

PROJECT MANUAL

MODERNIZATION OF STATE AIDED PUBLIC HOUSING

BUILDING PROJECT

STATE-AIDED DEVELOPMENT: Holbrook Housing Authority Housing Developments 667-01 & 667-02.

LHA PROJECT: Bathroom Exhaust Fan & Kitchen Hood Replacement

Executive Office of Housing and Livable Communities (EOHLC)

HOLBROOK HOUSING AUTHORITY 1 Holbrook Court Holbrook, Massachusetts 02343	PROJECT ADDRESS: 1 Holbrook Court Holbrook, Massachusetts 02343
Rick Brouillard, Director of Modernization Russell Sharp, Project Manager	

Prime Designer:

BLW Engineers, Inc.

William J. Scanlon, P.E.

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DATE: February XX, 2025

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- H0-01 Legend Schedules and Details
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- E001 Legend Schedules and Details
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ADVERTISEMENT

The **Holbrook Housing Authority**, the Awarding Authority, invites sealed bids from Contractors for the **Project # 133064** for the **Holbrook Housing Authority** in Holbrook, Massachusetts, in accordance with the documents prepared by **BLW Engineers, Inc.**

The Project consists of: **Bathroom Exhaust Fan & Kitchen Hood Replacement.**

The work is estimated to cost: **\$462,194.78**

Bids are subject to M.G.L. c.149 §44A-J & to minimum wage rates as required by M.G.L. c.149 §§26 to 27H inclusive.

General bidders must be certified by the Division of Capital Asset Management and Maintenance (DCAMM) in the category of **HVAC**.

General Bids will be received until **12:00 P.M. [Day of the week] and [Month, Day, Year]** and publicly opened, forthwith.

Filed sub-bids for the trades listed below will be received until **12:00 P.M.** and opened forthwith.

Filed sub-bidders must be DCAMM certified for the trades listed below and bidders must include a current DCAMM Sub-Bidder Certificate of Eligibility and a signed DCAMM Sub-Bidder's Update Statement.

SUBTRADES: Electrical

All Bids should be delivered to: **1 Holbrook Court Holbrook, Massachusetts 02343** and received no later than the date & time specified above.

General bids and sub-bids shall be accompanied by a bid deposit that is not less than five (5%) of the greatest possible bid amount (considering all alternates), and made payable to the **Holbrook Housing Authority**.

Bid Forms and Contract Documents will be available electronically or for purchase at cost:

Bid Package is available by emailing bidning@blwengineers.com.

General bidders must agree to contract with minority and women business enterprises as certified by the Supplier Diversity Office (SDO), formerly known as SOMWBA. The combined participation benchmark reserved for such enterprises shall not be less than 13% of the final contract price including accepted alternates.

Request for waivers must be sent to EOHLC Marcel Dumitrescu 617-573-1158, 5 calendar days prior to the General Bid date. NO WAIVERS WILL BE GRANTED AFTER THE GENERAL BIDS ARE OPENED.

PRE-BID CONFERENCE / SITE VISIT:

Date and Time: **[confirm the time] AM/PM on [Month Date Year]**

Address: **1 Holbrook Court Holbrook, Massachusetts 02343.**

Special Instructions:

SITE VISIT BY APPOINTMENT: Not applicable.

00.21.00
INSTRUCTIONS TO BIDDERS
Projects \$150,000- \$10Mil

ARTICLE 1 - BIDDER'S REPRESENTATION

- 1.1** Each General Bidder or Sub-bidder (hereinafter called the "**Bidder**") by making a bid or sub-bid (hereinafter called "**bid**") represents that:
- .1** The Bidder has read and understands the Contract Documents and the bid is made in accordance therewith.
 - .2** The Bidder has visited the site and is familiar with the local conditions under which the Work has to be performed.
- 1.2** Failure to so examine the Contract Documents and site will not relieve any Bidder from any obligation under the bid as submitted.

ARTICLE 2 - GENERAL BIDDER'S AND FILED SUB-BIDDER'S CERTIFICATION

- 2.1** General bids shall be submitted with the following:
- .1** A Certificate of Eligibility on the appropriate form prescribed and issued by the Division of Capital Asset Management and Maintenance (DCAMM), showing that the Bidder is eligible to bid on projects of this size in the specified category of work; and
 - .2** A Contractor Update Statement, DCAMM Form CQ3.
 - .3** The Contractor Update Statement (CQ3) is not a public record as defined in DCAMM regulation 810 CMR 8.06 and will not be open to public inspection.
- 2.2** Advertised filed sub-bids shall be submitted with the following:
- .1** A Sub-Bidder Certificate of Eligibility on the appropriate form prescribed and issued by DCAMM showing that the sub-bidder is eligible to bid on public projects in the specified category of work; and
 - .2** A Sub-Bidder Update Statement on a form prescribed by DCAMM.
- 2.3** It is the Sub-Bidder's responsibility to obtain the necessary forms from DCAMM and make application in sufficient time for evaluation of the application and issuance of a Sub-Bidder Certificate of Eligibility prior to bid.
- 2.4** The Sub-Bidder Update Statement is not a public record as defined in DCAMM regulation 810 CMR 8.06 and will not be open to public inspection.
- 2.5** All employees who work on this construction site must have no less than 10 hours of OSHA-approved safety and health training.
- 2.6** The Contractor and all subcontractors on this project will be required to provide certification of compliance with the requirement of 2.5 above in accordance with the provisions of these Contract Documents.
- 2.7** The Contractor and all subcontractors shall be completely responsible for compliance with EPA Lead Renovator Requirements including EPA regulation 40 CFR 745.

ARTICLE 3 – MBE/WBE PARTICIPATION BENCHMARKS

- 3.1** Refer to the Advertisement for the applicability of this Article 3.

- 3.2** The participation benchmarks that must be contracted with minority-owned and/or women-owned enterprises is stated in the Advertisement. If the Advertisement does not include participation benchmarks, paragraphs 3.3 – 3.6 below and Section 00.73.39 shall not apply.
- 3.3** The apparent low Bidder must submit the SDO Certified MBE/WBE Participation Schedule (Form 00.73.39.01) and Letters of Intent (Form 00.73.39.02) from all of the firms listed on the Schedule within five (5) working days after receipt of general bids. Letters of Intent are not required for filed Subcontractors. However, filed Sub-bidders who are SDO Certified shall be listed on the Participation Schedule.
- 3.4** If the general contractor requires any of the following it must do so in writing to the Department. (david.mcclave@mass.gov)
- 3.4.1** within five (5) calendar after receipt of general bids.
- .1 a time extension for the submission of its Participation Schedule & Letter(s) of Intent.
- 3.4.2** within **five (5)** calendar days **PRIOR** to the General Bid opening date and time:
- .1 a reduction in the participation benchmarks stated in the Advertisement; or
- .2 a waiver from the participation benchmark requirements.
- 3.4.3** The submitted request will be processed in the following manner:
- .3 **The Bidder must submit the reason for the waiver request, the sub-contractors and suppliers contacted from the SDO list and the percentage of reduction being requested.** The Department will review the request for reduction or waiver. If the Department determines that compliance with participation benchmarks is not feasible, it has the discretion to reduce or waive these benchmarks. If the benchmarks are reduced or waived, an addendum to the project, 48 hours prior to the bid opening will be issued with the new participation requirements. Such reduction or waiver shall be granted only upon the General Contractors showing that good faith efforts have been made to comply with the participation benchmarks. Reductions or waivers that are granted will be granted for all General Contractors bidding on the project.
- 3.4.4** The completed Participation Schedule, Letters of Intent and, if necessary, requests for a reduction in participation benchmarks or a waiver from participation benchmarks may be sent electronically to: David.Mcclave@mass.gov. No hard copy is required.
- 3.5** The Bidder must submit with its contract submission executed subcontracts with all subcontractors or a purchase order or invoice from material suppliers or manufacturers listed on the Participation Schedule.
- 3.6** Filed Sub-bidders are not required to submit a Participation Schedule. They may, at their option, submit a Letter of Intent with their bid if they are a SDO certified enterprise.
- 3.7** By submitting a Participation Schedule, the Bidder certifies that those firms listed on the Schedule will be supplying the goods and/or services that those firms are certified to supply.

ARTICLE 4 - REQUESTS FOR INTERPRETATION

- 4.1** Bidders shall promptly notify the Architect of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.
- 4.2** Bidders requiring clarification or interpretation of the Contract Documents shall make a written request to the Architect. The Architect will answer such requests if received seven (7) calendar days before the date for receipt of the bids.
- 4.3** Interpretation, correction, or change in the Contract Documents will be made by written Addendum which will become part of the Contract Documents. Neither the Housing Authority nor the Architect will be held accountable for any oral interpretations, corrections, or changes.

- 4.4** Addenda will be mailed by the Architect by U.S Postal Service to every individual or firm on record as having taken a set of Contract Documents.
- 4.5** Copies of addenda will be made available for inspection at the locations listed in the Advertisement where Contract Documents are on file.

ARTICLE 5 - PREPARATION AND SUBMISSION OF BIDS

5.1 Forms and Bid Preparation

Bids shall be submitted on the "**Form for General Bid**" or the "**Form for Sub-Bid**", as appropriate, furnished at no cost by the Housing Authority. The forms enclosed in the Project Manual shall not be extracted or used. Additional forms are available at the location listed in the Advertisement.

- 5.1.1** All entries on the bid form shall be made by typewriter or in ink.
- 5.1.2** Sums shall be expressed in both words and figures in the space indicated on the bid form. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.
- 5.1.3** If the requirement of Performance and Payment Bonds for filed sub-contractors is left blank by the General Bidder on the Form for General Bid, the Housing Authority shall interpret this as a "yes". No increase in contract price will be allowed for providing these bonds.
- 5.1.4** Costs for subcontractor's bond premiums shall be paid for by the General Contractor in accordance with M.G.L. c.149 §44F.

5.2 Bid Deposits shall be:

- 5.2.1** at least five percent (5%) of the greatest possible bid amount, considering all alternates;
- 5.2.2** made payable to the **housing authority**;
- 5.2.3** conditioned upon faithful performance by the principal of the agreements contained in the bid; and
- 5.2.4** in the form of:
- .1** cash,
 - .2** certified check, treasurer's or cashier's check issued by a responsible bank or trust company, or
 - .3** a bid bond issued by a surety company licensed to do business in the Commonwealth of Massachusetts.
- 5.2.5** retained until the execution and delivery of the Owner/Contractor Agreement if they represent the bid deposit of one of the three (3) lowest responsible and eligible General Bidders or one of the three (3) lowest Sub-bidders in a filed sub-bid trade, or a sub-bidder listed by one of the three (3) lowest General Bidders.

5.3 Delivery of Filed Sub-Bids

Sub-bids, including the bid deposit, DCAMM Sub-Bidder Certificate of Eligibility and a signed DCAMM Sub-Bidder Update Statement shall be enclosed in a sealed envelope with the following plainly marked on the outside:

Filed Sub-Bid for:

- Name of Housing Authority and Project Number**
- Sub-bid Section Number**
- Trade**
- Sub-bidder's Name, Business Address, and Phone Number**

5.4 Delivery of General Bids

General Bids, including the bid deposit, DCAMM Certificate of Eligibility and Update Statement (CQ3) shall be enclosed in a sealed envelope with the following plainly marked on the outside:

General Bid for:

- Name of Housing Authority and Project Number**
- Bidder's Name, Business Address, and Phone Number**

5.4.1 Date and time for receipt of bids is set forth in the Advertisement.

5.4.2 Timely delivery of a bid to the location designated shall be the full responsibility of the Bidder.

5.5 Sub-Trade Solicitations

5.5 .1 If the General Bidders are instructed to carry an amount for a given sub-trade listed under Item 2, General Bidder's shall list the sub-trade, and amount provided by the Housing Authority. The line under bonds required on the General Bid Form should be left blank or marked N/A in order for subparagraph 5.5.2.2 to be applicable.

5.5 .2 Upon solicitation of a subcontractor to perform the work required by the sub-trade as mentioned in subparagraph 5.5.1, the selected General Contractor's contract amount will be adjusted as follows:

- .1** The difference between the subcontract amount and the amount carried in the bid.
- .2** The total cost of the subcontractor's bonds, if the selected General Contractor requires such bonds after the solicitation is completed and if the selected General Contractor complied with 5.4.1 above, and
- .3** The resultant cost difference for General Contractor's Bonds premiums.

5.5.3 Overhead and Profit for supervision of the sub-trade in question shall be included by all General Bidders in its Item 1.

5.5 4 Additional overhead and profit is not allowed on the incremental difference as stated in M.G.L. c.149 §44F(4)(a)(2) nor on the costs for the additional bond premiums.

ARTICLE 6 - ALTERNATES

General Bidders

6.1 Each General Bidder shall acknowledge Alternates by listing the individual Alternate number in Section C on the Form for General Bid and enter the dollar amount of addition or subtraction necessitated by each Alternate listed in the corresponding space.

6.2 General Bidders shall enter on the Form for General Bid a single amount for each Alternate which shall consist of the Sub-bidders' amounts and the amount for work performed by the General Contractor.

6.3 In the event an Alternate does not involve a change in dollar value, the General Bidder shall so indicate by listing the individual Alternate number and acknowledge the Alternate by inserting "**No Change**", "**No Charge**", "**N/C**" or "**0**" in the corresponding space provided for the dollar value of that Alternate.

6.4 The Low Bidder will be determined on the basis of the sum of the base bid and the accepted alternates.

Filed Sub Bidders

6.5 Each Sub-bidder shall acknowledge Alternates by listing the individual alternate number in Section A on the Form for Sub Bid and enter the dollar amount of addition or subtraction necessitated by each Alternate listed in the corresponding space.

6.6 If an Alternate does not involve a change to a sub-trade's in dollar value the sub bidder shall so indicate by listing the individual alternate number in the space provided and acknowledge the alternate by inserting "**No Change**", "**No Charge**", "**N/C**" or "**0**" in the corresponding space provided for the dollar value of the alternate.

- 6.7 If the alternate does not affect the sub-trade category of work so indicate by writing "N/A". Sub-bidders are encouraged to list and acknowledge all alternates.

ARTICLE 7 - WITHDRAWAL OF BIDS

7.1 Before Opening of Bids

- 7.1.1 Any bid may be withdrawn prior to the time designated for receipt of bids upon written request. Withdrawal of bids must be confirmed over the Bidder's signature by written notice post-marked or sent by facsimile on or before the date and time set for receipt of bids.
- 7.1.2 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids.

7.2 After Opening of Bids

Bidders may withdraw a bid, without penalty, any time up to the time of Award as defined in paragraph 8.1, and upon demonstrating, to the satisfaction of the Housing Authority, that a bona fide clerical error was made during the preparation of the bid. Failure to conclusively demonstrate a bona fide clerical error may result in forfeiture of the bid deposit.

- 7.3 In the event of a general bid withdrawal after opening of bids, the Housing Authority shall consider the bid from next lowest eligible and responsible bidder.

