

ELEVATOR MODERNIZATION

AT

FOGARTY MANOR, RI 2-4

214 ROOSEVELT AVENUE

AND

KENNEDY MANOR, RI 2-3,5

175 BROAD STREET

FOR THE

PAWTUCKET HOUSING AUTHORITY

214 ROOSEVELT AVENUE

PAWTUCKET, RHODE ISLAND 02860



Funded By
United States Department of
Housing and Urban Development

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Issued for Bid

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INVITATION TO BID

The Pawtucket Housing Authority, Pawtucket, Rhode Island, the Awarding Authority, invites sealed bids from Contractors for completing elevator modernization at Fogarty Manor, RI 2-4 and Kennedy Manor, RI 2-3,5 in accordance with the documents prepared by William Starck Architects, Inc., 126 Cove Street, Fall River, Massachusetts.

The work generally includes, but is not limited to the following:

Modernization of elevator components of four (4) elevators in total (2 per building). Fogarty Manor is a fifteen (15)-story building and Kennedy Manor is a nine (9)-story building. Components include, but are not limited to new controls, hoist machines and deflector sheaves, governors, car frames and safety systems (roller guides, slings, platforms, and elevator safeties), counterweight frames, counterweight plates, hoist ropes, car and hoistway door equipment, cab enclosures, car and hall station fixtures, traveling cables and hoistway wiring, buffers and pit equipment, including cleaning of guide rail supports. Work also includes incidental electrical, lighting, and fire alarm system upgrades, and mechanical heating, cooling, and ventilation upgrades. **Refer also to Section 00500.1, Elevator Service Contract.**

Bids are subject to Equal Employment Opportunities, bonding requirements and other bidding and contract requirements as set forth in the construction documents.

Bids will be received until **10:00 A.M. on Monday, March 30, 2026**, at the Pawtucket Housing Authority, 214 Roosevelt Ave, Pawtucket, Rhode Island, 02860, at which time they will be publicly opened and read aloud.

Bids shall be accompanied by a Bid Bond that is not less than five percent (5%) of the bid amount.

Bid Forms and Bid Documents will be available for pick-up free of charge, in PDF format on or after **Wednesday, February 25th, 2026** from the office of the Architect, **William Starck Architects, Inc., 126 Cove Street, Fall River, Massachusetts, 02720, between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday**. The bid documents will also be available on Pawtucket Housing Authority's website at www.pawthousing.org on or after Wednesday, February 25th, 2026. Bidders requesting Contract Documents are to contact:

Andrew Godek
Senior Associate
William Starck Architects, Inc.
(508) 679-5733
agodek@starckarchitects.com

If mailed, bids shall be sent to the **Pawtucket Housing Authority** and received no later than the date and time specified above.

Pawtucket Housing Authority
Attention: Alissa Stipa
175 Broad Street
Pawtucket, RI 02860
Also include the name of the project on the package.

A non-mandatory Pre-bid conference is scheduled for **10:00 A.M., Monday, March 16, 2026**, at the project sites, 214 Roosevelt Ave & 175 Broad St, Pawtucket, RI 02863. Following, the project sites will be available for a Pre-Bid walk-through. Meet at the front of Fogarty Manor, 214 Roosevelt Ave. Attendance of prospective Bidders is strongly encouraged.

Bids are subject to prevailing wage rates as determined by the U.S. Secretary of Labor.

This project is subject to Title VI of the Civil rights Act of 1964, Section 3 of the Housing and Urban Development Act of 1968 and the Instructions to Bidders, which will be discussed in detail at the Pre-Bid Conference. This is a Section 3-eligible job opportunity. Pawtucket Housing Authority encourages bids from Contractors that are Section 3 business concerns and/or employ individuals who are classified in low-income category and/or live in Public Housing and/or receive a Section 8 Voucher.

The Pawtucket Housing Authority reserves the right to reject any or all bids or to waive any informalities in the bidding if it be in the public interest to do so.

PAWTUCKET HOUSING AUTHORITY
Justin Barros
Executive Director
AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

SECTION 00010

LIST OF DRAWINGS

ELEVATOR MODERNIZATION

AT

FOGARTY MANOR, RI 2-4, 214 ROOSEVELT AVENUE

KENNEDY MANOR, RI 4-2, 175 BROAD STREET

PAWTUCKET, RHODE ISLAND

CS.....	Cover Sheet
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D1.1.....	Fogarty Manor: Exist./Demo. Roof Key Plan, Enlarged Plans, Elevations & Notes
D1.2.....	Fogarty Manor: Existing/Demo. Section, Elevation at Elevator Lobby, Legend & Notes
D1.3.....	Kennedy Manor: Existing/Demo. Key Plans, Enlarged Plans & Notes
D1.4.....	Kennedy Manor: Existing/Demo. Roof Key Plan, Enlarged Plans, Elevations & Notes
D1.5.....	Kennedy Manor: Existing/Demo. Section, Elevation at Elevator Lobby, Legend & Notes
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A1.2.....	Fogarty Manor: Proposed Section, Elevation at Elevator Lobby, Legend & Notes
A1.3.....	Kennedy Manor: Proposed Key Plans, Enlarged Floor Plans, Notes & Legend
A1.4.....	Kennedy Manor: Proposed Roof Key Plan, Enlarged Plans, Elevations, Notes & Legend
A1.4A.....	Kennedy Manor: Proposed Roof Railing Plan, Details & Elevations
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Drawings are dated: February 25, 2026

**U.S. Department of Housing and
Urban Development**
Office of Public and Indian Housing

**Instructions to Bidders for Contracts
Public and Indian Housing Programs**

Instructions to Bidders for Contracts

Public and Indian Housing Programs

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1. Bid Preparation and Submission

(a) Bidders are expected to examine the specifications, drawings, all instructions, and, if applicable, the construction site (see also the contract clause entitled **Site Investigation and Conditions Affecting the Work** of the *General Conditions of the Contract for Construction*). Failure to do so will be at the bidders' risk.

(b) All bids must be submitted on the forms provided by the Public Housing Agency/Indian Housing Authority (PHA/IHA). Bidders shall furnish all the information required by the solicitation. Bids must be signed and the bidder's name typed or printed on the bid sheet and each continuation sheet which requires the entry of information by the bidder. Erasures or other changes must be initialed by the person signing the bid. Bids signed by an agent shall be accompanied by evidence of that agent's authority. (Bidders should retain a copy of their bid for their records.)

(c) Bidders must submit as part of their bid a completed form HUD-5369-A, "Representations, Certifications, and Other Statements of Bidders."

(d) All bid documents shall be sealed in an envelope which shall be clearly marked with the words "Bid Documents," the Invitation for Bids (IFB) number, any project or other identifying number, the bidder's name, and the date and time for receipt of bids.

(e) If this solicitation requires bidding on all items, failure to do so will disqualify the bid. If bidding on all items is not required, bidders should insert the words "No Bid" in the space provided for any item on which no price is submitted.

(f) Unless expressly authorized elsewhere in this solicitation, alternate bids will not be considered.

(g) Unless expressly authorized elsewhere in this solicitation, bids submitted by telegraph or facsimile (fax) machines will not be considered.

(h) If the proposed contract is for a Mutual Help project (as described in 24 CFR Part 905, Subpart E) that involves Mutual Help contributions of work, material, or equipment, supplemental information regarding the bid advertisement is provided as an attachment to this solicitation.

2. Explanations and Interpretations to Prospective Bidders

(a) Any prospective bidder desiring an explanation or interpretation of the solicitation, specifications, drawings, etc., must request it at least 7 days before the scheduled time for bid opening. Requests may be oral or written. Oral requests must be confirmed in writing. The only oral clarifications that will be provided will be those clearly related to solicitation procedures, i.e., not substantive technical information. No other oral explanation or interpretation will be provided. Any information given a prospective bidder concerning this solicitation will be furnished promptly to all other prospective bidders as a written amendment to the solicitation, if that information is necessary in submitting bids, or if the lack of it would be prejudicial to other prospective bidders.

(b) Any information obtained by, or provided to, a bidder other than by formal amendment to the solicitation shall not constitute a change to the solicitation.

3. Amendments to Invitations for Bids

(a) If this solicitation is amended, then all terms and conditions which are not modified remain unchanged.

(b) Bidders shall acknowledge receipt of any amendment to this solicitation (1) by signing and returning the amendment, (2) by identifying the amendment number and date on the bid form, or (3) by letter, telegram, or facsimile, if those methods are authorized in the solicitation. The PHA/IHA must receive acknowledgement by the time and at the place specified for receipt of bids. Bids which fail to acknowledge the bidder's receipt of any amendment will result in the rejection of the bid if the amendment(s) contained information which substantively changed the PHA's/IHA's requirements.

(c) Amendments will be on file in the offices of the PHA/IHA and the Architect at least 7 days before bid opening.

4. Responsibility of Prospective Contractor

(a) The PHA/IHA will award contracts only to responsible prospective contractors who have the ability to perform successfully under the terms and conditions of the proposed contract. In determining the responsibility of a bidder, the PHA/IHA will consider such matters as the bidder's:

- (1) Integrity;
- (2) Compliance with public policy;
- (3) Record of past performance; and
- (4) Financial and technical resources (including construction and technical equipment).

(b) Before a bid is considered for award, the bidder may be requested by the PHA/IHA to submit a statement or other documentation regarding any of the items in paragraph (a) above. Failure by the bidder to provide such additional information shall render the bidder nonresponsible and ineligible for award.

5. Late Submissions, Modifications, and Withdrawal of Bids

(a) Any bid received at the place designated in the solicitation after the exact time specified for receipt will not be considered unless it is received before award is made and it:

(1) Was sent by registered or certified mail not later than the fifth calendar day before the date specified for receipt of offers (e.g., an offer submitted in response to a solicitation requiring receipt of offers by the 20th of the month must have been mailed by the 15th);

(2) Was sent by mail, or if authorized by the solicitation, was sent by telegram or via facsimile, and it is determined by the PHA/IHA that the late receipt was due solely to mishandling by the PHA/IHA after receipt at the PHA/IHA; or

(3) Was sent by U.S. Postal Service Express Mail Next Day Service - Post Office to Addressee, not later than 5:00 p.m. at the place of mailing two working days prior to the date specified for receipt of proposals. The term "working days" excludes weekends and observed holidays.

(b) Any modification or withdrawal of a bid is subject to the same conditions as in paragraph (a) of this provision.

(c) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent either by registered or certified mail is the U.S. or Canadian Postal Service postmark both on the envelope or wrapper and on the original receipt from the U.S. or Canadian Postal Service. Both postmarks must show a legible date or the bid, modification, or withdrawal shall be processed as if mailed late. "Postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed by employees of the U.S. or Canadian Postal Service on the date of mailing. Therefore, bidders should request the postal clerk to place a hand cancellation bull's-eye postmark on both the receipt and the envelope or wrapper.

(d) The only acceptable evidence to establish the time of receipt at the PHA/IHA is the time/date stamp of PHA/IHA on the proposal wrapper or other documentary evidence of receipt maintained by the PHA/IHA.

(e) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent by Express Mail Next Day Service-Post Office to Addressee is the date entered by the post office receiving clerk on the "Express Mail Next Day Service-Post Office to Addressee" label and the postmark on both the envelope or wrapper and on the original receipt from the U.S. Postal Service. "Postmark" has the same meaning as defined in paragraph (c) of this provision, excluding postmarks of the Canadian Postal Service. Therefore, bidders should request the postal clerk to place a legible hand cancellation bull's eye postmark on both the receipt and Failure by a bidder to acknowledge receipt of the envelope or wrapper.

(f) Notwithstanding paragraph (a) of this provision, a late modification of an otherwise successful bid that makes its terms more favorable to the PHA/IHA will be considered at any time it is received and may be accepted.

(g) Bids may be withdrawn by written notice, or if authorized by this solicitation, by telegram (including mailgram) or facsimile machine transmission received at any time before the exact time set for opening of bids; provided that written confirmation of telegraphic or facsimile withdrawals over the signature of the bidder is mailed and postmarked prior to the specified bid opening time. A bid may be withdrawn in person by a bidder or its authorized representative if, before the exact time set for opening of bids, the identity of the person requesting withdrawal is established and the person signs a receipt for the bid.

6. Bid Opening

All bids received by the date and time of receipt specified in the solicitation will be publicly opened and read. The time and place of opening will be as specified in the solicitation. Bidders and other interested persons may be present.

7. Service of Protest

(a) Definitions. As used in this provision:

"Interested party" means an actual or prospective bidder whose direct economic interest would be affected by the award of the contract.

"Protest" means a written objection by an interested party to this solicitation or to a proposed or actual award of a contract pursuant to this solicitation.

(b) Protests shall be served on the Contracting Officer by obtaining written and dated acknowledgement from —

Executive Director, Justin Barros
Pawtucket Housing Authority
214 Roosevelt Avenue
Pawtucket, RI 02860

[Contracting Officer designate the official or location where a protest may be served on the Contracting Officer]

(c) All protests shall be resolved in accordance with the PHA's/IHA's protest policy and procedures, copies of which are maintained at the PHA/IHA.

8. Contract Award

(a) The PHA/IHA will evaluate bids in response to this solicitation without discussions and will award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the PHA/IHA considering only price and any price-related factors specified in the solicitation.

(b) If the apparent low bid received in response to this solicitation exceeds the PHA's/IHA's available funding for the proposed contract work, the PHA/IHA may either accept separately priced items (see 8(e) below) or use the following procedure to determine contract award. The PHA/IHA shall apply in turn to each bid (proceeding in order from the apparent low bid to the high bid) each of the separately priced bid deductible items, if any, in their priority order set forth in this solicitation. If upon the application of the first deductible item to all initial bids, a new low bid is within the PHA's/IHA's available funding, then award shall be made to that bidder. If no bid is within the available funding amount, then the PHA/IHA shall apply the second deductible item. The PHA/IHA shall continue this process until an evaluated low bid, if any, is within the PHA's/IHA's available funding. If upon the application of all deductibles, no bid is within the PHA's/IHA's available funding, or if the solicitation does not request separately priced deductibles, the PHA/IHA shall follow its written policy and procedures in making any award under this solicitation.

(c) In the case of tie low bids, award shall be made in accordance with the PHA's/IHA's written policy and procedures.

(d) The PHA/IHA may reject any and all bids, accept other than the lowest bid (e.g., the apparent low bid is unreasonably low), and waive informalities or minor irregularities in bids received, in accordance with the PHA's/IHA's written policy and procedures.

(e) Unless precluded elsewhere in the solicitation, the PHA/IHA may accept any item or combination of items bid.

(f) The PHA/IHA may reject any bid as nonresponsive if it is materially unbalanced as to the prices for the various items of work to be performed. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.

(g) A written award shall be furnished to the successful bidder within the period for acceptance specified in the bid and shall result in a binding contract without further action by either party.

9. Bid Guarantee (applicable to construction and equipment contracts exceeding \$25,000)

All bids must be accompanied by a negotiable bid guarantee which shall not be less than five percent (5%) of the amount of the bid. The bid guarantee may be a certified check, bank draft, U.S. Government Bonds at par value, or a bid bond secured by a surety company acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. In the case where the work under the contract will be performed on an Indian reservation area, the bid guarantee may also be an irrevocable Letter of Credit (see provision 10, Assurance of Completion, below). Certified checks and bank drafts must be made payable to the order of the PHA/IHA. The bid guarantee shall insure the execution of the contract and the furnishing of a method of assurance of completion by the successful bidder as required by the solicitation. Failure to submit a bid guarantee with the bid shall result in the rejection of the bid. Bid guarantees submitted by unsuccessful bidders will be returned as soon as practicable after bid opening.

10. Assurance of Completion

(a) Unless otherwise provided in State law, the successful bidder shall furnish an assurance of completion prior to the execution of any contract under this solicitation. This assurance may be [Contracting Officer check applicable items] —

☒ (1) a performance and payment bond in a penal sum of 100 percent of the contract price; or, as may be required or permitted by State law;

☐ (2) separate performance and payment bonds, each for 50 percent or more of the contract price;

☐ (3) a 20 percent cash escrow;

☐ (4) a 25 percent irrevocable letter of credit; or,

☐ (5) an irrevocable letter of credit for 10 percent of the total contract price with a monitoring and disbursements agreement with the IHA (applicable only to contracts awarded by an IHA under the Indian Housing Program).

(b) Bonds must be obtained from guarantee or surety companies acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. Individual sureties will not be considered. U.S. Treasury Circular Number 570, published annually in the Federal Register, lists companies approved to act as sureties on bonds securing Government contracts, the maximum underwriting limits on each contract bonded, and the States in which the company is licensed to do business. Use of companies listed in this circular is mandatory. Copies of the circular may be downloaded on the U.S. Department of Treasury website <http://www.fms.treas.gov/c570/index.html>, or ordered for a minimum fee by contacting the Government Printing Office at (202) 512-2168.

(c) Each bond shall clearly state the rate of premium and the total amount of premium charged. The current power of attorney for the person who signs for the surety company must be attached to the bond. The effective date of the power of attorney shall not precede the date of the bond. The effective date of the bond shall be on or after the execution date of the contract.

(d) Failure by the successful bidder to obtain the required assurance of completion within the time specified, or within such extended period as the PHA/IHA may grant based upon reasons determined adequate by the PHA/IHA, shall render the bidder ineligible for award. The PHA/IHA may then either award the contract to the next lowest responsible bidder or solicit new bids. The PHA/IHA may retain the ineligible bidder's bid guarantee.

11. Preconstruction Conference (applicable to construction contracts)

After award of a contract under this solicitation and prior to the start of work, the successful bidder will be required to attend a preconstruction conference with representatives of the PHA/IHA and its architect/engineer, and other interested parties convened by the PHA/IHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract (e.g., Equal Employment Opportunity, Labor Standards). The PHA/IHA will provide the successful bidder with the date, time, and place of the conference.

12. Indian Preference Requirements (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

(a) HUD has determined that the contract awarded under this solicitation is subject to the requirements of section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e(b)). Section 7(b) requires that any contract or subcontract entered into for the benefit of Indians shall require that, to the greatest extent feasible

(1) Preferences and opportunities for training and employment (other than core crew positions; see paragraph (h) below) in connection with the administration of such contracts or subcontracts be given to qualified "Indians." The Act defines "Indians" to mean persons who are members of an Indian tribe and defines "Indian tribe" to mean any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians; and,

(2) Preference in the award of contracts or subcontracts in connection with the administration of contracts be given to Indian organizations and to Indian-owned economic enterprises, as defined in section 3 of the Indian Financing Act of 1974 (25 U.S.C. 1452). That Act defines "economic enterprise" to mean any Indian-owned commercial, industrial, or business activity established or organized for the purpose of profit, except that the Indian ownership must constitute not less than 51 percent of the enterprise; "Indian organization" to mean the governing body of any Indian tribe or entity established or recognized by such governing body; "Indian" to mean any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act; and Indian "tribe" to mean any Indian tribe, band, group, pueblo, or community including Native villages and Native groups (including

corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

(b) (1) The successful Contractor under this solicitation shall comply with the requirements of this provision in awarding all subcontracts under the contract and in providing training and employment opportunities.

(2) A finding by the IHA that the contractor, either (i) awarded a subcontract without using the procedure required by the IHA, (ii) falsely represented that subcontracts would be awarded to Indian enterprises or organizations; or, (iii) failed to comply with the contractor's employment and training preference bid statement shall be grounds for termination of the contract or for the assessment of penalties or other remedies.

(c) If specified elsewhere in this solicitation, the IHA may restrict the solicitation to qualified Indian-owned enterprises and Indian organizations. If two or more (or a greater number as specified elsewhere in the solicitation) qualified Indian-owned enterprises or organizations submit responsive bids, award shall be made to the qualified enterprise or organization with the lowest responsive bid. If fewer than the minimum required number of qualified Indian-owned enterprises or organizations submit responsive bids, the IHA shall reject all bids and readvertise the solicitation in accordance with paragraph (d) below.

(d) If the IHA prefers not to restrict the solicitation as described in paragraph (c) above, or if after having restricted a solicitation an insufficient number of qualified Indian enterprises or organizations submit bids, the IHA may advertise for bids from non-Indian as well as Indian-owned enterprises and Indian organizations. Award shall be made to the qualified Indian enterprise or organization with the lowest responsive bid if that bid is -

(1) Within the maximum HUD-approved budget amount established for the specific project or activity for which bids are being solicited; and

(2) No more than the percentage specified in 24 CFR 905.175(c) higher than the total bid price of the lowest responsive bid from any qualified bidder. If no responsive bid by a qualified Indian-owned economic enterprise or organization is within the stated range of the total bid price of the lowest responsive bid from any qualified enterprise, award shall be made to the bidder with the lowest bid.

(e) Bidders seeking to qualify for preference in contracting or subcontracting shall submit proof of Indian ownership with their bids. Proof of Indian ownership shall include but not be limited to:

(1) Certification by a tribe or other evidence that the bidder is an Indian. The IHA shall accept the certification of a tribe that an individual is a member.

(2) Evidence such as stock ownership, structure, management, control, financing and salary or profit sharing arrangements of the enterprise.

(f) (1) All bidders must submit with their bids a statement describing how they will provide Indian preference in the award of subcontracts. The specific requirements of that statement and the factors to be used by the IHA in determining the statement's adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement shall be rejected as nonresponsive. The IHA may require that comparable statements be provided by subcontractors to the successful Contractor, and may require the Contractor to reject any bid or proposal by a subcontractor that fails to include the statement.

(2) Bidders and prospective subcontractors shall submit a certification (supported by credible evidence) to the IHA in any instance where the bidder or subcontractor believes it is infeasible to provide Indian preference in subcontracting. The acceptance or rejection by the IHA of the certification shall be final. Rejection shall disqualify the bid from further consideration.

(g) All bidders must submit with their bids a statement detailing their employment and training opportunities and their plans to provide preference to Indians in implementing the contract; and the number or percentage of Indians anticipated to be employed and trained. Comparable statements from all proposed subcontractors must be submitted. The criteria to be used by the IHA in determining the statement(s)'s adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement(s), or that includes a statement that does not meet minimum standards required by the IHA shall be rejected as nonresponsive.

(h) Core crew employees. A core crew employee is an individual who is a bona fide employee of the contractor at the time the bid is submitted; or an individual who was not employed by the bidder at the time the bid was submitted, but who is regularly employed by the bidder in a supervisory or other key skilled position when work is available. Bidders shall submit with their bids a list of all core crew employees.

(i) Preference in contracting, subcontracting, employment, and training shall apply not only on-site, on the reservation, or within the IHA's jurisdiction, but also to contracts with firms that operate outside these areas (e.g., employment in modular or manufactured housing construction facilities).

(j) Bidders should contact the IHA to determine if any additional local preference requirements are applicable to this solicitation.

(k) The IHA [] does [] does not [Contracting Officer check applicable box] maintain lists of Indian-owned economic enterprises and Indian organizations by specialty (e.g., plumbing, electrical, foundations), which are available to bidders to assist them in meeting their responsibility to provide preference in connection with the administration of contracts and subcontracts.

SECTION 00101

ADDITIONAL INSTRUCTIONS TO BIDDERS

1. The Bids must be accompanied by the following:
 - A. Bid Deposit.
 - B. Non-Collusive Affidavit.
 - C. Debarment Certification.
 - D. Previous Participation Certification; HUD-2530.
 - E. Representations, Certifications, and Other Statements of Bidders; HUD-5369-A.
 - F. OSHA Certification Requirement
 - G. Contractor Certification
 - H. Unit Prices
 - I. Alternates
 - J. List of Prime Contractor's Proposed Subcontractors
 - K. Confirmation that the bidder is certified to perform U.S. Federal Government contracting projects, and is a registered vendor through the system for Award Management (sam.gov)
2. Taxes
 - A. The Awarding Authority is exempt from payment of the Rhode Island Sales Tax. The Contractor will be provided a Certificate of exemption number at the preconstruction conference.
2. Irrevocability of Bids
 - A. Bids shall be evaluated and a Letter of Award and/or a Contract issued with reasonable promptness and by written notice to the successful Bidder; bids shall be irrevocable for a period of sixty (60) days following the opening date unless expressly provided for to the contrary in the solicitation document, and may not be withdrawn during this period without the express written permission of the Housing Authority.
3. Permits and Fees
 - A. Bidders' attention is directed to SECTION 01720 – Permits and Fees requiring the Contractor to apply for, obtain and pay for all required permits and fees and shall schedule all inspections required by State & Local Agencies.
4. Bidders' attention is directed to ITEM 3A, of the Special Conditions requiring the Contractor to complete the work within **seven hundred (700) calendar days**. A Notice to Proceed is expected to be issued by **end of April 2026**.
5. Winter Conditions
 - A. It is the Bidders' responsibility to anticipate and include, in their bid, allowances for normal weather conditions as necessary to complete the work. No claim for extra compensation or extension of time will be allowed on account of the contractor's failure to allow for normal seasonal conditions.

END OF SECTION

SECTION 00300

FORM OF BID

To: Pawtucket Housing Authority
214 Roosevelt Avenue
Pawtucket Housing, RI 02860

Developments:
Project RI 2-4
Project RI 2-3,5

From: _____
(name of bidder)

A. The undersigned, having familiarized himself/themselves with the local conditions affecting the cost of the work and with the Project Manual including all Bidding information, Conditions of the Contract, Forms, Statements, Certifications listed in the Project Manual, the Technical Specifications and the Drawings and Addenda, if any thereto, as prepared by William Starck Architects, Inc., hereby proposes to furnish all labor, materials, equipment and services required for the *Elevator Upgrades at Fogarty Manor, RI 2-4 and Kennedy Manor, RI 2-3,5* for the contract price specified below, subject to additions and deductions according to the terms of the Specifications.

B. This bid includes addenda numbered _____.

C. The proposed contract price is _____
_____ Dollars (\$ _____)

D. The proposed price for the Elevator Service Contract is

_____ Dollars (\$ _____)

Note: The awarded Contractor will be engaged by the Housing Authority to assume the elevator service contract. Refer to Section 00500.1, Elevator Service Contract for the prescribed requirements. Refer also to Section 01270, Unit Prices. The Modernization Contract, and the Service Contract will be awarded to the same Contractor. The awarded 'Prime' Contractor may be either a General Contractor, or an Elevator Contractor. Bidders shall take note that in addition to Fogarty Manor and Kennedy Manor, the Elevator Service Contract includes Burns Manor as described in the sample Agreement for Services. Burns Manor is not included as part of the elevator modernization scope of work.

E. ALLOWANCES: We have included in our Bid Price, the following Project Allowance from Division 1, Section 01020 herein:

1. Allow the sum of: **\$200,000. \$100,000 per building**

F. BID ALTERNATES: We propose to modify the above Bid Price by the following amount, as identified in Section 01250, Alternates herein and as may be selected by the Owner.

BID ALTERNATE NO. 1:

Deduct from the Base Bid Price, the cost associated with the specified work for *painting* of the elevator pits of the two (2) buildings.

DEDUCT: \$ _____

BID ALTERNATE NO. 2:

Deduct from the Base Bid Price, the cost associated with the specified work for *painting* of the upper and lower-level Elevator Penthouse Machine Rooms of the two (2) buildings.

DEDUCT: \$ _____

G. The undersigned agrees that, if he is selected as Contractor, he will within five (5) days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the Authority, execute a contract in accordance with the terms of this bid and furnish a Performance Bond and a Labor and Material Payment Bond, each of a surety company qualified to do business under the laws of the *State of Rhode Island* and satisfactory to the Authority and each in the sum of at least one hundred percent (100%) of the contract price, the premiums for which are to be paid by the contractor and are included in the contract price.

H. Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or any other proposal or the submitting of proposals for the contract for which this proposal is submitted.

I. The undersigned offers the following information as evidence of his qualifications to perform the work as bid upon according to all the requirements of the Project Manual and Drawings:

1. Have been in business under present business name: _____ years.
2. Ever failed to complete any work awarded: _____
3. List two (2) recent projects on which you served as General Contractor for work of similar character as required for this job.

a. Building _____

Architect _____
(contract name & telephone number)

Owner _____
(contact name & telephone number)

Contract Amount _____

b. Building _____

Architect _____
(contact name & telephone number)

Owner _____
(contact name & telephone number)

Contract Amount _____

4. Bank Reference _____

J. The undersigned hereby certifies that this bid does include the excise taxes imposed by Chapter 14, Acts of 1966, upon the purchase or rental of materials, supplies, services and the equipment to be used in the work to furnish all labor, materials, equipment and services required to complete the work.

K. The undersigned represents that he () has, () has not, participated in a previous contract or subcontract subject to the equal opportunity clause prescribed by U.S. Executive Orders 10925, 11114, or 11246 or the Secretary of Labor; that he () has, () has not, filed all required compliance reports; and that representations indicating submissions of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. (The above representation need not be submitted in connection with contracts or subcontracts which are exempt from the clause.)

NOTE: The penalty for making false statements in offers is described in 18 U.S.C. 1001.

Date: _____
(Name of Bidder)

Official Address: _____
By: _____
Title: _____

Note: If the bidder is a corporation, indicate state of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses if different from business addresses.

Attached to this Bid are the following:

- A. Bid Deposit.
- B. Non-Collusive Affidavit.
- C. Debarment Certification.
- D. Previous Participation Certification; HUD-2530.
- E. Representations, Certifications, and Other Statements of Bidders; HUD-5369-A.
- F. OSHA Certification Requirement
- G. Contractor Certification
- H. Unit Prices
- I. Alternates
- J. List of Prime Contractor's Proposed Subcontractors
- K. Confirmation that the bidder is certified to perform U.S. Federal Government contracting projects, and is a registered vendor through the system for Award Management (sam.gov)

SECTION 00400

FORM OF BID BOND

Bond No. _____

KNOW ALL BY THESE PRESENTS, that we _____ as Principal,
hereinafter called the Principal, and _____ (Bonding Company), a corporation duly
organized under the laws of _____ (State) as Surety, hereinafter called the Surety,
are held and firmly bound unto the *Pawtucket Housing Authority* (HA) for the sum of

Dollars (\$ _____), for the payment of which sum well and truly to be made, the said
Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors, and assigns,
jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for _____

(Identify project by number and brief description).

NOW, THEREFORE, if the *Pawtucket Housing Authority* shall accept the bid of the Principal and the
Principal shall enter into a contract with the *Pawtucket Housing Authority* in accordance with the terms of
such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good
and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and
material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such
Contract and give such bond or bonds, if the Principal shall pay to the *Pawtucket Housing Authority* the
difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount
for which the *Pawtucket Housing Authority* may in good faith contract with another party to perform work
covered by said bid or an appropriate required amount as specified in the Invitation to Bid then this obligation
shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this _____ day of _____, 20_____.

(Witness)

(Principal) (Seal)

(Title)

(BONDING COMPANY)

(Witness)

By _____
(Attorney-in-Fact)

SECTION 00401

FORM OF NON-COLLUSIVE AFFIDAVIT

State of _____

County of _____

_____, being first duly sworn, deposes and says:

that he is _____,
(a partner or officer of the firm, etc.)

of the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any bidder, or to fix any over- head profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the Pawtucket Housing Authority in the City of Pawtucket, or any person interested in the proposed contract; and that all statements in said proposal or bid are true.

Signature of:

Bidder, if the bidder is an individual;

Partner, if the bidder is a partnership;

Officer, if the bidder is a corporation;

Subscribed and sworn to before me

this _____ day of _____, 20____

(Notary Public)

My commission expires _____, 20____

SECTION 00402

DEBARMENT CERTIFICATION

The undersigned, a Respondent to the Invitation to Bid, hereby certifies to the awarding authority on behalf of itself and each member of Respondents development team, as follows:

In accordance with 24 CFR 85.35, Respondent certifies that neither Respondent, nor any member of the Respondent's development team is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal Assistance programs under Executive Order 12549 "Debarment and Suspension."

Date

Respondent (Name of Firm)

By: _____

Title:

US Department of Housing and Urban Development
Office of Housing/Federal Housing Commissioner

US Department of Agriculture
Farmers Home Administration

Part I to be completed by Controlling Participant(s) of Covered Projects (See instructions) Reason for submission:		For HUD HQ/FmHA use only	
1. Agency name and City where the application is filed		2. Project Name, Project Number, City and Zip Code	
3. Loan or Contract amount \$	4. Number of Units or Beds	5. Section of Act	6. Type of Project (check one) ☐ Existing ☐ Rehabilitation ☐ Proposed (New)

7. List all proposed Controlling Participants and attach complete organization chart for all organizations showing ownership %

Name and address (Last, First, Middle Initial) of controlling participant(s) proposing to participate	8 Role of Each Principal in Project	9. SSN or IRS Employer Number (TIN)

Certifications: The controlling participants(s) listed above hereby apply to HUD or USDA FmHA, as the case maybe, for approval to participate as controlling participant(s) in the role(s) and project listed above. The controlling participant(s) certify that the information provided on this form and in any accompanying documentation is true and accurate. I/we acknowledge that making, presenting, or submitting a false, fictitious, or fraudulent statement, representation, or certification may result in criminal, civil, and/or administrative sanctions, including fines, penalties, and imprisonment. The controlling participants(s) further certify to the truth and accuracy of the following:

1. Schedule A contains a listing, for the last ten years, of every project assisted or insured by HUD, USDA FmHA and/or State and local government housing finance agencies in which the controlling participant(s) have participated or are now participating.
2. For the period beginning 10 years prior to the date of this certification, and except as shown on the certification:
 - a. No mortgage on a project listed has ever been in default, assigned to the Government or foreclosed, nor has it received mortgage relief from the mortgagee;
 - b. The controlling participants have no defaults or noncompliance under any Conventional Contract or Turnkey Contract of Sale in connection with a public housing project;
 - c. There are no known unresolved findings as a result of HUD audits, management reviews or other Governmental investigations concerning the controlling participants or their projects;
 - d. There has not been a suspension or termination of payments under any HUD assistance contract due to the controlling participant's fault or negligence;
 - e. The controlling participants have not been convicted of a felony and are not presently the subject of a complaint or indictment charging a felony. (A felony is defined as any offense punishable by imprisonment for a term exceeding one year, but does not include any offense classified as a misdemeanor under the laws of a State and punishable by imprisonment of two years or less);
 - f. The controlling participants have not been suspended, debarred or otherwise restricted by any Department or Agency of the Federal Government or of a State Government from doing business with such Department or Agency;
 - g. The controlling participants have not defaulted on an obligation covered by a surety or performance bond and have not been the subject of a claim under an employee fidelity bond;
3. All the names of the controlling participants who propose to participate in this project are listed above.
4. None of the controlling participants is a HUD/FmHA employee or a member of a HUD/FmHA employee's immediate household as defined in Standards of Ethical Conduct for Employees of the Executive Branch in 5 C.F.R. Part 2635 (57 FR 35006) and HUD's Standard of Conduct in 24 C.F.R. Part 0 and USDA's Standard of Conduct in 7 C.F.R. Part 0 Subpart B.
5. None of the controlling participants is a participant in an assisted or insured project as of this date on which construction has stopped for a period in excess of 20 days or which has been substantially completed for more than 90 days and documents for closing, including final cost certification, have not been filed with HUD or FmHA.
6. None of the controlling participants have been found by HUD or FmHA to be in noncompliance with any applicable fair housing and civil rights requirements in 24 CFR 5.105(a). (If any controlling participants have been found to be in noncompliance with any requirements, attach a signed statement explaining the relevant facts, circumstances, and resolution, if any).
7. None of the controlling participants is a Member of Congress or a Resident Commissioner nor otherwise prohibited or limited by law from contracting with the Government of the United States of America.
8. Statements above (if any) to which the controlling participant(s) cannot certify have been deleted by striking through the words with a pen, and the controlling participant(s) have initialed each deletion (if any) and have attached a true and accurate signed statement (if applicable) to explain the facts and circumstances.

Name of Controlling Participant	Signature of Controlling Participant	Certification Date (mm/dd/yyyy)	Area Code and Tel. No.
This form prepared by (print name)		Area Code and Tel. No.	

Schedule A: List of Previous Projects and Section 8 Contracts. Below is a complete list of the controlling participants' previous participation projects and participation history in covered projects as per 24 CFR, part 200 §200.214 and multifamily Housing programs of FmHA, State and local Housing Finance Agencies, if applicable. **Note:** Read and follow the instruction sheet carefully. Make full disclosure. Add extra sheets if you need more space. Double check for accuracy. If no previous projects, write by your name, **"No previous participation, First Experience"**.

1. Controlling Participants' Name (Last, First)	2. List of previous projects (Project name, project ID and, Govt. agency involved)	3. List Participants' Role(s) (indicate dates participated, and if fee or identity of interest participant)	4. Status of loan (current, defaulted, assigned, foreclosed)	5. Was the Project ever in default during your participation Yes No If yes, explain		6. Last MOR rating and Physical Insp. Score and date

Part II- For HUD Internal Processing Only

Received and checked by me for accuracy and completeness; recommend approval or refer to Headquarters after checking appropriate box.

Date (mm/dd/yyyy)	Tel No. and area code	☐ A. No adverse information; form HUD-2530 approval recommended. ☐ B. Name match in system ☐ C. Disclosure or Certification problem ☐ D. Other (attach memorandum)
Staff	Processing and Control	
Signature of authorized reviewer		Signature of authorized reviewer Approved ☐ Yes ☐ No
		Date (mm/dd/yyyy)

Instructions for Completing the Previous Participation Certificate, form HUD-2530

Carefully read these instructions and the applicable regulations. A copy of the regulations published at 24 C.F.R. part 200, subpart H, § 200.210-200.222 can be obtained on-line at www.gpo.gov and from the Account Executive at any HUD Office. Type or print neatly in ink when filling out this form. Incomplete form will be returned to the applicant.

Attach extra sheets as you need them. Be sure to indicate "Continued on Attachments" wherever appropriate. Sign each additional page that you attach if it refers to you or your record. **Carefully read the certification before you sign it.** Any questions regarding the form or how to complete it can be answered by your HUD Account Executive.

Purpose: This form provides HUD/USDA FmHA with a certified report of all previous participation in relevant HUD/USDA programs by those parties submitting the application. The information requested in this form is used by HUD/USDA to determine if you meet the standards established to ensure that all controlling participants in HUD/USDA projects will honor their legal, financial and contractual obligations and are of acceptable risks from the underwriting standpoint of an insurer, lender or governmental agency. HUD requires that you certify and submit your record of previous participation, in relevant projects, by completing and signing this form, before your participation can be approved.

HUD approval of your certification is a necessary precondition for your participation in the project and in the capacity that you propose. If you do not file this certification, do not furnish the information requested accurately, or do not meet established standards, HUD will not approve your certification.

Note that approval of your certification does not obligate HUD to approve your project application, and it does not satisfy all other HUD program requirements relative to your qualifications.

Who Must Sign and File Form HUD-2530: Form HUD-2530 must be completed and signed by all Controlling Participants of Covered Projects, as such terms are defined in 24 CFR part 200 §200.212, and as further clarified by the Processing Guide (HUD notice H 2016-15) referenced in 24 CFR §200.210(b) and available on the HUD website at: http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/mfh/prevparticipation.

Where and When Form HUD-2530 Must Be Filed: The original of this form must be submitted to the HUD Office where your project application will be processed at the same time you file your initial project application. This form must be filed with applications for projects listed in 24 CFR §200.214 and for the Triggering Events listed at 24 CFR §200.218.

Review of Adverse Determination: If approval of your participation in a HUD project is denied, withheld, or conditionally granted on the basis of your record of previous participation, you will be notified by the HUD Office. You may request reconsideration in accordance with 24 CFR §200.222 and further clarified by the Processing Guide. Request must be made in writing within 30 days from your receipt of the notice of determination.

The Department of Housing and Urban Development (HUD) is authorized to collect this information by law 42 U.S.C. 3535(d) and by regulation at 24 CFR 200.210. This information is needed so that principals applying to participate in multifamily programs can become HUD-approved controlling participants. The information you provide will enable HUD to evaluate your record with respect to established standards of performance, responsibility and eligibility. Without prior approval, a controlling participant may not participate in a proposed or existing multifamily or healthcare project. HUD uses this information to evaluate whether or not controlling participants pose an unsatisfactory underwriting risk. The information is used to evaluate the potential controlling participants and approve only individuals and organizations that will honor their legal, financial and contractual obligations.

Privacy Act Statement: The Housing and Community Development Act of 1987, 42 U.S.C. 3543 requires persons applying for a Federally-insured or guaranteed loan to furnish his/her Social Security Number (SSN). HUD must have your SSN for identification of your records. HUD may use your SSN for automated processing of your records and to make requests for information about you and your previous records with other public agencies and private sector sources. HUD may disclose certain information to Federal, State and local agencies when relevant to civil, criminal, or regulatory investigations and prosecutions. It will not be otherwise disclosed or released outside of HUD, except as required and permitted by law. You must provide all of the information requested in this application, including your SSN.

Public reporting burden for this collection of information is estimated to average three hour 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 control number.

A response is mandatory. Failure to provide any of the information will result in your disapproval of participation in this HUD program.

**U.S. Department of Housing
and Urban Development**
Office of Public and Indian Housing

**Representations, Certifications,
and Other Statements of Bidders**
Public and Indian Housing Programs

Representations, Certifications, and Other Statements of Bidders

Public and Indian Housing Programs

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1. Certificate of Independent Price Determination

(a) The bidder certifies that--

(1) The prices in this bid have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to (i) those prices, (ii) the intention to submit a bid, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this bid have not been and will not be knowingly disclosed by the bidder, directly or indirectly, to any other bidder or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a competitive proposal solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the bidder to induce any other concern to submit or not to submit a bid for the purpose of restricting competition.

(b) Each signature on the bid is considered to be a certification by the signatory that the signatory--

(1) Is the person in the bidder's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

[insert full name of person(s) in the bidder's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the bidder's organization];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the bidder deletes or modifies subparagraph (a)2 above, the bidder must furnish with its bid a signed statement setting forth in detail the circumstances of the disclosure.

[] [Contracting Officer check if following paragraph is applicable]

(d) Non-collusive affidavit. (applicable to contracts for construction and equipment exceeding \$50,000)

(1) Each bidder shall execute, in the form provided by the PHA/IHA, an affidavit to the effect that he/she has not colluded with any other person, firm or corporation in regard to any bid submitted in response to this solicitation. If the successful bidder did not submit the affidavit with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the affidavit by that date may render the bid nonresponsive. No contract award will be made without a properly executed affidavit.

(2) A fully executed "Non-collusive Affidavit" [] is, [] is not included with the bid.

2. Contingent Fee Representation and Agreement

(a) Definitions. As used in this provision:

"Bona fide employee" means a person, employed by a bidder and subject to the bidder's supervision and control as to time, place, and manner of performance, who neither exerts, nor proposes to exert improper influence to solicit or obtain contracts nor holds out as being able to obtain any contract(s) through improper influence.

"Improper influence" means any influence that induces or tends to induce a PHA/IHA employee or officer to give consideration or to act regarding a PHA/IHA contract on any basis other than the merits of the matter.

(b) The bidder represents and certifies as part of its bid that, except for full-time bona fide employees working solely for the bidder, the bidder:

(1) [] has, [] has not employed or retained any person or company to solicit or obtain this contract; and

(2) [] has, [] has not paid or agreed to pay to any person or company employed or retained to solicit or obtain this contract any commission, percentage, brokerage, or other fee contingent upon or resulting from the award of this contract.

(c) If the answer to either (a)(1) or (a)(2) above is affirmative, the bidder shall make an immediate and full written disclosure to the PHA/IHA Contracting Officer.

(d) Any misrepresentation by the bidder shall give the PHA/IHA the right to (1) terminate the contract; (2) at its discretion, deduct from contract payments the amount of any commission, percentage, brokerage, or other contingent fee; or (3) take other remedy pursuant to the contract.

3. Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (applicable to contracts exceeding \$100,000)

(a) The definitions and prohibitions contained in Section 1352 of title 31, United States Code, are hereby incorporated by reference in paragraph (b) of this certification.

(b) The bidder, by signing its bid, hereby certifies to the best of his or her knowledge and belief as of December 23, 1989 that:

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence 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 on his or her behalf in connection with the awarding of a contract resulting from this solicitation;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence 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 on his or her behalf in connection with this solicitation, the bidder shall complete and submit, with its bid, OMB standard form LLL, "Disclosure of Lobbying Activities;" and

(3) He or she will include the language of this certification in all subcontracts at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

(d) Indian tribes (except those chartered by States) and Indian organizations as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) are exempt from the requirements of this provision.

4. Organizational Conflicts of Interest Certification

The bidder certifies that to the best of its knowledge and belief and except as otherwise disclosed, he or she does not have any organizational conflict of interest which is defined as a situation in which the nature of work to be performed under this proposed contract and the bidder's organizational, financial, contractual, or other interests may, without some restriction on future activities:

(a) Result in an unfair competitive advantage to the bidder; or,
(b) Impair the bidder's objectivity in performing the contract work.
[] In the absence of any actual or apparent conflict, I hereby certify that to the best of my knowledge and belief, no actual or apparent conflict of interest exists with regard to my possible performance of this procurement.

5. Bidder's Certification of Eligibility

(a) By the submission of this bid, the bidder certifies that to the best of its knowledge and belief, neither it, nor any person or firm which has an interest in the bidder's firm, nor any of the bidder's subcontractors, is ineligible to:

(1) Be awarded contracts by any agency of the United States Government, HUD, or the State in which this contract is to be performed; or,

(2) Participate in HUD programs pursuant to 24 CFR Part 24.

(b) The certification in paragraph (a) above is a material representation of fact upon which reliance was placed when making award. If it is later determined that the bidder knowingly rendered an erroneous certification, the contract may be terminated for default, and the bidder may be debarred or suspended from participation in HUD programs and other Federal contract programs.

6. Minimum Bid Acceptance Period

(a) "Acceptance period," as used in this provision, means the number of calendar days available to the PHA/IHA for awarding a contract from the date specified in this solicitation for receipt of bids.

(b) This provision supersedes any language pertaining to the acceptance period that may appear elsewhere in this solicitation.

(c) The PHA/IHA requires a minimum acceptance period of [Contracting Officer insert time period] calendar days.

(d) In the space provided immediately below, bidders may specify a longer acceptance period than the PHA's/IHA's minimum requirement. The bidder allows the following acceptance period: calendar days.

(e) A bid allowing less than the PHA's/IHA's minimum acceptance period will be rejected.

(f) The bidder agrees to execute all that it has undertaken to do, in compliance with its bid, if that bid is accepted in writing within (1) the acceptance period stated in paragraph (c) above or (2) any longer acceptance period stated in paragraph (d) above.

7. Small, Minority, Women-Owned Business Concern Representation

The bidder represents and certifies as part of its bid/ offer that it --

(a) [] is, [] is not a small business concern. "Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR 121.

(b) [] is, [] is not a women-owned business enterprise. "Women-owned business enterprise," as used in this provision, means a business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business.

(c) [] is, [] is not a minority business enterprise. "Minority business enterprise," as used in this provision, means a business which is at least 51 percent owned or controlled by one or more minority group members or, in the case of a publicly owned business, at least 51 percent of its voting stock is owned by one or more minority group members, and whose management and daily operations are controlled by one or more such individuals. For the purpose of this definition, minority group members are:

(Check the block applicable to you)

[] Black Americans	[] Asian Pacific Americans
[] Hispanic Americans	[] Asian Indian Americans
[] Native Americans	[] Hasidic Jewish Americans

8. Indian-Owned Economic Enterprise and Indian Organization Representation (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

The bidder represents and certifies that it:

(a) [] is, [] is not an Indian-owned economic enterprise. "Economic enterprise," as used in this provision, means any commercial, industrial, or business activity established or organized for the purpose of profit, which is at least 51 percent Indian owned. "Indian," as used in this provision, means any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act.

(b) [] is, [] is not an Indian organization. "Indian organization," as used in this provision, means the governing body of any Indian tribe or entity established or recognized by such governing body. Indian "tribe" means any Indian tribe, band, group, pueblo, or

community including Native villages and Native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

9. Certification of Eligibility Under the Davis-Bacon Act (applicable to construction contracts exceeding \$2,000)

(a) By the submission of this bid, the bidder certifies that neither it nor any person or firm who has an interest in the bidder's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(b) No part of the contract resulting from this solicitation shall be subcontracted to any person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(c) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

10. Certification of Nonsegregated Facilities (applicable to contracts exceeding \$10,000)

(a) The bidder's attention is called to the clause entitled **Equal Employment Opportunity** of the General Conditions of the Contract for Construction.

(b) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

(c) By the submission of this bid, the bidder certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The bidder agrees that a breach of this certification is a violation of the Equal Employment Opportunity clause in the contract.

(d) The bidder further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) prior to entering into subcontracts which exceed \$10,000 and are not exempt from the requirements of the Equal Employment Opportunity clause, it will:

(1) Obtain identical certifications from the proposed subcontractors;

(2) Retain the certifications in its files; and

(3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

Notice to Prospective Subcontractors of Requirement for Certifications of Nonsegregated Facilities

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Employment Opportunity clause of the prime contract. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

Note: The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

11. Clean Air and Water Certification (applicable to contracts exceeding \$100,000)

The bidder certifies that:

(a) Any facility to be used in the performance of this contract [] is, [] is not listed on the Environmental Protection Agency List of Violating Facilities:

(b) The bidder will immediately notify the PHA/IHA Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the bidder proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and,

(c) The bidder will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

12. Previous Participation Certificate (applicable to construction and equipment contracts exceeding \$50,000)

(a) The bidder shall complete and submit with his/her bid the Form HUD-2530, "Previous Participation Certificate." If the successful bidder does not submit the certificate with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the certificate by that date may render the bid nonresponsive. No contract award will be made without a properly executed certificate.

(b) A fully executed "Previous Participation Certificate"

[] is, [] is not included with the bid.

13. Bidder's Signature

The bidder hereby certifies that the information contained in these certifications and representations is accurate, complete, and current.

(Signature and Date)

(Typed or Printed Name)

(Title)

(Company Name)

(Company Address)

SECTION 00406

FORM OF CONTRACTOR CERTIFICATION

I, _____, certify that I am the
_____ of the corporation named as
Contractor herein; that _____, who
signed this contract on behalf of the Contractor, was then _____
_____ of said corporation; that said Contract was
duly signed for and in behalf of said corporation by authority of its
governing body, and is within the scope of its corporate powers.

(Affix Corporate Seal)

(Print or type the names underneath all signatures.)

SECTION 00500

FORM OF CONTRACT

THIS AGREEMENT, made this _____ day of _____, in the year Two Thousand _____, by and between _____, hereinafter called the "Contractor", and the **Pawtucket Housing Authority**, a public body, politic and corporate, organized and existing under the Housing Authority Law of the State of Rhode Island, hereinafter called the "Authority",

WITNESSTH, that the Contractor and the Authority for the consideration stated herein agree as follows:

Article 1. Statement of Work. The Contractor shall furnish all labor, materials, equipment, services and insurance, and perform and complete all work required by and in strict accordance with the Specifications for _____ in Pawtucket, Rhode Island, dated _____, and the addenda thereto numbered _____ and _____, and the Drawings referred to therein, all as prepared by _____. Said Specifications, Addenda and Drawings are incorporated herein by reference and are made a part thereof.

Article 2. Time of Completion. The Contractor shall commence work, under this Contract on the date specified in the written notice of the Authority to proceed and shall fully complete all work hereunder within the time stated elsewhere in the Contract Documents.

Article 3. The Contract Price. The Authority shall pay the Contractor for the performance of the Contract, in current funds, subject to additions and deductions as provided in the Specifications, the sum of _____ Dollars (\$_____).

Article 4. Contract Documents. The Contract shall consist of the following component parts

- a. Invitation to Bid, Instructions to Bidders and Form of Bid
- b. This Instrument
- c. General Conditions
- d. Special Conditions
- e. General Scope of Work
- f. Technical Specifications
- g. Drawings

This instrument, together with other documents enumerated in this Article 4, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, form the Contract. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this Article 4 shall govern, except as otherwise specifically stated. The various provisions in Addenda shall be construed in the order of preference of the component part of the Contract which each modifies.

IN WITNESS WHEREOF, the parties hereto have caused this Instrument to be executed in _____ original counterparts as of the day and year first above written.

Attest:

(Contractor)

By _____

Title _____

Business Address:

(Street)

(City) (State) (Zip Code)

**PAWTUCKET
HOUSING AUTHORITY**

By _____

Title _____

Business Address:

30 Washington Street

Pawtucket, Rhode Island 02863

(Print or type the names underneath all signatures.)

The Contractor is responsible for ensuring that their Elevator Subcontractor, just prior to completion of the first elevator, provides in-depth on-site training for the Housing Authority, the City of Pawtucket Fire Department and the City of Pawtucket Public Safety Department, and any other involved parties hereinafter called 'Stakeholders'. The training shall include, but not be limited to the elevator life-safety features, elevator diagnostics, elevator logistics, elevator operational procedures, etc. In addition to this initial training, the Contractor shall also be responsible for the same training on an annual basis, with all Stakeholders, for as long as their Elevator Service Contract is in effect.

DOCUMENT 00500.1

ELEVATOR SERVICE CONTRACT

1. The following sample Elevator Service Contract (Agreement for Services) shall be part of this elevator modernization contract. The Housing Authority reserves the right to modify actual start and finish dates. Refer to Form of Bid and Unit Prices, herein.

Note: Bidders shall take note that in addition to Fogarty Manor and Kennedy Manor, the Elevator Service Contract includes Burns Manor as described in the sample Agreement for Services. Burns Manor is not included as part of the elevator modernization scope of work.

PAWTUCKET HOUSING AUTHORITY

AGREEMENT FOR SERVICES

Contract No. XXXX-XXX

THIS AGREEMENT, is made and entered into this **Month, Day, Year** by and between **VENDOR** located on **VENDOR ADDRESS** hereinafter called the "**Contractor**" and **The Housing Authority of the City of Pawtucket, Rhode Island**, a public body and a body corporate and politic existing under the General Laws of the State of Rhode Island, hereinafter called the "**Authority**":

WITNESSETH, that the Contractor and the Authority, for the considerations stated herein, mutually agree:

ARTICLE 1. Statement of Work

The Contractor shall furnish all labor, materials, and services to perform **Pawtucket Housing Authority Elevator Services** for all locations of the Housing Authority throughout the City of Pawtucket in accordance with: all applicable HUD rules and regulations, Part II - Additional Terms and Conditions, HUD-5370-EZ General Conditions, WH-347 US Department of Labor, Table 5.1 Mandatory Contract Clauses for Small Purchases other than Construction, Pawtucket Housing Certificate of Liability Insurance Sample, and the Non-Collusive Affidavit, all of which are hereby incorporated by reference and made a part hereof.

The specific deliverables are: all items listed under Scope of Work

The Contract Price

The Authority shall pay the Contractor for the performance of this contract. in current funds, subject to additions and deductions as provided herein, the sum of **TBD**

Method of Payment

Portions of the contract price shall be paid within thirty (30) days of receipt of on approved invoice. If the delivery of any service and/or material purchased under this contract is provided in stages, then for each of the agreed stages, a partial payment will be made. The Contractor is issued **Contract Number XXXX-XXX** by the Authority. This number must be indicated on all invoices in order to be processed for payment.

Billing Address: ATTN Finance Department
Pawtucket Housing Authority
214 Roosevelt Avenue OFC,
Pawtucket, RI 02860

Email Invoices: invoices@pawthousing.org

Time of Performance

Pawtucket Housing Authority Elevator Services will commence on or about **TBD** and shall be completed on or before **TBD**.

Contract Documents

The Contract shall consist of the following component parts:

- a. This Instrument
- b. Part II - Additional Terms & Conditions
- c. HUD-5370-EZ General Conditions
- d. WH-347 US Department of Labor
- e. Table 5.1 Mandatory Contract Clauses for Small Purchases other than Construction
- f. Pawtucket Housing Authority Certificate of Liability Sample
- g. Contractual Risk Liability Letter
- h. Non-Collusive Affidavit

Additional Compliance

The Contractor shall comply with all pertinent Federal, State, and Municipal Laws and Regulations, and all pertinent Amendments thereto. including but not limited to:

- Federal and State Confidentiality, Privacy, and Data Security;
- Title VII of the Civil Rights Act of 1964;
- The Pregnancy Discrimination Act;
- The Equal Pay Act of 1963;
- The Age Discrimination in Employment Act of 1967;
- Title I of the Americans with Disabilities Act of 1990;

PAWTUCKET HOUSING AUTHORITY

- Sections 102 and 103 of the Civil Rights Act of 1991;
- Sections 501 and 505 of the Rehabilitation Act of 1973;
- The Genetic Information Nondiscrimination Act of 2008; and
- Executive Order 11246 as Amended, including Parts I through IV.
- Vendors, Non-Affiliated Third Parties, and Contractors shall implement and maintain reasonable data security procedures and practices appropriate to the size and scope of the organization, the nature of the information, and the purpose for which the information was collected to protect the Personal Information (PI) from Unauthorized Access, Use, Modification, Destruction, or Disclosure.

THIS INSTRUMENT, together with the other documents enumerated in Contract Documents are fully a part of the Contract as if hereto attached and constitutes the entire agreement between the parties. This Agreement shall not be modified except in writing signed by both parties. If any provision in any component part of this Contract conflicts with any provision of any other component part, the provision required by HUD, and/or provision(s) most beneficial to the Authority, shall govern.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

Pawtucket Housing Authority

Owner Signature: _____
Justin Barros
Executive Director
214 Roosevelt Avenue
Pawtucket, RI 02860

Vendor Signature _____
Title: _____
Address: _____
City, State, Zip _____

SCOPE OF WORK

PAWTUCKET HOUSING AUTHORITY

1. Intent of Specifications:

The Contractor shall provide full service elevator maintenance and repair services for the Pawtucket Housing Authority

2. Statement of Work:

The Contractor shall provide all labor, material, repair parts, emergency repair and preventive maintenance required to maintain the elevators described herein and their respective equipment components in accordance with the original manufacturer's design specifications, operational efficiencies, and capacities. Owner reserves the right to add and/or delete (with 30 days notice) equipment as may be required during the contract period at negotiated rates. Maximum allowable response time for any given elevator is 6 hours from the time the call for service is placed. Maximum allowable down time for any given elevator is 24 hours. Owner understands there may be concessions due to parts availability, etc .. and those incidents will be handled individually. Owner reserves the right to utilize another source, without affecting contract provisions, should Contractor not perform within this time period.

3. Contract Term:

The initial contract term shall be for a period of three (3) years effective from date of award. Owner reserves the right to extend the contract term for two (2) additional one (1) year periods.

4. Vendor Experience:

The vendor must be thoroughly familiar with the application areas specified and have an installed base of customers currently using the proposed products. The vendor shall have the staff, technical, and financial resources to reliably install and support the proposed system.

5. Examination of Bid Document and Work Siles

Contractors shall determine for themselves the conditions and circumstances effecting requirements of the included work by personal examinations of each included item of equipment and equipment system, building area, all bid documents and by such other means as they may choose that are acceptable to Owner. The submission of a bid will be considered conclusive evidence that the contractor has made such examinations and investigations, and that the contractor fully understands and is satisfied as to the conditions to be encountered, the character, quantity, quality and scope of work, and the requirements of the bid documents. Respondents must request a site visit through the Director of Operations. Chris Bostic, at 401-721-5064.

6. Elevator and Equipment Services:

A. TRACTION ELEVATORS

The Contractor shall provide a preventive maintenance program to deliver service tailored to the buildings specific needs. Equipment type, component life, equipment usage, and building environment will be taken into account when planning routine short and long term maintenance schedules and records for each elevator. The unit will be provided with devices to monitor equipment usage. Industry Standard work processes will be used.

All equipment, materials and installation shall conform to: ANSI, A17.1 The American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks, ANSI, A17.2 American Standard Practice for the Inspection of Elevators, Inspectors Manual, and National Fire Protection Association (NFPA) code.

The contractor will use trained, licensed personnel directly employed and supervised by them. They will be qualified to keep the equipment properly adjusted, and they will use all reasonable care to maintain the elevator equipment in proper and safe operating condition.

1. The contractor will regularly and systematically examine, adjust, lubricate as required, and if conditions warrant, repair or replace:

PAWTUCKET HOUSING AUTHORITY

- a. Machine, worm, gear, thrust bearings, drive sheave, drive sheave shaft bearings, brake pulley and brake coil, contact, linings and component parts.
- b. Motor and motor generator, motor windings, rotating element, commutator. brushes, brush holders and bearings.
- c. Silicon control rectifiers, reactors, filters, heat sinks, amp traps. transducers and all control components.
- d. Controller. selector and dispatching equipment, all relays, solid state components, resistors, condensers, transformers. contacts, leads. dash pots, timing devices, computer and micro computer devices, steel selector cable or tape and mechanical and electrical driving equipment.
- e. Governor, governor sheave and shaft assembly, bearings. contacts and governor jaws.
- f. Deflector or secondary sheave, bearings. car and counterweight guide rails, top and bottom limit switches, governor tension sheave assembly, compensating sheave assembly, counterweight and counterweight guide shoes including rollers or gibs.
- g. Hoistway door interlocks and hangers, bottom door guide and auxiliary door closing devices.
- h. Automatic power operated door operator, car door hanger, car door contact, door protective device, load weighing equipment, car frame, car sling. car safety mechanism, platform, wood platform flooring, elevator car guide shoes, gibs or roller.

The Contractor will also:

- i. Examine monthly all safety devices and governors and conduct annual no-load test, and each fifth year perform a full-load, full-speed test of safety mechanism, overhead speed governors, car and counterweight buffers. The car balance will be checked, and the governor set. If required, the governor will be calibrated and sealed for proper tripping speed.
- j. Load weighing devices will be calibrated after annual and five year safety tests.
- k. Renew all wire ropes as often as is necessary to maintain an adequate factor of safety: equalize the tension on all hoist and compensation ropes, and shorten ropes and chains as required to provide legal and reasonable bottom clearances.
- l. Repair or replace conductor cables and hoistway and machine room elevator wiring as required
- m. Furnish lubricants and hydraulic fluid compounded to the manufacturer's rigid specifications. Contractor will furnish the Utilities Contract Coordinator copies of the M. S.D.S. for all materials stored on-site.

The Contractor shall also maintain, and if conditions warrant, repair or replace the following auxiliary equipment with the OWNER Contract Coordinator's prior approval:

- n. Emergency lighting, batteries, trickle charger and related wiring and components.
- o. Elevator Management Systems, Consoles, CRT's keyboards, wiring and components and all other devices associated with these systems. (Only those systems and devices directly related to Elevator Communication.)
- p. Fire Emergency Operation and elevator operating devices (Only those systems and devices directly related to the Elevator System).
- q. Emergency Power Operation and elevator operating devices (Only those systems and devices directly related to the Elevator System).
- r. All handicap devices that are part of the elevator system.
- s. All elevator related earthquake devices.

2. The Contractor shall make all repairs necessary due to normal wear and tear. The Owner shall pay for repairs due to abuse or misuse and shall retain the right to obtain competitive prices for repairs of this nature. The Contractor shall notify Owner in advance of such needed repairs and shall provide a written estimate of cost.

3. The Contractor shall notify Owner in advance of any suggested and/or required upgrades. and shall provide a written estimate of cost. Owner shall retain the right to obtain competitive prices for items of this nature.

4. The Contractor shall have no responsibility for the following items of elevator equipment. which are not included in this contract:

Car enclosure (including removable panels, door panels, car gates, plenum chambers, hung ceilings, light diffusers, light luges and bulbs, handrails, mirrors, carrels, flooring): hoistway enclosure; hoistway gates, doors, frames and sills, main line disconnects or line side feeders.

PAWTUCKET HOUSING AUTHORITY

B. HYDRAULIC ELEVATORS

The Contractor shall provide a preventive maintenance program to deliver service tailored to the buildings specific needs. Equipment type, component life, equipment usage, and building environment will be taken into account when planning routine short and long term maintenance schedules and records for each elevator. The units will be provided with devices to monitor equipment usage. Industry Standard work processes will be used.

All equipment, materials and installation shall conform to: ANSI. A 17.1 The American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks, ANSI, A 17.2 American Standard Practice for the Inspection of Elevators, Inspectors Manual, and National Fire Protection Association (NFPA) code. The Contractor will use trained, licensed personnel directly employed and supervised by them. They will be qualified to keep the equipment properly adjusted, and they will use all reasonable care to maintain the hydraulic elevator equipment in proper and safe operating condition.

1. The Contractor will regularly and systematically examine, adjust, lubricate as required, and if conditions warrant, repair or replace:

- a. Pumps, pump motors, operating valves, valve motors, motor windings, leveling valves, plunger, plunger packing, exposed piping and hydraulic fluid tanks.
- b. Controller, leveling devices and cams, all relays, magnet frames, solid state components. resistors, condensers, transformers, contacts, leads. timing devices, resistance for operating and motor circuits. operating circuit rectifiers.
- c. Hoistway door interlocks, hoistway door hangers, bottom door guides, auxiliary door closing devices and hoistway switches.
- d. Automatic power operated door operator, car door hanger, car door contact. door protective device, car frame, car ventilation system platform, wood platform flooring, in the elevator car, car guide rails, car guide shoes, gibs or rollers.
- e. Filters, mufflers and muffler components.

The Contractor will also:

- f. Examine monthly, all safety devices and conduct pressure tests and other tests required by ANSI A 17.1 or other applicable codes.
- g. Repair or replace conductor cables, elevator hoistway wiring and machine room elevator wiring.
- h. Furnish lubricants and hydraulic fluid compounded to the manufacturer's rigid specifications. Contractor will furnish the OWNER Contract Coordinator copies of the M.S.D.S. for all materials stored on-site.
- i. In Accordance with the manufacturer's specifications, conduct an analysis hydraulic fluid to detect contaminants and assure proper viscosity and make necessary corrections and replace fluid as required. A copy of the findings shall be furnished the OWNER Contract Coordinator within thirty (30) calendar days of the analysis.
- j. Clean excessive fluid leakage from pump pans, cylinder heads, machine room and pit floors. The Contractor shall also maintain, and if conditions warrant, repair or replace the following auxiliary equipment with the OWNER Contract Coordinator's prior approval:
- k. Emergency lighting, bulbs, batteries, trickle charger and all related wiring and components.
- l. Elevator Management Systems, Consoles, CRTs keyboards, wiring and components and all other devices associated with these systems. (Only those systems and devices directly related to Elevator Communication.)
- m. Fire Emergency Operation and elevator operating devices [Only those systems and devices directly related to the Elevator System).
- n. Emergency Power Operation and elevator operating devices (Only those systems and devices directly related to the Elevator System).
- o. All handicap devices that are part of the elevator system.
- p. All elevator related earthquake devices.

2. The Contractor shall make oil repairs necessary due to normal wear and tear. The Owner shall pay for repairs due to abuse or misuse and shall retain the right to obtain competitive prices for repairs of this nature. The Contractor shall notify the Owner in advance of such needed repairs and shall provide a written estimate of cost.

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3. The Contractor shall notify Owner in advance of any suggested and/or required upgrades, and shall provide a written estimate of cost. Owner shall retain the right to obtain competitive prices for items of this nature.

4. The Contractor shall have no responsibility for the following items of elevator equipment, which are not included in this contract:

Car enclosure {including removable panels, door panels, car gates, plenum chambers, hung ceilings, light diffuses, light tubes and bulbs, handrails, mirrors, carpets, tile flooring}; hoistway gates, doors, frames and sills; casings and buried piping. Cylinders and plungers shall not be included.

7. Tests and Reports

A. Yearly inspection and report: Contractor shall conduct annually a non-load, low speed test of elevator car and counter weight safeties, a test of buffers and safety device tests and a hydraulic elevator pressure relief valve test as required by ANSI A 17 code. Every fifth year, contractor shall conduct a rated load, rated speed safety test and a test of governors safeties and butlers. The result of each test shall be delivered to the OWNER Contract Coordinator in writing within fourteen (14) days of date of test.

B. Annual performance evaluation and report: Contractor warrants that it shall conduct annual evaluations of equipment performance, including car speed, door operations, riding quality, car leveling, floor to floor time and system operation, including traffic handling response time and step indexing. The result of the evaluation and report shall be delivered to the OWNER Contract Coordinator in writing within thirty (30) days of test.

C. Contractor reports - Operation problems: Contractor shall immediately communicate verbally and in writing within two (2) days to the OWNER Contract Coordinator the discovery, cause and correction of all potential operational problems of an unusual or potentially hazardous nature that the contractor becomes aware of. A letter is to be sent to the Facilities Department Representative stating causes and corrective action.

D. Contractor operation records: Contractor shall maintain schedules, operations logbooks, inventory lists, equipment specifications and drawings which describe the elevator installations covered by these specifications and the services performed. These documents shall be made available to the OWNER Contract Coordinator upon request. Contractor records must be furnished in paper form.

8. Information library Requirements

The contractor shall have and maintain, for the duration of the contract period, a reference library consisting of manufacturer's equipment maintenance schedules, equipment schematics, layouts, parts list, etc., and other basic information needed to properly maintain the included elevator systems. Upon termination of the contract, Owner shall become sole owners of these records.

9. Personnel Qualifications

A. Only trained and Licensed service technicians shall be used to perform repairs and maintenance services stipulated in this contract. Service Technicians assigned by the contractor must be fully qualified in all aspects of maintenance to be performed, including repairs that may become necessary during the term(s) of the contract.

B. The Contractor shall have and maintain backup technicians who are qualified in all respects of equipment repair and services requirements to assume the responsibilities for the maintenance of the included elevator systems.

C. During the performance of maintenance services, all employees of the Contractor shall display a Company issued picture ID badge and the assigned technicians shall wear approved uniforms to be provided by the Contractor. Uniforms are to bear the Contractor's emblem and the technician's name.

PAWTUCKET HOUSING AUTHORITY

Uniforms shall be maintained in clean and serviceable condition. The wearing of a uniform is to identify the technician with the Contractor's organization.

10. Supervision and Administration

- A. The Contractor agrees to maintain complete accurate records of All maintenance services performed, repairs made, and replacement parts used and billed for during the period of this contract. Maximum use shall be made of the preventive maintenance program to identify and forecast routine elevator and elevator equipment maintenance requirements. All equipment defects and deviations from normal operating characteristics and specifications shall be recorded on the preventive maintenance services.
- B. The Contractor agrees to furnish the Director of Operations, a copy of each work order and that work order shall be annotated with the name of the persons authorizing the work, the scope of the work, and the nature of the original complaint and/or problem with the recommended corrective actions to be taken by the contractor.

11. Working Hours and Response Time

- A. All routine work shall be performed during regular working hours and days. Regular working hours are 7:00 a.m. to 3:30 p.m., Monday through Friday, holidays excluded. The Contractor shall respond to requests for services within two (2) hours of notification of an emergency during regular working hours. The Contractor shall respond within three (3) hours during other than regular working hours and days. Response, as defined herein, shall mean that a serviceman shall be on the job site and prepared to work within the indicated time frame after being notified by Owner.
- B. This contract includes 24-hour call back service to be furnished on request of Owner, to take care of minor and/or major elevator malfunction detected between scheduled maintenance examinations. Call back response times shall be as indicated in paragraph "A" above. Overtime shall require prior approval from the Director of Operations.
- C. Any conditions that impede the normal flow of traffic or can potentially negatively impact the health, safety and welfare of the public or Owner employees will be considered as an emergency. Calls for emergency service must be responded to in person within two (2) hours. Service will be required twenty-four (24) hours a day, seven (7) days a week, holidays included. When a person is stuck in an elevator, response time shall be no longer than forty-five (45) minutes.

12. Toll-Free Telephone

The contractor shall provide to the Owner, if necessary, a toll-free telephone number for contacting the contractor's office during normal and non-duty hours and during non-duty and holidays, twenty-four (24) hours per day, seven (7) days per week.

13. Qualifications of Bidders

- A. All respondents on this project shall have an active organization specializing in the field of providing full service elevator maintenance work as described in this bid package.
- B. The organization must employ a minimum of four (4) technicians specializing in this general type of work for the past five (5) consecutive years.
- C. The contractor or authorized representatives shall be available upon request for joint inspections with representatives of the PHA. Unsatisfactory maintenance and/or repair services, as determined by the PHA Representative, which is not corrected after notification, may result in immediate notice of cancellation of the contract. All services performed shall be subject to inspection and approval of the PHA.

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ELEVATOR SCHEDULE

The following is a list of elevator equipment included under this contract with pertinent data relating to each.

Development Address	Elev. #	Use	Rated Load Load LBS	Rated Speed Speed (FPM)
Kennedy 175 Broad St	1	PAX	2,500	250
Kennedy 175 Broad St	2	PAX	2,500	250
Fogarty - 214 Roosevelt Ave	1	PAX	2,500	250
Fogarty - 214 Roosevelt Ave	2	PAX	2,500	250
Burns - 95 Park St	1	PAX	2,000	150
Burns - 95 Park St	2	PAX	2,000	150

PART II - TERMS AND CONDITIONS

1. Termination of Contract for Cause:

If, through any cause, the Contractor shall fail to fulfill in timely and proper manner his obligations under this Contract, or if the Contractor shall breach or otherwise violate any of the covenants, agreements, stipulations, terms, or conditions of this Contract, the Authority shall thereupon have the right to terminate this Contract by giving written notice to the Contractor of such termination and specifying the effective date thereof, at least five days before the effective date of such termination.

Notwithstanding the above, the Contractor shall not be relieved of liability to the Authority for damages sustained by the Authority by virtue of any breach of the Contract by the Contractor, or any violation of any of the covenants, agreements, stipulations, terms, or conditions of the Contract by the Contractor, or any failure by the Contractor to fulfill in a timely and proper manner, his obligations under the Contract. The Authority may withhold any payments to the Contractor for the purpose of setoff until the exact amount of damages due the Authority from the Contractor is determined.

2. Changes:

The Authority may, from time to time, request changes in the scope of services of the Contractor to be performed hereunder. Such changes, including any increase or decrease in the amount of the Contractor's compensation, which are mutually agreed upon by and between the Authority and the Contractor, shall be incorporated in written amendments to this Contract.

3. Personnel:

- a. The Contractor represents that he has, or will secure at his own expense, all personnel required in performing the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the Authority.
- b. All the services required hereunder will be performed by the Contractor or under his supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under State and local law to perform such services.
- c. No person who has served a sentence in a penal or correctional institution shall be employed or work under this Contract.

4. Equal Employment Opportunity:

During the performance of this Contract, the Contractor agrees as follows:

- a. 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.

- b. 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 to race, color, religion, sex or national origin.
- c. The Contractor will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Contract so that such provisions will be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

5. Discrimination Because of Certain Labor Matters:

No person employed on the work covered by this Contract shall be discharged or in any way discriminated against because he 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 hereunder to his employer.

6. Compliance with Local Laws:

The Contractor shall comply with all applicable laws, ordinances, and codes of the State and local governments, and shall commit no trespass on any public or private property in performing any of the work embraced by this Contract.

7. Subcontracting:

None of the services covered by this Contract shall be subcontracted without the prior written consent of the Authority. The Contractor shall be as fully responsible to the Authority for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him. The Contractor shall insert in each subcontract appropriate provisions requiring compliance with the labor standards provisions of this Contract.

8. Assignability:

The Contractor shall not assign any interest in this Contract, and shall not transfer any interest in the same (whether by assignment or novation) without the prior written approval of the Authority: **Provided**, however, that claims for money due or to become due the Contractor from the Authority under this Contract may be assigned to a bank, trust company, or other financial institution, or to a Trustee in Bankruptcy, without such approval. Notice of any such assignment or transfer shall be furnished promptly to the Authority.

9. Conflict of Interest:

- A. The conflict of interest provisions contained in 24 CFR 85.36(b)(3) are applicable to this Contract; and, in addition to any other applicable conflict of interest requirement, the Authority and the Contractor and employees are bound by all of the pertinent conflicts of interest provisions of Section 19 of the Annual Contributions Contract incorporated herein by reference.
- B. No employee, officer, or agent of the Contractor or the Authority shall participate directly or indirectly in the selection or in the award or administration if a conflict, real or apparent, would be involved. Such a conflict would arise when a financial or other interest in a firm selected for the award is held by:
 - 1) An employee, officer, or agent of the Authority or Contractor involved in making the award;
 - 2) His or her immediate family;
 - 3) His/her partner; or
 - 4) An organization which employs, is negotiating to employ, or has an arrangement concerning prospective employment of any of the above.
- C. In addition, neither the Authority nor the Contractor or any subcontractor may enter into any contract, subcontract, or arrangement in connection with the project to which this Contract pertains in which any of the following classes of people has an interest, direct or indirect, during his or her tenure or for one year thereafter:
 - 1) Any present or former member or officer of the governing body of the Authority, or any member of the officer's immediate family. There shall be excepted from this prohibition any present or former tenant commissioner who does not serve on the governing body of a resident corporation, and who otherwise does not occupy a policymaking position with the resident corporation, the Authority, or a business entity.
 - 2) Any employee of the Authority who formulates policy or who influences decisions with respect to the project(s), or any member of the employee's immediate family, or the employee's partner.
 - 3) Any public official, member of the local governing body, or State or local legislator, or any member of such individual's immediate family, who exercises functions or responsibilities with respect to the project to which this Contract pertains or the Authority.
- D. The Contractor may not hire an employee in connection with the project to which this Contract pertains if the prospective employee is an immediate family member of any person belonging to one of the following classes:
 - 1) Any present or former member or officer of the governing body of the Authority. There shall be exempted from this prohibition any former tenant commissioner

who does not serve on the governing body of a resident corporation, and who otherwise does not occupy a policymaking position with the Authority.

- 2) Any employee of the Authority who formulates policy or who influences decisions with respect to the project to which this Contract pertains.
 - 3) Any public official, member of the local governing body, or State or local legislator, who exercises functions or responsibilities with respect to the project to which this Contract pertains or the Authority.
- E. The prohibition referred to in section D above shall remain in effect throughout the class member's tenure and for one year thereafter.
- F. For purposes of this section entitled "Conflict of Interest", the term "immediate family member" means husband, wife, father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, father-in-law, mother-in-law, son-in-law, daughter-in-law, brother-in-law, sister-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, stepsister, half- brother, or half- sister.

10. Interest of Certain Federal Officials:

No member of or Delegate to the Congress of the United States, and no Resident Commissioner, shall be admitted to any share or be a part of this Contract or to any benefits that arise here from.

11. Examination and Retention of Contractor's Records:

The Authority, HUD, or Comptroller General of the United States, or any of their duly authorized representatives shall, until 3 years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

12. Warranty of Title:

The Contractor warrants good title to all materials, supplies, and equipment incorporated in the work and agrees to deliver the premises together with all improvements thereon or any material delivered under this contract free from any claims, liens or charges, and agrees further that neither it nor any other person, firm or corporation shall have any right to a lien upon the premises or anything appurtenant thereto.

13. Insurance:

The Contractor is required to obtain an endorsement to the comprehensive general liability policy to include owners' and contractors' protective liability coverage to protect the Authority from any claims arising from the contractor's operations. Before beginning work, the Contractor and each subcontractor shall furnish the Authority with Certificates of Insurance showing that the following insurance is in force and will insure all operations under the contract. All

insurance shall be carried with companies, which are financially responsible and authorized to do business in the State of Rhode Island.

- i. Commercial General Liability Insurance naming the Authority as an additional insured on a primary and non-contributory basis for ongoing operations CG 2010 and completed operations CG 2037 or their equivalent at a minimum limit of \$1,000,000 per occurrence and \$2,000,000 in the aggregate, together with damage to premises rented and fire damage legal liability limit of \$1,000,000 and medical payments for any one person of \$5,000.
- ii. Automobile Liability Insurance at a minimum of \$1,000,000 combined single limit for each accident naming the Authority as an additional insured on a primary and non-contributory basis.
- iii. Workers Compensation and Employers Liability Insurance certificate evidencing the Contractor's current workers compensation per statute and employers' liability at a minimum limit of \$1,000,000 per accident, \$1,000,000 disease each employee and \$1,000,000 disease policy limit.
- iv. Umbrella/Excess Liability insurance at a minimum limit of [DEPENDS ON THE WORK OR SERVICES TO BE PERFORMED] per occurrence and in the aggregate including the Authority as an additional insured on a primary and non-contributory basis with General Liability, Automobile Liability and employers' liability as underlying coverage.
- v. Professional Liability insurance, where applicable, with a minimum limit of [DEPENDS ON THE WORK OR SERVICES TO BE PERFORMED].
- vi. Pollution Liability Insurance, where applicable, with a minimum limit of [DEPENDS ON THE WORK OR SERVICES TO BE PERFORMED].

To the fullest extent permitted by law, the Contractor hereby acknowledges and agrees that it shall indemnify, hold harmless and defend the PHA and any of their offices, directors, employees, agents, affiliates, subsidiaries and partners, from and against all claims, damages, losses and expenses, including but not limited to, attorney's fees, arising out of or resulting from the performance of the Contractor's work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death or to the destruction of tangible property (other than to the work itself) including loss of use resulting there from, and (2) is caused in whole or in part by any acts or omissions of the Contractor, its employees, agents or Subcontractors or anyone directly or indirectly employed by any of them or anyone whose acts any of them may be liable.

The Contractor hereby acknowledges its obligation under the foregoing paragraph to indemnify the PHA against judgments suffered because of the Contractor's work and to assume the cost of defending the PHA against claims as described in the foregoing paragraph.

General Contract Conditions for Small Construction/Development Contracts

U.S. Department of Housing and Urban Development
Office of Public and Indian Housing
OMB Approval No. 2577-0157 (exp. 1/31/2017)

Applicability. The following contract clauses are applicable and must be inserted into small construction/development contracts, greater than \$2,000 but not more than \$100,000.

1. Definitions

Terms used in this form are the same as defined in form HUD-5370

2. Prohibition Against Liens

The Contractor is prohibited from placing a lien on the PHA's property. This prohibition shall apply to all subcontractors at any tier and all materials suppliers. The only liens on the PHA's property shall be the Declaration of Trust or other liens approved by HUD.

3. Disputes

- (a) Except for disputes arising under the **Labor Standards** clauses, all disputes arising under or relating to this contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall be resolved under this clause.
- (b) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision. A claim by the PHA against the Contractor shall be subject to a written decision by the Contracting Officer.
- (c) The Contracting Officer shall, within 30 days after receipt of the request, decide the claim or notify the Contractor of the date by which the decision will be made.
- (d) The Contracting Officer's decision shall be final unless the Contractor (1) appeals in writing to a higher level in the PHA in accordance with the PHA's policy and procedures, (2) refers the appeal to an independent mediator or arbitrator, or (3) files suit in a court of competent jurisdiction. Such appeal must be made within 30 days after receipt of the Contracting Officer's decision.
- (e) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

4. Default

- (a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with the diligence that will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within this time, the Contracting Officer may, by written notice to the Contractor, terminate the right to proceed with the work (or separable part of the work) that has been delayed. In the event, the PHA may take over the work and complete it by contract or otherwise, and may take possession of and use any materials, equipment, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the PHA resulting from the Contractor's refusal or failure to complete the work within the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the PHA in completing the work.

- (b) The Contractor's right to proceed shall not be terminated or the Contractor charged with damages under this clause if –
 - (1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor; and
 - (2) The Contractor, within 10 days from the beginning of such delay notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of the delay. If, in the judgment of the Contracting Officer, the findings of Fact warrant such action, time for completing the work shall be extended by written modification to the contract. The findings of the Contracting Officer shall be reduced to a written decision which shall be subject to the provisions of the **Disputes** clause of this contract.
- (c) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligation of the parties will be the same as if the termination had been for convenience of the PHA.

5. Termination for Convenience

- (a) The Contracting Officer may terminate this contract in whole, or in part, whenever the Contracting Officer determines that such termination is in the best interest of the PHA. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the performance of the work under the contract is terminated, and the date upon which such termination becomes effective.
- (b) If the performance of the work is terminated, either in whole or in part, the PHA shall be liable to the Contractor for reasonable and proper costs resulting from such termination upon the receipt by the PHA of a properly presented claim setting out in detail: (1) the total cost of the work performed to date of termination less the total amount of contract payments made to the Contractor; (2) the cost (including reasonable profit) of settling and paying claims under subcontracts and material orders for work performed and materials and supplies delivered to the site, payment for which has not been made by the PHA to the Contractor or by the Contractor to the subcontractor or supplier; (3) the cost of preserving and protecting the work already performed until the PHA or assignee takes possession thereof or assumes responsibility therefore; (4) the actual or estimated cost of legal and accounting services reasonably necessary to prepare and present the termination claim to the PHA; and (5) an amount constituting a reasonable profit on the value of the work performed by the Contractor.
- (c) The Contracting Officer will act on the Contractor's claim within days (60 days unless otherwise indicated) of receipt of the Contractor's claim.
- (d) Any disputes with regard to this clause are expressly made subject to the provisions of the Disputes clause of this contract.

6. Insurance

- (a) Before commencing work, the Contractor and each subcontractor shall furnish the PHA with certificates of insurance showing the following insurance is in force and will insure all operations under the Contract:

(1) Workers' Compensation, in accordance with state or Territorial Workers' Compensation laws.

(2) Commercial General Liability with a combined single limit for bodily injury and property damage of not less than \$ _____ [Contracting Officer insert amount] per occurrence to protect the Contractor and each subcontractor against claims for bodily injury or death and damage to the property of others. This shall cover the use of all equipment, hoists, and vehicles on the site(s) not covered by Automobile Liability under (3) below. If the Contractor has a "claims-made" policy, then the following additional requirements apply: the policy must provide a "retroactive date" which must be on or before the execution date of the Contract; and the extended reporting period may not be less than five years following the completion date of the Contract.

(3) Automobile Liability on owned and non-owned motor vehicles used on the site(s) or in connection therewith for a combined single limit for bodily injury and property damage of not less than \$ _____ [Contracting Officer insert amount] per occurrence.

(b) Before commencing work, the Contractor shall furnish the PHA with a certificate of insurance evidencing that Builder's Risk (fire and extended coverage) Insurance on all work in place and/or materials stored at the building site(s), including foundations and building equipment, is in force. The Builder's Risk Insurance shall be for the benefit of the Contractor and the PHA as their interests may appear and each shall be named in the policy or policies as an insured. The Contractor in installing equipment supplied by the PHA shall carry insurance on such equipment from the time the Contractor takes possession thereof until the Contract work is accepted by the PHA. The Builder's Risk Insurance need not be carried on excavations, piers, footings, or foundations until such time as work on the superstructure is started. It need not be carried on landscape work. Policies shall furnish coverage at all times for the full cash value of all completed construction, as well as materials in place and/or stored at the site(s), whether or not partial payment has been made by the PHA. The Contractor may terminate this insurance on buildings as of the date taken over for occupancy by the PHA. The Contractor is not required to carry Builder's Risk Insurance for modernization work which does not involve structural alterations or additions and where the PHA's existing fire and extended coverage policy can be endorsed to include such work.

(c) All insurance shall be carried with companies which are financially responsible and admitted to do business in the State in which the project is located. If any such insurance is due to expire during the construction period, the Contractor (including subcontractors, as applicable) shall not permit the coverage to lapse and shall furnish evidence of coverage to the Contracting Officer. All certificates of insurance, as evidence of coverage, shall provide that no coverage may be canceled or non-renewed by the insurance company until at least 30 days prior written notice has been given to the Contracting Officer.

7. Contract Modifications

(a) Only the Contracting Officer has authority to modify any term or condition of this contract. Any contract modification shall be authorized in writing.

(b) The Contracting Officer may modify the contract unilaterally (1) pursuant to a specific authorization stated in a contract clause (e.g., Changes); or (2) for administrative matters which

do not change the rights or responsibilities of the parties (e.g., change in the PHA address). All other contract modifications shall be in the form of supplemental agreements signed by the Contractor and the Contracting Officer.