7.4 Sub-bid Withdrawal/Substitution

- 7.4.1 **Selection** - Should a filed sub-bidder listed on the Form for General Bid of the selected General Contractor (per Article 8 of these instructions) withdraw its bid, be unable to provide performance and payment bonds as required by the selected General Contractor, or otherwise refuse to sign a subcontract with the selected General Contractor, the housing authority and the selected General Contractor shall consider the other sub-bids to which the housing authority and the selected General Contractor make no objection and substitute a new sub-bidder for such trade.

- 7.4.2 **Process:** If the selected General Contractor:

- .1 **required bonds (on the Form for General Bid) for the sub-bidder who withdrew** then the selected General Contractor's contract amount shall be adjusted to account for:
 - .1 the difference between the amount of the sub-bid listed on the Form for General Bid and the amount of the replacement sub-bid, and
 - .2 the incremental difference in the cost of the General Contractor bonds premiums, but
 - .3 there will be no compensation for additional subcontractor bond premiums
- .2 **did not require bonds (on the Form for General Bid) for the sub-bidder who withdrew** and now the selected General Contractor wants bonds from the replacement sub-bidder, then the selected General Contractor's contract amount shall be adjusted:
 - .1 to account for the difference between the amount of the sub-bid listed on the Form for General Bid and the amount of the replacement sub-bid,
 - .2 the amount for the new sub-bidder's performance and payment bonds, and
 - .3 the incremental difference in the cost of the General Contractor bond premiums.

- 7.4.3 There shall be no adjustment to the selected General Contractor's contract amount except as set forth in 7.4.2.1 and 7.4.2.2. Additional overhead and profit is not allowed on the incremental difference in the sub-bids or on the costs for the additional bond premiums.

ARTICLE 8 - CONTRACT AWARD

- 8.1 **Award** means both the determination and selection of the lowest, responsible and eligible bidder, by Housing Authority board vote.

- 8.2** The Housing Authority will award the contract to the lowest responsible and eligible bidder within thirty days, Saturdays, Sundays, and legal holidays excluded after the opening of bids in accordance with M.G.L. c.149 §44A.
- 8.3** The Contract will be awarded to the lowest responsible and eligible Bidder, except in the event of substitution as provided under M.G.L. c.149 §§44E and 44F, in which cases the procedure as required by said sections shall govern the award of the Contract.
- 8.4** The award of this Contract is subject to the approval of the Undersecretary of the Commonwealth of Massachusetts, Executive Office of Housing and Livable Communities (EOHLC) or its Designee. Contracts without EOHLC approval shall not be considered valid.
- 8.5** The Housing Authority reserves the right to waive any informality in or to reject any or all Bids if it be in the public interest to do so.
- 8.6** The Housing Authority also reserves the right to reject any sub-bid if it determines that such sub-bid does not represent the bid of a person competent to perform the work as specified, or if bid prices are not reasonable for acceptance without further competition and require a change in the scope of work.
- 8.7** As used herein, the term "lowest responsible and eligible bidder" shall mean the General Bidder whose bid is the lowest of those Bidders demonstrably possessing the skill, ability, and integrity necessary for the faithful performance of the work, and who meets the requirements for Bidders set forth in M.G.L. c.149 §44A-J and is not debarred from bidding under M.G.L. c.149 §44C; and who shall certify that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.
- 8.8** Bidders' attention is directed to 01.11.00 for any additional selection criteria that may be a condition of Award of this project.

ARTICLE 9 - FORMS REQUIRED FOR CONTRACT APPROVAL

- 9.1** Upon Award, the General Bidder shall complete the following forms to ensure prompt contract validation. These forms will be provided to the selected General Bidder by EOHLC. Submit (3) originals of each.
- 9.2 Owner/Contractor Agreement and Form of Corporate Vote.** (Form 00.53.00)
- 9.3.1 Form of Performance Bond and Form of Payment Bond** must be submitted by the General Contractor on EOHLC's Forms 00.61.13 and 00.61.16, in accordance with Article 18 of the General Conditions. The dates on the bonds must coincide with the contract date, and a current Power-of-Attorney must be attached to each bond.
- 9.3.2 Performance and Payment Bonds** must also be submitted for all filed subcontractors, if required by the General Bidder on its Form for General Bid, in the total amount of the subcontract payable to the General Contractor.
- 9.4.1 Insurance Certificates** for the General Contractor and all **filed subcontractors** are required and must be submitted in accordance with Article 16 of the General Conditions.
- 9.4.2** General Contractors must indicate on Builders Risk insurance Certificate or installation floater if stored materials are covered.
- 9.5 Form of Contractor's Equal Employment Certification** in accordance with Specification Section 00.73.36. (Form 00.73.36.01)
- 9.5.1 Form of Sub-Contractor's Equal Employment Certification** in accordance with Specification Section 00.73.36. (Form 00.73.36.02)
- 9.6.1 Form of Subcontract for all filed subcontractors** - executed and submitted on the statutory subcontract form. (Form 00.62.00)

9.6 Statement of Management on Internal Accounting Controls and a Statement prepared by a CPA

expressing an opinion to the state of Management Controls, as required by M.G.L. c.30 §39R. This applies to the General Contractor only.

9.7 Evidence of Certification with 40 CFR part 745 Lead Renovation, Repair and Painting Program

ARTICLE 10 - CONTRACT VALIDATION

- 10.1** The Owner-Contractor Agreement shall not be valid until signed by the Undersecretary of the Department of Housing and Community Development (Department) or its Designee.
- 10.2** The Notice to Proceed for construction shall not be issued until the Owner/Contractor Agreement has been validated by the Undersecretary of the Department or its Designee
- 10.3** Incomplete or unacceptable submissions of forms required by paragraphs 9.2 - 9.7 will delay the validation of the Owner/Contractor Agreement by the Department.

**END OF 00.21.00
INSTRUCTIONS TO BIDDERS**

FORM FOR GENERAL BID

TO THE AWARDING AUTHORITY

LHA Project #
EOHLC #133064

A. The undersigned proposes to furnish all labor and materials required for **Bathroom Exhaust Fan & Kitchen Hood Replacement.** for the PROJECT

Holbrook LOCAL HOUSING AUTHORITY in Holbrook Massachusetts

in accordance with Contract Documents prepared by BLW Engineers, Inc.
Name of Engineer/Architect

For the contract price specified below, subject additions and deductions according to the terms of the specifications and shall be complete within 70 consecutive calendar days

B. This bid includes addenda numbered _____

C. The proposed contract price is:
_____ Dollars \$ _____
Bid Amount in Words Bid Amount in Numbers

For Alternate(s) No. ____ Add \$ _____ Subtract \$ _____

Each Alternate shall be listed separately

D. The subdivision of the proposed contract price is as follows:

ITEM 1. The work of the general contractor, being all work other than that covered by ITEM 2.

TOTAL OF ITEM 1 \$ _____

ITEM 2. Sub-bids as follows:

Sub-trade	Name of Filed Sub-bidder	Sub-bid Amount	Bond Required	
			Yes	No
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

TOTAL OF ITEM 2..... \$ _____

The undersigned agrees that each of the above-named sub-bidders will be used for the work indicated at the amount stated, unless a substitution is made. The undersigned further agrees to pay the premiums for the performance and payment bonds furnished by sub-bidders as requested herein and that all of the cost of all such premiums is included in the amount set forth in Item I of this bid.

The undersigned agrees that if selected as general contractor, they will promptly confer with the awarding authority on the question of sub-bidders; and that the awarding authority may substitute for any sub-bid listed above a sub-bid filed with the awarding authority by another sub-bidder for the sub-trade against whose standing and ability the undersigned makes no objection; and that the undersigned will use all such finally selected sub-bidders at the amounts named in their respective sub-bids and be in every way as responsible for them and their work as if they had been originally named in this general bid, the total contract price being adjusted to conform thereto.

- E. The undersigned agrees that, if selected as general contractor, he will within five days, Saturdays, Sundays, and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the awarding authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price, provided, however, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards made subject to section 44A.

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Signature 

Date: _____

Name of General Bidder

BY: _____
Signature & Title of person signing bid

Business Address

(Email & Phone Number)

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 of partners if different from business addresses.

FORM FOR SUB-BID

TO ALL GENERAL BIDDERS EXCEPT THOSE EXCLUDED:

A. The undersigned proposes to furnish all labor and materials required for completing, in accordance with the hereinafter described plans, specifications and addenda, all the work specified in Section No. _____ of the specifications and in any plans specified in such section prepared by:

BLW Engineers, Inc. for Bathroom Exhaust Fan & Kitchen Hood Replacement
Name of Architect/Engineer Project

for the Holbrook **HOUSING AUTHORITY in** Holbrook Massachusetts,
City/Town City/Town

for the contract sum of :

_____ Dollars \$ _____
Bid Amount in Words Bid Amount in Numbers

For Alternate(s)	No. _____	Add \$ _____	Subtract \$ _____
	No. _____	Add \$ _____	Subtract \$ _____
	No. _____	Add \$ _____	Subtract \$ _____

Each Alternate shall be listed separately

B. This Sub-bid includes addenda numbered _____

C. This Sub-bid

May be used by any General Bidder **Except:**

May **only be used** by the following General Bidders:

To exclude general bidders, insert "X" in one box only and fill in blank following that box.
Do not answer C if no general bidders are excluded

D. The undersigned agrees that, if selected as a sub-bidder, they will, within five days, Saturdays, Sundays and legal holidays excluded, after presentation of a subcontract by the general bidder selected as the general contractor, execute with such general bidder a subcontract in accordance with the terms of this sub-bid, and contingent upon the execution of the general contract, and, if requested to do so in the general bid by such general bidder, who shall pay the premiums therefor, furnish a performance and payment bond of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the awarding authority, in the full sum of the subcontract price.

E. The names of all persons, firms and corporations furnishing to the undersigned labor or labor and materials for the class or classes or part thereof of work for which the provisions of the section of the specifications for this sub-trade require a listing in this paragraph, including the undersigned if customarily furnished by persons on his own payroll and in the absence of a contrary provision in the specification the name of each such class of work or part thereto and the bid price for such class of work or part thereof are:

NAME	CLASS OF WORK	BID PRICE
_____	_____	_____
_____	_____	_____

(Do not give bid price for any class or part thereof furnished by the undersigned).

- F. The undersigned agrees that the above list of bids of the undersigned represents bona fide bids based on hereinbefore described plans, specifications and addenda, and that, if the undersigned is awarded the contract, they will be used for the work indicated at the amounts stated, if satisfactory to the awarding authority.
- G. The undersigned further agrees to be bound to the general contractor by the terms of the hereinbefore described plans, specifications (including all general conditions stated therein) and addenda, and to assume toward him all the obligations and responsibilities that the contractor, by those documents, assumes toward the owner.
- H. The undersigned offers the following information as evidence of the contractor's qualifications to perform the work as bid upon according to all the requirements of the plans and specifications:

- 1. Have been in business under present business name for _____ years
- 2. Ever failed to complete any work awarded? _____
- 3. List one or more recent buildings with names of general contractor and architect on which you served as subcontractor for work of similar character as required for the above-named building

Building Type	Architect	General Contractor	Contract Amount
_____	_____	_____	\$ _____
_____	_____	_____	\$ _____
_____	_____	_____	\$ _____

4. Bank Reference: _____

- I. The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards of subcontracts subject to section 44F.

The undersigned further certifies under penalty of perjury that this sub-bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated there under.

Signature 

BY:

Signature & Title of person signing bid

Date: _____

Business Address

(Email & Phone Number)

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 of partners if different from business addresses.

BIDDER'S CHECKLIST

THIS CHECK LIST IS NOT PART OF THE FORM FOR BID! THIS FORM DOES NOT HAVE TO BE SUBMITTED WITH A BID!

To ensure that your bids are acceptable to the awarding authority and EOHLIC, and are not rejected due to mistakes, we are providing this Checklist for your convenience. It does not have to be included with a bid. If this checklist is submitted it is an informality that will not void the bid.

ALL BIDDERS

- 1. Have you used the appropriate bid form provided for this specific development?
- 2. Have you properly identified the trade, development, architect, etc., on your bid form?
- 3. Do your bid amounts, as expressed in figures and words, coincide? The amount expressed in words shall control.
- 4. Have you added any information not called for, or acknowledged an addendum or alternate that does not exist, which would make your bid conditional or obscure, and lead to a bid protest?
- 5. Is your Bid Form **SIGNED** and dated?
- 6. **Bid Deposits**
 - a. Is your bid deposit, if in the form of a bid bond, issued from a bonding company licensed to do business in the Commonwealth of Massachusetts? **Bid deposits in the form of cash, certified check, treasure or cashier's checks are also acceptable forms of bid deposit. The bid deposit must be submitted to the housing authority at or before the time of bidding.**
 - b. **Is it signed by you and the bonding company?**
 - c. Is your bid deposit made payable to the **Housing Authority? Bid deposits made payable to the city, town, commonwealth, or architect will cause the bid to be rejected.**
 - d. Is your bid deposit at least five (5%) of the largest possible bid amount, considering all alternates?

Passbooks, Letters of Credit, and Deeds to Property are not acceptable as a bid deposit.

FILED SUB-BIDDERS

- 7. Have you acknowledged every alternate if applicable to the project?
- 8. If an alternate pertains to your specific category of work and you estimate that there is **no change in price**, did you indicate by writing "**no change**", "**N/C**" or "**0**"?
- 9. If an alternate is called for and it does not affect your category of work did you so indicate by writing "**N/A**" or "**0**".

Leaving this space blank, on your sub bid form, when alternates are requested, may lead to a may lead to rejection of your bid.

- 10. Paragraph E of the Form for Sub Bid requires the listing of Sub-Sub Bids **only when your section of the specification explicitly calls for sub-sub bids**. If sub-sub bids are not required did you either leave the space blank or write "**N/A**"?

Filling in paragraph E with your own name or a sub-sub's name when sub-sub bids are not explicitly required by the specifications will cause your bid to be rejected.

- 11. If Sub-Sub Bids are required did you fill in the name, class of work, and amount of the sub-sub bid you are using?
- 12. If you customarily perform this work did you fill in your **name, class of work, and no dollar amount?**

- 13. Have you acknowledged all addenda ISSUED that affect your trade, and followed the instructions contained therein?
- 14. Have you attached your current DCAMM Sub-Bidder Certificate of Eligibility and a **signed** DCAMM Sub-Bidders Update Statement to your bid, and are they completely and accurately filled out?
- 15. Have you **signed** your Update Statement?

GENERAL BIDDERS

- 16. Have you acknowledged every alternate if applicable to the project?
- 17. If an **ALTERNATE** price is requested and you estimate that there is no change in price, did you indicate by writing "**no change**", "**N/C**" or "**0**"?

Leaving this space blank, on your general bid form, when alternates are requested may lead to rejection of your bid.

- 18. Have you indicated in Item 2 of your Form for General Bid if you will require performance and payment bonds from the subcontractors by writing "**yes**" or "**no**"? If left blank it will be interpreted as "**yes**".

(See Articles 5 & 7 of 00.21.00 Instruction to Bidders).

Remember this is your decision as a general bidder.

- 19. Have you acknowledged all addenda issued, and followed the instructions contained therein?
- 20. Have you attached your current DCAMM Certificate of Eligibility and a **signed** DCAMM Update Statement (Form CQ3) to your bid, and are they completely and accurately filled out?
- 21. Have you **signed** your Update Statement?