(c) When a proposed modification requires the approval of HUD prior to its issuance (e.g., a change order that exceeds the PHA's approved threshold), such modification shall not be effective until the required approval is received by the PHA.

8. Changes

(a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract including changes:

- (1) In the specifications (including drawings and designs);
- (2) In the method or manner of performance of the work;
- (3) PHA-furnished facilities, equipment, materials, services, or site; or,

(4) Directing the acceleration in the performance of the work.

(b) Any other written order or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances and source of the order and (2) that the Contractor regards the order as a change order.

(c) Except as provided in this clause, no order, statement or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.

(d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for a adjustment based on defective specifications, no proposal for any change under paragraph (b) above shall be allowed for any costs incurred more than 20 days (5 days for oral orders) before the Contractor gives written notice as required. In the case of defective specifications for which the PHA is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.

(e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause, or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting a written statement describing the general nature and the amount of the proposal. If the facts justify it, the Contracting Officer may extend the period for submission. The proposal may be included in the notice required under paragraph (b) above. No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

(f) The Contractor's written proposal for equitable adjustment shall be submitted in the form of a lump sum proposal supported with an itemized breakdown of all increases and decreases in the contract in at least the following details:

- (1) Direct Costs. Materials (list individual items, the quantity and unit cost of each, and the aggregate cost); Transportation and delivery costs associated with materials; Labor

breakdowns by hours or unit costs (identified with specific work to be performed); Construction equipment exclusively necessary for the change; Costs of preparation and/ or revision to shop drawings resulting from the change; Worker's Compensation and Public Liability Insurance; Employment taxes under FICA and FUTA; and, Bond Costs - when size of change warrants revision.

- (2) Indirect Costs. Indirect costs may include overhead, general and administrative expenses, and fringe benefits not normally treated as direct costs.
- (3) Profit. The amount of profit shall be negotiated and may vary according to the nature, extent, and complexity of the work required by the change.

The allowability of the direct and indirect costs shall be determined in accordance with the Contract Cost Principles and Procedures for Commercial Firms in Part 31 of the Federal Acquisition Regulation (48 CFR 1-31), as implemented by HUD Handbook 2210.18, in effect on the date of this contract. The Contractor shall not be allowed a profit on the profit received by any subcontractor. Equitable adjustments for deleted work shall include a credit for profit and may include a credit for indirect costs. On proposals covering both increases and decreases in the amount of the contract, the application of indirect costs and profit shall be on the net-change in direct costs for the Contractor or subcontractor performing the work.

- (g) The Contractor shall include in the proposal its request for time extension (if any), and shall include sufficient information and dates to demonstrate whether and to what extent the change will delay the completion of the contract in its entirety.
- (h) The Contracting Officer shall act on proposals within 30 days after their receipt, or notify the Contractor of the date when such action will be taken.
- (i) Failure to reach an agreement on any proposal shall be a dispute under the clause entitled Disputes herein. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.
- (j) Except in an emergency endangering life or property, no change shall be made by the Contractor without a prior order from the Contracting Officer.

9. Examination and Retention of Contractor's Records

The HA, HUD, or Comptroller General of the United States, or any of their duly authorized representatives shall, until three years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

10. Rights in Data and Patent Rights (Ownership and Proprietary Interest)

The HA shall have exclusive ownership of, all proprietary interest in, and the right to full and exclusive possession of all information, materials, and documents discovered or produced by Contractor pursuant to the terms of this Contract, including but not limited to reports, memoranda or letters concerning the research and reporting tasks of this Contract.

11. Energy Efficiency

The Contractor shall comply with all mandatory standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub.L. 94-163) for the State in which the work under this contract is performed.

12. 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.

13. Training and Employment Opportunities for Residents in the Project Area (Section 3, HUD Act of 1968; 24 CFR 135)

- (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.

14. Labor Standards - Davis-Bacon and Related Acts

(a) Minimum Wages.

(1) All laborers and mechanics employed under this contract in the construction or development of the project(s) involved 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 1(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 regular 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 in 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.

- (2) (i) Any class of laborers or mechanics, including helpers, 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 all the following criteria have been met:
- (a) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (b) The classification is utilized in the area by the construction industry; and
 - (c) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (ii) 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 shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employee Standards Administration, U.S. Department of Labor, Washington, DC 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.
- (iii) 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 of the Wage and Hour Division 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.
- (iv) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (a)(2)(ii) or (iii) of this clause 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.
- (3) 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.
- (4) 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.

- (b) **Withholding of Funds.** 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 in the construction or development of the project, all or part of the wages required by the contract, HUD or its designee may, after written notice to the Contractor, 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.

(c) **Payrolls and Basic Records.**

- (1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working in the construction or development of the project. 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 1(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 costs reasonably anticipated in providing benefits under a plan or program described in section 1(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.

- (2) (i) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer 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 subparagraph (c)(1) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The prime Contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1214-0149.)
- (ii) 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:
- (A) That the payroll for the payroll period contains the information required to be maintained under paragraph (c)(1) of this clause and that such information is correct and complete;
- (B) 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; and
- (C) 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.
- (iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirements for submission of the "Statement of Compliance" required by subparagraph (c)(2)(ii) of this clause.
- (iv) 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 3729 of Title 31 of the United States Code.
- (3) The Contractor or subcontractor shall make the records required under subparagraph (c)(1) available for inspection, copying, or transcription by authorized representatives of HUD or its designee, the Contracting Officer, 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, 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.

- (d) 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 (OATELS), or with a State Apprenticeship Agency recognized by OATELS, 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 OATELS 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 in this paragraph, 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 journeyman 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 of the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event OATELS, or a State Apprenticeship Agency recognized by OATELS, 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.

- (e) 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 in 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 in 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 in the wage determination for the classification of 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 in 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.

- (f) Equal Employment Opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.
- (g) Compliance with Copeland Act Requirements. The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.
- (h) Contract Termination; Debarment. A breach of the labor standards clauses in this contract may be grounds for termination of the contract and for debarment as a Contractor and a subcontractor as provided in 29 CFR 5.12.
- (i) 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.
- (j) Disputes Concerning Labor Standards. Disputes arising out of the labor standards provisions of this clause 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 the PHA, HUD, the U.S. Department of Labor, or the employees or their representatives.
- (k) Certification of Eligibility.
- (1) 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 contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - (2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a United States Government

contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(3) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

(l) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts all the provisions contained in this clause, and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all these provisions.

(m) Non-Federal Prevailing Wage Rates. Any prevailing wage rate (including basic hourly rate and any fringe benefits), determined under State law to be prevailing, with respect to any employee in any trade or position employed under the contract, is inapplicable to the contract and shall not be enforced against the Contractor or any subcontractor, with respect to employees engaged under the contract whenever such non-Federal prevailing wage rate exceeds:

- (i) the applicable wage rate determined by the Secretary of Labor pursuant to the Davis-Bacon Act (40 U.S.C. 3141 et seq.) to be prevailing in the locality with respect to such trade;
- (ii) an applicable apprentice wage rate based thereon specified in an apprenticeship program registered with the U.S. Department of Labor (DOL) or a DOL-recognized State Apprenticeship Agency; or
- (iii) an applicable trainee wage rate based thereon specified in a DOL-certified trainee program.

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.

Rev. Dec. 2008
OMB No.:1235-0008
Expires: 07/31/2024

NAME OF CONTRACTOR ☐				OR SUBCONTRACTOR ☐				ADDRESS												
PAYROLL NO.				FOR WEEK ENDING				PROJECT AND LOCATION				PROJECT OR CONTRACT NO.								
(1)	(2)	(3)	(4) DAY AND DATE	(5)	(6)	(7)	(8) DEDUCTIONS				(9)									
NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER	NO. OF WITH-HOLDING EXEMPTIONS	WORK CLASSIFICATION	OT OR ST	HOURS WORKED EACH DAY							TOTAL HOURS	RATE OF PAY	GROSS AMOUNT EARNED	FICA	WITH- HOLDING TAX			OTHER	TOTAL DEDUCTIONS	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 it 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

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

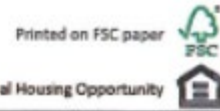
☐ — in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(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 3729 OF TITLE 31 OF THE UNITED STATES CODE.	



214 Roosevelt Avenue, P.O. Box 1303, Pawtucket, Rhode Island 02862-1303
Phone : 401-721-6000 • Fax: 401-723-3970 • TDD: 800-745-5555 • Web: www.pawthousing.org

Date:

VENDOR

Re: Contractual Liability Risk Management

It is our policy to identify and effectively manage our contractual liabilities arising out of business relationships with Contractors. We seek to take responsibility for our own actions and their consequences, while requiring our business partners to assume a share of risk relative to their ability to control it.

Given the number of contractual relationships that we may have at any point in time, it is imperative that we control the type and magnitude of the liabilities we assume. Conversely, we will look for opportunities to ensure that where legally possible, we manage our risks by asking others to contractually assume their share of liability. The effective management of these liabilities will allow us to lower our overall cost of risk. This program is a vital element of our overall safety and risk management program.

In order to perform as a Contractor for us, we will require a certificate of insurance from you meeting or exceeding the requirements on the attached sample certificate. We will require that we have additional insured coverage on your general liability policy for ongoing (CG 2010) and completed operations (CG 2037) or their equivalent on a primary and non-contributory basis and that the additional insured status be shown on the certificate of insurance as indicated on the sample. We will also require that we be an additional insured on a primary and non-contributory basis on your commercial auto policy and umbrella policy and a certificate holder on your workers compensation policy as shown on the sample certificate. Finally, we require a waiver of Subrogation in our favor on the General Liability, Auto Liability, Umbrella and Workers Compensation/Employers Liability. If you are an architect or engineer we will require that the certificate include evidence of a professional/pollution liability policy as well.

The following Hold Harmless and Indemnity Agreement, as evidenced by your (the Contractors') signature below, hereby applies to all work performed by the Contractor on our behalf, whether or not a separate work order or contract has been signed or agreed to between the parties:

To the fullest extent permitted by law, the Contractor hereby acknowledges and agrees that it shall indemnify, hold harmless and defend The Housing Authority of the City of Pawtucket, Rhode Island and any of their commissioners, officers, directors, employees, agents, affiliates, subsidiaries and partners, from and against all claims, damages, losses and expenses, including but not limited to, attorney's fees, arising out of or resulting from the performance of the Contractor's work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death or to the destruction of tangible property (other than to the work itself) including loss of use resulting there from, and (2) is caused in whole or in part by any acts or omissions of the Contractor, its employees, agents or sub-contractors or anyone directly or indirectly employed by any of them, or for anyone whose acts any of them may be liable.

The Contractor hereby acknowledges its obligation under the foregoing paragraphs to provide the Certificate(s) of Insurance meeting the specified requirements and to indemnify The Housing Authority of the City of Pawtucket, Rhode Island against judgments suffered because of the Contractors work while assuming the cost of defending The Housing Authority of the City of Pawtucket, Rhode Island against claims as described in the foregoing paragraphs.

Contractor Name:
Title:
Date:

We must receive the required Certificate of Insurance meeting all the requirements, as well as the Contractors signature above accepting the terms of our Hold Harmless and Indemnity Agreement, prior to the beginning of any work.

If you have any questions on the above requirements, please contact Chris Bostic at (401) 640-1485.

Sincerely,

Justin Barros
Executive Director

Job Location: _____

FORM OF NON-COLLUSIVE AFFIDAVIT

(Firm Submitting Proposal)

State of _____

County of _____

_____, being first duly sworn, deposes and says:

That he is (A partner or officer of the firm of) _____ the party making the foregoing proposal, that such proposal is genuine and not collusive or sham; that said person has not colluded, conspired, connived or agreed, directly or indirectly with any person, to put in a sham proposal or to refrain from submitting a proposal, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the proposal price or affidavit or any other firm submitting a proposal, or to fix any overhead, profit or cost element of said proposal price, or that of any other firm submitting a proposal, or to secure any advantage against the Pawtucket Housing Authority or any person interested in the proposed contract; and that all statements in said proposal are true.

Signature of:

Authorized Individual if Proposal is submitted as an Individual, Partnership, Corporation, etc.

Subscribed and sworn to before me

this _____ day of _____, 20____.

My commission expires _____, 20____.

General Conditions for Construction Contracts - Public Housing Programs

U.S. Department of Housing and Urban
Development
Office of Public and Indian Housing
OMB Approval No. 2577-0157 (exp. 11/30/2023)

Applicability. This form is applicable to any
construction/development contract greater than \$250,000.

Public reporting burden for this collection of information is estimated to average 1 hour. This includes the time for collecting, reviewing, and reporting the data. The information requested is required to obtain a benefit. This form includes those clauses required by OMB's common rule on grantee procurement, implemented at HUD in 2 CFR 200, and those requirements set forth in Section 3 of the Housing and Urban Development Act of 1968 and its amendment by the Housing and Community Development Act of 1992, implemented by HUD at 24 CFR Part 75. The form is required for construction contracts awarded by Public Housing Agencies (PHAs). The form is used by Housing Authorities in solicitations to provide necessary contract clauses. If the form were not used, PHAs would be unable to enforce their contracts. There are no assurances of confidentiality. HUD may not conduct or sponsor, and an applicant is not required to respond to a collection of information unless it displays a currently valid OMB control number.

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4. Other Contracts	3	27. Payments	9
Construction Requirements		28. Contract Modifications	10
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6. Construction Progress Schedule	3	30. Suspension of Work	11
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1. Definitions

- (a) "Architect" means the person or other entity engaged by the PHA to perform architectural, engineering, design, and other services related to the work as provided for in the contract. When a PHA uses an engineer to act in this capacity, the terms "architect" and "engineer" shall be synonymous. The Architect shall serve as a technical representative of the Contracting Officer. The Architect's authority is as set forth elsewhere in this contract.
- (b) "Contract" means the contract entered into between the PHA and the Contractor. It includes the forms of Bid, the Bid Bond, the Performance and Payment Bond or Bonds or other assurance of completion, the Certifications, Representations, and Other Statements of Bidders (form HUD-5370), these General Conditions of the Contract for Construction (form HUD-5370), the applicable wage rate determinations from the U.S. Department of Labor, any special conditions included elsewhere in the contract, the specifications, and drawings. It includes all formal changes to any of those documents by addendum, change order, or other modification.
- (c) "Contracting Officer" means the person delegated the authority by the PHA to enter into, administer, and/or terminate this contract and designated as such in writing to the Contractor. The term includes any successor Contracting Officer and any duly authorized representative of the Contracting Officer also designated in writing. The Contracting Officer shall be deemed the authorized agent of the PHA in all dealings with the Contractor.
- (d) "Contractor" means the person or other entity entering into the contract with the PHA to perform all of the work required under the contract.
- (e) "Drawings" means the drawings enumerated in the schedule of drawings contained in the Specifications and as described in the contract clause entitled Specifications and Drawings for Construction herein.
- (f) "HUD" means the United States of America acting through the Department of Housing and Urban Development including the Secretary, or any other person designated to act on its behalf. HUD has agreed, subject to the provisions of an Annual Contributions Terms and Conditions (ACC), to provide financial assistance to the PHA, which includes assistance in financing the work to be performed under this contract. As defined elsewhere in these General Conditions or the contract documents, the determination of HUD may be required to authorize changes in the work or for release of funds to the PHA for payment to the Contractor. Notwithstanding HUD's role, nothing in this contract shall be construed to create any contractual relationship between the Contractor and HUD.
- (g) "Project" means the entire project, whether construction or rehabilitation, the work for which is provided for in whole or in part under this contract.
- (h) "PHA" means the Public Housing Agency organized under applicable state laws which is a party to this contract.
- (j) "Specifications" means the written description of the technical requirements for construction and includes the criteria and tests for determining whether the requirements are met.
- (l) "Work" means materials, workmanship, and manufacture and fabrication of components.

2. Contractor's Responsibility for Work

- (a) The Contractor shall furnish all necessary labor, materials, tools, equipment, and transportation necessary for performance of the work. The Contractor shall also furnish all necessary water, heat, light, and power not made available to the Contractor by the PHA pursuant to the clause entitled Availability and Use of Utility Services herein.
- (b) The Contractor shall perform on the site, and with its own organization, work equivalent to at least [] (12 percent unless otherwise indicated) of the total amount of work to be performed under the order. This percentage may be reduced by a supplemental agreement to this order if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the PHA.
- (c) At all times during performance of this contract and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the work site a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.
- (d) The Contractor shall be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. The Contractor shall hold and save the PHA, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.
- (e) The Contractor shall lay out the work from base lines and bench marks indicated on the drawings and be responsible for all lines, levels, and measurements of all work executed under the contract. The Contractor shall verify the figures before laying out the work and will be held responsible for any error resulting from its failure to do so.
- (f) The Contractor shall confine all operations (including storage of materials) on PHA premises to areas authorized or approved by the Contracting Officer.
- (g) The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. After completing the work and before final inspection, the Contractor shall (1) remove from the premises all scaffolding, equipment, tools, and materials (including rejected materials) that are not the property of the PHA and all rubbish caused by its work; (2) leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer; (3) perform all specified tests; and, (4) deliver the installation in complete and operating condition.
- (h) The Contractor's responsibility will terminate when all work has been completed, the final inspection made, and the work accepted by the Contracting Officer. The Contractor will then be released from further obligation except as required by the warranties specified elsewhere in the contract.

3. Architect's Duties, Responsibilities, and Authority

- (a) The Architect for this contract, and any successor, shall be designated in writing by the Contracting Officer.

- (b) The Architect shall serve as the Contracting Officer's technical representative with respect to architectural, **Schedule** engineering, and design matters related to the work performed under the contract. The Architect may provide direction on contract performance. Such direction shall be within the scope of the contract and may not be of a nature which: (1) institutes additional work outside the scope of the contract; (2) constitutes a change as defined in the Changes clause herein; (3) causes an increase or decrease in the cost of the contract; (4) alters the Construction Progress Schedule; or (5) changes any of the other express terms or conditions of the contract.
- (c) The Architect's duties and responsibilities may include but shall not be limited to:
- (1) Making periodic visits to the work site, and on the basis of his/her on-site inspections, issuing written reports to the PHA which shall include all observed deficiencies. The Architect shall file a copy of the report with the Contractor's designated representative at the site;
 - (2) Making modifications in drawings and technical specifications and assisting the Contracting Officer in the preparation of change orders and other contract modifications for issuance by the Contracting Officer;
 - (3) Reviewing and making recommendations with respect to - (i) the Contractor's construction progress schedules; (ii) the Contractor's shop and detailed drawings; (iii) the machinery, mechanical and other equipment and materials or other articles proposed for use by the Contractor; and, (iv) the Contractor's price breakdown and progress payment estimates; and,
 - (4) Assisting in inspections, signing Certificates of Completion, and making recommendations with respect to acceptance of work completed under the contract.

4. Other Contracts

The PHA may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and with PHA employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by PHA employees

Construction Requirements

5. Pre-construction Conference and Notice to Proceed

of the work, and that it has investigated and satisfied itself

- (a) Within ten calendar days of contract execution, and prior to the commencement of work, the Contractor shall attend a preconstruction conference with representatives of the PHA, its Architect, and other interested parties convened by the PHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract. The PHA will provide the Contractor with the date, time, and place of the conference.
- (b) The contractor shall begin work upon receipt of a written Notice to Proceed from the Contracting Officer or designee. The Contractor shall not begin work prior to receiving such notice.

6. Construction Progress

- (a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring labor, materials, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments or take other remedies under the contract until the Contractor submits the required schedule.
- (b) The Contractor shall enter the actual progress on the chart as required by the Contracting Officer, and immediately deliver three copies of the annotated schedule to the Contracting Officer. If the Contracting Officer determines, upon the basis of inspection conducted pursuant to the clause entitled Inspection and Acceptance of Construction, herein that the Contractor is not meeting the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the PHA. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.
- (c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the Contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the Default clause of this contract.

7. Site Investigation and Conditions Affecting the Work

- (a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location as to the general and local conditions which can affect the work or its cost, including but not limited to, (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is

reasonably ascertainable from an inspection of the site, including all exploratory work done by the PHA, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the PHA.

- (b) The PHA assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the PHA. Nor does the PHA assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

8. Differing Site Conditions

(a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site(s), of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.

(b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. Work shall not proceed at the affected site, except at the

Contractor's risk, until the Contracting Officer has provided written instructions to the Contractor. If the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, the Contractor shall file a claim in writing to the PHA within ten days after receipt of such instructions and, in any event, before proceeding with the work. An equitable adjustment in the contract price, the delivery schedule, or both shall be made under this clause and the contract modified in writing accordingly.

(c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.

(d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

9. Specifications and Drawings for Construction

(a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be

promptly submitted to the Contracting Officer, who shall

promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

(b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by", or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.

(c) Where "as shown" "as indicated", "as detailed", or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place" that is "furnished and installed".

(d) "Shop drawings" means drawings, submitted to the PHA by the Contractor, subcontractor, or any lower tier subcontractor, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit, and attachment details) of materials of equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract. The PHA may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with other contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the PHA's reasons therefore. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.

(f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Architect approves any such variation and the Contracting Officer concurs, the Contracting Officer shall issue an appropriate modification to the contract, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.

(g) It shall be the responsibility of the Contractor to make timely requests of the PHA for such large scale and full size drawings, color schemes, and other additional information, not already in his possession, which shall be

required in the planning and production of the work. Such requests may be submitted as the need arises, but each such request shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay.

- (h) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by the PHA and one set will be returned to the Contractor. As required by the Contracting Officer, the Contractor, upon completing the work under this contract, shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the work is completed and accepted.
- (i) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all shop drawings prepared by subcontractors are submitted to the Contracting Officer.

10. As-Built Drawings

- (a) "As-built drawings," as used in this clause, means drawings submitted by the Contractor or subcontractor at any tier to show the construction of a particular structure or work as actually completed under the contract. "As-built drawings" shall be synonymous with "Record drawings."
- (b) As required by the Contracting Officer, the Contractor shall provide the Contracting Officer accurate information to be used in the preparation of permanent as-built drawings. For this purpose, the Contractor shall record on one set of contract drawings all changes from the installations originally indicated, and record final locations of underground lines by depth from finish grade and by accurate horizontal offset distances to permanent surface improvements such as buildings, curbs, or edges of walks.
- (c) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all as-built drawings prepared by subcontractors are submitted to the Contracting Officer.

11. Material and Workmanship

- (a) All equipment, material, and articles furnished under this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the contract to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of, and as approved by the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.
- (b) Approval of equipment and materials.
- (1) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the

machinery and mechanical and other equipment.

When required by this contract or by the Contracting Officer, the Contractor shall also obtain the

Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting

approval, the Contractor shall provide full information concerning the material or articles. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

- (2) When required by the specifications or the Contracting Officer, the Contractor shall submit appropriately marked samples (and certificates related to them) for approval at the Contractor's expense, with all shipping charges prepaid. The Contractor shall label, or otherwise properly mark on the container, the material or product represented, its place of origin, the name of the producer, the Contractor's name, and the identification of the construction project for which the material or product is intended to be used.
- (3) Certificates shall be submitted in triplicate, describing each sample submitted for approval and certifying that the material, equipment or accessory complies with contract requirements. The certificates shall include the name and brand of the product, name of manufacturer, and the location where produced.
- (4) Approval of a sample shall not constitute a waiver of the PHA right to demand full compliance with contract requirements. Materials, equipment and accessories may be rejected for cause even though samples have been approved.
- (5) Wherever materials are required to comply with recognized standards or specifications, such specifications shall be accepted as establishing the technical qualities and testing methods, but shall not govern the number of tests required to be made nor modify other contract requirements. The Contracting Officer may require laboratory test reports on items submitted for approval or may approve materials on the basis of data submitted in certificates with samples. Check tests will be made on materials delivered for use only as frequently as the Contracting Officer determines necessary to insure compliance of materials with the specifications. The Contractor will assume all costs of retesting materials which fail to meet contract requirements and/or testing materials offered in substitution for those found deficient.
- (6) After approval, samples will be kept in the Project office until completion of work. They may be built into the work after a substantial quantity of the materials they represent has been built in and accepted.
- (c) Requirements concerning lead-based paint. The Contractor shall comply with the requirements concerning lead-based paint contained in the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846) as implemented by 24 CFR Part 35.

12. Permits and Codes

- (a) The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. Notwithstanding the requirement of the Contractor to comply with the drawings and specifications in the contract, all work installed shall comply with all applicable codes and regulations as amended by any

waivers. Before installing the work, the Contractor shall examine the drawings and the specifications for compliance with applicable codes and regulations bearing on the work and shall immediately report any discrepancy it may discover to the Contracting Officer.

Where the requirements of the drawings and specifications fail to comply with the applicable code or regulation, the Contracting Officer shall modify the contract by change order pursuant to the clause entitled Changes herein to conform to the code or regulation.

- (b) The Contractor shall secure and pay for all permits, fees, and licenses necessary for the proper execution and completion of the work. Where the PHA can arrange for the issuance of all or part of these permits, fees and licenses, without cost to the Contractor, the contract amount shall be reduced accordingly.

13. Health, Safety, and Accident Prevention

(a) In performing this contract, the Contractor shall:

- (1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;
- (2) Protect the lives, health, and safety of other persons;
- (3) Prevent damage to property, materials, supplies, and equipment; and,
- (4) Avoid work interruptions.

(b) For these purposes, the Contractor shall:

- (1) Comply with regulations and standards issued by the Secretary of Labor at 29 CFR Part 1926. 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 U.S.C. 3701 et seq.; and
- (2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.
- (c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 CFR Part 1904.
- (d) The Contracting Officer shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.
- (e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as the PHA, the Secretary of Housing and Urban Development, or the Secretary of Labor shall direct as a means of enforcing such provisions.

14. Temporary Heating

The Contractor shall provide and pay for temporary heating, covering, and enclosures necessary to properly protect all work and materials against damage by dampness and cold, to dry out the work, and to facilitate the completion of the work. Any permanent heating equipment used shall be turned over to the PHA in the condition and at the time required by the specifications.

15. Availability and Use of Utility Services

- (a) The PHA shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the PHA or, where the utility is produced by the PHA, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.
- (b) The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the PHA, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

16. Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements

- (a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed under this contract, and which do not unreasonably interfere with the work required under this contract.
- (b) The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during performance of this contract, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- (c) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. Prior to disturbing the ground at the construction site, the Contractor shall ensure that all underground utility lines are clearly marked.
- (d) The Contractor shall shore up, brace, underpin, secure, and protect as necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be affected by the excavations or other operations connected with the construction of the project.
- (e) Any equipment temporarily removed as a result of work under this contract shall be protected, cleaned, and replaced in the same condition as at the time of award of this contract.

- (f) New work which connects to existing work shall correspond in all respects with that to which it connects and/or be similar to existing work unless otherwise required by the specifications.
- (g) No structural members shall be altered or in any way weakened without the written authorization of the Contracting Officer, unless such work is clearly specified in the plans or specifications.
- (h) If the removal of the existing work exposes discolored or unfinished surfaces, or work out of alignment, such surfaces shall be refinished, or the material replaced as necessary to make the continuous work uniform and harmonious. This, however, shall not be construed to require the refinishing or reconstruction of dissimilar finishes previously exposed, or finished surfaces in good condition, but in different planes or on different levels **Construction** when brought together by the removal of intervening work, unless such refinishing or reconstruction is specified in the plans or specifications.
- (i) The Contractor shall give all required notices to any adjoining or adjacent property owner or other party before the commencement of any work.
- (j) The Contractor shall indemnify and save harmless the PHA from any damages on account of settlement or the loss of lateral support of adjoining property, any damages from changes in topography affecting drainage, and from all loss or expense and all damages for which the PHA may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.
- (k) The Contractor shall repair any damage to vegetation, structures, equipment, utilities, or improvements, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

17. Temporary Buildings and Transportation of Materials

- (a) Temporary buildings (e.g., storage sheds, shops, offices, sanitary facilities) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the PHA. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- (b) The Contractor shall, as directed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any federal, state, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

18. Clean Air and Water

The contractor shall comply with the Clean Air Act, as amended, 42 USC 7401 et seq., the Federal Water Pollution Control Water Act, as amended, 33 U.S.C. 1251 et seq., and standards issued pursuant thereto in the facilities in which this contract is to be performed.

19. Energy Efficiency

The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub.L. 94-163) for the State in which the work under the contract is performed.

20. Inspection and Acceptance of

- (a) Definitions. As used in this clause -
 - (1) "Acceptance" means the act of an authorized representative of the PHA by which the PHA approves and assumes ownership of the work performed under this contract. Acceptance may be partial or complete.
 - (2) "Inspection" means examining and testing the work performed under the contract (including, when appropriate, raw materials, equipment, components, and intermediate assemblies) to determine whether it conforms to contract requirements.
 - (3) "Testing" means that element of inspection that determines the properties or elements, including functional operation of materials, equipment, or their components, by the application of established scientific principles and procedures.
- (b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. All work is subject to PHA inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.
- (c) PHA inspections and tests are for the sole benefit of the PHA and do not: (1) relieve the Contractor of responsibility for providing adequate quality control measures; (2) relieve the Contractor of responsibility for loss or damage of the material before acceptance; (3) constitute or imply acceptance; or, (4) affect the continuing rights of the PHA after acceptance of the completed work under paragraph (j) below.
- (d) The presence or absence of the PHA inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specifications without the Contracting Officer's written authorization. All instructions and approvals with respect to the work shall be given to the Contractor by the Contracting Officer.
- (e) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The PHA may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. The PHA shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

- (f) The PHA may conduct routine inspections of the construction site on a daily basis.
- (g) The Contractor shall, without charge, replace or correct work found by the PHA not to conform to contract requirements, unless the PHA decides that it is in its interest to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.
- (h) If the Contractor does not promptly replace or correct rejected work, the PHA may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor, or (2) terminate for default the Contractor's right to proceed.
- (i) If any work requiring inspection is covered up without approval of the PHA, it must, if requested by the Contracting Officer, be uncovered at the expense of the Contractor. If at any time before final acceptance of the entire work, the **Construction PHA** considers it necessary or advisable, to examine work already completed by removing or tearing it out, the Contractor, shall on request, promptly furnish all necessary facilities, labor, and material. If such work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray all the expenses of the examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the Contracting Officer shall make an equitable adjustment to cover the cost of the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.
- (j) The Contractor shall notify the Contracting Officer, in writing, as to the date when in its opinion all or a designated portion of the work will be substantially completed and ready for inspection. If the Architect determines that the state of preparedness is as represented, the PHA will promptly arrange for the inspection. Unless otherwise specified in the contract, the PHA shall accept, as soon as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines and designates can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or the PHA's right under any warranty or guarantee.

21. Use and Possession Prior to Completion

- (a) The PHA shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the PHA intends to take possession of or use. However, failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The PHA's possession or use shall not be deemed an acceptance of any work under the contract.
- (b) While the PHA has such possession or use, the Contractor shall be relieved of the responsibility for (1) the loss of or damage to the work resulting from the PHA's possession or use, notwithstanding the terms of the clause entitled Permits and Codes herein; (2) all maintenance costs on the areas occupied; and, (3) furnishing heat, light, power, and water used in the areas

occupied without proper remuneration therefore. If prior possession or use by the PHA delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment shall be made in the contract price or the time of completion, and the contract shall be modified in writing accordingly.

22. Warranty of Title

The Contractor warrants good title to all materials, supplies, and equipment incorporated in the work and agrees to deliver the premises together with all improvements thereon free from any claims, liens or charges, and agrees further that neither it nor any other person, firm or corporation shall have any right to a lien upon the premises or anything appurtenant thereto.

23. Warranty of

- (a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (j) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of _____ (one year unless otherwise indicated) from the date of final acceptance of the work. If the PHA takes possession of any part of the work before final acceptance, this warranty shall continue for a period of (one year unless otherwise indicated) from the date that the PHA takes possession.
- (b) The Contractor shall remedy, at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damage to PHA-owned or controlled real or personal property when the damage is the result of—
- (1) The Contractor's failure to conform to contract requirements; or
 - (2) Any defects of equipment, material, workmanship or design furnished by the Contractor.
- (c) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for (one year unless otherwise indicated) from the date of repair or replacement.
- (d) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect or damage.
- (e) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the PHA shall have the right to replace, repair or otherwise remedy the failure, defect, or damage at the Contractor's expense.
- (f) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:
- (1) Obtain all warranties that would be given in normal commercial practice;
 - (2) Require all warranties to be executed in writing, for the benefit of the PHA; and,
 - (3) Enforce all warranties for the benefit of the PHA.
- (g) In the event the Contractor's warranty under paragraph (a) of this clause has expired, the PHA may bring suit at its own expense to enforce a subcontractor's, manufacturer's or supplier's warranty.

- (h) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defect of material or design furnished by the PHA nor for the repair of any damage that results from any defect in PHA furnished material or design.
- (i) Notwithstanding any provisions herein to the contrary, the establishment of the time periods in paragraphs (a) and (c) above relate only to the specific obligation of the Contractor to correct the work, and have no relationship to the time within which its obligation to comply with the contract 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 its obligation other than specifically to correct the work.
- (j) This warranty shall not limit the PHA's rights under the Inspection and Acceptance of Construction clause of this contract with respect to latent defects, gross mistakes or fraud.

24. Prohibition Against Liens

The Contractor is prohibited from placing a lien on the PHA's property. This prohibition shall apply to all subcontractors at any tier and all materials suppliers.

Administrative Requirements

25. Contract Period

this contract within _____ calendar days of the effective date of the contract, or within the time schedule established in the notice to proceed issued by the Contracting Officer.

26. Order of Provisions

accordance with the terms and conditions of the

In the event of a conflict between these General Conditions and the Specifications, the General Conditions shall prevail. In the event of a conflict between the contract and any applicable state or local law or regulation, the state or local law or regulation shall prevail; provided that such state or local law or regulation does not conflict with, or is less restrictive than applicable federal law, regulation, or Executive Order. In the event of such a conflict, applicable federal law, regulation, and Executive Order shall prevail.

27. Payments

retain ten (10) percent of the amount of progress

- (a) The PHA shall pay the Contractor the price as provided in this contract.
- (b) The PHA shall make progress payments approximately every 30 days as the work proceeds, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer. The PHA may, subject to written determination and approval of the Contracting Officer, make more frequent payments to contractors which are qualified small businesses.
- (c) Before the first progress payment under this contract, the Contractor shall furnish, in such detail as requested by the Contracting Officer, a breakdown of the total contract price showing the amount included therein for each principal category of the work, which shall substantiate the payment amount requested in order to provide a

basis for determining progress payments. The breakdown shall be approved by the Contracting Officer and must be acceptable to HUD. If the contract covers more than one project, the Contractor shall furnish a separate breakdown for each. The values and quantities employed in making up this breakdown are for determining the amount of progress payments and shall not be construed as a basis for additions to or deductions from the contract price. The Contractor shall prorate its overhead and profit over the construction period of the contract.

- (d) The Contractor shall submit, on forms provided by the PHA, periodic estimates showing the value of the work performed during each period based upon the approved

submitted not later than _____ days in advance of the date set for payment and are subject to correction and revision as required. The estimates must be approved by the Contracting Officer with the concurrence of the Architect prior to payment. If the contract covers more than one project, the Contractor shall furnish a separate progress payment estimate for each.

- (e) Along with each request for progress payments and the required estimates, the Contractor shall furnish the following certification, or payment shall not be made: I hereby certify, to the best of my knowledge and belief, that:

- (1) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;
- (2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements; and,
- (3) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in subcontract.

Name:

Title:

Date:

- (f) Except as otherwise provided in State law, the PHA shall

payments until completion and acceptance of all work under the contract; except, that if upon completion of 50 percent of the work, the Contracting Officer, after consulting with the Architect, determines that the Contractor's performance and progress are satisfactory, the PHA may make the remaining payments in full for the work subsequently completed. If the Contracting Officer subsequently determines that the Contractor's performance and progress are unsatisfactory, the PHA shall reinstate the ten (10) percent (or other percentage as provided in State law) retainage until such time as the Contracting Officer determines that performance and progress are satisfactory.

- (g) The Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration when computing progress payments.

Material delivered to the Contractor at locations other than the site may also be taken into consideration if the Contractor furnishes satisfactory evidence that (1) it has acquired title to such material; (2) the material is properly stored in a bonded warehouse, storage yard, or similar suitable place as may be approved by the Contracting Officer; (3) the material is insured to cover its full value; and (4) the material will be used to perform this contract. Before any progress payment which includes delivered material is made, the Contractor shall furnish such documentation as the Contracting Officer may require to assure the protection of the PHA's interest in such materials. The Contractor shall remain responsible for such stored material notwithstanding the transfer of title to the PHA.

- (h) All material and work covered by progress payments made shall, at the time of payment become the sole property of the PHA, but this shall not be construed as (1) relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or, (2) waiving the right of the PHA to require the fulfillment of all of the terms of the contract. In the event the work of the Contractor has been damaged by other contractors or persons other than employees of the PHA in the course of their employment, the Contractor shall restore such damaged work without cost to the PHA and to seek redress for its damage only from those who directly caused it.
- (i) The PHA shall make the final payment due the Contractor under this contract after (1) completion and final acceptance of all work; and (2) presentation of release of all claims against the PHA arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. Each such exception shall embrace no more than one claim, the basis and scope of which shall be clearly defined. The amounts for such excepted claims shall not be included in the request for final payment. A release may also be required of the assignee if the Contractor's claim to amounts payable under this contract has been assigned.
- (j) Prior to making any payment, the Contracting Officer may require the Contractor to furnish receipts or other evidence of payment from all persons performing work and supplying material to the Contractor, if the Contracting Officer determines such evidence is necessary to substantiate claimed costs.
- (k) The PHA shall not; (1) determine or adjust any claims for payment or disputes arising there under between the Contractor and its subcontractors or material suppliers; or, (2) withhold any moneys for the protection of the subcontractors or material suppliers. The failure or refusal of the PHA to withhold moneys from the Contractor shall in nowise impair the obligations of any surety or sureties under any bonds furnished under this contract.

28. Contract Modifications

- (a) Only the Contracting Officer has authority to modify any term or condition of this contract. Any contract modification shall be authorized in writing.
- (b) The Contracting Officer may modify the contract unilaterally (1) pursuant to a specific authorization stated in a contract clause (e.g., Changes); or (2) for administrative matters which do not change the rights or

responsibilities of the parties (e.g., change in the PHA address). All other contract modifications shall be in the form of supplemental agreements signed by the Contractor and the Contracting Officer.

- (c) When a proposed modification requires the approval of HUD prior to its issuance (e.g., a change order that exceeds the PHA's approved threshold), such modification shall not be effective until the required approval is received by the PHA.

29. Changes

- (a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract including changes:
 - (1) In the specifications (including drawings and designs);
 - (2) In the method or manner of performance of the work;
 - (3) PHA-furnished facilities, equipment, materials, services, or site; or,
 - (4) Directing the acceleration in the performance of the work.
- (b) Any other written order or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances and source of the order and (2) that the Contractor regards the order as a change order.
- (c) Except as provided in this clause, no order, statement or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.
- (d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for a adjustment based on defective specifications, no proposal for any change under paragraph (b) above shall be allowed for any costs incurred more than 20 days (5 days for oral orders) before the Contractor gives written notice as required. In the case of defective specifications for which the PHA is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.
- (e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause, or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting a written statement describing the general nature and the amount of the proposal. If the facts justify it, the Contracting Officer may extend the period for submission. The proposal may be included in the notice required under paragraph (b) above. No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.
- (f) The Contractor's written proposal for equitable adjustment shall be submitted in the form of a lump sum proposal supported with an itemized breakdown of all increases and decreases in the contract in at least the following details:

- (1) Direct Costs. Materials (list individual items, the quantity and unit cost of each, and the aggregate cost); Transportation and delivery costs associated with materials; Labor breakdowns by hours or unit costs (identified with specific work to be performed); Construction equipment exclusively necessary for the change; Costs of preparation and/ or revision to shop drawings resulting from the change; Worker's Compensation and Public Liability Insurance; Employment taxes under FICA and FUTA; and, Bond Costs when size of change warrants revision.
- (2) Indirect Costs. Indirect costs may include overhead, general and administrative expenses, and fringe benefits not normally treated as direct costs.
- (3) Profit. The amount of profit shall be negotiated and may vary according to the nature, extent, and complexity of the work required by the change. The allowability of the direct and indirect costs shall be determined in accordance with the Contract Cost Principles and Procedures for Commercial Firms in Part 31 of the Federal Acquisition Regulation (48 CFR 1-31), as implemented by HUD Handbook 2210.18, in effect on the date of this contract. The Contractor shall not be allowed a profit on the profit received by any subcontractor. Equitable adjustments for deleted work shall include a credit for profit and may include a credit for indirect costs. On proposals covering both increases and decreases in the amount of the contract, the application of indirect costs and profit shall be on the net-change in direct costs for the Contractor or subcontractor performing the work.
- (g) The Contractor shall include in the proposal its request for time extension (if any), and shall include sufficient information and dates to demonstrate whether and to what extent the change will delay the completion of the contract in its entirety.
- (h) The Contracting Officer shall act on proposals within 30 days after their receipt, or notify the Contractor of the date when such action will be taken.
- (i) Failure to reach an agreement on any proposal shall be a dispute under the clause entitled Disputes herein. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.
- (j) Except in an emergency endangering life or property, no change shall be made by the Contractor without a prior order from the Contracting Officer.

30. Suspension of Work

- (a) The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the PHA.
- (b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified (or within a reasonable time if not specified) in this contract an adjustment shall be made for any increase in the cost of performance of the contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have

been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor or for which any equitable adjustment is provided for or excluded under any other provision of this contract.

- (c) A claim under this clause shall not be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and, (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under the contract.

31. Disputes

- (a) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to the contract. A claim arising under the contract, unlike a claim relating to the contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim. The submission may be converted to a claim by complying with the requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.
- (b) Except for disputes arising under the clauses entitled Labor Standards - Davis Bacon and Related Acts, herein, all disputes arising under or relating to this contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall be resolved under this clause.
- (c) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision. A claim by the PHA against the Contractor shall be subject to a written decision by the Contracting Officer.
- (d) The Contracting Officer shall, within 60 (unless otherwise indicated) days after receipt of the request, decide the claim or notify the Contractor of the date by which the decision will be made.
- (e) The Contracting Officer's decision shall be final unless the Contractor (1) appeals in writing to a higher level in the PHA in accordance with the PHA's policy and procedures, (2) refers the appeal to an independent mediator or arbitrator, or (3) files suit in a court of competent jurisdiction. Such appeal must be made within (30 unless otherwise indicated) days after receipt of the Contracting Officer's decision.
- (f) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

32. Default

- (a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with the diligence that will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within this time, the Contracting Officer may, by written notice to the Contractor, terminate the right to

proceed with the work (or separable part of the work) that has been delayed. In this event, the PHA may take over the work and complete it, by contract or otherwise, and may take possession of and use any materials, equipment, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the PHA resulting from the **Convenience** Contractor's refusal or failure to complete the work within

the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the PHA in completing the work.

- (b) The Contractor's right to proceed shall not be terminated or the Contractor charged with damages under this clause if—
- (1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (i) acts of God, or of the public enemy, (ii) acts of the PHA or other governmental entity in either its sovereign or contractual capacity, (iii) acts of another contractor in the performance of a contract with the PHA, (iv) fires, (v) floods, (vi) epidemics, (vii) quarantine restrictions, (viii) strikes, (ix) freight embargoes, (x) unusually severe weather, or (xi) delays of subcontractors or suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and
- (2) The Contractor, within days (10 days unless otherwise indicated) from the beginning of such delay (unless extended by the Contracting Officer) notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of the delay. If, in the judgment of the Contracting Officer, the findings of fact warrant such action, time for completing the work shall be extended by written modification to the contract. The findings of the Contracting Officer shall be reduced to a written decision which shall be subject to the provisions of the Disputes clause of this contract.
- (c) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been for convenience of the PHA.

33. Liquidated Damages

- (a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, as specified in the clause entitled Default of this contract, the Contractor shall pay to the PHA as liquidated damages, the sum of \$ _____ [Contracting Officer insert amount] for each day of delay. If different completion dates are specified in the contract for separate parts or stages of the work, the amount of liquidated damages shall be assessed on those parts or stages which are delayed. To the extent that the Contractor's delay or nonperformance is excused under another clause in this contract, liquidated damages shall not be due the PHA. The Contractor remains liable for damages caused other than by delay.
- (b) If the PHA terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final

completion of the work together with any increased costs occasioned the PHA in completing the work.

- (c) If the PHA does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

34. Termination for

- (a) The Contracting Officer may terminate this contract in whole, or in part, whenever the Contracting Officer determines that such termination is in the best interest of the PHA. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the performance of the work under the contract is terminated, and the date upon which such termination becomes effective.
- (b) If the performance of the work is terminated, either in whole or in part, the PHA shall be liable to the Contractor for reasonable and proper costs resulting from such termination upon the receipt by the PHA of a properly presented claim setting out in detail: (1) the total cost of the work performed to date of termination less the total amount of contract payments made to the Contractor; (2) the cost (including reasonable profit) of settling and paying claims under subcontracts and material orders for work performed and materials and supplies delivered to the site, payment for which has not been made by the PHA to the Contractor or by the Contractor to the subcontractor or supplier; (3) the cost of preserving and protecting the work already performed until the PHA or assignee takes possession thereof or assumes responsibility therefore; (4) the actual or estimated cost of legal and accounting services reasonably necessary to prepare and present the termination claim to the PHA; and (5) an amount constituting a reasonable profit on the value of the work performed by the Contractor.
- (c) The Contracting Officer will act on the Contractor's claim within days (60 days unless otherwise indicated) of receipt of the Contractor's claim.
- (d) Any disputes with regard to this clause are expressly made subject to the provisions of the Disputes clause of this contract.

35. Assignment of Contract

The Contractor shall not assign or transfer any interest in this contract; except that claims for monies due or to become due from the PHA under the contract may be assigned to a bank, trust company, or other financial institution. Such assignments of claims shall only be made with the written concurrence of the Contracting Officer. If the Contractor is a partnership, this contract shall inure to the benefit of the surviving or remaining member(s) of such partnership as approved by the Contracting Officer.

36. Insurance

- (a) Before commencing work, the Contractor and each subcontractor shall furnish the PHA with certificates of insurance showing the following insurance is in force and will insure all operations under the Contract:
- (1) Workers' Compensation, in accordance with state or Territorial Workers' Compensation laws.
- (2) Commercial General Liability with a combined single limit for bodily injury and property damage of not less than \$ _____ [Contracting Officer insert amount]

per occurrence to protect the Contractor and each subcontractor against claims for bodily injury or death and damage to the property of others. This shall cover the use of all equipment, hoists, and vehicles on the site(s) not covered by Automobile Liability under (3) below. If the Contractor has a "claims made" policy, then the following additional requirements apply: the policy must provide a "retroactive date" which must be on or before the execution date of the Contract; and the extended reporting period may not be less than five years following the completion date of the Contract.

- (3) Automobile Liability on owned and non-owned motor vehicles used on the site(s) or in connection therewith for a combined single limit for bodily injury and property damage of not less than \$ _____

[Contracting Officer insert amount] per occurrence.

- (b) Before commencing work, the Contractor shall furnish the PHA with a certificate of insurance evidencing that Builder's Risk (fire and extended coverage) Insurance on all work in place and/or materials stored at the building site(s), including foundations and building equipment, is in force. The Builder's Risk Insurance shall be for the benefit of the Contractor and the PHA as their interests may appear and each shall be named in the policy or policies as an insured. The Contractor in installing equipment supplied by the PHA shall carry insurance on such equipment from the time the Contractor takes possession thereof until the Contract work is accepted by the PHA. The Builder's Risk Insurance need not be carried on excavations, piers, footings, or foundations until such time as work on the superstructure is started. It

need not be carried on landscape work. Policies shall furnish coverage at all times for the full cash value of all completed construction, as well as materials in place and/or stored at the site(s), whether or not partial payment has been made by the PHA. The Contractor may terminate this insurance on buildings as of the date taken over for occupancy by the PHA. The Contractor is not required to carry Builder's Risk Insurance for modernization work which does not involve structural alterations or additions and where the PHA's existing fire and extended coverage policy can be endorsed to include such work.

- (c) All insurance shall be carried with companies which are financially responsible and admitted to do business in the State in which the project is located. If any such insurance is due to expire during the construction period, the Contractor (including subcontractors, as applicable) shall not permit the coverage to lapse and shall furnish evidence of coverage to the Contracting Officer. All certificates of insurance, as evidence of coverage, shall provide that no coverage may be canceled or non-renewed by the insurance company until at least 30 days prior written notice has been given to the Contracting Officer.

37. Subcontracts

- (a) Definitions. As used in this contract -

(1) "Subcontract" means any contract, purchase order, or other purchase agreement, including modifications and change orders to the foregoing, entered into by a subcontractor to furnish supplies, materials, equipment, and services for the performance of the prime contract or a subcontract.

(2) "Subcontractor" means any supplier, vendor, or firm that furnishes supplies, materials, equipment, or services to or for the Contractor or another subcontractor.

- (b) The Contractor shall not enter into any subcontract with any subcontractor who has been temporarily denied participation in a HUD program or who has been suspended or debarred from participating in contracting programs by any agency of the United States Government or of the state in which the work under this contract is to be performed.
- (c) The Contractor shall be as fully responsible for the acts or omissions of its subcontractors, and of persons either directly or indirectly employed by them as for the acts or omissions of persons directly employed by the Contractor.
- (d) The Contractor shall insert appropriate clauses in all subcontracts to bind subcontractors to the terms and conditions of this contract insofar as they are applicable to the work of subcontractors.
- (e) Nothing contained in this contract shall create any contractual relationship between any subcontractor and the PHA or between the subcontractor and HUD.

38. Subcontracting with Small and Minority Firms, Women's Business Enterprise, and Labor Surplus Area Firms

The Contractor shall take the following steps to ensure that, whenever possible, subcontracts are awarded to small business firms, minority firms, women's business enterprises, and labor surplus area firms:

- (a) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
- (b) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;
- (c) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;
- (d) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises; and
- (e) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies.

39. Equal Employment Opportunity

During the performance of this contract, the Contractor/Seller agrees as follows:

- (a) The Contractor/Seller shall not discriminate against any employee or applicant for employment because of race color, religion, sex, sexual orientation, gender identity, disability, or national origin.
- (b) The Contractor/Seller shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, disability, or national origin. Such action shall include, but not be limited to, (1) employment, (2) upgrading demotion, (4) transfer, (5) recruitment or recruitment advertising, (6) layoff or termination, (7) rates of pay or other forms of compensation, and (8) selection for training, including apprenticeship

(c) The Contractor/Seller agrees to post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(d) The Contractor/Seller shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor/Seller, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(e) The Contractor/Seller shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(f) The Contractor/Seller shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(g) The Contractor/Seller shall furnish all information and reports required by Executive Order 11246, as amended, Section 503 of the Rehabilitation Act of 1973, as amended, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto. The Contractor/Seller shall permit

access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(h) In the event of a that the Contractor/Seller is in noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor/seller may be declared ineligible for further Government 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.

(i) The contractor/seller will include the provisions of paragraphs (a) through (h) 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 sub[contractor/seller] or vendor. The [contractor/seller] will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the [contractor/seller] becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the [contractor/seller] may request the United States to enter into such litigation to protect the interests of the United States.

(j) Compliance with the requirements of this clause shall be to the maximum extent consistent with, but not in derogation of, compliance with section 7(b) of the Indian Self-Determination and Education Assistance Act and the Indian Preference clause of this contract.

40. Employment, Training, and Contracting Opportunities for Low-Income Persons, Section 3 of the Housing and Urban Development Act of 1968.

(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 75, 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 75 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 prioritization requirements and shall state the minimum percentages of labor hour requirements established in the Benchmark Notice (FR-6085-N-04).

(d) The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 75, 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 75. 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 75.

(e) Noncompliance with HUD's regulations in 24 CFR Part 75 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

(f) Contracts, subcontracts, grants, or subgrants subject to Section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5307(b)) or subject to tribal preference requirements as authorized under 101(k) of the Native American Housing Assistance and Self-Determination Act (25 U.S.C. 4111(k)) must provide preferences in employment, training, and business opportunities to Indians and Indian organizations, and are therefore not subject to the requirements of 24 CFR Part 75.

41. Interest of Members of Congress

No member of or delegate to the Congress of the United States of America shall be admitted to any share or part of this contract or to any benefit that may arise therefrom.

42. Interest of Members, Officers, or Employees and Former Members, Officers, or Employees

No member, officer, or employee of the PHA, no member of the governing body of the locality in which the project is situated, no member of the governing body of the locality in which the PHA was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the project, shall, during his or her tenure, or for one year thereafter, have any interest, direct or indirect, in this contract or the proceeds thereof.

43. Limitations on Payments made to Influence Certain Federal Financial Transactions

- (a) The Contractor agrees to comply with Section 1352 of Title 31, United States Code which prohibits the use of **Acts** Federal appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: 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; or the modification of any Federal contract, grant, loan, or cooperative agreement.
- (b) The Contractor further agrees to comply with the requirement of the Act to furnish a disclosure (OMB Standard Form LLL, Disclosure of Lobbying Activities) if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence 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 a Federal contract, grant, loan, or cooperative agreement.

44. Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringement of any patent rights and shall save the PHA harmless from loss on account thereof; except that the PHA shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified and the Contractor has no reason to believe that the specified design, process, or product is an infringement. If, however, the Contractor has reason to believe that any design, process or product specified is an infringement of a patent, the Contractor shall promptly notify the Contracting Officer. Failure to give such notice shall make the Contractor responsible for resultant loss.

45. Examination and Retention of Contractor's Records

- (a) The PHA, HUD, or Comptroller General of the United States, or any of their duly authorized representatives shall, until 3 years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.
- (b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders not exceeding \$10,000.
- (c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the Disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the PHA, HUD, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

46. Labor Standards - Davis-Bacon and Related

If the total amount of this contract exceeds \$2,000, the Federal labor standards set forth in the clause below shall apply to the development or construction work to be performed under the contract.

- (a) Minimum Wages.
 - (1) All laborers and mechanics employed under this contract in the development or construction of the project(s) involved 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 1(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 regular 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 in 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.

(2) (i) Any class of laborers or mechanics, including

helpers, 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 all the following criteria have been met: (A) The work to be performed by the classification requested is not performed by a classification in the wage determination; and (B) The classification is utilized in the area by the construction industry; and (C) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(ii) 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, Employee Standards Administration, U.S.

Department of Labor, Washington, DC 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.

(iii) 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 of the Wage and Hour Division 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.

(iv) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (a)(2)(ii) or (iii) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in classification.

(3) 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.

(4) 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.

(b) Withholding of funds. 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 in the construction or development of the project, all or part of the wages required by the contract, HUD or its designee may, after written notice to the Contractor, 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.

(c) Payrolls and basic records.

(1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working in the construction or development of the project. 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 1(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 costs reasonably anticipated in providing benefits under a plan or program described in section 1(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.

(2) (i) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer 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 subparagraph (c)(1) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The Contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1214-0149.)

(ii) 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:

- (A) That the payroll for the payroll period contains the information required to be maintained under paragraph (c) (1) of this clause and that such information is correct and complete;
- (B) 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; and
- (C) 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.

(iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirements for submission of the "Statement of Compliance" required by subparagraph (c)(2)(ii) of this clause.

(iv) 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 3729 of Title 31 of the United States Code.

(3) The Contractor or subcontractor shall make the records required under subparagraph (c)(1) available for inspection, copying, or transcription by authorized representatives of HUD or its designee, the Contracting Officer, 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, 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.

(d) (1) 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 and Training, Employer and Labor Services (OATELS), or with a State Apprenticeship Agency recognized by OATELS, 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 OATELS 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 in this paragraph, 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 journeyman 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 of the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event OATELS, or a State Apprenticeship Agency recognized by OATELS, 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.

(2) 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 in 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 in 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 in the wage determination for the classification of 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 in 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.

- (3) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.
- (e) Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.
- (f) Contract termination; debarment. A breach of this contract clause may be grounds for termination of the contract and for debarment as a Contractor and a subcontractor as provided in 29 CFR 5.12.
- (g) 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.
- (h) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this clause 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 the PHA, HUD, the U.S. Department of Labor, or the employees or their representatives.
- (i) Certification of eligibility.
 - (1) 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 contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

- (2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a United States Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (3) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.
- (j) Contract Work Hours and Safety Standards Act. 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, including watchmen and guards, 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 provisions set forth in subparagraph (j)(1) of this clause, 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 provisions set forth in subparagraph (j)(1) of this clause, in the sum of \$27 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 provisions set forth in subparagraph (j)(1) of this clause. DOL posts current fines at: <https://www.dol.gov/whd/govcontracts/cwhssa.htm#cmp>
 - (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 Federal contract with the same prime Contractor, 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 provisions set forth in subparagraph (j)(2) of this clause.
- (k) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts all the provisions contained in this clause, and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all these provisions.

47. Non-Federal Prevailing Wage Rates

(a) Any prevailing wage rate (including basic hourly rate and any fringe benefits), determined under State or tribal law to be prevailing, with respect to any employee in any trade or position employed under the contract, is inapplicable to the contract and shall not be enforced against the Contractor or any subcontractor, with respect to employees engaged under the contract whenever such non-Federal prevailing wage rate exceeds:

(1) The applicable wage rate determined by the Secretary of Labor pursuant to the Davis-Bacon Act (40 U.S.C. 3141 et seq.) to be prevailing in the locality with respect to such trade;

(b) An applicable apprentice wage rate based thereon specified in an apprenticeship program registered with the U.S. Department of Labor (DOL) or a DOL-recognized State Apprenticeship Agency; or

(c) An applicable trainee wage rate based thereon specified in a DOL-certified trainee program.

48. 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.

() 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.

Supplementary Conditions of the Contract for Construction

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

OMB Approval No. 2502-0470
(Expires 12/31/2016)

Public reporting burden for this collection of information is estimated to average 30 minutes 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 information is required to obtain benefits and voluntary. HUD may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB control number.

This information collection is necessary to ensure that viable projects are developed. It is important to obtain information from applicants to assist HUD in determining if nonprofit organizations initially funded continue to have the financial and administrative capacity needed to develop a project and that the project design meets the needs of the residents. The Department will use this information to set forth the obligations of the contractor or subcontractor performing under the covered contract. This information is required in order to obtain benefits. This information is considered non-sensitive and no assurance of confidentiality is provided.

Article 1 – Labor Standards

Instructions

Whenever only FHA mortgage insurance is involved, use paragraph (A) and (C) of Article 1 – Labor Standards. Whenever any direct form of assistance (Section 8, Section 202/811 Capital Advance, grants etc.) is involved, use paragraphs (A) and (B) and (C) of Article 1 – Labor Standards.

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted or insured by the United States of America and the following Federal Labor Standards Provisions are included in this Contract or related instrument pursuant to the provisions applicable to such Federal assistance or insurance.

A. 1. (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), 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 1(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 Part 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 Part 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 therefore 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 A.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 (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), 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 and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). 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 1(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 1(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 Part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (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 maintained under 29 CFR Part 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 paragraph A.3.(ii)(b) of this section.

(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 paragraph A.3.(i) of this section 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 Part 5.12.

4. (i) Apprentices and Trainees. 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, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, 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 Bureau of Apprenticeship and Training 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 Bureau

of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, 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's 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 classification of 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 this part 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 29 CFR 5.5(a)(1) through (10) and such other clauses as HUD or its designee may be appropriate instructions require, 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 29 CFR Part 5.5.

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 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 1010, 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."

B. Contract Work Hours and Safety Standards Act. 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 he or she is employed on such work to work in excess of forty 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 forty 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 therefore 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 forty hours without payment of the overtime wages required by the clause set forth in subparagraph (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 contractor, 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. The Contractor will be required to execute FHA Form No. 2403-A, Contractor's Prevailing Wage Certificate, as a condition precedent to insurance by the Federal Housing Administration of that certain mortgage loan, or an advance thereof, made or to be made by the mortgagee in connection with the construction of the project.

Article 2 – Equal Employment Opportunity

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:

A. 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.

B. 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 to race, color, religion, sex, or national origin.

C. 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 hereunder, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

D. 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.

E. 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 Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

F. 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, regulations or order of the Secretary of Labor, or as otherwise provided by law.

G. The Contractor will include the portion of the sentence immediately preceding paragraph A and the provisions of paragraphs A through G 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 Secretary of Housing and Urban Development or the Secretary of Labor 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 vendor as a result of such direction by the Secretary of Housing and Urban Development or the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

H. 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.

I. 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.

J. 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 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.

Article 3 – Equal Opportunity for Businesses and Lower Income Persons Located Within the Project Area

(Applicable to Section 236 projects, where the estimated replacement cost of the project as determined by the Secretary of Housing and Urban Development exceeds \$500,000, and to all projects, including Section 236 regardless of estimated replacement cost, receiving rent supplement assistance under Title I, Section 101 of the Housing and Urban Development Act of 1965.)

A. The work to be performed under this contract is on a project assisted under a program providing direct Federal financial assistance from the Department of Housing and Urban Development and 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 requires that to the greatest extent feasible opportunities for training and employment be given lower income residents of the unit of local government or the metropolitan area (or nonmetropolitan county) as determined by the Secretary of Housing and Urban Development in which the projects located and contracts for work in connection with the project be awarded to business concerns which are located in, or owned in substantial part by persons residing in the same metropolitan area (or nonmetropolitan county) as the project.

Article 4 – Health and Safety

A. 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.

B. The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 (formerly part 1518) 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).

C. The Contractor shall include the provisions of this Article in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development of the Secretary of Labor shall direct as a means of enforcing such provisions.

SECTION 00502

SPECIAL CONDITIONS (SUPPLEMENTARY GENERAL CONDITIONS)

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1. **SUPPLEMENTARY GENERAL CONDITIONS**

- A. It shall be the Contractor's responsibility to review the General Conditions of the Contract for Construction, AIA Document A201 included herein for any such amendments to its contents.
- B. The General Conditions, together with these Supplementary General Conditions, shall be a part of the Contract for the work, and shall apply to all the work in each Division of these Specifications.
- C. Where the Supplementary General Conditions are in conflict with the General Conditions, the Supplemental General Conditions shall take precedence and shall govern.

2. **PROJECT SITES**

Fogarty Manor, RI 2-4
214 Roosevelt Avenue
Pawtucket, RI 02860

Kennedy Manor, RI 2-4,5
175 Broad Street
Pawtucket, RI 02860

3. **TIME FOR COMPLETION**

- A. The work shall be completed within **seven hundred (700) calendar days**. The Contractor shall reimburse Architect at \$175.00/hour for any and all time expended in connection with construction administration of the project subsequent to the expiration of the total contract time, unless otherwise agreed by the Owner, Contractor and Architect during the Construction Phase.
- B. It is the Bidders' responsibility to anticipate and include, in their bid, allowances for normal weather conditions as necessary to complete the work. No claim for extra compensation or extension of time will be allowed on account of the contractor's failure to allow for normal seasonal weather conditions.
- C. This time period was established using normal material ordering and delivery conditions and holidays for the time of the year that the work is expected to be undertaken. A Notice to Proceed is expected to be issued by **end of April 2026**.
- D. The Pawtucket Housing Authority, may at its sole discretion, agree to suspend work if weather conditions prevent the work from progressing in a satisfactory manner.

The contractor shall not be entitled to extra compensation for any reasons if the work is suspended by the Pawtucket Housing Authority for the reasons stated above.

4. **LIQUIDATED DAMAGES**

- A. As actual damages for any delay in completion are impossible to determine, the Contractor and his sureties shall be liable for and shall pay to the Pawtucket Housing Authority the sum of \$250 as fixed, agreed, and liquidated damages for each calendar day of delay until the work is substantially completed.

5. **COMMUNICATIONS**

- A. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.
- B. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Contract (or at such other office as he may from time to time designate in writing to the Authority) or deposited in the United States mail in a sealed, postage-prepaid envelope, or if delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.
- C. All papers required to be delivered to the Authority or Architect shall, unless otherwise specified in writing to the Contractor, be delivered to the contracting office at *214 Roosevelt Avenue, Pawtucket, RI 02860*, and any notice to or demand upon the Authority or Architect shall be sufficiently given if so delivered, or deposited in the United States mail in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to said. Pawtucket Housing Authority as such address or to such other representatives of the Authority or to such other address as the Authority may subsequently specify in writing to the Contractor for such purpose.
- D. Any such notice shall be deemed to have been given as of the time of actual delivery; or, in the case of mailing, when the same should have been received in due course of post; or, in the case of tele grams, at the time of actual receipt.

6. **MINIMUM RATES OF PAY**

- A. The minimum rates of pay required to be paid mechanics and laborers employed directly upon the site of the work under this project shall be in accord with the Wage Rate Decision listed in the schedule hereinafter attached. The wage rates have been determined by the Secretary of Labor in accordance with Public Law 403 of the Seventy-Fourth Congress approved August 10, 1935 as amended.

7. **PAYMENTS TO CONTRACTOR**

- A. "Periodical Estimates for Partial Payment in their final form must be submitted to the Architect for review each month, not later than (10) calendar days prior to the Owner's Payment Schedule, in order to be considered and approved for payment by the LHA at its next regular meeting. Periodical Estimates not submitted to the Architect in accordance with this article will not be reviewed at the subsequent meeting of the LHA but, at the next subsequent meeting of the LHA."
- B. *Five percent (5%)* of the Contract amount shall be retained until thirty (30) days after FINAL COMPLETION of the project.
- C. The Architect may decline to approve any Periodical Estimate for payment in whole or in part, or he may nullify the whole or any part of a Periodical Estimate previously approved, to protect the Owner from loss because of:
 - a) Defective work not corrected promptly.
 - b) Third-party claims filed.
 - c) Question whether the work can be completed on time or for the outstanding balance of the Contract Sum.
 - d) Unsatisfactory prosecution of the work by the Contractor.
 - e) Lack of Lien Releases
 - f) Not submitting Payroll Affidavits
 - g) Lack of revised Construction Implementation Schedule

- D. Original Lien Releases from the G.C.'s Subcontractors and suppliers shall be submitted with each Payment Application, starting with Payment Application No. 2. Payment Applications will not be processed through the Architect's office otherwise.

Lien Releases Shall Include:

- a) Amount of Agreement
- b) Amount Paid To Date
- c) Balance Owed

8. **CHANGES IN THE WORK**

- A. The maximum allowance for overhead and profit combined, included in the total cost to the Owner, shall be based upon the following schedule:
- .1 To the Contractor, for Work performed by his own forces, a maximum of 10% of the cost;
 - .2 To the Subcontractors for Work performed by his own forces or their subcontractors, a maximum of 10% of the cost;
 - .3 The combined maximum overhead and profit for Contractor and Subcontractors, a maximum of fifteen percent (15%) of the cost.

9. **SALES TAX**

- A. All materials and supplies purchased by the Contractor and built into this project are exempt from State Sales and Use Tax Act.

10. **VISIT TO THE SITE(S)**

- A. Each bidder is to visit the site, view the existing areas and acquaint himself with all of the conditions under which the work is to be performed. Failure of the Contractor to acquaint himself with all the conditions involved will not relieve him from fulfilling the Contract in all its details.

11. **CONDUCT OF THE WORK**

- A. During the progress of the Work, the Contractor shall so conduct his work that as little inconvenience as possible is caused to the occupants. At the close of the work each day, the Contractor shall pick up and stow all equipment and miscellaneous material leaving the site in a neat and safe condition.

12. **WORKING HOURS**

- A. Regular working hours are between 7:30 a.m. and 4:00 p.m., Monday through Friday. If the Contractor finds it necessary to work other than regular working hours, he must obtain a written approval in advance from the Pawtucket Housing Authority.
- B. Days which the Pawtucket Housing Authority is closed because of holidays will also be a day of non-work for the general contractor.

13. **PROTECTION OF PEOPLE AND PROPERTY**

- A. The Contractor shall be solely responsible for initiating, maintaining and supervising safety, security and protection programs and shall comply with all applicable laws, ordinances, rules and regulations concerning safety of people and the protection of property.

- B. The Contractor shall repair or replace, at his own expense, with new any item, surface, or object that is damaged by the Contractor or damaged because of the Contractor's actions during the course of the Work and during any guarantee period.
- C. The Contractor shall, at his own expense, repair or replace with new any item, surface, or object that is damaged by the Contractor or damaged because of the Contractor's actions during the course of the Work and during any guarantee period.
- D. Site and building conditions shall be restored to their original/new condition at the start of the Work. Before commencing work, the Contractor shall report any existing damage to the Architect in writing to assure that the Contractor will not be liable for preexisting damage.

14. **SIGNS**

- A. No signs except for safety signs will be allowed to be displayed on the site or on the building.

15. **INSURANCE**

- A. The Contractor shall provide and maintain the following minimum amounts of insurance naming the Owner, the Contractor and Subcontractors (as their interests may appear) as the insured:

- (a) Workmen's Compensation Insurance: As required by law.
- (b) Comprehensive General Liability Insurance:

Personal Injury:

Each Person\$1,000,000.
Each Occurrence\$2,000,000.

Property Damage:

Each Accident\$ 500,000.
Aggregate\$1,000,000.

- (c) Comprehensive Automobile Liability Insurance:

Bodily Injury:

Each Person\$ 500,000.
Each Occurrence\$1,000,000.

Property Damage:

Each Occurrence\$ 500,000.

- (d) Certificate of Liability Insurance: The Contractor shall procure and maintain during the life of this contract, a Certificate of Liability Insurance which includes High-Risk with Professional/Pollution Insurance. Refer to the following sample Certificate.

- B. The Contractor shall provide the Owner with a Performance Bond and a Labor and Materials or Payment Bond in the form provided, executed by a surety company licensed by the State of Rhode Island's Division of Insurance. Each such bond shall be in the amount of the Contract price. In the event that the Contractor waives the requirement in its bid that a filed

sub-bidder is to provide the Contractor with Performance and Payment Bonds, the Contractor shall provide the Owner with a credit change order in an amount equal to the bond premium it would have paid had it required the filed Subcontractor to provide such bonds.

16. **INDEMNIFICATION**

- A. The Contractor shall take all responsibility for the Work and take all precautions for preventing injuries to persons and property in or about the Work; shall bear all losses resulting to or on account of the amount or character of the Work. The Contractor shall pay or cause payment to be made for all labor performed or furnished and for all materials used or employed in carrying out this Contract. The Contractor shall assume the defense of, and indemnify and save harmless, the Architect, the Owner, and their officers and agents from all claims relating to labor performed or furnished and materials used or employed for the Work; to inventions, patents and patent rights used in and in doing the Work; unless such patent infringement is due to a product or process specified by the Owner; to injuries to any person or corporation received or sustained by or from the Contractor and any employees, and subcontractors and employees, in doing the work, or in consequence of any improper materials, implements or labor used or employed therein; and to any act, omission or neglect of the Contractor and any employees therein.

17. **PUNCH LIST**

- A. At the completion of the Work, and prior to acceptance by the Housing Authority, the Architect and the Contractor shall inspect the project and prepare a written Punch List of their findings. This list is to be submitted to the Housing Authority to assist it in its own Final Inspection. The Contractor shall notify the Architect in writing when work on the punch list has been completed. Architect shall then complete one (1) Final Punch List Inspection; Contractor shall be invoiced for all follow-up Punch List Inspections, if so required, at the Architect's standard hourly rate.

18. **PAYROLL AFFIDAVITS**

- A. "Original" weekly payroll affidavits shall be submitted by the Contractor, to the Owner.

19. **MONTHLY UTILIZATION FORMS**

- A. Contractor and subcontractor shall file Standard Form 257 with the Local Authority and the Compliance Agency. They are to accompany periodical estimates whenever such estimates are submitted.

20. **OWNERSHIP AND USE OF DOCUMENTS**

- A. Drawings and specifications, as instruments of professional service, are and shall remain the property of the Architect. These Documents are not to be used, in whole or in part, for any other projects or purposes, or by any other parties, other than those properly authorized in writing, by the Architect. This paragraph supersedes all other related portions of these Contract Documents.

END OF SECTION



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

Current Date

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Contractor Insurance Agent 123 Main Street Anytown, State, Zip 02920	CONTACT NAME: PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL: ADDRESS: <table style="width: 100%;"> <tr> <th style="text-align: center;">INSURER(S) AFFORDING COVERAGE</th> <th style="text-align: center;">NAIC #</th> </tr> <tr> <td>INSURER A: ABC Insurance Company</td> <td></td> </tr> <tr> <td>INSURER B: DEF Insurance Company</td> <td></td> </tr> <tr> <td>INSURER C: GHI Insurance Company</td> <td></td> </tr> <tr> <td>INSURER D: JKL Insurance Company</td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> <tr> <td>INSURER F:</td> <td></td> </tr> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: ABC Insurance Company		INSURER B: DEF Insurance Company		INSURER C: GHI Insurance Company		INSURER D: JKL Insurance Company		INSURER E:		INSURER F:	
INSURER(S) AFFORDING COVERAGE	NAIC #														
INSURER A: ABC Insurance Company															
INSURER B: DEF Insurance Company															
INSURER C: GHI Insurance Company															
INSURER D: JKL Insurance Company															
INSURER E:															
INSURER F:															
INSURED Contractor Name Address City/State/Zip code															

COVERAGES

CERTIFICATE NUMBER: CL2611437643

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS		
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PROJECT ☐ LOC OTHER:	Y	Y	Policy Number	Current	Date	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000		
B	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY	Y	Y	Policy Number	Current	Date	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$		
A	☒ UMBRELLA LIAB ☒ OCCUR ☐ EXCESS LIAB ☐ CLAIMS-MADE DED \$ RETENTION \$	Y	Y	Policy Number	Current	Date	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000		
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	Y	Current	Date	☒ PER STATUTE ☐ OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000		
D	Professional/Pollution Liability			Policy Number	Current	Date	Per Claim \$2,000,000 Aggregate \$2,000,000		

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

The certificate holder is included as an Additional Insured on a primary and non-contributory basis on the General Liability policy for Ongoing Operations (CG2010) and Completed Operations (CG2037) or their equivalent. Certificate holder is included as an additional insured on a primary and non-contributory basis on the Automobile and Umbrella policies. The Additional Insured coverage shall not require a contract between the certificate holder and Insured. The Commercial General Liability, Automobile Liability, Umbrella Liability and Employers Liability all include a Waiver of Subrogation in favor of the certificate holder. All Insurance carriers affording coverage are approved to do business in the State of Rhode Island and have an AM Best Rating of not less than A.X. The Certificate Holder shall be an additional insured on the Pollution Liability Coverage.

CERTIFICATE HOLDER**CANCELLATION**

The Housing Authority of the City of Pawtucket, Rhode Island 214 Roosevelt Avenue Pawtucket RI 02860-2153	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Must be signed

SECTION 00503

FORM OF PERFORMANCE BOND

Bond No. _____

KNOW ALL BY THESE PRESENTS that _____, as Principal, hereinafter called Contractor, and _____, a corporation duly organized under the laws of the State of _____, as Surety, hereinafter called Surety, are held and firmly bound unto the *Pawtucket Housing Authority* as Obligee, in the amount of _____ (\$ _____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____ entered into a contract with the *Pawtucket Housing Authority* for _____ in accordance with drawings and specifications prepared by _____ which contract is by reference made a part hereof referred to as the Contract.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that, if Contractor shall promptly and faithfully perform said Contract then this obligation shall be null and void; otherwise it shall remain in full force and effect. The Surety hereby waives notices of any alteration of extension of time made by the *Pawtucket Housing Authority* and its obligation is not affected by any such alteration or extension provided the same is within the scope of the contract. Whenever Contractor shall be, and is declared by the *Pawtucket Housing Authority* to be in default under the Contract, the *Pawtucket Housing Authority* having performed the *Pawtucket Housing Authority's* obligations thereunder, the Surety may promptly remedy the default or shall promptly:

1. Complete the Contract in accordance with its terms and conditions; or
2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the *Pawtucket Housing Authority* and the Surety jointly of the lowest responsive, responsible bidder, arrange for a contract between such bidder and the *Pawtucket Housing Authority* and make available as work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the *Pawtucket Housing Authority* to the Contractor under the Contract and any amendments thereto, less the amount property paid by the *Pawtucket Housing Authority* to Contractor. No right of action shall accrue on this bond to or for the use of any person or corporation other than the *Pawtucket Housing Authority* or successors of the *Pawtucket Housing Authority*.
Signed and sealed this _____ day of _____, 20_____.

(Witness)

(Principal) (Seal)

(Title)

(Witness)

(Bonding Company)

By _____
(Attorney-in-Fact)

SECTION 00504

FORM OF LABOR AND MATERIAL PAYMENT BOND

Bond No. _____

KNOW ALL BY THESE PRESENTS that _____,
_____, as Principal, hereinafter called Principal, and
_____, a corporation duly
organized under the laws of the State of _____, as Oblige, hereinafter called the
Pawtucket Housing Authority, for the use and benefit of claimants as herein below defined, in the amount of
_____ (\$_____) for the payment whereof Principal
and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and
severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____, entered into a contract with the
Pawtucket Housing Authority for _____
_____ in accordance with drawings and specifications
prepared by _____ which contract is by reference
made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make
payment to all claimants as hereinafter defined, for all labor and materials used or reasonably required for use
in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and
effect, subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the
Principal for labor, material, or both, used or reasonably required for use in the performance of the
Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil,
gasoline, telephone service, or rental of equipment directly applicable to the Contract.
2. The above-named Principal and Surety hereby jointly and severally agree with the Pawtucket Housing
Authority that every claimant as herein defined, who has not been paid in full before the expiration of a
period of ninety (90) days after the date on which the last of such claimant's work or labor was done or
performed, or materials were furnished by such claimant, may sue on this bond for the use of such
claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and
have execution thereon. The Pawtucket Housing Authority shall not be liable for the payment of any
costs or expenses of any such suit.
3. No suit or action shall be commenced herein under by any claimant:
 - a. Unless claimant, other than one having a direct contract with the Principal, shall have given
written notice to any two of the following: the Principal, the Pawtucket Housing Authority, or the
Surety above named, within ninety (90) days after such claimant did or furnished the last of the
materials for which said claim is made, stating with substantial accuracy the amount claimed
and the name of the party to whom the materials were furnished, or for whom the work or labor
was done or performed. Such notice shall be personally served or served by mailing the same
by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal
at any place the Principal maintains an office or conducts its business.
 - b. After the expiration of one (1) year following the date on which the last of the labor was
performed or material was supplied by the part bringing suit.
 - c. Other than in a court of competent jurisdiction for the county or district in which the construction
contract was to be performed.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith herein under, inclusive of the payment by Surety of mechanics' liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

Signed and sealed this _____ day of _____, 20____.

_____	_____	_____
(Witness)	(Principal)	(Seal)
_____	_____	_____
	(Title)	
_____	_____	_____
(Witness)	(Bonding Company)	
	By _____	
	(Attorney-in-Fact)	

SECTION 00601
LABOR REGULATIONS

PART 1 - GENERAL

1.01 WAGE RATES

- A. The rate per hour to be paid to mechanics, apprentices, teamsters, chauffeurs, and laborers employed on the Work shall not be less than the rate of wages in the Davis-Bacon "Minimum Wage Rates". This schedule shall continue to be the minimum rate of wages for said employees during the life of this Contract.
- B. Keep posted on the site a legible copy of said schedule. Keep on file the wage rates and classifications of labor employed on this Work in order that they may be available for inspection by the Owner, Administrator, or the Architect.
- C. Apprentices employed pursuant to this determination of wage rates must be registered and approved by the State Apprenticeship Council wherever rates for journeymen or apprentices are not listed.
- D. The State of Rhode Island Department of Labor, Division of Professional Regulation General Decision Modification Document, current as of the "Bid Issuance" date for this project shall be an integral part of the Bid Documents for use in fulfilling the Prevailing Wage Rate Requirements. Bidders shall be responsible for obtaining the pertinent Wage Decision from the government's web site: <https://beta.sam.gov/>.
- E. The most current edition of General Decision Number RI2026001, at the time of the bid submission, shall be utilized by the Contractor for Construction Type "Building".
- F. Contractors are encouraged to familiarize themselves with the Davis-Bacon Labor Standards. Refer to the following HUD publications for the Agency/Contractor Guide [Agency/Contractor Guide](#), and Contractor Guide Addendum [Contractor Guide Addendum](#).

END OF SECTION

A. 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.

1. Minimum wages and fringe benefits

- i. All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), 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 basic hourly 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. As provided in 29 CFR 5.5(d) and (e), the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(v) of these contract clauses; 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 must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) 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 classifications and wage rates conformed under 29 CFR 5.5(a)(1)(iii)) and the Davis-Bacon poster (WH-1321) must 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. Frequently recurring classifications

- A.** In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to 29 CFR 5.5(a)(1)(iii), provided that:
1. The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;
 2. The classification is used in the area by the construction industry; and
 3. The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.
- B.** The Administrator will establish wage rates for such classifications in accordance with 29 CFR 5.5(a)(1)(iii)(A)(3). Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

iii. Conformance

- A.** The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be

classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate 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 used 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. The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.
- C. If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- D. In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- E. The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under 29 CFR 5.5 (a)(1)(iii)(C) and (D). The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to 29 CFR 5.5 (a)(1)(iii)(C) or (D) must 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.

iv. Fringe benefits not expressed as an hourly rate

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 may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

v. Unfunded plans

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, in accordance with the criteria set forth in 29 CFR 5.28, 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.

- vi. Interest** In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding

i. Withholding requirements

The U. S. Department of Housing and Urban Development may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in 29 CFR 5.5(a) for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in 29 CFR 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work (or otherwise working in construction or development of the project under a development statute) all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in 29 CFR 5.5(a)(3)(iv), HUD may on its own initiative and after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, 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.

ii. Priority to withheld funds

The Department has priority to funds withheld or to be withheld in accordance with 29 CFR 5.5(a)(2)(i) or (b)(3)(i), or both, over claims to those funds by:

- A.** A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- B.** A contracting agency for its procurement costs;
- C.** A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- D.** A contractor's assignee(s);
- E.** A contractor's successor(s); or
- F.** A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901-3907.

3. Records and certified payrolls

i. Basic record requirements

A. Length of record retention. All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

B. Information required Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; 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 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

C. Additional records relating to fringe benefits. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(v) 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 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must 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.

D. Additional records relating to apprenticeship Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

ii. Certified payroll requirements

A. Frequency and method of submission The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to HUD if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the certified payrolls to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to HUD. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system

B. Information required The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i)(B), except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the sponsoring government agency (or the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records).

C. Statement of Compliance Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

1. That the certified payroll for the payroll period contains the information required to be provided under 29 CFR 5.5(a)(3)(ii), the appropriate information and basic records are being maintained under 29 CFR 5.5 (a)(3)(i), and such information and records are correct and complete;
2. That each laborer or mechanic (including each helper and apprentice) working 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; and

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(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.
 - D. **Use of Optional Form WH-347** The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the “Statement of Compliance” required by 29 CFR 5.5(a)(3)(ii)(C).
 - E. **Signature** The signature by the contractor, subcontractor, or the contractor’s or subcontractor’s agent must be an original handwritten signature or a legally valid electronic signature.
 - F. **Falsification** The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.
 - G. **Length of certified payroll retention** The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.
- iii. **Contracts, subcontracts, and related documents** The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.
- iv **Required disclosures and access**
- A. **Required record disclosures and access to workers** The contractor or subcontractor must make the records required under 29 CFR 5.5(a)(3)(i)–(iii), and any other documents that HUD or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by 29 CFR 5.1, available for inspection, copying, or transcription by authorized representatives of HUD or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.
 - B. **Sanctions for non-compliance with records and worker access requirements** If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, 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, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to 29 CFR 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.
 - C. **Required information disclosures** Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to HUD if the agency is a party to

the contract, or to the Wage and Hour Division of the Department of Labor. If the Federal agency is not such a party to the contract, the contractor, subcontractor, or both, must, upon request, provide the full Social Security number and last known address, telephone number, and email address of each covered worker to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to HUD, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity

i. Apprentices

- A. Rate of pay** Apprentices will be permitted to work at less than the predetermined rate for the work they perform 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 (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- B. Fringe benefits** Apprentices must 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, fringe benefits must be paid in accordance with that determination.
- C. Apprenticeship ratio** The allowable ratio of apprentices to journeymen on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to 29 CFR 5.5(a)(4)(i)(D). Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in 29 CFR 5.5(a)(4)(i)(A), must 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 this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.
- D. Reciprocity of ratios and wage rates** Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

- ii Equal employment opportunity** The use of apprentices and journeymen under this part must 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 must insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (11), along with the applicable wage determination(s) and such other clauses or contract modifications as the U.S. Department of Housing and Urban Development may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate.

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 the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

i. By entering into this contract, the contractor certifies that neither it 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 40 U.S.C. 3144(b) or 29 CFR 5.12(a).

ii. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or 29 CFR 5.12(a).

iii. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

11 Anti-retaliation It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

i. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, or 29 CFR parts 1, 3, or 5;

ii. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, or 29 CFR parts 1, 3, or 5;

iii. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, or 29 CFR parts 1, 3, or 5; or

iv. Informing any other person about their rights under the DBA, Related Acts, or 29 CFR parts 1, 3, or 5.

B. Contract Work Hours and Safety Standards Act (CWHSSA)

The Agency Head must cause or require the contracting officer to insert the following clauses set forth in 29 CFR 5.5(b)(1), (2), (3), (4), and (5) in full, or (for contracts covered by the Federal Acquisition Regulation) by reference, in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses must

be inserted in addition to the clauses required by 29 CFR 5.5(a) or 4.6. As used in this paragraph, the terms “laborers and mechanics” include watchpersons 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 he or she is employed on such work to work in excess of forty 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 forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in 29 CFR 5.5(b)(1) the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. 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 watchpersons and guards, employed in violation of the clause set forth in 29 CFR 5.5(b)(1), in the sum of \$31 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in 29 CFR 5.5(b)(1).

3. Withholding for unpaid wages and liquidated damages

i. Withholding process The U.S Department of Housing and Urban Development or the recipient of Federal assistance may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in 29 CFR 5.5(b) on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in 29 CFR 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

ii Priority to withheld funds The Department has priority to funds withheld or to be withheld in accordance with 29 CFR 5.5(a)(2)(i) or (b)(3)(i), or both, over claims to those funds by:

- A.** A contractor’s surety(ies), including without limitation performance bond sureties and payment bond sureties;
- B.** A contracting agency for its procurement costs;
- C.** A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor’s bankruptcy estate;
- D.** A contractor’s assignee(s);
- E.** A contractor’s successor(s); or
- F.** A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901-3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in 29 CFR 5.5(b)(1) through (5) and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in 29 CFR 5.5(b)(1) through (5). In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss,

due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

- 5 Anti-retaliation** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:
- i. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in 29 CFR part 5;
 - ii. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or 29 CFR part 5;
 - iii. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or 29 CFR part 5; or
 - iv. Informing any other person about their rights under CWHSSA or 29 CFR part 5.
- C. CWHSSA required records clause** In addition to the clauses contained in 29 CFR 5.5(b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other laws referenced by 29 CFR 5.1, the Agency Head must cause or require the contracting officer to insert a clause requiring that the contractor or subcontractor must maintain regular payrolls and other basic records during the course of the work and must preserve them for a period of 3 years after all the work on the prime contract is completed for all laborers and mechanics, including guards and watchpersons, working on the contract. Such records must contain the name; last known address, telephone number, and email address; and social security number of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid; daily and weekly number of hours actually worked; deductions made and actual wages paid. Further, the Agency Head must cause or require the contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph must be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview workers during working hours on the job.
- D. Incorporation of contract clauses and wage determinations by reference** Although agencies are required to insert the contract clauses set forth in this section, along with appropriate wage determinations, in full into covered contracts, and contractors and subcontractors are required to insert them in any lower-tier subcontracts, the incorporation by reference of the required contract clauses and appropriate wage determinations will be given the same force and effect as if they were inserted in full text.
- E. Incorporation by operation of law** The contract clauses set forth in this section (or their equivalent under the Federal Acquisition Regulation), along with the correct wage determinations, will be considered to be a part of every prime contract required by the applicable statutes referenced by 29 CFR 5.1 to include such clauses, and will be effective by operation of law, whether or not they are included or incorporated by reference into such contract, unless the Administrator grants a variance, tolerance, or exemption from the application of this paragraph. Where the clauses and applicable wage determinations are effective by operation of law under this paragraph, the prime contractor must be compensated for any resulting increase in wages in accordance with applicable law.