This checklist is provided as guidance and assistance to bidders to avoid technical mistakes resulting in rejection of a bid. The full comprehensive instructions are located in section 00.21.50 Instructions to Bidders.

This in no way changes, affects, or supersedes the provisions set forth in M.G.L. c.149 §44A-J or c.30 §39M or any other sections or provisions contained in the contract documents.

THIS FORM DOES NOT HAVE TO BE SUBMITTED WITH A BID!

OWNER-CONTRACTOR AGREEMENT
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF HOUSING AND LIVABLE COMMUNITIES

PROJECT # 133064

This agreement made «Approval_Date» by and between **Holbrook Housing Authority**, hereinafter called the "Owner", and «Contractor_Name» hereinafter called the "Contractor".

Witnesseth, that the Owner and the Contractor, for the consideration hereinunder named, agree as follows:

Article 1. Scope of Work: The Contractor shall perform all Work required by the Contract Documents for **LHA Project # «TBD» EOHLC # «TBD» Project Name: «TBD»** acting as, and referred to in the Contract Documents as the "Architect".

Article 2. Time of Completion: The Contractor shall commence work under this Contract on the date specified in the written "Notice to Proceed" and shall bring the Work to Substantial Completion within **126** calendar days of said date. Damages for delays in the performance of the Work shall be in accordance with Article 9 of the General Conditions of the Contract.

Article 3. Contract Sum: The Owner shall pay the Contractor, in current funds, for the performance of the Work, subject to additions and deductions by Change Order, of the Contract Sum of «TBD».

The Contract Sum is divided as follows:

- Item 1: The Work of the Contractor, being all Work other than that covered by Item 2: \$«Item_1».
- Item 2: Subcontractors as follows:

Section - Trade	Subcontractor	Amount
«Trade1»	«Sub1»	\$«Amt1»
«Trade2»	«Sub2»	\$«Amt2»
«Trade3»	«Sub3»	\$«Amt3»
«Trade4»	«Sub4»	\$«Amt4»
«Trade5»	«Sub5»	\$«Amt5»
«Trade6»	«Sub6»	\$«Amt6»
«Trade7»	«Sub7»	\$«Amt7»
«Trade8»	«Sub8»	\$«Amt8»
«Trade9»	«Sub9»	\$«Amt9»

TOTAL OF ITEM 2 \$«Item_2».

Article 4. Contract Documents: The following, together with this Agreement, form the Contract and all are as fully a part of the contract as if attached to this Agreement or repeated herein: The Advertisement, Bidding Documents, Contract Forms, Conditions of the Contract, and Specifications as enumerated in the Table of Contents, the drawings as enumerated in the List of Contract Drawings, publication known as the EOHLC Construction Handbook, and all Modifications issued after execution of the Contract. Terms used in this Agreement which are defined in the Conditions of the Contract shall have the meanings designated in those Conditions.

Article 5. Alternates: The following Alternates have been accepted and their costs are included in the Contract Sum stated in Article 3 of this Agreement: «Alternates_Accepted»

Article 6. REAP Certification: Pursuant to M.G.L. c.62(c) §49(a), the individual signing this Contract on behalf of the Contractor, hereby certifies, under the penalties of perjury, that to the best of their knowledge and belief the Contractor has complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

Article 7. Worker Documentation Certification: In accordance with Executive Order 481 the undersigned further certifies under the penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of this contract; that pursuant to federal requirements, the Contractor shall verify the immigration status of all workers assigned to such contract without engaging in unlawful discrimination; and that it shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the contract period may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

Article 8. Conflict of Interest: The Contractor covenants, that (1) presently, there is no financial interest and shall not acquire any such interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this Agreement or which would violate M.G.L. c.268A, as amended; (2)in the performance of this Contract, no person having any such interest shall be employed by the Contractor or engaged as a subcontractor by the contractor; and (3) no partner or employee of the firm is related by blood or marriage to any Board Member or employee of the Awarding Authority.

Article 9. Validation: This Contract will not be valid until signed by the Secretary of the Executive Office of Housing and Livable Communities or her/his designee.

In Witness whereof, the Parties Hereto Have Caused This Instrument to be executed Under Seal.

CONTRACTOR

AWARDING AUTHORITY

«Contractor_Name»

Holbrook Housing Authority

«Contractor_Address»

By: _____
Signature, Title & Seal

By: _____
Signature & Seal

Witness: _____

Witness: _____

**EXECUTIVE OFFICE OF HOUSING AND LIVABLE
COMMUNITIES**

Secretary or Designee

Date: _____

CERTIFICATE OF CORPORATE VOTE OF AUTHORIZATION

Date: _____ 20__

I hereby certify that a meeting of the Board of Directors of the:

NAME OF CORPORATION

duly called and held at _____ on the ___ day of _____ 20__

at which a quorum was present and acting, it was voted that _____
NAME OF CORPORATE OFFICER

of the _____,
NAME OF CORPORATION

be and hereby is authorized to execute and deliver for and on behalf of the Corporation, a Contract with the Local Housing Authority, for work to be done at **Bathroom Exhaust Fan & Kitchen Hood Replacement, 1 Holbrook Court - Project #133064** in Holbrook, Massachusetts.

And to act as principal to execute bonds in connection therewith, which Contract and Bonds were presented to and made part of the records of said meeting.

I further certify that _____ is duly qualified and acting
NAME OF CORPORATE OFFICER
_____ of the Corporation and that said vote has not been repealed,
TITLE
rescinded or amended.

A true copy of the record,

ATTEST: _____

(CORPORATE SEAL)

On this ___ day of _____ 20__, before me, the undersigned Notary Public, personally appeared _____, duly designated by the board of directors and proved to me, through satisfactory evidence of identification, which was _____, that s/he is the person whose name is signed on the foregoing documents, and acknowledged to me that s/he signed it voluntarily for its stated purpose and that it was her/his free act and deed.

Notary Public
My Commission Expires:

BOND NO. _____

PERFORMANCE BOND

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF HOUSING AND LIVABLE COMMUNITIES

KNOW ALL MEN BY THESE PRESENTS:

That we, _____, as **Principal**, and
_____, as **Surety**,
are held and firmly bound unto the **LOCAL HOUSING AUTHORITY**, as **Obligee**,
in the sum of _____ dollars (\$ _____)
to be paid to the Obligee, for which payments, well and truly to be made, we bind ourselves, our respective
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said **Principal** has made a contract with the **Obligee**, bearing the date of _____, **20__**
for the **Bathroom Exhaust Fan & Kitchen Hood Replacement, 1 Holbrook Court - Project #133064** in
Holbrook, Massachusetts.

NOW, the condition of this obligation is such that if the **Principal** and all Subcontractors under said contract
shall well and truly keep and perform all the undertakings, covenants, agreement, terms and conditions of
said contract on its part to be kept and performed during the original term of said contract and any extensions
thereof that may be granted by the Obligee, with or without notice to the **Surety**, and during the life and any
guarantee required under the contract, and shall also well and truly keep and perform all the undertakings,
covenants, agreements, terms and conditions of any and all duly authorized modifications, alterations
changes or additions to said contract that may hereafter be made, notice to the **Surety** of such modifications,
alterations, changes or additions being hereby waived, then this obligation shall become null and void;
otherwise, it shall remain in full force and virtue.

IN THE EVENT, that the contract is abandoned by the **Principal**, or in the event that the Obligee, under the
provisions of Article 19 of the General Conditions of said contract terminates the employment of the **Principal**
or the authority of the **Principal** to continue the work, said **Surety** hereby further agrees that said **Surety**
shall, if requested in writing by the Obligee, take such action as is necessary to complete said contract.

IN WITNESS WHEREOF, the **Principal** and **Surety** have hereunto set their hands and seals this:
_____ Day of _____ 20__

PRINCIPAL _____

SURETY _____

By: _____

By: _____

SEAL

ATTORNEY-IN FACT

Attest: _____

Attest: _____

The rate for this bond is _____% for the first \$ _____ and _____% for the next \$ _____

The total premium for this bond is \$ _____

BOND NO. _____

PAYMENT BOND

COMMONWEALTH OF MASSACHUSETTS
OFFICE OF HOUSING AND LIVABLE COMMUNITIES

KNOW ALL MEN BY THESE PRESENTS:

That we, _____, as **Principal**, and
_____, as **Surety**,
are held and firmly bound unto the _____ **LOCAL HOUSING AUTHORITY**, as
Obligee,
in the sum of _____ dollars (\$ _____)
to be paid to the Obligee, for which payments, well and truly to be made, we bind ourselves, our respective
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said **Principal** has made a contract with the **Obligee**, bearing the date of _____, 20__
for the **Bathroom Exhaust Fan & Kitchen Hood Replacement, 1 Holbrook Court - Project #133064** in
Holbrook, Massachusetts.

NOW the conditions of this obligation are such that if the **Principal** and all subcontractors under said contract
shall pay for all labor performed or furnished and for all materials used or employed in said contract and in
any and all duly authorized modifications, alterations, extensions of time, changes or additions to said
contract that may hereafter be made, notice to the **Surety** of such modifications, alterations, extensions of
time, changes or additions being hereby waived, the foregoing to include any other purposes or items set
out in, and to be subject to, provisions of M.G.L. c.30 §39A, and M.G.L. c.149 §29, as amended, then this
obligation shall become null and void; otherwise it shall remain in full force and virtue.

IN WITNESS WHEREOF, the **Principal** and **Surety** have hereunto set their hands and seals this:

_____ Day of _____ 20__

PRINCIPAL _____

SURETY _____

By: _____

By: _____

SEAL

ATTORNEY-IN FACT

Attest: _____

Attest: _____

The rate for this bond is _____% for the first \$ _____ and _____% for the next \$ _____

The total premium for this bond is \$ _____

00.72.00
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION
c.149 \$150,000 – \$10 Million

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Owner-Contractor Agreement, Advertisement, Instructions to Bidders, Bidding Documents, Contract Forms, Conditions of the Contract, Specifications, Drawings, EOHLC publication known as the Construction Handbook, all addenda issued prior to execution of the Contract, and other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect.

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification.

1.1.3 THE WORK

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

1.1.4 THE PROJECT

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

1.1.5 THE DRAWINGS

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

1.1.6 THE SPECIFICATIONS

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

1.1.7 THE CONSTRUCTION HANDBOOK

The Construction Handbook is published by and available free of charge, from the Department. It outlines the procedures that the Contractor, Owner, Architect, and Department shall follow during the construction of the Work. The most recent version, at the time of bid opening, of the Construction Handbook is incorporated by reference into the Contract Documents.

1.2 EXECUTION, CORRELATION, AND INTENT

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

1.2.2 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. In case of inconsistent requirements in the Contract Documents, the requirement for the greater quantity or higher quality shall take precedence and shall be the Contract requirement.

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

1.2.4. Where reference is made to standards or trade association publications, it shall be considered to refer to the latest edition and revision thereof, if any, in effect on the date the Contract Documents were advertised for bid.

1.3 USE OF DRAWINGS, SPECIFICATIONS, AND OTHER DOCUMENTS

The Drawings, Specifications and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, the Architect, and the Department.

ARTICLE 2 OWNER

2.1 DEFINITION

The term "Owner", sometimes also referred to as the "Awarding Authority" or "Authority", means the Housing Authority identified in the Owner-Contractor Agreement, organized and existing under the provisions of M.G.L. c.121B.

2.2 INFORMATION AND SERVICES TO BE PROVIDED BY THE OWNER

2.2.1 The Owner will furnish to the Contractor, free of charge, a reasonable number of copies of the Contract Documents for the execution of the Work, including a set for record purposes. In addition, the Owner, through the Architect, will furnish to the Contractor a reproducible transparency and one black line print of detail and clarification drawings issued after the Contract has been awarded. The Contractor shall provide and distribute such number of prints of these transparencies as required for the Contractor's and Subcontractors' use.

2.2.2 The Owner shall furnish available surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents or persistently fails to carry out the Work in accordance with the Contract Documents, the Owner by written order signed personally or by its authorized agent, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

2.3.2 Stop work orders require the Administrators' prior approval. (See Subparagraph 3.1.2)

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Architect at the Owner's direction to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, hire one or more contractors to correct such deficiencies.

2.4.2 In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services and expenses made necessary by such default, neglect, or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 DEPARTMENT

3.1 DEFINITIONS

3.1.1 The term "Department" means the Massachusetts Department of Housing and Community Development, 100 Cambridge St. Suite 300, Boston, MA 02114.

3.1.2 The term "Administrator" means the person appointed by the Department to administer the terms of the Contract for Financial Assistance between the Owner and the Department, who is also empowered to take certain actions under this Agreement. Contractor should address mail to the Administrator c/o the Construction Management Unit.

3.1.3 The term "Construction Advisor" means the person designated by the Administrator to assist the Administrator. The duties, responsibilities and limitations of the Construction Advisor's authority are described in the Construction Handbook.

3.2 PROJECT FUNDING

The Work under this Contract is funded by the Commonwealth of Massachusetts through the Department pursuant to a contract for financial assistance between the Department and the Owner.

3.3 DEPARTMENT'S RESPONSIBILITIES

3.3.1 The Contractor is advised that various actions taken or decisions made by the Owner and/or the Architect under this Contract, require the prior approval and counter-signature of the Administrator. Those actions or decisions include, but are not limited to, the following:

- .1 Approval, substitutions, and final selection of Sub-Bidders pursuant to M.G.L. c.149 §44F
- .2 Change Orders and Construction Change Directives, whether or not they affect a change in the Contract Sum or in the Contract Time.
- .3 Written orders, notices, and approvals given by the Owner pursuant to the Contract Documents or pursuant to any Laws applicable to this Contract, including approval of the Contractor's payment requests.
- .4 Approval of "or equal" submissions and substitutions pursuant to Subparagraph 4.6.3.
- .5 Stop Work order.
- .6 Certificate of Substantial Completion.
- .7 Final payment.
- .8 Termination of Contract.

3.3.2 In any instance where the Contractor requires clarification as to whose approval is required, the Architect shall provide such clarification.

3.3.3 Work undertaken by the Contractor or a Subcontractor at the Owner's or other person's order without the Administrator's countersignature prior to the start of such work shall be considered unauthorized work and shall not be considered cause for extra payment. The Contractor or Subcontractor shall be responsible for performing, at their own expense, corrective measures required by the Architect due to any failure to obtain the prior approval of the Administrator pursuant to Subparagraph 3.3.1.

3.3.4 The Department and its authorized representatives and agents shall at all times have access to, and be permitted to observe and review all Work, materials, payrolls, records of personnel, conditions of employment, invoices of materials, and other relevant data and records maintained by the Contractor on the Project.

ARTICLE 4 CONTRACTOR

4.1 DEFINITION

The Contractor, sometimes referred to as the General Contractor, is the person or entity identified as such throughout the Contract Documents as if singular in number. The term Contractor means the Contractor or its authorized representative.

4.2 REVIEW OF CONTRACT DOCUMENTS & FIELD CONDITIONS BY CONTRACTOR

4.2.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Subparagraph 2.2.2 and shall at once report to the Architect errors, inconsistencies, or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies, or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency, or omission and knowingly failed to notify the Architect. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Architect, the Contractor shall assume responsibility for such performance and shall bear the attributable costs for correction.