F. HEALTH AND SAFETY

The provisions of this paragraph (F) 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 or her 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 29 CFR 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 U.S.C. § 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.

SECTION 00602

OSHA CERTIFICATION REQUIREMENT
& OSHA TRAINING ADVISORY

Effective **July 1, 2006**, all employees of a contractor to be employed on **public building and public works** worksites must have successfully completed at least a ten (10)-hour course in construction safety and health approved by the United States Occupational Safety and Health Administration (OSHA) at the time the employee begins work.

I, _____, as _____, of the
(Print Name) (Position with the entity submitting bid)

joint venture/corporation/partnership or other legal entity submitting this bid for a public works project, do hereby certify that any and all employees found on my worksite for this project have, or will have by the start of their work on the project, successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that was at least ten (10) hours in duration.

A copy of the OSHA completion cards for each employee must be submitted to the *Housing Authority* before work on this project is to begin and must be supplemented as new employees are hired or contracted to work on this project.

_____, as
Signature

_____, of
Position

_____, on _____
Company/Corp/Joint Venture/Partnership/Etc. Date

DOCUMENT 00603

**CERTIFICATE FROM CONTRACTOR
PAYMENT OF EMPLOYEES- HUD 5282**

The following HUD Document 5282 shall be an integral part of the Bid Documents, executed by the awarded Contractor as instructed herein.

**Certificate from Contractor Appointing
Officer or Employee to Supervise
Payment of Employee**

**U.S. Department of Housing
and Urban Development**
Office of Public and Indian Housing

Project Name _____ Date (mm/dd/yyyy) _____

Location _____ Project No. _____

(I) (We) hereby certify that (I am) (we are) (the prime contractor) (a subcontractor) for _____

(specify "General Construction," "Plumbing," "Roofing," etc.) in connection with construction of the above-mentioned Low-Rent Housing Project,

and that (I) (we) have appointed _____, whose signature

appears below, to supervise the payment of (my) (our) employees beginning (Date: mm/dd/yyyy) _____ ;

That he/she is in a position to have full knowledge of the facts set forth in the payroll documents and in the statement of compliance

required by the so-called Kick-Back Statue which he/she is to execute with (my) (our) full authority and approval until such time as (I)

(we) submit to the (Name of Local Authority) _____

a new certificate appointing some other person for the purposes hereinabove stated.

(Identifying Signature of Appointee)

Attest (If required)

(Name of Firm or Corporation)

(Signature)

By _____
(Signature)

(Title)

(Title)

(Date: mm/dd/yyyy)

(Date: mm/dd/yyyy)

Note: This certificate must be execute by an authorized officer of a corporation or by a member of a partnership, and shall be executed prior to and be submitted with the first payroll. Should the appointee be changed, a new certificate must accompany the first payroll for which the new appointee executes a statement of compliance required by the Kick-Back Statue.

DOCUMENT 00604

WEEKLY CERTIFIED PAYROLL FORM

The following U.S. Department of Labor Payroll Form shall be an integral part of the Bid Documents, executed by the awarded Contractor as instructed herein.

The Contractor is required to submit weekly certified payroll reports on the following U.S. Department of Labor Form WH-347. Weekly certified payroll reports must be submitted for both the Contractor and Subcontractors. A PDF version is available at the following website:
<https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347.pdf>

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)
_____ (Building or Work); that during the payroll period commencing on the _____ 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 _____

_____ (Contractor or Subcontractor) _____ from the full 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; 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.	

DOCUMENT 00605

**STATEMENT OF COMPLIANCE FORM
WH-348 WITH INSTRUCTIONS**

The following U.S. Department of Labor Statement of Compliance Form WH-348 shall be an integral part of the Bid Documents, executed by the awarded Contractor as instructed herein.

EXHIBIT VIII-T

STATEMENT OF COMPLIANCE, Form WH-348

U.S. DEPARTMENT OF LABOR
WAGE AND HOUR DIVISION

Form Approved
Budget Bureau No. 44-R1093

Date _____

I, _____, _____ do hereby state:
(Name of Signatory Party) (Title)

(1) That I paid or supervised the payment of the person employed by _____
_____ on the _____;
(Contractor or Subcontractor) (Building or Work)

during the payroll period commencing on the _____ day of _____
20__ and ending on the _____ day of _____ 20__ 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 _____
(Contractor or Subcontractor)

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 CFR Subtitle A),
issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948.63 Stat. 180, 72
Stat. 967; 76 Stat. 357; 40 U.S.C. 276c), 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.

EXHIBIT VIII-T, Cont.

(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 labor 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

EXCEPTIONS (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE (Typed)

SIGNATURE

THE LAWFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION (SEE SECTION 1001 OF TITLE 16 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.)

EXHIBIT VIII-T, Cont.

INSTRUCTIONS FOR PREPARATION OF STATEMENT OF COMPLIANCE

This statement of compliance meets needs resulting from the amendment of the Davis-Bacon Act to include fringe benefits provisions. Under this amended law, the contractor is required to pay fringe benefits as predetermined by the Department of Labor, in addition to payment of the minimum rates. The contractor's obligation to pay fringe benefits may be met by payment of the fringes to the various plans, funds, or programs by making these payments to the employees as cash in lieu of fringes.

The contractor should show on the face of his payroll all monies paid to the employees whether as basic rates or as cash in lieu of fringes. The contractor shall represent in the statement of compliance that he is paying to others fringes required by the contract and not paid as cash in lieu of fringes. Detailed instructions follow:

Contractors who pay all required fringe benefits:

A contractor who pays fringe benefits to approved plans, funds, or programs in amounts not less than predetermined in the applicable wage decision of the Secretary of Labor shall continue to show on the face of this payroll the basic cash hourly rate and overtime rate paid to his employees, just as he has always done. Such a contractor shall check paragraph 4(a) of the statement to indicate that he is also paying to approved plans, funds, or programs not less than the amount predetermined as fringe benefits for each craft. Any exception shall be noted in Section 4(c).

Contractors who pay no fringe benefits:

A contractor who pays no fringe benefits shall pay to the employee and insert in the straight time hourly rate column of his payroll an amount not less than the predetermined rate for each classification plus the amount of fringe benefits determined for each classification in the applicable wage decision. Inasmuch as it is not necessary to pay time and a half on cash paid in lieu of fringes, the overtime rate shall be not less than the sum of the basic predetermined rate, plus the half time premium of the basic or regular rate plus the required cash in lieu of fringes at the straight time rate. To simplify computation of overtime, it is suggested that the straight time basic rate and cash in lieu of fringes be separately stated in the hourly rate column, thus \$3.25/.40. In addition, the contractor shall check paragraph 4(b) of the statement to indicate that he is paying fringe benefits in cash directly to his employees. Any exception shall be noted in Section 4(c).

Use of Section 4(c), Exceptions

Any contractor who is making payment to approved plans, funds, or programs in amounts less than the wage determination requires is obligated to pay the deficiency directly to the employees as cash in lieu of fringes. Any exception to Section 4(a) or 4(b), whichever the contractor may check, shall be entered in Section 4(c). Enter in the Exception column the craft and enter in the Explanation column the hourly amount paid the employees as cash in lieu of fringes, and the hourly amount paid to plans, funds, or programs as fringes.

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Washington DC 20402

SECTION 00606

CONTRACTOR'S EQUAL EMPLOYMENT CERTIFICATION

_____ certifies that it

1. intends to use the following listed construction trades in the work under the Contract:

2. will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. will obtain from each of the subcontractors, prior to the award of any subcontract under this Contract, a subcontract certification.

(Signature of authorized representative of Contractor)

(Date)

(Name and Title)

SECTION 00700

PAWTUCKET HOUSING AUTHORITY AFFIRMATIVE ACTION GOALS

POLICY:

The Pawtucket Housing Authority has adopted, as part of its Affirmative Action Plan, a resolution that all contracts awarded by the Authority shall have a goal of twenty percent (20%) for Minority and women Business Enterprise participation. It is its objective in carrying out its Affirmative Action Plan that MBE/WBEs shall have the maximum opportunity to participate in the performance of this contract.

MBE/WBE/DisBE OBLIGATION:

Bidders on this contract are requested to establish a goal to commit to MBE/WBEs twenty percent (20%) of the total dollar amount of the construction contract. All minority businesses utilized are required to be MBE, WBE and/or DisBE certified. Bidders are requested to use positive efforts to utilize minorities from the Directory supplied by the State Office of Diversity, Equity & Opportunity.

MINORITY SUPPLIERS:

Minority suppliers can be counted for up to fifty percent (50%) of the goal.

PAWTUCKET HOUSING AUTHORITY LOCAL HIRING PREFERENCE

POLICY:

The Pawtucket Housing Authority has adopted, as part of its Local Hiring Preference, a resolution that all contracts awarded by the Authority shall have a goal of a minimum of thirty percent (30%) for hiring of residents of the city of Pawtucket. It is its objective in carrying out its Local Hiring Preference that residents of the city of Pawtucket shall have maximum opportunity to participate in the performance of this contract.

LOCAL HIRING PREFERENCE OBLIGATION:

Bidders on this contract are requested to establish a goal to commit to a minimum of thirty percent (30%) of the total project labor force being residents of the city of Pawtucket. Bidders are requested to use positive efforts to employ residents of the city of Pawtucket.

SECTION 00701

HUD SECTION 3 BUSINESS CONCERN PREFERENCE

The *Pawtucket Housing Authority* will give preference to Section 3 business concerns when feasible. The purpose of Section 3 of the Housing and Urban Development Act of 1968, as amended by section 915 of the Housing and Community Development Act of 1992, is to "Ensure that employment and other economic opportunities generated by HUD financial assistance shall, to the greatest extent feasible and consistent with existing Federal, State and local laws and regulations be directed toward low and very low income persons, particularly those who are recipients of government assistance for housing and to business concerns which provide economic opportunities to low and very low income persons." If you or your business is claiming a section 3 business concern preference, you must contact the *Pawtucket Housing Authority* prior to submitting bids/proposals. Please ask for the Section 3 business concern application and submit prior to bid deadline or at bid opening.

HUD Section 3 Business Concern Preference, Section 3 does not require that jobs be created for the sake of creating positions. Section 3 requires **WHEN** employment or contracting opportunities are generated because a project or activity undertaken is paid for with federal funding the business/recipient must give preference to hiring Section 3 residents.

Section 3 residents **MUST** demonstrate that they meet the qualifications for new employment opportunities.

Employment goals are based on "new hires", which is defined as full-time employees for permanent, temporary or seasonal employment opportunities that are created during the expenditure of Section 3 covered financial assistance work.

If Section 3 covered assistance is awarded and the recipient has **NO** need for additional employees or trainees, or the recipient has no need to contract for work, then Section 3 requirements are **NOT** triggered.

All employment opportunities generated by the expenditure of development, operating and modernization assistance, including management and administrative jobs, technical, professional, construction and maintenance jobs; and jobs at all levels shall be paid the on-going rate for the job. Even apprenticeship jobs must be paid the apprenticeship rates as determined by Davis-Bacon.

For example: If the Davis-Bacon rate for a painter for this project is \$31.52 plus \$19.35 per hour the Section 3 resident must be paid the same rate and benefits; if a payroll clerk is hired for this project and the current rate is \$22.01 plus fringe benefits, the Section 3 resident must be paid the same rate and benefits.

END OF SECTION

Section 00702

Equal Employment Opportunity Requirements

Attachment A

Notice of Requirement for Affirmative Action to Ensure Equal employment Opportunity (Executive Order 11246).

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's workforce in each trade on all construction work in the covered area, area as follows:

Female:	6.9%
Minorities:	1.6%

These goals are applicable to all Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and regulations of 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any other construction subcontract in excess of \$10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number, estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.
4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is:

Female:	Nationwide
Minorities:	Pawtucket, Rhode Island

Equal Employment Opportunity Requirements

Attachment B

The applicant 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 a 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 consideration 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 he 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 contractors' 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 his books, records and accounts by the administering agency and the Secretary of Labor for purposes 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 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 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 non-compliance: 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 responsibilities for securing compliance.

The applicant further agrees that it will refrain from entering into any contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contract 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 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.

Equal Employment Opportunity Requirements

Attachment C

Standard Federal Equal Employment Opportunity Construction Specifications (Executive Order 11246)

1. As used in these specifications:
 - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted.
 - b. "Director" means director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority.
 - c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941.
 - d. "Minority" includes:
 - I. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - II. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - III. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - IV. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any time, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000.00 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which the contract resulted.
3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U. S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area

(including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to make good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in Paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.
7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
 - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to

community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization's responses.

- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunity and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards, accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, lay-off, termination or other employment decisions including specific review of these terms with on-site supervisory personnel such as Super- intendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposi- tion of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contrac-

tors and Subcontractors with whom the Contractor does or anticipates doing business.

- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one (1) month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
 - j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
 - k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
 - l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
 - m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
 - n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
 - o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers including circulation of solicitations to minority and female contractor associations.
 - p. Conduct a review, at least annually, of ally supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and a participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these specifications provided that the contractor actively participates in the group, makes every effort to

assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may also be in violation of the Executive Order if a specific minority group of women is under-utilized.
10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-40.3.
14. The Contractor, shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records shall at least include for each employee the name, address, telephone number, construction trade, union affiliation, if any, employee identification number when assigned, social security number, race, sex, status (e.g. mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be

maintained in an easily understandable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program.

SECTION 00703

**NOTICE OF AWARD OF CONSTRUCTION CONTRACTS
AND SUBCONTRACTS IN EXCESS OF \$10,000**

NOTICE OF AWARD OF CONSTRUCTION CONTRACTS AND SUBCONTRACTS IN EXCESS OF \$10,000. FORWARD NOTICE TO ADDRESSEE INDICATED BELOW WITHIN TEN (10) DAYS OF EXECUTION OF ALL NON-EXEMPT CONTRACTS.*

Project No.: _____

Project Name: _____

Project Location: City: PAWTUCKET
 County: PROVIDENCE State: RHODE ISLAND

Name of Prime Contractor: _____

Subcontractor: Name: _____
 Address: _____

Federal Employer Tax No. (used on form 941) _____

Subcontract Amount: \$ _____

Estimated Starting Date: _____

Estimated Completion Date: _____

If project is located in Eastern Massachusetts, Maine, New Hampshire, Vermont – **send Notice to:**

UNITED STATES DEPARTMENT OF LABOR, ESA
OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS
JFK FEDERAL BUILDING
ROOM E235
BOSTON, MASSACHUSETTS 02203
Telephone: 617-565-2055

*IF, DURING ANY TWELVE (12) MONTH PERIOD (INCLUDING THE TWELVE (12) MONTHS PRECEDING THE AWARD OF THIS CONTRACT), THE CONTRACTOR HAS BEEN OR IS AWARDED NON-EXEMPT FEDERAL CONTRACTS AND/OR SUBCONTRACTS THAT HAVE AN AGGREGATE VALUE IN EXCESS OF \$10,000.00, THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF E.O. 11246 AS AMENDED BY E.O. 11375.

DOCUMENT 00704

**EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS
STANDARD FORM- 257**

The following Equal Employment Opportunity Requirements Standard Form- 257 shall be an integral part of the Bid Documents, executed by the awarded Contractor as instructed herein.

**EQUAL EMPLOYMENT
OPPORTUNITY REQUIREMENTS**

STANDARD FORM - 257 (Aug. 1976) As prescribed by the Dept. of Labor (OEOCP)	MONTHLY EMPLOYMENT UTILIZATION REPORT (See reverse for instructions)	Reporting Period (Month, Year)

This report is required by Executive Order 11246, Section 203. Failure to report can result in sanctions which include suspension, termination, cancellations or debarment of contract.

To: (Name & location of Compliance Agency)	From: (Name & location of Contractor)

1. Company's Name (I.D.)	2. Trade	3. Work Hours of Employment. (See footnote)						4. % minority w/h of total w/h	5. Total number of minority Employ- ees	6. Total numbe of Emple ees
		Classi- fica- tions	a. Total	b. * Black	c. * His- panic	d. * Amer. Indian	e. * Asian/ Pacific Island	f. ** Total Fe- male		
		C								
		Ap								
		Tr								
		C								
		Ap								
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		Ap								
		Tr								
		C								
		Ap								
		Tr								

7. Company Official's Signature & Title	8. Date Signed	9. Telephone Number (Include Area Code)

EQUAL EMPLOYMENT
OPPORTUNITY REQUIREMENTS

INSTRUCTIONS FOR FILING EMPLOYMENT UTILIZATION REPORT (SF-257)

The Employment Utilization Report is to be completed by each subject contractor (both prime and subcontractors) and signed by a responsible official of the company. The reports are to be filed on the day required, each month, during the term of the contract, and they shall include the total work-hours worked for each employee level in each designated trade for the entire reporting period. The prime contractor shall submit a report for its aggregate work force and shall collect and submit reports for each subcontractor's aggregate work force to the Federal Compliance Agency that is funding their construction project.

Reporting Period.....Self-explanatory

Compliance Agency.....U. S. Government contracting or administering agency responsible for equal employment opportunity on the project.

Contractor.....Any contractor who has a construction contract with the U. S. Government or applicant
(See OFCCP Regs. 60-1,3).

1. Company's Name.....Any contractor or subcontractor who has a federally-involved contract.

2. Trade.....Only those crafts covered under applicable Federal EEO bid conditions.

3. Work-hours of Employment.....The total number of hours worked by all employees in each classification; the total number of hours worked by each *minority group in each classification and the total work-hours for all women.

Classification.....The level of accomplishment or status of the worker in the trade. (C = Craftworker - Qualified, Ap = Apprentice, Tr = Trainee)

4. Percent of minority work-hours of total work-hours.....The percentage of total minority work-hours worked of all work-hours worked. (The sum of columns b, c, d and e divided by column a.)

5. Total number of minority employees.....Number of minority employees working in contractor's aggregated work force during reporting period.

6. Total number of employees.....Number of all employees working in contractor's aggregate work force during reporting period

*Minority is defined as including Blacks, Hispanics, American Indians and Asian

SECTION 00705

SCHEDULE OF PARTICIPATION BY MBEs and WBEs

PRIME BIDDER

NAME	ADDRESS	<u>PROJECT</u> NAME/NO.	ADDRESS

MBE/WBE

NAME	ADDRESS	TYPE OF PARTICIPATION	AMOUNT

NOTE: ALL OF THE ABOVE MUST BE CERTIFIED BY SOMWBA.

SECTION 00706

LETTER OF INTENT FOR MBE/WBE PARTICIPATION
(to be completed by MBE & WBE and submitted by General Bidders)

To: PRIME BIDDER

NAME	ADDRESS	<u>PROJECT</u> NAME/NO.	ADDRESS
_____	_____	_____	_____
_____	_____	_____	_____

From: MBE/WBE (circle one)

NAME	ADDRESS
_____	_____
_____	_____

1. My company intends to perform work in connection with the above project as: (check one)

_____ an individual	_____ a joint venture with:
_____ a corporation	_____
_____ a partnership	_____ other:

 2. My company has been certified by the State Office of Minority and Women Business Assistance (SOMWBA) and it has not changed its minority ownership, control or management without notifying SOMWBA within thirty (30) days of such change.

 3. My company understands that if your company is awarded the contract, your company intends to enter into an agreement with my company to perform the activity described below for the amounts indicated.

 4. TYPE OF PARTICIPATION (specify in detail particular work items or parts thereof to be performed)

 - 5, AMOUNT OF PARTICIPATION (specify price & quantity)

-
<u>MBE/WBE AUTHORIZED AGENT</u>	_____ (title)
_____	_____ (date)

SECTION 00707

MINORITY/WOMEN BUSINESS ENTERPRISE IDENTIFICATION STATEMENT

(to be completed by MBE/WBE and submitted by General Contractor)

1. Name of Minority/Women Business Enterprise:

Year Business Established: _____

2. Address and Telephone Number: _____

3. Name of Principal Officer: _____

4. Classification of Work: _____

5. Specialty Items (if applicable): _____

6. Number of persons involved in management of contractor and positions held
(indicate those who are minority/women persons):

7. If a corporation, describe classes of stock and state percentage of each owned
by minority/women persons:

8. If a partnership:

- (a) Number of persons (indicate who are minority/women persons):

- (b) Describe interests of partners (if all are not equal general partners):

9. If a joint venture:

- (a) Fill out an additional form for the joint venturer who is a minority/
women contractor.
- (b) Describe division of management responsibility and profits-sharing as
between the joint venturers:

10. If a proprietorship, indicate if such proprietor is a minority/women person:

11. The undersigned agrees to provide other relevant information concerning owner-
ship and control if requested to do so by the Authority or its representative.

Name of Minority/Women Business Enterprise

By _____
Name of Principal Officer

Date _____

Title _____

NOTE: Minority person means an individual who is Black, Hispanic, Asian-American,
American Indian, Alaskan Native, or a woman, regardless of race or ethnicity.

Minority/Women Business Enterprise means an enterprise which is:

- 1) An individual who is a Minority/Women Person;
- 2) A partnership or joint venture controlled by Minority/Women Persons
and in which at least fifty-one percent (51%) of the beneficial ownership
interests are held by Minority/Women Persons; or,
- 3) A corporation or other entity controlled by Minority/Women Persons in
which at least fifty-one percent (51%) of the voting interests and fifty-one
percent (51%) of the beneficial ownership interests are held by Minority/
Women Persons.

SECTION 00708

MINORITY/WOMEN BUSINESS ENTERPRISE UNAVAILABILITY CERTIFICATION
(to be completed by General Contractor & MBE/WBE)

I, _____, _____, of
(Name) (Title)
_____, certify that on _____
(Prime Bidder) (Date)

I contacted the following Minority/Women Business Enterprise to obtain a bid for work items to be performed on *PHA* Contract: _____.

Minority/Women Contractor	Work Items Sought	Form of bid sought (i.e., unit price, materials & labor, labor only, etc.)
_____	_____	_____

To the best of my knowledge and belief, said Minority/Women Business Enterprise was unavailable for work on this project, or unable to prepare a bid for the following reason(s):

Signature: _____

Date: _____

_____ was offered an opportunity to bid on the
(Name of Minority/Women Business Enterprise)
above-identified work on _____ by _____.
(Date) (Source)

The above statement is a true and accurate account of why I did not submit a bid on this project.

(Signature of Minority/Women Business Enterprise)

Title: _____

SECTION 01012

CONTRACTOR'S USE OF THE PREMISES

PART 1 – GENERAL

1.01 DESCRIPTION:

- A. Work Included: This Section applies to situations in which the Contractor or his representatives including, but not necessarily limited to, suppliers, subcontractors, employees, and field engineers, enter upon the Owner's property.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections of Division 1 of these specifications.

1.02 QUALITY ASSURANCE:

- A. Promptly, upon award of the Contract, notify all pertinent personnel regarding requirements of this Section.
- B. Require that all personnel who will enter upon the Owner's property certify their awareness of and familiarity with the requirements of this Section.
- C. The Prime Contractor and his subcontractors shall wear an appropriate form of identification, whether it be a photo ID, shirt or jacket with company logo, etc.
- D. The Prime Contractor and his subcontractors shall park their personal vehicles in appropriate locations off the Owner's site. One company vehicle of the prime contractor may be parked on the site at any time unless otherwise authorized in writing, by the Owner.

1.03 SUBMITTALS:

- A. Maintain an accurate record of the names and identification of all persons entering upon the Owner's property in connection with the work of this Contract, including times of entering and times of leaving, and submit a copy of the record to the Owner daily.

1.04 TRANSPORTATION FACILITIES:

- A. Truck and equipment access:
 - 1. To avoid traffic conflict with vehicles of the Owner's employees and customers, and to avoid over-loading of streets and driveways elsewhere on the Owner's property, limit the access of trucks and equipment to the route provided by or directed by the Owner.
 - 2. Provide adequate protection for curbs and sidewalks over which trucks and equipment pass to reach the job site.
- B. Contractor's Vehicles:
 - 1. Contractor's vehicles, vehicles belonging to employees of the Contractor, and all other vehicles entering the Owner's property in performance of the work of the Contract, shall use only the access route provided by or directed by the Owner.

2. Do not permit such vehicles to park on any street or other area of the Owner's property except in the areas directed or provided by the Owner.
3. Contractor shall assume sole responsibility for all parking and traffic violation of employees, subcontractors, suppliers, etc.

1.05 HOISTING:

- A. **Only the elevator that is decommissioned for modernization may be used for hoisting equipment/stocking the roof. The other elevator at such building must remain in service for use, only by building occupants.**
- B. The Contractor submit to the Architects and Owner, a 'pick/lift plan', prepared by the crane company prior to scheduling all crane visits to the sites.

1.06 SECURITY:

- A. Restrict the access of all persons entering upon the Owner's property in connection with the work to an Access Route authorized by the Owner.

1.07 GENERAL:

- A. Contain operations at site to areas permitted by:
 1. Law
 2. Ordinances
 3. Owner
 4. Contract Documents
- B. Do not unreasonably encumber site with materials or equipment.
- C. **Do not load the building or building components with weight that will endanger the structures.**
- D. **The load capacity for building storage (roof, floors, etc.), for material weighing over 100 lbs. per square foot, shall be determined and certified by a Rhode Island licensed professional structural engineer, hired by, and being the full responsibility of the Contractor, with the Contractor bearing all related costs.**
- E. Assume full responsibility for protection and safekeeping of products stored on premises.
- F. Move any stored products which interfere with operations of Owner or other Contractor.
- G. Obtain and pay for use of additional storage or work areas needed for operations.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01015

EXISTING CONDITIONS

PART 1- GENERAL

1.01 SUMMARY

A. EXISTING CONDITIONS SURVEY

- A. Before submitting a bid, the Contractor shall make a thorough examination of the conditions of the site, checking the requirements of the Plans and Specifications with the existing conditions.
- B. No claim for extra compensation or extension of time will be allowed on account of the Contractor's failure to estimate properly the quantities, locations and measurements of all items required to complete the work.
- C. The Contractor shall report any discrepancies to the Architect and request and interpretation before submitting a bid.
- D. The Development will remain occupied for the duration of the Contract.
- E. Refer also to Division 14 herein.

END OF SECTION

SECTION 01020

PROJECT ALLOWANCES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Intent: To provide adequate budget and bonding to cover items not precisely determined by the Owner prior to bidding. Allow within the proposed Contract Sum the amounts described below. Project Allowance shall be included in the Bid Price.
- B. Entire Project Allowance and/or portions of any Project Allowances may be deleted to lower the Base Bid Price prior to Award of Contract and/or after Award of Contract.
- C. Related Work:
 - 1. Documents affecting work of this section including but not necessarily limited to General Conditions, Supplementary Conditions, and sections in Division 1 of these Specifications. Any unused portion of the following "Project Allowances" shall be refunded to the Owner upon final completion of the project.
 - 2. Other provisions concerning Project Allowances may also be stated in other Sections of these specifications.
 - 3. Contractor shall submit original receipts and complete time and materials break-down for all Project Allowance items.

1.02 SPECIFIC PROJECT ALLOWANCE:

- 1. Allow the sum of Two Hundred Thousand Dollars (\$200,000). One Hundred Thousand Dollars (\$100,000) per building.**

1.03 GENERAL

- A. Adjustment of Costs:
 - 1. Should actual purchase cost be more than specified amount of allowance, the Contract Sum will be adjusted by Change Order, equal to the amount of the difference.
 - 2. Contractor shall include in the Base Bid, the full amount of allowances whether or not any Bid Alternate is implemented.
 - 3. Any allowance amount or unused portion of each allowance amount shall be refunded to the Owner at any time prior to Award of Contract and/or throughout the Construction Phase at Owner and Architect discretion.
 - 4. Utilization of each and any project allowance shall be via written authorization of the Owner and/ or Architect.

PART 2 – PRODUCTS

Note Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01070

ARCHITECTURAL ABBREVIATIONS AND SYMBOLS

1.01 Reference to a technical society, institution, association or governmental authority is made in the Specifications in accordance with the following abbreviations:

AAMA	Architectural Aluminum Manufacturers Association
AASHO	American Association of State Highway Officials
AC OR ACOUS	Acoustical
ACI	American Concrete Institute
ADJ	Adjustable
A/E	Architect/Engineer
A.F.F.	Above Finish Floor
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AL or ALUM	Aluminum
ALS	American Lumber Standards
ALT	Alternate
A.P.	Access Panel
APA	American Plywood Association
APPROX.	Approximate
ARCH	Architectural
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
@	At
ATI	Asphalt Tile Institute
A/V	Audio Visual
AWI	Architectural Woodwork Institute
AWPA	American Wood Preserver's Association
AWPI	American Wood Preserver's Institute
AWS	American Welding Society
B.C.I.	Background Criminal Investigation
BD.	Board
BLK'G.	Blocking
BM.	Beam
BOTT. or BOT.	Bottom
BRK	Brick
BS or BACKSP.	Back Splash
BULL.BD.	Bulletin Board
CAB.	Cabinet
CARP.	Carpet
C.B.	Catch Basin
CEIL'G or CLG.	Ceiling
CHBD.	Chalkboard
CHEM.	Chemical or Chemistry
C.J.	Control Joint
CLOS.	Closet
C.M.U.	Concrete Masonry Units
COL.	Column
COMP.	Computer
CONC.	Concrete
CONC.BLK.	Concrete Block
CONF.	Conference

CONT. or CONTIN.	Continuous
CONTR.	Contractor
COV'RD.	Covered
CR.	Classroom
C.S.	Commercial Standard U.S. Department of Commerce
C.S.I.	Construction Specifications Institute
C.T.	Ceramic Tile
DEPT.	Department
DET.	Detail
D.F.	Drinking Fountain
DIM.	Dimension
DISP.	Dispenser
DR.	Door
D.S.	Drench Shower or Downspout (use applicable)
D.W.	Dish Washer
DWG.	Drawing
EL. or ELEV.	Elevation
ELEC.	Electrical
ELEV.	Elevator
ENT. or ENTR.	Entrance
EP. RES.	Epoxy Resin
EQ.	Equal
EQUIP.	Equipment
EXIST. or	
EXIST'G or E.	Existing
EXP.	Exposed
EXP. JT.	Expansion Joint
EXP. STR.	Exposed Structure
F.A.	Fresh Air
F.B.	Fiber Board
F.D.	Floor Drain
F.E.	Fire Extinguisher
FGJA	Flat Glass Jobbers Association
FIN	Finish(ed)
FL. or FLR.	Floor (ing)
FLG.	Flashing
F.M.	Factory Mutual
F.N.D.	Feminine Napkin Disposal
F.O.	Face Of
F.O.B.	Face Of Brick
F.O.S.	Face Of Stud
F.P.	Fire Proofing
FS	Federal Specification
G.A.	Gypsum Association
GALV.	Galvanized
G.B.	Glazed Block or Grab Bar
G.C.	General Contractor
GEN.	General
GL.	Glass
G.P.D.W.	Gypsum Drywall
G.W.B.	Gypsum Wallboard
GYP.	Gypsum
GYP. BD.	Gypsum Board
H.C.	Handicap
H.M.	Hollow Metal
H.M.U.	Hollow Masonry Unit
HT. or HGT.	Height
HVAC	Heating, Ventilating and Air Conditioning

ICBO	Uniform Building Code
IES	Illuminating Engineering Society
INSUL.	Insulation or Insulated
J. or JAN.	Janitor
KIT.	Kitchen
LAB.	Laboratory
LAD.	Ladder
L.A.R.R.	Liquid Applied Rubber Roofing
L.C.C.	Lead Coated Copper
L.W.S.	Liquid Writing Surface
M.	Man
MAN.	Manual
MAS. or MSRY.	Masonry
MAX.	Maximum
MECH.	Mechanical
MED.	Medium
MFGR. or MANF.	Manufacturer
MIA	Marble Institute of America
MIN.	Minimum
M. or MIR.	Mirror
MLMA	Metal Lath Manufacturers Association
M.O.	Masonry Opening
MOD.	Modular
MS	Military Specification
MSTD	Military Standard
MTD.	Mounted
MTL. or MET.	Metal
NAAMM	National Association for Architectural Metal Manufacturers
NAT.	Natural
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards'
NEC	National Electrical Code of NBFU
NFPA	National Fire Protection Association
N.F.R.	Nonwoven Fiberglass-Reinforced
NHLA	National Hardwood Lumber Association
N.I.C.	Not In Contract
NLMA	National Lumber Manufacturers Association
NO. or #	Number
NTMA	National Terrazzo and Mosaic Association, Inc.
N.T.S.	Not To Scale
NWMA	National Woodwork Manufacturers Association
O.C.	On Center
O. D.	Outside Diameter
OFF.	Office
O.H.	Overhead
O.I.	Owner's Insurance
OPP. HAND.	Opposite Hand
ORIG.	Original
OZ.	Ounce
PASS.	Passage
P.E.P.	Polyester Epoxy Paint
PL.	Plate
P.LAM.	Plastic Laminate
PLYD. or PWD.	Plywood
PNL.	Panel
PORT.	Portable
P.P.	Pitch Pocket
PREP.	Preparation

PROJ.	Project(ion)
PTD. or PT.	Painted
P.T.	Pressure Treated
P.T.D.	Paper Towel Dispenser
P.T.H.	Paper Towel Holder
PTN. or PART.	Partition
R.	Riser
R.B.	Rubber Base
R.D.	Roof Drain
REF.	Reference
REFRIG.	Refrigerator
REFIN.	Refinish
REQ'D or REQ.	Required
REINF.	Reinforced(ing)
RESIS.	Resistant
R.H.	Roof Hatch
R.L. or R.W.L.	Rain Water Leader
RM.	Room
R.T.U.	Roof Top Unit
RUB.	Rubber
R.V.	Roof Vent
R.V.T.	Reinforced Vinyl Tile
S.	Sink
SAN.	Sanitary
S.A.T.	Suspended Acoustical Tile
S.B.C.C.I.	Standard (Southern) Building Code
S.C.	Solid Core
SCHED.	Schedule
SCPI	Structural Clay Products Institutes
S.D.	Standard Detail or Soap Dispenser
SDI	Steel Deck Institute
SECT.	Section
SH. or SHLV.	Shelf - Shelving
SHT.	Sheet
SHWR.	Shower
SIM.	Similar
SMACNA	Sheet Metal and Air Conditioning Contractors National Association Inc.
S.N.D.	Sanitary Napkin Dispenser
SPEC.	Specification
SPR	Simplified Practice Recommendation, U.S. Department of Commerce
SSPC	Steel Structures Painting Council
STL. or ST.	Steel
STN. STL. or S.S.	Stainless Steel
STOR.	Storage
STRUCT.	Structural
SUPP.	Supplementary
SUSP.	Suspended
T. or TOIL.	Toilet
T.B. or TKBD.	Tackboard
TCA	Tile Council of America
TEL.	Telephone
TEMP.	Tempered
THK.	Thickness
TKS.	Thickness
T.M.	Tilt Mirror
T.O.S.	Top of Steel
TYP.	Typical
U.L.	Underwriter's Laboratories, Inc.

ULC	Underwriter's Laboratories of Canada
USA	U.S. of America Standards Association
U.V.	Unit Ventilator
VAR.	Varnish
V.A.T.	Vinyl Asbestos Tile
V.C.B.	Vinyl Cover Base
V.B.	Vinyl Base
VEST.	Vestibule
VERT.	Vertical
W.	Women
W/	With
WD.	Wood
WDW. or WIN.	Window
W.H.	Wall Hung
W.R.	Wall Receptacle
W.W.F.	Welded Wire Fabric

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01072

DEFINITIONS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. The General Conditions and applicable portions of Division 1 of the Project Manual are a part of this Section.

1.02 DEFINITIONS:

- A. Purchaser, Owner Agent, Pawtucket Housing Authority means the Owner.
- B. A/E shall mean the Architect who has a Contract with the Owner.
- C. Contractor shall mean the person or firm under Contract with the Owner to construct the project.
- D. "Furnish" and "provide" means to supply, erect, install and connect up complete in readiness for regular operation, particular work referred to, unless otherwise specified.
- E. "Supply" means purchase and delivery of material to the site.
- F. "Install" means to erect in place the supplied item.
- G. The term "Owner-Contractor Agreement" where used therein shall refer to the Owner's purchase order.
- H. The term "Change Order" where used herein shall refer to the Owner's purchase change order.
- I. Award of Contract and Date of Purchase Order refer to the same.
- J. "Day", as used throughout the contract unless otherwise stated, means "calendar day".

1.03 THE WORK:

- A. The work comprises the completed construction and documentation required by the Contract Documents and includes all labor needed to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction, and all manuals, reports, tests, releases, punch lists, operating instructions and the like to provide new work as shown on the Contract Documents.

1.04 DATE OF SUBSTANTIAL COMPLETION:

- A. The Date of Substantial Completion of the Work or designated portion thereof, is the date certified by the Architect when construction is sufficiently complete (90% to 95%), in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or designated portion thereof, for the use for which it is intended.

1.05 DATE OF FINAL COMPLETION (FULLY COMPLETED):

- A. The Date of Final Completion of the Work is the date certified by the A/E when he finds all Work is acceptable and has been performed and completed in accordance with the terms and conditions of the Contract Documents.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 01100

SUMMARY OF THE WORK

PART 1 - GENERAL

1.01 SUMMARY

A. Project Identification: Elevator Upgrades at:

Fogarty Manor, Project RI 2-4
214 Roosevelt Avenue
Pawtucket, RI 02860

Kennedy Manor, Project RI 2-3,5
175 Broad Street
Pawtucket, RI 02860

- B. The scope of work at the above developments consists of the modernization of elevator components of four (4) elevators in total (2 per building). Fogarty Manor is a fifteen (15)-story building and Kennedy Manor is a nine (9)-story building. Components include, but are not limited to new controls, hoist machines and deflector sheaves, governors, car frames and safety systems (roller guides, slings, platforms, and elevator safeties), counterweight frames, counterweight plates, hoist ropes, car and hoistway door equipment, cab enclosures, car and hall station fixtures, traveling cables and hoistway wiring, buffers and pit equipment, including cleaning of guide rail supports. Work also includes incidental electrical, lighting, and fire alarm system upgrades, and mechanical heating, cooling, and ventilation upgrades.
- C. This project is a major elevator modernization in an existing building that resides tenants, is open for public business, and will continue to operate throughout all phases of required work. It is essential that the Contractor give special attention and priority to all matters concerning project safety, protection from dust and loose materials, reduction of noise level, protection from water and air infiltration into the building, and maintenance of neat, sightly conditions in and around work areas inside and outside of the building. Packaging, scrap materials, and demolition debris shall be promptly removed from the building and site on a daily basis. Provide equipment as specified, utilizing existing and/or modified hoistways and machine rooms. Coordinate installation of LAN cabling in hoistway and machine room. Include all costs in bid, including the required time to assist with LAN cable installation. No additional fees will be accepted for coordination and assisting with cable installation by the electrical contractor. The new elevator components shall be provided to function a complete system, for a complete and proper job. The submitted products shall function harmoniously for a complete and proper installation. All incidental components shall be engineered by the product manufacturers so as to properly maintain the existing speed and weight capacity of the existing elevators. Refer to Division 14, Modernization of Electric Traction Elevators, 2.5, Elevator Alterations.
- D. Permits and Fees:
1. Refer also to Summary of the Work in Section 14220 herein.
- E. Permits and Fees:
2. Apply for, obtain and pay for permits and fees required.
 3. The Building permit will be issued by the *City of Pawtucket*.
 3. All other applicable permits will also be issued by the *City of Pawtucket*.
 4. Submit copies of all permits to Architect.

- F. Codes: Comply with applicable codes and regulations of authorities having jurisdiction. Submit copies of inspection reports, notices and similar communications to Architect.
- G. Dimensions: Verify dimensions indicated on drawings with field dimensions, prior to submitting Bid. Do not scale drawings.
- H. Existing Conditions: Notify Architect of existing conditions differing from those indicated on the drawings.
- I. Refer to Section 00502, Special Conditions for additional information.

1.02 RELATED WORK:

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of the Project Manual are a part of this section which shall consist of all labor, equipment and materials necessary to complete all work indicated on the drawings, herein specified, or both; and as related to the project or projects defined in the Bidding and Contract requirements.
- B. The specification format used herein is in accordance with the master CSI format, and in no way intends to restrict this Contractor from expediting his work as he sees fit, nor is there any intention of segregating the units of work as related to specific trades involving jurisdictional labor problems.

1.03 PROJECT COORDINATION:

- A. The Contractor selected to complete work specified herein shall also be responsible for coordinating the work of other trades. All work or portions thereof shall be completed simultaneously. The G.C.'s designated Superintendent shall be on site at all times while any work is taking place, or while any of the G.C.'s Vendors, Subcontractors. Personnel, deliveries, etc. are being performed.
- B. The Contractor will be allowed to work on two (2) buildings at the same time; however, only one (1) of the two (2) elevators per building shall be out of service at one time. The project schedule is to be developed by the Contractor and reviewed and approved by the Owner. Refer to 1.03 PROJECT COORDINATION item L. for additional information.**
- C. The Contractor shall provide all work incidental to and necessary for a complete and proper installation of the specified and intended work of the Project.
- D. Prior to removing existing improvements, consult with Owner to determine which improvements will be turned-in to the Owner. If Owner does not wish to keep existing improvements, Contractor shall dispose of item in a legal and approved manner.
- E. Provide all core drilling and demolition work necessary to accommodate the specified work and all related work without creating structural or other damage. Patch and repair all wall, floor and ceiling assemblies with approved construction materials to match existing construction materials. Provide fire rated materials between fire separation wall assemblies, minimum two (2)-hour U.L. approved. Visit the site and become familiar with the intended work prior to submitting bid.
- F. Visit the site and become familiar with the specified and the intended work prior to submitting bid.

- G. Secure and pay for, as necessary for proper execution and completion of the work, and as applicable at time of receipt of bids, the following:
 - 1. All permits
 - 2. Government Fees
 - 3. Licenses
 - 4. Utility Company Charges.
- H. Give required notices.
- I. Lay out all work and be responsible for all lines, elevations and measurements. Verify the figures shown before laying out the work and be responsible for any error resulting from failure to do so.
- J. Notify all trades, subcontractors and suppliers of all designated alternative and be responsible for their coordination.
- K. Coordinate the work of all trades. All mechanical and electrical work shall be completed by qualified Contractors licensed in the State in which the work is being performed.
- L. The Contractor shall be responsible for carefully coordinating all proposed demolition work and new construction work with the Owner. The Owner must maintain use of the sites during the Construction Phase. The Contractor may be required to complete work in several phases. Plan accordingly and include all related costs in the Base Bid. Consult Owner prior to submitting bid.

1.04 GENERAL RESPONSIBILITIES OF THE CONTRACTOR:

- A. The Contractor shall be responsible for all personnel involved in the work, including those of his direct employ, his subcontractors and suppliers of materials and equipment and/or labor. The Technical Specifications have been divided for convenience only, to cover the Scope of Work, and where reference to a particular Contractor is noted, it is for convenience only. **The Owner and A/E recognize only one Contractor as a party to this Contract.**
- B. Except as specifically noted, provide and pay for:
 - 1. Labor, materials and equipment
 - 2. Tools, construction equipment and machinery
 - 3. Water, heat and utilities required for construction - unless otherwise directed herein.
 - 4. Other facilities and services necessary for proper execution and completion of work
- C. Owner is exempt from sales tax on products permanently incorporated in the work.
- D. The Contractor and his subcontractors who are selected to complete the proposed new work shall have a minimum of five (5) consecutive years' experience providing similar work to that specified.
- E. **The Contractor shall be responsible for supervision of their Subcontractors. The Contractor shall be on site at all times to perform Subcontractor supervision. Subcontractors will not be allowed to work on site without the presence of the General (Prime) Contractor.**
- F. This Contractor shall complete all work within the specified amount of days described in other sections herein.
- G. The Contractor shall be responsible for patching, repairing and restoring to original new condition, all portions of the site and building damaged and or adversely affected in any way

during construction. The Owner and the Architect shall review and approve any and all new work and related restoration work prior to the Contractor considering work to be complete.

- H. Submit original receipts for all work completed with Allowance moneys. Do not utilize Allowance moneys without the written authorization of the Architect.
- I. The Contractor, upon Substantial Completion of this project, shall provide the Owner and Architect with a certified statement stating that all work has been provided in conformance with the Contract Documents, applicable manufacturer(s) written specifications and recommendations.
- J. This Scope of Work may be completed during the winter months or may lapse into the winter months. The Contractor shall prepare his bid as if the work will be completed during winter conditions.
- K. Provide all temporary fencing, hay bales and other related barriers and protection/prevention materials and equipment required to protect the property of the Owner and others and if applicable, to conform to Wetlands rules and regulations.
- L. The Contractor shall provide adequate dust control at each site throughout the duration of the Construction Phase.
- M. The Contractor shall install all products in strict conformance with these specifications and/or the manufacturers' written instructions and recommended practices, whichever is most stringent. No exceptions will be allowed.
- N. Comply with codes, ordinances, rule, regulations, orders and legal requirements of public authorities which bear on performance of work.
- O. Promptly submit written notice to A/E of observed variance of Contract Documents from legal requirements.
 - 1. Appropriate modifications to Contract Documents will adjust necessary changes.
 - 2. Assume responsibility for work known to be contrary to such requirements, without notice.
- P. Enforce strict discipline and good order among employees. Do not employ persons not skilled in assigned task.
- Q. The Contractor shall provide all as-built reproducible drawings, disk and/or CD compatible with Owner's computer equipment at no additional cost to the Owner. The as-built drawings shall reflect actual systems installation and work completed. No exceptions will be allowed.
- R. The Contractor shall be responsible for patching, repairing and restoring to original new condition, all portions of the site and building damaged and or adversely affected in any way during construction. The Owner and the A/E shall review and approve any and all new work and related restoration work prior to the Contractor considering work to be complete. If any portion of the Owner's property is damaged during the course of construction, Contractor shall assume sole responsibility to complete repairs.

1.05 WORK BY OWNER: Not Applicable.

1.06 RESOLUTION OF CONTRACT DOCUMENT CONFLICTS OR CONFUSION:

- A. Conflicts or Confusion: Prior to submitting bid, the Contractor shall carefully study and compare the Contract Documents and shall request clarification in all cases of apparent conflict or confusion. **In case of conflict or confusion where the Contractor did not request clarification prior to submitting his bid, the Contractor shall interpret the**

Contract Documents to require the greater quantity, higher quality, most restrictive, and most expensive of the possible interpretations.

1.07 PLANNING THE WORK:

- A. The Contractor shall plan his schedule to produce the work expeditiously in an orderly manner without interfering with the Owner's operations or the operations of other building tenants (occupants).
- B. The Contractor shall substantially complete one phase of construction prior to beginning another phase of construction related work.
- C. Coordinate and carefully plan work described herein and as shown and described elsewhere and on the drawings.
- D. Owner shall be notified by the contractor at least seventy-two (72) hours prior to all "downtime" of systems involved in construction.
- E. The Contractor shall direct all questions and submittals to the office of the Architect, only. The Contractor shall assume all responsibility for work associated with the project if the Architect is not first advised.
- F. The Contractor shall visit the site and become familiar with the specified and the intended work prior to submitting his bid. No additional costs will be allowed for work obviously intended to be a part of this Contract. Architect's decision shall be final.
- G. Contractor shall be responsible for coordinating and cross-referencing all drawings and portions of the Project Manual. **DO NOT SEPARATE THE DRAWINGS AND PAGES OF THE PROJECT MANUAL.**

1.08 SAFETY PRECAUTIONS:

- A. OSHA:
 - 1. These construction documents of construction hereby contemplated are to be governed at all times by applicable provisions of the Federal Law (s), including but not limited to the latest amendments of the following:
 - a) Williams; Steiger Occupational Safety & Health Act of 1970, Public Law 91-956;
 - b) Part 1510 - Occupational Safety & Health Standards, Chapter XVII of Title 29, Code of Federal Regulations.
 - 2. This project, the Contractor and his subcontractors shall, at all times, be governed by Chapter XIII of Title 29, Code of Federal Regulations, Part 1518 - Safety and Health Regulations for Contraction, (36 FR 75), as amended to date.
- B. Hazardous materials Procedures: Hazardous Materials Procedures will be addressed at the Pre-Bid Conference.
- C. Emergencies:
 - 1. Should a tornado, hurricane, gale or heavy wind warnings be issued, every practicable precaution shall be taken by the Contractor to minimize the danger to persons, to the work and to the adjacent property. Such damage caused to any part of the work shall be rectified or replaced to complete satisfaction of the A/E and at no expense to the

Owner. Injury to personnel or damage to adjacent property because of the work shall be the complete responsibility of the Contractor, and he accepts exclusive liability for same.

D. Loading:

1. No part of any structure involved in this Contract shall be loaded during construction with a weight greater than it is calculated to carry with safety. Should any accidents or damage occur through any violation of this requirement, the Contractor shall be held solely responsible under his Contract and bond. When, in the opinion of the A/E, portions of the structure appear to be overloaded, it shall be the Contractor's responsibility to prove otherwise, or the Contractor shall follow the instructions of the A/E in connection with reduction of the loads.

E. Compliance with the Owner's Insurer, hereinafter referred to as OI.

1. If applicable, plans and final installation of Fire Suppression Systems are subject to acceptance by the OI.
2. All proposed uses of plastic construction materials shall be referred to the OI for review and appropriate recommendations.
3. Fire protection equipment shall be installed in conformance with the standards to the National Fire Protection Association (NFPA). Devices listed by Underwriters Laboratories Inc. (UL) or any other recognized testing laboratory shall be used.
4. Electrical installation shall conform to the National Electrical Code (NEC).
5. Combustible stock and processing equipment should not be moved into the buildings until recommended suppression systems are properly installed, tested, and in full service.
6. Fire prevention and protection during the construction period shall include the following:
 - a) Use of public fire department, plant fire brigade, and portable extinguishing equipment.
 - b) Early contract awards and expediting of fire protection equipment.
 - c) Proper supervision of open flames and temporary wiring.
 - d) Suitable access to the site with hydrants and water available on the site in early stages of construction.
 - e) Supervision of welding or cutting operations, including use of flame-proofed tarpaulins.
 - f) Keeping combustible material, including process equipment awaiting installation, to a minimum, and as far away as possible from buildings under construction.
 - g) Keeping the construction site clean and orderly.
 - h) Detaching Contractor's sheds from buildings under construction, if applicable.
 - i) Special precautions such as shoring of masonry walls and temporary tie-bracing of structural steel work to prevent windstorm damage during construction.

1.09 WORK SEQUENCE:

- A. The Contractor shall plan his schedule to produce the work expeditiously in an orderly manner without interfering with the Owner's operations.
- B. Work Hours: all work shall be conducted between the normal working hours of 7:30 A.M. and 4:00 P.M. local time, and during regular weekdays, unless otherwise adjusted by the Owner. No work shall be performed before or after the normal working hours or during Saturdays, Sundays and Holidays as defined by the Department of Labor. The Owner may waive this requirement in an emergency situation.

PART 2 – PRODUCTS: Not Used.

PART 3 – EXECUTION:

3.01 REQUIREMENTS:

- A. Maintain at job site, a minimum of one (1) copy of:
 - 1. Signed Contract Drawings
 - 2. Project Manual
 - 3. Addenda
 - 4. Reviewed Shop Drawings
 - 5. Change Orders
 - 6. Other Modifications to Contract
 - 7. Field Test Records
 - 8. Approved material samples
 - 9. As-built Drawings
- B. The Owner or Architect will accept only those Contract Documents that are signed or initialed and dated on each page.
- C. Store documents in field construction office(s), apart from documents used for construction.
- D. Provide files and racks for storage of documents.
- E. File documents in accordance with CSI Master Format.
- F. Maintain documents in clean, dry, legible condition.
- G. Do not use record document for construction purposes.
- H. Make documents available at all times for inspection by A/E and Owner.
- I. At Final Completion of the Project, turn over to the Architect, all Project Record Documents. All items such as reviewed shop drawings, Change Orders, test reports, etc. shall be delivered in bound book form and on CD, disk compatible with the Owner's and the Architect's computer systems.

3.02 RECORDING:

- A. Label each document "PROJECT RECORD DRAWINGS"
- B. Keep record documents current.

- C. Do not permanently conceal any work until required information has been recorded and inspected.
- D. Contract Drawings: Legibly mark to record actual construction.
 - 1. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - 2. Field change of dimension and detail.
 - 3. Changes made by Change Order or Field Order.
 - 4. Details not on original contract drawings.
- E. Specification and Addenda: legibly mark up each section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by change order or field order.
 - 3. Other matters not originally specified.
- F. Shop Drawings: Maintain as record documents; legibly annotate drawings to record changes made after review.

3.03 CUTTING AND PATCHING

- A. Execute cutting, fitting or patching or work, required to:
 - 1. Make several parts fit properly.
 - 2. Uncover work to provide for installation of ill-timed work.
 - 3. Remove and replace defective work.
 - 4. Remove and replace work not conforming to requirements of Contract Documents.
 - 5. Install specified work in existing construction.
- B. In addition to contract requirements, upon written instruction of the A/E:
 - 1. Uncover work to provide for A/E's observation of covered work, as required by the General Conditions.
 - 2. Remove samples of installed materials for testing; as required by the General Conditions.
 - 3. Remove work to provide for alteration of existing work.
- C. Do not endanger any work by cutting or altering work or any of it.
- D. Do not cut or alter work of another contractor without written consent of A/E.
- E. Prior to cutting which affects the structural integrity and safety of project work or that of another contractor, seek prior written notice to the Architect requesting consent to proceed with cutting. All such cutting shall be certified by a *Rhode Island*-licensed structural engineer at no additional cost to the Owner or Architect. All related costs shall be the sole responsibility of the Contractor.

- F. Prior to cutting and patching done on instruction of AE, submit cost estimate.
- G. Should conditions of work, or schedule indicate change of materials or methods, submit written recommendation to A/E, including:
 - 1. Conditions indicating change.
 - 2. Recommendations for alternative materials or methods.
 - 3. Submittals as required for substitutions.
- H. Submit written notice to A/E, designating time work will be covered, to provide for observation.
- I. Payment for costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of A/E, will be borne solely by the Contractor.
- J. Preparation (prior to cutting):
 - 1. Provide shoring, bracing and support as required to maintain structural integrity.
 - 2. Provide protection for other portions of project.
 - 3. Provide protection from elements.
- K. Performance: Perform all work of fitting, adjustment, cutting, patching, finishing and restoration to perfectly match the quality as specified throughout these specifications

3.04 CONTRACTOR INSPECTION:

- A. Inspect existing conditions of work, including elements subject to movement or damage during cutting and patching.
- B. Repair/replacement of defective work will not constitute sufficient cause to extend the contract deadline.

END OF SECTION

SECTION 01113

HAZARDOUS-MATERIALS PROCEDURES

PART 1 - GENERAL

1.01 HAZARDOUS MATERIALS DISCOVERY

- A. The Owner has determined that there are hazardous materials to be encountered under the work of this Project.

1.02 SECTION INCLUDES

- A. The Contractor may be required to provide testing to verify the presence of other potentially hazardous materials using the Project Allowances.
- B. Prepare abatement/mitigation plan(s).
- C. Removal of asbestos materials.
- D. Mitigation/abatement of lead paint.
- E. Asbestos Abatement is a part of this Contract. The Contractor shall be responsible for the removal and disposal of all asbestos-containing materials that may be found in the scope of work and other building components as they relate to the scope of work. It is the intent of the Owner to have the Contractor remove and dispose all asbestos in full accordance with the Rhode Island Department of Health; Division of Occupational Health/Radiation Control and this Agency's issue "Rules and Regulation for Asbestos Control", January, 1986 (R23-24.5-ASB), or as amended to date.
- F. Invoices for removal and abatement shall be accompanied by approved shipping documents which describe final disposal location, date of disposal, approved signatures and General Contractor signature of acknowledgment. Final payment will not be made without the preceding documents.

1.03 RELATED WORK:

- A. Documents affecting work of this section including but not necessarily limited to General Conditions, Supplementary Conditions, and sections in Division 1 of these Specifications.

1.04 RELATED REPORT

- A. Pertinent portions of applicable Survey and Sampling Reports and Abatement Plan are included herein, following. They consist of:
 - 1. **Environmental Consulting Management (ECM), July 01, 2025, consisting of thirty (30) pages.**
 - 2. CONTRACTOR NOTE WELL: Quantities and estimated removal costs if applicable, are for reference only. The Contractor shall verify all quantities and assume all costs relative to the complete and proper removal and disposal of hazardous materials abatement.

1.05 ABATEMENT PROCEDURES (By the Contractor)

- A. The Contractor shall obtain the services of a State-Certified Abatement Consultant to prepare an approved hazardous-materials abatement plan, monitoring and clearance samples.

- B. Obtain the services of a Rhode Island-Licensed Environmentalist (consultant) to provide complete and proper testing services and related hazardous-materials procedures. The Consultant shall also provide all monitoring and clearance samples.
- C. Obtain the services of a State-Certified Abatement Contractor(s) to abate and/or mitigate the hazardous material(s) in accordance with Federal, State and Local rules and regulations.
- D. All lead hazard mitigation and abatement work shall be provided by a Contractor certified by the Rhode Island State Department of Health.
- E. The Contractor providing the scope of work shall possess Contractor's Pollution/Lead Liability per the Insurance Requirements stated elsewhere in the Project Manual and/or as required by applicable laws.
- F. Contractor shall be responsible for notifying Owner of the Hazardous Materials Procedures such as signage being posted on entry doors indicating hazardous materials work underway, containment areas, air sampling, etc.
- G. Meet with Owner, Architect, and if required by the Owner, building occupants, to inform them of the upcoming hazardous materials abatement/mitigation work. Notices shall be sent to the Owner, who in turn will distribute accordingly throughout the building.
- H. Comply fully with Federal, State, and Local Regulations, including but not limited to O.S.H.A. rules for worker safety, E.P.A., and local community rules for waste disposal.
- I. Avoid creating dust. Use low dust work practices such as misting surface with water before sanding or scraping. Cover area under work with durable protective sheathing (plastic or poly). Keep dust contained to immediate work area.
- J. Protect building occupants, particularly children. Keep children away from work area. Clean up work site, daily.
- K. Contractor must wear proper respiratory protection for lead dust. Do not take dust home.
- L. Clean all work areas when completed with work. Take dust-wipe samples to ensure that area is safe for children and other building occupants.
- M. Retain hazardous-materials abatement invoices for submittal with required close-out record documents. Invoices must be accompanied by complete shipping documents showing final disposal location.
- N. Provide other mitigation/abatement related services not specifically described herein, but needed for a complete and proper job.
- O. Engage the services of a qualified independent firm to conduct all air quality testing as required by law.
- P. Provide all other abatement related services not specifically described herein, but needed for a complete and proper job.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION



July 1, 2025

William Starck Architects, Inc.
Attn: Mr. Geoffrey Northrup
126 Cove Street
Fall River, MA 02720

Pawtucket Housing Authority
Elevator Modernization Project – Fogarty Manor and Kennedy Manor
Limited Hazardous Material Inspection Report.

Dear Mr. Northrup:

Enclosed are the analytical results, observations, and recommendations associated with the limited hazard material inspection performed by Environmental Consulting & Management Inc. (ECM) of materials that will be impacted by the elevator modernization project at Kennedy Manor and Fogarty Manor in Pawtucket, Rhode Island.

Methodology and Scope

On June 6th, 2025 a limited asbestos and lead paint inspection was conducted by Mr. Joseph M. Lepore (AI00661) of ECM. During the course of the inspection ECM collected samples of accessible suspect asbestos containing building materials (ACBM) and suspect lead containing paints that may be impacted during the elevator modernization project at the sites. The inspection was conducted according to EPA AHERA asbestos bulk sampling protocols. Only materials that are anticipated to be impacted by the above stated renovation were surveyed as part of this inspection.

The building was occupied at the time of the inspection. Destructive investigation to check above fixed ceilings, within wall cavities and pipe chases, under hard finish flooring (e.g. ceramic floor tile, wood floors, plywood sub flooring, etc.) and under any of the exterior facade was not conducted as part of this survey. Active mechanical and electrical building components were not evaluated as part of this inspection. No attempt was made to survey the building in its entirety.

181 Amaral Street
Riverside, RI 02915

O: 401.438.1360
F: 401.438.1316

www.ecmne.com

Asbestos:

The survey consisted of collecting suspect ACBM that may be impacted as part of the elevator modernization project at two high-rise housing authority buildings according to AHERA sampling protocol. The asbestos bulk samples were then sent to a Rhode Island licensed asbestos analytical laboratory to be analyzed for asbestos content utilizing Polarized Light Microscopy (PLM) in accordance with Environmental Protection Agency (EPA) method 600/R-93/116 Please refer to **Attachment 1** for the laboratory analytical results. Below are charts of the asbestos bulk samples collected, the locations of the materials, the testing results and the quantity of ACBM.

Table 1: Kennedy Manor, Elevator Modernization Project- Asbestos Bulk Sample Results.

Sample #s	Material Description	Material Location	Results	Quantity
01A	Coating on elevator car	Elevator Cars exterior side and top	None Detected	NA
02A	Grey flooring and mastic	Interior of elevator cars	None Detected	NA
03A	Joint compound at wall	Elevator lobby under control buttons	None Detected	NA
04A-B	Cement walls	Elevator machine room	None Detected	NA
05A	Door caulking	Elevator room door	None Detected	NA
06A	Skim Coat on CMU Wall	Elevator Lobbies on Floors 2 through 10	<1% Chrysotile	NA
Assumed Asbestos Containing Materials				
--	Elevator Brakes	Elevator Cars and Machine Rooms	Assumed Asbestos	2 Sets of Elevator Brakes

Table 2: Fogarty Manor, Elevator Modernization Project- Asbestos Bulk Sample Results.

Sample #s	Material Description	Material Location	Results	Quantity
01A	Covebase and adhesive	Front of elevator at lobby	None Detected	NA
02A	Wallpaper and adhesive	Front of elevator at lobby	None Detected	NA
03A-B	Coating on elevator car	Elevator car exterior and top	None Detected	NA
04A	Flooring in elevator car	Elevator car floor	None Detected	NA
05A	Cement	At elevator threshold	None Detected	NA
06A	Covebase	15 th Floor in front of elevator	None Detected	NA
07A	Glazing on window	Penthouse window	None Detected	NA
08A-B	Caulking around windows and louvers	Penthouse exterior	3% Chrysotile	~20sf
Assumed Asbestos Containing Materials				
--	Elevator Brakes	Elevator Cars and Machine Rooms	Assumed Asbestos	2 Sets of Elevator Brakes

NA – Not Applicable

Asbestos: Recommendations & Summary

Kennedy Manor

All accessible components sampled from the elevator cars and surrounding areas associated with the elevator upgrade project was found to be none detected for asbestos.

ECM could not sample the elevator brakes at the time of this inspection, due to the elevators still being in service. Sampling of the elevator brake is destructive in nature and may result in the elevator not operating properly. The elevator brakes are be assumed to be asbestos containing. There are 2 sets of elevator brakes.

Fogarty Manor

Asbestos containing caulking was identified around windows and louvers located on the penthouse of Fogarty Manor. Below are pictures of the windows and louvers with asbestos caulking.



ECM could not sample the elevator brakes at the time of this inspection, due to the elevators still being in service. Sampling of the elevator brake is destructive in nature and may result in the elevator not operating properly. The elevator brakes are assumed to be asbestos containing. There are 2 sets of elevator brakes.

Any suspect asbestos containing material not listed within this report must be assumed to contain asbestos and disposed of accordingly unless future sampling determines otherwise.

Regulatory Compliance

Since the amount of ACM is less than 25 square feet/10 linear feet, an asbestos abatement plan will not be needed for this project. All asbestos removal work must be done by a licensed asbestos abatement contractor, all OSHA worker protection measures must be implemented and all debris generated must be disposed of as asbestos containing waste.

Lead Report

Lead paint chip samples were collected from the renovation area in each building to establish a lead concentration for painted surfaces. The samples were analyzed utilizing EPA test method sw846/3050B/7000B. The results can be found in the following charts. Please refer to **Attachment 2** for the laboratory results.

Table 3: Kennedy Manor, Elevator Modernization Project- Lead Paint Chip Sample Results.

Sample ID	Description	Location	Lead Results (ppm)
L-1	White wall paint	Exterior of elevator on walls	Less than detection limit
L-2	Black toe guard	At base of elevator	779.1
L-3	White wall paint	Penthouse walls	Less than detection limit
L-4	Grey floor paint	Penthouse	362.9
L-6	Tan exterior paint	On penthouse exterior	212.4

Table 4: Fogarty Manor, Elevator Modernization Project- Lead Paint Chip Sample Results.

Sample ID	Description	Location	Lead Results (ppm)
L-4	Black paint	On elevator rails exterior of car	1181

All samples were below the HUD standard of 5,000 ppm.

Lead Conclusions

Kennedy Manor:

Samples L-1 and L-3 were collected from white wall paint on the interior of the first floor and the penthouse. These samples were below the detection limits and can be viewed as none detected. Samples L-2, L-4, and L6 did have detectable lead levels, however they were below the HUD standard for lead based paint of 5,000 ppm.

Sample L-5 was collected from the black stair railing in the penthouse. Paint layer was very thin and there was not enough material to be tested by bulk sampling. This material can be retested by XRF analysis on site. Since this material is a metal product and will most likely be recycled it can also be removed utilizing OSHA lead in construction standards and sent to a recycling facility rather than putting it in the waste stream.

Fogarty Manor:

Sample L-4 was collected from black paint on elevator rails. This sample was above the detection limit but below the HUD standard for lead based paint of 5,000 ppm.

Unfortunately samples L-1, L-2, L-3 and L-5 did not have enough paint to be captured for lead content by bulk analysis. These materials were black railing in penthouse, grey penthouse floor, white penthouse ceiling, and exterior penthouse paint respectively. These materials can be analyzed on site by XRF to potentially identify lead concentration.

Lead: Recommendations

Several factors including worker protection, disposal, and childhood lead poisoning prevention may apply when considering a lead hazard.

The United States Department of Housing and Urban Development (HUD) considers a dried paint with a lead level of 5,000 parts per million to be lead based paint.

ECM recommends utilizing OSHA lead in construction standard when impacting the paint with any amount of lead. When impacting surfaces with paint containing greater than 5,000 parts per million, ECM recommends using a contractor that is Rhode Island and EPA Lead Renovation, Repair and Paint (RRP) certified. ECM recommends that all contractors who may impact lead painted materials should have at minimum OSHA lead awareness training, in addition to following the OSHA lead in construction standard.

OSHA's lead in construction standard applies to all construction, modification, or repair where workers may be exposed to lead. OSHA's Lead Standard for the Construction Industry, Title 29 Code of Federal Regulations 1926.62, establishes maximum limits of exposure to lead for all workers. The OSHA exposure limits are not determined by the lead concentration of the painted surface but instead uses air sampling to determine the exposure to a worker. The permissible exposure limit (PEL) sets the maximum worker exposure to lead at 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) of air averaged over an eight-hour period. The action level (AL), regardless of respirator use, is an airborne concentration of 30 $\mu\text{g}/\text{m}^3$ averaged over an eight-hour period. The AL is the level at which an employer must begin specific compliance activities.

Until an exposure assessment is performed, and documentation showing that workers are not exposed above the PEL, OSHA requires that personal protective equipment (PPE) must be utilized.

Prior to disposal, construction waste suspected to contain lead must undergo Toxic Characteristic Leaching Procedure (TCLP) sampling for lead. The Environmental Protection Agency (EPA) specifies that waste containing greater than 5 mg/l of lead be disposed of as lead waste. The material can be sent out with the normal construction debris, however if there is any concern that it could cause a TCLP of the waste container to fail, the paint chip waste could be segregated and disposed of as lead waste.

Limitations:

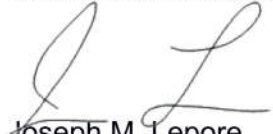
This inspection was limited by visibility, accessibility, and scope of work. Components that could affect building operation and endanger the safety of the inspector such as active mechanical or electrical systems were not scrutinized during this inspection unless otherwise noted.

This survey and sampling were performed for a specific scope of work. Should the scope of work for this project change; additional sampling may be required.

This report was prepared under the request of William Starck Architects, Inc. This report should not be represented, reproduced, or disseminated without the written approval of Environmental Consulting and Management or William Starck Architects, Inc. No warranties other than those expressed in the contract for this project are expressed or implied.

A hard copy of this report can be provided for your records via mail upon request. If you have any further questions feel free to contact myself at 401-304-6614.

Sincerely,
Environmental Consulting & Management, Inc.

A handwritten signature in black ink, appearing to read 'J. Lepore', written over a horizontal line.

Joseph M. Lepore
Project Manager
RI Inspector License: AI00661

Attachment 1
Asbestos Bulk Sample Results



The Identification Specialists

Analysis Report
prepared for
Environmental Consulting & Management Inc

Report Date: 6/13/2025

Project Name: Fogarty Manor

Project #: 250275

SanAir ID#: 25036786



NVLAP LAB CODE 200870-0

10501 Trade Court, North Chesterfield, Virginia 23236
888.895.1177 | 804.897.1177 | fax: 804.897.0070 | LabReports@SanAir.com | SanAir.com



SanAir ID Number

25036786

FINAL REPORT

6/13/2025 2:49:00 PM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
Bristol, RI 02809
Phone: 401-438-1360

Project Number: 250275
P.O. Number:
Project Name: Fogarty Manor
Collected Date: 6/4/2025
Received Date: 6/9/2025 8:55:00 AM

Dear Joseph M. Lepore,

We at SanAir would like to thank you for the work you recently submitted. The 11 sample(s) were received on Monday, June 09, 2025 via FedEx. The final report(s) is enclosed for the following sample(s): 01A, 02A, 03A, 03B, 04A, 05A, 06A, 07A, 08A, 08B, 09A.

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

A handwritten signature in black ink that reads "Sandra Sobrino".

Sandra Sobrino
Asbestos & Materials Laboratory Manager
SanAir Technologies Laboratory

Final Report Includes:

- Cover Letter
- Analysis Pages
- Disclaimers and Additional Information

Sample conditions:

- 11 samples in Good condition.



SanAir ID Number

25036786

FINAL REPORT

6/13/2025 2:49:00 PM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
Bristol, RI 02809
Phone: 401-438-1360

Project Number: 250275
P.O. Number:
Project Name: Fogarty Manor
Collected Date: 6/4/2025
Received Date: 6/9/2025 8:55:00 AM

Analyst: Forman, Sydney

Asbestos Bulk PLM EPA 600/R-93/116

SanAir ID / Description	Stereoscopic	Components		Asbestos Fibers
	Appearance	% Fibrous	% Non-fibrous	
01A / 25036786-001 Covebase - Front Of Elevator	Grey Non-Fibrous Homogeneous		100% Other	None Detected
02A / 25036786-002 Wallpaper - GF Elevator, Wallpaper	White Non-Fibrous Heterogeneous	10% Synthetic	90% Other	None Detected
02A / 25036786-002 Wallpaper - GF Elevator, Mastic	Tan Non-Fibrous Homogeneous		100% Other	None Detected
03A / 25036786-003 Coating On Elevator Car	Grey Non-Fibrous Homogeneous		100% Other	None Detected
03B / 25036786-004 Coating On Elevator Door	Various Non-Fibrous Heterogeneous		100% Other	None Detected
04A / 25036786-005 Flooring In Elevator Car, Mastic	Green Non-Fibrous Homogeneous		100% Other	None Detected
04A / 25036786-005 Flooring In Elevator Car, Flooring	Grey Non-Fibrous Homogeneous	3% Cellulose	97% Other	None Detected
04A / 25036786-005 Flooring In Elevator Car, Mastic	Tan Non-Fibrous Homogeneous		100% Other	None Detected
05A / 25036786-006 Cement At Elevator Threshold	Grey Non-Fibrous Heterogeneous		100% Other	None Detected
06A / 25036786-007 Covebase 15th Elevator, Coverbase	Grey Non-Fibrous Homogeneous		100% Other	None Detected

Analyst: *Sydney Forman*Approved Signatory: *Johnathan Wilson*

Analysis Date: 6/13/2025

Date: 6/13/2025



SanAir ID Number

25036786

FINAL REPORT

6/13/2025 2:49:00 PM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
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Project Number: 250275
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Asbestos Bulk PLM EPA 600/R-93/116

SanAir ID / Description	Stereoscopic	Components		Asbestos Fibers
	Appearance	% Fibrous	% Non-fibrous	
06A / 25036786-007 Covebase 15th Elevator, Mastic	Cream Non-Fibrous Homogeneous		100% Other	None Detected
07A / 25036786-008 Glazing - Penthouse Window	Various Non-Fibrous Heterogeneous		100% Other	None Detected
08A / 25036786-009 Window Caulking	Grey Non-Fibrous Homogeneous		97% Other	3% Chrysotile
08B / 25036786-010 Louver Caulking, Caulk	Grey Non-Fibrous Homogeneous		100% Other	None Detected
08B / 25036786-010 Louver Caulking, Caulk	Off-White Non-Fibrous Homogeneous		100% Other	None Detected
09A / 25036786-011 Penthouse Ceiling, Plaster	Grey Non-Fibrous Heterogeneous		100% Other	None Detected
09A / 25036786-011 Penthouse Ceiling, Skim Coat	White Non-Fibrous Heterogeneous		100% Other	None Detected

Analyst:

Sydney Forman

Approved Signatory:

Johnathan Wilson

Analysis Date: 6/13/2025

Date: 6/13/2025

Disclaimer and Additional Information:
Asbestos Bulk PLM EPA 600/R-93/116

This report is the sole property of the client named on the chain-of-custody (COC) submitted to SanAir Technologies Laboratory, Inc. (SanAir). Results in the report are confidential information intended only for the use by the customer listed on the COC. Neither results nor reports will be discussed with or released to any third party without our client's written permission. The final report shall not be reproduced, except in full, without written approval of the laboratory to assure that parts of the report are not taken out of context. This report and any information contained within shall not be edited, altered, or modified in any way by any persons or agencies receiving, viewing, distributing, or otherwise possessing a copy of this final report. The laboratory reserves the right to perform amendments to any finalized report, of which shall supersede and make obsolete any previous editions. Such changes, modifications, additions, or deletions shall be effective immediately upon notice thereof, which may be given by means including but not limited to posting on the SanAir client portal website, electronic or conventional mail, or by any other means.

The information provided in this report applies only to the samples submitted and is relevant only for the date, time, and location of sampling. The accuracy of the results is dependent upon the client's sampling procedure and information provided to the laboratory by the client on the COC. SanAir assumes no responsibility for the sampling procedure and will provide evaluation reports based solely on the sample(s) in the condition received at the laboratory and information provided by the client on the COC, such as: project number, project name, collection dates, P.O. number, special instructions, samples collected by, sample numbers, sample identifications, sample type, selected analysis type, flow rate, total volume or area, and start-stop times that may affect the validity of the results in this report. Samples were received in good condition unless otherwise noted on the report. When the client requires samples to be tested that deviates from a specific method or condition, all reported results may be affected by the deviation. SanAir assumes no responsibility or liability for the manner in which the results are used or interpreted.

This report does not constitute nor shall not be used by the client to claim product, process, system, or person certification, approval, or endorsement by NVLAP, NIST, NELAC, AIHA LAP, LLC or any other U.S. governmental agencies; all or some tests contained in this report may not be accredited by every local, state, and federal regulatory agencies. Refer to the SanAir website at www.sanair.com for copies of current certificates and scopes of various accreditations, certifications, and licenses or contact the laboratory for inquiries regarding the status or scope of an accreditation or certification.

Samples are held for a period of 60 days. Fibers smaller than 5 microns cannot be seen with this method due to scope limitations. For NY state samples, method EPA 600/M4-82-020 is performed.

NYELAP Disclaimer:

Polarized-light microscopy is not consistently reliable in detecting asbestos in floor covering and similar non-friable organically bound materials. Quantitative transmission electron microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing.

Asbestos Accreditations, Certifications, and Licenses

National Voluntary Laboratory Accreditation Program (NVLAP) Lab Code 200870-0

City of Philadelphia Department of Public Health Air Management Services, Certification#ALL-460

Commonwealth of Pennsylvania Department of Environmental Protection Number 68-05397

California State Environmental Laboratory Accreditation Program Certificate Number 2915

Colorado Department of Public Health and Environment Registration Number AL-23143

Connecticut Department of Public Health Environmental Laboratory Registration Number PH-0105

Massachusetts Department of Labor Standards Asbestos Analytical Services License Number:

AA000222

State of Maine Department of Environmental Protection License Number: LB-0075

New York State Department of Health Laboratory ID: 11983

State of Rhode Island Department of Health Certification No.: PLM00126

Texas Department of State Health Services License Number: 300440

Commonwealth of Virginia Department of Professional and Occupational Regulation Number:

3333000323

State of Washington Department of Ecology Laboratory ID: C989

State of West Virginia Bureau for Public Health Analytical Laboratory Number: LT000616

Vermont Department of Health License Number: Asb-Co-An-000006

Louisiana Department of Environmental Quality AI Number 212253, LELAP Lab ID #05088



10501 Trade Ct., Suite 100
N. Chesterfield, VA 23236
804.897.1177 / 888.895.1177
Fax 804.897.0070
sanair.com

Asbestos
Chain of Custody
Form 140, Rev 7, 10/20/2022

SanAir ID Number

25036786

Company: Environmental Consulting & Management Inc	Project #: 250275	Collected by: Joseph Lepore
Address: 50 Kickemuit Ave	Project Name: Fogarty Manor	Phone #: 401-438-1360
City, St., Zip: Bristol, RI 02809	Date Collected: 6/6/24	Fax #: 401-438-1316
State of Collection: RI Account#: 2667	P.O. Number:	Email: JLepore@ECMNE.com

Bulk

ABB	PLM EPA 600/R-93/116	☒
	Positive Stop	☐
ABEPA	PLM EPA 400 Point Count	☐
ABB1K	PLM EPA 1000 Point Count	☐
ABBEN	PLM EPA NOB**	☐
ABBCH	TEM Chatfield**	☐
ABBTM	TEM EPA NOB**	☐
ABQ	PLM Qualitative	☐

** Available on 24-hr. to 5-day TAT

Air

ABA	PCM NIOSH 7400	☐
ABA-2	OSHA w/ TWA*	☐
ABTEM	TEM AHERA	☐
ABATN	TEM NIOSH 7402	☐
ABT2	TEM Level II	☐
Other:		☐

New York ELAP

ABEPA2	NY ELAP 198.1	☐
ABENY	NY ELAP 198.6 PLM NOB	☐
ABBNY	NY ELAP 198.4 TEM NOB	☐

Positive Stop

Soil

ABSE	PLM EPA 600/R-93/116 (Qual.)	☐

Vermiculite

ABB	PLM EPA 600/R-93/116	☐
ABEPA3	PLM EPA 400 Point Count	☐
ABCM	Cincinnati Method	☐

Dust

ABWA	TEM Wipe ASTM D-6480	☐
ABDMV	TEM Microvac ASTM D-5755	☐

Matrix Other

ABHE	EPA 100.2	☐

Turn Around Times	3 HR (4 HR TEM) ☐	6 HR (8HR TEM) ☐	12 HR ☐	1 Day ☐
	☐ 2 Days	☐ 3 Days	☒ 4 Days	☐ 5 Days

Special Instructions

Sample #	Sample Identification/Location	Volume or Area	Sample Date	Flow Rate*	Start - Stop Time*
01A	Covebase - Front of elevator				
02A	Wallpaper - GF Elevator				
03A	Coating on elevator car				
03B	" " Door				
04A	Flooring in elevator car				
05A	Cement at elevator threshold				
06A	Covebase 15th Floor Elevator				
07A	Glaazing - Penthouse window				
08A	Window caulking				
08B	Lower caulking				
09A	Penthouse ceiling				

Relinquished by:	Date: 6/6/25	Time:	Received by: EDR	Date: 6/6/25	Time: 8:55 a.m.

If no technician is provided, then the primary contact for your account will be selected. Unless scheduled, the turnaround time for all samples received after 3 pm EST will be logged in the next business day. Weekend or holiday work must be scheduled ahead of time and is charged at 150% of the 3hr TAT or a minimum charge of \$150. A courier charge will be applied for same day and one-day turnaround times for offsite work. SanAir covers Ground and Next Day Air shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.



The Identification Specialists

Analysis Report
prepared for
Environmental Consulting & Management Inc

Report Date: 6/13/2025

Project Name: Kennedy Manor Elevator

Project #: 250275

SanAir ID#: 25036783



NVLAP LAB CODE 200870-0

10501 Trade Court, North Chesterfield, Virginia 23236
888.895.1177 | 804.897.1177 | fax: 804.897.0070 | LabReports@SanAir.com | SanAir.com



SanAir ID Number

25036783

FINAL REPORT

6/13/2025 1:25:59 PM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
Bristol, RI 02809
Phone: 401-438-1360

Project Number: 250275
P.O. Number:
Project Name: Kennedy Manor Elevator
Collected Date: 6/4/2025
Received Date: 6/9/2025 8:55:00 AM

Dear Joseph M. Lepore,

We at SanAir would like to thank you for the work you recently submitted. The 7 sample(s) were received on Monday, June 09, 2025 via FedEx. The final report(s) is enclosed for the following sample(s): 01A, 02A, 03A, 04A, 04B, 05A, 06A.

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

A handwritten signature in black ink that reads "Sandra Sobrino". The signature is fluid and cursive.

Sandra Sobrino
Asbestos & Materials Laboratory Manager
SanAir Technologies Laboratory

Final Report Includes:

- Cover Letter
- Analysis Pages
- Disclaimers and Additional Information

Sample conditions:

- 7 samples in Good condition.



SanAir ID Number

25036783

FINAL REPORT

6/13/2025 1:25:59 PM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
Bristol, RI 02809
Phone: 401-438-1360

Project Number: 250275
P.O. Number:
Project Name: Kennedy Manor Elevator
Collected Date: 6/4/2025
Received Date: 6/9/2025 8:55:00 AM

Analyst: Forman, Sydney

Asbestos Bulk PLM EPA 600/R-93/116

SanAir ID / Description	Stereoscopic	Components		Asbestos Fibers
	Appearance	% Fibrous	% Non-fibrous	
01A / 25036783-001 Coating On Elevator Car	Grey Non-Fibrous Heterogeneous		100% Other	None Detected
02A / 25036783-002 Flooring Inside Elevator Car, Tile	Grey Non-Fibrous Heterogeneous		100% Other	None Detected
02A / 25036783-002 Flooring Inside Elevator Car, Mastic/Leveler	Various Non-Fibrous Heterogeneous		100% Other	None Detected
03A / 25036783-003 Joint Compound Wall @ Elevator	White Non-Fibrous Homogeneous		100% Other	None Detected
04A / 25036783-004 Cement Walls - Elevator Machine Room	Grey Non-Fibrous Heterogeneous		100% Other	None Detected
04B / 25036783-005 Cement Walls - Elevator Machine Room	Grey Non-Fibrous Heterogeneous		100% Other	None Detected
05A / 25036783-006 Door Caulk On Elevator Room	Grey Non-Fibrous Homogeneous		100% Other	None Detected
06A / 25036783-007 Textured Cement Ceiling - Elv. Machine Room, Cement	Off-White Non-Fibrous Heterogeneous		100% Other	None Detected
06A / 25036783-007 Textured Cement Ceiling - Elv. Machine Room, Texture	White Non-Fibrous Heterogeneous		100% Other	None Detected

Analyst: *Sydney Forman*

Approved Signatory: *Johnathan Wilson*

Analysis Date: 6/13/2025

Date: 6/13/2025

Disclaimer and Additional Information:
Asbestos Bulk PLM EPA 600/R-93/116

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Samples are held for a period of 60 days. Fibers smaller than 5 microns cannot be seen with this method due to scope limitations. For NY state samples, method EPA 600/M4-82-020 is performed.

NYELAP Disclaimer:

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Asbestos Accreditations, Certifications, and Licenses

National Voluntary Laboratory Accreditation Program (NVLAP) Lab Code 200870-0

City of Philadelphia Department of Public Health Air Management Services, Certification#ALL-460

Commonwealth of Pennsylvania Department of Environmental Protection Number 68-05397

California State Environmental Laboratory Accreditation Program Certificate Number 2915

Colorado Department of Public Health and Environment Registration Number AL-23143

Connecticut Department of Public Health Environmental Laboratory Registration Number PH-0105

Massachusetts Department of Labor Standards Asbestos Analytical Services License Number:

AA000222

State of Maine Department of Environmental Protection License Number: LB-0075

New York State Department of Health Laboratory ID: 11983

State of Rhode Island Department of Health Certification No.: PLM00126

Texas Department of State Health Services License Number: 300440

Commonwealth of Virginia Department of Professional and Occupational Regulation Number:

3333000323

State of Washington Department of Ecology Laboratory ID: C989

State of West Virginia Bureau for Public Health Analytical Laboratory Number: LT000616

Vermont Department of Health License Number: Asb-Co-An-000006

Louisiana Department of Environmental Quality AI Number 212253, LELAP Lab ID #05088



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Fax 804.897.0070
sanair.com

Asbestos
Chain of Custody
Form 140, Rev 7, 10/20/2022

SanAir ID Number

25036783

Company: Environmental Consulting & Management Inc	Project #: 250275	Collected by: Joseph Lapace
Address: 50 Kickemuit Ave	Project Name: Kennedy Manor Elevator	Phone #: 401-438-1360
City, St., Zip: Bristol, RI 02809	Date Collected: 6/4/25	Fax #: 401-438-1316
State of Collection: RI Account#: 2667	P.O. Number:	Email: Jlapace@ECMNE.com

Bulk

Air

ABB	PLM EPA 600/R-93/116	☒
	Positive Stop	☐
ABEPA	PLM EPA 400 Point Count	☐
ABB1K	PLM EPA 1000 Point Count	☐
ABBE	PLM EPA NOB**	☐
ABBCH	TEM Chatfield**	☐
ABBTM	TEM EPA NOB**	☐
ABQ	PLM Qualitative	☐

ABA	PCM NIOSH 7400	☐
ABA-2	OSHA w/ TWA*	☐
ABTEM	TEM AHERA	☐
ABATN	TEM NIOSH 7402	☐
ABT2	TEM Level II	☐
Other:		☐

ABSE	PLM EPA 600/R-93/116 (Qual.)	☐

Vermiculite

ABB	PLM EPA 600/R-93/116	☐
ABEPA3	PLM EPA 400 Point Count	☐
ABCM	Cincinnati Method	☐

Dust

ABWA	TEM Wipe ASTM D-6480	☐
ABDMV	TEM Microvac ASTM D-5755	☐

New York ELAP

ABEPA2	NY ELAP 198.1	☐
ABENY	NY ELAP 198.6 PLM NOB	☐
ABBNY	NY ELAP 198.4 TEM NOB	☐

Matrix

Other

ABHE	EPA 100.2	☐

	Positive Stop	☐

		☐

Turn Around

Times

3 HR (4 HR TEM) ☐

6 HR (8HR TEM) ☐

12 HR ☐

1 Day ☐

☐ 2 Days

☐ 3 Days

☒ 4 Days

☐ 5 Days

Special Instructions

Sample #	Sample Identification/Location	Volume or Area	Sample Date	Flow Rate*	Start - Stop Time*
01A	Grey coating on elevator car				
02A	Flooring inside elevator car				
03A	Joint compound wall @ elevator				
04A	Cement walls - Elevator machine Room				
04B	"				
05A	Door caulk on elevator Room				
06A	Textured cement ceiling - Elev. Machine Room				

Relinquished by	Date	Time	Received by	Date	Time
	6/6/25		EDR	06/09/25	8:55 a.m.

If no technician is provided, then the primary contact for your account will be selected. Unless scheduled, the turnaround time for all samples received after 3 pm EST will be logged in the next business day. Weekend or holiday work must be scheduled ahead of time and is charged at 150% of the 3hr TAT or a minimum charge of \$150. A courier charge will be applied for same day and one-day turnaround times for offsite work. SanAir covers Ground and Next Day Air shipping. Shipments billed to SanAir with a faster shipping rate will result in additional charges.

Attachment 2
Lead Paint Chip Sample Results



The Identification Specialists

Analysis Report
prepared for
Environmental Consulting & Management Inc

Report Date: 6/16/2025

Project Name: Kennedy Manor

Project #: 250275

SanAir ID#: 25036787



10501 Trade Court, North Chesterfield, Virginia 23236
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SanAir ID Number
25036787
FINAL REPORT
6/16/2025 11:47:56 AM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
Bristol, RI 02809
Phone: 401-438-1360

Project Number: 250275
P.O. Number:
Project Name: Kennedy Manor
Collected Date: 6/4/2025
Received Date: 6/9/2025 8:55:00 AM

Dear Joseph M. Lepore,

We at SanAir would like to thank you for the work you recently submitted. The 6 sample(s) were received on Monday, June 09, 2025 via FedEx. The final report(s) is enclosed for the following sample(s): L-1, L-2, L-3, L-4, L-6. The following sample(s) were unusable and were not tested: L-5

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

A handwritten signature in black ink, appearing to read "Abisola Kasali".

Abisola Kasali
Metals Laboratory Director
SanAir Technologies Laboratory

Final Report Includes:

- Cover Letter
- Chemistry Analysis
- Disclaimers and Additional Information

Sample conditions:

- 5 samples in Good condition.
- 1 samples in QNS condition. (#5)



SanAir ID Number
25036787
FINAL REPORT
6/16/2025 11:47:56 AM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
Bristol, RI 02809
Phone: 401-438-1360

Project Number: 250275
P.O. Number:
Project Name: Kennedy Manor
Collected Date: 6/4/2025
Received Date: 6/9/2025 8:55:00 AM

Analyst: Seward, Spencer
Test Method: SW846/M3050B/7000B

Lead Paint Analysis

PAINT Sample	Description	$\mu\text{g Pb}$ In Sample	Sample Size (grams)	Calculated RL	Sample Results	Sample Results
25036787 - 1	L-1 White Wall Paint	< 10	0.1051	95.1	<95.1 $\mu\text{g/g (ppm)}$	<0.010 % By Weight
25036787 - 2	L-2 Black Toe Guard On Elevator	52	0.0667	149.9	779.1 $\mu\text{g/g (ppm)}$	0.078 % By Weight
25036787 - 3	L-3 White Wall Paint - Penthouse	< 10	0.1025	97.6	<97.6 $\mu\text{g/g (ppm)}$	<0.010 % By Weight
25036787 - 4	L-4 Grey Floor Paint - Penthouse	43	0.1175	85.1	362.9 $\mu\text{g/g (ppm)}$	0.036 % By Weight
25036787 - 6	L-6 Tan Exterior Penthouse Paint	24	0.1119	89.4	212.4 $\mu\text{g/g (ppm)}$	0.021 % By Weight

Method Reporting Limit <10 $\mu\text{g}/0.1\text{ g}$ paint

Signature: 
Date: 6/12/2025

Reviewed: 
Date: 6/12/2025

Disclaimer

This report is the sole property of the client account named on the chain-of-custody (COC) submitted to SanAir Technologies Laboratory, Inc. (SanAir). Results in the report are confidential information intended only for the use by the customer listed on the chain of custody. Neither results nor reports will be discussed with or released to any third party without our client's written permission. Final reports cannot be reproduced, except in full, without written approval from SanAir to assure that parts of the report are not taken out of context. This report and any information contained within shall not be edited, altered, or modified in any way by any persons or agencies receiving, viewing, distributing, or otherwise possessing a copy of this final report. The laboratory reserves the right to perform amendments to any finalized report, of which shall supersede and make obsolete any previous editions. Such changes, modifications, additions, or deletions shall be effective immediately upon notice thereof, which may be given by means including but not limited to posting on the SanAir client portal website, electronic or conventional mail, or by any other means.

The information provided in this report applies only to the samples submitted and is relevant only for the date, time, and location of sampling. The accuracy of the results of the analysis is dependent upon the method of sample procurement and information provided by the client on the COC. SanAir is not responsible for the method of sample procurement. SanAir assumes no responsibility for information provided by the client on the COC such as project number, project name, collection dates, po number, special instructions, samples collected by, sample numbers, sample identifications, sample type, selected analysis type, flow rate, total volume or area, and start stop times that may affect the validity of the results in this report. SanAir only assures the precision and accuracy of the data it generates and assumes no responsibility for errors or biasing that occur during collection prior to SanAir's receipt of the sample(s). Evaluation reports are based solely on the sample(s) in the condition in which they are received at the laboratory and on the information provided by the client on the COC. Sample(s) were received in good condition unless otherwise noted on the report. All quality control results are acceptable unless otherwise noted. SanAir does not make contamination corrections to reports based upon analysis of laboratory and/or field blanks. When the client requires samples to be tested that deviate from a specific method or condition, all reported results may be affected by the deviation. SanAir assumes no responsibility or liability for the manner in which the results are used or interpreted. SanAir's Method Detection Limits (MDL) and Reporting Limits (RL) have been derived using various materials meeting each accrediting agencies' standards. All samples are disposed of after 60 days unless otherwise requested by the client. For Lead Exposure Limits, refer to HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards and State and Federal Regulations, where applicable.

SanAir Technologies Laboratory, Inc. participates in the Environmental Lead Accreditation Program (ELAP) administered by AIHA LAP, LLC (Laboratory ID LAP-162952), and has met the EPA's NLLAP program standards. SanAir also participates in the State of New York's DOH-ELAP program (NY Lab Id No. 11983) for lead in paint. This report does not constitute nor shall be used by the client to claim product, process, system, or person certification, approval, or endorsement by AIHA LAP, LLC, NELAC, NIST, and/or any other U.S. governmental agencies. All or some test results contained in this report may not be accredited by every local, state or federal regulatory agency. Refer to the SanAir website at www.sanair.com for copies of current certificates and scopes of various accreditations, certifications, and licenses or contact the laboratory for inquiries regarding the status or scope of an accreditation or certification.

AIHA LAP, LLC Lab ID: LAP-162952

New York State Department of Health Laboratory ID No: 11983

State of Connecticut Department of Public Health Environmental Laboratory Registration Number: PH-0105

Ohio Department of Health Environmental Lead Laboratory Approval Number E10049

State of Rhode Island Department of Health Environmental Lead Laboratory No LAO00371

Revision Date 3/24/2025



The Identification Specialists

Analysis Report
prepared for
Environmental Consulting & Management Inc

Report Date: 6/16/2025

Project Name: Fogarty Manor

Project #: 250275

SanAir ID#: 25036785



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SanAir ID Number
25036785
FINAL REPORT
6/16/2025 11:46:00 AM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
Bristol, RI 02809
Phone: 401-438-1360

Project Number: 250275
P.O. Number:
Project Name: Fogarty Manor
Collected Date: 6/4/2025
Received Date: 6/9/2025 8:55:00 AM

Dear Joseph M. Lepore,

We at SanAir would like to thank you for the work you recently submitted. The 5 sample(s) were received on Monday, June 09, 2025 via FedEx. The final report(s) is enclosed for the following sample(s): L-4. The following sample(s) were unusable and were not tested: L-1, L-2, L-3, L-5

These results only pertain to this job and should not be used in the interpretation of any other job. This report is only complete in its entirety. Refer to the listing below of the pages included in a complete final report.

Sincerely,

A handwritten signature in black ink, appearing to read "Abisola Kasali".

Abisola Kasali
Metals Laboratory Director
SanAir Technologies Laboratory

Final Report Includes:

- Cover Letter
- Chemistry Analysis
- Disclaimers and Additional Information

Sample conditions:

- 1 samples in Good condition.
- 4 samples in QNS condition. (#1, #2, #3, #5)



SanAir ID Number
25036785
FINAL REPORT
6/16/2025 11:46:00 AM

Name: Environmental Consulting & Management Inc
Address: 50 Kickemuit Ave
Bristol, RI 02809
Phone: 401-438-1360

Project Number: 250275
P.O. Number:
Project Name: Fogarty Manor
Collected Date: 6/4/2025
Received Date: 6/9/2025 8:55:00 AM

Analyst: Templeton, Kat
Test Method: SW846/M3050B/7000B

Lead Paint Analysis

PAINT Sample	Description	$\mu\text{g Pb}$ In Sample	Sample Size (grams)	Calculated RL	Sample Results	Sample Results
25036785 - 4	L-4 Black Rail Paint Pit	129	0.1094	91.4	1181 $\mu\text{g/g (ppm)}$	0.118 % By Weight

Method Reporting Limit <10 $\mu\text{g}/0.1 \text{ g}$ paint

Signature: *Kaitlyn Templeton*
Date: 6/10/2025

Reviewed: *Abigail*
Date: 6/10/2025

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AIHA LAP, LLC Lab ID: LAP-162952

New York State Department of Health Laboratory ID No: 11983

State of Connecticut Department of Public Health Environmental Laboratory Registration Number: PH-0105

Ohio Department of Health Environmental Lead Laboratory Approval Number E10049

State of Rhode Island Department of Health Environmental Lead Laboratory No LAO00371

Revision Date 3/24/2025

SECTION 01250

ALTERNATES

PART 1 - GENERAL

1.01 SUMMARY

- A. List price for each alternate in the Form of Bid. Include cost of modifications to other work to accommodate alterations. Include related costs such as overhead and profit.
- B. Owner will decide which alternates are selected for inclusion in the Contract.
- C. Alternates are described briefly in this section. The contract documents define the requirements for alternates.
- D. Coordinate alternates with related work to ensure that work affected by each selected alternate is properly accomplished.
- E. Alternates will be taken in order.

PART 2 – ALTERNATES

2.01 ALTERNATES

A. BID ALTERNATE NO. 1:

Deduct from the Base Bid Price, the cost associated with the specified work for *painting* of the elevator pits of the two (2) buildings.

B. BID ALTERNATE NO. 2:

Deduct from the Base Bid Price, the cost associated with the specified work for *painting* of the upper and lower-level Elevator Penthouse Machine Rooms of the two (2) buildings.

END OF SECTION

SECTION 01270

UNIT PRICES

PART 1 – GENERAL:

1.01 SUMMARY

- A. Related Documents: Provisions established in General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.
- B. Section Includes: Unit Prices.

1.02 GENERAL REQUIREMENTS

- A. Perform Work required by Unit Prices in accordance with Contract Documents.
- B. Unit Prices cover portions of Work added to or deducted from quantities indicated by Contract Documents.
- C. Unit Prices are for work in place, except where indicated otherwise.
- D. Acceptance or rejection of Unit Prices, partially or completely, will be declared at time of Contract award.
- E. Unit Prices for additions or deletions include:
 - 1. Products.
 - 2. Delivery to site.
 - 3. Supervision and labor.
 - 4. Installation, including associated accessories.
 - 5. Insurance.
 - 6. Applicable taxes.
 - 7. Overhead and profit.
 - 8. Handling, including receiving, unloading, uncrating, storage, and distribution.
 - 9. Protection from damage and from elements.
 - 10. Submittal and processing of product data, shop drawings, samples, and other required submittals.
 - 11. Other expenses required to complete installation.

1.03 SCHEDULE OF UNIT PRICES:

- A. Contractor's Unit Price Note: The following Unit Prices are intended to provide the Owner with predetermined prices should changes to the Base Bid Contract be required. The Owner reserves the right to include any Unit Price Item for adding or deleting work. The Contractor agrees to modify his Base Bid by the shown amount.

1. Deduct from the Bid Price, the cost to complete the work associated with providing the specified *'re-skinning' of the existing elevator entrance door jambs (and transoms located on Ground Floor Lobby) with new #4 finish, #14 USSG stainless steel; in substitution, provide polishing of the existing stainless steel door skins with a multi-stage mechanical grinder/polisher*, in accordance with the Bid Documents.

DEDUCT: \$_____per opening

2. Pertaining to Section 00500.1, Elevator Service Contract:
Hourly Rate on Additional Service Repairs between the hours of 8:00am and 4:30pm

Straight Time:

Supervisor	\$_____per hour
Mechanic	\$_____per hour
Helper	\$_____per hour

3. Pertaining to Section 00500.1, Elevator Service Contract:
Hourly Rate on Repairs between the hours of 4:30pm and 8:00am

Overtime:

Supervisor	\$_____per hour
Mechanic	\$_____per hour
Helper	\$_____per hour

4. Pertaining to Section 00500.1, Elevator Service Contract:

Holiday Rate:

Supervisor	\$_____per hour
Mechanic	\$_____per hour
Helper	\$_____per hour

PART 2 – PRODUCTS:

Not Used.

PART 3 – EXECUTION:

Not Used.

END OF SECTION

SECTION 01300

SCHEDULING

PART 1 - GENERAL

1.01 SUMMARY

- A. Working hours shall be between 7:30 a.m. and 4:00 p.m., Monday through Friday. The contractor will not be allowed to work on holidays observed by the *Pawtucket Housing Authority*. A list of these holidays can be obtained from the Housing Authority.
- B. Prior to beginning any work, the Contractor shall submit a schedule as described herein for all work to be completed, for the Owner's review and acceptance.

1.02 DESCRIPTION:

- A. Work Included: To assure adequate planning and execution of the work so that the work is completed within the number of calendar days allowed in the Contract, and to assist the Architect in appraising the reasonableness of the proposed schedule and in evaluating progress of the work, prepare and maintain the schedules and reports described in this section.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Requirements for Progress Schedule: General Conditions.
 - 3. Construction Period: Form of Agreement.

1.03 QUALITY ASSURANCE:

- A. Employ a scheduler who is thoroughly trained and experienced in compiling construction schedule date, and in preparing and issuing periodic reports as required below.
- B. Perform data preparation, analysis, charting, and updating in accordance with standards approved by the Architect.
- C. Reliance upon the approved schedule:
 - 1. The construction schedule as approved by the Architect will be an integral part of the Contract and will establish interim completion dates for the various activities under the Contract.
 - 2. Should any activity not be completed within seven (7) days after the stated scheduled date, the Owner shall have the right to require the Contractor to expedite completion of the activity by whatever means the Owner deems appropriate and necessary, without additional compensation to the Contractor.

3. Should any activity be thirty (30) days or more behind schedule, the Owner shall have the right to perform the activity or have the activity performed by whatever method the Owner deems appropriate.
4. Costs incurred by the Owner and by the Architect in connection with expediting construction activity under this Article shall be reimbursed by the Contractor.
5. It is expressly understood and agreed that failure by the Owner to exercise the option either to order the Contractor to expedite an activity or to expedite the activity by other means shall not be considered to set a precedent for any other activities or waive the Owner's right to do so.

1.04 SUBMITTALS:

- A. Submit initial schedules within seven (7) calendar days after date of Award of Contract.
 1. A/E will review schedules and, if changes are required by A/E, return reviewed copy within five (5) workdays after receipt.
 2. If required, Contractor shall resubmit within five (5) workdays after return of reviewed copy.
- B. Submit monthly, updated schedules accurately depicting progress to first day of each month.
- C. Comply with pertinent provisions of Section 01300.

1.05 FORM OF SCHEDULE:

- A. Prepare in form of horizontal bar chart:
 1. Provide separate horizontal bar column for each trade or operation.
 2. Order: Chronological order of beginning of each item of work.
 3. Identify each column:
 - a) By major specification number.
 - b) By distinct graphic delineation.
 4. Horizontal Time Scale: Identify first workday of each week.
 5. Scale and Spacing: To allow space for updating.
- B. Minimum sheet size: 11" × 17".

1.06 CONTENT OF SCHEDULE:

- A. Provide complete sequence of construction by activity.
 1. Decision dates for:
 - a) Products specified by allowances.
 - b) Selection of finishes.
 2. Dates for beginning and completion of each element of construction.
- B. Identify work of separate floors, or separate phases, or other logically grouped activities.
- C. Show projected percentage of completion for each item of work as of the first day of every other week.

1.07 UPDATING:

- A. At least every other week, show all changes occurring since previous submission of updated schedule.
- B. Indicate progress of each activity, show completion dates.
- C. Include:
 - 1. Major changes in scope.
 - 2. Activities modified since previous updating.
 - 3. Revised projections due to changes.
 - 4. Other identifiable changes.

1.08 DISTRIBUTION:

- A. Distribute copies of reviewed schedules to:
 - 1. Job site file.
 - 2. Subcontractor.
 - 3. Other concerned parties.
- B. Instruct recipients to report any inability to comply, and provide detailed explanation with suggested remedies.

PART 2 – PRODUCTS:

Not Used.

PART 3 – EXECUTION:

Not Used.

END OF SECTION

SECTION 01330

SUBMITTALS - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Work Included: Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Individual requirements for submittals also may be described in pertinent sections of these Specifications.
 - 3. Refer also to Division 14, Modernization of Traction Elevators, Section 013000, Submittals.
- C. Work Not Included:
 - 1. Un-required submittals will not be reviewed by the Architect.
 - 2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Architect.

1.02. GENERAL PROCEDURES FOR SUBMITTALS

- A. Timeliness - The Contractor shall transmit each submittal to the Architect sufficiently in advance of performing related Work or other applicable activities, so that the installation not be delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Architect in advance of the Work.
- B. Contractor's Review and Approval - Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Architect. Submittals shall be accompanied by a transmittal notice stating name of Project, date of submittal, "To", "From", (Contractor, Subcontractor, Installer, Manufacturer, Supplier), Specification Section, or Drawing No. to which the submittal refers, purpose (first submittal, resubmittal), description, remarks, distribution record, and signature of transmitter.
- C. Or-Equals - On the transmittal or on a separate sheet attached to the transmittal, the Contractor shall direct attention to any deviations including minor limitations and variations, from the Contract Documents.
 - 1. The Contractor and all Subcontractors shall submit to the Architect for consideration of any Or-Equal substitution, a written point by point comparison containing the name and full particulars of the proposed product to the product named or described in the Contract Documents.
 - 2. Upon receipt of a written request for approval of an Or-Equal substitution, the

Architect shall investigate whether the proposed item shall be considered equal to the item named or described in the Contract Documents. Upon conclusion of the investigation, the Architect shall promptly advise that the item is, or is not, considered acceptable as an Or-Equal substitution. Such written notice must have the concurrence of the Administrator.

4. In no case may an item be furnished on the Work other than the item named or described, unless the Architect considers the item equal to the item so named or described.
 5. The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Architect at the expense of the Contractor or Subcontractor submitting the substitution.
 6. The Architect may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor or Subcontractor, as the case may be, shall bear full cost for providing, delivering, and disposal of all such samples.
 7. The Contractor or Subcontractor, as the case may be, shall assume full responsibility for the performance of any item submitted as an "Or-Equal" and assume the costs of any changes in any Work which may be due to such substitution.
- D. Processing - All costs for printing, preparing, packaging, submitting, resubmitting, and mailing, or delivering submittals required by this contract shall be included in the Contract Sum.

1.02 QUALITY ASSURANCE:

A. Coordination of submittals:

1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

B. "Or Equal":

1. Where the phrase "or equal", or "or equal as approved by the Architect", occurs in the Contract Documents, do not assume that the materials, equipment, or methods will be approved as equal unless the item has been specifically so approved for this work by the Architect.
2. The decision of the Architect shall be final.

1.03 SUBMITTALS:

- A. Make submittals of shop drawings, samples, substitution requests, and other items in accordance with the provisions of this section.

1.04 CONTRACTOR'S RESPONSIBILITIES:

- A. It is the responsibility of the Contractor to check all dimensions and details on shop drawings, before submission to the A/E and reject same if necessary, and only forward to the A/E, shop drawings which he is reasonably certain fulfill the requirements of the Contract Documents and the work. Resulting costs for failure to do so shall be borne solely by the Contractor.
- B. The review of shop drawings by the A/E shall be general only, in character and not mean dimensions on the drawings have been checked, and will in no way, relieve the Contractor of the responsibility for proper fitting and construction of the work, nor from the necessity of furnishing materials or doing the work required by the drawings and/or specifications, which may not be indicated on the shop drawings when reviewed.
- C. **ALL SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR, AND MUST BEAR HIS STAMP OF REVIEW AND APPROVAL AND SIGNATURE, DRAWINGS SUBMITTED WITHOUT THIS SIGNED STAMP OF REVIEW AND APPROVAL WILL NOT BE CONSIDERED AND/OR ACCEPTED.**
- D. Submit prints of each drawing, including fabrication, erection, layout and setting drawings, and such other drawings as required under various sections of the specifications until final review is obtained. Submit copies of manufacturer's descriptive data including catalog sheets for materials, equipment and fixtures, showing dimensions, performance characteristics and capacities, wiring diagrams and controls, schedules and other pertinent information as required.
- E. Contractor is fully responsible for obtaining and distributing prints of shop drawings as necessary after, as well as before final approval.
- F. Designated person in Contractor's office shall be responsible for coordinating submission and distribution of submittals and notify A/E in writing within fifteen (15) calendar days after Award of Contract. Notify A/E in writing if designated person is changed.
- G. Meet with A/E within fifteen (15) calendar days after Award of Contract or date of Purchase Order to review procedure for submission and distribution of submittals and format of Submittal Schedule.
- H. Verify:
 - 1. Field measurements.
 - 2. Field construction criteria
 - 3. Catalog numbers and similar data
- I. Contractor's responsibility for errors and omissions in submittals is not relieved by A/E's review of submittals.
- J. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by A/E's review of submittals unless A/E gives written acceptance of specific deviations.
- K. Notify A/E in writing at time of submission of deviations in submittals from requirements of Contract Documents.
- L. Begin no work which requires submittals until return of submittals with A/E's stamp and initials or signature indicating review.
- M. Maintain a complete file of all shop drawings at the job site until completion of the project.

- N. Submit to the A/E samples of all material (whether or not requested) for review and color selection. The Contractor shall not assume that the A/E has certain color samples on file. The A/E shall prepare a color schedule upon receipt of ALL samples and materials. No materials or products submitted for color selections shall be reviewed individually.

1.05 ARCHITECT/ENGINEER'S DUTIES:

- A. Review submittals with reasonable promptness; allow ten (10) calendar days for Architect's review and twelve (12) calendar days for Architect's Design Consultant's review of shop drawings.
- B. Review for:
 - 1. Design concept (general conformance) of project.
 - 2. Information given in Contract Documents.
- C. Review of separate item does not constitute review of an assembly in which item functions.
- D. Affix stamp and initials or signature certifying general conformance only, of submittal. Review of shop drawings by Architect will be provided only when 1.04, Contractor's Responsibilities are fulfilled.
- E. Return submittals to Contractor for distribution.

1.06 ARCHITECT'S ACTION

- A. The Architect will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings:
 - 1. **Reviewed:** the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.
 - 2. **Make Correction Noted:** the Work may proceed provided it complies with the Architect's notations or corrections on the submittal and complies with the requirements of the Contract Documents. Acceptance of the Work will depend upon these compliances.
 - 3. **Revise and Resubmit or Rejected:** the Work covered by the submittal (purchasing, fabrication, delivery, or other activity) should not proceed. The submittal should be revised or a new submittal resubmitted without delay, in accordance with the Architect's notations stating the reasons for returning the submittal.
 - 4. **Rejected** - the work covered by the submittal is not in accordance with the Contract Documents and shall not proceed. The contractor shall resubmit without delay.

PART 2 – PRODUCTS

2.01 SCHEDULE OF MATERIALS:

- A. Within seven (7) calendar days after the Award of Contract, the Contractor shall submit to the A/E a schedule of all materials specified for the work which are likely to cause delay due to unavailability, extended delivery dates, or any other reason.

- B. The schedule shall contain the list of materials, the name of the supplier or suppliers that the Contractor contacted in attempting to purchase the material, the projected delivery dates and the reason for the anticipated delay.
- C. The Contractor shall assume full responsibility for additional costs incurred due to delay attributed to unavailability, insufficient time for delivery and/or installation of material or performance of the work, unless he has conformed with Paragraphs A and B above, except as noted in Paragraph D below. No extension of construction schedule time will be allowed.
- D. Delays in delivery of material caused by factors beyond the Contractor's control and occurring after the time stipulated in Paragraph A above, shall not be deemed to be the responsibility of the Contractor.

2.02 SHOP DRAWINGS, PROJECT DATA AND SAMPLES:

A. General:

- 1. Within ten (10) calendar days after Award of Contract, submit to the A/E, shop drawings, project data and samples required by specification sections.
- 2. The Contractor shall immediately submit to Architect for review, all shop drawings for long lead items.
- 3. Prepare and submit with Construction Schedule, a separate schedule listing dates for submission and dates reviewed shop drawings, project data and samples shall be provided for each product.
- 4. Number of Submittals:
 - a) Unless otherwise provided in this Section only, or as otherwise requested, submit five (5) copies of all submittals required. Such submittals included are those herein specified, as well as those indicated in their respective technical specification section. The Owner and A/E shall each retain one (1) copy of each such submittal. Three (3) copies shall be returned to the Contractor. The contractor shall be responsible for preparing and distributing additional copies to his suppliers and subcontractors.

B. Shop Drawings:

- 1. Original drawings, prepared by Contractor, subcontractors, supplier or distributor, which illustrate some portion of the work; showing fabrication, layout setting or erection details.
 - a) Prepared by a qualified detailer.
 - b) Identify details by reference to sheet and detail numbers shown on Contract Drawings.
 - c) Minimum sheet size 11" × 17".
- 2. Submittals shall include:
 - a) Date and revision dates.
 - b) Project title and number.
 - c) The name of: A/E, Contractor, subcontractors, supplier, manufacturer, separate detailer when pertinent.
 - d) Identification of product of material.
 - e) Relation to adjacent structure or materials.
 - f) Field dimensions, clearly identified as such.

- g) Specification section number.
- h) Applicable standards, such as ASTM number, or Federal Specification.
- i) A blank space, 4" x 5" for the A/E's grading stamp.
- j) Identification of deviations from Contract Documents.
- k) Contractor's stamp signed, certifying to review and approval of submittal, verification of field measurements and compliance with Contract Drawings.

C. Project Data:

- 1. Manufacturer's standard schematic drawings:
 - a) Modify drawings to delete information which is not applicable to project.
 - b) Supplement standard information to provide additional information applicable to project.
- 2. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.
 - a) Clearly mark each copy to identify pertinent material products or models.
 - b) Show dimensions and clearances required.
 - c) Show performance characteristics and capacities.
 - d) Show wiring diagrams and controls.

D. Samples:

- 1. Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which complete work is judged.
 - a) Office samples: Of sufficient size and quantity to clearly illustrate:
 - 1) Functional characteristics of product or material, with integrally related parts and attachment devices.
 - 2) Full range of color samples.

E. Upon completion of the project, the Contractor shall provide the Owner with a complete package containing two (2) sets of all project-related shop drawing submittals.

2.03 SCHEDULE OF VALUES

- A. Within one (1) week of the Award of the Contract or date of Purchase Order, submit a detailed Schedule of Values of the project by technical specification section, and coordinated with the Progress Schedule.
- B. Include all cash allowances as line items.
- C. Prepare Schedule of Values in the C.S.I. format as is herein.
- D. Each item in the Schedule of Values shall include its proper share of overhead and profit. This schedule, when approved by the A/E, shall be used only as a basis for the Contractor's Applications for Payment.

PART 3 – EXECUTION:

3.01 IDENTIFICATION OF SUBMITTALS:

- A. Consecutively number all submittals.
 - 1. When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
 - 2. On re-submittals, cite the original submittal number for reference.
- B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.
- C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.
- D. Maintain an accurate submittal log for the duration of the work, showing current status of all submittals at all times. Make the submittal log available to the Architect for his review upon request.

3.02 GROUPING OF SUBMITTALS:

- A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
 - 1. Partial submittals may be rejected as not complying with the provisions of the Contract.
 - 2. The Contractor may be held liable for delays so occasioned.

3.03 ARCHITECT'S REVIEW:

- A. Review by the Architect does not relieve the Contractor from responsibility for errors or omissions which may exist in the submitted data.
- B. Revisions:
 - 1. Make revisions required by the Architect.
 - 2. If the Contractor considers any required revision to be a change, he shall so notify the Architect as provided for in the General Conditions.
 - 3. Make only those revisions directed or approved by the Architect.

END OF SECTION

SECTION 01350
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide types of submittals listed in individual sections and number of copies required below.
 - 1. Shop drawings, reviewed and annotated by the Contractor - transparency and two blackline prints. Note: at project closeout, provide two (2) complete packages consisting of all project submittals for Owner's use.
 - 2. Product data - 4 copies.
 - 3. Samples - 2, plus extra samples as required to indicate range of color, finish, and texture to be expected.
 - 4. Inspection and test reports - 4 copies.
 - 5. Warranties - 4 copies.
 - 6. Survey data - 4 copies.
 - 7. Closeout submittals - 4 copies.
 - 8. Project photographs - 8 8x10 color prints each month and at beginning and end of construction. Include negatives.
- B. Comply with project format for submittals.
- C. Comply with submittal procedures established by Architect including Architect's submittal and shop drawing stamp. Provide required resubmittals if original submittals are not approved. Provide distribution of approved copies including modifications after submittals have been approved.
- D. Samples and shop drawings shall be prepared specifically for this project. Shop drawings shall include dimensions and details, including adjacent construction and related work. Note special coordination required. Note any deviations from requirements of the Contract Documents.
- E. Provide warranties as specified; warranties shall not limit length of time for remedy of damages Owner may have by legal statute. Warranties shall be signed by contractor, supplier or installer responsible for performance of warranty.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION

SECTION 01400
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate. Comply with manufacturers' tolerances.

1.03 REFERENCES

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

1.04 QUALITY ASSURANCE/CONTROL OF INSTALLATION

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

1.05 VERIFICATION OF CREDENTIALS AND LICENSES

- A. Persons employed on the project site shall have appropriate and current credentials and licenses in their possession, at the project site, for the work they are performing.
- B. Owner's Representative will be reviewing Contractor's Certified Payroll Records for conformance with Prevailing Wage Requirements.

- C. A Background Criminal Investigation (B.C.I.) may be required of the Contractor and his subcontractors prior to award. The Contractor shall complete this task and shall do so within a ten (10) workday allotment of time, prior to award of contract.
- D. Those persons without the appropriate credentials and licenses, including B.C.I.'s, will be subject to dismissal from the project site.

1.06 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to perform the following as applicable and to initiate instructions when necessary.
 - a. Observe site conditions.
 - b. Conditions of surfaces and installation.
 - c. Quality of workmanship.

1.07 CONTRACTOR'S QUALITY CONTROL

- A. Perform quality control during installation.

1.08 MOCK-UP REQUIREMENTS

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

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION

SECTION 01500
TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall be responsible for providing and maintaining all temporary facilities until Substantial Completion. Removal of such prior to Substantial Completion must be with the concurrence of the Architect. The Contractor bears full responsibility for providing any facility removed prior to Substantial Completion if required for the Work.

1.02. FIELD OFFICES

- A. The Contractor shall provide a suitable office at the site for use by Contractor personnel.
- B. The offices shall be set in a location approved by the Owner, and shall be maintained by the Contractor in a clean and orderly condition.

1.03. TEMPORARY TELEPHONES

- A. The Contractor shall provide cellular phone service for the use of the Contractor's authorized personnel and Subcontractors, and communications with Architect.
- B. The Contractor shall pay for all calls and charges in connection therewith.
- C. The building telephone shall not be used by the Contractor.

1.04 TEMPORARY TOILETS

- A. The Contractor shall provide and service an adequate number of toilet booths with chemical-type toilets.
- B. The toilets shall be erected in a location approved by the Owner and shall be maintained by the Contractor in a clean and orderly condition in compliance with all local and state health requirements.
- C. The Contractor may use portions of the Owner's sanitary system as approved by the Owner and Architect, provided that the Contractor (1) assumes full responsibility for the used portions of the sanitary system, and (2) pays all costs for operation, maintenance, cleaning, and restoration of used portions.

1.05 TEMPORARY STRUCTURES AND MATERIAL HANDLING

- A. The Contractor shall provide such storage sheds, temporary buildings, or trailers as required for the performance of the Contract.
- B. Materials shall be handled, stored, installed, cleaned, and protected in accordance with the best practice in the industry and, except where otherwise specified in the Contract Documents, in accordance with manufacturer's specifications and directions.

1.06 TEMPORARY STAGING, STAIRS, CHUTES

- A. Except as otherwise specified, the Contractor shall furnish, install, maintain in safe condition, and remove all scaffolds, staging, and planking, as required for the use of all trades for proper execution of the Work.
- B. The Contractor shall furnish, install, maintain, and remove all temporary ramps, stairs, ladders, and similar items as required for the use of all trades for the proper execution of the Work.

1.07 HOISTING FACILITIES

- A. Except as otherwise specified, the Contractor shall provide, operate, and remove material hoists, cranes, and other hoisting as required for the performance of the Work by all trades.

1.08 WATER

- A. The Contractor shall provide an adequate supply of cool drinking water with individual drinking cups for personnel on the job.

1.09 TEMPORARY ELECTRICITY

- A. The Contractor will be allowed to tie into the existing electric panels (house panels); the Owner will pay the energy-related costs. The Contractor shall make arrangements for, and furnish and install all necessary equipment to provide temporary power for his use on a during construction..
- B. Temporary electrical Work shall be performed under the direct supervision of at least one master electrician, who will be present on the project at all times when such work is being performed.
- C. The Contractor shall furnish, install, and maintain lamps in operating condition. Temporary Work of a special nature, not otherwise specified hereunder, shall be provided, maintained, and paid for the trade requiring same.
- D. All temporary Work shall be provided in conformity with the National Electric Code, State laws, and requirements of the power company.
- E. The Contractor shall dismantle and completely remove from the project site, temporary electrical facilities upon Substantial Completion.

1.10 PARKING AND ACCESS TO THE BUILDING

- A. The Owner's parking lot is not to be used by the Contractor or his personnel for the duration of the project.
- B. Full access to the buildings must be maintained at all times, for use by Tenants.

1.11 WEATHER PROTECTION

- A. "Weather Protection" means the temporary protection of that Work adversely affected by moisture and wind. The Contractor shall furnish and install "Weather Protection" material and be responsible for all costs associated with the same.
- B. The Contractor shall assume the entire responsibility for weather protection during construction (until Substantial Completion), and shall be liable for any damage to any Work caused by failure to supply proper weather protection and proper ventilation.
- C. It is to be specifically understood that the Contractor shall do no work under any conditions deemed unsuitable by the Architect to the satisfactory execution of the Work. This provision shall not constitute any waiver, release, or lessening of the Contractor's obligation to bring the Work to Substantial Completion within the period of time set forth in the Contract Documents.

END OF SECTION

SECTION 01550
PROJECT MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Contractor shall schedule and administer pre-construction meetings, periodic progress meetings, and schedule meetings throughout the progress of the work.
 - 1. Prepare agenda for meetings.
 - 2. Distribute written notice of each meeting.
 - 3. Make physical arrangements for meetings.
 - 4. Prepare minutes of meetings unless otherwise directed in writing by the Architect.
- B. Representatives of contractors, subcontractors and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. A/E will attend meetings to ascertain that work is expedited consistent with Contract Documents and the Construction Schedules.
- D. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.
 - 2. The Contractor's relations with his subcontractors and materials suppliers, and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

1.02 QUALITY ASSURANCE:

- A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority and commit the Contractor to solutions agreed upon in the project meetings.

1.03 SUBMITTALS:

- A. Make submittals of shop drawings, samples, substitution requests, and other items in accordance with the provisions of this section.

PART 2 – PRODUCTS:

Not Used.

PART 3 – EXECUTION:

3.01 PRE-CONSTRUCTION MEETING

- A. Schedule within ten (10) calendar days after date of Purchase Order.
 - 1. Minutes:
 - a.) The Contractor shall compile minutes of each project meeting, and will furnish three copies to the Architect and required copies to the Owner.
 - b.) Recipients of copies may make and distribute such other copies as they wish.
- B. Locations: On Site. (Location to be determined)
- C. Attendance:
 - 1. Owner's Representative
 - 2. A/E and his/her professional consultants
 - 3. Resident Project Representative
 - 4. Contractor's Superintendent
 - 5. Major Subcontractors
- D. Suggested Addenda:
 - 1. Distribution and discussion of:
 - a) List of major subcontractors and suppliers.
 - b) Projected Construction Schedules
 - 2. Critical work sequencing.
 - 3. Major equipment deliveries and priorities.
 - 4. Project Coordination
 - a) Designation of responsible personnel.
 - 5. Procedures and processing of:
 - a) Field decisions
 - b) Proposal requests
 - c) Submittals
 - d) Change Orders
 - e) Applications for Payment
 - 6. Adequacy of distribution of Contract Documents.
 - 7. Procedures for maintaining Record Documents.
 - 8. Use of premises:
 - a) Office, work and storage areas.
 - b) Owner's requirements.
 - 9. Construction facilities, controls and construction aids.
 - 10. Temporary utilities.
 - 11. Safety and first-aid procedures.
 - 12. Security procedures.
 - 13. Housekeeping procedures.

3.02 PROGRESS MEETINGS:

- A. Schedule regular periodic meetings, as required.
- B. Hold called meetings as required by progress of work.
- C. Location of Meetings: The project field office of the Contractor or other location as determined necessary.
- D. Attendance:

1. Owner, Contractor, A/E and his professional consultants as needed or when requested by the Owner.
2. Subcontractors as appropriate to the agenda.
3. Suppliers as appropriate to the agenda.
4. Others.

E. Suggested Agenda:

1. Review, approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to Construction Schedule.
8. Plan progress, schedule, during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Life/safety issues.

F. Contract Documents:

1. **The General Contractor shall bring to every meeting, one (1) complete set of drawings and project manual, in addition to the one (1) on-site as-built set of drawings and project manual.**

END OF SECTION

SECTION 01600
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide products from one manufacturer for each type or kind as applicable. Provide secondary materials as acceptable to manufacturers of primary materials.
- B. Provide products selected or equal approved by Architect. Products submitted for substitution shall be submitted with complete documentation and include construction costs of substitution including related work.
- C. Request for substitution must be in writing. Conditions for substitution include:
 - 1. An 'or equal' phrase in the specifications.
 - 2. Specified material cannot be coordinated with other work.
 - 3. Specified material is not acceptable to authorities having jurisdiction.
 - 4. Substantial advantage is offered to the Owner in terms of cost, time, or other valuable consideration.
- D. Substitutions shall be submitted subsequent to the opening of bids but prior to award of contract, unless otherwise acceptable. Approval of shop drawings, product data, or samples containing substitutions is not an approval of a substitution unless items are clearly presented as a substitution at the time of submittal
- E. In making request for substitution, Bidder/Contractor represents:
 - 1. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.
 - 2. He will provide the same guarantee for substitution as for product or method specified.
 - 3. He will coordinate installation of accepted substitution into work, making such changes as may be required for work to be complete in all respects.
 - 4. He waives all claims for additional costs related to substitution which consequently becomes apparent.
 - 5. Cost data is complete and includes all related costs under his/her Contract, but excludes:
 - a) Costs under separate contracts.
 - b) Architect/Engineer's redesign.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION

SECTION 016200

SUBSTITUTION REQUEST FORM

No substitutions will be considered without this completed substitution request form and supporting documentation. Substitutions made without completion of this form will be considered defective work as stated in AIA A201.

Date: _____ Number: _____

Re: Request for Substitution

The Contractor proposes the following substitution in accordance with the requirements of the Contract Documents:

Scope of Substitution	
Specification Reference	
Drawing Reference	
Reason for Proposed Substitution	
Benefit to Owner	
Impact on Project Cost	
Impact on Project Schedule	
Impact on Guarantees and Warranties	

Coordination and
Compatibility Required
with Adjacent Materials
and System

List Deviations
From Specified
Requirements

Attachments: Attach supporting documentation sufficient for Architect to evaluate substitution.
Substitution Request Forms submitted without adequate documentation will be returned without review.

Attachments

Response Date: List date by which response by Architect is requested to maintain project schedule and
allow sufficient time for inclusion of proposed substitution.

Response Date

Submitted By

Firm and Address

Signature below signifies acceptance of responsibility for accuracy and completeness of information
included in this Substitution Request Form.

Authorized Signature

ARCHITECT'S RESPONSE

Notations listed below shall have same meaning as on Architect's approval stamp. Clarifications to or changes in project schedule or time shall be processed using standard project forms.

Architect's
Response

- _____ Approved
- _____ Approved as Corrected
- _____ Revise and Resubmit
- _____ Rejected
- _____ Returned Without Review

Remarks

Date

Signed

END OF FORM



**SUBSTITUTION
REQUEST**
(After the Bidding/Negotiating Phase)

Project: _____ Substitution Request Number: _____
From: _____
To: _____ Date: _____
A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone: _____
Trade Name: _____ Model No: _____
Installer: _____ Address: _____ Phone: _____

History: ☐ New product ☐ 1-4 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product:

☐ Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
Address: _____ Owner: _____
Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase — Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

A/E's REVIEW AND RECOMMENDATION

- ☐ Approve Substitution - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- ☐ Approve Substitution as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- ☐ Reject Substitution - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

OWNER'S REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures. Prepare Change Order.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures. Prepare Change Order.
- ☐ Substitution rejected - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E

SECTION 01630

WARRANTY

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall submit a written warranty covering his work for a period of **two (2) years**. All warranties shall go into effect on the date of **Substantial** Completion. Refer to Section 14220, Modernization of Electric Traction Elevators, Section 18000, Maintenance, Maintenance & Warranty Summary, 1.3.A, 1.3.B and 1.3.C.
- B. Each elevator, when deemed acceptable for public use and when turned over to the Housing Authority, shall be the start of two (2)-year warranty. In summary, each of the four (4) elevators will have its own start and end date for the warranty duration. The standard one (1)-year elevator package warranty will be inclusive of this two (2)-year warranty. The maintenance contract will be in effect for all existing 'pre-modernized' elevators until the last elevator has been completed and turned over to the Housing Authority for use.

PART 2 - PRODUCTS - Not Applicable to this Section

PART 3 - EXECUTION - Not Applicable to this Section

END OF SECTION

SECTION 01660

CLEANING UP

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Work Included: Throughout the construction period, maintain the site in a standard of cleanliness as described in this Section.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other sections of these specifications.

1.02 QUALITY ASSURANCE:

- A. Conduct daily inspection, and more often if necessary, to verify that requirements for cleanliness are being met.
- B. In addition to the standards described in this section, comply with pertinent requirements of governmental agencies having jurisdiction.

1.03 RESPONSIBILITIES OF THE CONTRACTOR:

- A. The General Contractor shall be responsible for the work of this Section, however, each subcontractor engaged upon the work shall bear his/her full responsibility in cleaning up immediately each day upon completion of his work in accordance with the provisions of this Section or other applicable Sections of the Specifications and shall cooperate with the Contractor to that effect.
- B. The above shall in no way be construed to relieve the Contractor of his responsibility for leaving all work in a clean and proper condition, satisfactory to the Owner and the A/E.

1.04 REQUIREMENTS OF REGULATORY AGENCIES:

- A. Safety Standards: Maintain project in accordance with the following safety and insurance standard: Federal Occupational Safety and Health Act - Latest Edition.
- B. Fire Protection: Store volatile waste in approved metal containers, and remove from premises daily.
- C. Pollution Control: Conduct clean-up and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Burning or burying of rubbish and waste materials on project site is not permitted.
 - 2. Disposal of volatile fluid wastes (such as mineral spirits, oil or paint thinner) in storm sanitary sewer systems or into streams or waterways is not permitted.

PART 2 - PRODUCTS:

2.01 CLEANING MATERIALS:

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning materials manufacturer.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION:

- A. Oversee cleaning and insure the grounds are maintained free from accumulations of waste material and rubbish.
- B. Sprinkle dusty debris with water and calcium chloride as needed. Calcium chloride shall be utilized only as directed by the Architect.
- C. At reasonable intervals daily, during the progress of work, clean-up site and access and dispose of waste materials, rubbish and debris.
- D. Do not allow waste material, rubbish and debris to accumulate and become an unsightly or hazardous condition.
- E. Remove waste materials, rubbish and debris from the site and legally dispose of at public or private dumping areas off the Owner's property.
- F. Vacuum clean applicable interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for acceptance or occupancy.
- G. Lower waste materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- H. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet newly painted surfaces.

3.02 FINAL CLEANING:

- A. Use experienced workmen, or professional cleaners for final cleaning.
- B. At completion of construction and just prior to acceptance or occupancy, conduct a final inspection of exposed exterior and interior surfaces.
- C. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from interior and exterior surfaces.
- D. Repair, patch and touch-up marred surfaces to match adjacent surfaces.
- E. Broom clean paved surfaces; rake clean other surfaces of grounds, daily.
- F. Replace air conditioning filters if units were operated during construction.
- G. Clean ducts, blowers and coils if air conditioning units were operated without filters during construction.
- H. Maintain cleaning until the work area is utilized by the Owner.

END OF SECTION

SECTION 01670

PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Any damage to buildings, roads, public roads, bituminous concrete areas, fences, lawn areas, trees, shrubbery, poles, underground utilities, etc. shall be made good by and at the Contractor's own expense, all to the satisfaction of the Owner. The Contractor shall patch, repair and/or replace all adjacent materials and surfaces damaged after the installation of new work at no expense to the Owner. All repair and replacement work shall match the existing in kind and appearance.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION

SECTION 01700
EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. The following are prerequisites to Substantial Completion. Provide the following:
 - 1. Punch list prepared by Contractor and subcontractors as applicable.
 - 2. Supporting documentation.
 - 3. Warranties.
 - 4. Certifications.
- B. Provide the following prerequisites to final acceptance:
 - 1. Final payment request with supporting affidavits.
 - 2. Completed punch list.
- C. Provide a marked-up set of drawings including changes which occurred during construction.
- D. Provide the following during project closeout:
 - 1. Submission of record documents.
 - 2. Submission of maintenance manuals.
 - 3. Removal of temporary facilities.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION

SECTION 01711
DEMOLITION AND REPAIR

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Carefully demolish and remove from the building and site those items specified to be demolished and removed. Provide patching and repairs to all surfaces as indicated and as required for a complete and proper job.
- B. Demolition shall not begin within the construction area or any other portions of the job site until all materials needed to complete the affected areas have been delivered to the job site.
- C. Scope: The demolition and repair work generally consists of, but is not necessarily limited to that work described and shown on the drawings:
 - 1. The work of this section also consists of, but is not necessarily limited to that work described in Section 01100, Summary of the Work and elsewhere herein.
- D. Related Work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.
 - 2. Section 01740: Cutting and Patching.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Match existing materials unless otherwise specified.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS:

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 DEMOLITION

- A. By careful study of the Contract Documents, determine the location and extent of selective demolition and repairs to be performed.

- B. Prepare and follow an organized plan for demolition and removal of items:
1. Shut off, cap, and otherwise protect existing utility lines.
 2. Completely remove items scheduled to be so demolished and removed, leaving surfaces clean, solid, and ready to receive new materials specified elsewhere.
 3. Where indicated on the drawings, completely remove footings, foundations, and above-ground and under-ground construction of all kinds.
 4. Remove rocks larger than 6" diameter, roots, and debris.
 5. In all activities, comply with pertinent regulations of governmental agencies having jurisdiction.
- C. The Contractor shall be responsible for the removal and disposal of all materials and equipment from the site and building during the project. Unless directed otherwise by the Owner, all demolition materials to be removed from the site shall be disposed of in accordance with applicable laws and regulations.
- D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.
- E. Demolished material shall be considered to be the property of the Contractor unless Owner otherwise directs Contractor, and shall be completely removed from the job site. The Contractor shall, prior to any removal of rubbish from the site, furnish written evidence satisfactory to the Architect and/or Owner, that he has disposed of all debris from his demolition in an approved dumping location. **Owner shall have first right of refusal of any and all materials and equipment scheduled for removal.**
- F. All demolition work shall be carried on in such a manner that the existing building and site and their component parts will not be damaged. Any damage to the building shall be corrected by the Contractor, to the satisfaction of the Owner and Architect, at no additional cost to the Owner.
- G. Demolition of any of the material to be removed shall be carefully scheduled so that no portion of the buildings shall remain unprotected from the weather when work is not in progress. The Contractor and/or Subcontractor shall have on hand at all times, temporary covers and other materials to make weather tight areas that may be without protection in the event of a sudden shower, snowfall, freezing weather, etc.

3.02 REPLACEMENTS

- A. In the event of demolition of items not so scheduled to be demolished, promptly replace such items to the approval of the Architect and at no additional cost to the Owner.

3.03 CUTTING, PATCHING, REPAIR

- A. Patch and repair all surfaces damaged as a result of the work of this Contract. When completed, patches or repairs shall not be visible to the naked eye from a distance of 6 feet.

END OF SECTION

SECTION 01720
PERMITS AND FEES

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall apply for, obtain and pay for all required permits and fees and shall arrange and schedule all inspections required.

PART 2 - PRODUCTS - Not Applicable To This Section

PART 3 - EXECUTION - Not Applicable To This Section

END OF SECTION

SECTION 01740
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide cutting and patching work to properly complete the work of the project, complying with the applicable project requirements for:
 - 1. Structural work.
 - 2. Mechanical/Electrical Systems.
 - 3. Visual requirements, including detailing and tolerances.
 - 4. Operational and safety limitations.
 - 5. Fire resistance ratings.
 - 6. Inspection, preparation, and performance.
 - 7. Cleaning.
- B. Do not cut and patch in a manner that would result in a failure of the work to perform as intended, decrease energy performance, increase maintenance, decrease operational life, or decrease safety performance.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Match existing materials for cutting and patching work with new materials conforming to project requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Inspect conditions prior to work to identify scope and type of work required. Protect adjacent work. Notify Owner of work requiring interruption to building services or Owner's operations.
- B. Perform work with workmen skilled in the trades involved. Prepare sample area of each type of work for approval.
- C. Cutting: Use cutting tools, not chopping tools. Make neat holes. Minimize damage to adjacent work. Inspect for concealed utilities and structure before cutting.
- D. Patching: Make patches, seams, and joints durable and inconspicuous. Comply with tolerances for new work.
- E. Clean work area and areas affected by cutting and patching operations.

END OF SECTION

SECTION 01760

SURVEYS AND RECORD DRAWINGS

PART 1 - GENERAL

1.02 RECORD DRAWINGS

- A. Record Drawings shall consist of all the Contract Drawings.
- B. From the sets of drawings furnished by the Owner, the Contractor shall reserve one set for record purposes. From this set, the Contractor shall detach and furnish, at no charge to the Mechanical and Electrical Subcontractors the drawings of their portion of the Work for the same purpose.
- C. The Contractor and the above Subcontractors shall keep their record set on the site at all times and note on it in colored ink or pencil, neatly and accurately, at the end of each working day, the exact location of their work as actually installed. This shall include the location and dimensions of underground and concealed Work and any architectural, mechanical, or electrical variations from the Contract Drawings. All changes, including those issued by Addendum, Change Order, or instructions by the Architect shall be recorded. Record Drawings shall be prepared for the entire project and include all Work.
- D. The Architect may periodically inspect the Record Drawings at the site. The proper and current maintenance of the information required on these drawings shall be a condition precedent to approval of the monthly requisitions for periodic payment.
- E. At Substantial Completion the Contractor shall submit the complete set of Record Drawings to the Architect. The Architect will review these drawings and return them to the Contractor with necessary comments.
- F. Upon receipt of a set of electronic media files of the original contract drawings from the Architect, the Contractor and Subcontractors shall transfer the As-Built information shown on the Record Drawings. This drafting shall be done by an experienced draftsman and match the original drawings.
- G. The Contractor shall, at its own expense, prepare two sets of prints and then submit copies of the prints to the Architect. Each sheet shall be clearly marked "Record Drawing" and bear the date of printing. Submission of accurate Record Drawings and their approval by the Architect shall be a condition precedent to final payment.

END OF SECTION

SECTION 01780

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY

- A. This section supplements the General Conditions.
- B. Consult the individual sections of the specifications for specific items required under those sections.

1.02 DESCRIPTION:

- A. Work Included: Provide an orderly and efficient transfer of the completed work to the Owner.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Activities relative to contract closeout are described in, but not necessarily limited to the General Conditions.
 - 3. "Substantial Completion" is defined in the General Conditions, and herein.

1.03 QUALITY ASSURANCE:

- A. Prior to requesting inspection by the Architect, use adequate means to assure that the work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.04 OCCUPANCY PERMIT (as applicable)

- A. The Contractor shall coordinate the efforts of all Subcontractors and obtain the Completion Certificate from the local Building Department, as required by the Building Official. The Contractor shall pay any Building Department fee associated with the Occupancy Permit.

1.05 RECORD DRAWINGS

- A. Consult the individual sections of the Specifications for the specific requirements of those sections. In cases of inconsistency the more stringent requirement, as directed by the Architect, shall be required.
- B. Prior to final payment and completion the Contractor shall provide all Record Drawings and media (CDs, flash drives, etc.) as required under other sections of the Specifications.

1.06 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Prior to final payment and completion the Contractor shall provide all Maintenance Instructions as required by the Contract Documents.
- B. Consult the individual sections of the specifications for the specific requirements for those sections and for further details and descriptions of the requirements.

C. OPERATING INSTRUCTIONS AND MANUALS

1. Subcontractors, installers and suppliers shall furnish to the Contractor two sets of operating and maintenance instructions of all mechanical, electrical and manually operated equipment furnished and installed by them. Mechanical and electrical Subcontractors shall furnish instructions as specified in their respective sections.
2. The Contractor shall collect all of the above instructions, bind them into two complete sets and submit them to the Architect who will deliver them to the Owner.
3. Submission of operating and maintenance instructions shall be a condition precedent to final payment.

D. INSTRUCTION OF OWNER'S PERSONNEL.

1. Where specified in the individual sections of the specifications, the Contractor and Subcontractor shall instruct the Owner's personnel at the site, in the use and maintenance of equipment installed under the Contract.
2. Submission to the Architect of a certificate of compliance to this requirement, signed by the Contractor and the Owner's Representative, shall be a condition precedent to final payment.

1.07 SUBSTANTIAL COMPLETION:

- A. When Contractor considers the work is substantially complete, he shall submit to A/E:
 1. A written notice that the work, or designated portion thereof is substantially complete.
 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, A/E will make an inspection to determine the status of completion.
- C. Should A/E determine that the work is not substantially complete:
 1. A/E will promptly notify the Contractor in writing, giving reasons thereof.
 2. Contractor shall remedy the deficiencies in the work and send a second written notice of substantial completion to the A/E.
 3. A/E will re-inspect the work.
- D. When A/E concurs that the work is substantially complete he will:
 1. Prepare a Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the A/E.

1.08 FINAL INSPECTION:

- A. When Contractor considers the work is complete, he shall submit written certification that:
 1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 5. Work is completed and ready for final inspection.
- B. A/E will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should A/E consider that the work is incomplete or defective:
1. A/E will promptly notify the Contractor in writing, listing the incomplete or defective work.
 2. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to A/E that the work is complete.
 3. A/E will re-inspect the Work.
- D. When the A/E finds that the work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.09 RE-INSPECTION FEES:

- A. Should A/E perform re-inspections due to failure of the work to comply with the claims of status of completion made by the Contractor, and site visits are required in addition to those noted previously under Substantial Completion and Final Inspection:
1. Contractor shall compensate A/E for such additional services. A/E fees shall be charged to the General Contractor at the A/E standard hourly rate of \$175.00/hr.
 2. Processing of Final Payment to the Contractor will not be completed until full payment for additional A/E Services is made by the Contractor to the Architect.

1.10 CONTRACTOR'S CLOSEOUT SUBMITTALS AND PROCEDURES:

- A. Provide submittals to Architect that are required by governing or other authorities, including the following closeout documents. Six (6) originally executed copies of all documentation shall be submitted. **Note: these items must be submitted prior to issuance of the Final Application for Payment.**
1. AIA Document G706 - Contractor's Affidavit of Payment of Debts and Claims, latest Edition.
 2. AIA Document G706A - Contractor's Affidavit of Release of Liens, latest Edition.
 3. AIA Document G707 - Consent of Surety Company to Final Payment, latest Edition.
 4. Contractor's Certificate and Release (Architect to provide Contractor with form for Contractor to complete and return to Architect)
 5. Certificate of Completion-Consolidated (completed by Architect)
 6. Contractor's 2-year Warranty statement
- B. Submit Final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- C. Convey fully corrected and updated set of Project Record Documents to Architect with Final Application for Payment.
- D. Evidence of compliance with requirements of governing authorities:
1. Certificate of Occupancy.

- E. Final Completion will be considered only when Architect has approved and accepted possession of required closeout documents, and has determined closeout procedures are completed.
- F. Operating and Maintenance Data, Instructions to Owner's Personnel.
- G. Warranties and Bonds.
- H. Keys and Keying Schedule.
- I. Spare Parts and Maintenance Materials.

1.11 FINAL ADJUSTMENT OF ACCOUNTS:

- A. Submit a final statement of accounting to the Architect.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a) Previous Change Orders.
 - b) Allowances.
 - c) Unit Prices.
 - d) Deductions for uncorrected work.
 - e) Penalties and Bonuses.
 - f) Deduction for liquidated damages.
 - g) Deductions for re-inspection payments.
 - h) Other adjustments.
 - 3. Total Contract Sum, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
- C. The Architect will prepare a final Change Order reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.12 FINAL APPLICATION FOR PAYMENT:

- A. Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Provisions of the Contract.
- B. See 1.09 regarding inspection fees, preceding.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

SECTION 05120

STRUCTURAL STEEL

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Work included: Provide structural steel work where shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- B. Comply with pertinent portions of Section 05500, Metal Fabrications, which information is not referenced herein.
- C. The structural steel work includes but is not necessarily limited to the following:
 - 1. Anchor bolts.
 - 2. Columns and base plates
 - 3. Beams.
 - 4. Connections and fasteners.
 - 5. Lintels.
 - 6. Other structural shapes indicated on drawings.
 - 7. Temporary bracing, guying and plumbing as required.
 - 8. Cleaning and preparation of metal surfaces to receive paint.
 - 9. Shop painting and field touch-up of metal surfaces.

1.02 RELATED WORK:

- A. Documents affecting work of this section including but not necessarily limited to General Conditions, Supplementary Conditions, and sections in Division 1 of these Specifications.

1.03 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Perform shop and/or field welding required in connection with the work of this Section in strict accordance with pertinent recommendations of the American Welding Society.
- C. All work shall be subject to inspections and tests by an independent testing agency supervised by the A/E.
- D. Visual and/or ultrasonic inspection of welds in accordance with the latest edition of Article 605 of AWS Building Code.

1.04 STANDARDS, CODES AND SPECIFICATIONS:

- A. The latest edition of the "Code of Standard Practice for Steel Buildings and Bridges", and the "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", of the American Institute of Steel Construction; the "Standard Code for Welding in Building Construction" of the American Welding Society are made a part of this specification, the same as if fully set forth herein.
- B. The above-referenced standards, codes and specifications apply in all respects unless amended or modified hereafter.

- C. Where provisions of referenced standards, codes, or specifications conflict with each other or with this specification, the provisions which in the opinion of the A/E insure the greatest safety, quality or appearance shall apply.

1.05 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01300.
- B. Approval of shop drawings shall be for size, arrangement and overall suitability of members and does not relieve the Contractor of his responsibility for the strength of connections, correctness of dimensions, size and quantities, and general fit up of parts.
- C. Errors shown on shop drawings whether reviewed for general conformance or not shall be the responsibility of the Contractor.
- D. Provide mill certificates certifying steel conforms to designated specifications. Provide notarized certificates certifying that columns possess designated fire rating.
- E. Inspection of High Strength Bolted Construction in accordance with Section 6, AISC Specification for Structural Joints.

1.06 PRODUCT HANDLING:

- A. Comply with pertinent provisions of Section 01600.
- B. Delivery of materials to be installed under other Sections:
 - 1. Deliver anchor bolts and other anchorage devices which are embedded in cast-in-place concrete or masonry construction to the project site in time to be installed before the start of cast-in-place concrete operations or masonry work.
 - 2. Provide setting drawings, templates, and directions for installation of the anchor bolts and other devices.
- C. Storage of Materials:
 - 1. Store structural steel members at the project site above ground on platforms, skids or other supports. Store beams with webs vertical.
 - 2. Protect steel from weather and corrosion.
 - 3. Store other materials in a weather-tight and dry place, until ready for use in the work.
 - 4. Store packaged materials in their original unbrocking package or container.

PART 2 - PRODUCTS

2.01 MATERIALS (General)

- A. In fabricating items which will be exposed to view, limit materials to those which are free from surface blemishes, pitting, rolled trade names, and roughness.
- B. Materials shall conform to the latest edition of the following specifications or manufacturer's standards.

1. Steel shapes, bars and plates	ASTM A-572	FY-50KSI
2. Structural Tubing	ASTM A-500	
3. Anchor Bolts	ASTM A-307	
4. Structural Bolts	ASTM A-325	
5. Weld Material	E70XX	
6. Shop Paint	Redlead; TT-6-86	
	Type I or Type II	
7. Concrete Fill for Columns	5000 psi @ 28 days	
8. Zinc Coating	ASTM 4-123; A-386	
9. Bitumastic Preservative	Mil-P-15230	

2.02 CONNECTIONS:

- A. Provide structural steel framed connections equivalent to AISC Framed Beam Connections unless otherwise shown.
- B. Design connections to support the total allowable uniform load of the beam for the given span plus the reaction from other beams framing in close to the supports.
- C. Where applicable, provide connections for concrete filled columns as indicated on the drawings.
- D. Weld or high strength bolt all shop connections unless otherwise shown.
- E. Punch or drill holes accurately. Do not burn to enlarge unfit holes. Ream holes that must be enlarged.

2.03 TUBULAR COLUMNS:

- A. Provide new steel tubular columns as manufactured by the Dean Column Company or approved equal.
- B. Provide cap and base plates with milled bearing surfaces, and weld to columns perpendicular to their vertical axis.
- C. Provide structural through-plate for beam to column connections unless otherwise indicated.

2.05 SHOP PAINTING:

- A. Paint all structural steel except as noted:
 - 1. Surfaces shall be dry and clean. Remove all dirt, rust, scale, loose paint and loose mill scale by scraping and wire brushing with power wire brush. Remove oil and grease. Welds, angles and crevices and rust pits need special attention. Architecturally exposed structural steel shall be given special attention as to cleaning and preparing the surfaces to receive paint. Follow good painting practice. Have paint delivered to shop and job site in original sealed containers, marked with manufacturer's name and brand identification. Use paint as prepared by manufacturer without thinning or other admixture.
 - 2. No paint is to be applied to surfaces of steel work to be encased in concrete, and zinc-coated surfaces; however, all steel surfaces are to be clean of oil, grease, rust, scale and foreign matter.
 - 3. Apply one coat of shop paint to a minimum dry film thickness of 1.5 mils on all structural steel requiring paint.

2.06 GALVANIZING:

- A. All steel exposed to the elements after completion shall be hot-dip galvanized.

2.07 FABRICATION:

- A. Fabricate Structural Steel in accordance with the aforementioned standards, codes and specifications, with the modifications and additional requirements specified in this section.
 - 1. Punch and drill steel as indicated for connections and for attachment of other materials.
 - 2. Exercise special care to ensure the structural steel work will be straight, plumb, and true and that its details will in no way interfere with the installation of such work.
- B. Refer to Section 05500 for pertinent other fabrication notes.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.
- B. Erect steel in conformance with all requirements of the American Institute of Steel Construction standards cited heretofore in this specification.
- C. Erection shall proceed as rapidly as possible. Provide temporary bracing and guying as required to assure stability of all elements. Plumb, level and secure all members to completely resist all dead loads, wind load, and erection and construction loads. Level and plumb all steel within a tolerance of 1:500. Make no permanent field connections until the work has been properly aligned and plumbed.
- D. Straighten all bent or damaged members before erecting; however, the A/E may reject replacement of members which, in his opinion will be unsafe or have an unsatisfactory appearance in the completed structure.
- E. Fasten splices of compression members after abutting surfaces have been brought completely into contact.
- F. Clean bearing surfaces and surfaces which will be in permanent contact before the members are assembled.
- G. Provide splices only where indicated.
- H. Tighten erection bolts used in welded construction and leave in place.
- I. Field connect beams to beams, and beams to columns with high strength bolts conforming to ASTM Specification A-325. Use 3/4" dia. bolts unless otherwise shown.
- J. Tighten bolts in accordance with "Specifications for Structural Joints Using ASTM A-325 Bolts". Turn-of-nut method shall be followed. However, should the Contractor elect to tighten bolts using a calibrated torque wrench, then he must furnish and install hardened steel washers under the element (nut or head) being turned.

- K. Do not field correct fabrication by gas cutting on any member in the structural framing.
- L. Contractor is responsible for the adequacy of members and connections to support construction loads.

3.02 FIELD TOUCH-UP PAINTING AND PROTECTIVE COATING:

- A. After erection, spot paint all field bolts, field welds and any abrasions occurring to shop coat, with same material used for original shop coat. Clean all steel after erection of all rust, scale, welding flux, grease and other foreign matter, with solvents and by wire brushing. Touch up all surfaces and leave the surfaces ready for painting by other as specified under the painting section of these specifications and/or as called for on the drawings.
- B. Repair all zinc-coating that has been damaged in handling or transporting or in welding, riveting or bolting by the application of a galvanizing repair paint conforming to specification MIL-P-21035.
- C. Coat all steel below slabs on grade, including leveling plates, base plates, anchor bolts, and columns with heavy coat of bitumastic preservative after assembly and prior to placement of slabs.

3.03 COORDINATION:

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this section.

3.04 INSTALLATION:

- A. General:
 - 1. Set work accurately into position, plumb, level, true and free rack.
 - 2. Anchor firmly into position.
 - 3. Where field welding is required, comply with AWS recommended procedures of manual-shielded metal-arc welding for appearance and quality of weld and for methods to be used in correcting welding work.
 - 4. Grind exposed welds smooth and touch-up shop prime coats.
 - 5. Do not cut, weld or abrade surfaces which have been hot-dip galvanized after fabrication and which are intended for bolted or secreted field conditions.
- B. Immediately after erection, clean the field welds, bolted connections, and abraded areas of shop priming. Paint the exposed areas with the same materials used for shop priming.

END OF SECTION

SECTION 05217
SAFETY RAILINGS

PART 1 GENERAL

1.1 SUMMARY: Section includes passive safety railing fall protection systems.

A. Non-penetrating safety railing system for roof edge fall protection:

1.2 REFERENCES

- A. Occupational Safety and Health Administration (OSHA) 9 CFR 1926 - Safety and Health Regulations for Construction, Subpart M-Fall Protection.
- B. Occupational Safety and Health Administration (OSHA) 29 CFR 1910.29 - Subpart D, Walking-Working Surfaces; Fall Protection Systems and Falling Object Protection.
- C. ASTM Standard E985 Standard Specification for Permanent Metal Railing Systems and Rails for Buildings (withdrawn 2005).

1.3 SUBMITTALS

- A. Submit under provisions of Section 1350 – Submittal Procedures.
- 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. Certification: Provide manufacturer's certifications that the ultimate strength of the fall protection system is equal to or greater than those specified.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: minimum of 15 years' experience manufacturing portable railing systems.
- B. Installer Qualifications: Minimum 2 person crew capable of positioning and installing portable roof fall protection system according to manufacturer's instructions.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store and maintain products in accordance with the manufacturer's printed recommendations.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design product: Garlock Safety Systems, Plymouth, MN, www.garlocksafety.com, Email: sales@garlockequip.com

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Comply with requirements of applicable local, state, and federal codes.
 - 1. OSHA: 29 CFR 1926.502.
 - 2. OSHA: 29 CFR 1910.29.
 - 3. ASTM Standard E985 Maximum Allowable Deflection under test conditions specified in section 7.1 and 7.2.
- B. Structural performance of cable and stanchion supports:
 - 1. Capable of withstanding a concentrated load of 200 pounds (90.6 kg), applied to the top rail at any point and in any direction.
 - 2. Capable of withstanding a uniform load of 50 pounds per linear foot (74.3 kg/m) applied to the top rail horizontally with a simultaneous load of 100 pounds per linear foot (148.6 kg/m) applied vertically downward.
 - 3. Design need not provide for both concentrated and uniform loads to be applied concurrently.
- C. Structural performance of cable infill:
 - 1. Capable of withstanding a horizontal concentrated load of 200 pounds (90.6 kg), applied to one foot (30.5mm) square area at any point on the infill.
 - 2. Infill includes cable, intermediate posts and other elements.
 - 3. Design need not provide for infill loads to be applied concurrently with top rail loading.

2.3 EQUIPMENT

- A. Customizable, non-penetrating safety guardrail system with weighted base.
 - 1. Description:
 - a. Standard rail section 16 gauge welded steel.
 - b. Rails: 1.625 inch (41.275 mm) O.D. 16 gage wall HREW tubing.
 - c. Length: Refer to Plans
 - d. Height: 42 inches (1067 mm).
 - e. Mid-rail: 20 inches (508 mm).
 - f. Finish: Epoxy powder coated safety yellow.
 - 2. Gate System; N/A
 - 3. Base Plates.
 - a. Material: Cast iron class 20B.
 - b. Size: 1 foot 9-1/2 inches by 1 foot 9-1/2 inches (546 by 546 mm).
 - c. Carrying handles: built in with a center carrying hook for base transporter.
 - d. Toeboard receptacles: two, built in.
 - e. Capacity: two railing sections and be able to accommodate adapter to support three or four intersecting rails on the same base.
 - f. Holes: Holes for permanent mounting and round holes for pins securing base to rail.
 - g. Bottom of base must have a concave recess no less than 125 sq. inches (806 sq.cm) to reduce rocking on uneven surfaces.
 - h. Base plate must provide no less than 5 inches (127 mm) of leading edge substrate contact as concentrated load is applied to base.
 - i. Finish: Epoxy powder coated safety yellow.
 - j. Four adhesive pads with directional non-skid resistant ridge pattern and minimum 28 sq. inches (180 sq.cm) of substrate contact each shall be adhered to the bottom of base plate to resist slippage on hard surfaces.
 - 4. Base Transporter.
 - a. Cart shall be able to carry individual base plates easily.

5. Cart.
 - a. 4 Wheel cart.
 - b. Cart shall be able to carry eight base plates and seven rail sections.
 - c. Cart shall have a manual winch to raise and lower base plates.
6. Speed Boards.
 - a. Material: 4 inches (102 mm) wide, zinc plated steel.
 - b. Attachment: Boards shall telescope to fit into toe board brackets on base plate and pinned to the base toe board brackets.

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.

3.2 PREPARATION

- A. 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 in accordance with manufacturer's instructions.
- B. Before installation, inspect all parts to ensure no damaged parts are used.

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

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Work included: Provide metal fabrication work where shown on the drawings, as specified herein, and as needed for a complete and proper installation. Work generally includes:

1. Fasteners
2. Miscellaneous metal materials and accessories
3. Refer also to Division 14, herein.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.

1.02 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Perform shop and/or field welding required in connection with the work of this Section in strict accordance with pertinent recommendations of the American Welding Society.

1.03 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01300.

PART 2 - PRODUCTS

2.01 MATERIALS (General)

A. In fabricating items which will be exposed to view, limit materials to those which are free from surface blemishes, pitting, rolled trade names, and roughness.

B. Comply with the following standards, as pertinent:

ASTM A36	- Steel plates, shapes and bars
ASTM A283	- Grade C - Steel plates to be bent or cold-formed
ASTM A501	- Steel tubing (hot formed, welded or seamless)
ASTM A306	- Grade 65 or ASTM A36 - Steel bars and bar size shapes
ASTM A108	- Cold finished steel bars
ASTM A336	- Cold rolled carbon steel sheets
ASTM A526	- Galvanized carbon steel sheets
ASTM A525	- (with G90 zinc)
AISI, Type 302, or 304 - 22 ga. with No. 4 finish unless otherwise specified on the drawings or herein.	
ASTM A53	- Gray iron castings, Grade A, Sched. 40; black finish unless otherwise noted.
ASTM A47	- Malleable iron castings
ASTM A53	- Steel pipe, Grade A, Sched. 40; black finish unless otherwise noted.

2.02 FASTENERS:

A. General:

1. For use where built into exterior surfaces, provide zinc-coated fasteners.
2. Provide fasteners of type, grade and class required for the particular use.
3. Use compatible fastening materials. Use only hot-dipped galvanized metal, copper or stainless steel fasteners where used in conjunction with preservative treated wood.

B. Comply with the following standards as pertinent:

1. Bolts and nuts; provide 4 hexagon-head, regular type complying with ASTM A307, Grade A.
2. Lag Bolts; provide square-head type, complying with Fed. Spec. FF-B-561.
3. Machine Screws; provide cadmium plated steel type complying with Fed. Spec. FF-S-111.
4. Concrete Inserts:
 - a) Threaded or wedge type galvanized ferrous castings of malleable iron complying with ASTM A27.
 - b) Provide required bolts, shims and washers; hot-dip galvanized in accordance with ASTM A153.
5. Washers:
 - a) Plain Washers; comply with Fed. Spec. FF-W-92, round carbon steel.
 - b) Lock Washers; comply with Fed. Spec. FF-W-84, helical spring type carbon steel.
6. Toggle Bolts; provide type, class and style needed complying with Fed. Spec. FF-B-588.
7. Anchorage Devices; provide expansion shield complying with Fed. Spec. FF-S-325

2.03 PREFABRICATED MODULAR ALUMINUM STEP AND LANDING SYSTEM

1.1 References

- a. International Building Code 2018
- b. 1.1.3 ICC / ANSI A117.1 2017

1.2 Submittals

- a. Shop Drawings: detailed shop drawings to be submitted upon receipt of purchase order including:
 - 1.2.a.1 Overall layout dimensions
 - 1.2.a.2 Detailed shop weldment drawings
 - 1.2.a.3 Footer layout drawings when requested
- b. Warranty Statement must be submitted with bid.
- c. Product specifications must be submitted with bid.
- d. **Engineering: Professional Engineering sealed drawings (RI registration) shall be submitted to Architect for review prior to ordering materials.**

1.3 Quality Assurance

- a. Acceptable manufacturer: Upside Innovations, LLC, 5470 Spellmire Dr., West Chester, OH 45246. Phone: (513) 889-2492; Fax: (513) 672-2124, or as approved equal.
- b. All components (Platforms and Steps) must be designed such that an access system can

- be repurposed in new configurations and functions. This includes being able to connect all platforms (originally meant for ramps or steps), together if a new configuration requires.
- c. Aluminum welding will be in accordance with ANSI / AWS D1.2/D1.2M: 2008. Welding must be performed solely with Pulsed Gas Metal Arc Welding (Pulse-MIG) processes or Gas Tungsten ArcWelding (TIG) processes by experienced operators.
 - d. All exposed surfaces must be free of sharp or jagged surfaces.

1.4 Materials

- a. All Platforms, Steps, Legs, and Guardrails shall be constructed of mill finish aluminum extrusions and mill finish aluminum sheet. Extrusions shall be either 6061-T6, 6063-T52, or 6005-T5 aluminum alloy and all aluminum sheet is 5052-H32.
- b. All mechanical fasteners shall be 18-8 stainless steel. All anchors and lag bolts shall be galvanized steel.

1.5 Engineering

- a. The Step, and Platform system shall be designed to be a rigid, free-standing structure. All footplates should be fastened securely to a sound surface or 12" minimum diameter footings in order to achieve full structural integrity.

2.1 Platforms & Landings

- a. Walking surfaces shall be designed to carry a uniform live load of 100 pounds per square foot and a concentrated vertical load of 300 pounds in an area of one square foot.
- b. Walking surfaces shall be designed to have a coefficient of friction no less than 0.50 in all directions of travel.
- c. Walking surfaces shall be designed and constructed to be continuous, without gaps and must be made using 1-1/2" x 8" extruded decking. The outside legs of each piece of extrusion must be touching the adjacent piece in order to create a hard stop for structural support.
- d. All platforms shall be designed to be wider than the step leading up to them and at least 60" long in the direction of travel.
- e. All platforms shall be designed to allow at least a 60" diameter area of clearance free of obstructions.
- f. Platforms shall be fabricated in typical 5'-4" x 5'-4" sections. Larger sizes will be fabricated as required by layout.
- g. Platforms must be designed as a universal design, so that a common platform can be configured as a resting platform, switchback platform, turning platform, walkway platform, or threshold landing platform.

2.2 Platform Guardrails

- a. All platform guardrails shall be designed to withstand a concentrated load of 200 pounds applied in any direction on the top of the rail.
- b. Platform guardrails shall be designed to be 42" high measured vertically from the walking surface to the top of the rail.
- c. All balusters and other custom rail panels shall be designed to withstand a load of 50 pounds in the horizontal direction applied in an area of one square foot.
- d. All guardrails shall not allow a 4" diameter sphere to pass through in any area.
- e. Guardrails shall be provided on all open sides of each platform.
- f. All guardrail frames shall be constructed at minimum with 2" x 2" aluminum square tube.
- g. All balusters shall be constructed at minimum with 3/4" x 3/4" aluminum square tube.

2.3 Platform Legs

- a. All legs shall be designed to support the ramp sections and platforms / landings. (See sections 2.1.1 & 2.3.1)
- b. Ramp legs shall be designed to include 28" of adjustability in order have enough adjustment so that a compliant installation can be made with the minimum number of parts.
- c. Ramp legs include a 6" x 10" x 0.250" welded foot pad.
- d. Platform legs must be designed using a minimum of 3" x 3" x 0.125" aluminum square tube that connects to the platform and a telescoping 2.7" x 2.7" x 0.125" aluminum square tube with a 6" x 6" x 0.250" welded foot pad. The legs must be bolted wall-to-wall with two 18-8 stainless steel bolts. The telescoping feature allows leg adjustment in order to meet elevation changes.

2.4 Steps

- a. Step treads and stringers shall be designed to carry a uniform live load of 100 pounds per square foot and a concentrated vertical load of 300 pounds in an shall be in an area of one square foot.
- b. Walking surfaces shall be designed to have a coefficient of friction no less than 0.50 in the normal direction of travel.
- c. Steps shall be designed to allow a minimum clearance of 48" between handrails.
- d. All step treads shall be designed to have a uniform depth of 12" with a 1" nosing for an effective run of 11" minimum per step, INCLUDING THE TOP STEP ONTO THE PLATFORM / LANDING.
- e. All step nosings have a uniform radius of 1/4" and an underside angle of 60 degrees from the horizontal.
- f. Step treads shall be designed to have a uniform height of either 6", 6-1/2", or 7" depending on the overall height of the step assembly. All step risers shall be closed between treads.
- g. Step tread widths shall be designed to allow a clearance of 48" between handrails.

2.5 Step Rails

- a. All step rails shall be designed to withstand a concentrated load of 200 pounds applied in any direction on the top of the rail.
- b. Steps over 30": Step rails for steps with a vertical rise over 30" must have a 42" guardrail in addition to the 36" handrail.
- c. Steps 30" or under: Step rails for steps at 30" or under do not require a 42" guardrail.
- d. All baluster panels and other custom rail panels shall be designed to withstand a load of 50 pounds in the horizontal direction applied in an area of one square foot.
- e. All step rails shall not allow a 4" diameter sphere to pass through in any area.
- f. Step rails shall be provided on both sides of the step treads.
- g. All step handrails shall be designed to be continuous along step runs and in between the inside corner of 90 degree and 180 degree turns in step direction. Handrails shall be not interrupted by posts or other obstructions.
- h. All handrails must have a clearance of 2-1/4" between the handrail and the guardrail. Handrails shall be constructed of 1-1/4" SCH 40 pipe with an outside diameter of 1.66".
- i. Step handrails shall be designed to be 36" high measured vertically from the top of the step nosing to the top of the rail.
- j. Step handrails extend 12" past the top step nosing parallel to the ground surface and return to the closest rail post or wall if needed due to door swing interference at the top of the step. Step handrails also extend one tread width past the bottom step tread (11") and return to the closest rail post.
- k. All step rail frames shall be constructed at minimum with 1-3/4" x 1-3/4" aluminum square tube.
- l. All baluster panels shall be constructed at minimum with 3/4" x 3/4" aluminum square tube.

2.04 MISCELLANEOUS MATERIALS AND ACCESSORIES:

- A. Concrete: Comply with provisions of Section 03300 for concrete slabs, if included herein.
- B. All other materials as needed for a complete and proper installation.

2.05 SHOP PAINT:

- A. Primer: Use "10-99 Tnemec Primer", "Rustoleum #5769 Primer" or equal.
- B. For repair of galvanizing use a high zinc dust content paint complying with MIL-P-21035.
- C. Clean surfaces in accordance with Steel Structures Painting Council Sp-3, "Power Tool Cleaning".
- D. After surfaces are properly cleaned, apply the primer to a uniform 1.5 mils. dry thickness.

2.06 FABRICATION:

- A. Except as otherwise shown on the drawings or the reviewed shop drawings, use materials or size, thickness and type required to produce reasonable strength and durability in the work of this section.
- B. Fabricate with accurate angles and surfaces which are true to the required lines and levels, grinding exposed welds smooth and flush, forming exposed connections with hairline joints and using concealed fasteners wherever possible.
- C. Prior to shop painting or priming, properly clean metal surfaces as required for the applied finish for the proposed use of the item.
- D. On surfaces inaccessible after assembly or erection, apply two coats on the specified primer. Change color of second coat to distinguish it from the first.
- E. Galvanizing where indicated or specified shall be performed after fabrication. Shapes, plates and bars shall be galvanized in accordance with the requirements of "Standard Specifications for the Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips" ASTM Designation A 123-71. Nuts, bolts, and washers shall be galvanized in accordance with the requirements of "Standard Specifications for Zinc Coating (Hot-Dip) on Iron and Steel Hardware" ASTM Designation A 153-71 and A286. All galvanized material shall comply with specifications and marked with stamp indicating ASTM number and weight of zinc coating in ounces per square foot similar to Duncan Stamp. Notarized statement of compliance with list of galvanized items to accompany shipment of galvanized materials and furnished to A/E.
- F. Dissimilar Material: Where aluminum surfaces come in contact with metals other than stainless steel, zinc, white bronze of small area or other metals compatible with aluminum, aluminum surfaces shall be kept from direct contact with such parts by painting the dissimilar metal with a coating of zinc chromate paint, a good quality caulking placed between aluminum and dissimilar metal, or a non-absorptive tape or gasket.

2.07 LADDER FALL ARREST DEVICES:

- A. General: Provide personal fall arrest system for fixed ladders exceeding 24-feet in height.
- B. Manufactured system to consist of pre-swaged stainless-steel cable and galvanized steel channels or pipe, designed to be secured to ladder. Include mounting brackets, rung clamps, cable tensioner, automatic pass-through traveling devices and energy absorbing lanyard for complete installed system.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, include but are not limited to, the following:
 - a. FixFastUSA; KattClimb Ladder Fall Arrest.
 - b. Honeywell Industrial Safety; Miller Vi-Go.
 - c. MSA; Latchways Vertical Ladder Kit.
 2. Cable: 3/16-inch (5 mm) diameter, 1-by-7 wire cable made from stainless steel wire Type 316.
 3. Carriers: Automatic locking with anti-inversion feature, with no more than 20-inch (500 mm) movement in a fall event.
 4. Arrest Capacity: Single person use; 1400 lbs. (635 kg) rated.
 5. Performance Standards: Units to meet or exceed OSHA 1910.28, ANSI A14.3 and ANSI Z359.16.
- C. Mount personal fall arrest system to ladder rungs in accordance with manufacturer's instructions, and approved submittals.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 COORDINATION:

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this section.

3.03 INSTALLATION:

A. General:

1. Set work accurately into position, plumb, level, true and rack-free.
2. Anchor firmly into position.
3. Where field welding is required, comply with AWS recommended procedures of manual-shielded metal-arc welding for appearance and quality of weld and for methods to be used in correcting welding work.
4. Grind exposed welds smooth and touch-up shop prime coats.
5. Do not cut, weld or abrade surfaces which have been hot-dip galvanized after fabrication and which are intended for bolted or secreted field conditions.

- B. Immediately after erection, clean the field welds, bolted connections, and abraded areas of shop priming. Paint the exposed areas with the same materials used for shop priming.

END OF SECTION

SECTION 06100
ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide rough carpentry:
 - 1. Nailers, and blocking.
 - 2. Wood furring.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Lumber Standards and Grade Stamps: U.S. Product Standard PS 20, American Softwood Lumber Standard and inspection agency grade stamps.
- C. Construction Panel Standards: PS 1, U.S. Product Standard for Construction and Industrial Plywood; APA PRP-108.
- D. Wood Framing Standards: NFPA House Framing Manual.
 - 1. Exterior Wall Framing: 2 inch by 6 inch nominal (38 mm by 140 mm actual) studs, 24 inches (61 cm) on center.
 - 2. Exterior Wall Framing: 2 inch by 4 inch nominal (38 mm by 89 mm actual) studs, 16 inches (40 cm) on center.
 - 3. Interior Wall Framing: 2 inch by 4 inch (38 mm by 89 mm actual) studs, 16 inches (40 cm) on center.
- E. Preservative Treatment: AWPA C2 for lumber and AWPA C9 for plywood; waterborne pressure treatment. Provide for wood in contact with soil, concrete, masonry, roofing, flashing, dampproofing and waterproofing.
- F. Fire-Retardant Treatment: AWPA C20 for lumber and AWPA C27 for plywood; noncorrosive type. Provide at building interior where required by code.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Dimension Lumber:
 - 1. Light Framing: Stud, No. 3 or Standard grade.
 - 2. Structural Framing: Select structural grade.
 - 3. Structural Framing: No. 1 grade.
 - 4. Structural Framing: No. 2 grade.
 - 5. Structural Framing: No. 3 grade.
 - 6. Species: Any species of grade indicated.
 - 7. Exposed Framing: Appearance grade.