4.2.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies, or omissions discovered shall be reported to the Architect at once.

4.2.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 4.7.

4.3 SUPERVISION AND CONSTRUCTION PROCEDURES, COORDINATION, AND CUTTING AND PATCHING

4.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work under the Contract.

4.3.2 The Contractor shall be responsible for the proper fitting of all Work and the coordination of the operations of all trades, Subcontractors, or material men engaged upon the Work.

4.3.3 All necessary cutting, coring, drilling, grouting, and patching required to fit together the several parts of the Work shall be done by the Contractor, except as may be specifically noted otherwise under any particular filed sub-bid section of the Specifications.

4.3.4 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors, and their agents and employees, and other persons performing portions of the Work.

4.3.5 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

4.3.6 The Contractor shall do engineering required for establishing grades, lines, levels, dimensions, layouts, and reference points for the trades; shall be responsible for maintaining bench marks and other survey marks; and shall replace any bench marks or survey marks which have been disturbed or destroyed.

4.3.7 Unless otherwise required by the Contract Documents, or directed in writing by the Architect, Work shall be done during regular working hours. However, if the Contractor desires to carry on the Work outside of regular working hours or on Saturdays, Sundays, or Massachusetts holidays it shall allow ample time to enable satisfactory arrangements to be made for inspecting Work in progress and shall bear the costs of such inspection. The Owner shall bill the Contractor directly for such costs.

4.3.8 Work done outside of regular working hours without the consent or knowledge of the Architect shall be subject to additional inspection and testing as directed by the Architect. The cost of this inspection and testing shall be paid by the Contractor whether the Work is found to be acceptable or not.

4.4 SUPERINTENDENT

4.4.1 The Contractor shall employ a Superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case. The Superintendent shall attend each job meeting.

4.4.2 The Superintendent shall be a competent and responsible employee, satisfactory to the Owner, who is regularly employed by the Contractor and is designated by the Contractor as its representative to be in full time attendance at the Project site throughout the construction of the Work. The Superintendent shall be responsible for coordinating all the Work of the Contractor and the Subcontractors. The Superintendent shall be licensed consistent with the Massachusetts Building Code. The Superintendent's resume shall be submitted to the Owner prior to commencement of construction and must demonstrate to the Owner's reasonable satisfaction that the Superintendent has performed similar duties on previous construction projects similar to the Project.

4.5 LABOR

The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them, and whenever the Owner shall notify the Contractor, in writing, that any worker is, in its opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the Work and shall not again be employed on the Project except with the consent of the Owner.

4.6 MATERIALS AND EQUIPMENT

4.6.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

4.6.2 Materials and Equipment to be installed as part of the Contract (both or either of which are hereinafter referred to as "Materials") shall be new, unused, of recent manufacture, assembled, and used in accordance with the best construction practices.

4.6.3 "OR EQUAL" SUBMISSIONS/SUBSTITUTIONS

4.6.3.1 Except where a product has been specified as a proprietary material, the words "or equal" are understood to follow the name of any maker, vendor, or product specified to be used in the Contract Documents. To determine if the materials or articles proposed by the Contractor are equal to those specified, the Architect, with the concurrence of the Department, shall determine whether the materials or articles proposed are at least equal in quality, durability, appearance, strength and design to the material or articles named or described, and will perform at least equally the functions imposed by the design. See M.G.L. c.30 §39M.

4.6.3.2 The Contractor shall be responsible for providing the Architect with any information and test results the Architect reasonably requires to determine if a material is equal to a material named or described in the Contract Documents.

4.6.3.3 Whenever the Contractor submits a material for approval as a substitute for a material named or described in the Contract Documents, such submission shall be made at least one hundred and twenty (120) days prior to the date the materials will be used on the Project but in no event later than ninety (90) days after the award of the Contract. In no event shall the Contractor maintain a claim for delays based upon the Architect's review of such substituted materials if the Contractor has failed to comply with the one hundred and twenty (120) days submission requirement.

4.7 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

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

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

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

4.7.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. The purpose of their submission is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.7.9.

4.7.5 The Contractor shall review, approve, and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action. The Contractor's attention is directed to the provisions of Subparagraph 4.6.3 entitled "Or Equal" Submissions/Substitutions and Section 01.25.13 of the Specifications.

4.7.6 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule submitted pursuant to Paragraph 9.4, and allows the Architect reasonable time to review submittals.

4.7.7 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such Work shall be in accordance with approved submittals.

4.7.8 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements, and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

4.7.9 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Department has given explicit written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the Architect's actions.

4.7.10 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals.

4.7.11 Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents.

4.7.12 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

4.8 SAMPLES AND TESTS

4.8.1 Materials to be used in the Work may be tested or inspected after reasonable notice by the Architect and may be rejected if they fail the specified tests. Except as otherwise provided in the Contract, all testing of material specifically requested by the Architect will be paid for by the Owner, except that the cost of testing of materials that fail the testing criteria shall be borne by the Contractor. If the Contractor requests permission to use a material that was not specified in the Contract Documents and the Architect requires testing of such material before approving its use, the Contractor shall pay for such testing.

4.8.2 The source of material proposed by the Contractor shall be designated in time to permit all required testing and inspection before the material is needed for incorporation into the Work. The Contractor shall have no claim for delays due to testing if it fails to designate the proposed source or to order the material in time to provide for adequate testing and inspection. Necessary arrangements shall be made to permit the Architect to make factory, shop, or other inspection of materials or equipment ordered for the Work, in process of manufacture or fabrication, or in storage elsewhere than the site of the Work.

4.8.3 The Contractor shall furnish the Architect with samples of the materials it proposes to use in the execution of the work in sufficient time to afford the Architect the opportunity to adequately review and, if necessary, arrange for testing of such materials.

4.9 DELIVERY AND STORAGE OF MATERIALS

4.9.1 Materials and equipment shall be progressively delivered to the site so that there will be neither delay in the progress of the Work nor an undue accumulation of materials that are not to be used within a reasonable time.

4.9.2 Materials stored off-site shall be stored at the expense of the Contractor in a manner that preserves their quality and fitness for the Work. Material shall be placed on wooden platforms or other hard clean surfaces and not on the ground and shall be properly protected.

4.9.3 If the Contractor requests the Architect's inspection of materials stored off-site, the Contractor shall assume the Architect's reasonable costs for travel, room, and meals associated with such inspection.

4.9.4 Materials stored either at the site or at some other location agreed upon in writing shall be located so as to facilitate prompt inspection and may again be inspected prior to their use in the work.

4.9.5 The Contractor shall take charge of and be liable for any loss of or injury to the materials delivered at or in the vicinity of the place where the Work is being done and shall notify the Architect as soon as any such materials are so delivered and allow them to be examined by the Architect.

4.9.6 Payment for stored materials shall be made in accordance with Paragraph 10.4.

4.10 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

4.11 REJECTION OF DEFECTIVE MATERIALS

The Architect may reject materials if the Architect reasonably determines that such materials do not conform to the Contract Documents. No rejected materials, the defects of which have been subsequently corrected, shall be used in the Work except with the written permission of the Architect. No extra time shall be allowed for completion of the Work due to the rejection of non-conforming materials.

4.12 REJECTION OF DEFECTIVE WORK

The Architect's inspection of the Work shall not relieve the Contractor of any of its responsibilities to fulfill the Contract obligations, and defective work shall be corrected. Unsuitable work may be rejected by the Architect, notwithstanding that such work and materials have been previously overlooked or misjudged by the Architect and accepted for payment. If the Work or any part thereof shall be found defective at any time before the final acceptance of the whole Work, the Contractor shall forthwith correct such defect in a manner satisfactory to the Architect, and if any material brought upon the site for use in the Work, or selected for the same, shall be rejected by the Architect as unsuitable or not in conformity with the Contract requirements, the Contractor shall forthwith remove such materials from the vicinity of the Work.

4.13 MATERIALS ATTACHED OR AFFIXED TO THE WORK

Nothing in this Contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the Work or the soil; but all such materials shall, upon being so attached or affixed, become the property of the Owner.

4.14 SALES TAX EXEMPTION AND OTHER TAXES

4.14.1 To the extent that materials and supplies are used or incorporated in the performance of this Contract, the Contractor is considered an exempt purchaser under the Massachusetts Sales Act, Chapter 14 of the Acts of 1966.

4.14.2 The Contractor shall be responsible for paying all other taxes and tariffs of any sort, related to the work.

4.15 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the use and information of the Owner, one record copy of the Drawings, Specifications, Addenda, Change Orders, and other Contract Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples, updated construction schedule, and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

4.16 PERMITS, FEES, AND NOTICES

4.16.1 The Contractor (and the appropriate licensed subcontractor when applicable) shall secure and the Owner shall pay for any and all permits. The Contractor (and licensed subcontractor when applicable) shall secure and pay for all licenses, and other fees required for the proper execution of the Work. The Contractor shall coordinate all efforts required to obtain these permits including having the permit issued in the name of the Contractor or appropriate subcontractor.

4.16.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work.

4.16.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

4.16.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

4.17 DEBRIS, CHEMICAL WASTE

4.17.1 The Contractor shall not permit the accumulation of debris, both exterior and interior, and the work area shall at all times be kept satisfactorily clean.

4.17.2 The Contractor shall remove debris from the site of the work and legally dispose of it at any private or public dump that the Contractor may choose. The Contractor shall make all arrangements and obtain any approvals necessary for said disposal from the owners or officials in charge of such dumps and shall bear all cost, including fees resulting from such disposal. Garbage shall be removed daily.

4.17.3 No open fire shall be permitted on site.

4.17.4 Chemical Waste: Chemical waste shall be stored in corrosion resistant containers, removed from the Project site, and disposed of not less frequently than monthly unless directed otherwise. Disposal of chemical waste shall be in accordance with requirements of the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP). Fueling and lubricating of vehicles and equipment shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants to be discarded or burned shall be disposed of in accordance with approved procedures meeting all applicable Federal, State and local regulations. In the event of an oil or hazardous materials spill large enough to violate Federal, State, or applicable local regulations, the Architect shall be notified immediately. The Contractor shall be responsible for immediately cleaning up any oil or hazardous waste spills resulting from its operations. Any costs incurred in cleaning up any such spills shall be borne by the Contractor.

4.18 SITE AND WEATHER PROTECTION

4.18.1 The Contractor shall take precaution during the execution of work involving demolition not to disturb or damage any existing structures, landscaping, walks, roads, or other items scheduled to remain. The Contractor shall restore any damaged items to original condition and as directed by the Architect. The Contractor shall provide and erect acceptable barricades, fences, signs, and other traffic devices to protect the work from traffic and the public as reasonably necessary and as required by the Massachusetts Building Code.

4.18.2 The Contractor shall install weather protection and provide adequate heat in the protected area from November 1 to March 31 as required by M.G.L. c.149 §44G.

4.19 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved and reported immediately to the Architect for determination of appropriate actions to be taken.

4.20 SAFETY REQUIREMENTS

4.20.1 The Contractor must comply with all Federal, State, and Local safety laws and regulations of the applicable to work performed under this Contract.

4.20.2 If the Contractor uses or stores toxic or hazardous substances it is subject to M.G.L. c.111F §2, the "Right to Know" law and regulations promulgated by the Department of Public Health, 105 CMR 670, the Department of Environmental Protection, 310 CMR 33, and the Department of Labor and Workforce Development, 441 CMR 21; and must post a Workplace Notice obtainable from the Department of Labor and Workforce Development.

4.20.3 The Contractor must comply with Dig-Safe Laws. Dig-Safe is the Utility Underground Plant Damage Prevention System, 331 Montvale Ave., Woburn, MA 01801, 1.888.344.7233. The Contractor must notify Dig-Safe of contemplated excavation, demolition, or explosive work in public or private ways, and in any utility company right of way or easement, by certified mail, with a copy to Department of Environmental Protection (DEP). This notice must be given at least 72 hours prior to the work, but not more than sixty days before the work is to be done. Such notice shall state the name of the street or the route number of the way and an accurate description of the location and nature of the proposed work. Dig-Safe is required to respond to the notice within 72 hours of receipt by designating the location of pipes, mains, wires or conduits at the site. The Contractor shall not commence work until Dig-Safe has responded. The work shall be performed in such manner and with reasonable precautions taken to avoid damage to utilities under the surface at the work location. The Contractor shall provide the Superintendent with current Dig-Safe regulations, and a copy of M.G.L. c.82 §40. Any costs related to the services performed by Dig-Safe shall be borne by the Contractor.

4.20.4 This project is subject to compliance with Public Law 92-596 "Occupational Safety and Health Act of 1970" (OSHA), with respect to all rules and regulations pertaining to construction, U.S. Code Title 29, sections 651 et seq. including Volume 36, numbers 75 and 105, of the Federal Register as amended, and as published by the U.S. Department of Labor.

4.20.5 If this Project requires the containment or removal of asbestos or material containing asbestos, lead or waste containing lead based paint, the Contractor shall ensure that the person or company performing the asbestos or lead related services is licensed pursuant to applicable State laws and regulations.

4.21 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work at all times and shall cooperate with the Owner whenever the Owner invites visitors to the site.

ARTICLE 5 ADMINISTRATION OF THE CONTRACT

5.1 ARCHITECT

The Architect is the person or entity licensed to practice architecture or engineering, who is responsible for performing the duties assigned to the Architect by the Contract Documents.

5.2 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall communicate through the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

5.3 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

5.3.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the guaranty period described in Article 11. The Architect will advise and consult with the Owner.

5.3.2 The Architect will regularly visit the site, conduct job meetings, and keep the Owner informed of the progress and quality of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work. The Architect's minutes of meetings shall be the official minutes kept on the Project.

5.3.3 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will submit to the Owner and the Department for their consideration Certificates for Payment in such amounts as the Architect determines appropriate.

5.3.4 The Architect shall reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable to achieve the intent of the Contract Documents, the Architect will have authority to require additional inspection or testing of the Work in accordance with Paragraph 4.8.

5.3.5 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking such submittals for conformance with the information given and the design concept expressed in the Contract Documents. This review shall be in accordance with the

provisions of Subparagraph 4.6.3 and the procedures described in Section 01.33.00 of the Specifications, and shall not relieve the Contractor from compliance with the requirements of the Contract Documents.

5.3.6 The Architect will prepare Change Orders and Construction Change Directives, and may authorize Minor Changes in the Work as provided in Paragraph 8.1.

5.3.7 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of Final Completion, will receive and forward to the Owner for the Owner's review and records written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

5.3.8 If the Owner, Architect, and Department agree, the Owner may provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities, and limitations of authority of such project representatives shall be as described in the Construction Handbook and explained at the pre-construction conference.

5.3.9 The Architect will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Architect's written response to such requests will be made within the thirty day time limit prescribed in Paragraph 8.6.3.

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

5.4 PROCEDURES AND PRACTICES

The Department's procedures, forms, and practices which must be employed on the Project are described in the Construction Handbook, and will be explained at the pre-construction conference.