- B. Timbers:
 - 1. Species and Grade: WCLIB/WWPA select structural Douglas fir.
 - 2. Species and Grade: SPIB No. 1 dense SR southern pine.
 - 3. Type: Free of heart center.
- C. Boards:
 - 1. Exposed Boards: 15 percent moisture content.
 - 2. Exposed Boards: 19 percent moisture content.
 - 3. Concealed Boards: 19 percent moisture content.
- D. Miscellaneous Lumber:
 - 1. Moisture Content: 19 percent.
 - 2. Grade: Standard grade light framing.
- E. Engineered Wood Products:
 - 1. Laminated Veneer Lumber: Laminated wood veneers with exterior type adhesive; design stresses for use intended.
 - 2. Prefabricated Wood I Joists: Stress-graded lumber bonded to APA performance rated panel with exterior type adhesive; design stresses for use intended.
 - 3. Composite Joists and Headers: Laminated lumber veneers; design stresses for use intended.
- F. Construction Panels:
 - 1. Combination Subfloor-Underlayment: APA Sturd-I-Floor, Exterior.
 - 2. Combination Subfloor-Underlayment: APA Sturd-I-Floor, Exposure 1.
 - 3. Subflooring: APA Sheathing, Exterior.
 - 4. Subflooring: APA Sheathing, Exposure 1.
 - 5. Wall Sheathing: APA Sheathing, Exterior.
 - 6. Wall Sheathing: APA Sheathing, Exposure 1.
 - 7. Roof Sheathing: APA Sheathing, Exterior.
 - 8. Roof Sheathing: APA Sheathing, Exposure 1.
 - 9. Plywood Backing Panels: APA C-D Plugged Exposure 1 with exterior glue, fire-retardant treated.
 - 10. Plywood Underlayment for Resilient Flooring: APA Underlayment Exterior.
 - 11. Construction Panel Underlayment for Resilient Flooring: APA Sturd-I-Floor, Exterior.
 - 12. Construction Panel Underlayment for Ceramic Tile: APA Sturd-I-Floor, Exposure 1.
 - 13. Plywood Underlayment for Carpet: APA Underlayment Exposure 1.
- G. Fibrous Felted Boards:
 - 1. Hardboard Underlayment: ANSI/AHA A 135.4, Class 4.
 - 2. Fiberboard Sheathing: ANSI/AHA A194.1, Type IV.
- H. Particleboard:
 - 1. Underlayment: ANSI A 208.1, grade 1-M-1, grade marked.
 - 2. Subflooring: ANSI A 208.1, grade 2-M-W (waferboard) or Grade 2-M-3.
 - 3. Wall Sheathing: ANSI A 208.1, grade 2-M-1.
 - 4. Roof Sheathing: ANSI A 208.1, grade 2-M-W (waferboard).
- I. Gypsum Sheathing:
 - 1. Material: Gypsum sheathing board with water-resistant core.
 - 2. Material: Glass-fiber-surfaced gypsum sheathing board.
 - 3. Type: Regular ASTM C 79.
 - 4. Type: Type X fire-resistant ASTM C 79.
- J. Plastic Board Sheathing:
 - 1. Material: Extruded polystyrene, ASTM C 578, Type IV.
 - 2. Material: Polyisocyanurate, FS HH-I-1972/1 for Class 2.
- K. Auxiliary Materials:

1. Air Infiltration Barrier: Asphalt-saturated organic felt, ASTM D 226, Type I, No. 15 felt, unperforated.
2. Air Infiltration Barrier: High density polyethylene.
3. Air Infiltration Barrier: Woven polyolefin sheet.
4. Sill Sealer Gaskets: Glass fiber strip resilient insulation.
5. Framing Anchors and Fasteners: Non-corrosive, suitable for load and exposure. Drywall screws are not acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Wood framing: Comply with recommendations of NFPA Manual for House Framing, NFPA Recommended Nailing Schedule, and NFPA National Design Specifications for Wood Construction.
- B. Plywood: Comply with recommendations of APA Design and Construction Guide - Residential and Commercial.
- C. Provide nailers, blocking and grounds where required. Set work plumb, level and accurately cut.
- D. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with other work.
- E. Comply with manufacturer's requirements for cutting, handling, fastening and working treated materials.
- F. Restore damaged components. Protect work from damage.

END OF SECTION

SECTION 07540
PVC SHEET ROOFING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Provide fully adhered PVC roofing membrane as shown on the Drawings.
2. Contractor shall verify all dimensions, details and existing conditions prior to submitting bid.

B. Related Work: The work includes but is not necessarily limited to the installation of:

1. roof membrane
2. sealants and adhesives

1.02 QUALITY ASSURANCE

- A. This roofing system shall be applied only by an Applicator authorized by the roofing manufacturer prior to the bid due date.
- B. Upon completion of the installation, and the delivery to the manufacturer by the Applicator or a certification that all work has been completed in strict accordance with the Construction Documents and the manufacturer's requirements, an inspection shall be made by a technical representative of the manufacturer to observe the installed roof system.
- C. Membrane Manufacturer to confirm in writing that they directly manufacture the roofing membrane; private labeled membranes are not acceptable
- D. Manufacturer to have a minimum of five years' experience recycling their membranes at the end of their service life back into new membrane products. Provide a minimum of five reference projects.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.
- B. Handle all materials to prevent damage. Place all materials on pallets and fully protected from moisture.
- C. Membrane rolls shall be stored lying down on pallets, and fully protected from weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions.
- D. All adhesives shall be stored at temperatures above 40° F (5° C).
- E. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.
- F. All materials which are determined to be damaged by the Architect or the roofing manufacturer are to be removed from the job site and replaced at no cost to the Owner.
- G. Do not load the building or building components with weight that will endanger the structure.

1.07 JOB CONDITIONS

- A. The roofing manufacturer's materials may be installed under certain adverse weather conditions but only after consultation with the roofing manufacturers, as installation time and system integrity may be affected.

1.08 WARRANTY

- A. The roof system warranties for Fogarty Manor and Kennedy Manor have expired; however, the Roofing Subcontractor shall exhibit experience with heat-welded PVC roof systems. The roof systems on both buildings are manufactured by Sarnafil.**

PART 2 - PRODUCTS

2.01 GENERAL

- A. The components of the Adhered Roof System are to be products of the roofing manufacturer as indicated on the detail drawings and specified in the Construction Documents.
- B. Components to be used that are other than those supplied or manufactured by the roofing manufacturer shall be submitted by the Applicator to the roofing manufacturer for review and acceptance by the roofing manufacturer. Acceptance of any other product is only for chemical compatibility with the roofing manufacturer products and not for inclusion in the roofing manufacturer warranty. The specifications, installation instructions, limitations, and/or restrictions of the respective manufacturers shall be reviewed by the Architect for acceptability for the intended use with the roofing manufacturer products.

2.02 MANUFACTURER

- A. Sika-Sarnafil, or as approved equal
100 Dan Rd, Canton, MA 02021
(781) 828-5400
www.usa.sarnafil.sika.com

2.03 APPROVED MEMBRANE SYSTEMS

- A. "Sarnafil", G410 nonwoven fiberglass-reinforced membrane .060" (60 mils) thick, with an acrylic coating.

2.04 MEMBRANE

- A. Minimum thickness is required with a letter from an officer of the manufacture. Classification: Type II, Grade 1. Must contain an acrylic coating.
- B. As manufactured, membrane shall conform to the following physical properties:

<u>Parameters</u>	<u>ASTM Test Method</u>	<u>ASTM Requirement</u>	<u>Minimum Sarnafil Typical Physical Properties</u>
Reinforcing Material	---	---	Fiberglass
Overall Thickness inches (mm) min.	D638	0.045 (1.14)	0.080 (1.50)

Tensile Strength, psi (Mpa) min.	D638	1500 (10.4)	1600 (11.1)
Elongation at Break (M.D. × C.D.)	D638	250% M.D. 230% C.M.D.	270% M.D. 250% C.M.D.
Seam Strength* (% of Tensile Strength) min.	D638	75	80
Retention of Properties After Heat Aging	D3045	---	---
Tensile Strength (% of original) min.	D638	90	95
Elongation (% of original) min.	D638	90	90
Tearing Resistance lbf (N) min.	D1004	10 (45)	14 (63)
Low Temperature Bend -40° F (-40° C)	D2136	Pass	Pass
Accelerated Weathering Test (Xenon Arc)	D2565	5,000 Hours	10,000 Hours
Cracking (7× magnification)	---	None	None
Discoloration (by observation)	---	Negligible	Negligible
Crazing (7× magnification)	---	None	None

(Physical Properties continued...)

<u>Parameters</u>	<u>ASTM Test Method</u>	<u>ASTM Requirement</u>	<u>Minimum Sarnafil Typical Physical Properties</u>
Linear Dimensional Change	D1204	0.10% max.	0.02%
Weight Change After Immersion in Water	D570	± 3.0% max.	2.5%
Static Puncture Resistance 33 lbf (15kg)	D5602	Pass	Pass
Dynamic Puncture Resistance 7.3 ft-lbf (10J)	D5635	Pass	Pass

*Failure occurs through membrane rupture not seam failure.

Initial Solar Reflectance	E903	---	0.83
Emissivity	E408, C1371, Other	---	0.90

Solar Reflective Index (SRI)	E1980	---	104
Recycled Content (5 & 10 ft. sheets only)	8 to 12% Pre-Consumer/Up to 1% Post Consumer		

2.05 MEMBRANE ADHESIVE

A. Sarnacol 2170VC Adhesive.

1. Use: solvent-based adhesive for bonding membranes to approved substrates.
2. Application rates for bonding membranes to various substrates:

	<u>Substrate Rate</u> <u>gallons/100ft²</u>	<u>Membrane Rate</u> <u>gallons/100ft²</u>	<u>Total Rate</u> <u>gallons/100ft²</u>	<u>liters/meter²</u>
metal	0.75	0.50	1.25	0.51
smooth plywood		1.00	0.50	1.50
0.61				
fiberglass mat facer	1.25	0.50	1.75	0.71
smooth structural concrete	1.25	0.50	1.75	0.71

Notes:

- a) Due to an increase in viscosity when outdoor temperatures during installation are below 40° F (5° C), add 0.5 gal/100 ft² (0.2 L/m²) to rate for estimating purposes.

Rates will vary with finish of substrate.

- ### A. Sarnamatic 641 Hot-Air Welder
- High-quality, electrically-powered, self-propelled machine used to seal long lengths of Sarnafil membrane seams.
roof decks. Sarnadisc-MAXLoad is an 20 gauge (0.9 mm), 3.5 inch (88 mm), round corrosion resistant steel plate.

PART 3 - EXECUTION

3.01 GENERAL

- A. The roofing contractor shall coordinate the installation so that each area is made watertight at the end of each work period.

3.04 SUBSTRATE PREPARATION

- A. A dry, clean and smooth substrate shall be provided to receive the Sarnafil adhered roof system.
- B. The Applicator shall inspect the substrate for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect the quality of work.
- C. The substrate shall be clean, smooth, dry, free of flaws, sharp edges, loose and foreign material, oil and grease. Roofing shall not start until all defects have been corrected.
- D. All roof surfaces shall be free of ice, water and snow.
- E. New roofing materials shall be applied over compatible and accepted substrates only.

3.05 HOT-AIR WELDING OF LAP AREAS

A. General:

1. All seams shall be hot air welded. Seam overlaps shall be a minimum of 3 inches (75 mm) wide when automatic machine welding, and 4 inches (100 mm) wide when hand welding.
2. Welding equipment shall be provided by the roofing manufacturer. All mechanics intending to use the equipment shall have successfully completed a training course provided by a roofing manufacturer technical representative prior to welding.
3. All membrane to be welded shall be clean and dry. No adhesive shall be in the seam.

B. Hand Welding

1. Hand welded seams shall be completed in three stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.
 - a) The seam shall be tack-welded every 3 feet (0.9 m) to hold the membrane in place.
 - b) The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot air during the final welding.
 - c) The nozzle shall be inserted into the seam at a 45 degree angle. Once the proper welding temperature has been reached and membrane begins to "flow", the hand roller is positioned perpendicular to the nozzle and pressed lightly. For straight seams, the 1-1/2" (40 mm) wide nozzle shall be used. For corners and compound connections, the 3/4 inch (20 mm) wide nozzle shall be used.

C. Machine Welding:

1. Machine-welded seams shall be achieved by the use of the roofing manufacturer's automatic welding equipment. The roofing manufacturer's instructions shall be followed and local codes for electric supply, grounding and over current protection observed. The automatic welding machines require 218 to 230 volts at 30 amps. Horse power or a dedicated portable generator is recommended. No other equipment shall be operated off the generator.

D. Quality Control of Welded Seams

1. The Applicator shall check all welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark gray material from the underside of top membrane. On-site evaluation of welded seams shall be made daily by the Applicator to locations as directed by the Architect or roofing manufacturer representative. One inch (25 mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of weld. Each test cut shall be patched by the Applicator at no extra cost to Owner.

3.06 COMPLETION

- A. Prior to demobilization from the site, the work shall be reviewed by the Architect and the Applicator. All defects shall be noted and noncompliance with the specifications or the recommendations of the roofing contractor shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the Owner and roofing manufacturer prior to demobilization.

END OF SECTION

SECTION 07920

SEALANTS AND CAULKING

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Work Included: Throughout the work seal and caulk joints where shown on the drawings and elsewhere as required to provide a positive barrier against passage of moisture and passage of air.
- B. All necessary packing and back-up material shall be provided at existing locations and as required for a complete and proper installation. Manufacturer's printed recommendations for the preparation of surfaces and handling, mixing and installation of caulking and sealing compounds shall be strictly followed.
- C. Related Work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.02 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

1.03 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01300.
- B. Product Data: After the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to provide compliance with the specified requirements.
 - 3. Manufacturer's recommended installation procedures which, when approved by the A/E, will become the basis for accepting or rejecting actual installation procedures used on the work.
 - 4. Color samples.
- C. Samples: Accompanying the submittal described above, submit samples of each sealant, each backing material, each primer, and each bond breaker proposed to be used.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Comply with pertinent provisions of Section 01600.
- B. Do not retain or use at the job site, material which has exceeded the shelf life recommended by its manufacturer.

PART 2 - PRODUCTS

2.01 SEALANTS:

- A. Except as otherwise specifically approved by the A/E, use only the types of sealants described herein.
- B. For all joints at aluminum and aluminum-to-masonry: Sealing Compound; Tremco Spectrum 1-(1) part, moisture-curing silicone joint sealant.
- C. For all joints at metal-to-glass: Sealing Compound; Tremco Spectrum 2- High-performance, neutral-cure, general-purpose silicone sealant.
- D. For all joints at exterior masonry: Tremco Dymonic 100 1-part urethane sealant.
- E. Caulking compound of the 1-part acrylic-type Tremco Tremflex 834 shall be used for sealing all joints on the building interior where "caulking" is indicated and required.
- F. For other services, provide products especially formulated for the proposed use and approved in advance by the A/E.
- G. Colors:
 - 1. Colors for each sealant installation will be selected by the A/E from standard colors normally available from the specified manufacturers.
 - 2. Should such standard color not be available from the approved manufacturer except at additional charge, provide such colors at no additional cost to the Owner.
- H. In concealed installations and in partially or fully exposed installations where so approved by the A/E, use standard gray or black sealant.

2.02 FIRE-STOP SYSTEM FOR FLOOR & WALL PENETRATIONS:

- A. TREMstop IA (Firestop): Provide at all wall and floor penetrations where fire rated assembly is specified, provide where penetrations such as but not limited to sprinklers, electrical, mechanical, piping, etc. are present.
- B. Manufacturer: TREMCO, Beachwood, Ohio. Tel. #: 1-800-321-7906, or as approved equal.
- C. Specification Requirements:
 - ASTM E84; Flame Spread: 0
 - ASTM E84; Smoke Development: 5
 - UL 2079 (ASTM E 1966)
 - CAN 4 S115
 - ASTM E814

2.03 PRIMERS:

- A. Use only those primers which are non-staining, have been tested for durability on the surfaces to be sealed, and are specifically recommended for this installation by the manufacturer of the sealant used.

- B. In general, use Tremco Primer "A" for porous surfaces, Primer B for non-porous surfaces. Provide in strict conformance with manufacturer's written instructions.

2.04 BACK-UP MATERIALS:

- A. Use only those back-up materials which are specifically recommended for this installation by the manufacturer of the sealant used, which are nonabsorbent, and which are non-staining.
- B. Backing: Joints shall be backed with a close-cell butyl or neoprene rod; with a minimum shore "A" of 70 unless otherwise noted elsewhere. A solid base shall be provided below the joint backing utilizing sand, multiple layers of joint backing, etc., in order to support the sealant. It is important that the backdrop material be of a type to which the sealant does not adhere in a working joint.
- C. Acceptable Types Include:
 - 1. Closed-cell resilient urethane or polyvinyl-chloride foam;
 - 2. Closed-cell polyethylene foam;
 - 3. Closed-cell sponge of vinyl or rubber;
 - 4. Polycholoprene tubes or beads;
 - 5. Polyisobutylene extrusions; and
 - 6. Oil-less dry jute.
- D. Do not block weep holes

2.05 BOND PREVENTATIVE MATERIALS:

- A. Use only one of the following as best suited for the application, and as recommended by the manufacturer or the sealant used:
 - 1. Polyethylene tape, pressure-sensitive adhesive, with the adhesive required only to hold tape to the construction materials as indicated.
 - 2. Aluminum foil complying with MIL-A-148E.
 - 3. Wax paper complying with Fed. Spec. UU-P-270.

2.06 MASKING TAPE:

- A. For masking around joints, provide masking tape complying with Fed. Spec. UU-T-106c.

2.07 OTHER MATERIALS:

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the A/E.

PART 3- EXECUTION

3.01 SURFACE CONDITIONS:

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 PREPARATION:

A. Concrete and Masonry Surfaces:

1. Install only on surfaces which are dry, sound, and well brushed, wiping free from dust.
2. At open joints, remove dust by mechanically blown compressed air, if so required.
3. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
4. Where surfaces have been treated, remove the surface treatment by sandblasting, wire brushing or grinding.
5. Remove laitance and mortar from joint cavities.
6. Where backstop is required, insert the approved backup material into the joint cavity to the depth needed.
7. Joints and spaces filled with sealant greater in depth than the width of the joint shall be filled so that the depth of the joint shall be equal to the width of the joint. The depth of the joint shall not be less than 3/8". Packing for the joints shall be of the materials specified. Packing shall provide a firm back-up for the sealant via the manufacturer's written instructions.
8. Joints and spaces caulked with Tremco Dymonic sealant shall not be more than 3/8" wide by 3/8" deep. Minimum size of joints caulked shall be recommended by the manufacturer. Joints more than 3/8" in depth shall be packed as specified.
9. Color: As selected by the A/E.
10. Priming: As recommended by the sealant manufacturer.

B. Steel Surfaces in Contact with Sealant:

1. Sandblast as required or prepare surfaces in accordance with manufacturer written instruction to achieve acceptable surface for bond.
2. If sandblasting is not practical, or would damage adjacent finish, scrape the metal or wire brush to remove mill scale.
3. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
4. Remove protective coatings on steel by sandblasting or by using a solvent which leaves no residue.

C. Aluminum Surfaces in Contact with Sealant:

1. Remove temporary protective coatings, dirt, oil, and grease.

2. When masking tape is used for protective cover, remove the tape just prior to applying the sealant.
3. Use only such solvents to remove protective coatings as are recommended for that purpose by the manufacturer of the aluminum work, and which are non-staining.

3.03 INSTALLATION OF BACK-UP MATERIAL:

- A. Use only the back-up material recommended by the manufacturer of the sealant used, and approved by the A/E for the particular installation, compressing the back-up material 25% to 50% to achieve a positive and secure fit.
- B. When using back-up tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod back-up stock.

3.04 BOND-BREAKER INSTALLATION:

- A. Provide an approved bond-breaker where recommended by the manufacturer of the sealant, and where directed by the A/E, adhering strictly to the installation recommendations as approved by the A/E.

3.05 INSTALLATION OF SEALANTS:

- A. Prior to start of installation in each joint, verify the joint type according to details on the drawings, or as otherwise directed by the A/E, and verify that the required proportion of width of joint to depth of joint has been secured.
- B. Equipment:
 1. Apply sealant under pressure with power-actuated or hand gun, or by other appropriate means.
 2. Use guns with nozzle of proper size and providing sufficient pressure to completely fill the joints as designed.
- C. Thoroughly and completely mask joints where the appearance of sealant on adjacent surfaces would be objectionable.
- D. Install the sealant in strict accordance with the manufacturer's recommendations as approved by the A/E, thoroughly filling joints to the recommended depth.
- E. Tool joints to the profile shown on the drawings, or as otherwise required if such profiles are not shown on the drawings.
- F. Cleaning Up:
 1. Remove masking tape immediately after joints have been tooled.
 2. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.

END OF SECTION

SECTION 08 80 00
GLASS AND GLAZING

PART 1 - GENERAL

Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all SECTIONS within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this section of Specifications.

1.1 DESCRIPTION:

- A. This section shall consist of all labor, equipment, and materials necessary to complete all glass and glazing as indicated on the drawings, herein indicated, or both.
- B. Work installed but furnished by others:
 - 1. Metal stops for hollow metal frames, metal doors and frames, Section 081110.
- C. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 086300 "Metal Frame Skylights."

1.2 SUBMITTALS:

- A. Full-sized details of fastenings, setting blocks and spacers as well as complete schedule of location of each type of glass shall be submitted in accordance with the Section 011000, General Requirements, prior to ordering materials.

1.3 PRODUCT HANDLING:

- A. All materials shall be delivered, stored, handled and installed so as not to be damaged.
- B. Each light of glass shall bear manufacturer's label indicating name of manufacturer and quality of glass, including weight or thickness where applicable. Absence of label may constitute cause for rejection, except that cut from local stock. Vendor shall furnish affidavit attesting to compliance with specification and stating manufacturer's name, quality, thickness and type of glass furnished.
- C. Glass shall be stored in a clean, dry area to prevent staining.
- D. Glass shall be delivered in the manufacturer's original unopened containers, bearing the manufacturer's label.
- E. Glass shall be carefully handled so as to prevent scratching and chipping. Do not remove paper covering until time recommended by manufacturer.

1.4 ENVIRONMENTAL CONDITIONS:

- A. Glazing shall not be completed when the ambient temperature is below 40 degrees F., except that the Contractor may erect suitable enclosures with adequate heating of enclosed space to raise surface temperatures of frames and glass above 40 degrees F.

1.5 QUALITY ASSURANCE:

- A. Conform to Fed. Spec. DO-G-451
- B. Manufacturer's label showing strength, grade, thickness, type and quality will be required on each piece of glass. Labels must remain on glass until it has been set and inspected.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Manufacturer: Libby-Owens-Ford Glass Company.
- B. PPG Architectural Glass.
- C. Vitro.
- D. Viracon.
- E. Old Castle Glass.
- F. Commercial Door Systems (insulating panels)
- G. Nippon Electric Glass Company, Ltd. (fire-rated ceramic glass)

2.2 MATERIALS:

- A. Insulating Glass: 1-1/16 or 1-1/8 inch consisting of tempered exterior lite, 1/2 inch sealed air space, and laminated safety glass interior lite. Glass must meet the requirements of AAMA Glass Design for Sloped Glazing for the project.

2.3 OTHER RELATED MATERIALS:

- A. Glazing Compound Manufacturers:
 - 1. Pecora
 - 2. Dicks-Armstrong Pontius
 - 3. Tremco Manufacturing Company
 - 4. Nippon Electric Glass Company, Ltd.
- B. Glazing tape shall be extruded butyl, Tremco 440 or approved equal, for glass.
- C. Setting Blocks and Spacers: Resilient types and materials as recommended by manufacturer of glass or glazing materials.

2.4 INSPECTION SURFACES:

- A. All surfaces of openings to receive glass shall be examined for defects insofar as they affect glass and glazing work. Glazing work shall not be started until such defects have been corrected.

2.5 PREPARATION FOR GLAZING:

- A. All surfaces of openings shall be properly primed where necessary and protective coatings removed from surfaces to be glazed.
- B. Protective coatings, film, etc. shall be removed from aluminum surfaces to be glazed. Use a solvent which will not etch or mar the finish.
- C. All surfaces to be sealed shall be dry, free from oil, dust, etc. and wiped clean before applying sealants.
- D. Glass shall be free from dust, oil, etc. and wiped clean immediately before installation.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Glazing in Metal Channel:
 - 1. Glass bedded, backs puttied, secured in place and, except where glazing beads are required, shall be face puttied. Secure glass with non-ferrous glazier's points or clips or beads as required.
 - 2. Provide neoprene setting blocks as required.
 - 3. Glaze all operating sash in closed position.
 - 4. All glass shall be cut to fill sizes required for the openings from measurements taken at the project site. All cut edges shall be smooth and straight.
 - 5. Stops and glazing beads, where provided, shall be removed before glazing and carefully reset after glazing.
 - 6. Labels shall not be removed until final approval is obtained.
- B. Install glass with waviness parallel to floors.
- C. All glass and glazing shall be installed according to manufacturer's printed instructions, in strict compliance with the recommended practice as stated in "The Flat Glass Jobbers Association Glazing Manual", latest edition.

3.2 PROTECTION AFTER INSTALLATION:

- A. After installation, precaution shall be taken against breakage or other damage to glass.
- B. Glazed openings shall be identified with colorful flags or festoons attached to the glass holding members at the head of jambs.
- C. Glass shall be protected from plaster, sandblasting and welding spatter.
- D. Replace any damaged or broken glass at no expense to the Owner.

3.3 CLEAN-UP:

- A. All glass, wood and metal to be cleaned of excess glazing compound.

- B. Wash glass completely after installation.
- C. Glass broken after proper installation and cleaning shall be the responsibility of the General Contractor at no additional cost to the Owner.
- D. Glass broken because of faulty setting shall be replaced by the Contractor at no additional cost to the Owner.
- E. Remove all broken glass, glazing compound, etc., from site after completion of work.

3.4 WARRANTY:

- A. Provide manufacturer's standard warranty, five (5) years, for security glass against defects such as edge separation or obstruction of vision.

END OF SECTION 08 80 00

SECTION 08110
STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Furnish and install standard hollow metal doors, frames, sidelites and borrowed lites as specified or shown on plans and schedules.
- B. Related Work Specified Elsewhere:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.02 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. Unless otherwise specifically approved by the Architect, provide all products of this section from a single manufacturer.
- C. Where fire-rated assemblies are indicated or required, provide assemblies that comply with NFPA-80 and have been tested, listed and labeled in accordance with ASTM E-152 by a nationally recognized independent testing and inspection agency acceptable to the authorities having jurisdiction.
- D. No product shall be manufactured prior to receipt of approved hardware information and templates.
- E. Other Reference Standards:
 - 1. American National Standards Institute (ANSI)
 - a) ANSI A115 series on door and frame preparation.
 - 2. Steel Door Institute (SDI). Technical Data Series.
 - 3. Federal Specification (FS) RR-O-5758, Type II, Heavy Duty, 1-3/4", Style 2, Full Flush, Hollow Steel Construction.

1.03 SUBMITTALS:

- A. Comply with pertinent other provisions of Section 01300 which are not specifically described below.
- B. Show glass opening sizes and locations in doors.
- C. Detail connections of hollow metal work to structural steel framing concealed in hollow metal work.

- D. Detail joints required to accommodate expansion joint movement.
- E. Submit manufacturer's product technical data substantiating that products comply with requirements.
- F. All openings shall be labeled with the Architect's door number NOT the shop "TAG" number.
- G. Elevations and large-scale dimensioned sections shall be provided for each door and frame type.
- H. Indicate all hardware locations, gages, finishes and materials included in submittals.
- I. Provide details showing anchors, wall conditions, and installation for each different condition.
- J. Indicate coordination of glazing frames and stops with glass and glazing requirements.
- K. Submit all necessary shop drawings to Architect for review of general conformance with the requirements of the Contract Documents, minimum (6) copies.

1.04 PRODUCT HANDLING:

- A. Comply with pertinent other provisions of Section 01600 which are not specifically described below.
- B. Products shall be marked at point of shipping with Architect's opening numbers.
- C. Protect materials during shipment and storage.
- D. Store doors and frames upright and spaced off the floor to prevent damage from standing water.
- E. Inspect all materials upon receipt for damage and notify both shipper and supplier in writing of damage found. If acceptable to the Architect minor damage can be repaired, refinished.

1.05 WARRANTY

- A. All materials shall be warranted to be free from defects in materials and workmanship for a period of one year (1) from the time of substantial completion of the project as defined in the general conditions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

- A. Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
 - 1. Amweld Building Products, Inc., Garrettsville OH.
 - 2. Ceco Company, Oakbrook Terrace IL.
 - 3. Curries Company / Essex Industries, Mason City IA.
 - 4. Republic Builders Products Corporation, McKenzie TN

2.02 MATERIALS (DOORS):

- B. Face sheets shall be of 18 ga. min. steel, all doors.
- C. Internal Stiffeners:
 - 1. Minimum 18 ga. steel.
 - 2. Space at no over 6" centers.
 - 3. Spot weld to face panels at maximum 5" intervals.
 - 4. Vertical edges of face panels shall be joined and welded on maximum 6" centers, then ground smooth and filled with mineral filler to conceal seams.
 - 5. Minimum 14 ga. Steel internal hinge channel reinforcing and lock channel.
- C. Sound Deadening: Interior surfaces shall be treated with a sound deadening material to eliminate metallic ring.
- D. Glazing Stops: 18 Ga. steel, secured with countersunk sheet metal screws at minimum 12" intervals. Paint all exposed surfaces – Color to match door.
- E. Vision Panel: 1/4" tempered glass, size; 5" × 20" or as noted on the drawings.
- F. Exterior Doors: Provide solid-core, fully weather-sealed polystyrene insulating door.

2.03 FRAMES:

- A. Frames shall be combination buck, frame and trim type.
- B. Minimum Gages: 16 gauge interior, 14 gauge. Exterior.
- C. Brake-form steel sheets.
- D. Frames in masonry shall have reinforced heads.
 - 1. Provide profiles and shapes free of warp, buckles, fractures or other defects.
 - 2. Form stops integral with frames unless otherwise shown.
- E. Corners and connections shall be mitered and welded with exposed welds ground flush and smooth.
- F. Anchors:
 - 1. Provide an anchor at each jamb for each 2'-6" of door height or fraction thereof unless otherwise noted.
 - 2. Vary anchor types to provide positive fastening to adjacent construction.
 - 3. Secure a metal clip angle at bottom of each jamb member for anchoring to floor with a minimum of 2 fasteners.
- G. All door frames shall be filled solid before installation with light weight aggregate plaster or mortar.

- H. Provide and install rubber door silencers in all interior door frames. (Not less than two (2) silencers on the lock side of single doors, and one (1) silencer for each leaf in heads of double door frames).

2.04 LABELED DOORS AND FRAMES:

- A. Doors and frames designated to be labeled shall bear UL label.
- B. Where label is not required, submit manufacturer's certificate that construction conforms to Testing Agencies' requirements for label indicated.
- G. Furnish statement on label that construction provides the heat transmission rating of a maximum of 250°F in 30 minutes or as required on the drawings.

2.05 FINISHING:

- A. Doors and frames shall be leveled and ground smooth.
- B. Apply mineral filler to eliminate weld scars and other blemishes.
- C. Give factory coat of rust-inhibitive metal primer. Interior doors and frames shall receive a coat of air dry, vinyl base metal primer # MP-139 grey. Exterior doors and frames using G.90 zinc shall receive a coat of mixed air dried primers #DZ3 and #DLT16.
- D. Paint all surfaces and edges of doors and frame assembly.

2.06 PREPARATION FOR FINISH HARDWARE:

- A. Prepare doors and frames to receive hardware.
 - 1. Hardware supplier shall furnish hollow metal manufacturer approved hardware include schedule, hardware templates, and samples of physical hardware where necessary to insure correct fitting and installation.
 - 2. Coordinate all electrified hardware/security components with doors and frames and prepare doors and frames to receive any required components.
 - 3. Preparation includes sinkage and cutouts for mortise and concealed hardware.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install doors and frames in accordance with HMMA 840 and NFPA-80 to ensure fire ratings and proper operation of openings.
- B. Set welded frames prior to wall construction and remove shipping spreaders before installation.
- C. Follow manufacturer's instruction and apply hardware in accordance with hardware manufacturer's templates and written instructions.
- D. Exercise care in setting of frames to maintain scheduled dimensions, hold head level and maintain jams plumb and square.

- E. Secure anchorages and connections to adjacent construction.
- F. Wherever possible, leave frame spreader bars intact until frames are set perfectly square and plumb, and anchors are securely attached.
- G. Secure frames to structural steel framing concealed in hollow metal work, and make field splices.
- H. Allow for expansion movement as required.
- I. Apply hardware in accordance with hardware manufacturer's templates and instructions.
- J. Adjust operable door parts for correct function.
- K. Remove hardware, with the exception of prime-coated items, tag, box, and reinstall after finish paint work is completed.

3.02 PRIME COAT TOUCH-UP:

- A. Immediately after erection, areas where prime coat has been damaged shall be sanded smooth and touched up with the same primer as applies at shop.
- B. Remove rust before above specified touch-up is applied.
- C. Touch-up shall not be obvious.
- D. Before job painting is started, finish on frame and doors shall comply with finish on approved same.
- E. At the time of installation, remove and debris created as a result of unpacking or installation.
- F. Prior to building turnover, make a final inspection for proper operation, fit and tolerances. Make all necessary adjustments.

3.03 PROTECTION:

- A. Protect installed hollow metal work against damage from other construction work.

END OF SECTION

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. The work covered by these specifications shall include the furnishing and delivery to the job site of finish hardware, complete and in strict accordance with these specifications and the applicable drawings, and ready for complete and proper installation by the Contractor.
- B. It shall be the sole responsibility of the Contractor to provide all necessary items of hardware required for a complete and proper installation. Any hardware item required and not definitely specified herein, or not specifically mentioned but necessary for complete installation of the work, shall conform in type and quality to the items specified and shall be provided by this Contractor as part of his Contract at no additional cost to the Owner.
- C. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and sections in Division 1 of these Specifications.

1.02 SUBMITTALS:

- A. Samples: The Contractor shall submit to the Architect and Owner for approval.
- B. Schedule: The Contractor shall submit to the Architect for review, (5) copies of a complete and properly itemized schedule of all finish hardware to be furnished under this Contract with the calling of each item clearly referred to as per manufacturer's code letters and numbers.
- C. Templates: The complete template information necessary for the fabrication of doors and frames etc.
- D. Manufacturer's Recommendations: Prior to installation, deliver to all installing personnel, complete recommendations from the manufacturer regarding installation methods.

1.03 GUARANTEE/QUALITY ASSURANCE:

- A. All material furnished under this Contract shall be guaranteed free from defects by manufacturer for a period of one (1) year from the date of Final Acceptance of the building. Any defective material shall be removed and replaced at no expense to the Owner.
- B. Qualifications of Supplier: The finish hardware supplier shall have in his employ an AHC member of the American Society of Hardware Consultants who shall be made available for consultation at no additional cost to the Owner and Architect during the course of construction.
- C. Review by AHC: (or manufacturer's hardware consultant)
 - 1. The AHC shall be present at completion of the work, shall check the installation of all finish hardware, shall make all minor adjustments required and supervise all hardware replacements required. He shall report to the Architect on completeness of the installation.
 - 2. The Manufacturer's Hardware Consultant shall review and approve all submittals prior to Contractor ordering product.

- D. Contractor and Manufacturer's Hardware Consultant shall verify that specified automatic closer/holder assembly is properly suited for each particular application. Do so prior to submitting bid. Submit shop drawings and shop drawing hardware schedule including type of closer/holder recommended for installation at each door/frame assembly location.

1.04 PACKING AND MARKING:

- A. All hardware items required shall be individually packed, complete with all screws, bolts, washers and all other necessary accessories for proper installation. Each individual container shall be marked with item numbers corresponding to numbers on the approved schedule identifying contents and location of the item in the finished work. After delivery, this Contractor shall lay out all the hardware in a designated secure area and then check same with the General Contractor's representative.
- B. Delivery:
 - 1. Deliver all finish hardware to the installers in a timely manner to ensure orderly progress of the total work.

1.05 WORK INCLUDED:

- A. All labor, materials, templates, equipment and services required to furnish and install the finish hardware complete as required by the drawings, as herein specified.
- B. All electrical related work, refer to electrical drawings and specifications.

PART 2 - PRODUCTS

2.01 FASTENERS:

- A. Furnish all finish hardware with all necessary screws, bolts and other fasteners of suitable size and type to anchor the hardware in position for long life under hard use.
- B. Furnish fastenings where necessary with expansion shields, toggle bolts, sex bolts and other anchors approved by the A/E, according to the material to which the hardware is to be applied and the recommendations of the hardware manufacturer.
- C. Design - all fastening shall harmonize with the hardware as to material and finish.

2.02 KEYING:

- A. Final Keying System:
 - 1. Grand master key all locks on the project to existing Great Grand Master Key System, factory keyed and/or as directed by Owner.
 - 2. Cylinders shall have Special Keyway.
 - 3. Deliver three (3) change keys for each lock plus three (3) master keys to the Owner.
 - 4. Provide "Key Log" to Owner upon completion of project.

2.03 ACCEPTABLE MANUFACTURERS:

- A. Catalog numbers used in the Hardware Schedule are taken from the indicated manufacturers and all finish hardware shall be the hardware specifically described unless otherwise directed by the Owner. Contractor shall consult Owner prior to ordering all hardware listed below.
- B. Submit to Architect, written statement that Owner has reviewed and accepts specified hardware. Submit all revisions to Architect for review prior to ordering.
- C. Field verify all dimensions prior to ordering – Contractor shall be responsible for dimensional correctness.

Hardware Doors:

<u>ITEMS</u>	<u>MANUFACTURER</u>	<u>MODEL #</u>
Butts (Hinges)	Stanley Bommer Ives	RD 749 Round Corner 3 EA Bommer BB5000 Series
Lever handle, lockset (knurled)	Schlage	Classroom Lock function: ND Series. <u>Note</u> : interior side shall always remain unlocked
Door Closers	Sargent	350/351 Series
Silencers	Rockwood or H.B. Ives	

2.04 FINISH:

- A. Hardware generally shall be bronze metal with dull chrome plated finish, US26D, unless otherwise noted. If not noted elsewhere, the following shall apply.
 - 1. Exterior Butts - Solid Bronze - Dull Chrome Plate
 - 2. Interior Butts - Steel, Dull Chrome Plate
 - 3. Door Closers - Sprayed Aluminum

2.05 LOCKSET & LATCHSET DESIGN:

- A. Refer to pertinent sections herein.

2.06 OTHER MATERIALS:

- A. All other materials not specifically described but required for a complete and proper finish hardware installation shall be as selected by the Contractor subject to the approval of the A/E.

PART 3 - EXECUTION

3.01 DELIVERIES:

- A. Stockpile all items sufficiently in advance to ensure their availability and make all necessary deliveries in a timely manner to ensure orderly progress of the total work

3.02 PROTECTION:

- A. Finish hardware shall not be installed until all operations or work causing dampness has been completed and thoroughly dried. Knobs, handles and projecting parts shall be wrapped in cloth or soft paper to protect the finish until the project is accepted by the Owner.

3.03 INSPECTION OF INSTALLATION:

- A. Upon completion of the installation and as a condition of its acceptance, deliver to the A/E, a report signed by the AHC stating that his/her inspection was made, that all adjustments recommended by him have been completed and that all finish hardware furnished under this section has been installed and is in optimum working condition.

3.04 FINISH HARDWARE SCHEDULE:

- A. The Contractor shall be responsible for complete examination of the drawings and shall furnish all hardware required for a complete and proper installation.

END OF SECTION

SECTION 08730

WEATHERSTRIPPING AND SEALS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide new weatherstripping and seals at all door and door/frame assemblies where indicated on the drawings.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.02 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Products of other manufacturers are also acceptable, providing they comply with the requirements of these specifications.

1.03 SUBMITTALS:

- A. Comply with submittal requirements of Section 01300.
- B. Submit to Architect, Manufacturer's literature
- C. Schedule of doors and weatherstripping or seal on each, as required.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver to job site in original manufacturer's wrapping.
- B. Store in area protected from weather damage.
- C. Handle only by experienced workmen.
- D. Comply also with applicable requirements of Section 01600.

PART 2 – PRODUCTS

2.01 MANUFACTURER:

- A. Manufacturer and/or supplier of weatherstripping, seals, and thresholds:
 - 1. Visco Products, Valley Street, Providence, Rhode Island 02909, Telephone Number: (401) 831-1665
 - 2. Pemko; Hager; National Guard Products, or approved equal.

2.02 MATERIALS:

- A. Door Sweep: Model # HS051, heavy-duty.
- B. Weatherstripping: Model #STK #DS075 or Model #STK #GD085.

PART 3 - EXECUTION

3.01 INSTALLATION OF WEATHERSTRIPPING:

- A. Install all materials according to manufacturer's specifications.
- B. Apply after doors and frames are painted.
- C. Caulk under all weatherstripping before installation.

3.02 CLEAN-UP:

- A. Remove all excess material, packaging, etc. from project site.
- B. Wipe clean all weatherstripping of excess caulking, dirt, etc.

3.03 ADJUST AND LUBRICATE:

- A. Adjust all weatherstripping for proper operation and to form a complete weathertight closure.
- B. Lubricate all parts as necessary.

END OF SECTION

SECTION 086300
METAL FRAME SKYLIGHTS

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Aluminum-framed pyramid skylights model CCPG.
- B. Related Sections may include but are not limited to the following:
 - 1. Division 8 Glazing: Glass and Glazing Section.
 - 2. Division 7 Flashing and Sheet Metal: Flashing and Sheet Metal Section.
 - 3. Division 7 Section "Joint Sealants" for sealants installed at metal-framed skylight perimeters.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Provide unit skylights capable of withstanding loads as defined by the local codes having jurisdiction where units are to be installed without failure. Failure includes the following:
 - 1. Thermal stresses transferred to the building structure.
 - 2. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing.
- B. Deflection of the entire length of framing members in direction normal to glazing plane is limited to 1/175 of clear span.
- C. Structural Loads: Provide metal-framed skylights, including anchorage, capable of withstanding the effects of the following design loads when supporting full dead loads:
 - 1. Roof Loads
 - a. Concentrated Load: 250 lb applied to framing members at location that produces the most severe stress or deflection.
- D. Structural Performance: Provide metal-framed skylights, including anchorage, capable of withstanding test pressure indicated without material and deflection failures and permanent deformation of structural members exceeding 0.2 percent of span when tested according to ASTM E 330-97.
 - 1. Structural Test Pressure: 60 PSF positive and 30 PSF negative.
- E. Air Infiltration: Provide metal-framed skylights with maximum air leakage of 0.06 cfm/sq. ft. of surface when tested according to ASTM E 283-91 at a minimum static-air-pressure differential of 6.24 lbs/sq. ft.
- F. Water Penetration: Provide metal-framed skylights that do not evidence water penetration when tested according to ASTM E 331-00 and E 547-00 at a minimum differential static pressure of 20 percent of positive design wind load, but not less than 12 lbs/sq. ft.

- G. Condensation Resistance Factor: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 45 when tested according to AAMA 1503.

1.3 SUBMITTALS

- A. Shop Drawings: For metal-framed skylights. Include plans, details, and attachments to other work.
- B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for factory-finished aluminum.
- C. Samples for Verification: Finish samples if required are to be provided.
- D. Product Test Reports: From a qualified testing agency indicating skylights comply with requirements, based on comprehensive testing of current products.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has specialized in installing metal-framed skylights similar to those indicated for this Project.
- B. Professional Engineer Qualifications: A professional engineer who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of skylights that are similar to those indicated for this project in material, design, and extent.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Where metal-framed skylights are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating skylights without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.6 WARRANTY

- A. Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of metal-framed skylights that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Structural failures.
 2. Failure of systems to meet performance requirements.
 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 4. Water leakage; defined as uncontrolled water appearing on normally exposed interior surfaces of skylights from sources other than condensation, resulting from defects in skylight materials or workmanship. (Water controlled by flashing and gutters and drained back to the exterior and that cannot damage adjacent materials or finishes is not water leakage). Water leakage resulting from improper installations not part of this warranty.
 5. Warranty Period: 5 years from date of shipment from the manufacturer.
- B. Finish Warranty: Provide written warranty signed by manufacturer agreeing to repair or replace work with finish defects. "Defects" is defined as peeling, chipping, chalking, fading, abnormal aging or deterioration, and failure to perform as required.
1. Warranty Period for Anodized Finish: 5 year from date of shipment from the manufacturer.
- C. Glass Warranty: Provide written warranty signed by manufacturer agreeing to repair or replace work that has or develops defects in the insulating glass. "Defects" is defined as seal failure or delamination.
1. Warranty Period for Insulating or Laminated Glass: 5 years from date of shipment. (Additional warranty periods may be available if specified. Consult manufacturer.)

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Provide products by Wasco Part of the Velux Group, Wells, ME (800-933-0593).
- B. Substitutions: Manufacturers shall not be considered without prior approval in writing no later than ten (10) calendar days prior to bid. Substitute manufacturers must have been in the custom skylight business for not less than a period of 15 years and must submit to the Architect the following:
1. List of similar projects successfully completed within the last five years.
 2. Proof of financial capability.
 3. Complete details of proposed skylight.
 4. Complete specifications for Architect's review.

2.2 FRAMING MATERIALS

- A. Framing Members: Extruded aluminum alloy 6063-T5 or T6, ASTM B 221 (ASTM B 221M) with minimum effective thickness of 0.109 inches. Provide integral condensation gutter system with

corners fully welded for waterproof quality. Sill frame to have glass fiber reinforced polymer thermal break.

1. Poured and de-bridged polyurethane thermal breaks are not acceptable.
- B. Exterior Pressure Caps: Extruded aluminum alloy 6063-T5 or T6, ASTM B 221 (ASTM B 221M) with minimum effective thickness of 0.090 inches.
- C. Concealed Flashing: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding flashing; compatible with adjacent materials.
- D. Exposed Flashing and Closures: Aluminum sheet alloy and temper of 1100-H14, thickness as require for proper performance.
 1. Minimum Thickness: 0.032 inch. Apron Flashings
 2. Minimum Thickness: 0.062 inch. Closures
- E. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories; compatible with adjacent materials.
 1. Aluminum Retaining Cap Fasteners and Framing Members Fasteners: ASTM A 193/A 193M, Series 300 stainless-steel screws; type as recommended by manufacturer.
 2. Connections to Supporting Structure: Series 300 Stainless Steel.
- F. Framing-System Sealants: Single-component, non-sag, high performance, non-priming, gun-grade elastomeric polyurethane sealant furnished by skylight manufacturer.
 1. Sealant complies with ASTM C920, Type S, Grade NS, Class 25, Use T, NT, M, A, G, and O. Canadian Specification CAN/CGSB-19.13-M87, Classification MCG-2-25-A-N.
 2. Sealant conforms to USDA approval standards.

2.3 GLAZING MATERIALS

- A. Insulating Glass: 1-1/16 or 1-1/8 inch consisting of tempered exterior lite, 1/2 inch sealed air space, and laminated safety glass interior lite. Glass must meet the requirements of AAMA Glass Design for Sloped Glazing for the project. (See Section 08800 for glass description and performance requirements).
- B. Glazing Gaskets: Manufacturer's proprietary pressure-glazing gaskets of elastomer type and hardness selected by skylight manufacturer to comply with requirements. Glazing gaskets to be extruded Thermoplastic Elastomer by the skylight manufacturer.
- C. Spacers, Edge Blocks, and Setting Blocks: Manufacturer's standard permanent non-migrating type of elastomer type and hardness selected to comply with requirements. Spacers, Edge Blocks and Setting Blocks to be extruded thermoplastic elastomer by the skylight manufacturer.
- D. Glazing Weatherseal Sealant: Neutral-curing silicone sealant recommended by skylight and sealant manufacturers for this use.
 1. Sealant is capable of withstanding 50 percent movement in both extension and compression (total of 100 percent movement) when tested for adhesion and cohesion under maximum cyclic movement according to ASTM C 719.
 2. Sealant complies with ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O, as applicable to substrates including other sealants with which it comes in contact.

3. Color: Black.

- E. Flashing Sealant: Single-component, non-sag, high performance, non-priming, gun-grade elastomeric polyurethane furnished by skylight manufacturer.
1. Sealant complies with ASTM C920, Type S, Grade NS, Class 25, Use T, NT, M, A, G, and O. Canadian Specification CAN/CGSB-19.13-M87, Classification MCG-2-25-A-N.
 2. Sealant conforms to USDA approval standards.

2.4 FABRICATION

- A. Framing Components: As follows:
1. Factory assemble framing.
 2. Glaze units where size allows.
 3. Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.
 4. Fabricate components to drain water passing joints and to drain condensation and moisture occurring or migrating within skylight system to the exterior.
 5. Fabricate components to ensure that glazing is thermally and physically isolated from framing members.
 6. Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
 7. Fit and assemble components to greatest extent practicable before finishing.
 8. Fit and secure joints by heliarc welding.
 9. Attach caps with stainless steel fasteners spaced at a maximum of 12 inches on center.
 10. Weld components before finishing and in concealed locations to greatest extent practicable to minimize distortion.
- B. Provide continuous aluminum frame with weatherproof joints sealed and fully welded corners. Locate weep holes in the frame at each rafter connection to drain condensation.
- C. Prepare framing to receive anchor and connection devices and fasteners.
- D. Field/Factory Glazing: Locate and size extruded elastomeric setting blocks and spacers in accordance with the glazing manufacturer's recommendations. At no point shall the glazing come in contact with the skylight frame or fasteners.

2.5 ALUMINUM FINISHES

- A. General: Comply with NAAMM "Metal Finishes Manual" recommendations for application and designations of finishes.
- B. Finish designations prefixed by AA conform to the system for designations of aluminum finishes established by the Aluminum Association.
1. Anodized: Clear-Anodized Finish, Class I: AA-C22A41 complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting skylight performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Metal Protection: As follows:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
 - 3. Where aluminum will contact pressure-treated wood, separate dissimilar materials by methods recommended by manufacturer.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written instructions for protecting, handling, and installing skylight components.
- B. Following manufacturer's installations instructions and job specific drawings to ensure proper installation.
- C. Coordinate with installation of roof deck and other substrates to receive skylight units.
- D. Coordinate with installation of vapor barriers, roof insulation, roofing, and flashing as required to assure that each element of the work performs properly and that combined elements are waterproof and weather tight. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.

3.4 CLEANING

Clean exposed metal and glass surfaces according to manufacturer's instructions during installation.
Touch up damaged metal coatings.

Final cleaning by others.

END OF SECTION

SECTION 09651
RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes vinyl sheet flooring.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:
 - 1. Product Data: For adhesives, indicating VOC content.
 - 2. Product Data: For chemical-bonding compounds, indicating VOC content.
- C. Shop Drawings: For each type of flooring. Include flooring layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - 1. Show details of special patterns.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and Manufacturer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of resilient sheet flooring to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Resilient Sheet Flooring: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, in roll form and in full roll width for each type, color, and pattern of flooring installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for resilient sheet flooring installation and seaming method indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient sheet flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F. Store rolls upright.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F in spaces to receive resilient sheet flooring during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 85 deg F.
- C. Close spaces to traffic during resilient sheet flooring installation.
- D. Install resilient sheet flooring after other installation and finishing operations have been completed.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace resilient sheet flooring that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Yellow from exposure to vinyl backed flooring
 - b. Permanently indentation
 - c. Rip, tear or gouge
 - d. Permanently discolor or fade
 - 2. Warranty period for Finishes: 30 years minimum from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient sheet 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 1.
 - 2. Meets 450 or less when tested in accordance with ASTM E 662/ NFPA 258, Standard Test Method for Smoke Density.
 - 3. FSR – 150; SDC – 145 when tested in accordance to CAN/ULC S102.2, Standard Test Method for Flame Spread Rating and Smoke Development of Flooring Materials.
 - 4. Class C when tested in accordance to ASTM E 84/NFPA 255, Standard Test Method for Surface Burning Characteristics.
 - 5. FSR – 165, SDC – 145 when tested in accordance to CAN/ULC S102, Standard Test Method for Flame Spread Rating and Smoke Development of Wall Materials.
- B. Environmental: 100% USDA Certified BioBased Product. Compliant with CHPS 01350 requirements for VOC emissions and indoor air quality.
- C. Flexibility: Will not crack or break when bent around a 1.4-inch diameter circle.
- D. Static Load Limit: Residual compression of 0.002" with 250 pounds per square inch when tested in accordance with ASTM F 970-17, Standard Test Method for Static Load Limit.
- E. Slip Resistance: Meets or exceeds the industry recommendation of >0.5 for flat surfaces when tested in accordance with ASTM D 2047, Standard Test Method for Static Coefficient of Friction.
- F. Castor Resistance: Suitable for office chairs with castors when tested in accordance with EN 425, Castor Chair Test.
- G. Impact Sound Reduction: 6db when tested in accordance with ISO 717-2, Impact Sound Insulation Test.
- H. Resistance to Bacteria: Provides a self-sanitizing quality in the form of a bactericidal effect. Independent testing has shown that a sterile zone around the material inhibits the growth of organisms such as staphylococcus aureus, Clostridium difficile, and Klebsiella pneumonia (CRE).
- I. Cigarette Resistance: Resists cigarette burns. Burning cigarettes will leave only a brown mark, which can be rubbed out using steel wool or scouring.

2.2 VINYL SHEET FLOORING WITH BACKING

- A. Basis-of-Design Product: Marmoleum. Subject to compliance with requirements, as manufactured by Forbo Flooring North America, 8 Maplewood Drive, Humboldt Industrial Park, Hazleton, PA 18202, 800.842.7839, www.forbo.com, or as approved equal.
- B. Overall Thickness: 1/10 inch (2.5mm).
- C. Meets or exceeds all technical requirements as set forth in ASTM F 2034 Standard Specification for Linoleum Sheet Flooring, Type I.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient sheet flooring.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient sheet flooring until it is the same temperature as the space where it is to be installed.
 - 1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.3 RESILIENT SHEET FLOORING INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient sheet flooring.
- B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.
- C. Lay out resilient sheet flooring as follows:
 - 1. Maintain uniformity of flooring direction.
 - 2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
 - 3. Match edges of flooring for color shading at seams.
 - 4. Avoid cross seams.
- D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, and door frames.
- E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.

1. Permanent and non-permanent markers, pens, crayons, paint, or other transferable marking materials, must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.
- G. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections. Use Forbo L 885, Forbo Sustain 885m, Forbo Sustain 1195 or Sustain 1299 adhesive. Use a 1/16" x 1/16" x 1/16" square notch trowel. Spread Rate: Approximately 125 square feet/gallon.
- H. Seamless Installation:
 1. **Seams are prohibited for elevator cab installation.**

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.
- B. Perform the following operations immediately after completing resilient sheet flooring installation:
 1. Remove adhesive and other blemishes from surfaces.
 2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient sheet flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
 1. No traffic for 24 hours after installation.
 2. No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.
 3. Wait 72 hours after installation before performing initial cleaning.
- D. Maintenance: A regular maintenance program must be started after the initial cleaning.
- E. Floor Polish: Remove soil, adhesive, and blemishes from flooring surfaces before applying liquid floor polish.
 1. Apply one coat minimum or as recommended by the Manufacturer using approved cleaning and maintenance products from the resilient flooring Manufacturer.
- F. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION

SECTION 09910

PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Paint all surfaces as indicated herein and/or as required and as intended for a complete and proper job.
- B. Related Work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.02 QUALITY ASSURANCE:

- A. Include on Label of Containers:
 - 1. Manufacturer's name;
 - 2. Type of paint;
 - 3. Manufacturer's stock number;
 - 4. Color;
 - 5. Instructions for reducing, where applicable;
 - 6. Label analysis;
 - 7. Federal Specification number
- B. Sampling of Materials:
 - 1. When requested by the A/E, obtain test samples from materials stored at project site or source of supply.
 - 2. Select samples at random from sealed containers.
- C. Fungus Control: Organic coating shall show no fungus growth when tested as specified in Federal Test Method Standard 141, Method 6271.1.
- D. Field Quality Control:
 - 1. Request review of first finished room, space, or item of each color scheme required by A/E for color, texture, and workmanship.
 - 2. Use first acceptable building component as project standard for each color scheme.
 - 3. For spray application, paint surface not smaller than 100 sq. ft. as project standard.
- E. Paint Coordination:
 - 1. Provide finish coats, which are compatible with the prime coats actually used.
 - 2. Review other sections of these specifications as required verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.

3. Upon request, furnish information of the characteristics of the specific finish materials to assure that compatible prime coats are used.
4. Provide barrier coats over non-compatible primers, or remove the primer and re-prime as required.
5. Prior to ordering paint materials, notify the Architect in writing of anticipated problems in using the specified coating systems over existing and prime-coatings.

1.03 SUBMITTALS:

- A. Color samples;
- B. Manufacturer's literature and recommendations, including flame spread ratings, fuel contribution and smoke density factors, including each wood specimen to be used.
- C. Prototype:
 1. Completely paint a specified portion of one building to serve as a prototype for all painting. Do not proceed further until approved in writing, by the Architect.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver sealed containers with labels legible and intact.
- B. Store only acceptable project materials on project site.
- C. Store in a suitable location.
- D. Restrict storage to paint materials and related equipment.
- E. Comply with health and fire regulations.
- F. Comply with pertinent other provisions of Section 01600.

1.05 JOB CONDITIONS:

- A. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
- B. Do not apply finish in areas where dust is being generated.
- C. Cover or otherwise protect finished work of other trades and surfaces not being painted concurrently or not to be painted.
- D. Do not apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 45°F, unless otherwise permitted by the manufacturer's printed instructions as approved by the A/E.
- E. Weather Conditions:
 1. Do not apply paint when the relative humidity exceeds 85%; or to damp or wet surfaces, unless otherwise permitted by the manufacturer's printed instructions as approved by the A/E.

1.06 EXTRA STOCK:

- A. Upon completion of the work of this section, deliver to the Owner, as extra stock equaling 1 gallon of each color, type, and gloss of paint used in the work, tightly sealing each container, and clearly labeling with contents and location where used.
- B. Each container shall be clearly marked as to the type of paint or stain, color name (and number), manufacturer's name, and where used. Said containers shall be clean of excessive paint and have airtight covers.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

- A. Except as otherwise specified, materials shall be the products of the following manufacturer:
 - 1. Sherwin Williams
 - 2. Glidden Coatings
 - 3. Pratt & Lambert
- B. Materials selected for coating systems for each type surface shall be the product of a single manufacturer, unless otherwise indicated by the A/E.
- C. Where products are proposed other than those specified by name and number in the painting schedule, provide submittals and a new painting schedule compiled in the same format used for the painting schedule in this section.
- D. Undercoats and Thinners:
 - 1. Provide undercoat paint produced by the same manufacturer as the finish coat.
 - 2. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.
 - 3. Insofar as practicable, use undercoat, finish coat, and thinner materials as parts of a unified system of paint finish.

2.02 MATERIALS:

- A. Paint shall be first quality of types and brands herein specified. The term "paint" as used herein includes enamels, primers, epoxy, fillers, transparent coatings, paint emulsions, stains, varnishes, sealers, and other coatings, organic or inorganic, whether used as prime, intermediate finish coats. Paint shall be well ground and shall be of such composition that it can be easily broken up with a paddle to smooth consistency.
- B. Linseed oil, shellac, turpentine and other materials shall be of the highest quality as approved by the A/E.
- C. Tints and all other additives or thinners shall be used only as recommended by the manufacturer of the paint as approved.

2.03 COLORS:

- A. Colors of paints, including stain shades, shall be from manufacturer's standard colors. Architect shall select all colors.

B. Refer to 3.08 "B", Painting Schedule, herein.

2.04 MIXING AND TINTING:

- A. Deliver paints and enamels ready-mixed to job site.
- B. Accomplish job mixing and job tinting only when acceptable to the A/E.
- C. Mix only in mixing pails placed in suitably sized non-ferrous or oxide-resistant metal pans.
- D. Use tinting colors recommended by manufacturer for the specific type of finish.
- E. Fungicidal agent shall be incorporated into the paint by the manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution, permanence, or quality of work and which cannot be put into an acceptable condition through preparatory work as included in Article 3.02 - PREPARATION OF SURFACES.
- B. Do not proceed with surface preparation or coating application until conditions are suitable for timely and proper completion of this section.

3.02 PREPARATION OF SURFACES:

A. General:

- 1. Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's recommendations as approved by the A/E and these Specifications.
- 2. Remove removable items, which are in place and are not scheduled to receive paint finish, or provide surface-applied protection prior to surface preparation and painting operations.
- 3. Following completion of painting in each space or area, reinstall the removed items by using workers who are skilled in the necessary trades.
- 4. Clean each surface to be painted prior to applying paint or surface treatment. ALL SURFACES TO BE PAINTED SHALL BE HAND WASHED WITH NON-SAPONIFYING SOLUTION SUCH AS TSP UNTIL ALL TRACES OF DIRT, OIL, OR GREASE HAVE BEEN REMOVED.

B. Wood Surfaces:

- 1. Clean soiled surfaced with alcohol wash.
- 2. Except where rough exterior surface is specified, sand to smooth and even surface, and then vacuum off.
- 3. Apply specified product to all knots, pitch and resinous sapwood before priming coat is applied.

4. Fill nail holes, cracks, open joints, and other defects with oil based putty after priming coat has dried. Color to match finish color.
5. If a stain is used, provide a small test area for product compatibility. Test for color acceptance. Stains shall be allowed to dry 24 hours before re-coating. A light sanding with very fine sandpaper before application or finish shall be provided.

C. Gypsum Wallboard and Plaster:

1. Fill narrow, shallow cracks and small holes with spackling compound and/or plaster.
2. Allow to dry; sand smooth.
3. Do not raise nap of paper on wallboard.

D. Concrete and Masonry Surfaces: (when applicable)

1. Fill cracks and irregularities with Portland cement grout to provide uniform surface texture.
2. Etch with 5% solution (by weight) of muriatic acid.
3. Fill concrete masonry unit surfaces with block filler.

E. Ferrous Metal Surfaces:

1. Prepare surface in accordance with recommendations and directions of manufacturer with rust-inhibitive primer.
2. Feather edges of sound paint by grinding, if necessary.

F. Galvanized Metal:

1. Clean surface with mineral spirits to remove oily residue.
2. Dry with clean cloth.

3.03 MATERIALS PREPARATION:

A. General:

1. Mix and prepare paint materials in strict accordance with the manufacturer's recommendations as approved by the A/E.
2. When materials are not in use, store in tightly covered containers.
3. Maintain containers used in storage, mixing, and application of paint, in a clean condition, free from foreign materials and residue.

B. Stirring:

1. Stir materials before application, producing a mixture of uniform density.
2. Do not stir into the material any film, which may form on the surface, but remove the film and, if necessary, strain the material before using.

C. Preparation of Surfaces:

1. All surfaces to be painted shall be clean, dry and free of frost.

2. All wood trim shall be scraped, sanded, nailed, countersunk and puttied. All joints shall be caulked.

3.04 PAINT APPLICATION:

A. General:

1. Touch-up shop-applied prime coats which have been damaged, and touch-up bare areas prior to start of finish coats application.
2. Slightly vary the color of succeeding coats.
 - a.) Do not apply additional coats until the completed coat has been inspected and approved.
 - b.) Only the inspected and approved coats of paint will be considered in determining the number of coats applied.

B. Do not apply initial coating until moisture content of surface is within limitations recommended by paint manufacturer.

C. Apply paint enamel, stain and varnish with suitable brushes, rollers or spraying equipment.

1. Rate of application shall not exceed that as recommended by paint manufacturer for the surface involved, less 10 percent.
2. Keep brushes, rollers, and spraying equipment clean, dry, free of contaminants and suitable for the finish required.
3. Comply with recommendations of product manufacturer for drying time between succeeding coats.
4. Sand and dust between each coat to remove defects visible from a distance of 5 feet.
5. Finish coats shall be smooth, free of brush marks, streaks, laps, or pile-up of paints, and skipped or missed areas.
6. Deleted.
7. Contractor shall be responsible for following manufacturer's written instructions and warnings for all products specified or substitutes herein.

E. Leave all parts of moldings and ornamental work clean and true to detail with no undue amount of paint in corners and depressions.

F. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.

G. Refinish whole wall where portion of finish has been damaged or is not acceptable.

H. Back prime all new wood trim.

I. Runs on face are not permitted.

J. Wet Areas:

1. Add an approved fungicide to paints.

2. For oil base paints, use 1% phenolmercuric or 4% tetrachlorophenol.
 3. For water emulsion and glue size surfaces, use 4% sodium tetrachlorophenate.
- L. For completed work, match the approved samples as to texture, color, and coverage. Remove, refinish, or repaint work not in compliance with the specified requirements.

3.05 PAINT DRYING:

- A. Allow sufficient drying time between coats, modifying the period as recommended by the materials manufacturer to suit adverse weather conditions.
- B. Consider oil-base and oleo-resinous solvent-type paint as dry for recoating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and when the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

3.06 APPLICATION EQUIPMENT:

- A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and as approved by the Architect.
- B. Prior to use of application equipment, verify that the proposed equipment is actually compatible with the materials to be applied, and that the integrity of the finish will not be jeopardized by the use of the proposed equipment.
- C. Brush Applications:
1. Brush out and work the base coats onto the surface in an even film.
 2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.
- D. Spray Application:
1. Except as specifically otherwise approved by the Architect, confine spray application to metal framework and similar surfaces where hand brush work would be inferior.
 2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
 3. Do not double back with spray equipment to build up film thickness of two coats in one pass.
- E. Roller Application:
1. Rollers may be used on large wall and ceiling surfaces. Keep walls free of roller marks.

3.07 CLEANING:

- A. Touch up and restore finish where damaged.
- B. Remove spilled, splashed, or splattered paint from all surfaces.

- C. Do not mar surface finish of item being cleaned.
- D. Leave storage space clean and in condition required for equivalent spaces in project
- E. Cleaning up process shall proceed with progress of work.

3.08 PAINTING SCHEDULE:

A. Surfaces not to be painted:

1. Items with factory-applied final finish unless otherwise noted.
2. Masonry surfaces - unless otherwise noted.
3. Existing metal trim located over wood trim work such as that at certain window unit locations.
4. Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, lead-coated copper, bronze, and similar finished materials unless otherwise directed.
5. Do not paint over required labels or equipment identification performance rating, name, or nomenclature plates.

B. Areas shall be painted as indicated, as directed, and as approved. The kinds of painting materials and number of coats required on various surfaces shall be as indicated in the following schedule. **Certain portions of the Paint Schedule below may not apply to this project.**

NUMBER OF COATS INDICATED HEREINAFTER ARE MINIMUM. COMPLETE COVERAGE IS REQUIRED. PROVIDE ADDITIONAL COATS TO AREAS WHICH DO NOT SHOW COMPLETE COVERAGE WITH SPECIFIED COATS.

1. New Exterior Gypsum Board:
 1st coat: Pratt & Lambert, Suprime "3" Primer
 (2) coats: Pratt & Lambert, Pro-Hide Exterior Latex Semi-Gloss
2. New Exterior Gypsum Board:
 1st coat: Pratt & Lambert, Suprime "3" Primer
 (2) coats: Pratt & Lambert, Pro-Hide Exterior Latex Semi-Gloss
3. New Plaster and Gypsum Board Ceilings:
 1st coat: Pratt & Lambert, #3001 Latex Primer
 2nd coat: Aristex-Texture Finish (MATCH EXISTING CEILING TEXTURE)
 3rd coat: Pratt & Lambert, #Z1250, Skylight Latex Flat, Soft White
4. New Interior Plaster and Gypsum Board: (where applicable)
 1st coat: Pratt & Lambert, #Z3001 Latex Primer
 (2) coats: Pratt & Lambert, #Z9391, Pro-Hide Plus Latex.
5. New Interior Wood Trim:
 (3) coats: Pratt & Lambert, #Z9691, Pro-Hide Plus Latex Satin Enamel.
6. Interior Spot Priming: (at stains)
 Apply coats as required, Pratt & Lambert, Q-Dee, #E12, primer sealer stain killer.

NOTE: All surfaces shall be spot primed as necessary so as to prevent stains from "bleeding" through new paint finish.

7. Interior Stain: (wood trim, doors as noted, window sills, etc.)
Pratt & Lambert, Tonetic Architectural Wood Stain, color shall be selected by the A/E.
8. Exterior Stain: At existing wood shingle siding
(2) coats: Sherwin Williams WoodScapes Solid Color Stain, A15 Series
(NOTE: If Tannin Bleeding occurs, apply A-100 Exterior Oil Wood Primer,
Y24W20 prior to the (2)-coat stain application).
Color shall be selected by the Architect.
9. Exterior Wood Trim:
(2) coats: Sherwin Williams SuperPaint Exterior Latex Satin, A89 Series
(NOTE: If Tannin Bleeding occurs, apply A-100 Exterior Oil Wood Primer, Y24W20 prior to the (2)-coat stain application).
Color shall be selected by the Architect.
10. Exterior Metal
(2) coats: Sherwin Williams Sher-Cryl HPA, B66-300 Series
(NOTE: Apply Kem Kromik Metal Primer at all rusted or peeling locations prior to the (2)-coat paint application).
Color shall be selected by the Architect.

NOTE: If rust is showing on metal, first coat shall be a rust inhibitive primer after proper preparation has been made.

11. Interior Painted Metal Doors and Frames:
1st coat: 61 Enamel Undercoating
2nd coat: Cella-tone Alkyd Satin Enamel
3rd coat: Cella-tone Alkyd Satin Enamel

NOTES: If rust is showing on metal, first coat shall be a rust inhibitive primer after proper preparation has been made. Spray paint radiator covers.

12. Interior Masonry Units:
1st coat: Pro-Hide Plus Latex Block Filler
2nd coat: Accalade Velvety Latex Enamel
3rd coat: Accolade Velvety Latex Enamel
13. Exposed Interior Ducts, etc.:
1st coat: 61 Enamel Undercoater
2nd coat: Finish and system to match wall or ceiling finish.
3rd coat: Finish and system to match wall or ceiling finish
14. In Janitors Closets, Utility Closets, etc. Interior Dry Wall, Plaster, Plasterboard, Masonite, Pressboard, Boiler Covering, Pipe Covering, etc. – Unless otherwise directed on the drawings:
1st coat: Interior Acrylic Primer 23000
2nd and
3rd coat: Accalade Velvety Latex Enamel

15. Exposed Piping:

Color code pipes as follows:

Heating supply and return	Orange	
Domestic hot water.....	Dark Blue	Effecto Enamel
Domestic cold water.....	Violet	OSHA
Domestic water circulation.....	Dark Blue	Safety Color
Fire Protection.....	Red	
Gas.....	Gray	
Compressed Air.....	Yellow	

16. Exposed Fire Sprinkler Protection System Piping, Hangers, Hanger Rods, Fittings, Etc.:

- 1st Cleaner Manufacturer: Sherwin Williams "ProClean" or "TSP".
Spray-on, thoroughly wipe clean with damp sponge or cloth. In heavily soiled location, rinse with water after wiping. Comply completely with other recommendations of the manufacturer.
- 2nd Apply (1)-coat Sherwin Williams "Kem Kromik" Universal Metal Primer.
Color: Off-White – BSO WZ1
- 3rd Apply (2)-coats Sherwin Williams "DTM" Acrylic Coating: Semi-gloss:
Color shall be selected by the Architect.

NOTE: Comply fully with the painting procedures specified on the drawings.

17. Interior Drywall or Plaster Walls P.E.P. (epoxy-polyester finish); Total Dry Film Thickness 13 mils (when applicable):

- 1st coat: Vinyl Acrylic Primer 2300 (verify with manufacturer)
- 2nd and
- 3rd coats: Palgard Epoxy Coating

NOTE: All glazed coating (epoxy polyester) shall be applied in strict accordance with manufacturer's printed instructions. Apply filler coat by spray or roller application. Apply two finish coats by spray method.

18. Interior Masonry Units (epoxy-polyester finish):

- Total dry film thickness shall be 24 mils.
- 1st coat: Palgard Epoxy Coating
- 2nd and
- 3rd coats: Palgard Epoxy Coating

19. Interior Concrete Walls:

- 3 coats: Accalade Velvety Latex Enamel

20. Interior Poured Concrete Floors & Steps:

- (3) - coats: Alkyd Gloss Floor Enamel

NOTE: Thin above first coat with one (1) pint appropriate thinner to the gallon. Etch concrete area with 10% solution of muriatic acid (30 days after construction). Hose with clean water after effervesces and allow to dry before coating.

21. Exterior Zone Marking/Tactile Warning Location: If applicable, include numbers at parking spaces, "NO PARKING" designated areas, hatching at handicap parking, speed bumps, curb cuts, wheel stops and bituminous curbing and other exterior site areas scheduled for paint.

One Coat: Traffic Paint

NOTE: At "Tactile Warning" provide fine sand mixture.

22. Interior Masonry Units and Concrete (cementitious coating):

1st coat: (2 lb./sq. yd.) Eastern Concrete Sealer

2nd and

3rd coats: (1 lb./sq. yd.) Eastern Concrete Sealer.

NOTE: All cementitious coatings shall be applied in strict accordance with manufacturer's printed instructions.

23. Existing Exterior Concrete & C.M.U. surfaces where concrete stain is specified herein.

Sherwin Williams, H & C Shield Plus Silicone Acrylic Concrete Stain.

3.09 OTHER SURFACES:

- A. Surfaces for which the type of paint has not been specified shall be painted as specified for surfaces having similar conditions of exposure.

3.10 PAINT FOR OWNER:

- A. Each container shall be clearly marked as to the type of paint or stain, color name (and number), manufacturer's name, and where used. Said containers shall be clean of excessive paint and have airtight covers.

END OF SECTION

SECTION 10210
LOUVERS AND VENTS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide louvers and venting assemblies where shown and described on the drawings and herein.
- B. Related Work:
 - 1. Documents affecting work of this Section, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.02 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Perform shop and/or field welding required in connection with the work of this Section in strict accordance with pertinent recommendations of the American Welding Society.

1.03 STANDARDS, CODES AND SPECIFICATIONS:

- A. Where provisions of referenced standards, codes, or specifications conflict with each other or with this specification, the provisions which in the opinion of the A/E insure the greatest safety, quality or appearance shall apply.

1.04 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01300.
- B. Samples: Representative samples of materials to be used, including special finishes.
- C. Manufacturer's Literature:
 - 1. Descriptive data of louvers, including standard drawings and louver-free area.
 - 2. Parts list, if applicable.
 - 3. Installation instructions.
 - 4. Maintenance procedures.
- D. Errors shown on shop drawings whether reviewed for general conformance or not shall be the responsibility of the Contractor.

1.05 PRODUCT HANDLING:

- A. Comply with pertinent provisions of Section 01600.

PART 2- PRODUCTS

2.01 MANUFACTURERS:

Materials of this Section shall be by Ruskin- Model # ELF375DX / ELF375DXH or other manufacturer regularly engaged in the production of louvers and vents. Contractor is directed to coordinate louver installation with his subcontractors so as to avoid misunderstandings as to who is to provide louvers at certain locations.

2.02 MATERIALS:

- A. Aluminum Extrusions: ASTM B221 allow 6063-T5, Anodic finish – All finishes shall be selected by the Architect.
- B. Nails and Fasteners: Manufacturer's standard, compatible with fabricated items.

2.03 FABRICATION

- A. Components fabricated to manufacturer's standard design. Conform to mechanical drawings and specifications. Door louvers shall be designed to accommodate free area air velocity as specified in the Mechanical Design Documents. Contractor shall configure louvers to fit walls, ceilings, soffits, eaves, doors, etc.
- B. Extruded Louvers:
 - 1. Material; aluminum extrusions, anodic.
 - 2. Minimum thickness 1/16 inch.
 - 3. Blades, mullions, and frame extrusions configured to manufacturer's standard design.
 - 4. Assemble louvers by welding.
- C. Screens: (at exterior door/wall louvers)
 - 1. Material; aluminum – anodic.
 - 2. Wire Mesh Size:
 - a) Bird Screen - 3/4 inch
 - b) Insect Screen - 18 × 14 mesh
 - 3. Frame: Manufacturer's standard fabrication.
 - 4. Equip adjustable louvers with manual operating lever.
 - 5. Equip with mitered trim frame adjustable for 1-3/8 in. to 2 inches.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Check openings to assure that dimensions conform to drawings.
- B. Assure that openings are free of irregularities which would interfere with a proper and complete installation.
- C. Do not install louvers and vents until defects have been corrected.

3.02 INSTALLATION

- A. Install louvers and vents as shown or described on the drawings or herein.
- B. Follow procedures in manufacturer's recommended installation instructions.
- C. Provide sealants, caulking and backer rod as required for a complete and proper installation.

3.03 ADJUST AND CLEAN

- A. Set adjustable louver blades for uniform alignment in open and enclosed positions.
- B. Adjust louvers so moving parts operate smoothly.
- C. Repair damage to louvers and vents to match original, or replace.

END OF SECTION

SECTION 10250

FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Work specified in this Section includes provision for single fire extinguishers and surface-mounted cabinets.

1.02 RELATED WORK

- A. Documents affecting work of this Section, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.03 SUBMITTALS

- A. Submit for A/E's approval, in accordance with the supplementary general conditions, cuts from manufacturer's data showing component details, general arrangements, methods of anchoring, finish, and dimensions.

PART 2 - PRODUCTS

2.01 FIRE EXTINGUISHERS (Provide **six (6) total**, 3 per development in locations as determined by the local Fire Dept.)

- A. Extinguishers shall portable, as manufactured by J.L. Industries, or as approved equal, 4450 W. 78th Street Circle, Bloomington, MN 55435, phone: (612) 835-6859.
- B. Model #: Cosmic 10E, 10-pound capacity.
- C. Fire Classification: All-purpose, Class ABC dry-chemical.
- D. Brass valve and stem, steel handles, mild carbon steel cylinder, red enamel finish and U.L. 4A-80BC approved.

2.02 FIRE EXTINGUISHER CABINET: (Provide **six (6) total**, 3 per development in locations as determined by the local Fire Dept.)

- A. Powder-coated steel, surface-mounted cabinet, full double-strength acrylic, cabinet doors attached with a continuous hinge and equipped with zinc-plated handle and roller catch, with 1-3/4" trim on face and door, equal to Ambassador 1013F10, as manufactured by J.F. Industries, 4450 W. 78th Street Circle, Bloomington, MN 55435, phone: (612) 835-6850.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install cabinets in line with block coursing or wood blocking. Top of extinguisher cabinet shall be 5'-0" from the floor, except where indicated otherwise.
- B. Fasten securely in place, in accordance with the manufacturers requirements.

END OF SECTION

SECTION 14220

MODERNIZATION OF ELECTRIC TRACTION ELEVATORS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The specifications are intended to include all labor and material necessary for the complete modernization of elevator components of four (4) elevators total (2 per building) at Fogarty Manor and Kennedy Manor.
- B. The scope of work at the above developments consists of the modernization of elevator components of four (4) elevators in total (2 per building). Fogarty Manor is a fifteen (15)-story building and Kennedy Manor is a nine (9)-story building. Components include, but are not limited to new controls, gearless hoist machines and deflector sheaves, governors, car frames and safety systems (roller guides, slings, platforms, and elevator safeties), counterweight frames, counterweight plates, hoist ropes, car and hoistway door equipment, cab enclosures, car and hall station fixtures, traveling cables and hoistway wiring, buffers and pit equipment, including cleaning of guide rail supports. Work also includes non-elevator building electrical, lighting, elevator interface with building emergency power, and fire alarm system upgrades, mechanical heating, cooling, and ventilation upgrades.
- C. This project is a major elevator modernization in an existing building that resides tenants, is open for public business, and will continue to operate throughout all phases of required work. It is essential that the Contractor give special attention and priority to all matters concerning project safety, protection from dust and loose materials, reduction of noise level, protection from water and air infiltration into the building, and maintenance of neat, sightly conditions in and around work areas inside and outside of the building. Packaging, scrap materials, and demolition debris shall be promptly removed from the building and site on a daily basis. Provide equipment as specified, utilizing existing and/or modified hoistways and machine rooms. Coordinate installation of LAN cabling in hoistway and machine room. Include all costs in bid, including the required time to assist with LAN cable installation. No additional fees will be accepted for coordination and assisting with cable installation by the electrical contractor. The new elevator components shall be provided to function a complete system, for a complete and proper job. The submitted products shall function harmoniously for a complete and proper installation. All incidental components shall be engineered by the product manufacturers so as to properly maintain the existing speed and weight capacity of the existing elevators. Refer to Division 14, Modernization of Electric Traction Elevators, 2.5, Elevator Alterations.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Use products produced by manufacturers regularly engaged in the business of manufacturing, installing, and servicing elevators of the type involved in this Section of these Specifications, and with a history of successful production acceptable to the Architect.

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SECTION 001000 – INSTRUCTIONS TO CONTRACTOR

PART 1 - GENERAL

1.1 EXAMINATION

- A. In order to discover and resolve conflicts or lack of definition which might create problems, Contractor must review Contract Documents, existing site conditions, and existing equipment specified to be retained for compatibility with its product prior to submitting bid. Site review shall include, but not be limited to:
1. Adequacy of access.
 2. Retained equipment.
 3. Elevator hoistways.
 4. Pits.
 5. Machine rooms.
 6. Overhead clearances.
 7. Electrical power characteristics.
 8. Structural supports.
- B. Investigation and structural calculations required to determine compliance of existing elevator components, including machine support beams, with ASME A17.1, Rule 8.7.2.15.2 are responsibility of Contractor. The design of the scope of work included in the Contract Documents is not intended to result in a change in total car weight plus rated load of more than 5%.
- C. If Contractor is in doubt as to the meaning of any requirement included in the Contract Documents, they shall contact the Architect in writing for clarification at least five working days prior to bid due date.
- D. Compliance with all provisions of Contract Documents is assumed and required in absence of written exception.
1. Owner will not pay for change to building structure, structural supports, mechanical, electrical, or other systems required to accommodate Contractor's equipment if not identified before Contract award and authorized as stipulated above.
 2. Provide notification of exceptions no less than five days prior to submittal of bid.
- E. Submission of bid is considered evidence that Contractor:
1. Has visited the site facilities and was allowed adequate time and access to comply with 1.1 A and B above.
 2. Is conversant with the site facilities, site conditions, requirements of the Contract Documents, pertinent state and local codes, state of labor and material markets, and has made due allowance in their bid for all contingencies.
 3. Contractor shall contact the Architect for clarification at least ten working days prior to the bid due date if Contractor's investigation of site conditions or local code reveals:
 - a. Code requirements contrary to Contract Documents.
 - b. Any discrepancies or omissions from Contract Documents.
- F. No oral explanation will be made, and no oral instructions will be given before bid due date. Contractor shall act promptly and allow sufficient time for Architect to reply before submission of bid. Any required interpretation or supplemental instructions will be issued in the form of an addendum to the specifications and forwarded to all pre-qualified Contractors.
- G. Provide everything necessary for and incidental to the satisfactory completion of work required by Contract Documents. All required preparations, hoisting and movement of new equipment, reused equipment, or removal of existing equipment shall be the responsibility of Contractor.

1.2 EXISTING MAINTENANCE CONTRACT

- A. The Owner shall manage the cancellation of the existing Maintenance Contract. The incumbent Maintenance Contractor will not be approved to provide a bid for this project unless they arrange for, and provide evidence of, the cancellation of the existing maintenance agreement. If the present Maintenance Contractor is not awarded the Contract for Modernization, Maintenance Contractor agrees to deliver existing as modified control wiring diagrams to Owner and immediately remove its equipment and materials from the premises with the Owner or Owner's representative present. Owner shall withhold final maintenance payment due until Maintenance Contractor complies with this requirement.**

END OF SECTION

SECTION 008000 – SUPPLEMENTAL CONDITIONS

PART 2 - GENERAL

2.1 DEFINITION OF TERMS

- A. ELEVATOR ARCHITECT or ARCHITECT refers to William Starck Architects.
- B. OWNER refers to Pawtucket Housing Authority.
- C. CONTRACT or CONTRACT DOCUMENTS consists of the Agreement, Conditions of Contract, Specifications, Addenda, Drawings if included, and Alternates if accepted.
- D. CONTRACTOR or ELEVATOR CONTRACTOR refers to any persons, partners, firm, or corporation having a contract with Owner to furnish labor and materials for the execution of work required.
- E. CONTRACT AWARD refers to Owner's verbal or written award for work required.
- F. SUBCONTRACTOR refers to any persons, partners, firm, or corporation having a contract with Contractor to furnish labor and materials for the execution of work required.
- G. PROVIDE means "furnish and install."
- H. MANUFACTURER means either the Original Equipment Manufacturer (OEM) or the principal manufacturer of a component or system.
- I. RETAIN means, unless otherwise specified, the existing equipment is to be left in place with no alterations and no change in the original manufacturer's designed performance or functionality. Items that are "retained" shall be thoroughly cleaned in place and adjusted to achieve originally designed function.
- J. REFURBISH means, unless otherwise specified, the existing equipment is to be cleaned, repainted, repaired, and parts replaced to put the equipment into a condition to provide the same appearance, performance, and functionality as the equipment provided when it was originally installed. Unless otherwise specified, the scope of replacement of components is limited to those items currently available for purchase as replacement parts from the manufacturer or after-market suppliers approved by the manufacturer.
- K. REUSE means that the Contractor shall carefully remove equipment from the existing installation, avoiding any damage or additional wear. Store in a safe location to maintain equipment in its pre-removal condition. Reinstall and incorporate into the modernized elevator installation using the same procedures and recommendations provided by the manufacturer of the equipment.
- L. CALL BACK means a request from the Owner to the Contractor to provide a technician on site to evaluate an elevator that is out of service or not functioning properly, rectify the root cause of the malfunction, and place the unit back into normal service.
- M. INCLUDES or INCLUDING means including the items specified but not limited solely to those items if additional work or components are required to achieve the specified outcome.
- N. Words in the singular shall include the plural whenever applicable or context so indicates.

- O. All technical terms in these Contract Documents are used as defined in the latest edition of American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks ASME A17.1. and A17.2.

2.2 ARCHITECT'S STATUS

- A. Architect shall act as Owner's and/or Building Management's representative on all matters pertaining to required work. Architect shall interpret Contract Documents, analyze Contractor's bids, review Contractor's suggested alternates, review all Contractor's submittals, approve billings, review technical details and construction procedure, perform work progress reviews, and review and test completed work for compliance with Contract Documents prior to acceptance of work by Owner.
- B. Field Review Scheduling: Schedule progress and final work reviews with Architect. Reply promptly, in writing, to corrective work indicated on Architect's progress and/or final review reports, indicating status and schedule for completion. Architect anticipates scheduled site review appointments will be met.

2.3 CONTRACT

- A. Contract includes all engineering, labor, tools, and material required to complete the work in every respect. Contractor is cautioned to familiarize itself with existing site conditions and to include all incidental work that might occur or be required during the work. After Contract has been awarded, verbally or in writing, no extra charges will be allowed for any labor or material necessary to complete required work whether exactly described in these specifications.
- B. Any discrepancies or ambiguities found in Contract Documents or drawings shall be reported to the Architect prior to Contractor's bid submittal.

2.4 MEASUREMENTS AND DRAWINGS

- A. Drawings or measurements included with Contract Documents are for convenience of Contractor. Complete responsibility for detailed dimensions lies with Contractor. Contractor shall verify all dimensions with the actual on-site conditions. Where work of Contractor is to be coordinated with another trade, Contractor's shop drawings shall show actual dimensions and method of joining work of those trades.

2.5 CODES AND ORDINANCES

- A. All work covered by these Contract Documents is to be done in full accord with national code, state and local codes, ordinances, and elevator safety orders in effect at time elevator alteration permit issuance. All requirements of local Building Department and fire jurisdiction are to be fulfilled by Contractor and its Subcontractors. Also see Section 010400, Article 1.1.