5.5 PRECONSTRUCTION CONFERENCE

Prior to commencement of the Work, the Contractor shall meet in conference with representatives of the Owner, Department, and Architect to discuss and develop mutual understandings relative to administration of the quality assurance program, safety program, labor provisions, the schedule of work, and other Contract procedures.

ARTICLE 6 SUBCONTRACTORS

6.1 DEFINITION

6.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the work at the site.

6.1.2 The Contractor shall require each Subcontractor to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor assumes toward the Owner and the Architect. **6.1.3** Subcontracts between the Contractor and a filed sub-bidder shall be in the form required by M.G.L c.149 §44F.

6.2 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

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

- .1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 19.1 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and
- .2** assignment is subject to the prior rights of the surety obligated under bond relating to the Contract.

ARTICLE 7 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

7.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

7.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such claim as provided elsewhere in the Contract Documents.

7.1.2 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing and coordinating their construction schedules with one another when directed to do so.

7.2 MUTUAL RESPONSIBILITY

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

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

7.2.3 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors

ARTICLE 8 CHANGES IN THE WORK

8.1 CHANGES - DEFINITIONS

8.1.1 All changes in the work, including any increase, decrease, or other equitable adjustment in the Contract Sum or in the time for performing the Contract, shall be authorized in the form of one, or a combination of, the following written instruments: Change Order, Construction Change Directive, or a Minor Change in the Work. The term "equitable adjustment" as used in this paragraph shall include all adjustments to the Contract Sum or time to which the Contractor is entitled pursuant to M.G.L. c.30 §§39N and 39O and such equitable adjustment shall be made in accordance with the provisions of this Article.

8.1.2 A Minor Change is a written order binding on the Owner and Contractor issued by the Architect, with the concurrence of the Construction Advisor, not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. The Contractor shall carry out such written orders promptly.

8.1.3 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Department, Contractor, and Architect, stating their agreement regarding a change in the work, including a change in the Contract Sum or Contract Time.

8.1.4 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner, Architect, and Department, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum, or Contract Time, or both. The Owner may, by Construction Change Directive, and without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

8.1.5 A Change Order shall be based upon agreement among the Owner, Contractor, Architect, and Department; a Construction Change Directive requires agreement by the Owner, Architect, and the Department, and may or may not be agreed to by the Contractor; an order for a Minor Change in the Work may be issued by the Architect with the concurrence of the Construction Advisor.

8.1.6 Change Orders and Construction Change Directives must be counter-signed by the Administrator in accordance with Subparagraph 3.3.1, to be effective.

8.2 REQUEST FOR A CHANGE IN THE WORK

A change order request shall be in writing and may originate with the Owner, the Department, the Architect, or the Contractor. If such a request would cause a change in the Contract Sum, the Contractor shall promptly submit to the Architect its cost and pricing data for such proposed change. Such data shall be accurate, current and complete at the time of submission and shall be computed in accordance with Subparagraph 8.3.1.

8.3 METHOD FOR DETERMINING AMOUNT OF CHANGE

8.3.1 Changes in the Contract Sum shall be calculated in accordance with one or a combination of the following methods, as determined by the Architect:

- .1** Lump sum basis, provided the lump sum amount shall include the estimated cost of the change, broken down by Items **a** through **i** in the following Subparagraph **.3**.
- .2** Unit price basis, to be adjusted in accordance with contract unit prices, or other agreed upon unit prices provided that the unit prices shall be inclusive of all costs related to such equitable adjustment.

- .3 Time and materials basis, on a not-to-exceed predetermined upset amount determined by the Architect, to be subsequently adjusted on the basis of the Contractor's actual costs based on the following items a through i:
- a. Cost of labor at the rates found elsewhere in this document, including foremen;
 - b. Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
 - c. Rental cost of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others.
 - d. A percent of the net increase or decrease of Item a to cover Worker's Compensation, F.I.C.A., and unemployment contributions.
 - e. The percentage for Worker's Compensation in Item d above shall not exceed the standard manual rate for the involved trade, as set by the Worker's Compensation Rating and Inspection Bureau of Massachusetts. This rate shall not include any surcharges such as experience modifications and all risk factor adjustment programs, etc.
 - f. For work performed by the Contractor's own forces, there shall be added an amount of 15% of items a - d for overhead, superintendence, and profit.
 - g. For work performed by any Subcontractor, there shall be added an amount of 15% of the Subcontractor's costs for Items a - d for the Subcontractor's overhead, superintendence and profit. The Contractor shall be entitled to an additional 10% mark-up on the total amount of the Subcontractor's price as compensation for assuming full responsibility and supervision for the Subcontractor's work.
 - h. Actual increases in the premium costs for performance and payment bonds required of the Contractor and filed Subcontractors, provided there will be an appropriate credit for reduced premiums for a credit change order.
 - i. On any change in the Contract Sum that involves a credit, the amount of the credit will not include an overhead and profit factor, however, the credit will include an amount for item d. which shall not be less than 25% of item a.

8.3.2 The method provided in Subparagraph 8.3.1, for compensating the Contractor and Subcontractors for changes in the Work, shall be considered to adequately compensate the Contractor and Subcontractors for any and all costs directly, indirectly, or consequentially related to, or caused by, such change in the work.

8.4 WORK PERFORMED UNDER PROTEST

The Contractor shall perform all work as directed by the Architect, and if the Architect determines that certain work for which the Contractor has requested a change order does not represent a change in the Contract, or if the Contractor and the Architect cannot agree to the amount of compensation for a change order, the Contractor shall perform said work under protest and must follow the notice requirements and maintain the records required by Subparagraph 8.7.3.

8.5 STATUTORY CHANGE ORDER PROVISIONS

The Contractor's attention is directed to the Massachusetts General Laws Chapter 30, §§ 39I, 39J, 39N, 39O and 39P, the provisions of which apply to this Contract.

8.6 DIFFERING SITE CONDITIONS, M.G.L. c.30 §39N

8.6.1 If, during the progress of the Work, the Contractor or the Owner discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents, either the Contractor or the Owner may request an appropriate time extension and an equitable adjustment in the Contract Sum applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered.

8.6.2 Upon receipt of such a claim from a Contractor, or upon its own initiative, the Owner shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the Owner shall upon submission by the Contractor of a properly submitted Change Order request, make an equitable adjustment in the Contract Sum and the Contract shall be modified in writing accordingly.

8.6.3 TIMELY DECISION BY OWNER. M.G.L. c.30 §39P

Whenever this Contract requires the Owner or its Architect to make a decision during construction of the Project, on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, that decision shall be made promptly and, in any event, no later than thirty days after receipt of a written submission for such decision by the Contractor; but if such decision requires extended investigation and study, the Owner or the Architect shall, within thirty days after the receipt of the submission, give the Contractor written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

8.7 CLAIMS

8.7.1 If the Contractor has any claim or dispute of any nature arising under this Contract, including a claim based on the Owner's failure or refusal to approve a change order request of the Contractor, in full or in part, the Contractor shall submit such claim or dispute to the Architect, in the form of a change order request, for initial review and consideration, subject to further appeal to the Administrator. If the Contractor is not satisfied with the Architect's decision or, if the Architect fails to render a decision within thirty days after receiving written notice of such claim or dispute from the Contractor, the Contractor may file a written request for a decision with the Department pursuant to Subparagraph 8.7.2.

8.7.2 Appeal of an Architect's decision under Subparagraph 8.7.1 must be made directly to the Administrator by certified mail, copy to the Architect and Owner, within twenty-one (21) calendar days after the date on which the party making the appeal receives the Architect's written decision or within twenty-one (21) days after the thirty (30) day non-decision period noted in 8.7.1. Failure to appeal within this period will result in the Architect's decision becoming final and binding upon the Owner and the Contractor.

8.7.3 Pending resolution of the claim or dispute, the Contractor must proceed with the disputed Work, as directed by the Architect. The Contractor must give written notice to the Department and the Architect stating that it is proceeding with the disputed work under protest. Accurate records of the nature and extent of the disputed Work and of the time spent and equipment used on the disputed Work shall be maintained by the superintendent and verified daily by the Project Representative, or the Owner's designee. Failure of the Contractor to maintain such records shall cause the Contractor to forfeit its claim to additional compensation for such disputed work.

8.7.4 Meetings or administrative conferences held by the Department to review the basis of the claim or dispute are conducted in accordance with the procedure described in the Construction Handbook. Such conferences are not subject to the State Administrative Procedures Act.

8.7.5 At the conclusion of these proceedings, the Department shall issue a decision which shall be final under the Contract. The matter may then be appealed to a court of competent jurisdiction.

8.7.6 Requests for administrative conferences by subcontractors must be made by the Contractor; subcontractors cannot make such requests directly.

ARTICLE 9 TIME, SCHEDULES, AND COMPLETION

9.1 DEFINITIONS

9.1.1 Unless otherwise provided, Contract Time is the period of time, as extended by approved Change Order, allotted in the Contract Documents for Substantial Completion of the Work.

9.1.2 The date of commencement of the Work is the date established in the Notice to Proceed from the Owner. The commencement date shall not be postponed by the failure to act by the Contractor or by persons or entities for whom the Contractor is responsible.

9.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Subparagraph 9.6.7.

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

9.2. PROGRESS AND COMPLETION

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

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

9.3 DELAYS AND EXTENSIONS OF TIME

9.3.1 The Contractor shall be entitled to an extension of time for completion of the Work because of;

- .1** acts of God;
- .2** labor disputes;
- .3** abnormal weather conditions; or
- .4** acts of neglect of the Owner, Architect, or Department as described in Subparagraph 8.6.3.

9.3.1.5 Except in unusual circumstances, delays caused by suppliers, Subcontractors and sub-subcontractors shall be considered to be within the control of the Contractor.

9.3.1.6 Should the Contractor require additional time to complete the Work, the Contractor shall document the reasons therefor and request an extension of time at the time the alleged delay occurs, as provided in this Article and Article 8.

9.3.1.7 Failure to notify the Architect of any delay as provided in this Article shall preclude the Contractor from subsequently claiming any damages due to said delay.

9.3.1.8 Requests for extensions of time shall be submitted as a change order request to the Architect under Article 8 for the Owner's consideration.

9.3.2 CONTRACTOR'S LIABILITY FOR DELAYS

The Contractor shall be liable for, and shall pay, to the Owner, all of the Owner's Project related costs incurred after the time stipulated for Substantial Completion, as extended by Change Order. Such costs shall include: fees paid to the Architect as extra services for inspection services and administration of the Contract, at the rate stipulated in the Contract for Architectural Services between the Owner and the Architect; the costs of the Project Representative at the current salary rate; lost rental income based on the average rent collected by the Owner, and/or increased rental subsidies and any other direct expenses. The Owner may retain from moneys otherwise due the Contractor whatever sums accrue to the Owner pursuant to this provision. The Contractor shall not be liable for costs for delay in performance for any period for which an extension of the Contract Time has been granted pursuant to the provisions of Subparagraph 9.3.

9.3.3 OWNER DELAYS

9.3.3.1 The Owner may delay the commencement of the Work, or any part thereof, due to unforeseen circumstances or conditions which have a bearing on the Work required under this Contract or for any other reason if it is deemed to be in the best interest of the Owner to do so. Except as expressly provided in the following Subparagraphs 9.3.3.2, 9.3.3.3, and 9.3.3.4, the Contractor shall have no claim for additional compensation on account of such delay, but shall be entitled to an extension of Contract Time as determined reasonable by the Architect.

9.3.3.2 The Contractor and the Owner agree that the following Subparagraphs provide the Contractor with the right to request additional compensation for Owner caused delays only in the following two circumstances:

- .1** When the Owner provides the Contractor with a written order to suspend or delay the Work, or a portion thereof, for a period of fifteen days or more.
- .2** When the Owner or its Architect fails to make a decision within the thirty day period described in Subparagraph 8.6.3 and such failure delays the Work, or a portion thereof, for fifteen days or more.

9.3.3.3 The Owner may, for its convenience, order the Contractor in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as it may determine appropriate, provided however, that if there is a suspension, delay, or interruption for fifteen days or more, or there is a failure of the Owner to act within the time specified in this Contract, the Owner shall make an adjustment in the Contract Sum for any increase in the cost of performance of this Contract, but shall not include any profit to the Contractor on account of such increase; and provided further, that the Owner shall not make any adjustment in the Contract Sum under this provision for any suspension, delay, interruption, or failure to act to the extent that such is due to any cause for which this Contract provides for an equitable adjustment of the Contract Sum under any other Contract provisions. M.G.L. c.30 §390 (a).

9.3.3.4 The Contractor must submit the amount of a claim under Subparagraph 9.3.3.3 to the Owner in writing as soon as practicable after the end of the suspension, delay, interruption, or failure to act and, in any event, not later than the date of final payment under this Contract and except for costs due to a suspension order, the Owner shall not approve any costs in the claim incurred more than twenty days before the Contractor notified the Owner in writing of the act or failure to act involved in the claim. M.G.L. c.30 §390 (b).

9.3.3.5 The Owner and the Contractor agree that the preceding Subparagraph 9.3.3.4 places a burden on the Contractor to inform the Owner, whenever the Contractor considers that an action or inaction of the Owner or its Architect could result or has resulted in a delay in the Project, thereby providing the Owner with the opportunity to take action to avoid or lessen the time extensions or damages that might be associated with such action or inaction.

9.4 CONSTRUCTION AND PAYMENT SCHEDULES

9.4.1 Prior to commencement of the Work the Contractor shall submit to the Architect a construction schedule in bar graph form, satisfactory to the Architect, showing in detail the proposed progress for the construction of the various parts of the Work, the proposed times for receiving materials required, and the interrelationship between the various construction operations and the percentage of completion and the dollar value of the completed work on the first day of each month for each section of the specifications and the entire Work. Submission of said schedule shall be a condition precedent to approval of the Contractor's first application for payment.

9.4.2 At the end of each month, or more often if required, the Contractor shall furnish the Architect an updated schedule showing actual progress of the various parts of the Work in comparison with the originally proposed progress and payment schedules. If the Architect raises any objections to progress or payment schedules submitted by the Contractor, the Contractor shall immediately address and resolve such objections to the reasonable satisfaction of the Architect.

9.4.3 If the Contractor **submits** a construction schedule that anticipates Substantial Completion before the date established in the Owner's Notice to Proceed, the Contractor shall have no claim for additional compensation on account of any delays that prevent Substantial Completion before the date set in said Owner's Notice to Proceed.

9.5 USE AND OCCUPANCY

9.5.1 Prior to the date of Substantial Completion of the entire Project stipulated in the Notice to Proceed, the Owner shall have the right, from time to time, to occupy and use any portion of the Project as the Work in connection therewith is substantially completed, provided such use and occupancy does not unduly interfere with the Contractor's operations.

9.5.2 The Architect will, prior to any such use and occupancy, give written notice to the Contractor, indicating the areas intended to be occupied and used, and the intended commencement date of such use and occupancy. Occupancy and use shall not commence prior to a time mutually agreed to by the Owner and the Contractor.

9.5.3 Upon receipt of such notice of intent, the Contractor shall promptly secure and submit to the Architect endorsement from the insurance carrier permitting use and occupancy of the Work, or any designated portion thereof, by the Owner prior to Substantial Completion of the entire Project. The Contractor shall be permitted to cancel its special perils insurance for that portion of the Project used and/or occupied by the Owner.

9.5.4 Partial or entire use and occupancy by the Owner shall not constitute an acceptance of Work not completed in accordance with the Contract Documents nor relieve the Contractor from the obligation of performing any Work required by the Contract but not completed at the time of use and occupancy. Before such use and occupancy, the Architect will give the Contractor a list of items to be completed prior to Final Completion occurring in the areas to be occupied.

9.5.5 The Contractor shall be relieved of all maintenance costs of the portion of the Project occupied under the provisions of this Article.

9.5.6 The Contractor shall not be responsible for wear and tear or damage resulting solely from such use and occupancy.

9.5.7 The Contract Sum will be adjusted by mutually acceptable arrangements between the Owner and the Contractor with respect to heat, electricity, and water furnished by the Contractor to the portion of the Work so occupied.

9.5.8 When any portion of the building is in condition to receive fittings, appliances, furniture, or other property to be furnished and installed by the Owner under separate contracts, the Contractor shall allow the Owner to bring such items into the building and shall provide all reasonable facilities and protection therefor.

9.6 SUBSTANTIAL COMPLETION

9.6.1 Substantial Completion is the stage in the progress of the Work when, in the opinion of the Architect, the Work is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

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

9.6.3 Upon receipt of the Contractor's list of items to be completed or corrected, the Architect will promptly make a thorough inspection and prepare a "punch list", setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable or are incomplete.

9.6.4 If, after receipt of the Contractor's list, the Architect determines that the Work is not substantially complete, the Architect shall inform the Contractor of those items that must be completed before the Architect will prepare a punch list. Upon completion of those items, the Contractor shall again request the Architect to prepare the punch list.

9.6.5 When the punch list has been prepared, the Contractor will arrange a meeting with the Architect and Subcontractors to identify and explain all punch list items and address questions on the work which must be done before final acceptance.

9.6.6 The Architect may revise the punch list, from time to time, to ensure that all items of the Work are properly completed.

9.6.7 The Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate within the provisions of Subparagraph 9.7.2.

9.6.8 Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate and shall be subject to the approval of the Department.

9.7 FINAL COMPLETION

9.7.1 After the Architect has certified that the Work is substantially complete, the Contractor shall immediately proceed to complete all the remaining items of Work as determined by the Architect, including items authorized by Change Orders, Construction Change Directives, or items disputed by the Contractor.

9.7.2 The Contractor shall complete all the remaining items of Work described in Subparagraph 9.7.1, as soon as possible, and in any event within one hundred and twenty days after Substantial Completion, unless the Architect determines that a shorter time period for completion is appropriate, in which event the Contractor must complete the Contract work within such period. The Architect may extend such one hundred and twenty day period if the Architect determines that such extension is justified.

9.7.3 If the Contractor fails to complete the remaining items of Work within the time period provided in Subparagraph 9.7.2, the Owner may arrange for other contractors to complete such items and the direct and indirect costs of such completion shall be charged against the balance due the Contractor or, if no such balance remains, the Contractor shall pay the Owner the costs of such completion.

9.7.4 As an alternative to the procedure described in Subparagraph 9.7.3, the Owner may invoke the performance bond of the Contractor and demand that the surety shall complete the remaining items of work in a timely manner.

9.7.5 The Architect will conduct up to three (3) inspections of completed punchlist items. The Contractor shall be responsible for the costs of additional inspections required to verify successful completion of the punchlist.

ARTICLE 10 PAYMENTS

10.1 CONTRACT SUM

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

10.2 SCHEDULE OF VALUES

10.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

10.2.2 The schedule of values shall contain a separate item for each Section of the Specifications broken down in such form as the Architect may require. Each item in the schedule of values shall include its proper share of overhead and profit.

10.3 APPLICATIONS FOR PAYMENT

Once each month, on a date established at the beginning of the Work, the Contractor shall deliver to the Architect by hand or by registered or certified mail with return receipt, an itemized Application for Payment, supported by such data substantiating the Contractor's right to payment as the Architect may require, and reflecting retainage as provided in Subparagraph 10.6.1.

Such Application for Payment shall be submitted on a form available from the Department, (a copy can be found in the Construction Handbook). The form shall show separately:

- .1** The value of labor and materials incorporated in the Work.
- .2** The value, kind, and quantity of each item of material or equipment not incorporated in the Work but delivered and suitably stored at the site, during the current pay period.
- .3** The value, kind, and quantity of each item of material or equipment not incorporated in the Work but suitably stored at some other location agreed upon in writing, during the current pay period.
- .4** All Change Orders approved up to the date of the Application for Payment.
- .5** The amounts approved for payment for each item on previous applications.

10.4 PAYMENT FOR STORED MATERIALS

10.4.1 The Contractor shall include in such Application for Payment only such materials as are incorporated in the Work. Except however, the Contractor may include the value of materials or equipment delivered at the site of the Work (or at some location agreed to in writing) upon delivery to the Owner of:

- .1 an acceptable Transfer of Title (see the Construction Handbook); and
 - .2 receipted invoices or other acceptable proof of prior payment by the Contractor for such materials; and
 - .3 a stored materials insurance binder (see subparagraph 16.5.2) that covers the materials for which payment is requested, that names the Owner and the Department as an insured party should the stored materials be subjected to any casualty, loss, or theft prior to their inclusion in the Work.
- 10.4.2** This material(s) or equipment must, in the judgment of the Architect:
- .1 meet the requirements of the Contract, including prior shop drawing, product data, and sample approval; and
 - .2 be ready for use; and
 - .3 be properly stored by the Contractor and adequately protected until incorporated into the Work.
- 10.4.3** Failure to comply with subparagraphs 10.4.1 and 10.4.2 may result in Certificates being changed in accordance with M.G.L. c.30 §39K.

10.5. CERTIFICATES FOR PAYMENT

- 10.5.1** The Architect shall mark the date of receipt on the Contractor's Application for Payment. The Architect will, within seven days after receipt of the Contractor's Application for Payment either,
- .1 issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or
 - .2 return the application to the Contractor if it is not in proper form or contains computations not arithmetically correct; or
 - .3 make changes to the application as provided in subparagraph 10.5.2.

10.5.2 The Architect shall notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in subparagraphs 10.6.1.2 and 10.6.1.3.

10.5.3 The Owner may make changes in any Application for Payment submitted by the Contractor in accordance with M.G.L. c.30 §39K, and the payment due on said Application for Payment shall be computed in accordance with the changes so made. The provisions of said Section 39K shall govern payments pursuant to Applications for Payment on which the Owner has made changes.

10.5.4 No certificate for payment nor any progress payment shall constitute acceptance of Work not in accordance with the Contract Documents.

10.6 STATUTORY PAYMENT PROVISIONS

10.6.1 After the Architect has issued a Certificate for Payment the Owner shall make payment to the Contractor in accordance with M.G.L. c.30 §39K which provides as follows:

- .1 Within thirty 30 days after receipt from the Contractor, at the place designated by the Owner if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the Owner will make a periodic payment to the Contractor for the Work performed during the preceding month and for the materials not incorporated in the Work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title or to which a Subcontractor has title and has authorized the Contractor to transfer title to the Owner, less (1) a retention based on its estimate of the fair value of its claims against the Contractor and less (2) a retention for direct payments to Subcontractors based on demands for same in accordance with the provisions of Section 39F, and less (3) a retention not exceeding five percent (5%) of the approved amount of the periodic payment.
- .2 After the receipt of a periodic estimate requesting final payment and within 65 days after (a) the Contractor fully completes the Work or substantially completes the work so that the value of the Work remaining to be done is, in the estimate of the Owner, less than one percent (1%) of the original Contract Sum, or (b) the Contractor substantially completes the Work and the Owner takes possession for occupancy, whichever occurs first, the Owner shall pay the Contractor the entire balance due on the Contract less, (1) a retention based on its estimate of the fair value of its claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of Work less (2) a retention for direct payments to Subcontractors based on demands for same in accordance with the provisions of Section 39F, or based on the record of payments by the Contractor to the Subcontractors under this Contract if such record of payment indicates that the Contractor has not paid Subcontractors as provided in Section 39F.
- .3 If the Owner fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the Contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until thirty days after receipt of such a periodic estimate from the Contractor, at the place designated by the Owner if such a place is so designated. The Contractor agrees to pay to each Subcontractor a portion of any such interest paid in accordance with the amount due each Subcontractor.

10.6.2 DIRECT PAYMENT TO SUBCONTRACTORS

10.6.2.1 The Contractor shall make payments to filed Subcontractors in accordance with M.G.L c.30 §39F which provides as follows:

- .1** Forthwith after the Contractor receives payment on account of a periodic estimate, the Contractor shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished by the Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.
- .2** Not later than the 65th day after each Subcontractor substantially completes the Work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of Work, shall be due the Subcontractor and the Owner shall pay that amount to the Contractor. The Contractor shall forthwith pay to the Subcontractor the full amount received from the Owner less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.
- .3** Each payment made by the Owner to the Contractor pursuant to Subparagraphs .1 and .2 of this paragraph for the labor performed and the materials furnished by a Subcontractor shall be made to the Contractor for the account of that Subcontractor and the Owner shall take reasonable steps to compel the Contractor to make each such payment to each such Subcontractor. If the Owner has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the Contractor or which is to be included in a payment to the Contractor for payment to the Subcontractor as provided in Subparagraphs .1 and .2, the Owner shall act upon the demand as provided in this section.
- .4** If, within 70 days after the Subcontractor has substantially completed the Subcontract Work, the Subcontractor has not received from the Contractor the balance due under the Subcontract including any amount due for extra labor and materials furnished to the Contractor, less any amount retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of Work, the Subcontractor may demand direct payment of that balance from the Owner. The demand shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the Subcontract Work. Within ten days after the Subcontractor has delivered or so mailed a copy to the Contractor, the Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the Subcontract including any amount due for extra labor and materials furnished to the Contractor and of the amount due for each claim made by the Contractor and of the amount due for each claim made by the Contractor against the Subcontractor.
- .5** Within 15 days after receipt of the demand by the Owner but in no event prior to the 70th day after substantial completion of the Subcontract Work, the Owner shall make direct payment to the Subcontractor of the balance due under the Subcontract including any amount due for extra labor and materials furnished to the Contractor, less any amount (i) retained by the Owner as the estimated cost of completing the incomplete or unsatisfactory items of Work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the Contractor in the sworn reply; provided, that the Owner shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by Subparagraph .4. The Owner shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in part (i) and (ii) of this Subparagraph.
- .6** The Owner shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of Subparagraph .5 in an interest-bearing joint account in the names of the Contractor and the Subcontractor in a bank in Massachusetts selected by the Owner or agreed upon by the Contractor and the Subcontractor and shall notify the Contractor and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.
- .7** All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to Subparagraph .6 shall be made out of amounts payable to the General Contractor at the time of receipt of a demand for direct payment from a Subcontractor or out of amounts which later become payable to the Contractor and in order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Owner to the Contractor to the extent of such payment.
- .8** The Owner shall deduct from payments to the Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to Subparagraph .6, are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right to such deductions prior to any claims against such amounts by creditors of the Contractor.
- .9** If the Subcontractor does not receive payment as provided in Subparagraph .1 or if the Contractor does not submit a periodic estimate for the value of the labor and materials performed or furnished by the Subcontractor and the Subcontractor does not receive payment for same when due less the deductions provided for in Subparagraph .1, the

Subcontractor may demand direct payment by following the procedure in Subparagraph .4 and the Contractor may file a sworn reply as provided in that same Subparagraph. A demand made after the first day of the month following that for which the Subcontractor performed or furnished the labor and materials for which the Subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the Contractor. Thereafter the Owner shall proceed as provided in Subparagraphs .5, .6, .7, and .8.

10.7 FINAL PAYMENT

10.7.1 Upon completion of the Work, the Contractor shall be entitled to payment of the Contract balance, in accordance with Subparagraph 10.6.1.2 and per the process described in Division 1 of the Specifications.

10.7.2 The acceptance by the Contractor of the last payment due under this Contract or the execution of the Final Certificate of Completion, shall operate as a release to the Owner, Department, and the Architect from all claims and liability related to this Contract.

10.8 PAYMENT LIABILITIES OF CONTRACTOR

10.8.1 The Contractor shall be responsible to the Owner for all expenses, losses, and damages incurred in consequence of any defect, omission, or mistake of the Contractor or any of its employees, Subcontractors, or suppliers.

10.8.2 The Owner may retain any moneys which would otherwise be payable under this Contract and apply the same, or so much as may be necessary therefor, to the payment of any expenses, losses, or damages incurred by the Owner as a direct result of the Contractor's failure to perform its obligations hereunder.

ARTICLE 11 GUARANTEES AND WARRANTIES

11.1 GENERAL GUARANTY

If at any time during the period of one (1) year from the date of Substantial Completion as defined in Paragraph 9.6, any part of the Work shall, in the reasonable determination of the Architect or Owner, require replacing or repairing due to the fact that it is broken, defective, or otherwise does not conform to the Contract Documents, the Owner will notify the Contractor to make the required repairs or replacement.

11.2 If the Contractor shall neglect to commence such repairs or replacement to the satisfaction of the Owner within ten (10) days from the date of giving or mailing such notice, then the Owner may employ other persons to make the same.

11.3 The Contractor agrees, upon demand, to pay to the Owner all amounts which the Owner expends for such repairs or replacements.

11.4 During this one year guarantee period any corrective work shall be performed in accordance with the applicable terms of this Contract. For items of work completed after use and occupancy has been taken, the one year guarantee shall commence at the time the Owner accepts such items.

11.5 This one year guarantee shall not limit any express guaranty or warranty provided elsewhere in the Contract.

11.2 SPECIAL GUARANTEES AND WARRANTIES

11.2.1 Guarantees and warranties required in the various sections of the Specifications must be delivered to the Architect before final payment to the Contractor may be made, or in the case of guarantees and warranties which originate with a Subcontractor's section of the Work, before final payment for the amount of that subtrade or for the phase of Work to which the guarantee or warranty relates.

11.2.2 The failure to deliver a required guarantee or warranty shall constitute a failure to fully complete the Work in accordance with the Contract Documents.

11.2.3 The Contractor's obligation to correct Work as set forth in Paragraph 4.12 is in addition to, and not in substitution of, such guarantees or warranties as may be required in the various Sections of the Specifications.

ARTICLE 12 MISCELLANEOUS LEGAL REQUIREMENTS

12.1 GENERAL

The Contractor shall stay fully informed of all existing and future state and national laws and municipal ordinances and regulations in any manner affecting those engaged or employed in the work, or the materials used or employed in the work, or in any way affecting the conduct of the Work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or

authority over the Contract Work. All provisions of law that apply to this Contract are hereby made a part of this Contract. If any discrepancy or inconsistency is discovered in the Contract Documents in relation to any such law, ordinance, regulation, order or decree, the Contractor shall forthwith report the same to the Owner in writing.

12.1.1 The Contractor shall cause all of its agents and employees to observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees.

12.2 CORPORATE DISCLOSURES

The Contractor, if a foreign corporation, shall comply with M.G.L. c.181 §3 and §5, and M.G.L. c.30 §39L.