2.6 CONTRACTOR'S INSURANCE

- A. Contractor shall take out and maintain during the life of this Contract Worker's Compensation Insurance with statutory limits set by the State of Rhode Island laws for protection of its employees.
- B. Contractor shall carry a comprehensive general liability policy including completed operations blanket contractual broad form property damage, and Owner's and Contractor's protective liability in a casualty or liability insurance company acceptable to Owner. Insurance policy shall fully protect Contractor, its Subcontractors, Owner, and Architect from all loss and liability. Refer to Pawtucket Housing Authority Terms and Conditions provided.

- C. Prior to commencing work, Contractor shall secure required insurance, at its sole cost, and submit certificate of confirmation naming indemnified parties as additional insured. Said policies, including an endorsement which states that such insurance will not be cancelled or materially changed unless Owner is given thirty days' notice, in writing, of the intention of said insurer to cancel or change any such policy. In the event Property is owned by a joint venture or other multi-party entity, all joint venture partners, or parties with an equity interest in the ownership shall be named as additional insureds. Contractor's insurance shall be primary to any applicable loss. With Owner's prior approval, an Owners & Contractors Protective Liability (OCPL) Policy may be substituted for commercial general liability coverage. Please refer to the attached appendix that states the project specific insurance requirements.
- D. Contractor shall file with Owner a certificate of insurance from its insurance company, stating that such insurance is being carried and that Owner will be notified at least ten days prior to any cancellation of said insurance.

2.7 OWNER INSURANCE

- A. Owner's insurance policy covers work and equipment in place in building and approved and accepted by Architect and Owner. All material and equipment stored on site and not actually installed is not included in Owner's policy and such material and equipment shall be covered under Contractor's Property Damage Insurance.

2.8 TAXES, OLD AGE PENSIONS AND UNEMPLOYMENT INSURANCE

- A. Contractor's bids for required work, materials and equipment shall include all local, state, and federal occupational and sales taxes, luxury taxes, excise taxes, federal and state old age pensions, unemployment insurance contributions, and any other similar taxes and contributions in effect at time of award of Contract.

2.9 LABOR LAWS

- A. Contractor and its Subcontractors performing work under this Contract shall comply with applicable provisions of all federal, state, and local labor laws.

2.10 PATENTS

- A. Contractor shall save and hold harmless Owner and its officers, agents, servants, employees, and Architect from liability of any nature or kind on account of any patented or unpatented invention, process, article, or appliance manufactured or used in performance of Contract, including its use by Owner including all cost and expenses for defending any suits unless otherwise specifically stipulated in Contract Documents.
- B. Licenses which may be required for completion of required work are to be obtained and paid for by the Contractor.

2.11 ASSIGNMENTS

- A. Neither party to this Contract shall assign Contract or sublet it as a whole without written consent of other party, nor shall Contractor assign any payment due him or to become due to him hereunder without previous written consent of Owner.

2.12 ADVERTISING

- A. Advertising privileges will be retained by Owner. It is the duty of Contractor to keep premises free from posters, signs, decorations, etc., unless specifically approved by Owner.

2.13 PROTECTION OF WORK AND PROPERTY

- A. Contractor shall continuously maintain adequate protection of all its work from damage and shall protect Owner property from injury or loss arising out of this Contract. Contractor shall make good any such damages, injury, or loss, except such as may be directly caused by agents, subcontractors, or employees of the Owner. Contractor shall provide all barricades required to protect open hoistways or shafts per OSHA regulations. Design of barricades in public areas shall be approved by Owner prior to fabrication and installation.
- B. If Contract includes work which would be disruptive during normal business operations, or would be dangerous to building occupants, said work shall be performed during hours as building management dictates. Examples of such work include, without limitation, saw cutting of concrete, jack hammering, welding, metal cutting, pouring concrete, erecting steel, or hoisting equipment over occupied portions of the building, or performing tests requiring all elevators in a group. Contractor shall perform such work during off-hours and shall include all costs in its bid.
- C. Contractor shall install a suitable protective covering on all finished floors whether marble, wood, carpet or other, in areas where work is being performed. No material handling equipment shall be permitted on or over finished floors unless said floors have been protected in a manner approved by building management.
- D. Portable fire extinguishers shall be provided throughout Contractor's area of work and shall be placed so as to be accessible at all times. Extinguishers shall be multi-purpose dry chemical type, provided on a basis of one 2A-20BC rated unit for each 3,000 square feet of floor area. Extinguishers will remain property of Contractor.
- E. Contractor shall at all times maintain work areas, so all portions are accessible to fire department personnel and apparatus. Fire hydrants and fire department connections to building sprinkler systems must be kept free from obstruction at all times.
- F. Contractor shall strictly supervise any welding, metal cutting or other operations employing open flame work. All welding and cutting equipment shall be safely arranged and all combustibles in vicinity of any work being performed shall either be removed or protected by a noncombustible cover. Welding or cutting shall be attended by an assistant or fire watchman who is equipped with at least one 2A-20BC rated multi-purpose dry-chemical fire extinguisher. Fire watchman will maintain strict surveillance during entire welding or cutting operation and extinguish flying sparks or burning slag. After welding or cutting operation fire watchman shall thoroughly search entire area for remnants of smoldering materials before he is released from his duty. Any welding or other operation employing open flame in any portion of building shall be scheduled with and receive approval of Owner. Hot work permits shall be scheduled and approved with the Owner.
- G. Contractor shall keep noise level below 80 dBA level during normal building hours. When it is necessary to produce noise above this level, Contractor shall advise building management of such needs and times will be scheduled as directed. The Contractor shall anticipate and schedule excessive noise-generating procedures and include allowance for same in its bid and schedule. Anything above 80 dBA shall be conducted outside of normal building operation hours.

2.14 ACCIDENT REPORTS

- A. In the event of accidents of any kind, Contractor shall furnish Owner with copies of all accident reports. Reports shall be sent without delay and at same time that they are forwarded to any other parties.

2.15 STORAGE OF MATERIALS

- A. Contractor shall confine storage of materials on job site to limits approved by Owner and shall not unnecessarily encumber premises or overload any portion of building with materials to a greater extent than structure design load.

2.16 REMOVAL OF EQUIPMENT AND RUBBISH

- A. Contractor shall remove and properly dispose of all rubbish as fast as it accumulates including all existing parts and components not retained, keeping building and premises clean during progress of work and leave premises at completion in a condition acceptable to the Owner. Store parts and components identified by Architect as useful for maintenance of units not being modernized as directed by Owner. All other parts and components not retained shall become property of Contractor. Dumpster shall be located in area as designated by the Owner.

2.17 MATERIALS AND WORKMANSHIP

- A. All materials and equipment furnished shall be new and best quality. Installation shall be accurate, workmanlike, and subject to approval of Owner and Architect. All materials and equipment provided shall conform to regulations of enforcement bodies having jurisdiction. Contractor shall furnish material samples for approval.

2.18 SUPERVISION

- A. Contractor shall assign a competent Project Manager, Superintendent, and on-site Foreman for project satisfactory to Owner and Architect. Such persons shall represent Contractor and all instructions given to them shall be binding as if given to Contractor.

2.19 ROUTINE BUSINESS

- A. After award of Contract, all business relating to required work shall be transacted through Architect, unless otherwise directed.

2.20 CHANGES AND EXTRA WORK

- A. Owner may at any time make changes to Contract Documents, plans and drawings, omit work, or require additional work by Contractor. For such additional work performed hereunder, Owner shall pay Contractor on the basis of a mutually agreed lump sum. See Article 1.25 for method of computing lump sum cost of additional work. Contractor shall make no additions, changes, alterations, or omissions, or perform extra work, without receipt of written authorization of the Owner.

2.21 PAYMENTS

- A. Unless otherwise agreed, Contractor shall submit monthly applications for payment together with necessary data, information, waivers, and affidavits to Architect. Architect shall review data for accuracy and forward such applications to Owner for payment. Information shall be submitted with payment request and work progress forms.
- B. Applications for payments are to cover 90% of the value of labor performed and material installed and delivered during the preceding month or materials delivered to Contractor's storage facility.

- C. Balance (Retainage) shall be paid by Owner upon final acceptance of entire work by Architect and Owner and after performance guarantees have been satisfactorily demonstrated. See Section 017000.

2.22 PAYMENT WITHHELD

- A. Owner and/or Architect may withhold approval of payment on any Contractor's request to such extent as may be necessary to protect Owner from loss on account of:
 - 1. Believed negligence on part of Contractor to execute the work properly or fail to perform any provision of Contract. Owner, after 15 days' written notice to Contractor, may without prejudice to any other remedy he may have, make good such deficiencies, and may deduct its cost from the overall Contract sum.
 - 2. Claims filed or reasonable evidence indicating probable filing of claims by other Contractors or Subcontractors.
 - 3. Failure of Contractor to make proper payments to its material suppliers or Subcontractors for material and labor.
 - 4. A reasonable doubt that required work can be completed by Contractor for balance then unpaid or in Contract time frame.
 - 5. Contractor's damage to building or another Contractor.
- B. When the above grounds are removed, payment shall be made in full, less Retainage.

2.23 LIENS AND AFFIDAVITS

- A. Neither final payment nor any part of billing retention shall become due until Contractor delivers to Owner a complete release of all liens arising out of this Contract or receipts marked paid in full in lieu thereof. In addition, Contractor shall furnish an affidavit to Owner that, so far as he has knowledge or information, releases, or receipts include all labor and materials for which a lien could be filed. If any lien remains unsatisfied after all payments are made by Owner, Contractor shall refund to Owner all monies the latter may be compelled to pay in discharging such a lien, including all costs and reasonable attorney's fees.

2.24 CLAIMS FOR EXTRA COST

- A. Contractor's claims for extra cost due to additions or changes to required work shall be submitted to Architect in writing within a reasonable time after such additions or changes identified or are requested and, in any event, before proceeding with required work. No such claim shall be valid unless so made. Maximum charge for additions/changes to work shall be Contractor cost 10% for overhead and profit. Contractor's cost shall be verifiable from actual supplier invoices, purchase orders, time tickets, etc. Refer to Section 00502, Special Conditions, Changes in the Work.

2.25 DELAYS AND EXTENSION OF TIME

- A. If the Contractor's progress is delayed due to acts of Owner or Architect, acts of other Contractors, fire, floods, strikes or other casualties beyond the control or without fault or negligence of Contractor, time for completion of the work shall be extended for a period determined by Architect to be equivalent to time of such delay. Contractor must notify Architect, in writing, of such delay within 48 hours after delay commences, or no extension of time will be granted. Extension of time without written request within said period on one or more occasions shall not be deemed a waiver of provisions of this article.
- B. Should the project be completed past the final approved scheduled turnover date by Owner, a penalty will be assessed as noted in Refer to Section 00502, Special Conditions, Liquidated Damages.

2.26 PERMITS

- A. The Contractor shall obtain and pay for or cause its Subcontractor to obtain and pay for all permits required to complete required work. In addition, Contractor shall arrange, schedule, and pay for or cause its Subcontractors to arrange, schedule and pay for all required final inspections by state, local or independent certified inspecting authorities necessary for issuance of all required Owner utilization permits regarding completed work.

PART 3 - SPECIAL CONDITIONS

3.1 PROGRESS OF WORK

- A. Upon award, verbally or in writing, Contractor shall reconfirm in writing, the starting and completion schedule including equipment delivery dates based upon the information herein.
- B. The Contractor shall submit in writing monthly reports with payment request, including current equipment delivery dates and anticipated completion dates for individual units and groups of units.

END OF SECTION

SECTION 010100 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. The modernization of 4 elevators, including new gearless machines, operational controls, dispatching, door equipment, signal fixtures, car interior finishes, slings, platforms, counterweights and incidental equipment noted herein and for a complete and proper modernization.
- B. Provide all labor, engineering, tools, transportation, services, supervision, materials, and equipment necessary for and incidental to satisfactory completion of required work as indicated in Contract Documents.
- C. Provide all required staging, hoisting and movement of new equipment, reused equipment, or removal of existing equipment.
- D. Applicable conditions of Owner's General, Special, and Supplemental Conditions.
- E. Prime contracts are defined below, and each is recognized to be a major part of required work to be performed concurrently in close coordination with work of other Contractors.
- F. Scope of Contract includes, but is not limited to, the following:
 - 1. Coordination, scheduling, and management of work of component suppliers and subcontractors.
 - 2. Furnish and install equipment as specified, utilizing existing and/or modified hoistways and machine rooms.
 - 3. Specific item of required work which cannot be determined to be included in another contract is thereby determined to be included in prime contract.
 - 4. Coordinate installation of LAN cabling in hoistway and machine room. Include all costs in bid including required time to assist with LAN cable installation. No additional fees will be accepted for coordination and assisting with cable installation by the electrical contractor.

1.2 PRIME CONTRACTOR'S DUTIES

- A. Prime Contractor's duties include the following:
 - 1. Provide and pay for labor, materials and equipment, tools, construction equipment and machinery, and other facilities and services necessary for proper execution and completion of required work.
 - 2. Pay for legally required sales, consumer, and state remodel taxes.
 - 3. Secure and pay for required permits, fees, and licenses necessary for proper execution and completion of required work, as applicable at time of bid due date.
 - 4. Give required notices.
 - 5. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities applicable to performance of required work.
 - 6. Promptly submit written notice to Architect of observed variance of Contract Documents from legal requirements.
 - 7. Enforce strict discipline and good order among employees. Do not employ persons unskilled in assigned task.
 - 8. The Contractor shall obtain and pay for all required Permits from the Authorities Having Jurisdiction.

1.3 WORK SEQUENCE

- A. Construct work in stages as noted herein.

1.4 WORKING HOURS

- A. Unless otherwise stated below or elsewhere in the Contract Documents, the Contractor shall have access to the building for work activities during the regular building operating hours as noted in Section 00502, Special Conditions.
- B. Contractor shall perform all work that has the potential to result in any of the following conditions outside of regular building operating hours at no additional cost to the Owner:
1. More than one elevator out of service in a group of elevators (not including a second car out of service for more than sixty minutes for regular preventive maintenance during non-peak traffic periods).
 2. Interruptions or changes in normal group automatic operation.
 3. Activation of Firefighter's Emergency Operation Phase I.
 4. Activation of Standby Power Operation.
 5. Noise levels shall be kept to an absolute minimum in any occupied or public space.
 6. Transport of large equipment through public or tenant spaces.

1.5 CONTRACTOR USE OF PREMISES

- A. Confine operations at site to areas permitted by law, ordinances, permits, Contract Documents, and Owner's specific instructions.
- B. Do not unreasonably encumber site with materials or equipment. Staging area will be located as directed by Owner.
- C. Do not load structure with weight that will endanger structure. Coordinate with Owner.
- D. Assume full responsibility for protection and safekeeping of tools and products stored on or off premises.
- E. Move stored products which interfere with operations of building or the operations of other trades.
- F. Obtain and pay for use of additional storage or work areas needed for operations.

1.6 CONCURRENT MODERNIZATION WORK AND BUILDING OPERATION

- A. This project is a major elevator modernization in an existing building which resides tenants, is open for public business and will continue to operate throughout all phases of required work. It is essential that the Contractor give special attention and priority to all matters concerning project safety, protection from dust and loose materials, reduction of noise level, protection from water and air infiltration into building, and maintenance of neat, sightly conditions in and around work areas inside and outside of building. Packaging, scrap materials, and demolition debris shall be promptly removed from building and site on a daily basis.
- B. **Unless otherwise stated in the Contract Documents or Exhibit A, Contractor shall allow only one elevator to be out of service in each elevator group at any time during regular building operating hours.**
- C. At all times Contractor shall provide clearly visible warning and directional signage, full height barricades with locking doors, temporary lighting, overhead protection, and hazard-free walking

surfaces throughout public area. At all times give special attention to building entrances, exits, and proper safe exiting through work areas as required by law.

1. Barricade design must be approved by client prior to start of modernization work.
2. Standard folding maintenance barricades are not acceptable.

- D. Contractor shall consult Owner and other Contractors to establish and maintain safe temporary routes, including, but not limited to proper barricades, walking surfaces, lighting, fire protection, exiting, warning, and directional signs, and general protection of persons from all hazards in accordance with OSHA Standards due wholly or partially to its operations.

END OF SECTION

SECTION 010400 – PROJECT PROCEDURES

PART 1 - GENERAL

1.1 APPLICABLE CODES

- A. Compliance with Regulatory Agencies: Comply with most stringent applicable provisions of following Codes, laws, and/or Authorities, including revisions and changes in effect.

1.2 STAGING AREA

- A. An equipment staging area will be available for use by Contractor (to be coordinated with the Owner). Contractor shall restrict usage to area designated and shall notify Owner prior to storing of any large equipment which will impose heavy concentrated loading on floor area. Do not store such equipment until approval is received.

1.3 OCCUPANCY AND WORK BY OTHERS

- A. Contractor expressly affirms Owner's rights to let other contracts and employ other Contractors in connection with required work. Contractor will afford other Contractors and their workmen reasonable opportunity for introduction and storage of materials and equipment, for execution of their work, and will properly connect and coordinate its work with theirs. Contractor will also incorporate comparable provisions in all its subcontracts.
- B. Contractor declares that other Contractors employed by Purchaser on basis of separate contracts may proceed at such times as necessary to install items of work required by Purchaser.
- C. Contractor declares that it will cooperate with other Contractors employed by Purchaser and, in addition to other coordination and expediting efforts, will coordinate their work by written notices regarding necessity of such work to be done on or before certain dates.
- D. Contractor declares that it is responsible for review, stamped, and signed approval of all shop drawings for required work.
- E. Contractor hereby declares that content of foregoing paragraphs and influence they may have on project:
 - 1. Shall not cause a change in stipulated Contract Sum.
 - 2. Shall not cause a change in Construction Time Schedule.

END OF SECTION

SECTION 013000 – SUBMITTALS

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

- A. Within thirty calendar days after award of contract and before beginning equipment fabrication submit field verified existing installation information for review.
1. Car and Counterweight Information:
 - a. Existing Total Car Weight:
 - 1) Documented on crosshead data tag, all cars.
 - 2) Field Verified: weigh single cars and one car per group of each identical duty type.
 - b. Field verified counterweight total weight. Weigh or balance verify at vertical center of hoistway, single cars and one car per group of each identical duty type.
 - c. Estimated total weight of means of suspension.
 - d. Estimated total suspended compensation load on elevator traction machine drive sheave shaft.
 2. Power Confirmation Information: Field verified existing conditions at each elevator main disconnect:
 - a. Actual maximum available voltage and current.
 - b. Verify true earth ground value.
- B. Within sixty calendar days after award of contract and before beginning equipment fabrication submit planned modernization design information, shop drawings, and required material samples for review. Allow thirty days for response to initial submittal.
1. Indicate equipment lists, reactions, and design information on layouts in table form, including:
 - a. Car and Counterweight:
 - 1) Total car weight to be included on new crosshead data tag.
 - 2) Total counterweight (pre-modernization weight plus or minus any added or removed weight sections).
 - 3) Written confirmation that designed modernization total combined weight of car and rated load:
 - a) Is not more than 5% less or more than that of the original installation.
 - b) Is no more than the existing installation and no less than 95% of the existing installation.
 - 4) Verify buffer capacity via data tags or known manufacturing data.
 - 5) Verify car and counterweight safety capacities via data tags.
 - b. Power Confirmation Information: Design for existing conditions.
 - 1) Motor horsepower and code letter designation.
 - 2) Motor drive starting current, full load running current, and demand factor.
 - 3) Engineered power consumption based on 180 starts per hour full load, non-dynamic braking.
 - 4) Written confirmation that existing electrical provisions are adequate for post modernization installation equipment requirements.
 - c. Written confirmation that total planned modernization reactions on building structure do not exceed originally designed reactions by more than 5% existing reactions due to increased post modernization weights of:
 - 1) Traction machine and motor.
 - 2) Blocking beams.
 - 3) Sheaves.
 - 4) Total car weight.
 - 5) Total counterweight.
 - 6) Suspension means.

- 7) Suspended compensation.
 - 8) Travelling cables.
 - 9) Car Capacity.
 - 10) **Note: elevator machine manufacturer shall provide proper structural steel support bases to sit on existing structural steel beams to remain. All loading shall be evenly distributed on the existing beams and in no way shall the new machines (motors) be directly attached to the existing concrete floors of the elevator machine rooms.**
- d. Product Data, Including:
 - 1) Capacities, sizes, performances, operation, control, signal systems operations, safety features, finishes, and similar information.
 - 2) Product data for car enclosures and hoistway entrances.
 - 3) Product data for signal fixtures, lights, graphics, tactile marking plates, and details of mounting.
 - 4) Full details of ascending car protection means and installation.
 - 5) Two-way conversation devices.
 - 6) Post-modernization machine room heat emissions in BTU.
- 2. Shop Drawings:
 - a. Scaled or Fully Dimensioned Layout: Plan of machine room indicating equipment arrangement, details of car enclosures, hoistway entrances, and car/hall signal fixtures.
 - b. Fully Dimensioned Fixture Drawings:
 - 1) Car operating panels.
 - 2) Car floor indicators.
 - 3) Hall stations.
 - 4) Destination/landing input stations.
 - 5) Position indicators.
 - 6) Hall lanterns.
 - 7) Access key switch.
 - 8) Remote panels.
 - 9) Lobby desk panel.
 - 10) Firefighter's control panel.
 - 11) Group status panel.
 - 12) Emergency power selector switches.
 - c. Rope Brake Mounting and Installation Drawings:
 - 1) Details of all materials and installation design required.
 - 2) Showing reactions incorporated into design.
 - 3) **Signed and stamped by a Rhode Island-licensed structural engineer.**
- C. Samples for Initial Selection: For finishes involving surface treatment, paint or color selection.
- D. Samples for Verification:
 - 1. Samples of Sheet Materials: 3" (75 mm) square.
 - 2. Running Trim Members: 4" (100 mm) lengths.
- E. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract.
 - 1. Include any unique or product specific procedures or methods required to inspect or test the equipment.
 - 2. Identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
- F. Submittal review shall not be construed as an indication that submittal is correct or suitable or that the work represented by submittal complies with the Contract Documents. Compliance with Contract Documents, Code requirements, dimensions, fit, and interface with other work is Contractor's responsibility.

- G. Acknowledge and/or respond to review comments within fourteen calendar days of return.
 - 1. Promptly incorporate required changes due to inaccurate data or incomplete definition so that delivery and installation schedules are not affected.
 - 2. Identify and cloud drawing revisions including Contractor elective revisions on each re-submittal.
- H. Contractor's revision response time is not justification for equipment delivery or installation delay.

1.2 FINAL CONTRACT DOCUMENTS

- A. See Section 01780, Project Closeout.

END OF SECTION

SECTION 016000 – MATERIAL AND HANDLING

PART 1 - GENERAL

1.1 SITE CONDITION INSPECTION

- A. Prior to beginning installation of equipment, examine hoistway and machine room areas. Verify no irregularities exist which affect execution of work specified.
- B. Do not proceed with installation until work in place conforms to project requirements.

1.2 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. General:
 - 1. The protection of all equipment and exposed finishes shall be the responsibility of the Contractor during delivery, handling, and installation until completion of project.
 - 2. The Elevator Contractor shall replace damaged materials with new at no additional cost for material and labor to Owner.
- B. Delivery and Storage:
 - 1. Manufacturers' original packing must adequately protect materials during delivery.
 - 2. Deliver materials to the site ready for use in the accepted manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name, and manufacturer's name. Delivered materials shall be identical to accepted samples.
 - 3. Store materials in original protective packaging under cover in a dry and clean location off the ground. Remove delivered materials that are damaged or otherwise not suitable for installation from the job site and replace them with acceptable materials.
 - 4. It is the responsibility of the Contractor to properly store and protect all materials in space provided or designated by the Owner against damage, stains, scratches, corrosion, weather, construction debris, and environmental conditions.

1.3 INSTALLATION REQUIREMENTS

- A. Install all equipment in accordance with Manufacturer's instructions, referenced codes, specifications, and approved submittals.
- B. Install machine room equipment with clearances in accordance with referenced codes and specification.
- C. Install all equipment so it may be easily removed for maintenance and repair. Include new automatic lubrication devices for all hoist machines to lubricate hoist ropes.
- D. Install all equipment for ease of maintenance.
- E. Install all equipment to afford maximum accessibility, safety, and continuity of operation.
- F. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel:
 - 1. All exposed equipment and metal work installed as part of this work which does not have architectural finish.
 - 2. Machine room equipment.
 - 3. Pit equipment.
 - 4. Neatly touch up damaged factory-painted surfaces with original paint color.
 - 5. Protect machine-finish surfaces against corrosion.

1.4 MANUFACTURER'S NAMEPLATES

- A. Manufacturers' name plates and other identifying markings shall not be affixed on surfaces exposed to public view. This requirement does not apply to Underwriter's Laboratories and code required labels.
- B. Each major component of mechanical and electrical equipment shall have identification plate with the Manufacturer's name, address, model number rating, and any other information required by governing codes.

1.5 COLORS OF FACTORY-FINISHED EQUIPMENT

- A. All colors will be selected from the Manufacturer's standard range unless custom colors are specified herein.
- B. Submit samples of all standard colors available and/or specified custom colors for review and approval. See Section 01300, Submittals.
- C. Submit samples of all specified architectural metals specified for review and approval. See Section 01300, Submittals.

1.6 MATERIALS AND FINISHES

- A. Steel:
 - 1. Sheet Steel (Furniture Steel for Exposed Work): Stretcher-leveled, cold-rolled, commercial quality carbon steel, complying with ASTM A366, matte finish.
 - 2. Sheet Steel (for Unexposed Work): Hot-rolled, commercial quality carbon steel, pickled and oiled, complying with ASTM A568/A568M-03.
 - 3. Structural Steel Shapes and Plates: ASTM A36.
- B. Stainless Steel: Type 302 complying with ASTM A240, with standard tempers and hardness required for fabrication, strength, and durability. Apply mechanical finish on fabricated work in the locations shown or specified, Federal Standard and NAAMM nomenclature, with texture and reflectivity required to match Architect's sample. Protect with adhesive paper covering.
 - 1. No. 4 Satin: Directional polish finish. Graining directions as shown or, if not shown, in longest dimension.
 - 2. No. 8 Mirror: Reflective polish finish with no visible graining.
 - 3. Textured: 2WL as manufactured by Rigidized Metals or Windsor pattern as manufactured by Rimex Metals or approved equal with .050" mean pattern depth with bright directional polish (satin finish).
 - 4. Burnished: Non-directional, random abrasion pattern.
- C. Bronze: Stretcher-leveled, re-squared sheets composed of 60% copper and 40% zinc similar to Muntz Metal, Alloy Group 2, with standard temper and hardness required for fabrication, strength, and durability. Clean and treat bronze surfaces before mechanical finish. After completion of the final mechanical finish on the fabricated work, use a chemical cleaner to produce finish, Federal Standard, and NAAMM nomenclature, matching Architect's sample:
 - 1. No. 4 Satin: Directional polish finish, fine-satin, clear-coated with clear-organic coating recommended by Fabricator. Provide graining direction as shown or, if not shown, in vertical dimension.
 - 2. No. 8 Mirror: Reflective polish finish with no visible graining, bright-polished, clear-coated finish with clear-organic lacquer coating recommended by Fabricator.
 - 3. Acid-Etched Pattern: Provide a No. 8 mirror reflective-polished background with selectively acid-etched, matte-textured, custom pattern as shown. Acid selection and

dilution, if required, as recommended by Fabricator. After final finishing, coat bronze with clear-organic lacquer coating recommended by Fabricator.

- D. Aluminum: Extrusions per ASTM B221; sheet and plate per ASTM B209.
- E. Plastic Laminate: ASTM E84 Class A and NEMA LD3.1, Fire-Rated Grade (GP-50), Type 7, 0.050" $\pm$ 0.005" thick, color and texture as follows:
 - 1. Exposed Surfaces: Color and texture selected by Architect.
 - 2. Concealed Surfaces: Contractor's standard color and finish.
- F. Fire-Retardant Treated Particle Board Panels: Minimum 3/4" thick backup for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame-spread rating of 25 or less, registered with Local Authorities for elevator finish materials.
- G. Natural Finish Wood Veneer: Standard thickness, 1/40" thoroughly dried conforming to ASME/HPMA HP-1983, Premium Grade. Place veneer, tapeless spliced with grain running in direction shown, belt and polish-sanded, book-matched. Species and finish designated and approved by Architect.
- H. Paint: Clean exposed metal parts and assemblies of oil, grease, scale, and other foreign matter and factory paint one shop coat of standard rust-resistant primer. After erection, provide one finish coat of industrial enamel paint. Galvanized metal need not be painted.
- I. Prime Finish: Clean all metal surfaces receiving a baked enamel paint finish of oil, grease, and scale. Apply one coat of rust-resistant primer followed by a filler coat over uneven surfaces. Sand smooth and apply final coat of primer.
- J. Baked Enamel Finish: Prime finish per above. Unless specified "prime finish" only, apply and bake three additional coats of enamel in the selected solid color.
- K. Entrance Field Paint: Clean all surfaces to remove dirt and grease. Sand and finish surfaces as necessary to remove pits and scratches and prepare surface for painting. Apply filler to ensure smooth surface; sand and apply one coat of electrostatic enamel in the selected solid color.
- L. Refinishing of natural metals: Remove existing protective finish. Buff as necessary to remove scratches. Regrain or finish as specified and protect as indicated for particular metal type.
- M. Entrance Support Equipment within Hoistway: Include strut angles, headers, sill support angles, fascia, hanger covers, etc. Clean, remove, and check for corrosive activity. Replace components which exhibit severe deterioration. Tighten all fastenings. Repaint exposed surfaces with two coats of rust-preventive primer.
- N. Glass: Laminated safety glass, minimum 9/16" thick, conforming to ANSI Z97.1 and CPSC 16 CFR Part 1201.

END OF SECTION

SECTION 017000 – FINAL CONTRACT COMPLIANCE REVIEW

PART 1 - GENERAL

1.1 FINAL CLEANING

- A. See Section 008000, Supplemental Conditions, for contractual requirements governing site cleaning. As a minimum:
 - 1. Elevator hoistways and all equipment therein shall be cleaned and left free of rust, filings, welding slag, rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt, and dust, including walls, building beams, sill ledges, and hoistway divider beams.
 - 2. Care shall be to not to mark, soil, or otherwise deface existing or new surfaces. Clean and restore such surfaces to their original condition.
 - 3. Clean down surfaces and areas which require final painting and finishing work. Cleaning includes removal of rubbish, broom cleaning of floors, removal of any loose plaster or mortar, dust, and other extraneous materials from finish surfaces, and surfaces which will remain visible after the work is complete.
 - 4. Paint machine room walls and floors.

1.2 ARCHITECT'S FINAL OBSERVATION AND REVIEW REQUIREMENTS

- A. Review procedure shall apply for individual elevators, portions of groups of elevators, and completed groups of elevators accepted on an interim basis, or elevators and groups of elevators completed, accepted, and placed in operation.
- B. Contractor shall perform review and evaluation of all aspects of its work prior to requesting Architect's final review. Work shall be considered ready for Architect's final contract compliance review when all Contractor's tests are complete, all deficiencies noted by the AHJ have been rectified, and all elements of work or a designated portion thereof are in place and elevator or group of elevators are deemed ready for service as intended.
- C. Contractor shall perform review and evaluation of all aspects of its work prior to requesting Architect's review.
- D. Furnish labor, materials, and equipment necessary for Architect's review. Notify Architect five working days in advance when ready for final review of elevator or group of elevators.
- E. Architect's written list of observed deficiencies of materials, equipment, and operating systems will be submitted to Contractor for corrective action. Architect's review shall include as a minimum:
 - 1. Workmanship and equipment compliance with Contract Documents.
 - 2. Contract speed, capacity, floor-to-floor times, and door performance compliance with Contract Documents.
 - 3. Performance of following is satisfactory:
 - a. Starting, accelerating, running.
 - b. Decelerating, stopping accuracy.
 - c. Door operation and closing force.
 - d. Equipment noise levels.
 - e. Signal fixture utility.
 - f. Overall ride quality.
 - g. Performance of door control devices.
 - h. Operations of emergency two-way communication device.
 - i. Operations of firefighters' service.
 - j. Operations of special security features and floor lock-off provisions.
 - k. Operations of remote monitoring devices.

- I. Operations of emergency brake device.
 4. Test Results:
 - a. In all test conditions, obtain specified contract speed, performance times, stopping accuracy without re-leveling, and ride quality to satisfaction of Owner and Architect. Tests will be conducted under both no load and full load condition.
 - b. Temperature rise in motor windings limited to 122°F (50°C) above ambient. A full-capacity one-hour running test, stopping at each floor for ten seconds in up-and-down directions, may be required.
 - F. Performance Guarantee: Should Architect's review identify defects, poor workmanship, variance, or noncompliance with requirements of specified codes and/or ordinances, or variance or noncompliance with the requirements of Contract Documents, Contractor shall complete corrective work in an expedient manner to satisfaction of Owner and Architect at no cost as follows:
 1. Replace equipment which does not meet code or Contract Document requirements.
 2. Perform work and furnish labor, materials, and equipment necessary to meet specified operation and performance.
 3. Perform retesting required by governing code authority, Owner, and Architect.
 - G. A follow-up final contract compliance review shall be performed by Architect after notification by Contractor that all deficiencies have been corrected. Provide Architect with copies of the initial deficiency report marked to indicate items which Contractor considers complete.
- 1.3 MANUFACTURER'S WARRANTY
- A. Manufacturer agrees to repair, restore, or replace elevator equipment that fails due to defective materials or poor workmanship within specified warranty period.
 - B. Warranty Period: 12 months from date of Substantial Completion:
 - C. The Elevator Contractor guarantees that the materials and workmanship of the apparatus installed by them and any subcontractor, under this contract, is first class in every respect and that they will make good on any defects not due to ordinary wear and tear or improper use, which may develop within one year from the date of final acceptance of all equipment.
 - D. Manufacturer's warranty to repair or replace defective products or their components in the event of defects within a specified period.
 - E. Neither the final payment nor any provisions of the contract documents relieve the Elevator Contractor of any obligation provided by law. They shall remedy any defects and pay all expenses for any damage to other work.
 - F. The warranty as outlined above, for all devices, starts from the date of final acceptance of each device, by the Consultant and the Owner, of all work specified and intended under these contract documents.
- 1.4 OWNER'S INFORMATION
- A. Provide electronic copies (flash drive or Architect-approved equivalent) of written information necessary for proper maintenance and adjustment of equipment within 30 days following final acceptance. Final retention will be withheld until data is received by Owner and reviewed by Architect. Include the following as minimums:
 1. Straight-line wiring diagrams of "as-installed" elevator circuits with index of location and function of components. Provide one set reproducible master. Mount one set wiring diagrams on panels, racked, or similarly protected, in elevator machine room. Provide

- remaining set rolled and in a protective drawing tube. Maintain all drawing sets with addition of all subsequent changes. These diagrams are the Owner's property.
2. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract. Include any unique or product-specific procedures or methods required to inspect or test the equipment. In addition, identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
 3. Lubrication instructions, including recommended grade of lubricants.
 4. Parts catalogs for all replaceable parts, including ordering forms and instructions.
 5. Instructions explaining all operating features, including all apparatus in the car and lobby control panels.
 6. Maintenance Control Program documentation for all equipment.
- B. Provide Owner with the following:
1. Any interface cards required for equipment maintenance, code mandated testing, and troubleshooting.
 2. Four (4) sets of keys per development for all switches and control features properly tagged and marked.
 3. Diagnostic equipment complete with access codes, adjusters' manuals, and set-up manuals for adjustment, diagnosis, and troubleshooting of elevator system, and performance of routine safety tests.
- C. Preventive Maintenance Contract: Furnish properly executed contract for continuing preventive maintenance. Utilize contract form herein Elevator Service Contract, Section 00501.1.
- D. Acceptance of such records by Owner/Architect shall not be a waiver of any Contractor deviation from Contract Documents or shop drawings or in any way relieve Contractor from his responsibility to perform work in accordance with Contract Documents.

END OF SECTION

SECTION 018000 – MAINTENANCE

PART 1 - GENERAL

1.1 INTERIM MAINTENANCE

- A. Furnish preventive maintenance service on elevators described herein for a period from the Notice to Proceed, until such unit is removed from building service for modernization. In addition, furnish interim preventive maintenance on completed units until the modernization of all elevators is complete and the two (2)-year warranty, defined in Item 1.2 commences. Cost of interim maintenance shall not be included as part of modernization bid. Costs for actual work performed under interim maintenance shall be paid by Owner separately. Perform interim maintenance based upon terms and conditions of Owner's Maintenance/Service Agreement.
- B. Prior to the removal of any car from service, the consolidated callback service for all cars in the specific group shall be no more than three (3) calls per month. Contractor will be responsible for providing preventative maintenance to achieve this requirement.
- C. If callback activity exceeds three (3) callbacks per unit per month at any time when cars are off-line, all maintenance must be completed on overtime until callback rate is less than three/unit/month. Contractor shall assume all associated costs.
- D. Use competent personnel, acceptable to Owner, employed and supervised by the Contractor.

1.2 WARRANTY MAINTENANCE

- A. Provide preventive maintenance, 24-hour emergency callback service and full material-and workmanship warranty for two (2) years commencing on date of final acceptance (Substantial Completion) of all modernized elevators under this contract. Warranty maintenance shall expire concurrently for all elevators. Systematically examine, adjust, clean, and lubricate all equipment. Repair or replace defective parts using parts produced by the Contractor of installed equipment. Maintain elevator machine room, hoistway, and pit in clean condition.
- B. Use competent personnel, acceptable to the Owner, supervised and employed by Contractor.
- C. The maintenance period specified in Item 1.2 A. above shall be extended one month for each three-month period in which equipment-related failures average more than 0.25 per unit per month.
- D. The Owner retains the option to delete cost of warranty maintenance from modernization equipment contract and remit twelve (12) equal installments directly to Contractor during period in which maintenance is being performed.

1.3 MAINTENANCE & WARRANTY SUMMARY

- A. **The Contractor shall be completely responsible for all required work (labor and material) from the period from which an elevator is taken offline for modernization, until Substantial Completion of the project.**
- B. **Starting at Substantial Completion, the Contractor shall provide preventive maintenance, 24-hour emergency callback service and full material-and workmanship warranty for two (2) years commencing on date of final acceptance (Substantial Completion) of all modernized elevators under this contract.**

END OF SECTION

SECTION 019000 – RELATED WORK

PART 1 - GENERAL

1.1 RELATED WORK BY CONTRACTOR

A. Architectural and Structural, Hoistway and Hallway:

1. Clear, plumb, substantially flush hoistway with variations not to exceed 1" at any point.
2. Divider beams between adjacent elevators at each floor, pit, and overhead. Supports at each floor for car and counterweight guide rail fastening. Intermediate car guide rail support when floor heights exceed 14'-0". Intermediate counterweight guide rail supports where floor heights exceed 16'-0". Building supports not to deflect in excess of 1/8" under normal conditions, 1/4" under applicable seismic conditions.
3. Continuous vertical car and counterweight guide rail support between floors shown on Contract documents full height of hoistway.
4. Installation of guide rail bracket supports in concrete. Inserts or embeds, if used, will be furnished under this Section.
5. Wall blockouts and fire-rated closure for control and signal fixture boxes which penetrate walls.
6. Cutting and patching walls and floors.
7. Decorating of walls and floors.
8. Structural slab, concrete wall pockets, and/or structural steel beams for support of hoist machine, rope sheaves, and dead-end hitch beams. Support deflection shall not exceed 1/1666 of span under static load. Concrete or structural steel machine hold down means for hoist machine mounted offset from hoistway or below bottom landing.
9. Erect front hoistway wall after elevator entrances are installed.
10. Grout floor up to hoistway sills and around hoistway entrances.
11. Structural support at pit floor for buffer impact loads, guide rail loads, and compensation sheave tie-down upthrust.
12. Waterproof pit.
13. Pit Door: Rated door with code compliant vision panel. Include signage: "RESTRICTED" and "ELEVATOR HOISTWAY."
14. Protect open hoistways and entrances during construction per OSHA Regulations.
15. Protect car enclosure, hoistway entrance assemblies, and special metal finishes from damage.
16. Hoistway venting.
17. Seal fireproofing to prevent flaking.
18. Access ladders and platform to governor.
19. Professionally scrape and paint cast iron landing sills with commercial grade black epoxy paint. Apply with primer according to manufacturer's directions.
20. Remove existing finished cab flooring. Install new flooring. Coordinate weight of flooring and sill height with elevator contractor.

B. Machine Room:

1. Enclosure with access. Provide stair with guard railing as shown on the Drawings.
2. Self-closing and locking rated access door. Include Signage: "ELEVATOR MACHINE ROOM" and "AUTHORIZED PERSONNEL ONLY."
3. Pass-Through Machine Room: Where pass-through condition exists provide "NOT AN EXIT" signage on door to adjacent space.
4. Paint walls and ceiling for improved light reflectivity.
5. Class "ABC" fire extinguisher in each elevator machine room.
6. Seal fireproofing to prevent flaking.
7. Self-closing and locking governor access door and access means.
8. Access for hoisting. Provide access for hoisting to machine room and repair same when complete as follows: For maintenance purposes.

9. Remove combustible material from machine room as follows: Not needed after elevator modernization.
- C. Plumbing and Fire Protection:
 1. Remove abandoned plumbing from machine room and hoistway as follows: after elevator modernization.
- D. Mechanical:
 1. Machine Room or Control Space: Ventilation and heating. Maintain temperature range of 55°-90° F. Maintain maximum 80% relative humidity, non-condensing.
 2. Machine Space: Ventilation and heating. Maintain temperature range of 55°-90° F, and maximum 80% relative humidity, non-condensing.
- E. Electrical Service, Conductors, and Devices:
 1. Machine Room or Control Space Lighting: Guarded LED fixtures to provide minimum 19 footcandles average illumination. Provide toggle switch adjacent to strike side of machine room door. Occupancy sensor is not allowed.
 2. Machine Room or Control Space Night Light: Provide always-on 3-5-watt LED luminaire inside entrance to machine room.
 3. Machine Space Lighting: Guarded LED fixtures to provide minimum 19 footcandles average illumination.
 4. Pit Lighting: Guarded LED fixtures to provide minimum 10 footcandles average illumination.
 5. Hallway Lighting: LED fixtures to provide 10 footcandles average illumination measured at the threshold with doors closed. Lighting shall be always-on, un-switched and no occupancy sensor.
 6. Hoistway Lighting: Two 4'-0" lamps, LED, guarded luminaires. Locate at every other floor. For groups, one fixture may be provided between each two cars. Provide three-way and four-way switches at top floor adjacent to each entrance and in each pit adjacent to each entrance or pit door.
 7. GFCI convenience outlets in pit.
 8. Non-GFCI convenience outlet in pit for sump pump (sump pumps non-existent at the WHA developments).
 9. GFCI convenience outlets in machine room or control space.
 10. GFCI convenience outlets in machine space.
 11. Heavy-duty three-phase mainline copper power feeder to terminals of each elevator controller in the machine room with protected lockable "open" disconnecting means. Auxiliary disconnects in multi-level machine room. Auxiliary contacts to disable emergency battery lowering.
 12. Single-phase copper power feeder to each elevator with individual protected lockable "open" disconnecting means located in machine room for utilization equipment:
 - a. Car lighting and blower.
 - b. CCTV camera.
 - c. In-car video display.
 - d. Card reader system.
 - e. On-car wi-fi router.
 - f. Machine room monitoring system.
 - g. Machine room rope brake air compressor.
 - h. Main control console status panel.
 - i. Firefighters' control status panel.
 - j. Elevator intercom amplifier in the elevator machine room.
 13. Emergency telephone line to each individual designated elevator control panel in elevator machine room.

14. Automatic Fire Recall System:
 - a. Fire alarm initiating devices in each elevator lobby, for each group of elevators or single elevator.
 - b. Fire alarm initiating devices in each elevator machine room.
 - c. Fire alarm initiating devices at top of hoistway if sprinklered.
 - d. Three Relay Activation Modules for each group of elevators or single elevator. Locate modules within three feet of controller designated by the Elevator Contractor to minimize un-supervised wiring. Program Modules as follows:
 - 1) PRIMARY: Activate when any hallway device, except primary floor, activates.
 - 2) ALTERNATE: Activate when hallway device at primary floor activates.
 - 3) FIRE HAT: Activate when machine room device activates.
 - e. Device in machine room and at top of hoistway (if provided) to provide signal for general alarm.
 - f. Provide technician from fire alarm contractor for pre-test of system during normal working hours.
 - g. Provide technician from fire alarm contractor for acceptance test of system with AHJ during normal working hours.
 - h. Remove fire alarm devices from pit where not required.
 - i. Remove fire alarm devices from hoistway overhead where not required.
15. Category 6 Fiber optic ethernet connection and junction box in each elevator machine room space to where needed for fire command center.
16. Internet access to each machine room for off-site web access to monitoring system.
17. Firefighters' announcement speaker in car with connection to individual elevator control panels in elevator machine room and elevator control panel in firefighters' control room.
18. Conduit from the closest hoistway of each elevator group or single elevator to the firefighters' control room and/or main control console. Coordinate size, number, and location of conduits with Elevator Contractor.
19. Means to automatically disconnect power to affected elevator drive unit and controller prior to activation of machine room fire sprinkler system and/or hoistway fire sprinkler system. Provide heat detectors, shunt trip breaker and all necessary equipment.
20. When sprinklers are provided in the hoistway all electrical equipment, located less than 4'-0" above the pit floor shall be identified for use in wet locations. Exception: Seismic protection devices.
21. Wiring from building CCTV system to elevator controllers and all CCTV equipment.
22. CCTV Cameras, elevator contractor to coordinate and assist with installation of cameras in elevators.
23. Wiring from building security system to elevator controllers and all security system equipment.
24. Card or Proximity Readers, elevator contractor to coordinate and assist with installation of readers in car operating panels or hall stations.
25. Building Automation System (BAS): Elevator controller will enable a single discreet contact closure if the elevator has a reason to run but is not running. Provide all necessary wiring and equipment to elevator controllers from the BAS.
26. Power for Mechanical Equipment: Provide power for HVAC and/or ventilation equipment where applicable.
27. Remove abandoned electrical equipment from machine room and hoistway as follows what is not needed after modernization.
28. Conduit from fire alarm panel to each fire alarm device location at each floor, hoistway, pit and machine room including three relay activation modules in machine room. Provide junction box at each location.
29. Review power confirmation data, provided by the Elevator Contractor, on behalf of the Owner. Verify electrical supply to the controllers meets the stated requirements. Where applicable, review standby power generator capability to meet stated requirements and absorb regenerated power.

- F. Standby Power Provision:
1. Standby power of normal voltage characteristics via normal electrical feeders to run one elevator at a time in each elevator group and/or single elevator unit at full-rated car speed and capacity.
 2. Conductors from auxiliary form "C" dry contacts, located in the standby power transfer switch to a designated elevator control panel in each elevator group and/or single elevator unit to indicate utility or standby power active.
 3. Conductors from auxiliary form "C" dry contacts, located in the standby power transfer switch to a designated elevator control panel in each elevator group and/or single elevator unit. Provide a time delay of 30-45 seconds for pre-transfer signal in either direction.
 4. Standby single-phase power to group controller, and each elevator controller for car lighting, exhaust blower, emergency signaling device, intercom amplifier, hoist machine cooling fan, car heating and air conditioning unit.
 5. Means for absorbing regenerated power during an overhauling load condition per NEC 620.91. Elevator will employ IGBT drive, presenting a non-linear active load.
 6. Standby power to machine room ventilation or air conditioning.
 7. Standby power to emergency communications devices.
- G. Elevator Contractor Related Work:
1. Pit access stationary ladder for each elevator. Retractable ladder if provided shall include an electrical contact conforming to ASME A17.1, Rule 2.2.2.4.2.7.
 2. Under Car Access: Provide permanent ladder and platform for access to under car equipment as required by code.

END OF SECTION

SECTION 14220 - MODERNIZATION OF ELECTRIC TRACTION ELEVATORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes modernization of traction elevators as follows:
 - 1. Fogerty Manor (214 Roosevelt Street): Two (2) geared passenger elevators, Cars 1-2.
 - 2. Kennedy Manor (175 Broad Street): Two (2) geared passenger elevators, Cars 1-2.
- B. Products Installed but Not Furnished Under This Section:
 - 1. Emergency Voice/Alarm Communication System Provisions.
 - 2. CCTV camera provisions.
 - 3. Elevator security devices, control unit, mounting brackets, wiring materials, logic circuits, security system interface terminals, boxes, and relays.
 - 4. Car interior finishes.
 - 5. Car flooring.

1.2 DEFINITIONS

- A. See Section 008000 Supplemental Conditions. Technical terms used are defined in the latest edition of the Safety Code for Elevators and Escalators, ASME A17.1. or in this section.

1.3 WORK INCLUDED

- A. See Section 01100, Summary of Work.
- B. All engineering, equipment, labor, and permits required to satisfactorily complete elevator modernization required by Contract Documents.
- C. Applicable conditions of General, Special, and Supplemental Conditions, Division 1, and all sections listed in Contract Documents "Table of Contents."
- D. Preventive maintenance as described herein.
- E. Cartage and Hoisting: All required staging, hoisting, and movement to, on, and from the site including new equipment, retained equipment, or dismantling and removal of existing equipment.
- F. Unless specifically identified as "Retain," "Reuse," or "Refurbish," provide new equipment. Contractor may, with approval prior to bid, provide new equipment in lieu of refurbishing existing. See Section 008000, Supplemental Conditions.
- G. Reference to a device or a part of the equipment applies to the number of devices or parts required to complete the installation.
- H. Provisions of this specification are applicable to all elevators unless identified otherwise.
- I. Protective barriers between cars in normal operation and adjacent cars in the modernization process, full depth and height of hoistway.
- J. Provide hoistway, pit, and machine room barricades.

- K. Provide temporary and permanent pit ladders, working platforms, inspection platforms, and guard rails required to comply with applicable Building Code and AHJ requirements.
- 1.4 SOURCE QUALITY CONTROL
 - A. Country of Origin: Submit list of all major original equipment manufacturer components identifying origin of each component.
- 1.5 ACTION AND INFORMATIONAL SUBMITTALS
 - A. See Section 013000, Submittals.
- 1.6 CLOSEOUT SUBMITTALS
 - A. See Section 017000, Final Compliance Review.
- 1.7 PERMITS, TESTS, AND CERTIFICATES
 - A. Permits:
 - 1. Secure and pay for all permits required for Work to be performed, including but not limited to:
 - a. Municipal and State permits.
 - b. Device or equipment removal permits.
 - c. Hot works permits.
 - d. Confined space access permits.
 - 2. Post, maintain, and renew all permits in compliance with local governmental requirements.
 - 3. Obtain final close-out of all required permits.
 - B. Tests and Inspections: Schedule with the AHJ and perform tests required by Governing Authority in accordance with procedure described in ASME A17.2 Guide for Inspection of Elevators, Escalators, and Moving Walks in the presence of Authorized Representative of the AHJ.
 - C. Certificates: Obtain, pay for, and deliver to Owner General Contractor with all temporary and final inspection certificates provided by proper governing authorities.
 - D. Violations: Resolve any outstanding violations on record with the AHJ on devices being removed prior to final acceptance by the Owner General Contractor.
- 1.8 QUALITY ASSURANCE
 - A. Compliance with Regulatory Agencies: Comply with most stringent applicable provisions of currently enforced codes, laws, and/or authorities, including revisions and changes in effect.
 - B. Inspections: Provide access to areas where work is being performed for the Architect and General Contractor at any time throughout the project.
- 1.9 WARRANTY
 - A. See Sections 017000 Final Compliance Review and 018000 Maintenance.
- 1.10 MAINTENANCE
 - A. See Section 018000 Maintenance.

1.11 DELIVERY, STORAGE, AND HOISTING

- A. General:
 - 1. Protect all equipment and exposed finishes during delivery, handling, and installation until completion of project.
 - 2. Replace damaged materials with new, at no additional cost for material or labor to Owner.
- B. Delivery and Storage:
 - 1. Ensure manufacturers' original packing adequately protects materials during delivery.
 - 2. Deliver materials, identical to accepted samples, to the site ready for use in the manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name.
 - 3. Store materials under cover in a dry and clean location, off the ground. Remove delivered materials that are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.
 - 4. Store and protect all materials in space provided or designated by the Owner General Contractor against damage, stains, scratches, corrosion, weather, construction debris, and other environmental conditions.
 - 5. Comply with Owner's requirements for access to and use of any building loading docks, parking lots, parking garages, and any interior spaces required for delivery and storage.
- C. Hoisting: Arrange and pay for all required hoisting and movement of equipment.

1.12 COORDINATION

- A. See Section 010400, Summary of Work herein and 01100, Summary of the Work.

PART 2 - PRODUCTS

2.1 REFERENCES

- A. American National Standard Institute (ANSI): A117.1, Accessible and Usable Buildings and Facilities.
- B. American Society of Mechanical Engineers:
 - 1. ASME A17.1, Safety Code for Elevators and Escalators.
 - 2. ASME A17.2, Guide for Inspection of Elevators, Escalators, and Moving Walks.
 - 3. ASME A17.5, Elevator and Escalator Electrical Equipment.
 - 4. ASME A17.6, Standard for Elevator Suspension, Compensation, and Governor Systems.
- C. National Fire Protection Association (NFPA):
 - 1. NFPA 70, National Electric Code.
 - 2. NFPA 80, Fire Doors and Windows.
 - 3. NFPA 101, Life Safety Code.
 - 4. NFPA 13, Installation of Sprinkler Systems.
- D. International Building Code (IBC).
- E. Accessibility:
 - 1. American National Standard Institute (ANSI): A117.1, Accessible and Usable Buildings and Facilities.

2.2 MANUFACTURERS AND PRODUCTS

- A. Subject to compliance with the requirements of the contract, provide new products by one or more of the following Principal Manufacturers.
1. Controllers:
 - a. GAL Galaxy.
 - b. Nidec/MCE.
 - c. Elevator Controls, (EC)
 2. Motor Drives:
 - a. KEB.
 - b. Magnetek.
 - c. Yaskawa.
 3.
 - a. Reskin.
 - b. Draper
 4. Passenger Elevator Door Equipment (Operators, Tracks, Hangers, and Closers):
 - a. GAL model MOVFR II Door Operator, or as approved equal, to include heavy-duty 1/2 HP, 230 Volt AC motor, PC board with variable frequency closed loop-drive with consistent door timing, adaptable to all OEM and independent cabs and doors with optical closed-loop feedback, 'plug-and-play' door protection, LED display keypad programming, electronic door position optical cams with sequential lights displaying speed and door positions.
 5. Elevator Car Enclosures:
 - a. Interior Classic-II Woodgrain-Laminate with framed/LED-illuminated/ translucent ceiling as manufactured by Snap Cab, or as approved equal. Refer to the Drawings for finish components.
 - b. Columbia
 - c. Gunderlin
 - d. Fast-Cab
 - e. Draper standard and custom elevator cab interiors.
 - f. Car and Hall Signal Fixtures: vandal-resistant, stainless-steel:
 - g. EPCO.
 - h. Innovation.
 - i. MAD Fixtures.
 - j. Monitor.
 - k. National Elevator Cab and Doors.
 6. Two-Way Communication Device:
 - a. EMS.
 - b. Janus.
 - c. Rath Communications.
 - d. RingComm.
 7. Hoist Machines:
 - a. Hollister Whitney model GLV-40S1-A-VS401B (25" Sheave) Gearless Traction Machine, or as approved equal. If, upon manufacturer's design and engineering of the elevator system, a smaller sheave is required provide Hollister Whitney model GLV-40S1-A-VS401A (20" Sheave) Gearless Traction Machine, or as approved equal.
 8. Rope Brakes:
 - a. Bode.
 - b. Draka.
 - c. Hollister Whitney.
 9. Car Sling and Platform:
 - a. Hollister Whitney or as approved equal, to include channel styles, crossheads, gussets, braces, cable hitch plates, cut out for sills, #26 GA fireproofing on the underside wood platform, and toe guard.

2.3 FIELD CONDITIONS

- A. Seismic Equipment: Provide design, components, and operation per governing code.
 - 1. Dual counterweight derailment sensing wires vertically each side of counterweight the entire height of travel.
 - 2. Counterweight frame equipped with a minimum of four derailment rings.
 - 3. Provide dual axis seismic switch that activates at no less than 0.15 times gravity in the vertical or horizontal directions. A minimum of one seismic switch shall be provided per single or group of elevators.
 - 4. Counterweight retainer plates must be bolted.

2.4 PERFORMANCE REQUIREMENTS

- A. Seismic:
 - 1. Elevator system is designed to withstand the effects of earthquake motions determined according to SEI/ASCE 7 and complies with elevator safety requirements for seismic risk Zone 2 or greater in ASME A17.1/CSA B44.
 - 2. The term "withstand" means the system will remain in place without separation of any parts when subjected to the seismic forces specified.
 - 3. Provide earthquake equipment required by ASME A17.1/CSA B44.
 - 4. Provide Alpha-Numeric display if Earthquake Mode is needed.
 - 5. Provide seismic switch required by SEI/ASCE 7.
- B. Car Speed: $\pm 3\%$ of contract speed under any loading condition. (Verify existing car speed for compatibility with new car frame, safeties and hoistway structure)
- C. Car Capacity: Safely lower, stop, and hold 125% of rated load.
- D. Car Stopping Zone: $\pm 1/4"$ under any loading condition.
- E. Door Times: Seconds from start to fully open or fully closed:
 - 1. Cars Wilfrid Manor: Door Open: 2.1 seconds. Door Close: 3.4 seconds.
 - 2. Cars Forand Manor: Door Open: 2.1 seconds. Door Close: 3.4 seconds.
- F. Car Floor-to-Floor Performance Time: Seconds from start of doors closing until doors are 3/4 open for center-opening doors or 1/2 open for side-opening doors, and car is level and stopped at next successive floor under any loading condition or travel direction:
 - 1. Cars Wilfrid Manor: 12.8 seconds.
 - 2. Cars Forand Manor: 11.2 seconds.
- G. Car Ride Quality:
 - 1. Ride Quality measured and analyzed according to the methods specified in ISO18738.
 - 2. Utilize EVA-625 Elevator Vibration Analysis System as manufactured by Physical Measurement Technologies (PMT) to record field measurements.
 - 3. Specified levels apply to horizontal and vertical acceleration measured from within car, from the point at which the car has moved $\frac{1}{2}$ meter from start position to $\frac{1}{2}$ meter from final position, as defined by ISO18738.
 - 4. Maximum Allowable Peak-to-Peak Vibration for the Horizontal and Vertical Axes: 25mg.
 - 5. Maximum Allowable A95 Peak-to-Peak Vibration for the Horizontal and Vertical Axes: 12.5mg.
 - 6. Acceleration and Deceleration: Smooth, constant, and not less than 3.3 feet/second² with an initial ramp between 0.5 and 0.75 second.
 - 7. Sustained Jerk: Not more than 6 feet/second³.

- H. Noise and Vibration Control:
1. Airborne Noise:
 - a. Measured noise level of elevator equipment and its operation shall not exceed 60 dBA inside car under any condition including door operation and car ventilation exhaust blower on its highest speed.
 - b. Limit noise level in the machine room and control space relating to elevator equipment and its operation to no more than 80 dBA.
 - c. All dBA readings to be taken 3'-0" off the floor and 3'-0" from the equipment using the "A" weighted scale.
 2. Vibration Control: Mechanically isolate all new elevator equipment from the building structure and other components. Minimize objectionable noise and transmission of vibrations to occupied areas of the building.

2.5 ELEVATOR ALTERATIONS

A. Gearless Passenger Elevators:

ALTERATION SUMMARY		
CARS 1-2 , FOGERTY MANOR	EXISTING INSTALLATION	MODERNIZED INSTALLATION
Capacity:	2,500 lbs., 2,000 lbs.	No Change
Class of Loading:	Class A	No Change
Contract Speed:	250 fpm (Review hoistway compatibility.)	No Change
Roping Configuration:	1:1	No Change
Machine Type:	Geared	Gearless
Machine Location:	Overhead	No Change
Motor Type:	ACVF	ACVF
Motion Control:	ACVF	ACVF
Operation Control:		Two-button, Duplex automatic Selective collective automatic
Floors Served:	Front: *L, 1-15	Retain existing
Total Entrances:	15 front, all front	Retain existing
Entrance Type:	Single-speed side-opening	Retain existing
Entrance Size:	3'-0" wide x 7'-0" high	Retain existing

ALTERATION SUMMARY		
CARS 1-2 KENNEDY MANOR	EXISTING INSTALLATION	MODERNIZED INSTALLATION
Capacity:	2,500 lbs.	No Change
Class of Loading:	Class A	No Change
Contract Speed:	250 fpm (Review hoistway compatibility.)	250 fpm (Review hoistway compatibility.)
Roping Configuration:	1:1	No Change

ALTERATION SUMMARY		
CARS 1-2 KENNEDY MANOR	EXISTING INSTALLATION	MODERNIZED INSTALLATION
Machine Type:	Gearless	Gearless
Machine Location:	Overhead	No Change
Motor Type:	AC	AC
Motion Control:	ACVF	ACVF
Operation Control:	Microprocessor with group control	Microprocessor
Floors Served:	Front: *1, A-H	Retain existing
Total Entrances:	9 floors, all front	Retain existing
Entrance Type:	Two-speed side-opening	Retain existing
Entrance Size:	3'-0" wide x 7'-0" high	Retain existing

2.6 MATERIALS

- A. See Section 016000, Materials.

2.7 OPERATION (of modernized elevators shall be as follows):

A. General:

1. Cars automatically slow down and stop level at floors in response to car and landing calls with stops made in sequence in the established direction of travel, regardless of order in which buttons are pressed.
2. Landing calls are canceled when the assigned car arrives at the landing.
3. Automatic Dispatch Failure: Provide auxiliary dispatch system to automatically dispatch elevators in the event of failure of the primary control system.
4. Hall Call Button Failure: Should failure of hall call button system occur, initiate operation providing predetermined service to all landings; elevators respond normally to car calls.
5. Automatic Leveling:
 - a. When arriving at a floor cars level to within 1/8" above or below the landing sill prior to opening doors, without travelling past the landing during leveling
 - b. Maintain leveling accuracy regardless of carload, direction of travel, rope slippage or stretch.
6. Power Conservation:
 - a. Shut off car interior illumination after adjustable period (60-180 seconds) of no elevator demand.
 - b. turn on prior to opening car doors when elevator demand returns.

B. Door Operation:

1. Automatically open doors when car arrives at the floor.
2. Stop and reopen doors or hold doors in open position upon activation of "door open" button.
3. At expiration of normal dwell time, or upon activation of "door close" button, close doors:
 - a. Prevent doors from closing and reverse doors at normal opening speed if door reopening device beams are obstructed while doors are closing, except during nudging operation.
 - b. In event of door reopening device failure, provide for automatic shutdown of car at floor level with doors open.
 - c. Close cycle does not begin upon activation of "door close" button until normal door dwell time for a car or hall call has expired, except firefighters' operation.

4. Nudging Operation:
 - a. After beams of door reopening device are obstructed for a predetermined time interval (minimum 20.0-25.0 seconds), sound warning signal, and attempt to close doors with maximum of 2.5 foot-pounds kinetic energy.
 - b. Activation of the door open button overrides nudging operation and reopens doors.
 5. Interrupted Beam Time:
 - a. When beams are interrupted during initial door opening, hold door open a minimum of 3.0 seconds.
 - b. When beams are interrupted after the initial 3.0 second hold open time, reduce time doors remain open to an adjustable time of approximately 1.0-1.5 seconds after beams are reestablished.
 6. Differential Door Time:
 - a. Field adjustable time that doors remain open after stopping in response to calls.
 - b. Car Call: Hold open time adjustable between 3.0 and 5.0 seconds.
 - c. Hall Call:
 - 1) Hold open time adjustable between 5.0 and 8.0 seconds.
 - 2) Use hall call time when car responds to coincidental calls.
 - d. Reopen doors when car is designated for loading.
- C. Selective Collective duplex Operation, Two-Car Group, Cars 1-2 in both buildings:
1. Elevators operate via momentary pressure buttons to:
 - a. place hall calls by selecting direction of travel at each hall landing (up and down buttons at each intermediate landing, single buttons at each terminal landing).
 - b. place car call by selecting destination floor from inside the car (individual buttons for each floor served).
 2. Hall calls, other than calls placed at the landing at which car is standing, start car and cause the car to stop at first landing for which a call is registered in the direction of travel.
 3. Car calls cause the car to stop at the floors registered in the order the car arrives at each selected floor in its current direction of travel.
 4. Free Car:
 - a. When there are no calls in the system, one car is automatically dispatched to the elevator discharge level (home car), park other car (free car) at its last stop above elevator discharge level.
 - b. An idle free car answers call above or below it, except calls at main or Basement landings (where applicable).
 - c. When free car travels to main landing in response to a car call, it becomes home car and former home car travels to a middle floor above main landing and becomes the free car.
 - d. When free car is responding to calls, home car shall respond to the following:
 - 1) Up calls below UP traveling free car.
 - 2) All Up and Down calls behind DOWN traveling free car.
 - 3) Any hall calls registered when free car is delayed in its normal operation for a predetermined period.
 - e. When both cars are responding to registered car and hall calls, the first car to complete its calls becomes the assigned home car and is dispatched automatically to the Main Landing.
 - f. Only one car responds to each hall call.
 5. If either car is removed from service, the other car responds to all registered hall calls and its own car calls.
 6. Car and Hall Lanterns:
 - a. Lanterns provide audio and visual signal upon each stop, regardless of responding to car or hall call.
 - b. Visual signal remains active from commencement of door opening until doors are completely closed.
- D. Car-to-Lobby Operation, Cars 1-2 in both 4 buildings: (Make sure this is fixture approvals)

1. Activated and deactivated for each elevator or group of elevators:
 - a. Remotely via Elevator Management System.
 - b. In response from a signal received from the building security system controls.
 - c. Remotely via keyswitch activation.
 2. Return car nonstop after answering pre-registered car calls, and park with doors open for an adjustable time of 60-90 seconds.
 3. Upon expiration of time period, car automatically reverts to normal operation and closes doors until assigned as next car or until the car is placed on independent service.
 4. Firefighters' Emergency Operation overrides Car-to-Lobby Operation.
- E. Restricted Lobby Operation, Cars 1-2 in both buildings:
1. Activated via Elevator Monitoring System Input Terminal.
 2. All registered lobby, car, and hall calls for selected cars or group are cancelled.
 3. Car position indicator displays "Lobby Service Not Available" at the top of the car operating panel and pulsate indicating to riding passengers the car operation has changed.
 4. Include audible annunciation verbiage as selected.
 5. A car traveling toward the Lobby comfortably reverses direction and travels non-stop to the first floor above the lobby floor.
 6. A car traveling away from the lobby floor within the local zone served, stops comfortably at the next available floor, opens doors, and allows the passengers to exit or enter another car call.
 7. No lobby, hall, or car calls can be entered until normal operation is restored.
 8. When this operation is enabled Normal Group Operation functions as specified without service to the lobby.
 9. Firefighters' Emergency Operation overrides Restricted Lobby Operation.
- F. Restricted Floor Operation (Security), Cars 1-2 in both buildings:
1. Activated and deactivated for each elevator or group of elevators:
 - a. At elevator control system:
 - 1) Manually by elevator personnel.
 - 2) Automatically using internal clock.
 - b. Remotely via Elevator Management System
 - c. In response from a signal received from the building security system controls.
 - d. Inside car via keyswitch activation.
 - e. Remotely via keyswitch activation.
 2. Restrict elevator service to specific building floors when feature is active.
 3. Allow registration of a car call to one or more secure floors upon receipt of authorization signal at the elevator control system.
 4. Authorization signal is initiated by keyswitch activation card reader activation numeric keypad input.
 5. Car will not be assigned to respond to any subsequent hall or car calls until it reaches the secure floor and car doors open and fully close.
 6. Operation of the following features override security system:
 - a. Firefighters' Emergency Operation.
 - b. Code Blue.
 - c. Independent Service.
 - d. Attendant Operation.
 7. Actuate hall lantern each time car arrives at main lobby during secure mode operation.
 8. Warning light and/or signal in group control panel activates to indicate an attempt to register unauthorized destinations or to open car doors when car is moving or parked at a secured floor. Reset switch or button cancels the warning light and signal.
 9. System accepts a minimum three-digit code, entered on car pushbuttons or separate ten-digit pad, to bypass security system and allow registration of car call. System allows for separate easily changed code for each floor or group of floors.

- G. Restricted Floor Operation (Security) at Destination Input Station, Cars 1-2 in both buildings:
1. Activated and deactivated for each group of elevators:
 - a. At elevator control system:
 - 1) Manually by elevator personnel.
 - 2) Automatically using internal clock.
 - b. Remotely via Elevator Management System.
 - c. In response from a signal received from the building security system controls.
 - d. Remotely via keyswitch activation.
 2. Restrict elevator service to specific building floors when feature is active.
 3. Allow registration of a floor destination input to a secure floor upon receipt of authorization signal at the elevator control system.
 4. Request for authorization and floor destination is initiated by card reader activation numeric code entry at floor destination input station.
 5. System assigns and dispatches a car for loading at the floor where the authorized floor destination input was initiated.
 6. Assigned car will not:
 - a. be assigned for loading additional passengers at the floor where the authorized secure floor destination input was initiated unless additional authorized floor destination inputs are entered for the same secure destination floor.
 - b. stop at any floors for additional passenger loading, prior to arrival at the secure destination floor, in the same direction of travel.
 - c. be currently assigned to stop at any floors in the same direction of travel as the secure floor for passenger unloading.
 7. Operation of the Following Features Override Security System:
 - a. Firefighters' Emergency Operation.
 - b. Code Blue.
 - c. Independent Service.
 - d. Attendant Operation.
- H. Occupant Evacuation Operation, Cars 1-2 in both buildings:
1. Activation of automatic sprinkler system, smoke detectors, or manual keyswitch overrides normal operation and places elevators on Occupant Evacuation Operation.
 2. Elevators will automatically start the evacuation process within the designated evacuation zones.
 3. Elevators do not respond to registered hall or car calls until elevator is returned to "normal" operation.
 4. Keyswitches at designated egress floor of each elevator (one keyswitch per elevator), plus group keyswitch override Occupant Evacuation Operation during emergency condition, placing selected elevator or group on Phase I Emergency Recall.
 5. Phase I Emergency Recall initiation by keyswitch is selected individually or as a group.
 6. Provide each elevator with illuminating signal indicating Firefighters' Emergency Operation, Phase 1 .
 7. Remove each elevator from Phase I Emergency Recall via the individual Elevator Fire Service keyswitch.
 8. Provide variable information displays at the designated egress floors and every level within the evacuation zone, in lieu of the call station pictograph.
 9. Provide means to detect if elevator is occupied and estimated timeframe to serve any floor within the evacuation zone. Check code. How is information conveyed?
 10. Any elevator which has reached 80% capacity bypasses floors until reaching a discharge level. Any elevator which has reached 100% capacity remains at the landing with doors open, and both audibly and visually announce car is overloaded.
 11. Occupant Evacuation Operation remains active until Group or Individual Fire Service key switches are turned to the "ON" position.
- I. Flood Operation, Cars 1-2 in both buildings:
1. Activated by pit flood devices.

- a. Upon activation, elevator(s) automatically recall to the first level located above the Design Flood Elevation floor.
 - b. Once car has arrived, doors open and remain open for the duration of the flood event.
 - c. Hall signage remains illuminated indicating that the elevator(s) is(are) out of service.
 - d. Elevator remains out of service until flood devices have been manually reset, and all damage to elevator, hoistway, or affected components, have been fully evaluated and/or repaired, as needed.
 2. In Special Flood Hazard Areas, designated fire emergency recall landing is the next available landing above the Design Flood Elevation.
- J. Standby or Emergency Power Operation:
1. The terms Standby Power and Emergency Power are both referred to as Emergency Power in this Section. Elevator operation is the same when either is provided.
 2. Where emergency power is provided to the elevator main disconnects and required by the Building Code the elevator installation shall comply with the Emergency Power Operation requirements of ASME A17.1 as modified by any superseding Building Code requirements.
 3. Where emergency power is not provided, all elevator controller software and sequencing capabilities to allow future emergency power operation shall be included in the elevator control systems based on the applicable code requirements for new buildings in effect at the time of project permit application.
 4. Operation is activated by a signal from an Automatic Transfer Switch (ATS) to elevator controls indicating the Emergency power source is operational.
 - a. Start and run all elevators simultaneously one car in each group and or single car simultaneously at contract car speed and capacity.
 - b. Illuminate "ELEVATOR EMERGENCY POWER" signals.
 5. Automatic Selection and Return to Designated Landing: Provide automatic selection and return to designated landing for all elevator banks and single elevators in the building.
 6. Intergroup and single car Emergency Power Operation:
 - a. Elevator systems shall be designed to sequentially recall one elevator at a time in one bank and/or each single elevator at time. When all elevators in the first bank are recalled and parked, that control system shall communicate with the elevator control system for the next bank of elevators to commence automatic selection and return to designated landing operation until all elevators in the building are at their designated return landings with the doors open.
 - b. Once all elevators have completed the return sequence one or more individual elevators shall be returned to service.
 7. Restoration of Normal Power:
 - a. At least 20 seconds prior to transfer from emergency power to normal power at the ATS, a pre-transfer signal is supplied to the elevator control system from the ATS.
 - b. Elevators operating on emergency power stop at the next available landing and remain there until normal power is restored.
- K. Firefighters' Emergency Operation: Provide equipment and operation in accordance with code requirements. Replace all Firefighters Emergency Operation key switches that control non-modernized elevators in this building to match modernized elevators when first car in group is returned to service.
- L. Emergency Lighting, Communication, and Alarm:
1. Car mounted battery unit with solid-state charger to operate alarm bell, car emergency lighting, and voice communication system.

2. Car lighting and communication shall be provided with a minimum of 4 hours of operation on back-up power during a loss of normal power, and a minimum of 1 hour of operation for car-mounted alarm and any remote alarm mounted at the designated level.
3. Battery to be rechargeable with minimum five-year life expectancy.
4. Provide constant pressure test button in service compartment of car operating panel.
5. Provide lighting integral with portion of normal car lighting system.

2.8 MACHINE ROOM EQUIPMENT

- A. Provide and arrange equipment in existing machine room spaces and/or as shown on drawings.
- B. Identification: Permanently identify (painted on or securely attached) machine room equipment with minimum 3" characters corresponding to elevator identification.
 1. Driving machine. (Provide OEM auto-lube and wiper unit for hoist ropes)
 2. Motor drive, transformer, choke/filter.
 3. Controller.
 4. Selector.
 5. Governor.
 6. Main line disconnect switch.
 7. Elevator hoistway pit equipment.
- C. Gearless Traction Hoist Machine:
 1. Provide new gearless machine based on capacity, speed and duty designed to operate within specified machine room temperature range.
 2. Provide motor, brake, and demountable drive sheave mounted in proper alignment on a common isolated bedplate. Provide bedplate blocking to elevate secondary or deflector sheave above machine room floor.
 - a. Motor:
 - 1) AC induction or P.M.S.M. ACV³F gearless traction type motor
 - 2) Machine or motor mounted direct drive, digital, closed-loop velocity encoder.
 - b. Electromechanical Brake:
 - 1) Spring applied and electrically released.
 - 2) Drum or disc type.
 - 3) Spring applied and electrically released with removable manual brake release.
 - 4) Brake shoes applied to the braking surface simultaneously and with equal pressure.
 - 5) Adjusted to minimize noise during lifting and setting of brake shoes.
 - 6) Prevent ascending car over-speed and unintended car movement via dual-redundant braking system.
 - c. Drive Sheave:
 - 1) Demountable casting from the best grade of metal with a Brinell hardness of 215 to 230.
 - 2) Machined with grooves, providing maximum traction with a minimum of cable and sheave wear.
 - 3) Sealed bearings.
 - d. Deflector Sheave:
 - 1) Machine bedplate mounted deflector sheave.
 - 2) Machined grooves and sealed bearings.
 - 3) Maintainable from inside machine room.
 3. Installation includes:
 - a. Anti-friction bearings with easy access for lubrication.
 - b. Means to access and maintain and deflector sheave from machine room.
 - c. Sheave guards to prevent ropes from leaving sheave grooves.

- d. Sound isolation pads shall be installed to reduce vibration and noise transmission to the building structure.
 - e. Permanent ladders and platforms with handrails and toe boards for code required machine and sheave access.
- D. Solid State Power Conversion and Regulation Unit:
 - 1. Provide solid state, alternating current, variable voltage, variable frequency (ACV³F), I.G.B.T.
 - 2. Drive is regenerative and utilizes converter/inverter and dynamic braking during overhauling condition to return regenerated power to the building power grid.
 - 3. Performance Requirements:
 - a. Conform to IEEE standards 519-2014 for line harmonics and switching noise.
 - b. Maximum audible noise in the machine room and surrounding areas not to exceed 80 dBA.
 - 4. Power Factor: >0.95.
 - a. Minimum of 6 kHz switching frequency for SCR inverter and shunt transistors.
 - b. Sustained drive and motor overload protection rated at 250% of line current.
 - c. Capacitors utilized sized and located to avoid system resonance.
 - 5. Limit current suppress noise and radio frequency interference and prevent transient voltage feedback into main building power supply or emergency power source. Provide internal heat sink cooling fans for the power drive portion of the converter panels.
 - 6. Provide isolation transformers, filters, and chokes to completely isolate the system from the normal building power supply.
 - 7. Isolate unit to minimize noise and vibration transmission.
 - 8. Direct-current power for the operation of hoist machine brake, door operator, dispatch processor, signal fixtures, etc., supplied from separate static power supply.
- E. Regenerated Power:
 - 1. Provide resistor bank installed on the demand side of the elevator main disconnect to absorb the maximum sustained regenerated power from the motor drive during dynamic braking.
 - 2. Provide means to automatically divert regenerated power from being returned to the building electrical grid when emergency power operation is in effect.
 - 3. Provide resistor bank on the demand side of the elevator main disconnect to absorb and dissipate the maximum sustained regenerated power from the motor drive during dynamic braking.
- F. Encoder: Direct drive, solid-state, digital type. Update car position at each floor and automatically restore after power loss.
- G. Controller: UL/CSA labeled.
 - 1. Compartment: Securely mount all assemblies, power supplies, chassis switches, relays, etc., on a substantial, self-supporting steel frame. Completely enclose equipment with covers. Provide means to prevent overheating.
 - 2. Relay Design: Magnet operated with contacts of design and material to insure maximum conductivity, long life, and reliable operation without overheating or excessive wear. Provide wiping action and means to prevent sticking due to fusion. Contacts carrying high inductive currents shall be provided with arc deflectors or suppressors.
 - 3. Microprocessor-Related Hardware:
 - a. Provide built-in noise suppression devices providing a high level of noise immunity on all solid-state hardware and devices.
 - b. Provide power supplies with noise suppression devices.
 - c. Isolate inputs from external devices (such as pushbuttons) with opto-isolation modules.

- d. Design control circuits with one leg of power supply grounded.
 - e. Safety circuits are not to be affected by accidental grounding of any part of the system.
 - f. System automatically restarts when power is restored.
 - g. System memory is retained in the event of power failure or disturbance.
 - h. Equipment is provided with Electro Magnetic Interference (EMI) shielding within FCC guidelines.
- 4. Wiring: CSA labeled copper for factory wiring. Neatly route all wiring interconnections and securely attach wiring connections to studs or terminals.
- 5. Permanently mark components (relays, fuses, PC boards, etc.) with symbols shown on wiring diagrams.
- 6. Monitoring System Interface: Provide controller with serial data link through RJ45 Ethernet connection and install all devices necessary to monitor items outlined herein. Connect monitoring system interface to machine room monitoring compartment and LAN. Wiring from the LAN to the machine room monitoring compartment by others. Provide full monitoring system as specified herein.
- H. Auxiliary disconnect: Provide controller or machine mounted auxiliary, lockable "open," disconnect if mainline disconnect is not in sight of controller and/or machine.
- I. Provide manual security means override switch on the outside of the elevator controller to enable all car calls.
- J. Provide minimum 14-gauge galvanized sheet metal enclosures over any holes or block outs, other than for hoist ropes, in machine room floor. Mount on underside of floor slab.
- K. Sleeves and Guards: Provide 2" steel angle guards around cable or duct slots through floor slabs or grating. Provide rope and smoke guards for sheaves, cables, and cable slots in machine room and secondary machinery levels.
- L. Governor, Car: Centrifugal-type, car driven with pull-through jaws and bi-directional shutdown switches. Calibrated and tested with manufacturers' certification data plate as required by code. Provide required bracketing and supports for attachment to building structure.
- M. Governor, Counterweight: Centrifugal-type, Counterweight driven with pull-through jaws and bi-directional shutdown switches. Calibrated and tested with manufacturers' certification data plate as required by code. Provide required bracketing and supports for attachment to building structure and guarding as required for code compliance.
- N. Emergency Brake:
 - 1. Provide Rope Brake to prevent ascending car over-speed and unintended car movement. Installation and operation to comply with Code requirements.
 - 2. Acceptable emergency brake devices:
 - a. Hollister-Whitney rope gripper.
 - b. Draka.
 - 3. Install in compliance with approved drawings. See Section 013000 Submittals.
 - 4. Mount the auxiliary brake on suitable structural steel supports in machine room.
 - 5. Provide control circuits to enable the device to function as required by Code.

2.9 HOISTWAY EQUIPMENT

- A. Provide the following new equipment and arrange in existing hoistways and/or as shown on drawings.
- B. Guide Rails: Retain main and counterweight guide rails in place.

1. Clean rails and brackets. Remove rust.
 2. Check all rail and bracket fastenings and tighten.
 3. Provide supplemental rail brackets and/or backing as required by Code or to meet car ride quality requirements.
 4. Remove top of rail sections that are contact with overhead slab.
- C. Buffers, Car: Oil or Spring type with blocking and support channels. Provide switch on buffer to limit car speed if buffer is compressed. Provide sign in pit indicating designed counterweight runby.
- D. Buffers, Counterweight: Oil or Spring type with blocking and support channels. Provide switch on buffer to limit car speed if buffer is compressed. (Current car speed requires oil buffers`)
- E. Access Ladders and Platforms: Provide permanent buffer and car safety access ladders and platforms to comply with Code requirements.
- F. Deflector Sheaves, Secondary and Compensating: Machined grooves and sealed bearings. Provide mounting means to machine beams, machine bedplate, car and counterweight structural members, or building structure.
- G. Counterweight Frame: Steel frame with metal weight sections.
1. Hold weight sections within frame with at least two tie rods passing through holes in all sections.
 2. Equip rods with locknuts, secured by washers and cotter pins at each end keeping the weight sections in place and preventing rattling.
- H. Counterweight Guide Shoes:
1. Spring dampened roller guide shoes.
 2. Manufacturer, type, and size are subject to approval by Architect.
- I. Counterweight Guard: Metal guard in pit. Where counterweight is provided between adjacent elevators, provide runway guard full height of hoistway next to the adjacent elevator.
- J. Pit Flood Devices:
1. Provide float-activated switches in each single climb-in elevator pit or lowest point of each end of common climb-in pit.
 2. Activation of pit float switch initiates Flood Operation.
- K. Governor Rope Tension Sheave and Frame: Mount sheave and support frame on pit floor or guide rail. Provide frame with guides or pivot point to enable free vertical movement, required tension, and rope alignment. Adjust to provide quiet operation with no sound detectable from inside any car or outside of the hoistway.
- L. Suspension Means: Replace. New Traction steel type wire ropes of type specified by machine or drive sheave manufacturer. Fasten with staggered length, adjustable, spring isolated wedge type shackles.
- M. Governor Ropes: Governor rope of type specified by governor manufacturer.
- N. Compensation: Contractor's standard application. Encapsulated chain with pit guide assembly. Wire rope with pit-mounted guide sheave assembly. Pit mounted guide assembly providing quiet, effective restraint without excessive wear of components. Inhibit rubbing or chafing against hoistway or equipment within hoistway or pit. Install to meet specified requirements for compensation performance, noise levels, and car ride quality.

- O. Terminal Stopping: Provide normal and final devices. Provide emergency terminal speed limiting devices.
 - P. Electrical Wiring and Wiring Connections:
 - 1. Conductors and Connections: Copper throughout with individual wires coded and connections on identified studs or terminal blocks. Use no splices or similar connections in wiring except at terminal blocks, control compartments, or junction boxes. Provide a minimum of 10% spare conductors throughout. A minimum of ten #18 AWG wires shall be provided. Run spare wires from car connection points to individual elevator controllers in the machine room. Provide eight pairs of spare shielded communication wires in addition to those required to connect specified items. Tag spares in machine room.
 - 2. Conduit: Painted or galvanized steel conduit, EMT, or duct. Flexible heavy-duty service cord may be used between fixed car wiring and car door switches for door protective devices.
 - 3. Traveling Cables: Flame and moisture-resistant outer cover. Prevent traveling cable from rubbing or chafing against hoistway or equipment within hoistway. Provide 12 twisted shielded pairs in addition to wires needed to connect specified items and code required spares.
 - 4. Auxiliary Wiring: Connect fire alarm initiating devices, emergency two-way communication system, firefighters' phone, paging speaker, CCTV, digital video display, card reader, intercom, and announcement speaker and/or background music in each car controller in machine room.
 - Q. Hoistway Entrance Equipment:
 - 1. Door Hanger: Two-point hanger roller with neoprene roller surface and suspension with eccentric upthrust roller adjustment.
 - 2. Door Hanger Rollers: Replace.
 - 3. Door Track: Replace track liners. Bar or formed, cold-drawn removable steel tracks with smooth roller contact surface.
 - 4. Door Interlocks: Operable without retiring cam. Paint interlock box flat black.
 - 5. Door Closers: Jamb/strut-mounted or counterweight type. Install and adjust to insure smooth, quiet mechanical close of doors.
 - R. Hoistway Door Unlocking Device: Provide unlocking device including new escutcheon with locking escutcheon in door panel at all floors. Finish to match adjacent surface.
 - S. Hoistway Access Switches: Mount in wall top and bottom floors. Provide switch with faceplate. Locate within easy reach to entrance so entrance can be guarded by one technician.
 - T. Floor Numbers: Stencil paint 4" high floor designations in contrasting color on inside face of hoistway doors or hoistway fascia in location visible from within car.
- 2.10 HOISTWAY ENTRANCES
- A. Provide and arrange equipment in same location as existing entrances and/or as shown on drawings.
 - B. Frames: Retain existing. Re-clad with new, #14 USSG brushed #4 finish stainless steel. Refer to Unit Prices, Section 01270.
 - 1. Provide new Arabic floor designation/tactile marking plates:
 - a. Centered at 60" above finished floor.
 - b. Located on both side jambs of all entrances.
 - c. Minimum 4" high.
 - d. Tactile marking indications shall be below Arabic floor designation.
 - e. Permanently fastened.
 - 2. Provide plates at main egress landing with "Star" designation.