12.3 VETERANS PREFERENCE

In the employment of mechanics and apprentices, teamsters, chauffeurs, and laborers in the construction of public works in the Commonwealth, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for at least six months at the commencement of their employment and who are veterans as defined M.G.L. c.4 §7 (34), and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States

12.4 PREVAILING WAGE RATES

The Commissioner of the Department of Labor, Division of Occupational Safety has established the Schedule found in Division One of the Specifications, listing the prevailing minimum wage rates that must be paid to all workers employed on the Contract. Such Schedule shall continue to be the minimum rate of wages payable to workers on this Contract throughout the term of the Contract. The Contractor shall not have any claim for extra compensation from the Owner if the actual wages paid to employees on the Contract exceeds the rates listed on the Schedule. The Contractor shall cause a copy of said Schedule to be kept in a conspicuous place at the Project site during the term of the Contract. (See M.G.L c.149 §26-27H.) If reserve police officers are employed by the Contractor, they shall be paid the prevailing wage of regular police officers. (See M.G.L c.149 §34B).

12.5 VEHICLE AND EQUIPMENT OPERATORS

If the Commissioner of the Department of Labor, Division of Occupational Safety has established a Schedule of wage rates to be paid to the operators of trucks, vehicles or equipment for this Project, the Contractor shall be obligated to pay such operators at least the minimum wage rate contained on such Schedule. (See M.G.L. c.149 §26-27H).

12.6 EIGHT HOUR DAY AND LODGING

12.6.1 No laborer, workman, mechanic, foreman or inspector working in the employment of the Contractor, Subcontractor or other person doing or contracting to do the whole or part of the Work, shall be required or permitted to work any more than eight hours in any one day, or more than 48 hours in any one week, or more than six days in any one week, except in cases of emergency.

12.7 EXECUTIVE ORDERS

The Contractor shall comply with the provisions of M.G.L. c.151B; Executive Order No. 524 Establishing the Massachusetts Supplier Diversity Program (SDP), Executive Order 526, Order regarding Non-Discrimination, Diversity, Equal Opportunity, and Affirmative Action; pertaining to minority and women owned business enterprises; Executive Order 527 establishing the Office of Access and Opportunity and Executive Order 481, prohibiting the use of undocumented workers on state contracts and all regulations promulgated pursuant thereto. The aforementioned law, executive orders, regulations and any amendments are incorporated herein by reference and made a part of this Contract.

12.8 CONFLICT OF INTEREST

The Contractor covenants, that (1) presently, there is no financial interest and shall not acquire any such interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this Agreement or which would violate M.G.L. c.268A, as amended; (2) in the performance of this Contract, no person having any such interest shall be employed by the Contractor or engaged as a subcontractor by the contractor; and (3) no partner or employee of the firm is related by blood or marriage to any Board Member or employee of the Awarding Authority.

ARTICLE 13
CONTRACTOR'S ACCOUNTING REQUIREMENTS

13.1 DEFINITIONS

13.1.1 "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded this Contract.

13.1.2 "Contract" means any contract awarded or executed pursuant to M.G.L. c.30 §39M or M.G.L. c.149 §44A-J, which is for an amount greater than one hundred thousand dollars (\$100,000).

13.1.3 "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

13.1.4 "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent.

13.1.5 "Audit," when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

13.1.6 "Accountant's Report," when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he/she has made and sets forth his/her opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the Contractor.

13.1.7 "Management," when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the Contractor.

13.1.8 Accounting terms, unless otherwise defined herein shall mean, in accordance with generally accepted accounting principles and auditing standards.

13.2 RECORD KEEPING

13.2.1 The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

13.2.2 Until the expiration of six years after final payment, the Inspector General, the Owner, and the Department shall have the right to examine any books, documents, papers or records of the Contractor and Subcontractors that directly pertain to, and involve transactions relating to the Contractor and Subcontractors.

13.2.3 The Contractor shall describe any change in the method of maintaining records or recording transactions which materially affects any statements filed with the Owner including the date of the change and reasons therefor, and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes.

13.2.4 Prior to the execution of the Contract, the Contractor shall file a statement of management on internal accounting controls as set forth in Paragraph 13.3 below.

13.2.5 Prior to the execution of the Contract, the Contractor shall file an audited financial statement for the most recent completed fiscal year as set forth in Paragraph 13.4 below and will continue to file such statement annually during the term of the Contract.

13.3 STATEMENT OF MANAGEMENT CONTROLS

13.3.1 Prior to execution of the Contract, the Contractor shall file with the Owner a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

- .1 transactions are executed in accordance with management's general and specific authorization;
- .2 transactions are recorded as necessary to:
 - a. to permit preparation of financial statements in conformity with generally accepted accounting principles, and
 - b. to maintain accountability for assets;
- .3 access to assets is permitted only in accordance with management's general or specific authorization; and

- .4 the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

13.3.2 Prior to execution of the Contract, the Contractor shall also file with the Owner a statement prepared and signed by an independent certified public accountant, stating that the accountant has examined the statement of management on internal accounting controls, and expressing an opinion as to:

- .1 whether the representations of management in response to subparagraph 13.3.1 above are consistent with the results of management's evaluation of the system of internal accounting controls; and
- .2 whether such representations of management are reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statement.

13.4 ANNUAL FINANCIAL STATEMENT

Every Contractor awarded a contract shall annually file with the Owner during the term of the Contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report.

**ARTICLE 14
EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS**

14.1 The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, handicap, or sex. The aforesaid provision shall include, but not be limited to, the following employment upgrading, demotion or transfer; recruitment advertising; recruitment layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship.

14.2 The Contractor must provide information as is necessary, in the judgment of the Owner or the Department, to ascertain compliance with the terms of Specification Section 00.73.36.

**ARTICLE 15
MINORITY OR WOMAN OWNED ENTERPRISES - SUPPLIER DIVERSITY PROGRAM**

15.1 COMPLIANCE

15.1 The Contractor must provide information as is necessary, in the judgment of the Owner and the Department, to ascertain compliance with the terms of Specification Section 00.73.39.

**ARTICLE 16
INSURANCE**

16.1 INSURANCE REQUIREMENTS

16.1.1 The Contractor shall take out and maintain insurance coverage as listed in subparagraphs 16.2 - 16.8 with respect to the operations as well as the completed operations for two years after substantial completion of this Contract. This insurance shall be provided at the Contractor's expense and shall be in full force and effect for the full term of the Contract.

16.1.2 All policies shall be issued by companies authorized to write that type of insurance under the laws of this Commonwealth of Massachusetts.

16.2 CONTRACTOR'S COMMERCIAL GENERAL LIABILITY

16.2.1 Contractor shall provide to the Owner the "Commercial General Liability" policy form CG0001, or the exact equivalent with respect to the operations performed by any employee, Subcontractor, or supplier with limits of no less than:

Each Occurrence	\$1,000,000
General Aggregate	\$2,000,000 per project
Products-Completed Operations Aggregate	\$2,000,000
Personal Injury & Advertising Injury	\$1,000,000
Damages to Premises Rented by You	\$50,000
Not Specified Medical Expenses	\$5,000
Umbrella coverage:	
Each Occurrence	\$5,000,000
General Aggregate	\$5,000,000
Products-Completed Operations Aggregate	\$5,000,000

16.2.2 The completed operations coverage shall be maintained for a period of two (2) years after Substantial Completion as defined in subparagraph 9.6.1.

16.2.3 POLLUTION/ABATEMENT CONTRACTORS The policy shall:

- .1 be written on a "true" occurrence basis without any "sunset" clause;
- .2 have the pollution exclusion amended to add back coverage for all pollution claims.
- .3 include separate products and completed operations coverage, which shall be maintained for (2) years after Substantial Completion, as defined by G.L 30 §39G; and
- .4 provide the following limits of insurance:

Each occurrence	\$1,000,000
General Aggregate	\$2,000,000
Products-Completed Operations Aggregate	\$2,000,000
Personal Injury & Advertising Injury	\$1,000,000
Damage to Premises Rented by You	\$50,000
Medical Expense	\$5,000

16.3 AUTOMOBILE LIABILITY

Contractor shall provide automobile liability coverage for owned, non-owned, and hired autos using ISO Business Auto Coverage form CA0001, or the exact equivalent. If contractor owns no vehicles, this requirement may be met through a non-owned endorsement to the Commercial General.

Liability: Bodily Injury	\$ 1,000,000. each person \$ 1,000,000. each accident
Property Damage	\$ 1,000,000. each accident or \$1,000,000 Combined Single Limit

16.4 WORKER'S COMPENSATION

Workers' Compensation: Coverage A	Per G.L. c149 §34 and c152, as amended.
Employer's liability: Coverage B	\$500,000 Bodily Injury by Accident each accident \$500,000 Bodily Injury by Disease each employee \$500,000 Bodily Injury by Disease policy limit

16.5 PROPERTY COVERAGE

16.5.1 Provide Builder's Risk (Special Perils) coverage against loss or damage by fire and against loss or damage covered by the special perils insurance endorsement on all work included in this contract in an amount equal to at least 80% of Contract Amount.

16.5.2 When work will be completed on existing buildings owned by the Owner, the Contractor shall provide an installation floater, in the full amount of the Contract, for the requirements set forth in Subparagraph 16.5.

16.5.3 This policy and/or installation floater shall indicate if Stored Materials coverage is provided as required by Paragraph 10.4.

16.5.4 The policy or policies shall specifically state that they are for the benefit of and payable to the Owner, the Department, the Contractor, and all persons furnishing labor or labor and materials for the Contract Work, as their interests may appear

16.5.5 The Builder's Risk (Special Perils) coverage shall include any costs for work performed by the Architect or any consultant as the result of a loss experienced during the life of this contract.

16.6 OWNER AS ADDITIONAL INSURED

The Owner and Department shall be named as additional insureds on the Contractor's Commercial Liability Policies.

16.7 CERTIFICATES OF INSURANCE, POLICIES

16.7.1 Certificates of insurance, acceptable to the Owner, shall be submitted to the Owner simultaneously with the execution of the Contract. Certificates shall indicate that the contractual liability coverage, and Owner's and Contractor's Protective Liability coverage is in force, as well as the deletions of the XCU exclusions.

16.7.2 The Contractor shall file the original and one certified copy of all policies with the Owner and one with the Department within sixty days after Contract award. If the Owner is damaged by the Contractor's failure to maintain such insurance and to so notify the Owner, then the Contractor shall be responsible for all reasonable costs attributable thereto.

16.8 CANCELLATION

Cancellation of any insurance required by this contract, whether by the insurer or the insured, shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and Owner at least ten (10) days prior to the effective date thereof, which shall be expressed in said notice.

ARTICLE 17 INDEMNIFICATION

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 from 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, the Department and their officers and agents from all claims relating to: labor performed or furnished and materials used or employed for the Work; 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; 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 any act, omission, or neglect of the Contractor and any employees.

ARTICLE 18 PERFORMANCE AND PAYMENT BONDS

18.1 CONTRACTOR BONDS

18.1.1 The Contractor shall provide the Owner with performance and payment (labor and materials) bonds in the form provided by the Department, (Forms 00.61.13.13 and 00.61.13.16) executed by a surety licensed by the Commonwealth's Division of Insurance. Each such bond shall be in the amount of the Contract Sum.

18.1.2 If at any time prior to final payment to the Contractor, the Surety:

- .1 is adjudged bankrupt or has made a general assignment for the benefit of its creditors;
- .2 has liquidated all assets and has made a general assignment for the benefit of its creditors;
- .3 is placed in receivership;
- .4 otherwise petitions a state or federal court for protection from its creditors; or
- .5 allows its license to do business in Massachusetts to lapse or be revoked;

the Contractor shall, within 21 days of any such action listed above, provide the Owner with new performance and payment bonds as described in Paragraph 18.1.1. Such bonds shall be provided solely at the Contractor's expense.

18.2 SUBCONTRACTOR BONDS

18.2.1 The Contractor may list in its bid that any or all filed Subcontractors provide the Contractor with payment and performance bonds for the full amount of the Subcontract. The costs for said bonds shall be the responsibility of the Contractor.

18.2.2 In the event the Contractor lists in its bid that filed Subcontractors provide bonds, and subsequently waives the requirement, the Contractor shall provide the Owner with a certification that they understand if the filed subcontractor defaults or is terminated, the Contractor accepts full responsibility and costs related to said default or termination 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.

ARTICLE 19 TERMINATION

19.1 TERMINATION FOR CAUSE

19.1.1 The Owner may terminate this contract for cause if it determines that any of the following circumstances have occurred:

- .1 The Contractor is adjudged bankrupt or has made a general assignment for the benefit of its creditors;
- .2 A receiver has been appointed of the Contractor's property;
- .3 All or a part of the Work has been abandoned;
- .4 The Contractor has sublet or assigned all or any portion of the Work, the Contract, or claims thereunder, without the prior written consent of the Owner, except as provided in the Contract;
- .5 The Architect has determined that the rate of progress required on the project is not being met, or
- .6 The Contractor has substantially violated any provisions of this Contract.

19.1.2 In the event of such termination, the Owner may hold the Contractor and its sureties liable in damages as for a breach of contract, or the Owner may notify the Contractor to discontinue all work, or any part thereof, and the Contractor shall discontinue all work, or any part thereof, as the Owner may designate.

19.1.3 The Owner may complete the work, or any part thereof, and charge the expense of completing the Work or part thereof, to the Contractor.

19.1.4 The Owner may take possession of and use any materials, machinery, implements and tools found upon the site of said Work. The Owner shall not be liable for any depreciation, loss or damage to said materials, machinery, implements or tools during said use and the Contractor shall be solely responsible for their removal from the Project site after the Owner has no further use for them.

19.1.5 The Owner may, at its option, require the surety or sureties to complete the Contract.

19.2 TERMINATION LIABILITIES

19.2.1 All expenses charged under Paragraph 19.1 shall be deducted and paid by the Owner out of any moneys then due or to become due the Contractor under this Contract; and in such accounting the Owner shall not be held to obtain the lowest figures, by competitive bid or otherwise, for the completion of the Work or any part thereof.

19.2.2 All sums actually paid by the Owner to complete the Work shall be charged to the Contractor. In case the expenses charged are less than the sum which would have been payable under this Contract if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference. In case such expenses shall exceed the said sum, the Contractor shall pay the amount of the excess to the Owner.

19.2.3 Expenses incurred under subparagraph 19.1 shall also include, but not be limited to, costs for Architectural extra services and Project Representative services required, in the opinion of the Owner, to successfully inspect and administer the construction contract through final completion, as described in Paragraph 9.7.

19.3 TERMINATION - NO FAULT

19.3.1 In the event that this Contract is terminated by the Owner, and termination is not based on a reason listed in Paragraph 19.1, the Contractor shall be compensated for its costs incurred on the Project, including reasonable costs of de-mobilization, calculated on a percent completion basis as provided in Article 10, covering the period of time between the last periodic payment and the date of termination.

19.3.2 Payment by the Owner pursuant to Subparagraph 19.3.1 shall be considered to fully compensate the Contractor for all claims and expenses and those of any consultants, Subcontractors, and suppliers, directly or indirectly attributable to the termination, including any claims for lost profits.