3. Designated Emergency Elevator: Provide "Star of Life" cast designation plates at height of 78"-84" above finished floor on both side jambs at all floors.
 4. Designated Fire Service Access Elevator: provide fire service access elevator symbol cast designation plates at height of 78"-84" above finished floor on both side jambs at all floors.
 5. Provide car identification label:
 - a. Mounted directly below floor designation/tactile marking plates.
 - b. Located on both side jambs at the following levels:
 - 1) Designated level.
 - 2) Alternate level.
 - c. Finish and design to match floor designation/tactile marking plates.
 - d. Permanently fastened.
 - e. Provide cast-metal plate indications mounted onto surface of jambs.
 - f. Background of indication painted selected color in epoxy paint.
 - C. Transom Panels: Retain existing. Re-clad with new (at applicable landings), #14 USSG brushed #4 finish stainless steel. Refer to Unit Prices, Section 01270.
 - D. Hoistway Door Panels:
 1. 16-gauge steel, sandwich or pressed with ribbed construction and without binder angles.
 2. Provide one leading edge of doors with rubber astragal.
 3. Provide a minimum of two gibs per panel, one at leading and one at trailing edge with gibs in the sill groove entire length of door travel.
 4. Provide one separate 4" steel reinforcement safety gib mounted between door gibs, where not integrated with door gibs.
 5. Adjust panels to overlap the top and sides of the door opening and each other by not less than 5/8" when in the fully closed position.
 - E. Sight Guards: 14-gauge, same material and finish as hoistway entrance door panels. Construct without sharp edges.
 - F. Sills, Hoistway Entrance: Retain existing. Clean and polish. Check and tighten all fastenings.
 - G. Sill Supports, Hoistway Entrance: Retain existing. Check and tighten all fastenings.
 - H. Fascia, Toe Guards, and Hanger Covers: Retain existing.
 1. Provide as required where damaged or missing.
 2. Clean thoroughly, replace any damaged sections.
 3. Check and tighten all fastenings.
 4. Paint/Stencil floor number on fascia or hoistway wall all floors visible where car doors are initially opened.
 - I. Struts and Headers: Retain existing. Check and tighten all fastenings.
 - J. Finish of Frames and Doors: Brushed Stainless Steel.
- 2.11 CAR EQUIPMENT
- A. Frame: Welded or bolted, rolled, or formed steel channel construction to meet load classification specified.
 - B. Safety Device: New Type "B," flexible guide clamp. Install an additional marking plate of corrosion resistant metal stating the manufacturer's name and catalog safety system designation number.

- C. Platform:
 - 1. Designed and constructed to accommodate load classification requirements:
 - a. Provide Class "A" construction for passenger elevators.
 - b. Platform to accommodate cab interior width and depth equal to or greater than original installation car enclosure dimensions.
 - 2. Construction:
 - a. Steel frame with steel stringers securely welded together.
 - b. Two layers of 3/4" marine-grade plywood on top of sheet steel securely mounted on top of frame.
 - c. Standard non-sound isolated steel platform
 - d. New Platform to accommodate existing available floor space or provide more for maximum elevator interior space
- D. Platform Guard:
 - 1. New extended platform guard to meet Code requirements.
 - 2. Minimum 0.059" (1.5 mm) thick steel, or material of equivalent strength and stiffness.
 - 3. Reinforced and braced to car platform front and rear.
 - 4. Contractor's standard finish.
- E. Guide Shoes: Roller type, 10" with three or more spring dampened, sound-deadening rollers per shoe.
- F. Finish Floor Covering: Furnished under Section 09651, Resilient Flooring.
- G. Car Sills:
 - 1. One-piece extrusion.
 - 2. Extruded extension to match finish of sill.
 - 3. Fasteners to match sill material finish.
 - 4. All 4 Cars, aluminum construction
- H. Car Door Panels:
 - 1. Fully enclosed 16-gauge steel, sandwich construction without binder angles
 - 2. Constructed with interlocking, stiffening ribs.
 - 3. Leading edges of center-opening doors equipped with rubber astragals full height of panel.
 - 4. Minimum of two gibs per panel, one at leading and one at trailing edge with gibs in the sill groove entire length of door travel.
- I. Door Hangers: Two-point hanger roller with neoprene roller surface and suspension with eccentric upthrust roller adjustment.
- J. Door Track: Bar or formed, cold-drawn removable steel track with smooth roller contact surface.
- K. Door Header: Construct of minimum 12-gauge steel, shape with stiffening flanges.
- L. Car Door Electric Contact: Prohibit car operation unless car door is closed.
- M. Door Clutch:
 - 1. Heavy-duty clutch, linkage arms, drive blocks and pickup rollers or cams to provide positive, smooth, quiet door operation.
 - 2. Design clutch so car doors can be closed, while hoistway doors remain open.
- N. Restricted Opening Device:
 - 1. Restrict opening of car doors to Code required limit outside unlocking zone.

2. Adjust for smooth and quiet operation with operating noise undetectable from inside any car or outside of the hoistway.
 3. Plunger type restrictors not acceptable.
 4. Utilize mechanical angle to prevent door opening.
- O. Door Operator:
1. High-speed, linear drive or harmonic, heavy-duty door operator capable of opening doors at no less than 2.5 fps.
 2. Accomplish reversal in no more than 2½" of door movement.
 3. Solid-state door control with closed loop circuitry to constantly monitor and automatically adjust door operation based upon velocity, position, and motor current.
 4. Maintain consistent, smooth, and quiet car door operation at all floors, regardless of door weight or varying air pressure.
- P. Door Reopening Device:
1. Black fully enclosed infrared device with full screen infrared matrix or multiple beams extending vertically along leading edge of each door panel to minimum height of 7'-0" above finished floor. 3D beam device to detect approach from elevator lobby.
 2. Provide extension of housing and lens additional beams full height of door panels.
- Q. Car Operating Panel, All 4 Elevators
1. One car operating panel with faceplate:
 - a. Consisting of a metal box containing vandal resistant operating fixtures, mounted behind the car stationary front and return panel.
 - b. Faceplate shall be hinged and constructed of blackened steel.
 2. Provide Exposed Pushbuttons to Initiate:
 - a. Car call registration.
 - b. Alarm.
 - c. Door open.
 - d. Door close.
 - e. Emergency push-to-call communication.
 3. Pushbuttons:
 - a. Provide minimum 3/4" diameter flush floor vandal resistant stainless-steel pushbuttons which illuminate to indicate call registration.
 - b. Provide vandal resistant brushed stainless-steel buttons with LED illumination.
 - c. Include 5/8" high floor designation on face of pushbutton.
 - d. Locate operating controls no higher than 48" above the car floor; no lower than 35" for emergency push-to-call button and alarm button.
 - e. Identify buttons with cast surface-mounted.
 4. Locked Firefighters' Emergency Operation Panel:
 - a. Openable by the same key which operates the Fire Operation switch.
 - b. Provide panel with solenoid operated key switch which automatically opens in the event of Firefighters' Emergency Operation Phase I activation.
 - c. Including the following features:
 - 1) Full car reader card reader software and hardware capability
 - 2) Phase II fire access switch.
 - 3) Firefighters' visual indication.
 - 4) Call cancel button.
 - 5) Stop switch, manually operated.
 - 6) Door open button.
 - 7) Door close button.
 - 8) Floors served.
 5. Service Compartment:
 - a. Provide lockable service compartment with recessed flush door.
 - b. Door material and finish to match car return panel or car operating panel faceplate.

- c. Include Integral flush window for displaying the elevator operating permit on inside surface of door.
 - d. Include the following controls in lockable service cabinet with function and operating positions identified by permanent signage or engraved legend:
 - 1) Access switch.
 - 2) Light switch.
 - 3) Four-position exhaust blower switch.
 - 4) Independent service switch.
 - 5) Constant pressure test button for battery pack emergency lighting.
 - 6) 120-volt, AC, GFCI protected electrical convenience duplex outlet.
 - 7) Card reader override switch.
 - 8) Switch to select either floor voice annunciation, floor passing tone, or chime.
 - 9) Car lighting dimmer switch.
 - 10) Attendant operation switch.
 - 11) Auxiliary light switch.
 - 12) Keyed stop switch.
 - 6. Provide black paint filled (except as noted), engraved, or approved etched signage as follows with approved size and font:
 - a. Phase II firefighters' operating instructions on inside face of firefighters' compartment door.
 - b. Engrave filled red firefighters' operation on outside face of compartment door.
 - c. Building identification car number on main car operating panel.
 - d. "No Smoking" on main car operating panel.
 - e. Car capacity in pounds on main car operating panel.
 - R. Car Top Control Station:
 - 1. Mount to provide safe access and utilization while standing on car top.
 - 2. Operating device with Up and Down direction buttons, a Run button, an Inspection/Automatic switch and Emergency Stop switch.
 - 3. Operating device provides an audible and visible indicator that fire recall has been initiated.
 - 4. Fix station to the car crosshead or provide portable station provided the extension cord and housing is permanently attached to the car crosshead.
 - 5. The car will be operated by constant pressure on the appropriate directional button and the Run button simultaneously.
 - 6. Normal operating devices will be inoperative while this device is in use.
 - S. Car Top Emergency Audible Signal:
 - 1. Provide on top of each elevator.
 - 2. Activation of Alarm Button or Emergency Stop switch will cause Emergency Audible Signal.
 - 3. Provide auxiliary power supply to provide 1-hr. power in the event of loss of normal power.
 - 4. Provide second alarm at pit level.
 - T. Work Light and Duplex Plug Receptacle:
 - 1. GFCI protected outlet at top and bottom of car.
 - 2. Include on/off switch and lamp guard.
 - 3. Provide additional GFCI protected outlet on car top for installation of car CCTV digital video display Wi-Fi Router.
- 2.12 COMMUNICATION
- A. Car Communication System:
 - 1. Hands-Free Phone System:

- a. Two-way communication instrument in car with automatic dialing, tracking, and recall features, with shielded wiring to car controller in machine room equipment space.
- b. Provide dialer with automatic rollover capability with minimum two numbers:
 - 1) Actuate two-way communication via "Help" button.
 - 2) Adjacent light jewel shall illuminate and flash when call is acknowledged.
 - 3) Button shall match car operating panel pushbutton design.
 - 4) Provide "Help" button tactile symbol, engraved signage, and Tactile marking adjacent to button mounted integral with car front return panel.
- 2. Emergency Personnel Communication:
 - a. Communication system shall be provided allowing emergency personnel to establish communications with each elevator individually.
 - b. Emergency Personnel Communication shall override any existing connection outside of building.
 - c. Adjacent light jewel shall illuminate and flash when call is acknowledged.
 - d. Provide operating instructions.
 - e. On the same car operating panel as the phone push button, provide capability to communicate with and obtain responses from passengers.
 - f. Provide display video capability for entrapment assessment.
- 3. Intercom System:
 - a. General:
 - 1) Provide intercommunication system complete with talkback speaker, required auxiliary equipment and wiring.
 - 2) Include a preamplifier and associated equipment required to receive input from building.
 - 3) A battery backup system shall be provided for the two-way conversation system.
 - 4) The battery backup system shall be capable of providing power for a minimum of four hours.
 - 5) If it is determined that there will not be a 24-hour manned station on the premises, then the system provided shall be capable of dialing out of the facility to a 24-hour manned answering service or must be of the automatic dialing system and not an intercommunication system.
 - 6) In locations that call for Master Stations, a phone with a dedicated line shall be provided (by others).
 - b. Master Stations:
 - 1) Fire Control Station: Arrange to communicate with any other station, any group of stations or all stations simultaneously; include following devices:
 - a) Combination speaker-microphone.
 - b) Selector buttons for each station in system.
 - c) A button for simultaneous conversation with all stations in system.
 - d) Talk-listen button; press to talk, release to listen.
 - e) IN USE light to indicate when any master station is in use.
 - f) Reset Button; to disconnect call, extinguish in use light, and reset selection buttons to free system for next call.
 - g) Volume control.
 - 2) Machine Rooms/Control Rooms:
 - a) Arrange to communicate with other master stations and all elevator cars.
 - b) In addition to devices specified for Fire Control Station, provide a loud audible signal to announce calls to this unit.
 - c. Remote Stations:
 - 1) Provide combination speaker microphone in each elevator car as specified:
 - 2) Arrange to communicate with all master stations.

2.13 CAR ENCLOSURE AND INTERIOR FINISHES

- A. Unless specifically identified as "Retain," "Reuse," or "Refurbish," provide new equipment. Contractor may, with Architect approval, provide new equipment in lieu of refurbishing existing. See Section 008000, Supplemental Conditions.
- B. Car Enclosure and Interior Finishes Passenger
1. Verify and document overall car weight and interior dimensions prior to removal of any equipment from the existing car frame or car enclosure.
 2. Remove all existing interior finishes and shell components, weigh, and document.
 3. Provide completely new car enclosure and interior finishes as specified and/or detailed on architectural drawings.
 4. New cab enclosure to meet or exceed existing cab shell interior dimensions.
 5. New cab weight including all new finishes to be verified following completion of modernization. Post modernization weight not to exceed code allowable limits.
 6. Provide the following features:
 - a. Enclosure Walls: Reinforced 14-gauge furniture steel textured stainless steel. Width of individual panels shall not exceed 18". Apply sound-deadening mastic to exterior.
 - b. Enclosure Canopy: Reinforced 12-gauge furniture steel formed panels with lockable, hinged emergency exit. Interior finish white reflective baked enamel.
 - c. Front Stationary Return Panels: Reinforced 14 gauge textured satin finish stainless steel with cutouts for car operating panels and other equipment.
 - d. Entrance Columns: Reinforced 14 gauge textured satin finish stainless steel.
 - e. Transom: Reinforced 14 gauge textured satin finish stainless steel full width of enclosure with cutout for car position indicator.
 - f. Base: Textured Stainless steel with concealed ventilation cutouts.
 - g. Interior Wall Finish: Removable panels, faced and edged, with brushed stainless steel.
 - h. Ventilation: Three-speed type AA exhaust blower. Mount to car canopy on isolated rubber grommets. Exhaust blower shall meet noise requirements specified herein.
 - i. Lighting: LED fixtures with wiring and hookup. Coordinate with emergency lighting requirements. Provide emergency lighting integral with portion of normal car lighting system. Provide temporary lighting as required.
 - j. Handrails: Minimum 1¼" diameter stainless steel tubular grab bar across rear wall and both side walls (3 walls total).
 - k. Guardrails:
 - 1) Solid stainless steel flat stock bars, 4" x 3/8", mounted across rear wall and both side walls (3 walls total).
 - 2) Locate guardrail line at 8" above car floor.
 - 3) Bolt rails through car walls from back and mount on 1½" deep solid round stainless steel standoff spacers no more than 18" O.C.
 - 4) Return guardrail ends to car walls.
 - l. Pads and Buttons all 8 elevators Three-piece removable pads. Two pads covering side walls and adjacent front returns and one covering rear wall. Provide cutouts to access main car operating panel.
- C. Top of Car Guardrail: Provide car top railings where fall hazard exceeds 12". Install guardrails, necessary hardware, and toe board to meet code requirements.
- D. Card/Proximity Reader Security Provisions, All 4 Elevators:
1. Furnish and install Keri access control system as selected by building owner.
 2. Arrange car operating panels to accept and mount reader unit inside car as directed by Architect, and cross connect from car pushbuttons to control module in machine room.
 3. Integration with Keri reader control unit, mounting brackets, wiring materials, logic circuits, etc., to be coordinated by Elevator Contractor

4. Provide a filler plate to match card slot size and car return panel finish, including direction of graining, where card slot or proximity reader cutout is not initially utilized.
5. Elevator Contractor shall coordinate card reader programming and interface to building security system with building security system provider Shannix/ CSI.

2.14 HALL CONTROL

A. Pushbuttons:

1. Provide 1 riser per elevator group with flush-mounted enlarged faceplate to cover existing wall block out. Provide any cutting and patching required.
2. Vandal-resistant stainless-steel Pushbuttons for each direction of travel which illuminate to indicate call registration. Provide LED illumination.
3. Approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency as part of faceplate. Separate, engraved plate with approved engraved message and pictorial representation prohibiting use of elevator during fire or another emergency.
4. Pushbutton design to match car operating panel pushbuttons.

2.15 SIGNALS

A. Lobby Combination Floor Position/Hall Direction Display.

B. All Cars:

1. Provide at each lobby entrance to indicate travel direction of arriving car.
2. Alpha-numeric digital multi-light indicator containing floor designations and direction arrows a minimum of 2½" high to indicate floor served and direction of car travel.
3. Mount integral with hall lanterns at main landing.
4. Provide only at the Primary landing.
5. Provide vandal resistant indicator and light assemblies
6. Illuminate up or down LED lights and sound tone once for up and twice for down direction prior to car arrival at floor.
7. Illuminate light until the car doors start to close.
8. Sound level shall be adjustable from 20-80 dBA measured at 5'-0" in front of hall control station and 3'-0" off floor.
9. Provide advanced hall lantern notification to comply with ADA hall call notification time.
10. Provide advanced predictive hall lantern notification to comply with ADA hall call notification time.
11. Provide adjustable car door dwell time to comply with ADA requirements relative to hall call notification time.
12. Hall direction lenses shall be arrow-shaped with faceplates.
13. Lenses shall be minimum 2½" in their smallest dimension.

C. Car Direction Lantern, All Cars:

1. Provide flush-mounted car lantern in all car entrance columns.
2. Illuminate up or down LED lights and sound tone once for up and twice for down direction.
3. Illuminate light until the car doors start to close.
4. Sound level shall be adjustable from 20-80 dBA measured at 5'-0" in front of hall control station and 3'-0" off floor.
5. Provide advanced hall lantern notification to comply with ADA hall call notification time. Provide advanced predictive hall lantern notification to comply with ADA hall call notification time.
6. Car direction lenses shall be arrow-shaped with faceplates.
7. Lenses shall be minimum 2½" in their smallest dimension.
8. Provide vandal resistant lantern and light assemblies consisting of series of dots or lines for maximum visibility.

- D. Car Position Indicator:
 - 1. Alpha-numeric digital indicator LCD screens containing floor designations and direction arrows a minimum of 2" high to indicate floor served and direction of car travel.
 - 2. Locate fixture in car front return panel.
 - 3. When a car leaves or passes a floor, illuminate indication representing position of car in hoistway.
 - 4. Illuminate proper direction arrow to indicate direction of travel.
 - 5. Provide multi-numeral vandal resistant indicator and light assemblies.
- E. Voice Synthesizer:
 - 1. Provide electronic device with easily reprogrammable message and female voice to announce car direction, floor, emergency exiting instructions, etc.
 - 2. Once the doors close, the destinations remain illuminated until the car approaches the next destination floor, whereupon the floor numeral or light flashes and the audible signal sounds to denote the next stopping floor.
 - 3. When the doors open, Destination Indicator displays the next floors to be served.
- F. Fixture Faceplate Material and Finish:
 - 1. Satin finish stainless steel, all fixtures.
 - 2. Tamper resistant fasteners for all public facing fastenings.

2.16 FIREFIGHTERS CONTROL AND EMERGENCY POWER PANEL

- A. Provide and arrange new equipment as directed by Architect or as shown on drawings.
- B. Firefighters' Control Panel:
 - 1. Locate in building fire control room or as directed by Contractor.
 - 2. Fixture faceplate, satin finish stainless steel, including the following features:
 - a. Car position and direction indicator, digital-readout, or LCD flat screen color monitor.
 - b. Identify each position indicator with car number and group identification.
 - c. Indicator showing operating status of car.
 - d. Manual car emergency power selection switches and power status indicators.
 - 1) Group selection switch for Emergency Power operation switching between groups.
 - 2) Separate group level selection keyswitches for Emergency Power operation switching between cars in the same group:
 - a) Switches shall be labeled "ELEVATOR EMERGENCY POWER" with positions marked "AUTO" and appropriate car numbers controlled by each respective switch.
 - b) Key shall be keyed differently from the key utilized for firefighters' Phase I and II keyswitch. Key shall be removable in "AUTO" position only.
 - c) "EMERGENCY POWER" indicator lights, one per car
 - e. Two-position firefighters' emergency return switches and indicators with engraved instructions filled red.
 - 3. Where applicable, identify all indicators and manual switches with appropriate engraving.
 - 4. Provide wiring and conduit to control panel. Coordinate size and location of conduit with Contractor.
 - 5. Provide all wiring and conduit (materials and labor) to interconnect elevator controls between machine rooms or controller rooms. Coordinate wiring routing path and logistics with Owner.

6. Provide intergroup communications wiring or cable specifications and other requirements to Owner for installation by others for wiring outside of the machine rooms or control rooms.
- C. Firefighters' Key Box: Flush-mounted box with lockable hinged cover. Engrave instructions for use on cover per Local Fire Authority requirements.

2.17 ELEVATOR MANAGEMENT SYSTEM

- A. Provide a permanent system that includes reporting, monitoring, and elevator feature control options for all elevators.
- B. System shall allow user interface from within the building via two Contractor-provided dedicated CPUs with minimum 17" LCD screens and keyboards with required software installed, connected to building supplied intranet using Owner/Manager-provided computer hardware and Contractor provided software.
 1. Reporting:
 - a. Provide reports in both tabular and graphical format, both on-screen and in printed form capability.
 - b. System shall retain data to allow user to select reporting based on any time period during the previous 12 months.
 - c. Reports shall be generated and displayed by selecting a date and time range, unit or bank of equipment, and report type.
 - d. Available reports shall include Traffic Reports. Reports shall be available sorted by car, group, or floors served.
 - 1) Hall and car call events.
 - 2) Per call Wait Time.
 - 3) Average Wait Time.
 - 4) Per call Time to Destination.
 - 5) Average Time to Destination.
 - 6) Controller faults with playback.
 - 7) Unit up time.
 2. Monitoring:
 - a. Provide real time text and graphical representation of all units and groups showing the status of the following parameters:
 - 1) Car operating on normal/emergency power.
 - 2) Car position and direction of travel.
 - 3) Car calls.
 - 4) Hall calls.
 - 5) Group and Car Operating Mode:
 - a) Automatic.
 - b) Independent Service.
 - c) Inspection/Hoistway enable.
 - d) Fire Service.
 - 6) Door status.
 - 7) Delayed car.
 - 8) Load weighing and by-pass.
 - 9) Car in/out of service.
 - 10) Stop Switch Status:
 - a) In car.
 - b) Pit.
 - c) Car top.
 - 11) Seismic operation.
 - b. Shabbat operation.
 - c. Flood operation.
 3. Control: Allow user to initiate the following commands on a per unit and group level:

- a. Individual car on/off provisions.
 - b. Car to lobby.
 - c. Secured floor operation.
- C. Labor and materials for installation of any required conduit, wiring, or network cable outside of elevator machine rooms, elevator equipment spaces, elevator control spaces, or elevator hoistways required for Elevator Management System shall be provided by the Contractor.

2.18 CLIENT INTERFACE TOOL

- A. Provide access to real-time data for elevators, including the following:
 - 1. Complete service history for all vertical transformation.
 - 2. Key performance indicators.
 - 3. Access to service request logs, disposition, and total downtime.
 - 4. Create service requests.
 - 5. View customer contracts.
 - 6. View and or accept Work Orders.
 - 7. Provide document repository.
- B. Data accessible from any device, including mobile.

PART 3 - EXECUTION

3.1 SITE CONDITION INSPECTION

- A. Prior to beginning installation of equipment, examine hoistway and machine room areas. Verify no irregularities exist which affect execution of work specified.
- B. Inform Architect of any irregularities in writing prior to commencing work.
- C. Do not proceed with installation until work in place conforms to project requirements.

3.2 INSTALLATION

- A. See Section 016000, Materials and Handling.
- B. Install all equipment as follows:
 - 1. in accordance with Contractor's instructions, referenced codes, specifications, and approved submittals.
 - 2. with clearances in accordance with referenced codes, and specifications.
 - 3. to be easily maintained and/or removed.
 - 4. to afford maximum accessibility, safety, and continuity of operation.
- C. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel.
 - 1. All exposed equipment and metal work installed as part of this work which does not have architectural finish.
 - 2. Machine room equipment, and pit equipment.
 - 3. Neatly touch up damaged factory-painted surfaces with original paint color.
 - 4. Protect machine-finish surfaces against corrosion.
- D. Paint machine room and pit floors.

3.3 FIELD QUALITY CONTROL

- A. Work at jobsite will be checked during course of installation. Full cooperation with reviewing personnel is mandatory. Accomplish corrective work required prior to performing further installation.
- B. Perform complete "Acceptance" level pre-testing as specified in the latest edition of ASME A17.2 "Guide for Inspection of Elevators, Escalators, and Moving Walks" prior to AHJ-witnessed acceptance testing. Complete any adjustments, repairs, or replacements necessary to achieve code compliant operation including but not limited to:
 - 1. Car safety.
 - 2. Car emergency communications. Inform Owner and Architect of any noted failures of Owner provided and maintained equipment or systems.
 - 3. Car and counterweight buffers.
 - 4. Phase I and II Firefighters' Emergency Operation. Phase I initiated by smoke sensing devices.
 - 5. Power car door operation including door closing force, reopening device, and restricted opening.
 - 6. Suspension members.
 - 7. Compensation members.
- C. Have Code Authority acceptance inspection performed and complete corrective work.
- D. Provide access to installed equipment and elevator personnel assistance for Architect's final observation and review requirements. See Section 017000, Final Compliance Review.
- E. ADJUSTMENTS
- F. Static balance car to equalize pressure of guide shoes on guide rails.
- G. Verify that weights of existing or altered cars, counterweights, and compensation comply with traction machine manufacturers' requirements and do not exceed total weights indicated on approved submittals. See Section 013000, Submittals.
- H. Lubricate all equipment in accordance with Contractor's instructions.
- I. Adjust motors, power conversion units, brakes, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

3.4 CLEANUP

- A. See Section 010400, Project Procedures.
- B. Keep work areas orderly and free from debris during progress of project. Remove packaging materials daily.
- C. Remove all loose materials and filings resulting from work.
- D. Clean machine room equipment and floor.
- E. Clean hoistways, car, car enclosure, entrances, operating and signal fixtures.

3.5 OWNER'S INFORMATION

- A. Provide all documentation required in Section 017000, Final Compliance Review.

END OF SECTION

SECTION 230500

COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Drawings and General Provisions of Contract, including General and Modifications to General Conditions and Division 1 Specification Sections, apply to work specified in this Section.
- B. Equality of materials, articles, assembly or systems, other than those named or described in this Section, will be determined in accordance with the provisions given to Substitutions.
- C. All work in this Section is subject to the codes and standards of this Section unless otherwise listed in Section 230548 "Vibration and Seismic Controls", which will take precedence.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Piping materials and installation instructions common to most piping systems.
 - 2. Dielectric fittings.
 - 3. Mechanical sleeve seals.
 - 4. Sleeves.
 - 5. Escutcheons.
 - 6. Inserts.
 - 7. HVAC demolition.
 - 8. Equipment installation requirements common to equipment sections.
 - 9. Concrete bases.
 - 10. Supports and anchorages.
 - 11. Excavation, trenching and backfilling.
 - 12. Flashing of curbs.
 - 13. Openings in walls.
 - 14. Cutting and patching.
 - 15. Painting.
 - 16. Electrical wiring.
 - 17. Vibration Isolation and seismic controls.

1.3 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and within chases.

- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- F. "Contractor" means specifically sub-contractor working under his respective Section of the Specifications.
- G. "Furnish" and "Provide" mean to supply, erect, install and connect up complete in readiness for regular operation, particular work referred to, unless otherwise specified.
- H. "Piping" includes, in addition to pipe, all fittings, valves, hangers and other accessories relating to such piping.
- I. "Ductwork" includes, in addition to ducts, all fittings, hangers, dampers, elbows, transitions, access panels, breaker strips, flexible connections and other accessories relating to ductwork.
- J. "Supply" means purchase and delivery of material to the site.
- K. "Install" means to erect in place the supplied item.

1.4 SUBMITTALS

- A. Submit color samples for pipe coding system.
- B. Submit copies for approval and record of:
 - 1. All Tests.
 - 2. Balancing Report.
 - 3. Valve Chart.
 - 4. Pipe Color Code Chart.
 - 5. Maintenance Manuals.
 - 6. All products and materials supplied under Division 23.
- C. Any additional cost or loss, or damage arising from the substitution of any material or method for those originally specified shall be borne by the Contractor, notwithstanding review or acceptance of such substitution by the owner or the Architect, unless the substitution was made at the written request of the Owner. Any cost for re-design of any components of the contract documents shall be borne by the Contractor, unless the substitution was made at the written request of the Owner.
- D. Submittals shall be used by the contractor to coordinate location and size of access requirements, and location of piping, duct, drain, and electrical connections. Where the submittal is lacking proper information, the contractor shall obtain certified drawings or manufacturers installation brochures and instructions for the equipment before proceeding with the work.

1.5 SUBSTITUTIONS

- A. Requests for substitutions shall be submitted in writing two (2) weeks prior to bid opening. Otherwise, substitutions will only be considered when a product becomes unavailable through no fault of the Contractor.
- B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- C. A request constitutes a representation that the Contractor:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 2. Will provide the same warranty for the Substitution as for the specified product.
 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete in all respects with no additional cost to Owner.
 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 5. Will reimburse Owner for review or re-design services associated with re-approval by authorities.
- D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals without separate written request, or when acceptance will require revision to the Contract Documents.
- E. Engineer will determine acceptability of proposed substitution and will notify Contractor of acceptance or rejection in writing within a reasonable time.
- F. The Mechanical Contractor shall be responsible for the cost of and coordination of electrical revisions required as a result of the use of substituted equipment including modification to wire size, breaker size, wire routing, or starter/disconnect accessory differences.
- G. Only one request for substitution will be considered for each product. When substitution is not accepted, provide the specified product. If a substitution is submitted and rejected more than one time, the Engineer reserves the right to bill the Mechanical Contractor for additional review hours at the hourly rate established in the AIA Contract.

1.6 QUALITY ASSURANCE

- A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
- B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
- C. Electrical Characteristics for HVAC Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.
- D. Piping shall be fabricated by a qualified licensed plumber and/or steamfitters.
- E. Drainage piping shall be installed by a qualified drainlayer.

1.7 SCOPE OF WORK

- A. Provide all labor, materials, equipment, controls and accessories necessary to complete the work shown on the Drawings or herein specified to provide complete and operable systems.
- B. The work to be done under this Division includes all related work shown on the Drawings and or included in these Specifications.

- C. Provide commissioning of all mechanical systems; the general contractor as well as all sub-contractors shall cooperate with the commissioning agent and provide all required information to aid in system commissioning. Commissioning does not replace any specified start-up and testing of major pieces of equipment owned by the Mechanical Contractor.
- D. Drawings are diagrammatic and all duct and pipe fittings, transitions, or offsets required to install in the actual space are not necessarily shown. Changes in duct size, shape, and route must be coordinated and approved prior to fabrication or installation.

1.8 MATERIALS

- A. Any device, material or construction required to complete the job that is not specifically covered by description herein shall be of commercial-grade material normally used for the purpose and installed in a manner consistent with the conditions of use. Items exposed to the elements shall be weatherproofed or protected. All such items shall be submitted for review before being purchased or installed.

1.9 CODES AND STANDARDS

- A. Materials and equipment shall be designed, constructed, installed and tested in accordance with this Specification and the latest editions of the following applicable standards in addition to state and local codes applying. All products shall bear the label of approval from the appropriate agency.

Agencies:

National Environmental System Contractors Assoc.	NESCA
Air Moving and Conditioning Association	AMCA
American Society of Heating, Refrigerating and Air Conditioning Engineers	ASHRAE
American Society of Mechanical Engineers	ASME
Federal Construction Safety Standards (U.S. Dept. of Labor)	FCSS
American Society of Testing Materials	ASTM
National Electric Code	NEC
National Electrical Manufacturers Association	NEMA
National Fire Code	NFC
Occupational Safety and Health Act of '70	OSHA
International Building Code (Latest Edition)	IBC
National Sanitation Foundation	NSF
Air Conditioning and Refrigeration Inst.	ARI
Underwriters Laboratories, Inc.	UL
Building Officials & Code Administrators International, Inc.	BOCA
International Code Council	ICC
National Fire Protection Association	NFPA
Sheet Metal and Air Conditioning Contractors National Association	SMACNA
American National Standards Institute	ANSI
American Welding Society	AWS
Cast Iron Soil Pipe Institute	CISPI
Clean Air Act Amendment of 1990 (Title VI. Section 608)	CAA
Cooling Tower Institute	CTI
International Mechanical Code	IMC
International Energy Conservation Code	IECC
National Environmental Balancing Bureau	NEBB

- B. Any materials or workmanship called for in the above-mentioned requirements which are not specified or shown on the Drawings, shall be furnished and installed by the Contractors as though same had been specifically mentioned or indicated.

- C. If these Contractors fail to notify the A/E at this time, and install work in variance with the above-mentioned codes and regulations, they shall assume responsibility and expense to rectify the installation to the satisfaction of the A/E and Owner.
- D. Secure all local, state and federal permits necessary in connection with the installation of the equipment, including licenses and approvals and pay fees required for same.
- E. All work shall be performed in strict accordance with the above-mentioned standards, local and state codes.
- F. File all necessary Plans and Documents with Local Authorities and obtain the necessary Certificates of Inspection for work. Deliver same to A/E prior to request for acceptance and final payment.
- G. Notify A/E of any deviation from codes of work indicated or herein specified before installation of work is affected.

1.10 WORK PROCEDURE

- A. The Contractor shall, in good workmanlike manner, perform all work and furnish all supplies, materials, machinery, equipment, refrigerant charges, water treatment, equipment support structures including those for VFD/Starter, hoisting, rigging, and means, herein and otherwise specified, necessary or proper to perform and complete all work required by the Plans and Specifications in order to have a complete and satisfactory installation acceptable to the A/E.

1.11 DELIVERY, STORAGE, HANDLING AND PROTECTION

- A. Prior to installation, and after installation, follow Sections in Division 1.
- B. During construction, close open ends of work subject to weather or adverse conditions with temporary covers or plugs to prevent entry of water, dirt and obstructing materials.

1.12 COOPERATION WITH OTHER TRADES / COORDINATION DRAWINGS

- A. Cooperate to fullest extent with all other trades to best expedite the entire work.
- B. Furnish all information pertaining to materials, sizes, locations, means of support, etc., to all other trades requiring such information.
- C. Where work of Contractor will be installed in close proximity to work of other trades, or where there is evidence that work of Contractor will interfere with work of other trades, he shall assist in working out space conditions to make satisfactory adjustment.
- D. Contractor shall prepare composite working "COORDINATION" drawings and sections at suitable scale not less than $\frac{1}{4}" = 1'-0"$ clearly showing how his work is to be installed in relation to work of other trades. The contractor shall identify any conflicts and request assistance from the Architect / Engineer for assistance in resolving a field condition in order to complete the work required. No additional compensation will be granted or awarded for resolving coordination issues since this is considered part of this contractor's duties. Coordination drawings for suggested resolution of coordination issues shall be produced by this contractor and approved by the Engineer.

1.13 ELECTRICAL REQUIREMENTS

- A. Do not install any piping, ductwork or equipment in or through electrical rooms, transformer rooms, electrical closets, data/telephone rooms or elevator machine rooms, unless piping or ductwork of equipment is intended to serve these rooms. Additionally, no ductwork or piping will be installed above electric panels. If the Contractor violates this requirement, he shall remove and/or relocate all items as required at his expense and to the satisfaction of the Architect.
- B. Division 26 will furnish and install power wiring to the mechanical equipment and make electrical connections unless otherwise noted on the drawings.
- C. The mechanical contractor shall, regardless of voltage, furnish and install all temperature control wiring, all interlock wiring, and equipment control wiring for the equipment that the contractor furnishes unless otherwise noted. This contractor shall include in his bid, provisions to secure the services of the project's electrical contractor for incidental line voltage and transformers required for Automatic Temperature Controls.
- D. All electrical wiring furnished under the mechanical contract shall conform to the requirements of Division 26.
- E. The Mechanical Contractor shall be responsible for the cost of and coordination of electrical revisions required as a result of the use of substituted equipment including modification to wire size, breaker size, wire routing, or starter/disconnect accessory differences.
- F. Provide all starters and disconnects unless specifically furnished by Division 26.
- G. Duct smoke detectors are required at all air handling equipment 2000 CFM and larger. Detectors shall be supplied by Div. 26, installed by this contractor, and wired by Div. 26.

1.14 GUARANTEE

- A. The system specified herein and shown on the drawings shall be guaranteed to be free from original defects in both material and workmanship and shall perform to manufacturer specification for a period of **one year** of normal use and service, excepting damages from other causes. Systems which are manufactured ISO-9001 certification are preferred. This guarantee shall become effective starting the date the Contract work is accepted as complete by the Architect on behalf of the Owner and in accordance with the General Provisions/Conditions.
- B. Maintenance Service Option:
 - 1. The mechanical contractor shall include in the project an option for a full service maintenance contract for the HVAC system during the warrantee period including seasonal system changeover where applicable. This programmed maintenance agreement shall fully describe the maintenance work to be performed and shall advise as to the cost of this work prior to awarding of Contract. This warrantee service shall be provided 365 days/year, 24 hours a day.
 - 2. Upon completion of the installation, this contractor shall submit to the owner a proposal for a standard maintenance agreement to support the system operation for one year beyond the warrantee period. This service should include an option for manufacturer's recommended service maintenance for equipment as well as 24-hour emergency response
 - 3. Additionally, the ATC Subcontractor shall submit to the Owner a proposal to provide the necessary program maintenance, including operator support, application support, remote diagnostic support as well as database management support to keep the various control systems in proper working condition for one year beyond the warrantee period. This service shall be available 365 days/year, 24 hours a day.

1.15 RECORD DRAWINGS

- A. The contractor shall keep daily updated accurate records of all deviations in work as actually installed from work indicated on the contract drawings. Each Contractor shall record clearly, neatly, accurately, and promptly as work progresses the following data:
 - 1. Changes made resulting from change orders or instructions or sketches issued by the A/E.
 - 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. The record drawings shall be kept at the job site, available to the Owner at all times and labeled as "Project Record Information – Job Set". When work is completed, one complete set of marked-up original prints, updated Cad drawings with all changes listed above and a CD with Cad files shall be delivered to the A/E for approval.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All products shall be new and without defects.
- B. Products required by construction but not specifically described herein shall be as selected by the Contractor subject to the approval of the A/E.
- C. All products of Section 230548 shall take preference over the products of this Section.
- D. All products shall be of an approved type and shall be designed for the pressures and temperatures at which they are to be operated, for the materials they are to handle, and designed for their intended use.

2.2 DUCTWORK

- A. Refer to individual Division 23 Ductwork Sections for duct materials, accessories, and installation methods.
- B. Where ductwork penetrates any smoke and/or fire rated partitions provide UL listed dynamic fire and/or smoke dampers per NFPA Guidelines. Install dampers per manufacturer's instructions and install a duct and architectural access panels for every damper as required to test, inspect, and reset.
- C. Provide duct access doors for all motorized dampers, air flow stations, fire & smoke dampers, duct smoke detectors, the entering side of every coil, and at all other locations where components are installed within ductwork regardless of whether or not an access is indicated on the floor plans.
- D. All changes in duct direction shall be made in solid ductwork, not flexible duct.
- E. Square-throat/round-heel elbows are not allowed.
- F. Seal and pressure test ductwork as required in Section 233113 Metal Ducts.

2.3 PIPE, TUBE, AND FITTINGS

- A. Refer to individual Division 23 piping Sections for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.4 JOINING MATERIALS

- A. Refer to individual Division 23 piping Sections for special joining materials not listed below.
- B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.
- C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.
- F. Welding Filler Metals: Comply with AWS D10.12.
- G. Solvent Cements for Joining Plastic Piping:
 - 1. CPVC Piping: ASTM F 493.
 - 2. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

2.5 UNIONS / DIELECTRIC FITTINGS

- A. Use dielectric unions, flanges, or waterways to connect dissimilar metal parts.
- B. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
- C. Insulating Material: Suitable for system fluid, pressure, and temperature.
- D. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig (1725-kPa) minimum working pressure at 180 deg F (82 deg C).
- E. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig (1035- or 2070-kPa) minimum working pressure as required to suit system pressures.
- F. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig (2070-kPa) minimum working pressure at 225 deg F (107 deg C).
- G. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig (2070-kPa) minimum working pressure at 225 deg F (107 deg C).

2.6 SLEEVES

- A. Through outside masonry walls and below grade masonry walls, use schedule 40 ductile iron, caulked watertight.

- B. Through masonry floors or interior masonry walls and fire rated assemblies, use Schedule 40 galvanized steel pipe with fire stopping. Follow firestop manufacturer's installation instructions to maintain listing.
- C. Through interior non-fire rated stud partitions, use 22-gauge galvanized sheet metal.
- D. Galvanized-Steel Sheet: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.
- E. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- F. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- G. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
 - 1. Underdeck Clamp: Clamping ring with set screws.
- H. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.
- I. PVC Pipe: ASTM D 1785, Schedule 40.
- J. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

2.7 ESCUTCHEONS

- A. Provide escutcheons where pipe penetrations are exposed.
- B. Escutcheons for pipes passing through outside walls shall be solid cast brass, flat type, secured to pipe with a set screw, Ritter Pattern & Casting Co., #1.
- C. Escutcheons for pipes passing through floors shall be split hinged, cast brass type designed to fit pipe on one end and cover sleeve projection through floor on other end, Ritter Pattern & Casting Company, #36A.
- D. Escutcheons for pipes passing through interior walls, partitions and ceilings shall be split-hinged, cast brass, chromium plated type, Ritter Pattern & Casting Co., #3A.
- E. Beaton & Corbin and/or Caldwell products will be acceptable.

2.8 INSERTS

- A. Inserts shall be individual or strip type, of pressed steel construction galvanized only with accommodation for removable nuts and threaded rods up to $\frac{3}{4}$ " diameter, permitting lateral adjustment. Individual inserts shall have an opening at top to allow reinforcing rods up to $\frac{1}{2}$ " diameter to be passed through insert body and shall be Fee & Mason Manufacturing Company, Figure 178. Strip inserts shall have attached rods with hooked ends to allow fastening to reinforcing rods and shall be Fee & Mason Manufacturing Company, Figure 190. Grinnell or Carpenter Patterson materials will be acceptable.
- B. At Contractor's option, inserts may be galvanized, malleable iron, Universal type, Grinnell, Figure 279, for pipe sized up to $3\frac{1}{2}$ ", Figure 282, for all sizes up to 8".

- C. Where subject to corrosive atmospheres use stainless steel products.

2.9 ARCHITECTURAL ACCESS DOORS

- A. This contractor shall furnish architectural access panels not smaller than 12" x 16" for access to concealed valves, traps, dampers, sensors, etc. where no other means of access is provided. Access panels shall be all steel construction with no. 16 gauge wall or ceiling and no. 14 gauge panel door with not less than 1/8" insulation secured to inside of the door. Panels shall be installed by the GC in locations coordinated with this contractor.
- B. Doors shall be supported with concealed hinges and secured with suitable clips and countersunk flush screws. Outside of access panels shall be flush with finished wall or ceilings, except that where panels are located in acoustic panels or architectural paneling, the door shall be recessed to receive adjacent finish material. The final position for each access door and the size to be used shall be determined by the contractor as required by the field conditions in which it is being installed, with finish approval by the A/E. Access panels shall be as manufactured by MILCOR.
- C. Fire ratings of access door shall not be less than the surface on which the door is installed.

2.10 MOTORS AND STARTERS

- A. 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 premium efficiency. Motors used with variable frequency drives shall be rated for inverter duty and shall include manufacturer's integral motor shaft grounding protection. Field installed rings are not acceptable.
- B. Starters shall be Cutler Hammer or equal, with pushbuttons, HOA switches, auxiliary contacts, etc. Furnish starters for motors ½ HP and over and as required by Sequence of Operation in Section 230993. Starters for motors 200-volt/3 phase and over shall use products with built-in 120-volt control circuit transformer. This Contractor shall supply all starters unless specifically shown or specified elsewhere. Division 26 will install starters.
- C. Disconnects provided by this contractor will be installed by Division 26, with the exception of factory mounted equipment disconnects.

2.11 CONDENSATE

- A. All air conditioning, refrigerant coils, refrigerant valve boxes, and condensing gas-fired equipment shall have condensate drains regardless of whether this is indicated on the drawings. Provide a trap at all drain connections to pans. All condensate must drain to approved locations.
- B. Provide an individual condensate neutralizer at the drain to all condensing gas-fired equipment and pipe the drain to an indoor indirect waste connection. Do not drain to locations subject to freezing temperatures. Use PVC piping for pitched condensate drains; use clear vinyl tubing for pumped condensate. Do not use PVC or vinyl within an air plenum.
- C. A/C condensate piping within air plenums shall be insulated copper only. Insulated heat-pex piping may be permitted to be installed in a plenum if allowed by the AHJ.
- D. Condensate drain piping shall pitch at 1/8" per foot or shall be pumped. Pitched condensate drains shall have clean-outs.

- E. Condensate pumps installed above ceilings and must be hard-wired; receptacle plug type are not allowed. Cutting the plug end to modify for wired connection will void the UL warranty and is not allowed.
- F. Condensate pumps within a plenum must be plenum rated.

PART 3 - EXECUTION

3.1 GENERAL

- A. All installation methods of Section 230548 "Vibration and Seismic Controls" shall take precedence over the methods of this Section.

3.2 INTERPRETATION OF DRAWINGS

- A. Mechanical equipment and such other apparatus as may require maintenance and operation from time to time shall be made easily accessible. Although the equipment may be shown on the Drawings in certain locations, the construction may disclose that such locations do not make its position readily accessible. In such cases, the Owner or his Representative shall be notified before advancing the construction to a stage where a change will reflect additional expense.
- B. Compare actual site conditions with the Drawings and Specifications and include additional work which careful examination would disclose. Before the bidding period, advise the A/E of any omission, error or conflict in the Plans and Specifications.
- C. Equipment, ductwork and piping locations, as shown, are diagrammatic and approximate only unless fixed by dimensions. As the drawings are diagrammatic, every fitting, transition, and offset required for the installation is not shown on the drawings, but shall be anticipated by the contractor to be necessary for the installation. Actual field conditions and physical characteristics of the product govern exact locations. Where possible, adhere to locations on Drawing consistent with building construction and equipment installed by others.
- D. Contractor shall not scale measurements from the Drawings but check with General Contractor's latest Drawings, shop drawings, and equipment manufacturer's installation guides before proceeding with any work.
- E. Work layouts shall be the responsibility of the Contractor, following minimum requirements as set forth in these Specifications and accompanying Drawings.
- F. Where head room or space conditions appear inadequate, A/E shall be notified before proceeding with installation. If directed by A/E, Contractor shall, without extra charge, make reasonable modifications in layout as needed to prevent conflicts with work of other trades or for proper execution of work.
- G. If, in Contractor's opinion, work is shown or specified in manner or amount as to make it impossible to install a top quality piece of work or fulfilling intent of a perfectly efficient job when complete, refer same to A/E in writing before submitting proposals. The contractor shall suggest options for solutions to conflicts for review by the engineer.
- H. Should Contractor fail to refer such instances to A/E as required above, no excuse for poor, defective or incomplete work will be accepted.

3.3 SHOP DRAWINGS

- A. All equipment shall be submitted for approval under these Sections to the A/E.

- B. Do not place orders for any equipment until final approval is received. Allow at least two weeks for submittal review.
- C. If material or equipment is installed before it is approved, Contractor shall be liable for removal and replacement at no extra charge to the Owner.
- D. Contractor shall consult manufacturers' installation brochures and instructions to determine exact location of connection points. Take special care to allow for proper space for maintenance, operation of valves, removal of coils, filters and equipment. Provide offset pipe and union/flange arrangements for ease of removal of coils and equipment. Provide accessories required or recommended by the manufacturer. Locate drains for proper pitch and trapping for coils, space for control valves, and other components. Coordinate with electrical contractor by advising of proper location of attachment of electrical devices to be clear of areas of maintenance or access.
- E. Shop drawings shall be submitted on all major pieces of equipment and material. Each item of equipment proposed shall be a standard catalog product of an established manufacturer. The shop drawing shall give complete information on the proposed equipment such as: capacity, size, construction, material, dimensions, arrangement, required operating clearances, performance characteristics, weight, rating authority, and manufacturer's warranty. Particular operating characteristics and efficiencies scheduled or indicated on the drawings shall be included in the submittal data. Each item of the shop drawing shall be properly labeled, indicating the intended service of the material.
- F. The contractor shall, before submitting the shop drawings of the equipment to the A/E, check each item of the shop drawings to verify the proper equipment is included. Items to check shall include but not be limited to confirmation that the equipment will physically fit into space; proper equipment for the job; electrical characteristics including operating efficiencies and voltage matches that of electric service; proper arrangements for connections; that the equipment meets code requirements, and that all required BMS/DDC components are included.
- G. The shop drawings shall be submitted electronically to the A/E with a letter of transmittal, which shall list each item, submitted with the manufacturer's name.
- H. Review of the shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings have been reviewed, said review does not mean that drawings have been checked in detail; said review does not in any way relieve the contractor from his responsibility or the necessity of furnishing material or performing work as required by the contract drawings.

3.4 WARRANTY

- A. Refer to General Conditions. The warranty period for the work under this Section is for one year from date of acceptance. These contractors shall provide free day-and-night service, parts and labor for the complete installation of the entire system for this period.

3.5 CONTRACTOR'S RESPONSIBILITY

- A. Contractor shall be held responsible for any injuries to people, employees or damage done to building premises or adjoining areas or to other work resulting from execution on his part of work, in any manner whatsoever.
- B. Contractor shall be responsible for proper protection of his work, materials, people or employees from injury or loss done by others and shall make good such injury at his own expense.
- C. The Engineer shall not be responsible for the safety of Contractor's employees.

- D. The contractor shall be responsible for coordination with the electrical contractor with regard to final diffuser & ceiling smoke detector installation. Smoke detectors should not be located in a direct airflow or closer than 1 m (3 ft) from an air supply diffuser or return air opening. Supply or return sources larger than those commonly found in residential and small commercial establishments can require greater clearance to smoke detectors. Similarly, smoke detectors should be located farther away from high velocity air supplies.

3.6 CUTTING AND PATCHING

- A. All rough cutting and patching required for installation of the mechanical system shall be the responsibility of this contractor. All finish patching relative to this contractor's work shall be the responsibility of other trades in accordance with other sections of this specification. Coordinate all work for a complete and finished installation.
- B. Contractor shall furnish sketches showing the locations and sizes of all openings and chases, and furnish and locate all sleeves and inserts required for the installation of the mechanical work before the walls, floors and roof are built. The contractor shall be responsible for the cost of cutting and patching where any mechanical items were not installed or where incorrectly sized or located. The contractor shall do all drilling required for the installation of his hangers.

3.7 TESTING

- A. Refer to sections 230800 "Commissioning of HVAC", 019113 "General Commissioning Requirements", and 230593 "Testing, Adjusting and Balancing for HVAC" for the requirements of coordination, verification, and reporting of tests.
- B. Contractor shall submit to the A/E for record and approval a written report for each test conducted including manufacturer's equipment start-up testing. Report shall indicate date of test, system tested, method of testing, name of person or agency witnessing test, and results of tests. If test records are not kept and submitted, it will be assumed that the test was not completed and Contractor will be required to perform the test at A/E 's direction.
- C. All piping, ducts and equipment shall be tested. Contractor shall furnish Labor, materials, instruments and power required for testing unless otherwise indicated under particular section of Specifications.
- D. Tests shall be performed in presence of and to satisfaction of A/E, Commissioning Agent, Owner's Representative and/or such other parties as may have jurisdiction.
- E. Pressure test shall be applied to piping and ductwork only before connection of equipment. In no case shall piping, equipment or accessories be subjected to pressures exceeding their ratings.
- F. Provisions for capping and sealing ductwork and piping in preparation of testing, and restoring for final connection to equipment is the responsibility of this contractor.
- G. Ductwork shall be tested in accordance with SMACNA HVAC Duct Leakage Test Manual, with a minimum test of 25% of all ducts operating in excess of 3" wc, all ducts installed outdoors, all ducts that will be concealed within shafts, solid ceiling, crawl spaces, or solid soffits in the finished condition. In no case shall the maximum leakage allowed be equal to or greater than the SMACNA permitted leakage rates. Ductwork shall be resealed, sealant allowed to cure, and re-tested until all mains and all sections outdoors and within concealed ceilings, soffits, shafts and chases meets the leakage requirements.
- H. Defective work shall be promptly repaired or replaced and tests shall be repeated until particular system and/or component parts receive approval of the A/E.

- I. Any damages resulting from tests shall be repaired and damaged materials replaced.
- J. Duration and style of tests shall be as determined by authorities having jurisdiction but in no case less than time prescribed in each Section of Specifications. In general, pressure for tests shall be 1.5 times working pressure unless prescribed otherwise by code, specific specification section or ASTM Guidelines.
- K. Equipment and systems which normally operate during certain seasons of year shall be tested during appropriate season. Tests shall be performed on individual equipment, systems and their controls for proper operation, functioning and performance. Controls shall be operated simultaneously with equipment of system being tested.
- L. During testing procedure, remove accessories liable to damage during tests.
- M. Notice shall be furnished to A/E at least two days prior to any testing. Contractor shall be solely responsible for any delays, damages, etc., resulting from failure to notify.
- N. Instruments required under this Contract for permanent installation may be used for testing if re-adjusted and recalibrated for the service for which intended.

3.8 CLEANING OF SYSTEM

- A. All piping, ducts and equipment shall be thoroughly cleaned of foreign matter after being placed in operation. System shall be disconnected, cleaned and reconnected wherever necessary to locate and remove obstructions. Any work damaged in course of removing obstructions shall be repaired or replaced when system is reconnected at no additional cost to the Owner.
- B. All strainers shall be flushed prior to balancing of hydronic systems.
- C. Replace all air filters with new prior to balancing of air systems.

3.9 SLEEVES, INSERTS, ANCHOR BOLTS

- A. Sleeves shall be located by this Contractor and set by the General Contractor, subject to A/E approval. Provide General Contractor with such information in ample time to prevent unnecessary cutting and patching. Mechanical Contractor shall be responsible for and subsequent cutting and patching of openings if sleeves have been omitted due to failure of setting them properly or in time. Fasten sleeves securely to avoid dislocation during concrete pouring.
- B. In placing sleeves, inserts, anchor bolts or any other material to be embedded in masonry and concrete or built into structure, Contractor shall cooperate with all other trades and shall consult with A/E in regard to their exact locations wherever there is any interference with structural members.
- C. Contractor will be held responsible for location of and maintaining in proper positions, sleeves, inserts and anchor bolts supplied and/or set in place by him. In event that failure to do so requires cutting and patching of finished work, it shall be done at Contractor's expense.
- D. All pipes and conduits passing through floors, walls or partitions shall be provided with sleeves having an internal diameter two inches larger than outside diameter of pipe.
- E. Sleeves through outside walls shall be painted with one coat of bitumastic paint inside and outside. Sleeves shall extend ½" beyond each side of wall. Space between sleeve and pipe shall be packed with oakum to within two inches of each face of wall. Remaining space shall be packed and made watertight with a waterproof compound.

- F. Sleeves through masonry floors or interior masonry walls shall be set flush with finished wall or ceiling surfaces.
- G. Sleeves through interior stud partitions shall be set flush with finished surfaces of partitions.

3.10 ESCUTCHEONS

- H. Escutcheons shall be installed on pipes wherever they pass through floors, ceilings, wall partitions and outside walls where exposed to view.

3.11 OPERATING INSTRUCTIONS

A. Operation of system - Instruction:

1. Contractor is responsible for construction and installation of all mechanical systems and shall supply the services of competent personnel for a period of one day per system (heating, cooling, controls) plus one day per major piece of equipment (boilers, ERV, chiller, cooling tower) to instruct owner's personal. As such, Contractor may be required during the first year to review every phase of all mechanical systems with Owner's personnel and also to instruct and supervise Owner's personnel in the proper operation and maintenance of said system. Time shall be recorded by Contractor and signed by Owner or Representative. At the owner's request, the training instruction shall be video recorded and shall be included in the Operating Manual package.

B. Operation of system - Manuals:

1. Contractor shall provide three sets of complete operating instructions of all systems installed, both bound in a paper manual and provided as electronic documents in MS Word or Adobe PDF format. Manuals shall be assembled in black vinyl hardback loose-leaf binders, labeled with job name, address and date. Information on each piece of equipment of system shall be in a separate tab labeled section. Provide a complete index of the contents. After approval by the Engineer the binders shall be forwarded to the Owner.
2. Manual shall contain one approved copy of each shop drawing and submitted data, printed instructions as to care and maintenance of system arranged in the following sequence:
 - a. Table of Contents
 - b. Description of Installation with Contractor contact information and letter of Warranty including start date and terms.
 - c. Care and Maintenance: Including a check and follow-up chart for greasing and oiling of all mechanical equipment and a copy of instructions as to upkeep of motors.
 - d. Manufacturer's Listing: In alphabetical order, of all equipment installed on job, together with a listing of material supplied, manufacturer's address, name and address of local manufacturer's agent.
 - e. Copy of Valve Charts
 - f. Copy of Pipe System complete with color samples.
 - g. Testing & Balancing Report
 - h. Duct Pressure Test Report
 - i. Equipment start-up report and records including incident reports and refrigerant charges
 - j. List of filter sizes for all mechanical equipment including "clean filter" pressure drop gauge reading and "change filter" pressure drop gauge reading
 - k. Updated Automatic Temperature Control submittal & sequence of operations

- l. Operating & Maintenance manuals for the automatic temperature control system
- m. Manufacturer's Equipment Warranties
- n. Project documents and certificates
- o. The manual shall also include a schedule for all equipment maintenance. Schedule shall provide a general outline for equipment requirement. Example; filters shall be changed every 3 months, test dampers once a year, maintain neutralizing kit at the boilers.

3.12 PROJECT CLOSEOUT AND TROUBLE SHOOTING

- A. Each trade shall designate one person to methodically test, adjust, trouble shoot, and effect repairs to all equipment, devices and systems. The person shall be available on one hour's notice to answer trouble calls and to fully investigate and repair the cause of the problem. Each trade shall submit the name and phone number of the designated person to the Owner, Engineer and Architect. After final acceptance, this same person shall be available on eight hour's notice for free day-and-night service during the guarantee period.
- B. Contractor shall demonstrate all sequences of control to the Engineer. The temperature control and balancing sub-contractors shall accompany the Engineer during check-out procedure and shall demonstrate proper balancing positions of minimum fresh-air settings. Personnel shall be equipped with tools and spare parts to make minor repairs and adjustments.
- C. Contractor shall demonstrate compliance with balancing of systems in the presence of the Engineer by actual measurement of water and air flows at a minimum of three locations randomly selected by the Engineer. If requested by the Engineer, re-balancing shall be done at no additional charge.
- D. Balanced positions shall be neatly & clearly indicated with permanent marker on valves; label filter gauges with "clean filter pressure drop" indication and "change filter pressure drop" indication.

3.13 FIRE STOPPING

- A. Each trade is responsible for fire stopping of its own work.
- B. Fire stopping material shall be typical of HILTI Fire Barrier.
- C. Each trade must submit intended fire stopping material and methods for each application with UL listed approved designs.

3.14 HVAC DEMOLITION

- A. Refer to Division 01 sections for the limits of demolition required by this contractor.
- B. Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.
- C. Disconnect, demolish, and remove HVAC systems, equipment, and components indicated to be removed.
 - 1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - 2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.

3. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
4. Ducts to Be Abandoned in Place: Cap or plug ducts air-tight with same or compatible ductwork material.
5. Equipment to Be Removed: Disconnect and cap services and remove equipment.
6. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
7. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
8. Equipment Containing Refrigerant: Legally recover and recycle refrigerant from equipment prior to cutting pipes or removal of equipment.
9. Equipment Containing Hazardous Materials: Refer to Section 01 for procedures and responsibility of abatement of hazardous products.
10. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.15 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. Install piping according to the following requirements and Division 23 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping with provisions to permit expansion.
- G. Install piping to permit valve servicing.
- H. Install piping at indicated slopes.
- I. Install piping free of sags and bends.
- J. Install fittings for changes in direction and branch connections.
- K. Install piping to allow application of insulation.
- L. Select system components with pressure rating equal to or greater than system operating pressure.

- M. Install escutcheons for penetrations of walls, ceilings, and floors.
- N. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
- O. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
 - 1. Install steel pipe for sleeves smaller than 6 inches (150 mm) in diameter.
 - 2. Install cast-iron "wall pipes" for sleeves 6 inches (150 mm) and larger in diameter.
 - 3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- P. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
 - 1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- Q. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 07 Section "Penetration Firestopping" for materials.
- R. Verify final equipment locations for roughing-in.
- S. Refer to equipment specifications in other Sections for roughing-in requirements.

3.16 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 23 Sections specifying piping systems and approved joining methods for this project.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
1. Comply with ASTM F 402, for safe-handling practice of cleaners, primers, and solvent cements.
 2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
 3. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 4. PVC Non-pressure Piping: Join according to ASTM D 2855.
- J. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- K. Plastic Non-pressure Piping Gasketed Joints: Join according to ASTM D 3212.
- L. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
1. Plain-End Pipe and Fittings: Use butt fusion.
 2. Plain-End Pipe and Socket Fittings: Use socket fusion.
- M. Fiberglass Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.
- N. Press type fittings shall only be allowed with written permission of the A/E or Owner.

3.17 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
 2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.
 3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
 4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.18 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.

3.18 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
 - 5. Construct concrete bases of dimensions indicated, but not less than 4 inches (100 mm) larger in both directions than supported unit.
 - 6. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of the base.
 - 7. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
 - 8. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 9. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 10. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
 - 11. Use 28-day compressive-strength concrete and reinforcement as specified in Division 03.

END OF SECTION

SECTION 230513

COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

- A. General Provisions for Mechanical Work Division 23 shall apply to all work performed under this Section of the Specifications and shall be considered as included herein.

1.2 DESCRIPTION OF WORK

- A. Provide all HVAC Equipment motors and accessories required for a proper installation in accordance with the Drawings and Specifications.

1.3 QUALITY CONTROL

- A. All motors shall be manufactured by firms regularly engaged in the manufacture of similar equipment and whose products have been in satisfactory service for not less than five (5) years.

1.4 SUBMITTALS

- A. Submittals shall be provided in accordance with Sections 01300 and 15010. In addition to submittals specified elsewhere, the following information shall be submitted for all motors:
 - 1. Product data indicating voltage, horsepower, full load current, locked rotor current, frequency, service factor, motor speed, efficiency, power factor, frame size, insulation class and NEMA design code.
 - 2. Wiring diagrams with electrical characteristics and connection requirements.
 - 3. Manufacturer's operation and installation manuals.

PART 2 – PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. All motors shall be open Drip-proof type except where specifically noted otherwise.
- B. All motors shall be designed for continuous operation in 40° C environment.
- C. Motors shall have minimum efficiencies and power factors as indicated in Performance Schedules at the end of this section.
- D. Explosion-Proof Motors, when required, shall be UL approved and labeled for hazard classification, with over temperature protection.
- E. A visible nameplate shall be provided for each motor which indicates, as a minimum, all information required by article 430-7 of the National Electric Code (NEC).
- F. Wiring Terminations
 - 1. Suitable terminal lugs shall be provided and enclosed in a terminal box which conforms to the requirements of article 430-12 of the NEC.

2. For fractional horsepower motors where connection is made directly, provide conduit connection in end frame.

- G. All motors, 1 HP and larger, shall be premium efficiency according to the definition of the local utility company, and having minimum efficiency listed in item 3.06 of this section. All motors shall conform with the local utility company energy savings program, and shall qualify for respective rebates under this program.

2.2 THREE PHASE POWER – SQUIRREL CAGE MOTORS

- A. Starting Torque shall be between 1 and 1½ times full load torque.
- B. Starting Current shall not be greater than six times full load current.
- C. Power Output, Locked Rotor Torque, Breakdown or Pull Out Torque shall have NEMA Design B characteristics.
- D. Insulation System shall be NEMA Class F or better.
- E. Motors shall be tested to determine that they are free from electrical or mechanical defects in compliance with performance data.
- F. Motor Frames shall be NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.
- G. Bearings shall be grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication.

2.3 MOTORS

- A. 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 premium efficiency. Motors used with variable frequency drives shall be rated for inverter duty.
- B. Motors to be used with variable frequency controllers shall meet the following requirements in addition to requirements stated previously in this section.
- C. Motors shall be designed and evaluated for use on AC adjustable frequency controller waveforms.
- D. Motor insulation, for units operating at 600 VAC RMS or less, shall utilize a system that has increased mechanical and dielectric capabilities. This system shall be defined to mean a system that includes additional features which clearly indicate an attempt to improve the withstand capabilities of the motor winding to the increased mechanical and electrical stresses caused by inverter waveforms. The motor manufacturer's standard insulation system is considered to represent the base level of withstand capabilities by which the motor supplier shall use in his evaluation of whether the system supplied qualifies for use on inverter waveforms.
- E. Windings shall have a minimum of one normally closed thermostat provided as standard. This device shall be sized for the maximum recommended safe operating temperature of the motor winding.
- F. Stator Cores shall utilize low loss type electrical steel, reinforced end coil treatment and increased varnish coverage.

- G. Rotor Cores shall be designed for reduced electrical losses and low slip RPM levels.
- H. Motor Assemblies shall be of a low vibration design with minimum balance specifications equal to ½ of NEMA Standard Levels.
- I. Motors shall meet NEMA Design “B” performance limits.
- J. The following additional information shall be included on the motor nameplate:
 - 1. Application Type: Constant torque, constant horsepower or variable torque.
 - 2. Maximum approved continuous torque or horsepower level(s).
 - 3. Approved operating range defined in RPM's and frequency.
 - 4. Maximum motor amps approved, when used on non-sinewave power, for each voltage connection available.

2.4 STARTERS

- A. Starters shall be Cutler Hammer or equal, with pushbuttons, HOA switches, auxiliary contacts, etc. Furnish starters for motors ½ HP and over and as required by sequence of operations. Starters for motors 200 V/3 phase and over, use products with built-in, 120-volt control circuit transformer. This Contractor shall supply all starters unless specifically shown or specified elsewhere. Division 16 will install starters.
- B. Disconnects provided by this contractor will be installed by Division 26, with the exception of factory mounted disconnects.

2.5 VARIABLE SPEED / VARIABLE FREQUENCY DRIVES

- A. Provide one combination VFD for each piece of equipment shown with a VFD on the plans and/or described with a VFD in these specifications. Unit shall be manufactured by ABB, Cerus or Emerson Industrial Automation/Control Techniques.
- B. Unit shall have the following options:
 - 1. NEMA 1 type enclosure for indoor use.
 - 2. Operating temperature range 32 deg F – 104 deg F.
 - 3. The VFD shall have a built-in AC or DC reactor equivalent to 3% of line impedance or else must include an equivalent external line reactor in order to protect from AC line transients & to reduce harmonics.
 - 4. HOA (Hand / Off / Auto) Switch and manual/automatic lead pump selector.
 - 5. Potentiometer (0-100%)
 - 6. Three Contactor Electronic Bypass shall be provided when indicated on the plans. VFD and bypass components shall be mounted, fully pre-wired, tested and made available for installation as one UL listed assembly by the drive manufacturer.
- C. The unit is to be mounted in the same room as the pump.
- D. This unit is intended to be mounted indoors only.

PART 3 – EXECUTION

3.1 GENERAL

- A. All motors shall be installed in accordance with article 430 of the nec and the manufacturer's instructions.

- B. Motors shall be installed securely on a firm foundation and positioned so as to obtain the alignment that meets or exceeds all drive component specifications.
- C. After making corrective adjustments for alignment, tighten foot bolts and recheck alignment. When making shim adjustments, change only one foot at a time.
- D. Verify that all connections are in agreement with the connection diagram.
- E. All connections shall be properly taped or otherwise insulated to prevent shorting against each other or to ground.
- F. Performance schedule: three phase – energy efficient, open, drip-proof

Premium Efficiency Motor Requirements							
Open Drip-Proof (ODP) Motors				Totally Enclosed Fan-Cooled (TEFC)			
Size HP	Speed			Size HP	Speed		
	1200	1800	3600		1200	1800	3600
	NEMA Nominal Efficiency				NEMA Nominal Efficiency		
1	82.50%	85.50%	77.00%	1	82.50%	85.50%	77.00%
1.50	86.50%	86.50%	84.00%	1.50	87.50%	86.50%	84.00%
2	87.50%	86.50%	85.50%	2	88.50%	86.50%	85.50%
3	88.50%	89.50%	85.50%	3	89.50%	89.50%	86.50%
5	89.50%	89.50%	86.50%	5	89.50%	89.50%	88.50%
7.50	90.20%	91.00%	88.50%	7.50	91.00%	91.70%	89.50%
10	91.70%	91.70%	89.50%	10	91.00%	91.70%	90.20%
15	91.70%	93.00%	90.20%	15	91.70%	92.40%	91.00%
20	92.40%	93.00%	91.00%	20	91.70%	93.00%	91.00%
25	93.00%	93.60%	91.70%	25	93.00%	93.60%	91.70%
30	93.60%	94.10%	91.70%	30	93.00%	93.60%	91.70%
40	94.10%	94.10%	92.40%	40	94.10%	94.10%	92.40%
50	94.10%	94.50%	93.00%	50	94.10%	94.50%	93.00%
60	94.50%	95.00%	93.60%	60	94.50%	95.00%	93.60%
75	94.50%	95.00%	93.60%	75	94.50%	95.40%	93.60%
100	95.00%	95.40%	93.60%	100	95.00%	95.40%	94.10%
125	95.00%	95.40%	94.10%	125	95.00%	95.40%	95.00%
150	95.40%	95.80%	94.10%	150	95.80%	95.80%	95.00%
200	95.40%	95.80%	95.00%	200	95.80%	96.20%	95.40%

END OF SECTION

SECTION 230529

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Metal pipe hangers and supports.
 - 2. Trapeze pipe hangers.
 - 3. Thermal-hanger shield inserts.
 - 4. Fastener systems.
 - 5. Equipment supports.

1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Hangers and supports for HVAC piping and equipment shall withstand the effects of gravity loads and stresses.
 - 1. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.
 - 2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
 - 3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following; include Product Data for components:
 - 1. Revise list below to suit Project.
 - 2. Trapeze pipe hangers.
 - 3. Equipment supports.
- C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Remaining paragraph is defined in Division 01 Section "Submittal Procedures" as an "Informational Submittal." Retain paragraph if retaining procedures for welder certification in "Quality Assurance" Article.
- E. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
 - 3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
 - 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
 - 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.
- B. Stainless-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
 - 3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.
- C. Copper Pipe Hangers:
 - 1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
 - 2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

2.2 TRAPEZE PIPE HANGERS

- A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.3 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated or stainless steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.4 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.5 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
 - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
 - 2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.
- C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- D. Fastener System Installation:
 - 1. Verify suitability of fasteners in two subparagraphs below for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick.
 - 2. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
 - 3. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- E. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- F. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- H. Install lateral bracing with pipe hangers and supports to prevent swaying.
- I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger

and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

- J. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- L. Insulated Piping:
 - 1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
 - 2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
 - 3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
 - 4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2 : 12 inches long and 0.048 inch thick.
 - b. NPS 4: 12 inches long and 0.06 inch thick.
 - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
 - d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
 - e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.
 - 5. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
 - 6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches .

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 09.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports and attachments for general service applications.

- F. Use stainless-steel pipe hangers and stainless-steel attachments for hostile environment applications.
- G. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.
- H. Use padded hangers for piping that is subject to scratching.
- I. Use thermal-hanger shield inserts for insulated piping and tubing.
- J. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
 - 2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F, pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
 - 3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
 - 4. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
 - 5. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
 - 6. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
 - 7. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
 - 8. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction might occur.
 - 9. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
- K. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
 - 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.
- L. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
 - 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
- M. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 - 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
 - 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.

Pipe Size	Rod Diameter	Maximum Spacing	
		Copper	Steel
1/2"	3/8"	5' - 0"	7' - 0"
3/4"	3/8"	5' - 0"	7' - 0"
1"	3/8"	6' - 0"	7' - 0"
1 1/4"	3/8"	7' - 0"	7' - 0"
1 1/2"	3/8"	8' - 0"	9' - 0"
2"	3/8"	8' - 0"	10' - 0"
2 1/2"	1/2"	9' - 0"	11' - 0"
3"	1/2"	10' - 0"	12' - 0"
4" - 5"	5/8"	12' - 0"	14' - 0"
6" - 8"	3/4"	14' - 0"	17' - 0"

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4. PVC pipe shall be supported no more than 4'-0" on center.
5. Use insulation protection saddles or shields for all insulated cold piping and where hanger is outside the insulation. Secure all saddles and shields to the insulation to prevent slippage or shifting that may cause the shield to fall to the ground. Saddles shall be spot welded to hangers.

R. Hangers for vertical pipes shall be spaced no greater than as follows:

PIPING MATERIAL	MAX. VERTICAL SPACING
Cast Iron Pipe	15'-0"
Copper Pipe/Tubing	10'-0"
Galvanized Steel Pipe	15'-0"
PVC Pipe	4'-0"
CPVC Pipe/Tubing	3'-0"

END OF SECTION

SECTION 23 05 53

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. General Provisions for Mechanical Work Section 15010 shall apply to all work performed under this Section of the Specifications and shall be considered as included herein.

1.2 SCOPE

- A. Provide identification devices specified in this section.

1.3 RELATED SECTIONS

- A. All Sections of Division 15 apply to work in this Section.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of identification devices of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Codes and Standards:
1. ANSI Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.
 - a. The following colors shall be used for piping identification unless noted otherwise:

Service	Legend	Background Color
Hot water supply	HWS	Yellow
Hot water return	HWR	Yellow
Chilled Water Supply	CHWS	Yellow
Chilled Water Return	CHWR	Yellow
Fuel oil supply	FOS	Yellow
Fuel oil return/overflow	FOR	Yellow
Cold water	Cold water supply	Green
Compressed Air	Compressed Air	Green
Sanitary	Sanitary Sewer	Green
Vent	Vent	Yellow
Rainwater	Storm Sewer	Green
Fuel Gas	Fuel Gas	Yellow
Propane	Propane	Yellow

Service	Legend	Background Color
High Pressure Steam Supply	APS	Yellow
Low Pressure Steam Supply	LPS	Yellow
High Pressure Steam Return	HPSCR	Yellow
Low Pressure Steam Return	SCR	Yellow

Note: Color banding shall meet latest edition of NSI and OSHA requirements.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data and installation instructions for each identification material and device required.
- B. Samples: Submit samples of each color, lettering style and other graphic representation required for each identification material or system.
- C. Schedules: Submit valve schedule for each piping system, typewritten and reproduced on 8 ½ "x 11" bond paper. Tabulate valve number, piping system, system abbreviation (if any). Mark valves which are intended for emergency shut-off and similar special uses, by special "flags", in margin of schedule. In addition to mounted copies, furnish extra copies for Maintenance Manuals as specified in Section 15010.
- D. Maintenance Data: Include product data and schedules in maintenance manuals; in accordance with requirements of Section 15010.

1.6 WARRANTIES

- A. Provide one year maintenance warranty for all pieces of equipment. See Division 1 for additional warranty requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, products are limited to Seton, Brady or Brimar whom have a minimum of 5 years experience in the manufacturing of mechanical identification products.

2.2 MECHANICAL IDENTIFICATION MATERIALS

- A. General: Provide manufacturer's standard products of categories and types required for each application as referenced in other Division 15 sections. Where more than single type is specified for application, selections is Installer's option, but provide single selection for each product category.

2.3 PAINTED IDENTIFICATION MATERIALS

- A. Stencils: Standard fiberboard stencils, prepared for required applications with letter sizes generally complying with recommendations of ANSI A13.1 duct work.
- B. Stencil Paint: Standard exterior type stenciling enamel; black, except as otherwise indicated; either brushing grade or pressurized spray-can form and grade.

- C. Identification Paint: Standard identification enamel of colors indicated or, if not otherwise indicated for piping systems, comply with ANSI A13.1 for colors.

2.4 PLASTIC PIPE MARKERS

- A. Snap-On Type: Provide manufacturer's standard pre-printed, semi-rigid snap-on, color-coded pipe markers, complying with ANSI A13.1.
- B. Pressure-Sensitive Type: Provide manufacturer's standard pre-printed, permanent adhesive, color-coded, pressure-sensitive vinyl pipe markers, complying with ANSI A13.1.
- C. Insulation: Furnish 1" thick molded fiberglass insulation with jacket for each plastic pipe marker to be installed on uninsulated pipes subjected to fluid temperatures of 125°F or greater. Cut length to extend 2" beyond each end of plastic pipe marker.
- D. Small Pipes: For external diameters less than 6" (including insulation if any), provide full-band pipe markers, extending 360 degrees around pipe at each location, fastened by one of the following methods:
 - 1. Snap-on application of pre-tensioned semi-rigid plastic pipe marker.
 - 2. Adhesive lap joint in pipe marker overlap.
 - 3. Laminated or bonded application of pipe marker to pipe (or insulation).
 - 4. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than ¾" wide; full circle at both ends of pipe marker, tape lapped 1 ½".
- E. Large Pipes: For external diameters of 6" and larger (including insulation if any), provide either full-band or strip-type pipe markers, but not narrower than 3 times letter height (and or required length), fastened by one of the following methods:
 - 1. Laminated or bonded application of pipe marker to pipe (or insulation).
 - 2. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 1 ½" wide, full circle at both ends of pipe marker, tape lapped 3".
 - 3. Strapped-to-pipe (or insulation) application of semi-rigid type, with manufacturer's standard stainless steel bands.
- F. Lettering: Comply with piping system nomenclature as specified, scheduled or shown, and abbreviate only as necessary for each application length.
 - 1. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as separate unit of plastic.

2.5 VALVE TAGS

- A. Brass Valve Tags: Provide 1/16" (1.5mm) thick polished brass valve tags with stamp-engraved piping system abbreviation in 3/8" (8mm) high letters and sequenced valve numbers ¾" 918mm) high, and with 1/8" (3mm) hole for fastener.
 - 1. Provide 1 ½" (37mm) diameter tags, except as otherwise indicated.
 - 2. Provide size and shape as specified or scheduled for each piping system.
 - 3. Fill tag engraving with black enamel.
- B. Valve Tag Fasteners: Provide manufacturer's standard solid brass chain (wire link or beaded type), or solid brass S-hooks of the sizes required for proper attachment of tags to valves, and manufactured specifically for that purpose.

- C. Access Panel Markers: Provide manufacturer's standard 1/16" thick engraved plastic laminate access panel markers, with abbreviations and numbers corresponding to concealed valve. Include 1/8" center hole to allow attachment.

2.6 VALVE SCHEDULE FRAMES

- A. General: For each page of valve schedule, provide glazed display frame, with screws for removable mounting on masonry walls. Provide frames of finished hardwood or extruded aluminum, with SSB-grade sheet glass.

2.7 EQUIPMENT LABELS

- A. All equipment labels shall be made of 3 ply 3/16" engraved phenolic with low glare finish. Labels shall be electrically non-conductive and abrasion resistant. Labels shall have mounting holes and adhesive backing.

2.8 UNDERGROUND-TYPE PLASTIC LINE MARKERS

- A. General: Manufacturer's standard permanent, brightcolored, continuous-printed plastic tape, intended for direct-burial service; not less than 150mm wide x 4 mils thick. Provide tape with printing which most accurately indicates type of service of buried pipe
 - 1. Provide multi-ply tape consisting of solid aluminum foil core between 2-layers of plastic tape.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

- A. Coordination: Where identification is to be applied to surfaces which required insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.
- B. Where air or hydronic systems have been balanced, the Contractor shall permanently mark, ON THE DEVICE, the correct balancing settling of each valve, damper, or similar device.

3.2 DUCTWORK IDENTIFICATION

- A. General: Identify air supply, return, exhaust, intake and relief ductwork with stenciled signs and arrow, showing ductwork service and direction of flow, in black or white (whichever provides most contrast with ductwork color).
- B. Location: In each space where ductwork is exposed, or concealed only by removable ceiling system, locate signs near points where ductwork originates or continues into concealed enclosures (shaft, underground or similar concealment), and at 50 foot spacing along exposed runs.
- C. Access Doors: Provide plastic duct access door markers on each access door in ductwork and housings, indicating purpose of access (to what equipment) and other maintenance and operating instructions, and appropriate safety and procedural information. Where acoustic ceilings are below the access, provide duplicate marker on ceiling tile, ceiling grid, or ceiling access panel.

3.3 PIPING SYSTEM IDENTIFICATION

- A. General: install pipe markers on each system listed on the color chart Paragraph 1.04.B.1.a. indicate nominal pipe size (i.e. 4" HS) and include arrows to show normal direction of flow.

- B. Locate pipe markers and color bands as follows wherever piping and ductwork is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations and concealed above ceiling spaces.

1. Near each valve and control device.
2. Near each branch, excluding short take-offs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
3. Near locations where pipes pass through walls or floors/ceilings, or enter non-accessible enclosures.
4. At access doors, manholes and similar access points which permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced intermediately at maximum spacing of 50 feet along each piping run, except reduce spacing to 25 feet in congested areas of piping and equipment.
7. On piping above removable acoustical ceilings.

3.4 VALVE IDENTIFICATION

- A. General: Provide valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibs, and shut-off valves at plumbing fixtures, and HVAC terminal devices 50 mm and smaller and similar rough-in connections of end-use fixtures and units. List each tagged valve in valve schedule for each piping system.

1. Tagging Schedule: Valve tags shall be sequential.

- B. Mount valve schedule frames and schedules in machine rooms where indicated or, if not otherwise indicated, where directed by the Owner.

3.5 EQUIPMENT LABELS

- A. Equipment labels shall include, but not limited to the following applicable information:

Schedule Tag	CFM
Equipment Served	Static Pressure
Equipment Manufacturer	Head
Equipment Model	GPM
Horsepower	Valve CV
Fan RPM	lbs/HR
Voltage	Inlet Pressure
Sheaves	Outlet Pressure
Belt Size, Model, Quantity	Pressure Drop
Zone Served	Type of Service
	Filter Size & Quantity

- B. Provide equipment labels for:

Reheat Coils	Pumps
All Fans & Air Handling Units	Heat Exchanger
Chillers	Variable Frequency Drives
Boilers	Temperature Control Panels
Condensing Units	Expansion Tanks
Room Terminal Units	Storage Tanks
VAV Boxes	
Roof Top Units	Control Valve

3.6 ADJUSTING AND CLEANING

- A. Adjusting: Relocate any mechanical identification device which has become visually blocked by work of this division or other divisions.
- B. Cleaning: Clean face of identification devices, and glass frames of valve charts.

3.7 EXTRA STOCK

- A. Furnish minimum of 5% extra stock of each mechanical identification material required, including additional numbered valve tags (not less than 12) for each piping system, additional piping system identification markers, and additional plastic laminate engraving blanks of assorted sizes.
 - 1. Where stenciled markers are provided (ductwork only), clean and retain stencils after completion of stenciling and include used stencils in extra stock, along with required stock of stenciling paints and applicators.

3.8 UNDERGROUND PIPING IDENTIFICATION

- A. General: During back-filling/top-soiling of each exterior underground piping systems, install continuous underground-type plastic line marker, located directly over buried line at 6" to 8" below finished grade. Where multiple small lines are buried in common trench and do not exceed overall width of 16" (400 mm), install single line marker.

END OF SECTION

SECTION 230593

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Balancing Air Systems:
 - a. Constant-volume air systems.
 - b. Variable-air-volume systems.
2. Balancing Hydronic Piping Systems:
 - c. Constant-flow hydronic systems.
 - d. Variable-flow hydronic systems.

1.2 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.62.1
- E. TAB Specialist: An entity engaged to perform TAB Work.

1.3 SUBMITTALS

A. LEED Submittal:

1. Air-Balance Report for LEED Prerequisite EQ 1: Documentation of work performed for ASHRAE 62.1-2014, Section 7.2.2, "Air Balancing."
- B. Strategies and Procedures Plan: Within 30 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.
- C. Certified TAB reports.

1.4 QUALITY ASSURANCE

- A. TAB Contractor Qualifications: Engage a TAB entity certified by AABC, NEBB or TABB.
 1. TAB Field Supervisor: Employee of the TAB contractor and certified by AABC, NEBB or TABB.
 2. TAB Technician: Employee of the TAB contractor and who is certified by AABC, NEBB or TABB as a TAB technician.
- B. Certify TAB field data reports and perform the following:

1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
 2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.
- C. TAB Report Forms: Use standard TAB contractor's forms approved by Engineer.
- D. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
- B. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they meet the leakage class of connected ducts as specified in Division 23 Section **Metal Ducts** and are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.
- F. Examine equipment performance data including fan and pump curves.
 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine test reports specified in individual system and equipment Sections.
- I. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.

- J. Replace all air filters with new.
- K. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.
- L. Examine strainers. Verify that startup screens are replaced by permanent screens with indicated perforations and flush all strainers.
- M. Examine three-way valves for proper installation for their intended function of diverting or mixing fluid flows.
- N. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- O. Examine system pumps to ensure absence of entrained air in the suction piping.
- P. Examine operating safety interlocks and controls on HVAC equipment.
- Q. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes strategies and step-by-step procedures.
- B. Complete system-readiness checks and prepare reports. Verify the following:
 - 1. Permanent electrical-power wiring is complete.
 - 2. Hydronic systems are filled, clean, and free of air.
 - 3. Automatic temperature-control systems are operational.
 - 4. Equipment and duct access doors are securely closed.
 - 5. Balance, smoke, and fire dampers are open.
 - 6. Isolating and balancing valves are open and control valves are operational.
 - 6. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
 - 7. Windows and doors can be closed so indicated conditions for system operations can be met.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. "HVAC Systems - Testing, Adjusting, and Balancing" and in this Section. Comply with requirements in ASHRAE 62.1-2014, Section 7.2.2, "Air Balancing."
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
 - 2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Division 23 Section "HVAC Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

- D. Take and report testing and balancing measurements in U.S. standard **inch-pound (IP)** units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes. Balancing contractor shall provide additional motor sheaves if necessary to balance belt-driven fan motors.
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. Replace all air filters and identify clean and dirty pressure drops.
- D. Locate all volume dampers in system and correct schematic diagrams of systems' "as-built" duct layouts.
- E. For variable-air-volume systems, develop a plan to simulate diversity.
- F. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- G. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- H. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- I. Verify that motor starters are equipped with properly sized thermal protection.
- J. Check dampers for proper position to achieve desired airflow path.
- K. Check for airflow blockages.
- L. Check condensate drains for proper connections and functioning.
- M. Check for proper sealing of air-handling-unit components.
- N. Verify that air duct system is sealed as specified in Division 23 Section "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
 - 1. Measure total airflow.
 - a. Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.
 - 2. Measure fan static pressures as follows to determine actual static pressure:
 - a. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.
 - b. Measure static pressure directly at the fan outlet or through the flexible connection.

- c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from the flexible connection, and downstream from duct restrictions.
 - d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.
- 3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.
 - e. Report the cleanliness status of filters and the time static pressures are measured.
- 4. Measure static pressures entering and leaving other devices, such as sound traps, heat-recovery equipment, and air washers, under final balanced conditions.
- 5. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
- 6. Obtain approval from Engineer for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in Division 23 Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
- 7. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.
- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.
 - 1. Measure airflow of submain and branch ducts.
 - a. Where sufficient space in submain and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.
 - 2. Measure static pressure at a point downstream from the balancing damper, and adjust volume dampers until the proper static pressure is achieved.
 - 3. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.
- C. Measure air outlets and inlets without making adjustments.
 - 1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.
- D. Adjust air outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using branch volume dampers rather than extractors and the dampers at air terminals.
 - 1. Adjust each outlet in same room or space to within specified tolerances of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.
 - 2. Adjust patterns of adjustable outlets for proper distribution without drafts.

3.6 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

- A. Compensating for Diversity: When the total airflow of all terminal units is more than the indicated airflow of the fan, place a selected number of terminal units at a minimum set-point airflow with the remainder at maximum airflow condition until the total airflow of the terminal units equals the indicated airflow of the fan. Select the reduced-airflow terminal units so they are distributed evenly among the branch ducts.
- B. Pressure-Independent, Variable-Air-Volume Systems: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:
 - 1. Set outdoor-air dampers at minimum, and set return- and exhaust-air dampers at a position that simulates full-cooling load.
 - 2. Select the terminal unit that is most critical to the supply-fan airflow and static pressure. Measure static pressure. Adjust system static pressure so the entering static pressure for the critical terminal unit is not less than the sum of the terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.
 - 3. Measure total system airflow. Adjust to within indicated airflow.
 - 4. Set terminal units at maximum airflow and adjust controller or regulator to deliver the designed maximum airflow. Use terminal-unit manufacturer's written instructions to make this adjustment. When total airflow is correct, balance the air outlets downstream from terminal units the same as described for constant-volume air systems.
 - 5. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow the same as described for constant-volume air systems.
 - a. If air outlets are out of balance at minimum airflow, report the condition but leave outlets balanced for maximum airflow.
 - 6. Remeasure the return airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.
 - a. Adjust the fan and balance the return-air ducts and inlets the same as described for constant-volume air systems.
 - 7. Measure static pressure at the most critical terminal unit and adjust the static-pressure controller at the main supply-air sensing station to ensure that adequate static pressure is maintained at the most critical unit.
 - 8. Record final fan-performance data.
- C. Pressure-Dependent, Variable-Air-Volume Systems without Diversity: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:
 - 1. Balance variable-air-volume systems the same as described for constant-volume air systems.
 - 2. Set terminal units and supply fan at full-airflow condition.
 - 3. Adjust inlet dampers of each terminal unit to indicated airflow and verify operation of the static-pressure controller. When total airflow is correct, balance the air outlets downstream from terminal units the same as described for constant-volume air systems.
 - 4. Readjust fan airflow for final maximum readings.
 - 5. Measure operating static pressure at the sensor that controls the supply fan if one is installed, and verify operation of the static-pressure controller.
 - 6. Set supply fan at minimum airflow if minimum airflow is indicated. Measure static pressure to verify that it is being maintained by the controller.

7. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow the same as described for constant-volume air systems.
 - a. If air outlets are out of balance at minimum airflow, report the condition but leave the outlets balanced for maximum airflow.
 8. Measure the return airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.
 - a. Adjust the fan and balance the return-air ducts and inlets the same as described for constant-volume air systems.
- D. Pressure-Dependent, Variable-Air-Volume Systems with Diversity: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:
1. Set system at maximum indicated airflow by setting the required number of terminal units at minimum airflow. Select the reduced-airflow terminal units so they are distributed evenly among the branch ducts.
 2. Adjust supply fan to maximum indicated airflow with the variable-airflow controller set at maximum airflow.
 3. Set terminal units at full-airflow condition.
 4. Adjust terminal units starting at the supply-fan end of the system and continuing progressively to the end of the system. Adjust inlet dampers of each terminal unit to indicated airflow. When total airflow is correct, balance the air outlets downstream from terminal units the same as described for constant-volume air systems.
 5. Adjust terminal units for minimum airflow.
 6. Measure static pressure at the sensor.
 7. Measure the return airflow to the fan while operating at maximum return airflow and minimum outdoor airflow. Adjust the fan and balance the return-air ducts and inlets the same as described for constant-volume air systems.

3.7 GENERAL PROCEDURES FOR HYDRONIC SYSTEMS

- A. Prepare test reports with pertinent design data, and number in sequence starting at pump to end of system. Check the sum of branch-circuit flows against the approved pump flow rate. Correct variations that exceed plus or minus 5 percent.
- B. Prepare schematic diagrams of systems' "as-built" piping layouts.
- C. Prepare hydronic systems for testing and balancing according to the following, in addition to the general preparation procedures specified above:
 1. Open all manual valves for maximum flow.
 2. Check liquid level in expansion tank.
 3. Check makeup water-station pressure gage for adequate pressure for highest vent.
 4. Check flow-control valves for specified sequence of operation, and set at indicated flow.
 5. Set differential-pressure control valves at the specified differential pressure. Do not set at fully closed position when pump is positive-displacement type unless several terminal valves are kept open.
 6. Set system controls so automatic valves are wide open to heat exchangers.
 7. Check pump-motor load. If motor is overloaded, throttle main flow-balancing device so motor nameplate rating is not exceeded.
 8. Check air vents for a forceful liquid flow exiting from vents when manually operated.

3.8 PROCEDURES FOR CONSTANT-FLOW HYDRONIC SYSTEMS

- A. Measure water flow at pumps. Use the following procedures except for positive-displacement pumps:
 - 1. Verify impeller size by operating the pump with the discharge valve closed. Read pressure differential across the pump. Convert pressure to head and correct for differences in gage heights. Note the point on manufacturer's pump curve at zero flow and verify that the pump has the intended impeller size.
 - a. If impeller sizes must be adjusted to achieve pump performance, obtain approval from Engineer and comply with requirements in Division 23 Section "Hydronic Pumps."
 - 2. Check system resistance. With all valves open, read pressure differential across the pump and mark pump manufacturer's head-capacity curve. Adjust pump discharge valve until indicated water flow is achieved.
 - a. Monitor motor performance during procedures and do not operate motors in overload conditions.
 - 3. Verify pump-motor brake horsepower. Calculate the intended brake horsepower for the system based on pump manufacturer's performance data. Compare calculated brake horsepower with nameplate data on the pump motor. Report conditions where actual amperage exceeds motor nameplate amperage.
 - 4. Report flow rates that are not within plus or minus 10 percent of design.
- B. Measure flow at all automatic flow control valves to verify that valves are functioning as designed.
- C. Measure flow at all pressure-independent characterized control valves, with valves in fully open position, to verify that valves are functioning as designed.
- D. Set calibrated balancing valves, if installed, at calculated presettings.
- E. Measure flow at all stations and adjust, where necessary, to obtain first balance.
 - 1. System components that have Cv rating or an accurately cataloged flow-pressure-drop relationship may be used as a flow-indicating device.
- F. Measure flow at main balancing station and set main balancing device to achieve flow that is 5 percent greater than indicated flow.
- G. Adjust balancing stations to within specified tolerances of indicated flow rate as follows:
 - 1. Determine the balancing station with the highest percentage over indicated flow.
 - 2. Adjust each station in turn, beginning with the station with the highest percentage over indicated flow and proceeding to the station with the lowest percentage over indicated flow.
 - 3. Record settings and mark balancing devices.
- H. Measure pump flow rate and make final measurements of pump amperage, voltage, rpm, pump heads, and systems' pressures and temperatures including outdoor-air temperature.
- I. Measure the differential-pressure-control-valve settings existing at the conclusion of balancing.

- J. Check settings and operation of each safety valve. Record settings.

3.9 PROCEDURES FOR VARIABLE-FLOW HYDRONIC SYSTEMS

- A. Balance systems with automatic two- and three-way control valves by setting systems at maximum flow through heat-exchange terminals and proceed as specified above for hydronic systems.

3.10 PROCEDURES FOR MOTORS

- A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:
 - 1. Manufacturer's name, model number, and serial number.
 - 2. Motor horsepower rating.
 - 3. Motor rpm.
 - 4. Efficiency rating.
 - 5. Nameplate and measured voltage, each phase.
 - 6. Nameplate and measured amperage, each phase.
 - 7. Starter thermal-protection-element rating.
- B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass of the controller to prove proper operation. Record observations including name of controller manufacturer, model number, serial number, and nameplate data.

3.11 PROCEDURES FOR CONDENSING UNITS

- A. Verify proper rotation of fans.
- B. Measure entering- and leaving-air temperatures.
- C. Record compressor data.

3.12 PROCEDURES FOR HEAT-TRANSFER COILS

- A. Measure, adjust, and record the following data for each water coil:
 - 1. Entering- and leaving-water temperature.
 - 2. Water flow rate.
 - 3. Water pressure drop.
 - 4. Dry-bulb temperature of entering and leaving air.
 - 5. Wet-bulb temperature of entering and leaving air for cooling coils.
 - 6. Airflow.
 - 7. Air pressure drop.
- B. Measure, adjust, and record the following data for each electric heating coil:
 - 1. Nameplate data.
 - 2. Airflow.
 - 3. Entering- and leaving-air temperature at full load.
 - 4. Voltage and amperage input of each phase at full load and at each incremental stage.
 - 5. Calculated kilowatt at full load.
 - 6. Fuse or circuit-breaker rating for overload protection.
- C. Measure, adjust, and record the following data for each steam coil:

1. Dry-bulb temperature of entering and leaving air.
2. Airflow.
3. Air pressure drop.
4. Inlet steam pressure.

D. Measure, adjust, and record the following data for each refrigerant coil:

1. Dry-bulb temperature of entering and leaving air.
2. Wet-bulb temperature of entering and leaving air.
3. Airflow.
4. Air pressure drop.
5. Refrigerant suction pressure and temperature.

3.13 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.

1. Measure and record the operating speed, airflow, and static pressure of each fan.
2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
3. Check the refrigerant charge.
4. Check the condition of filters.
5. Check the condition of coils.
6. Check the operation of the drain pan and condensate-drain trap.
7. Check bearings and other lubricated parts for proper lubrication.
8. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.

B. Before performing testing and balancing of existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished. Verify the following:

1. New filters are installed.
2. Coils are clean and fins combed.
3. Drain pans are clean.
4. Fans are clean.
5. Bearings and other parts are properly lubricated.
6. Deficiencies noted in the preconstruction report are corrected.

C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.

1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
3. If calculations increase or decrease the air flow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
4. Balance each air outlet.

3.14 TOLERANCES

A. Set HVAC system's air flow rates and water flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: +/- 10%.
2. Air Outlets and Inlets: +/- 10%.
3. Heating-Water Flow Rate: +/- 10%.
4. Cooling-Water Flow Rate: +/- 10%.

3.15 REPORTING

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.
- B. Status Reports: Prepare **monthly** progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

3.16 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
- B. Final Report Contents: In addition to certified field-report data, include the following:
1. Pump curves.
 2. Fan curves.
 3. Manufacturers' test data.
 4. Field test reports prepared by system and equipment installers.
 5. Other information relative to equipment performance; do not include Shop Drawings and product data.
- C. General Report Data: In addition to form titles and entries, include the following data:
1. Title page.
 2. Name and address of the TAB contractor.
 3. Project name.
 4. Project location.
 5. Architect's name and address.
 6. Engineer's name and address.
 7. Contractor's name and address.
 8. Report date.
 9. Signature of TAB supervisor who certifies the report.
 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 11. Summary of contents including the following:

- a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
- 12. Nomenclature sheets for each item of equipment.
- 13. Data for terminal units, including manufacturer's name, type, size, and fittings.
- 14. Notes to explain why certain final data in the body of reports vary from indicated values.
- 15. Test conditions for fans and pump performance forms including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Cooling coil, wet- and dry-bulb conditions.
 - d. Face and bypass damper settings at coils.
 - e. Fan drive settings including settings and percentage of maximum pitch diameter.
 - f. Inlet vane settings for variable-air-volume systems.
 - g. Settings for supply-air, static-pressure controller.
 - h. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
 - 1. Quantities of outdoor, supply, return, and exhaust airflows.
 - 2. Water and steam flow rates.
 - 3. Duct, outlet, and inlet sizes.
 - 4. Pipe and valve sizes and locations.
 - 5. Terminal units.
 - 6. Balancing stations.
 - 7. Position of balancing devices.

3.17 ADDITIONAL TESTS

- A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

3.18 SPECIAL REQUIREMENTS

- A. If readings shown on the balancing report or from actual site visit are not acceptable to the Engineer, the Balancing Contractor shall spot test (witnessed by the Engineer) as many pieces of equipment or air outlets at no additional cost.

END OF SECTION

SECTION 232300
REFRIGERANT PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes refrigerant piping used for air-conditioning applications.

1.2 PERFORMANCE REQUIREMENTS

- A. Line Test Pressure for Refrigerant R-410A:
1. Suction Lines for Air-Conditioning Applications: 185 psig.
 2. Suction Lines for Heat-Pump Applications: 325 psig.
 3. Hot-Gas and Liquid Lines: 325 psig.

1.3 SUBMITTALS

- A. Product Data: For each type of valve and refrigerant piping specialty indicated. Include pressure drop based on manufacturer's test data.
- B. Shop Drawings: Show layout of refrigerant piping and specialties, including pipe, tube, and fitting sizes, flow capacities, valve arrangements and locations, slopes of horizontal runs, oil traps, double risers, wall and floor penetrations, and equipment connection details. Show interface and spatial relationships between piping and equipment.
1. Refrigerant piping indicated on Drawings is schematic only. Size piping and design actual piping layout, including oil traps, double risers, specialties, and pipe and tube sizes to accommodate, as a minimum, equipment provided, elevation difference between compressor and evaporator, and length of piping to ensure proper operation and compliance with warranties of connected equipment.
- C. Field quality-control test reports.
- D. Operation and maintenance data.

1.4 QUALITY ASSURANCE

- A. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."
- B. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

1.5 PRODUCT STORAGE AND HANDLING

- A. Store piping in a clean and protected area with end caps in place to ensure that piping interior and exterior are clean when installed.

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

- A. Copper Tube: ASTM B 88, Type K or L.

- B. Wrought-Copper Fittings: ASME B16.22.
- C. Wrought-Copper Unions: ASME B16.22.
- D. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.
- E. Brazing Filler Metals: AWS A5.8.
- F. Flexible Connectors:
 - 1. Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket.
 - 2. End Connections: Socket ends.
 - 3. Offset Performance: Capable of minimum 3/4-inch misalignment in minimum 7-inch- long assembly.
 - 4. Pressure Rating: Factory test at minimum 500 psig.
 - 5. Maximum Operating Temperature: 250 deg F.

2.2 VALVES AND SPECIALTIES

- A. Diaphragm Packless Valves:
 - 1. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
 - 2. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
 - 3. Operator: Rising stem and hand wheel.
 - 4. Seat: Nylon.
 - 5. End Connections: Socket, union, or flanged.
 - 6. Working Pressure Rating: 500 psig.
 - 7. Maximum Operating Temperature: 275 deg F.
- B. Packed-Angle Valves:
 - 1. Body and Bonnet: Forged brass or cast bronze.
 - 2. Packing: Molded stem, back seating, and replaceable under pressure.
 - 3. Operator: Rising stem.
 - 4. Seat: Nonrotating, self-aligning polytetrafluoroethylene.
 - 5. Seal Cap: Forged-brass or valox hex cap.
 - 6. End Connections: Socket, union, threaded, or flanged.
 - 7. Working Pressure Rating: 500 psig.
 - 8. Maximum Operating Temperature: 275 deg F.
- C. Check Valves:
 - 1. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
 - 2. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
 - 3. Piston: Removable polytetrafluoroethylene seat.
 - 4. Closing Spring: Stainless steel.
 - 5. Manual Opening Stem: Seal cap, plated-steel stem, and graphite seal.
 - 6. End Connections: Socket, union, threaded, or flanged.
 - 7. Maximum Opening Pressure: 0.50 psig.
 - 8. Working Pressure Rating: 500 psig.
 - 9. Maximum Operating Temperature: 275 deg F.

D. Service Valves:

1. Body: Forged brass with brass cap including key end to remove core.
2. Core: Removable ball-type check valve with stainless-steel spring.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Copper spring.
5. Working Pressure Rating: 500 psig.

E. Solenoid Valves: Comply with ARI 760 and UL 429; listed and labeled by an NRTL.

1. Body and Bonnet: Plated steel.
2. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Threaded.
5. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch conduit adapter.
6. Working Pressure Rating: 400 psig.
7. Maximum Operating Temperature: 240 deg F.
8. Manual operator.

F. Safety Relief Valves: Comply with ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.

1. Body and Bonnet: Ductile iron and steel, with neoprene O-ring seal.
2. Piston, Closing Spring, and Seat Insert: Stainless steel.
3. Seat Disc: Polytetrafluoroethylene.
4. End Connections: Threaded.
5. Working Pressure Rating: 400 psig.
6. Maximum Operating Temperature: 240 deg F.

G. Thermostatic Expansion Valves: Comply with ARI 750.

1. Body, Bonnet, and Seal Cap: Forged brass or steel.
2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
3. Packing and Gaskets: Non-asbestos.
4. Capillary and Bulb: Copper tubing filled with refrigerant charge.
5. Suction Temperature: 40 deg F.
6. Superheat: Adjustable.
7. Reverse-flow option (for heat-pump applications).
8. End Connections: Socket, flare, or threaded union.
9. Working Pressure Rating: 700 psig.

H. Straight-Type Strainers:

1. Body: Welded steel with corrosion-resistant coating.
2. Screen: 100-mesh stainless steel.
3. End Connections: Socket or flare.
4. Working Pressure Rating: 500 psig.
5. Maximum Operating Temperature: 275 deg F.

I. Angle-Type Strainers:

1. Body: Forged brass or cast bronze.
2. Drain Plug: Brass hex plug.
3. Screen: 100-mesh monel.

4. End Connections: Socket or flare.
5. Working Pressure Rating: 500 psig.
6. Maximum Operating Temperature: 275 deg F.

J. Moisture/Liquid Indicators:

1. Body: Forged brass.
2. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
3. Indicator: Color coded to show moisture content in ppm.
4. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.
5. End Connections: Socket or flare.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 240 deg F.

K. Replaceable-Core Filter Dryers: Comply with ARI 730.

1. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: Activated alumina or charcoal.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: 2 psig.
8. Working Pressure Rating: 500 psig.
9. Maximum Operating Temperature: 240 deg F.

L. Permanent Filter Dryers: Comply with ARI 730.

1. Body and Cover: Painted-steel shell.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: Activated alumina or charcoal.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: 2 psig.
8. Working Pressure Rating: 500 psig.
9. Maximum Operating Temperature: 240 deg F.

M. Liquid Accumulators: Comply with ARI 495.

1. Body: Welded steel with corrosion-resistant coating.
2. End Connections: Socket or threaded.
3. Working Pressure Rating: 500 psig.
4. Maximum Operating Temperature: 275 deg F.

2.3 REFRIGERANTS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Atofina Chemicals, Inc.
 2. DuPont Company; Fluorochemicals Div.
 3. Honeywell, Inc.; Genetron Refrigerants.
 4. INEOS Fluor Americas LLC.
- C. ASHRAE 34, R-410A: Puron.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

- A. Suction Lines NPS 1-1/2 and Smaller for Conventional Air-Conditioning Applications: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed or soldered joints.
- B. Suction Lines NPS 2 to NPS 4 for Conventional Air-Conditioning Applications: Copper, Type K, drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
- C. Hot-Gas and Liquid Lines and Suction Lines for Heat-Pump Applications: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed or soldered joints.
- D. Hot-Gas and Liquid Lines, and Suction Lines for Heat-Pump Applications: Copper, Type L, drawn-temper tubing and wrought-copper fittings with soldered joints.
- E. Hot-Gas and Liquid Lines and Suction Lines for Heat-Pump Applications:
1. NPS 1-1/2 and Smaller: Copper, Type L, drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
 2. NPS 2 to NPS 3: Copper, Type K, annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
 3. NPS 4: Copper, Type K, drawn-temper tubing and wrought-copper fittings with soldered joints.
- F. Safety-Relief-Valve Discharge Piping: Copper, Type K, drawn-temper tubing and wrought-copper fittings with soldered joints.
- G. Safety-Relief-Valve Discharge Piping:
1. NPS 1-1/2 and Smaller: Copper, Type L, drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
 2. NPS 2 to NPS 3: Copper, Type K, annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.
 3. NPS 4: Copper, Type K, drawn-temper tubing and wrought-copper fittings with soldered joints.

3.2 VALVE AND SPECIALTY APPLICATIONS

- A. Install diaphragm packless valves in suction and discharge lines of compressor.
- B. Install service valves for gage taps at strainers if they are not an integral part of strainers.
- C. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection.

- D. Except as otherwise indicated, install diaphragm packless valves on inlet and outlet side of filter dryers.
- E. Install a full-sized, three-valve bypass around filter dryers.
- F. Install solenoid valves upstream from each expansion valve. Install solenoid valves in horizontal lines with coil at top.
- G. Install thermostatic expansion valves as close as possible to distributors on evaporators.
 - 1. Install valve so diaphragm case is warmer than bulb.
 - 2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.
 - 3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.
- H. Install safety relief valves where required by ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to ASHRAE 15.
- I. Install moisture/liquid indicators in liquid line at the inlet of the thermostatic expansion valve or at the inlet of the evaporator coil capillary tube.
- J. Install strainers upstream from and adjacent to the following unless they are furnished as an integral assembly for device being protected:
 - 1. Solenoid valves.
 - 2. Thermostatic expansion valves.
 - 3. Compressor.
- K. Install filter dryers in liquid line between compressor and thermostatic expansion valve and in the suction line at the compressor.
- L. Install flexible connectors at compressors.

3.3 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- B. Install refrigerant piping according to ASHRAE 15.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping adjacent to machines to allow service and maintenance.
- G. Install piping free of sags and bends.

- H. Install fittings for changes in direction and branch connections.
- I. Select system components with pressure rating equal to or greater than system operating pressure.
- J. Refer to Division 23 Sections "Instrumentation and Control for HVAC" and "Sequence of Operations for HVAC Controls" for solenoid valve controllers, control wiring, and sequence of operation.
- K. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.
- L. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels as specified in Division 08 Section "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished surfaces.
- M. Install refrigerant piping in protective conduit where installed belowground.
- N. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.
- O. Slope refrigerant piping as follows:
 - 1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
 - 2. Install horizontal suction lines with a uniform slope downward to compressor.
 - 3. Install traps and double risers to entrain oil in vertical runs.
 - 4. Liquid lines may be installed level.
- P. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.
- Q. Install pipe sleeves at penetrations in exterior walls and floor assemblies.
- R. Seal penetrations through fire and smoke barriers according to Division 07 Section "Penetration Firestopping."
- S. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.
- T. Install sleeves through floors, walls, or ceilings, sized to permit installation of full-thickness insulation.
- U. Seal pipe penetrations through exterior walls according to Division 07 Section "Joint Sealants" for materials and methods.
- V. Identify refrigerant piping and valves according to Division 23 Section "Identification for HVAC Piping and Equipment."

3.4 PIPE JOINT CONSTRUCTION

- A. Soldered Joints: Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook."

- B. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."

1. Use Type BcuP, copper-phosphorus alloy for joining copper socket fittings with copper pipe.
2. Use Type BAg, cadmium-free silver alloy for joining copper with bronze or steel.

3.5 HANGERS AND SUPPORTS

- A. Hanger, support, and anchor products are specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment."

- B. Install the following pipe attachments:

1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet long.
2. Roller hangers and spring hangers for individual horizontal runs 20 feet or longer.
3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
4. Spring hangers to support vertical runs.
5. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.

- C. Install hangers for copper tubing with the following maximum spacing and minimum rod sizes:

1. NPS 1/2: Maximum span, 60 inches; minimum rod size, 1/4 inch.
2. NPS 5/8: Maximum span, 60 inches; minimum rod size, 1/4 inch.
3. NPS 1: Maximum span, 72 inches; minimum rod size, 1/4 inch.
4. NPS 1-1/4: Maximum span, 96 inches; minimum rod size, 3/8 inch.
5. NPS 1-1/2: Maximum span, 96 inches; minimum rod size, 3/8 inch.
6. NPS 2: Maximum span, 96 inches; minimum rod size, 3/8 inch.
7. NPS 2-1/2: Maximum span, 108 inches; minimum rod size, 3/8 inch.
8. NPS 3: Maximum span, 10 feet; minimum rod size, 3/8 inch.
9. NPS 4: Maximum span, 12 feet; minimum rod size, 1/2 inch.

- D. Support multifloor vertical runs at least at each floor.

3.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.

- B. Tests and Inspections:

1. Comply with ASME B31.5, Chapter VI.
2. Test refrigerant piping and specialties. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in Part 1 "Performance Requirements" Article.
 - a. Fill system with nitrogen to the required test pressure.
 - b. System shall maintain test pressure at the manifold gage throughout duration of test.
 - c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.

- d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.

3.7 SYSTEM CHARGING

- A. Charge system using the following procedures:
 - 1. Install core in filter dryers after leak test but before evacuation.
 - 2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers. If vacuum holds for 12 hours, system is ready for charging.
 - 3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
 - 4. Charge system with a new filter-dryer core in charging line.

3.8 ADJUSTING

- A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.
- B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.
- C. Adjust set-point temperature of air-conditioning or chilled-water controllers to the system design temperature.
- D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:
 - 1. Open shutoff valves in condenser water circuit.
 - 2. Verify that compressor oil level is correct.
 - 3. Open compressor suction and discharge valves.
 - 4. Open refrigerant valves except bypass valves that are used for other purposes.
 - 5. Check open compressor-motor alignment and verify lubrication for motors and bearings.
- E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION

SECTION 23 33 00

AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Backdraft and pressure relief dampers.
2. Manual volume dampers.
3. Control dampers.
4. Fire dampers.
5. Smoke dampers.
6. Flange connectors.
7. Turning vanes.
8. Duct-mounted access doors.
9. Flexible connectors.
10. Flexible ducts.
11. Duct accessory hardware.

1.2 SUBMITTALS

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

B. LEED Submittal:

1. Product Data for Prerequisite EQ 1: Documentation indicating that units comply with ASHRAE 62.1-2013, Section 5 - "Systems and Equipment."

C. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.

1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:
 - a. Special fittings.
 - b. Manual volume damper installations.
 - c. Control damper installations.
 - d. Fire-damper and smoke-damper installations, including sleeves; and duct-mounted access doors.
 - e. Wiring Diagrams: For power, signal, and control wiring.

D. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

B. Comply with AMCA 500-D testing for damper rating.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G60.
 - 2. Exposed-Surface Finish: Mill phosphatized.
- C. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304, and having a No. 2 finish for concealed ducts and top grade finish for exposed ducts.
- D. Aluminum Sheets: Comply with ASTM B 209, Alloy 3003, Temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.
- E. Extruded Aluminum: Comply with ASTM B 221, Alloy 6063, Temper T6.
- F. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- G. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.2 BACKDRAFT AND PRESSURE RELIEF DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Air Balance Inc.; a division of Mestek, Inc.
 - 2. Greenheck Fan Corporation.
 - 3. Nailor Industries Inc.
 - 4. Ruskin Company.
- B. Description: Gravity balanced.
- C. Maximum Air Velocity: 2000 fpm.
- D. Maximum System Pressure: 4-inch wg.
- E. Frame: 0.063-inch thick extruded aluminum, with welded corners and mounting flange.
- F. Blades: Multiple opposed blades, with sealed edges.
- G. Blade Action: Opposed Blade.
- H. Blade Seals: Low leak, Neoprene, mechanically locked.
- I. Blade Axles:
 - 1. Material: Galvanized steel.

2. Diameter: 0.20 inch.
- J. Tie Bars and Brackets: Galvanized steel.
- K. Return Spring: Adjustable tension.
- L. Accessories:
1. Adjustment device to permit setting for varying differential static pressure.
 2. Counterweights and spring-assist kits for vertical airflow installations.
 3. Electric actuators.
 4. Chain pulls.
 5. Screen Mounting: Front mounted in sleeve.
 - a. Sleeve Thickness: 20-gage minimum.
 - b. Sleeve Length: 6 inches minimum.
 6. Screen Mounting: Rear mounted.
 7. Screen Material: Aluminum.
 8. Screen Type: Bird.
 9. 90-degree stops.
- 2.3 MANUAL VOLUME DAMPERS
- A. Standard, Steel, Manual Volume Dampers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Air Balance Inc.; a division of Mestek, Inc.
 - b. McGill AirFlow LLC.
 - c. Nailor Industries Inc.
 - d. Ruskin Company.
 2. Standard leakage rating, with linkage outside airstream.
 3. Suitable for horizontal or vertical applications.
 4. Frames:
 - a. Hat-shaped, galvanized-steel channels, 0.064-inch minimum thickness.
 - b. Mitered and welded corners.
 - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
 5. Blades:
 - a. Multiple or single blade.
 - b. Parallel- or opposed-blade design.
 - c. Stiffen damper blades for stability.
 - d. Galvanized-steel, 0.064 inch thick.
 6. Blade Axles: Galvanized steel.
 7. Tie Bars and Brackets: Galvanized steel.
- B. Standard, Aluminum, Manual Volume Dampers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Air Balance Inc.; a division of Mestek, Inc.
 - b. McGill AirFlow LLC.
 - c. Nailor Industries Inc.
 - d. Ruskin Company.
- 2. Standard leakage rating, with linkage outside airstream.
- 3. Suitable for horizontal or vertical applications.
- 4. Frames: Hat-shaped, 0.10-inch- thick, aluminum sheet channels; frames with flanges for attaching to walls and flangeless frames for installing in ducts.
- 5. Blades:
 - a. Multiple or single blade.
 - b. Parallel- or opposed-blade design.
 - c. Stiffen damper blades for stability.
 - d. Roll-Formed Aluminum Blades: 0.10-inch- thick aluminum sheet.
 - e. Extruded-Aluminum Blades: 0.050-inch- thick extruded aluminum.
- 6. Blade Axles: Galvanized steel.
- 7. Tie Bars and Brackets: Aluminum.
- C. Jackshaft:
 - 1. Size: 1-inch diameter.
 - 2. Material: Galvanized-steel pipe rotating within pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
 - 3. Length and Number of Mountings: As required to connect linkage of each damper in multiple-damper assembly.
- D. Damper Hardware:
 - 1. Zinc-plated, die-cast core with dial and handle made of 3/32-inch- thick zinc-plated steel, and a 3/4-inch hexagon locking nut.
 - 2. Include center hole to suit damper operating-rod size.
 - 3. Include elevated platform for insulated duct mounting.

2.4 CONTROL DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Greenheck Fan Corporation.
 - 2. Nailor Industries Inc.
 - 3. Ruskin Company.
 - 4. Young Regulator Company.
- B. Frames:
 - 1. Angle shaped.
 - 2. Galvanized-steel channels, 0.064 inch thick.
 - 3. Mitered and welded corners.
- C. Blades:
 - 1. Multiple blade with maximum blade width of 8 inches.

2. Opposed-blade design.
3. Galvanized steel.
4. 0.064 inch thick.
5. Blade Edging: Closed-cell neoprene edging.
6. Blade Edging: Inflatable seal blade edging, or replaceable rubber seals.

D. Blade Axles: 1/2-inch- diameter; galvanized steel; blade-linkage hardware of zinc-plated steel and brass; ends sealed against blade bearings.

1. Operating Temperature Range: From minus 40 to plus 200 deg F.

2.5 FIRE DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Air Balance Inc.; a division of Mestek, Inc.
2. Greenheck Fan Corporation.
3. Nailor Industries Inc.
4. Ruskin Company.

B. Type: Dynamic Out of Airstream; rated and labeled according to UL 555 by an NRTL.

C. Closing rating in ducts up to 4-inch wg static pressure class and minimum 4000-fpm velocity.

D. Fire Rating: 1-1/2 and 3 hours (as required for wall rating).

E. Frame: Curtain type with blades outside airstream; fabricated with roll-formed, 0.034-inch- thick galvanized steel; with mitered and interlocking corners.

F. Mounting Sleeve: Factory- or field-installed, galvanized sheet steel.

1. Minimum Thickness: 0.052 or 0.138 inch thick, as indicated, and of length to suit application.
2. Exception: Omit sleeve where damper-frame width permits direct attachment of perimeter mounting angles on each side of wall or floor; thickness of damper frame must comply with sleeve requirements.

G. Mounting Orientation: Vertical or horizontal as indicated.

H. Blades: Roll-formed, interlocking, 0.034-inch- thick, galvanized sheet steel. In place of interlocking blades, use full-length, 0.034-inch- thick, galvanized-steel blade connectors.

I. Horizontal Dampers: Include blade lock and stainless-steel closure spring.

J. Heat-Responsive Device: Replaceable, 165 deg F rated, fusible links.

K. Heat-Responsive Device: Electric resettable link and switch package, factory installed, 165 deg F rated.

2.6 SMOKE DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Air Balance Inc.; a division of Mestek, Inc.
 2. Greenheck Fan Corporation.
 3. Nailor Industries Inc.
 4. Ruskin Company.
- B. General Requirements: Label according to UL 555S by an NRTL.
- C. Smoke Detector: Integral, factory wired for single-point connection.
- D. Frame: Curtain type with blades outside airstream; fabricated with roll-formed, 0.034-inch- thick galvanized steel; with mitered and interlocking corners.
- E. Blades: Roll-formed, horizontal, interlocking, 0.034-inch- thick, galvanized sheet steel. In place of interlocking blades, use full-length, 0.034-inch- thick, galvanized-steel blade connectors.
- F. Leakage: Class I / Class II (as required for assembly).
- G. Rated pressure and velocity to exceed design airflow conditions.
- H. Mounting Sleeve: Factory-installed, 0.052-inch- thick, galvanized sheet steel; length to suit wall or floor application with factory-furnished silicone caulking.
- I. Damper Motors: two-position action.
- J. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."
1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
 2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Division 26 Sections.
 3. Permanent-Split-Capacitor or Shaded-Pole Motors: With oil-immersed and sealed gear trains.
 4. Spring-Return Motors: Equip with an integral spiral-spring mechanism where indicated. Enclose entire spring mechanism in a removable housing designed for service or adjustments. Size for running torque rating of 150 in. x lbf and breakaway torque rating of 150 in. x lbf.
 5. Outdoor Motors and Motors in Outdoor-Air Intakes: Equip with O-ring gaskets designed to make motors weatherproof. Equip motors with internal heaters to permit normal operation at minus 40 deg F.
 6. Nonspring-Return Motors: For dampers larger than 25 sq. ft., size motor for running torque rating of 150 in. x lbf and breakaway torque rating of 300 in. x lbf.
 7. Electrical Connection: 115 V, single phase, 60 Hz.
- K. Accessories:
1. Auxiliary switches for signaling, fan control, or position indication.
 2. Momentary test switch, Test and reset switches, damper remote mounted.

2.7 COMBINATION FIRE AND SMOKE DAMPERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Air Balance Inc.; a division of Mestek, Inc.
 2. Greenheck Fan Corporation.
 3. Nailor Industries Inc.
 4. Ruskin Company.
- B. Type: Dynamic; rated and labeled according to UL 555 and UL 555S by an NRTL.
- C. Closing rating in ducts up to 4-inch wg static pressure class and minimum 4000-fpm velocity.
- D. Fire Rating: 1-1/2 and 3 hours (as required for wall rating).
- E. Frame: Curtain type with blades outside airstream; fabricated with roll-formed, 0.034-inch- thick galvanized steel; with mitered and interlocking corners.
- F. Heat-Responsive Device: Replaceable, 165 deg F rated, fusible links.
- G. Heat-Responsive Device: Electric resettable link and switch package, factory installed, 165 deg F rated.
- H. Smoke Detector: Integral, factory wired for single-point connection.
- I. Blades: Roll-formed, horizontal, interlocking, 0.034 inch- thick, galvanized sheet steel. In place of interlocking blades, use full-length, 0.034-inch- thick, galvanized-steel blade connectors.
- J. Leakage: Class I / Class II (as required for assembly).
- K. Rated pressure and velocity to exceed design airflow conditions.
- L. Mounting Sleeve: Factory-installed, 0.052-inch- thick, galvanized sheet steel; length to suit wall or floor application with factory-furnished silicone calking.
- M. Damper Motors: two-position action.
- N. Rated pressure and velocity to exceed design airflow conditions.
- O. Master control panel for use in dynamic smoke-management systems.
- P. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
 2. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Section 230923 "Direct Digital Control (DDC) System for HVAC."
 3. Permanent-Split-Capacitor or Shaded-Pole Motors: With oil-immersed and sealed gear trains.
 4. Spring-Return Motors: Equip with an integral spiral-spring mechanism where indicated. Enclose entire spring mechanism in a removable housing designed for service or adjustments. Size for running torque rating of 150 in. x lbf and breakaway torque rating of 150 in. x lbf.
 5. Outdoor Motors and Motors in Outdoor-Air Intakes: Equip with O-ring gaskets designed to make motors weatherproof. Equip motors with internal heaters to permit normal operation at minus 40 deg F.

6. Nonspring-Return Motors: For dampers larger than 25 sq. ft., size motor for running torque rating of 150 in. x lbf and breakaway torque rating of 300 in. x lbf.
7. Electrical Connection: 115 V, single phase, 60 Hz.

Q. Accessories:

1. Auxiliary switches for signaling, fan control, or position indication.
2. Momentary test switch, Test and reset switches, damper remote mounted.

2.8 FLANGE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ductmate Industries, Inc.
 2. Nexus PDQ; Division of Shilco Holdings Inc.
 3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Description: Roll-formed, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.
- C. Material: Galvanized steel.
- D. Gage and Shape: Match connecting ductwork.

2.9 TURNING VANES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ductmate Industries, Inc.
 2. Duro Dyne Inc.
 3. METALAIRE, Inc.
 4. SEMCO Incorporated.
 5. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.
- C. Manufactured Turning Vanes for Nonmetal Ducts: Fabricate curved blades of resin-bonded fiberglass with acrylic polymer coating; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- D. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 2-3, "Vaness and Vane Runners," and 2-4, "Vane Support in Elbows."
- E. Vane Construction: Single and Double wall.
- F. Vane Construction: Single wall for ducts up to 48 inches wide and double wall for larger dimensions.

2.10 DUCT-MOUNTED ACCESS DOORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ductmate Industries, Inc.
 2. Greenheck Fan Corporation.
 3. McGill AirFlow LLC.
 4. Nailor Industries Inc.
- B. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 2-10, "Duct Access Doors and Panels," and 2-11, "Access Panels - Round Duct."
1. Door:
 - a. Double wall, rectangular.
 - b. Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
 - c. Vision panel.
 - d. Hinges and Latches: 1-by-1-inch butt or piano hinge and cam latches.
 - e. Fabricate doors airtight and suitable for duct pressure class.
 2. Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.
 3. Number of Hinges and Locks:
 - a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
 - b. Access Doors up to 18 Inches Square: Two hinges and two sash locks.
 - c. Access Doors up to 24 by 48 Inches: Three hinges and two compression latches with outside and inside handles.
 - d. Access Doors Larger Than 24 by 48 Inches: Four hinges and two compression latches with outside and inside handles.
- C. Pressure Relief Access Door:
1. Door and Frame Material: Galvanized sheet steel.
 2. Door: Double wall with insulation fill with metal thickness applicable for duct pressure class.
 3. Operation: Open outward for positive-pressure ducts and inward for negative-pressure ducts.
 4. Factory set at 10-inch wg.
 5. Doors close when pressures are within set-point range.
 6. Hinge: Continuous piano.
 7. Latches: Cam.
 8. Seal: Neoprene or foam rubber.
 9. Insulation Fill: 1-inch- thick, fibrous-glass or polystyrene-foam board.

2.11 DUCT ACCESS PANEL ASSEMBLIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ductmate Industries, Inc.
 2. Flame Gard, Inc.
 3. 3M.

- B. Labeled according to UL 1978 by an NRTL.
- C. Panel and Frame: Minimum thickness 0.0528-inch carbon steel.
- D. Fasteners: Stainless steel. Panel fasteners shall not penetrate duct wall.
- E. Gasket: Comply with NFPA 96; grease-tight, high-temperature ceramic fiber, rated for minimum 2000 deg F.
- F. Minimum Pressure Rating: 10-inch wg, positive or negative.

2.12 FLEXIBLE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ductmate Industries, Inc.
 - 2. Duro Dyne Inc.
 - 3. Ventfabrics, Inc.
 - 4. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Materials: Flame-retardant or noncombustible fabrics.
- C. Coatings and Adhesives: Comply with UL 181, Class 1.
- D. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to 2 strips of 2-3/4-inch- wide, 0.028-inch- thick, galvanized sheet steel or 0.032-inch-thick aluminum sheets. Provide metal compatible with connected ducts.
- E. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.
 - 1. Minimum Weight: 26 oz./sq. yd..
 - 2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
 - 3. Service Temperature: Minus 40 to plus 200 deg F.
- F. Outdoor System, Flexible Connector Fabric: Glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone.
 - 1. Minimum Weight: 24 oz./sq. yd..
 - 2. Minimum Tensile Strength: 500 lbf/inch in the warp and 440 lbf/inch in the filling.
 - 3. Service Temperature: Minus 50 to plus 250 deg F.
- G. Thrust Limits: Combination coil spring and elastomeric insert with spring and insert in compression, and with a load stop. Include rod and angle-iron brackets for attaching to fan discharge and duct.
 - 1. Frame: Steel, fabricated for connection to threaded rods and to allow for a maximum of 30 degrees of angular rod misalignment without binding or reducing isolation efficiency.
 - 2. Outdoor Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
 - 3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
 - 4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
 - 5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
 - 6. Elastomeric Element: Molded, oil-resistant rubber or neoprene.

7. Coil Spring: Factory set and field adjustable for a maximum of 1/4-inch movement at start and stop.

2.13 FLEXIBLE DUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Flexmaster U.S.A., Inc.
 2. McGill AirFlow LLC.
 3. Ward Industries, Inc.; a division of Hart & Cooley, Inc.
- B. Noninsulated, Flexible Duct: UL 181, Class 1, 2-ply vinyl film supported by helically wound, spring-steel wire.
 1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 2. Maximum Air Velocity: 4000 fpm.
 3. Temperature Range: Minus 10 to plus 160 deg F.
- C. Noninsulated, Flexible Duct: UL 181, Class 1, black polymer film supported by helically wound, spring-steel wire.
 1. Pressure Rating: 4-inch wg positive and 0.5-inch wg negative.
 2. Maximum Air Velocity: 4000 fpm.
 3. Temperature Range: Minus 20 to plus 175 deg F.
- D. Noninsulated, Flexible Duct: UL 181, Class 1, multiple layers of aluminum laminate supported by helically wound, spring-steel wire.
 1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 2. Maximum Air Velocity: 4000 fpm.
 3. Temperature Range: Minus 20 to plus 210 deg F.
- E. Noninsulated, Flexible Duct: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound, spring-steel wire.
 1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 2. Maximum Air Velocity: 4000 fpm.
 3. Temperature Range: Minus 20 to plus 210 deg F.
- F. Noninsulated, Flexible Duct: UL 181, Class 0, interlocking spiral of aluminum foil.
 1. Pressure Rating: 8-inch wg positive or negative.
 2. Maximum Air Velocity: 5000 fpm.
 3. Temperature Range: Minus 100 to plus 435 deg F.
- G. Insulated, Flexible Duct: UL 181, Class 1, 2-ply vinyl film supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene vapor-barrier film.
 1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 2. Maximum Air Velocity: 4000 fpm.
 3. Temperature Range: Minus 10 to plus 160 deg F.
 4. Insulation R-value: Comply with ASHRAE/IESNA 90.1-2013.

- H. Insulated, Flexible Duct: UL 181, Class 1, black polymer film supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene vapor-barrier film.
1. Pressure Rating: 4-inch wg positive and 0.5-inch wg negative.
 2. Maximum Air Velocity: 4000 fpm.
 3. Temperature Range: Minus 20 to plus 175 deg F.
 4. Insulation R-Value: Comply with ASHRAE/IESNA 90.1-2013.
- I. Insulated, Flexible Duct: UL 181, Class 1, multiple layers of aluminum laminate supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene vapor-barrier film.
1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 2. Maximum Air Velocity: 4000 fpm.
 3. Temperature Range: Minus 20 to plus 210 deg F.
 4. Insulation R-value: Comply with ASHRAE/IESNA 90.1-2013.
- J. Insulated, Flexible Duct: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene vapor-barrier film.
1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
 2. Maximum Air Velocity: 4000 fpm.
 3. Temperature Range: Minus 20 to plus 210 deg F.
 4. Insulation R-value: Comply with ASHRAE/IESNA 90.1-2013.
- K. Insulated, Flexible Duct: UL 181, Class 0, interlocking spiral of aluminum foil; fibrous-glass insulation; polyethylene vapor-barrier film.
1. Pressure Rating: 8-inch wg positive or negative.
 2. Maximum Air Velocity: 5000 fpm.
 3. Temperature Range: Minus 20 to plus 250 deg F.
 4. Insulation R-value: Comply with ASHRAE/IESNA 90.1-2013.
- L. Flexible Duct Connectors:
1. Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches, to suit duct size.
 2. Non-Clamp Connectors: Adhesive plus sheet metal screws.

2.14 DUCT ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.
- C. Install backdraft dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.
- D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.
 - 1. Install steel volume dampers in steel ducts.
 - 2. Install aluminum volume dampers in aluminum ducts.
- E. Set dampers to fully open position before testing, adjusting, and balancing.
- F. Install test holes at fan inlets and outlets and elsewhere as indicated.
- G. Install fire and smoke dampers according to UL listing.
- H. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
 - 1. On both sides of duct coils.
 - 2. Upstream from duct filters.
 - 3. At outdoor-air intakes and mixed-air plenums.
 - 4. At drain pans and seals.
 - 5. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.
 - 6. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors; and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
 - 7. At each change in direction and at maximum 50-foot spacing.
 - 8. Upstream from turning vanes.
 - 9. Control devices requiring inspection.
 - 10. Elsewhere as indicated.
- I. Install access doors with swing against duct static pressure.
- J. Access Door Sizes:
 - 1. One-Hand or Inspection Access: 12 by 12 inches.
 - 2. Two-Hand Access: 12 by 12 inches.
 - 3. Head and Hand Access: 18 by 12 inches.
 - 4. Head and Shoulders Access: 21 by 14 inches.
 - 5. Body Access: 30 by 30 inches.
 - 6. Body plus Ladder Access: 42 by 30 inches.
- K. Label access doors according to Division 23 Section "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.
- L. Install flexible connectors to connect ducts to equipment.

- M. For fans developing static pressures of 5-inch wg and more, cover flexible connectors with loaded vinyl sheet held in place with metal straps.
- N. Connect terminal units to supply ducts with maximum 6-inch lengths of flexible duct. Do not use flexible ducts to change directions.
- O. Connect diffusers or light troffer boots to ducts with maximum 60-inch lengths of flexible duct clamped or strapped in place.
- P. Connect flexible ducts to metal ducts with draw bands.
- Q. Install duct test holes where required for testing and balancing purposes.
- R. Install thrust limits at centerline of thrust, symmetrical on both sides of equipment. Attach thrust limits at centerline of thrust and adjust to a maximum of 1/4-inch movement during start and stop of fans.

3.2 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operate dampers to verify full range of movement.
2. Inspect locations of access doors and verify that purpose of access door can be performed.
3. Operate fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
4. Inspect turning vanes for proper and secure installation.

END OF SECTION

SECTION 238126

SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes split-system air-conditioning and heat pump units consisting of separate evaporator-fan and compressor-condenser components. Units are designed for exposed or concealed mounting, and may be connected to ducts.

1.2 SUBMITTALS

- A. Product Data: For each unit indicated. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.
- B. Operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2014, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- C. ASHRAE/IESNA 90.1-2014 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2014, Section 6 - "Heating, Ventilating, and Air-Conditioning."

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace split-system air-conditioning units that fail in materials and workmanship within 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Daikin
 - 2. Mitsubishi
 - 3. Carrier
 - 4. Fujitsu
 - 5. Panasonic
 - 6. Friedrich Air Conditioning Company.

2.2 EVAPORATOR-FAN UNIT

- A. Concealed Unit Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
 - 1. Insulation: Faced, glass-fiber duct liner.
 - 2. Drain Pans: Galvanized steel, with connection for drain; insulated and complying with ASHRAE 62.1-2014.
 - 3. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2014.
- B. Floor-Mounting, Unit Cabinet: Enameled steel with removable panels on front and ends.
 - 1. Discharge Grille: Steel with surface-mounted frame.
 - 2. Insulation: Faced, glass-fiber, duct liner.
 - 3. Drain Pans: Galvanized steel, with connection for drain; insulated and complying with ASHRAE 62.1-2014.
 - 4. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2014.
- C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.
- D. Water Coil: Copper-tube water coil, with mechanically bonded aluminum fins spaced no closer than 0.1 inch; leak tested to 300 psig underwater; and having a 2-position control valve.
- E. Electric Coil: Helical, nickel-chrome, electric-resistance heating elements with refractory ceramic support bushings; automatic-reset thermal cutout; built-in magnetic contactors; manual-reset thermal cutout; airflow proving device; and one-time fuses in terminal box for overcurrent protection.
- F. Evaporator Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
- G. Fan Motor: Multispeed.
- H. Filters: 1 inch thick, in fiberboard frames with ASHRAE 52.2 MERV rating of 6 or higher.

2.3 AIR-COOLED, COMPRESSOR-CONDENSER UNIT

- A. Casing steel, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
- B. Compressor: Hermetically sealed scroll type with crankcase heater and mounted on vibration isolation. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
 - 1. Refrigerant: R-410A.
 - 2. Refrigerant: R-407C or R-410A.
- C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with liquid sub-cooler.
- D. Heat Pump Components: Reversing valve and low-temperature air cut-off thermostat.

- E. Fan: Aluminum-propeller type, directly connected to motor.
- F. Motor: Permanently lubricated, with integral thermal-overload protection.
- G. Low Ambient Kit: Permits operation down to 45 deg F.
- H. Mounting Base: Polyethylene.
- I. Minimum Energy Efficiency: Comply with ASHRAE/IESNA 90.1-2014, "Energy Standard for Buildings except Low-Rise Residential Buildings."

2.4 ACCESSORIES

- A. Thermostat: Low voltage with subbase to control compressor and evaporator fan.
- B. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
- B. Install ground-mounted, compressor-condenser components on 4-inch thick, reinforced concrete base; 4 inches larger on each side than unit. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete." Coordinate anchor installation with concrete base.
- C. Install ground-mounted, compressor-condenser components on polyethylene mounting base.
- D. Install compressor-condenser components on restrained, spring isolators with a minimum static deflection of 1 inch (25 mm). Refer to Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."

3.2 CONNECTIONS

- A. Connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.
- B. Connect supply and return water coil with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
- C. Connect supply and return condenser connections with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
- D. Install piping adjacent to unit to allow service and maintenance.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

- B. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
- C. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation. Remove malfunctioning units, replace with new components, and retest.
- D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

END OF SECTION

SECTION 260500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS (Read these DIVISIONS carefully. For purposes of bidding, assume that all work of the DIVISION referenced is to be performed under that DIVISION unless specifically indicated therein to be performed under the ELECTRICAL DIVISION. Coordinate with all divisions to ensure a complete installation)
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
 - B. Cutting and patching - see DIVISION 17
 - C. Unit Prices – see DIVISION 1.
 - D. Alternatives - see DIVISION 1.
- 1.2 SUMMARY
- A. Section Includes:
 - 1. Work that applies to all sections of DIVISION 26.
 - 2. Interruption of existing branch circuits and fire alarm systems
 - 3. Electrical equipment coordination and installation.
 - 4. Sleeves for raceways and cables.
 - 5. Sleeve seals.
 - 6. Common electrical installation requirements.
 - 7. Removals
- 1.3 DEFINITIONS
- A. Provide: Furnish and install.
 - B. Wiring: Wire, raceways, boxes and fittings.
- 1.4 SUBMITTALS
- A. Product Data: For detectors, horn/strobes, surface metal raceways.
- 1.5 QUALITY ASSURANCE
- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - B. Do all wiring and provide all equipment in accordance with the prevailing issue of the National Electrical Code, State Building Code, State Fire Code, OSHA and any additional local rules or requirements.
 - C. Obtain and pay for all necessary permits, certificates, etc. Present satisfactory proof of final inspection and approval by all inspection authorities.

- D. Consider the following Industry Standards as minimum requirements for all materials, equipment and systems where such standards are established for materials in question:
1. National Board of Fire Underwriters
 2. National Electrical Manufacturers Association
 3. National Fire Protection Association
 4. Institute of Electrical and Electronic Engineers
 5. A nationally recognized testing laboratory (UL, ETL, etc.)
 6. Factory Mutual
- E. Where applicable, this installation shall comply with the following NECA (National Electrical Contractors Association) "National Electrical Installation Standards." Except, if there is a conflict between this specification and these standards, the requirements of this specification shall prevail.
1. NECA 1-2000 Standard Practices for Good Workmanship in Electrical Contracting

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Branch Circuits: All shutdowns of services (power, fire alarm, etc.) must be approved in writing by the Owner.
1. Notify Owner no fewer than seven days in advance of proposed outages.
 2. All building services (power, fire alarm, lighting, emergency lighting, exit signs, etc.) must remain in operation during full period of construction. Provide temporary lighting in spaces existing fixtures are removed and new fixtures to be provided.
 3. When an existing fire alarm system is modified or replaced with new, all existing devices must remain in operation until replaced with new devices that are fully tested, approved and operational.
- B. Comply with NFPA 70E.

1.7 CHANGE ORDERS/PROPOSAL REQUESTS:

- A. During the course of construction, changes in the work may occur. When a significant change is to be made, a Proposal Request will be issued.
- B. Provide a complete cost breakdown when responding to each Proposal Request.
- C. Each item of work to be priced separately.
- D. Each line item to be broken down including quantities and listing separately labor and material.
- E. Both credits and extras shall be separately and clearly quantified.
- F. Allowances for overhead and profit shall be as listed in the supplementary conditions.
- G. If you become aware of a field condition, code requirement, error, or omission that you feel should result in a change to the work, please contact the Engineer for discussion. The Engineer may be able to clarify the situation and avoid unnecessary paperwork.

- H. It is recognized that the Owner benefits when the construction process is a cooperative effort instead of an adversarial relationship. Reasonable give-and-take allows the construction process to move smoothly. Your efforts in this regard will be appreciated by all parties.

1.8 INSPECTIONS/SITE OBSERVATIONS

- A. The authority having jurisdiction (usually the Municipal Electrical Inspector) shall be notified at periodic intervals that an inspection is requested. Inspections shall be requested at points of progress, meeting the approval of the inspector.
- B. The electrical foreman shall provide assistance to the Engineer during site observations:
 - 1. Describe the progress of the electrical work in detail.
 - 2. Accompany the Engineer on his tour of the site, upon request.
 - 3. Provide use of a suitable ladder, to observe the work, upon request.
 - 4. Provide use of project drawings, specifications and shop drawings.

1.9 GUARANTEES/WARRANTIES:

- A. See other portions of the Project Manual for details on Guarantees and Warranties. However, minimum shall be one year from date of acceptance by the Engineer.
- B. The Owner reserves the right to make appropriate modifications or extensions of systems and equipment furnished under this contract during the guarantee/warranty period without "voiding" or modifying the guarantee/warranty of equipment and wiring installed under this contract. If manufacturer voids guarantee, it shall not relieve this contractor of his responsibilities for guarantee/warranty period.

1.10 MISCELLANEOUS

- A. Provide all work complete. Drawings and Specifications form complementary requirements; provide work specified and not shown, and work shown and not specified as though explicitly required by both.
- B. Although work is not specifically shown or specified, provide supplementary or miscellaneous items, appurtenances, devices and materials obviously necessary for a sound, secure and complete installation.
- C. All wiring and connections shall be executed with associated circuit de-energized.

PART 2 - PRODUCTS

2.1 MATERIALS - General:

- A. All materials and equipment shall be new unless specifically stated otherwise.
- B. Materials and equipment shall be suitable for their intended use and for the environment in which they are installed. For example, equipment located outside shall be weatherproof and constructed of materials that will not rust. This includes brackets, screws, etc.
- C. Coordinate all dimensions to make sure that boxes, raceways, equipment, fixtures, etc., fit properly.
- D. As it is not practical to enumerate in these specifications (or show on the drawings) all details of fittings and accessory equipment required for proper operation of the smoke detectors,

horn/strobes and existing relays, fire alarm modules and building fire alarm devices herein described, it is understood that they will be supplied without extra compensation. Provide all fittings, terminations, relays, etc., needed for the best performance of new and existing fire alarm devices.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

- A. Comply with NECA 1.
- B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- D. Record of Addenda and Change Orders: To avoid overlooking addenda and change order modifications, mark all changes on all copies of drawings and specifications, in a manner acceptable to the Engineer. One method of accomplishing this is to make copies and tape them on the back of the preceding page (tape all edges). Also, circle the changed area and note: see addenda #1, etc. If whole pages or sheets change, either remove the superseded document or put a bold "X" through it.
- E. Record Drawings: Owner's record drawings shall be updated as the project progresses. Maintain documents in a safe, dry location. Indicate clearly and accurately any changes necessitated by field conditions and dimension all raceways built into or under concrete slabs or buried under ground. Contractor to prepare as-built drawings in CAD format at contractor's expense. Contract drawings in CAD format to be furnished to contractor at no cost to contractor. Contractor to provide two compact discs and two hard copies of final as-built drawings.
- F. Operating Instructions and Manuals: Provide the Owner or his representative with complete operating instructions by qualified personnel of all electrical systems. Provide three (3) bound sets (indexed and bound in three sturdy three-ring binders) of operating and maintenance instructions of all electrical systems employed and all shop drawings.
- G. Letter of Confirmation: Include in the above manuals a letter confirming that the following items have been completed. Provide written receipt signed by the Owner or his representative indicating that the first 4 items listed below have been received.
 - 1. The provisions of the "Operating Instructions and Manuals" paragraph of these specifications have been met.
 - 2. As-built electrical drawings have been completed and submitted.
 - 3. All tests are complete and in accordance with these specifications.
 - 4. All required shop drawings have been submitted and approved.
 - 5. The entire installation has been accepted by all authorities.

3.2 LAYOUTS

- A. The electrical system layouts indicated are generally diagrammatic and locations of detectors and equipment are approximate only; govern exact routing of wiring and locations of devices

and equipment by structural conditions and obstructions. This is not to be construed to permit redesigning systems. Interconnect as shown.

- B. Locate all equipment requiring maintenance and operation so that it will be readily accessible. The right is reserved to make any reasonable change in location of devices and equipment prior to roughing-in without involving additional expense. Exact location to be as directed in the field.

3.3 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, fire-rated ceiling and wall assemblies.
- B. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- C. Cut sleeves to length for mounting flush with both surfaces of walls.
- D. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants".
- E. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with firestopping requirements in Division 07.

3.4 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve.

3.5 FIRESTOPPING

- A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07.
- B. Penetrations through exterior surfaces shall be made watertight.

3.6 REMOVALS (DEMOLITION) AND RELOCATIONS:

- A. Coordinate with DIVISION 2 section "Selective Demolition."
- B. Do all removal work in a neat and orderly manner so as not to endanger lives nor cause damage. Removal work to include all associated hangers, couplings, supports, raceway and wiring, etc., and shall be complete in every way.
- C. Remove and dispose of, off-site in a legal manner, all detectors, wiring where indicated and exterior horn/lights where indicated to be removed.
- D. Carefully remove and store on-site, where directed by the Owner, all electrical equipment indicated to be REMOVED. After the Owner has examined this equipment, remove and dispose of, off-site in a legal manner, all of this equipment that the Owner does not want. All

remaining equipment shall remain the property of the Owner. Relocate the remaining equipment to a permanent storage location on site where directed by the Owner.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.

1.3 SUBMITTALS

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

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable, insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

1. Feeders and branch circuits.
2. Lighting circuits.
3. Receptacle circuits.

3.3 INSTALLATION

- A. Provide a green grounding conductor in all raceways at the time phase and neutral conductors are installed in the raceways.
- B. Confirm a continuous ground path is provided from all light fixtures and devices to circuit source.

END OF SECTION 260526

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.
- B. Related Sections include the following:
 - 1. Division 26 Section "Vibration and Seismic Controls For Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. Metallic slotted support systems.
 - 2. Nonmetallic slotted support systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.
2. Steel slotted channel systems. Include Product Data for components.
3. Nonmetallic slotted channel systems. Include Product Data for components.
4. Equipment supports.

C. Welding certificates.

1.6 QUALITY ASSURANCE

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

B. Comply with NFPA 70.

1.7 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories."

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Flange edges turned toward web, and 9/16-inch- (14-mm-) diameter slotted holes at a maximum of 2 inches (50 mm) o.c., in webs. Strength rating to suit structural loading. Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:

- a. Allied Tube & Conduit.
- b. Cooper B-Line, Inc.; a division of Cooper Industries.
- c. ERICO International Corporation.
- d. GS Metals Corp.
- e. Thomas & Betts Corporation.
- f. Unistrut; Tyco International, Ltd.
- g. Wesanco, Inc.
- h. Equal approved by Engineer.

2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.

3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.

5. Channel Dimensions: Selected for applicable load criteria.

B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- (14-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c., in at least 1 surface.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. Fabco Plastics Wholesale Limited.
 - d. Seasafe, Inc.
 - e. Equal approved by Engineer.
 2. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
 3. Fitting and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.
 4. Rated Strength: Selected to suit applicable load criteria.
- C. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers. As described in NECA 1 and NECA 101.
- D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron with hot-dip galvanized finish..
- F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
 - 5) Equal approved by Engineer.
 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated or stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.

- 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 - 6) Equal approved by Engineer.
- 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 - 6. Toggle Bolts: All-steel springhead type.
 - 7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems, except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with single-bolt conduit clamps using spring friction action for retention in support channel.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Support individual horizontal single raceways with separate, malleable-iron pipe hangers or clamps except use spring-steel fasteners for 1-1/2-inch (38-mm) and smaller single raceways above suspended ceilings and for fastening raceways to slotted channel and angle supports.
- C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.

- D. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- E. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads (+25 percent minimum) within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- F. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 - 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts, or beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
 - 9. Fasteners: Select so load applied to each fastener does not exceed 25 percent of its proof-test load.
- G. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi (20.7-MPa, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Cast-in-Place Concrete (Limited Applications)."
- C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.

1.4 SUBMITTALS

- A. Product Data: For surface raceways, electric metallic tubing, wireways, fittings, boxes, hinged-cover enclosures, and cabinets.
 - 1. Custom enclosures and cabinets.
 - 2. Raceways and fittings

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Alflec Inc.
 - 3. Allied Tube & Conduit; a Tyco International Ltd. Co.
 - 4. Anamet Electrical, Inc.; Anaconda Metal Hose.
 - 5. Electri-Flex Co.
 - 6. Manhattan/CDT/Cole-Flex.
 - 7. Maverick Tube Corporation.
 - 8. O-Z Gedney; a unit of General Signal.
 - 9. Wheatland Tube Company.
 - 10. Equal approved by Engineer.
- B. EMT: ANSI C80.3.

- C. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

- 1. Fittings for EMT: Steel, set-screw type.

2.2 BOXES, ENCLOSURES, AND CABINETS

- A. Available Manufactures: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- 1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
 - 2. EGS/Appleton Electric.
 - 3. Erickson Electrical Equipment Company.
 - 4. Hoffman.
 - 5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
 - 6. O-Z/Gedney; a unit of General Signal.
 - 7. RACO; a Hubbell Company.
 - 8. Robroy Industries, Inc.; Enclosure Division.
 - 9. Scott Fetzer Co.; Adalet Division.
 - 10. Spring City Electrical Manufacturing.
 - 11. Thomas & Betts Corporation.
 - 12. Walker Systems, Inc.; Wiremold Company (The).
 - 13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
 - 14. Equal approved by Engineer.

- B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

- C. Cast-Metal Outlet and Device Boxes; NEMA FB 1, aluminum, Type FD, with gasketed cover.

- D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

PART 3 - EXECUTION

3.1 INSTALLATION – SURFACE MOUNTED RACEWAYS

- A. Install in accordance with manufacturer's instructions for system components and approved shop drawings. Coordinate installation with adjacent work to ensure proper clearances and to prevent electrical hazards.
- B. Install in accordance with complete system instruction sheets.
- C. Install enclosures to be mechanically continuous and connected to all electrical outlets, boxes, device mounting brackets, and cabinets, in accordance with manufacturer's installation sheets.
- D. Install enclosures to be electrically continuous and bonded in accordance with the National Electric Code for proper grounding.
 - 1. Mechanical Security: Raceway systems shall be mechanically continuous and connected to all electrical outlets, boxes, device mounting brackets, and cabinets, in accordance with Manufacturer's installation sheets.
 - 2. Electrical Security: Metal raceway shall be electrically continuous and bonded in accordance with the National Electric Code for proper grounding.
 - 3. Raceway Support: Raceway shall be supported at intervals not exceeding 5 feet (1524 mm) or in accordance with Manufacturer's installation sheets.

4. Accessories: Provide accessories as required for a complete installation, including insulated bushings and inserts where required by manufacturer.
 5. Unused Openings: Close unused raceway openings using manufacturer's recommended accessories.
- E. Clean exposed surfaces using non-abrasive materials and methods recommended by manufacturer.
- F. Protect installed products until completion of project.
- G. Touch-up, repair or replace damaged products before Substantial Completion.
- H. Comply with the following indoor applications, unless otherwise indicated:
1. Exposed in basement, Not Subject to Physical Damage: EMT.
 2. Exposed in finished areas provide surface metal raceways with snap on covers.
 - a. Finished stairways.
 - b. Per drawings.
 3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 4. Damp or Wet Locations: Rigid steel conduit.
 5. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in corrosive locations.
- I. Minimum Raceway Size: 3/4-inch (21-mm) trade size.
- J. Raceway Fittings: Compatible with raceways and suitable for use and location.

3.2 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Keep raceways at least 12 inches (300 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Support raceways as the current National Electric Code.
- E. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.
- F. Conceal flexible type "MC" cable within finished walls, ceilings, and floors, where possible.

END OF SECTION 26 05 33

SECTION 262726

WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Receptacles, receptacles with integral GFCI, and associated device plates.
 - 2. Twist-locking receptacles.
 - 3. Wall-box motion sensors.
 - 4. Snap switches and wall-box dimmers.
 - 5. Solid-state fan speed controls.
 - 6. Wall-switch sensors.
 - 7. Pendant cord-connector devices.
 - 8. Cord and plug sets.
 - 9. Service poles and multioutlet assemblies.
 - 10. Device trim plates.
 - 11. Emergency lighting relays.

1.3 DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- D. RFI: Radio-frequency interference.
- E. TVSS: Transient voltage surge suppressor.
- F. UTP: Unshielded twisted pair.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Samples: One for each type of device and wall plate specified, in each color specified.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: Include all manufacturers' packing label warnings and instruction manuals.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

1.6 COORDINATION

- A. Receptacles for Owner-Furnished Equipment: Match plug configurations.
- B. Provide additional receptacles to suit the particular equipment served.
- C. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Wiring Devices:
 - a. General Electric Company
 - b. Bryant Electric, Inc./Hubbell Subsidiary.
 - c. Hubbell Incorporated; Wiring Device-Kellems.
 - d. Leviton Mfg. Company Inc.
 - e. Pass & Seymour/Legrand; Wiring Devices Div.
 - f. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper)
 - 2. Multioutlet Assemblies:
 - a. Hubbell Incorporated; Wiring Device-Kellems.
 - b. Wiremold Company (The).
 - c. Equal approved by Engineer.
 - 3. Poke-Through, Floor Service Outlets and Telephone/Power Poles:
 - a. Hubbell Incorporated; Wiring Device-Kellems.
 - b. Pass & Seymour/Legrand; Wiring Devices Div.
 - c. Thomas & Betts Corporation.
 - d. Wiremold Company (The).
 - e. Equal approved by Engineer.

2.2 RECEPTACLES

- A. General
 - 1. Comply with NEMA WD 1, NEMA WD 6, and UL 498.
 - 2. Provide additional receptacles to suit the particular equipment served.
 - 3. Provide other special duty receptacles as indicated on the drawings.

4. Receptacles mounted outdoors or in other wet or damp locations shall be GFI type and installed in weatherproof enclosures, the integrity of which is not affected when the receptacle is in use (attachment plug cap inserted). Also comply with UL 943, Class A, and include indicator light that is lighted when device is tripped.
5. Color as selected by Architect, or as noted.
6. Catalog numbers are for General Electric Company, or as noted.
7. Isolated-Ground, Duplex Convenience Receptacles: Straight blade; equipment grounding contacts shall be connected only to the green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts.

- B. Provide 20 amp. commercial specification grade, grounded, DUPLEX RECEPTACLES.

20A/125V	Duplex Receptacle	GE #GCR-20
20A/125V	Single Receptacle	GE #4102
30A/125V/250V	4 Wire Receptacle	GE #1439-3
50A/125V/250V	4 Wire Receptacle	GE #4181-3
20A/125V	Duplex Receptacle	GE #5362-IG (Isolated Ground)
20A/125V	Single Receptacle	GE #4102-IG (Isolated Ground)
20A/125V	GFI Dup. Rec.	GE #GFR 5342

- C. Provide Wiring Devices for HAZARDOUS (Classified) Locations: Comply with NEMA FB 11 and UL 1010.

- D. Provide TWIST-LOCKING RECEPTACLES: Provide single convenience receptacles where indicated.

- E. Provide heavy-duty grade PENDANT CORD-CONNECTOR DEVICES.

1. Body: Nylon with screw-open cable-gripping jaws and provision for attaching external cable grip.
2. External Cable Grip: Woven wire-mesh type made of high-strength galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector.

- F. Provide CORD AND PLUG SETS

1. Match voltage and current ratings and number of conductors to requirements of equipment being connected.
2. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and equipment-rating ampacity plus a minimum of 30 percent.
3. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

2.3 SWITCHES

- A. GENERAL

1. Comply with NEMA WD 1 and UL 20.

- B. Provide 20 amp., toggle type, "Federal Specification Grade" lighting switches.

Single pole	GE #5951	Three-way	GE #5953
Double pole	GE #5952	Four-way	GE #5954

- C. Provide heavy duty, specification grade, 20 amp., quiet "AC", "DECORA" TOUCH SWITCHES. Catalog numbers are for Slater Medalist Decora Series.

Single pole	2770	Three-way	2773
Double pole	2772	Four-way	2774

- D. Provide Pilot Light Switches, 20 A, single pole, with neon-lighted handle, illuminated when switch is "ON."
- E. Provide Key-Operated Switches, 120/277 V, 20 A, Single pole, with factory-supplied key in lieu of switch handle.
- F. Provide Key-Operated, Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.
- G. Provide FAN SPEED CONTROLS: Modular, 120-V, full-wave, solid-state units with integral, quiet on-off switches and audible frequency and EMI/RFI filters. Comply with UL 1917.
1. Continuously adjustable rotary knob, 5 A.
- H. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on/off switches and audible frequency and EMI/RFI filters, unless otherwise indicated on the drawings.
1. Control: Continuously adjustable combination slider and toggle switch with single-pole or three-way switching to suit connections. Comply with UL 1472.
- I. Occupancy Sensors
1. As indicated on the drawings.
- J. Wall-Switch Sensors:
1. As indicated on the drawings.

2.4 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
 2. Material for Finished Spaces: Smooth, high-impact thermoplastic.
 3. Material for Unfinished Spaces: Galvanized steel.
 4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, polycarbonate with lockable cover.
- C. Single and combination types to match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
 2. Provide smooth (unribbed) high-impact thermoplastic switch and receptacle cover plates. Color as selected by Architect.
 3. Receptacles mounted outdoors or in other wet or damp locations shall be installed in weatherproof enclosures with key lock cover, the integrity of which is not affected when the receptacle is in use (attachment plug cap inserted).

2.5 MULTIOUTLET ASSEMBLIES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Hubbell Incorporated; Wiring Device-Kellems.
 - 2. Wiremold Company (The).
 - 3. Panduit Corp.
 - 4. Equal approved by Engineer.
- B. Components of Assemblies: Products from a single manufacturer designed for use as a complete, matching assembly of raceways and receptacles.
- C. Raceway Material: Metal, with manufacturer's standard finish.

2.6 FINISHES

- A. Color: Wiring device catalog numbers in Section Text do not designate device color.
 - 1. Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
 - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes.
 - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 - 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
 - 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 - 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
 - 4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pigtailling existing conductors is permitted provided the outlet box is large enough.
- D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.
10. Install devices and assemblies level, plumb, and square with building lines.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening. Remove wall plates and protect devices and assemblies during painting.

G. Dimmers:

1. Install dimmers within terms of their listing.
2. Verify that dimmers used for fan speed control are listed for that application.
3. Install unshared neutral conductors on line and load side of dimmers.
4. Install wall dimmers to achieve indicated rating after derating for ganging.

H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical. Group adjacent switches under single, multigang wall plates.

I. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings. Obtain approval of adjustments from Architect/Engineer prior to installation.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes. Brother P-Touch Labeling System is acceptable, in lieu of engraving.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 3 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating proper polarity, damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

END OF SECTION

SECTION 26 50 00
INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. The replacement of the existing basement lighting with new LED light fixtures shall be priced under Alternate #2.
- B. This Section includes the following:
 - 1. Interior lighting fixtures with LED sources.
 - 2. Lighting fixtures mounted on exterior building surfaces with LED sources.
 - 3. Accessories, fasteners, etc.

1.2 RELATED DOCUMENTS:

- A. The General Conditions, Supplementary Conditions, and applicable portions of Division 1 of the specification are part of this section which shall consist of all labor, equipment, materials and other costs necessary to complete all INTERIOR LIGHTING work indicated on the drawings, herein specified or both.
- B. The applicable portions of section 260500 General are hereby make a part of this section. It is important that you read that section carefully because it expands upon the requirements herein.

1.3 SUBMITTALS

- A. Product Data: For each type of lighting fixture scheduled, arranged in order of fixture designation. Include data on features, accessories, and finishes.
- B. Shop Drawings: Show details of nonstandard or custom fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories.
- C. Operation and maintenance data.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

2.2 LIGHTING LUMINAIRES

- A. See schedules on drawings.
- B. LED Luminaires shall meet all DesignLights Consortium® (DesignLights.org) Product Qualification Criteria. This does not require that the luminaire be listed on the DesignLights Consortium's® Qualified Products List, but they must meet the Product Qualification Criteria. The technical requirements that the luminaire shall meet for each Application Category as currently defined by the DLC Premium qualification requirements at the time of bid.
- C. Color Temperature of 3000K-4100K for interior luminaires as listed in the Luminaire Schedule on the plans. The color temperature of exterior LED luminaires should not exceed 4100K (nominal).
- D. Color Consistency: LED manufacturer shall use a maximum 3-step MacAdam Ellipse binning process to achieve consistent luminaire-to-luminaire color for interior luminaires. Exterior luminaires shall use a maximum 5-step MacAdam Ellipse binning process.
- E. Glare Control: Exterior luminaires shall meet DesignLights Consortium's® criteria for Zonal Lumen Distribution requirements or Backlight-Uplight-Glare (BUG) standards for exterior luminaires.
- F. Luminaire shall be mercury-free, lead-free, and RoHS compliant.
- G. Luminaire shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.
- H. Light output of the LED system shall be measured using the absolute photometry method following IES LM-79 and IES LM-80 requirements and guidelines.
- I. Luminaire shall maintain 70% lumen output (L70) for a minimum of 50,000 hours.
- J. Driver shall have a rated life of 50,000 hours, minimum.
- K. Lumen output shall not depreciate more than 20% after 10,000 hours of use.
- L. Driver and LEDs shall be furnished from a single manufacturer to ensure compatibility.
- M. Luminaire Color Rendering Index (CRI) shall be a minimum of 80 for interior luminaires, and a minimum of 70 for exterior luminaires.
- N. LED luminaire shall be thermally designed as to not exceed the maximum junction temperature of the LED for the ambient temperature of the location the luminaire is to be installed. Rated case temperature shall be suitable for operation in the ambient temperatures typically found for the intended installation. Exterior luminaires to operate in ambient temperatures of -20°F to 122°F (-29°C to 50°C).
- O. LED driver shall have a minimum power factor (pf) of 0.9 and a maximum crest factor (cf) of 1.5 at full input power and across specified voltage range.
- P. Luminaire shall operate normally for input voltage fluctuations of plus or minus 10 percent.
- Q. Luminaire shall have a maximum Total Harmonic Distortion (THD) of 20% at full input power and across specified voltage range.
- R. Wiring connections to LED drivers shall utilize polarized quick-disconnects for field maintenance.

- S. All connections to luminaires shall be reverse polarity protected and provide high voltage protection in the event connections are reversed or shorted during the installation process.
- T. Fuse Protections: All luminaires shall have built-in fuse protection. All power supply outputs shall be either fuse protected or be Polymeric Positive Temperature Coefficient (PTC)-protected as per Class 2 UL listing.
- U. The LED luminaire shall carry a limited 5-year warranty minimum for LED light engine(s)/board array, and driver(s).
- V. Provide all of the following data on submittals:
 - 1. Delivered lumens
 - 2. Input watts
 - 3. Efficacy
 - 4. Color rendering index.
- W. The failure of one LED shall not affect the operation of the remaining LEDs.

2.3 FIXTURE SUPPORT COMPONENTS

- A. Comply with Division 26 Section "Basic Electrical Materials and Methods" for channel- and angle-iron supports and nonmetallic channel and angle supports.
- B. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated, 12 gage 2.68 mm.
- C. Wires For Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage (2.68 mm).
- D. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fixtures: Set level, plumb, and square with ceilings and walls.
- B. Suspended Fixture Support: As follows:
 - 1. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
 - 2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
 - 3. Continuous Rows (stem mounted): Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
 - 4. Continuous Rows (cable mounted): Suspend from cable.
 - 5. Support: Per NEC 410-16.
- C. Adjust aimable fixtures to provide required light intensities. Adjust all fixtures to the satisfaction of the Engineer. Adjustments required at night shall be done at no additional charge. Provide all equipment needed including scaffolding, if required.

END OF SECTION

SECTION 283111

ADDRESSABLE FIRE ALARM SYSTEM

PART 1.0 - GENERAL

1.01 DESCRIPTION:

- A. This section of the specification includes the furnishing, installation, connection and testing of the microprocessor controlled, intelligent reporting fire alarm equipment to be connected to this buildings existing addressable fire alarm system. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, auxiliary control devices, and wiring as shown on the drawings and specified herein.
- B. The fire alarm system shall comply with requirements of NFPA Standard No. 72 for Local Protected Premises Signaling Systems except as modified and supplemented by this specification. The system field wiring shall be supervised either electrically or by software-directed polling of field devices.
 - 1. All new fire alarm devices shall be compatible and of the same manufacturer as the existing EST, E3 series control panel.
- C. The fire alarm system shall be manufactured by an ISO 9001 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994.
- D. The FACP and peripheral devices shall be manufactured 100% by E.S.T.
- E. Underwriters Laboratories Inc. (UL) - USA:
 - UL 38 Manually Actuated Signaling Boxes
 - UL 268 Smoke Detectors for Fire Protective Signaling Systems
 - UL 521 Heat Detectors for Fire Protective Signaling Systems
 - UL 864 Standard for Control Units for Fire Protective Signaling Systems
 - UL 1481 Power Supplies for Fire Protective Signaling Systems
 - UL 1638 Visual Signaling Appliances
 - UL 2017 General-Purpose Signaling Devices and System
- F. The installing company shall employ NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final check-out and to ensure the systems integrity.

1.02 SCOPE:

- A. Intelligent, microprocessor-controlled, fire alarm detection components shall be installed in accordance to the project specifications and drawings.
- B. Basic Performance:
 - 1. Initiation Device Circuits (IDC) shall be wired NFPA Style Z (Class A) as part of an addressable device connected by the SLC Circuit.
 - 2. When not wired directly from panel NAC circuits, Notification Appliance Circuits (NAC) shall be wired NFPA Style Z (Class A) as part of an addressable device connected by the SLC Circuit.
 - 3. All circuits shall be power-limited, per UL864 requirements.
 - 4. A single ground fault or open circuit on the system Signaling Line Circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm.

C. BASIC SYSTEM FUNCTIONAL OPERATION

When a fire alarm condition is detected and reported by one of the system initiating devices, the following elevator control functions shall immediately occur:

1. The elevator cabs shall travel to the first floor and the doors shall open.
2. If the first floor lobby smoke detector is in the alarm, the elevator cabs will travel to a pre-determine alternate floor and the doors shall open.
3. If the smoke detector in the elevator machine room or the heat detector located at the top of the shafts goes into alarm, the firemen hat shall illuminate notifying the fireman not to use the elevators.

1.03 SUBMITTALS

A. General:

1. An electronic copy of all submittals shall be submitted to the Architect/Engineer for review.
2. All references to manufacturer's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality. Equivalent compatible UL-listed equipment from other manufacturers may be substituted for the specified equipment, if the minimum standards are met.
3. For equipment, other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

B. Shop Drawings:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.

C. Software Modifications

1. Provide the services of a qualified technician to perform all system software modifications, upgrades or changes. Response time of the technician to the site shall not exceed 4 hours.
2. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being made.
3. Provide firmware updates through USB thumb drive.

1.04 GUARANTY:

All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period, shall be included in the submittal bid.

1.05 MAINTENANCE:

- A. As part of the bid/proposal, include a quote for a maintenance contract to provide all maintenance, tests, and repairs described below. Include also a quote for unscheduled maintenance/repairs, including hourly rates for technicians trained on this equipment, and response travel costs for each year of the maintenance period. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

1.06 APPLICABLE STANDARDS AND SPECIFICATIONS:

The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards, if applicable.

- A. National Fire Protection Association (NFPA) - USA:

No. 13 Sprinkler Systems
No. 70 National Electric Code (NEC)
No. 72 National Fire Alarm Code
No. 101 Life Safety Code

- B. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL listing.
- C. Local and State Building Codes.
- D. All requirements of the Authority Having Jurisdiction (AHJ).

1.08 APPROVALS:

- A. The system shall have proper listing and/or approval from the following nationally recognized agencies:

UL Underwriters Laboratories Inc (Ninth Edition)
FM Factory Mutual
CAN/ULC - S527-99 Standard for Control Units for Fire Alarm Systems

PART 2 - PRODUCTS

2.01 EQUIPMENT AND MATERIAL, GENERAL:

- A. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a fire protective signaling system, meeting the National Fire Alarm Code.
- B. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.
- D. All equipment must be available "over the counter" through the Security Equipment Distributor

(SED) market and can be installed by dealerships independent of the manufacturer.

2.02 CONDUIT AND WIRE:

A. Conduit:

1. Conduit shall be in accordance with The National Electrical Code (NEC), local and state requirements.
2. Where required, all wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.
3. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per NEC Article 760-29.
4. With the exception of telephone connections, wiring for 24 volt DC control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.
5. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the FACP manufacturer.
6. Conduit shall be 3/4 inch (19.1 mm) minimum.
7. Where fire alarm circuiting is run concealed above ceilings or fished in walls, U.L. listed fire alarm type "MC" cable can be use.
8. The supply and return loops shall be separated 5 feet horizontally and two feet vertically.

B. Wire:

1. All fire alarm system wiring shall be new.
2. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for Initiating Device Circuits and Signaling Line Circuits, and 14 AWG (1.63 mm) for Notification Appliance Circuits.
3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
4. Wire and cable not installed in conduit shall have a fire resistance rating suitable for the installation as indicated in NEC 760 (e.g., FPLR).
5. Wiring used for the multiplex communication circuit (SLC) shall be twisted non-shielded and support a minimum wiring distance of 10,000 feet when sized at 12 AWG.
6. All field wiring shall be electrically supervised for open circuit and ground fault.

C. Terminal Boxes, Junction Boxes and Cabinets: All boxes and cabinets shall be UL listed for their use and purpose.

2.03 SYSTEM COMPONENTS:

A. Addressable Pull Box (manual station)

1. Addressable pull boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status. They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.
2. All operated stations shall have a positive, visual indication of operation and utilize a key

- type reset.
3. Manual pull stations shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.

B. Intelligent Multi-Sensing Detector

1. The intelligent detector shall be an addressable device which is capable of detecting multiple threats by employing photoelectric and thermal technologies in a single unit. This detector shall utilize advanced electronics which react to slow smoldering fires (photoelectric) and heat (thermal) all within a single sensing device.
2. The multi-detector shall include two LEDs for 360-degree viewing.
3. Automatically adjusts sensitivity levels without the need for operator intervention or programming. Sensitivity increases with heat.

C. Intelligent Photoelectric Smoke Detector

1. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
2. The detectors shall be ceiling-mounted and available in an alternate model with an integral fixed 135-degree heat-sensing element.
3. Each detector shall contain a remote LED output and a built-in test switch.
4. Detector shall be provided on a twist-lock base.
5. It shall be possible to perform a calibrated sensitivity and performance test on the detector without the need for the generation of smoke. The test method shall test all detector circuits.
6. A visual indication of an alarm shall be provided by dual latching Light Emitting Diodes (LEDs), on the detector, which may be seen from ground level over 360 degrees. These LEDs shall periodically flash to indicate that the detector is in communication with the control panel.
7. The detector shall not go into alarm when exposed to air velocities of up to 1500 feet per minute (fpm).
8. The detector screen and cover assembly shall be easily removable for field cleaning of the detector chamber.
9. All field wire connections shall be made to the base through the use of a clamping plate and screw.

D. Intelligent Thermal Detectors

1. Thermal detectors shall be intelligent addressable devices rated at 145 degrees Fahrenheit (58 degrees Celsius) and have a rate of-rise element rated at 15 degrees F (9.4 degrees C) per minute. It shall connect via two wires to the fire alarm control panel signaling line circuit.

E. Addressable Dry Contact Monitor Module

1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any normally open dry contact device) to one of the fire alarm control panel SLCs.
2. The monitor module shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box.
3. The IDC zone shall be suitable for Style D or Style B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
4. For difficult to reach areas, the monitor module shall be available in a miniature package

and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.

F. Two-Wire Detector Monitoring

1. Means shall be provided for the monitoring of conventional Initiating Device Circuits populated with 2-wire smoke detectors as well as normally-open contact alarm initiating devices (pull stations, heat detectors, etc).
2. Each IDC of conventional devices will be monitored as a distinct address on the polling circuit by an addressable module. The module will supervise the IDC for alarms and circuit integrity (opens).
3. The monitoring module will be compatible, and listed as such, with all devices on the supervised circuit.
4. The IDC zone may be wired for Style D or Style B (Class A or B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
5. The monitoring module shall be capable of mounting in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box or in an surface mount backbox.

G. Addressable Control Relay Module

1. Addressable control relay modules shall be provided to control the operation of fan shutdown and other auxiliary control functions.
2. The control module shall mount in a standard 4-inch square, 2-1/8 inch deep electrical box, or to a surface mounted backbox.
3. The control relay module will provide a dry contact, Form-C relay. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relays may be energized at the same time on the same pair of wires.
4. The control relay module shall be suitable for pilot duty applications and rated for a minimum of 0.6 amps at 30 VDC.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

3.02 TEST:

The service of a competent, NICET level II technician shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72, Chapter 10.

- A. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
- B. Open initiating device circuits and verify that the trouble signal actuates.
- C. Open and short signaling line circuits and verify that the trouble signal actuates.

- D. Open and short notification appliance circuits and verify that trouble signal actuates.
- E. Ground all circuits and verify response of trouble signals.
- F. Check presence and audibility of tone at all alarm notification devices.
- G. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
- H. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

3.03 FINAL INSPECTION:

- A. At the final inspection, a minimum NICET Level II technician shall demonstrate that the system functions properly in every respect.

3.04 INSTRUCTION:

- A. Instruction shall be provided as required for operating the system. Hands-on demonstrations of the operation of elevator capture, alternate floor recal and firemen's cap functions shall be provided.

END OF SECTION