19.4 ADMINISTRATOR'S APPROVAL

Termination of the Contract requires the prior written approval of the Administrator.

SECTION 00.73.36

EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

1. DEFINITIONS

For purposes of this Section 00.73.36, the following additional definitions shall apply:

- A.** "Minority" means a person who meets one or more of the following definitions:
 - (1.)** American Indian or Native American means: all persons having origins in any of the original peoples of North America and who are recognized as an Indian by a tribe or tribal organization.
 - (2.)** Asian means: All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian sub-continent, or the Pacific Islands, including, but Not limited to China, Japan, Korea, Samoa, India, and the Philippine Islands.
 - (3.)** Black means: All persons having origins in any of the Black racial groups of Africa, including, but not limited to, African-Americans, and all persons having origins in any of the original peoples of the Cape Verdean Islands.
 - (4.)** Eskimo or Aleut means: All persons having origins in any of the peoples of Northern Canada, Greenland, Alaska, and Eastern Siberia.
 - (5.)** Hispanic means: All persons having their origins in any of the Spanish-speaking peoples of Mexico, Puerto Rico, Cuba, Central or South America, or the Caribbean Islands.
- B.** "Commission" or "MCAD" means the Massachusetts Commission Against Discrimination.
- C.** "E.E.O. Officer" or Equal Employment Opportunity Officer means those persons designated by the Contractor, the Owner, or any other agency or party having jurisdiction under this contract, that serve in a capacity to implement this Section.

2. CONDITIONS

- A.** The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, handicap, or sex. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion or transfer; recruitment advertising; recruitment layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship.
- B.** The Contractor shall post notices provided by the Commission, in conspicuous places, setting forth the provisions of the Fair Employment Practices Law of the Commonwealth.
- C.** The Contractor shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age, handicap, or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age or sex.
- D.** The Contractor shall not discriminate on grounds of race, color, religious creed, national origin, age, or sex in employment practices, in the selection or retention of Subcontractors, or in the procurement of materials and rentals of equipment.
- E.** The Commission and a designee of the Owner shall have access to the construction site and all applicable records of the Contractor and Subcontractors.
- F.** The Contractor's EEO Certificate must be signed by the low general and all filed sub-bidders as a condition of Contract validation by the Department.

3. MINORITY GOAL MINIMUM MINORITY PERCENTAGES

- A. Pursuant to his/her obligations under the preceding section, the Contractor shall strive to achieve on this project the labor participation goals contained herein

The participation goals for this project shall be 15.3% for minorities and 6.9% for women.

- B. The participation goals, as set forth herein, shall not be construed as quotas or set-asides; rather, such participation goals will be used to measure the progress of the Commonwealth's equal opportunity, non-discrimination and affirmative action program. Additionally, the participation goals contained herein should not be seen or treated as a floor or as a ceiling for the employment of particular individuals or group of individuals.
- C. Such job categories shall include but not be limited to those "Classes of Work" enumerated in M.G.L. c.149 §44F and for trades covered by Item 1 of the Contractor's bid.
- D. These percentages shall apply to the Contractor and to all Subcontractors, regardless of tier, for all on-site Work.

4. REFERRALS

- A. In the hiring of minority journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the Department or the Commission; and traditional referral methods utilized by the construction industry, where such referrals are needed to meet minority hiring requirements. The Contractor shall keep accurate records of such requests for referrals.
- B. Records of employment referral orders, prepared by the Contractor, shall be made available to the Owner and to the Department upon request.

5. EEO WORK FORCE REPORTING PROCEDURES

- A. The Contractor shall provide the following information to the Owner on copies of the forms found at the end of this Section.

(1.) Weekly Manpower Reports 00.73.36.04: The Contractor shall prepare a report after each week of activity, reflecting the actual working hours of all personnel identified as minority or non-minority.

- (a) This report shall be received by the Owner no later than the Friday following the week reported.
- (b) Failure to provide information shall result in sanctions as provided in this section.

6. COMPLIANCE - REPORTS AND INFORMATION

- A. The Contractor shall provide all information and reports required by the Owner or the Department and will permit access to its facilities and to any books, records, accounts and other sources of information which may be determined by the Owner or the Department to affect the employment of personnel. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Owner or the Department as appropriate and shall set forth what efforts have been made to obtain the information.

7. COMPLIANCE - INVESTIGATIONS

- A.** Whenever the Owner's EEO Officer, the MCAD, or the Department believes the Contractor may not be operating in compliance with the terms of these requirements, the Department shall conduct an investigation, and may confer with the parties, to verify such allegations. The Department shall not initiate an investigation without prior notice to the Contractor.
- B.** If the Department finds the Contractor in non-compliance, it shall make a preliminary report, and notify the Contractor in writing of the steps necessary to bring such Contractor into compliance. A copy of this report shall be sent to the Department's Affirmative Action Officer.

8. COMPLIANCE - DEPARTMENT - AFFIRMATIVE ACTION INVESTIGATION

- A.** If the Contractor fails or refuses to fully perform the steps necessary to achieve compliance, the Department shall make a report of non-compliance to the Department's Affirmative Action Officer, who will then conduct an investigation.
- B.** Should the Department's Affirmative Action Officer find the Contractor in non-compliance a final report recommending the imposition of one or more of the sanctions listed below shall be issued.
- C.** Within fifteen (15) days of said report the Department shall, after due notice and giving the Contractor an opportunity to respond, move to impose one or more of the following sanctions to attain compliance.
- D.** If the Department's Affirmative Action Office believes the Contractor has taken or is taking every possible measure to achieve compliance, a report shall show the Contractor is in compliance.

9. SANCTIONS

- A.** For each week that the Contractor fails or refuses to comply, the Department may recover from the Contractor, 1/100 of 1% of the original Contract Sum or \$1000 whichever sum is greater, in the nature of liquidated damages.
- B.** If a Subcontractor is in non-compliance, the Department may recover from the Contractor, 1/10 of 1% of the Subcontract Sum, or \$400 whichever sum is greater, in the nature of liquidated damages, to be assessed by the Contractor as a back charge against the Subcontractor for each week that Subcontractor fails or refuses to comply.
- C.** The Owner may suspend part or all of any payment due under the contract until such time as the Contractor or any Subcontractor is able to demonstrate compliance with the terms of the Contract;
- D.** The Owner may terminate, or cancel part or all of the Contract, in accordance with the provisions of Article 19 of the General Conditions, unless the Contractor or any Subcontractor is able to demonstrate, within a specified time, compliance with the terms of the Contract.
- E.** The Contractor may request the Department and Owner to suspend the sanctions conditionally. Whereupon the Department shall investigate corrective measures taken by the Contractor and shall either lift or re-impose the sanctions.

10. SEVERABILITY

- A.** The provisions of this section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions of the Contract.

END OF EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS
00.73.36

FORM OF CONTRACTOR'S EQUAL EMPLOYMENT CERTIFICATION

Commonwealth of Massachusetts
Executive Office of Housing and Livable Communities

This form must be completed and submitted by the Contractor prior to the signing of the Owner-Contractor Agreement.

This certifies that:

Contractor

Street Address

City/State/Zip Code

1. Intends to use the following listed construction trades in the work under this contract:

2. Will comply with the minority manpower ratio and specific affirmative action steps contained in Section 00.73.36 of this Contract; and
3. Will obtain similar certifications from each of its subcontractors and submit to the Owner prior to the award of any subcontract under this contract the subcontractor's certification.

SIGNATURE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR

NAME AND TITLE

DATE



Massachusetts Department of
Executive Office of Housing and Livable Communities

EEO CONTRACTOR'S WEEKLY MANPOWER REPORT

_____ Housing Authority Development No. _____ Contract Amount \$ _____
 General Contractor: _____ **Minority** Participation Goal **15.3%** **Women** Participation Goal **6.9%**
 Name of Contractor Filing Report: _____ Trade(s): _____
 Week Ending: _____ Report No.: _____ Check Here if you are a non-filed Subcontractor
 Check Here if this is a Final Report Date Work Began: _____ Date Work Completed _____

Job Category	# of Employees	Weekly Total Manhours	Total Manhours to Date	# of Minorities	Weekly Total Minority Manhours	Weekly % Minority Manhours	# of Women	Weekly Total Women Manhours	Weekly % Women Manhours	Total Manhours to Date	Total Minority Manhours to Date	% of Minority Manhours to Date	Total Women Manhours to Date	% of Women Manhours to Date

Mail Reports to: Awarding Authority Prepared by: _____
 Title: _____
 Date: _____ 20____

SECTION 00.73.39
SUPPLIER DIVERSITY PROGRAM - EXECUTIVE ORDER 524
MINORITY AND WOMEN BUSINESS ENTERPRISES

1. PROJECT REQUIREMENTS

General bidders must agree to contract with minority and women-owned businesses as certified by the Supplier Diversity Office (SDO) formerly known as SOMWBA. The amount of participation which shall be reserved for such enterprises shall not be less than the percentages stated in document 00.11.00 Advertisement found elsewhere in these contract documents.

2. DEFINITIONS:

For purposes of this Section 00.73.39.00 the following definitions shall apply:

- A. "Minority business enterprise" or "MBE", means a business enterprise that is owned and controlled by one or more socially or economically disadvantaged persons. Such disadvantage may arise from cultural, racial, chronic economic circumstances or background or other similar cause. Such persons include, but are not limited to, African Americans, Cape Verdeans, Western Hemisphere Hispanics, Asians, American Indians, Eskimos, and Aleuts. For purposes of section 61 and of section 40N of chapter 7, the term "minority owned business" shall have the same meaning as "minority business enterprise".
- B. "SDO" means the Supplier Diversity Office.
- C. "Minority Business Enterprise" (MBE) means a business organization which is owned and controlled fifty-one percent (51%) or more by one or more minority group members and certified as such by SDO.
- D. "Women Business Enterprise" (WBE) means a business organization which is owned and controlled fifty-one percent (51%) or more by one or more women and certified as such by SDO.
- E. "MBE/WBE Manufacturer" means a person or firm certified by SDO and engaged in the process of making, fabricating, constructing, forming or assembling a product(s) from raw, unfinished, semi-finished, or finished materials through a direct contract with a contractor, subcontractor, or supplier.
- F. "MBE/WBE Subcontractor" means a person or firm certified as such by SDO and contractually engaged by the contractor to perform a portion (a) of the contracted Work, including labor, materials and supplies, or (b) labor, materials and supplies, or any combination thereof.
- G. "MBE/WBE Supplier" means a person or firm certified as such by SDO and engaged in selling of materials and supplies to contractors, subcontractors, and/or manufacturers for the purpose of constructing, repairing, remodeling, adding to or subtracting from, or improving any building, structure or property through a direct contract with a contractor or subcontractor. Said MBE/WBE must sustain substantial financial risk in the process of performing/supplying the work for this contract.
- H. "Amount of Participation" means the percentage stated on the advertisement of the final contract amount which is to be contracted to MBE/WBEs for work to be performed on this contract in accordance with this Section 00.73.39.

3. JOINT VENTURES

- A. A Joint Venture shall mean a business arrangement between MBE/WBEs and a non-SDO certified General Contractor, in which the MBE or WBE has at least a twenty-five percent (25%) interest in the Contract, and in which the other has at least the required minimum percentage of participation in the

Contract. It is expected that the M/WBE having the minimum 25% interest will participate in the management and decision-making aspects of the project proportionate to its percentage of ownership and interest in the Contract.

- B. An MBE/WBE Joint Venture shall mean a business arrangement wherein a SDO certified MBE or WBE serves as a General Contractor and engages the services of another SDO certified MBE or WBE (whichever is required) in an amount not less than twenty-five percent (25%) of the Contract amount, and in which the management and decision-making aspects of the project are shared to the degree of participation and ownership in the Contract.

4. CONDITIONS

- A. Once the Contractor agrees to comply with these provisions, and within 5 working days after receipt of bids, unless an extension of time or waiver for compliance is granted in accordance with Article 3 of the Instructions to Bidders, the apparent low bidder must submit a completed Participation Schedule 00.73.39.01 and Letters of Intent 00.73.39.02 covering each SDO certified MBE and WBE used to satisfy the requirements of this Section 00.73.39. These letters shall include the contract items the MBEs and/or WBEs are proposing to perform and the prices that the MBEs and/or WBEs propose to charge for the work.
- B. MBE and WBEs listed on the Participation Schedule may be any combination of MBE/WBE Subcontractors, MBE/WBE Manufactures, or MBE/WBE Suppliers as defined in Paragraph 2.G.
- C. Letters of Intent are not required from filed sub-bidders who are SDO Certified MBEs or WBEs.
- D. The amount of participation of MBE/WBEs listed in The Participation Schedule must total at least the percentage set forth in the Advertisement. The amounts indicated in the Letter of Intent shall not be less than the amount shown on the Participation Schedule. The SDO Certified MBEs and/or WBEs for whom Letters of Intent are submitted must be identical to the ones listed on the Participation Schedule. No substitutions shall be made without the written approval of the Owner.
- E. The Contractor may include MBEs and/or WBEs utilized by non-certified subcontractors to satisfy the requirements of this article.
- F. MBE/WBE Certification from any other agency/municipality shall not be considered applicable for this Contract.
- G. If a filed sub-bidder listed as an MBE and/or WBE is rejected for failure to obtain a performance and payment bond from a surety qualified to do business in the Commonwealth when requested by the general bidder to do so at the time of bid, said failure shall not entitle the general bidder to avoid the requirements of this Section 00.73.39.
- H. The Contractor shall not change the MBEs and/or WBEs listed in the Participation Schedule or make any other such MBE/WBE substitutions after the Contract has been executed or during construction without the written approval of the Owner.

5. COMPLIANCE

- A. The Contractor must provide information as is necessary, in the judgment of the Owner to ascertain compliance with the terms of this Section 00.73.39.
- B. The Contractor shall maintain records of Payment to Minority Business Enterprises.

6. MBE/WBE REPORTING PROCEDURES

- A. The Contractor shall maintain records of Payment to Minority Business Enterprises.
 - (1.) The Owner may request copies of canceled checks to confirm compliance.

7. SANCTIONS

- A. If at any time during the life of this Contract, the Contractor is found to be out of compliance with this Section 00.73.39, sanctions may be imposed within fifteen (15) working days after notification to the Contractor of said violation. If within those fifteen (15) days the Contractor remedies the non-compliance to the satisfaction of the Owner or provides compelling documentation as outlined in Paragraph 8.B said sanctions may be postponed or waived. If the Contractor requires more than fifteen (15) days to remedy non-compliance, it shall make a written request to the Owner for a time extension. This request shall be made within the original fifteen (15) day period.
- B. If the Contractor fails to comply with the terms of these conditions, the Owner may impose the following sanctions:
 - (.1) require the Contractor to provide equivalent substitute participation with SDO Certified MBEs and/or WBEs acceptable to the Owner and at no additional cost to the Owner; or
 - (.2) suspend any payment for the Work that should have been but was not performed by a MBE and/or WBE pursuant to the Participation Schedule.
- C. To the extent that the Contractor has not complied with the terms of these conditions, the Owner may withhold from any Certificate for Payment moneys equivalent to the product of the percentage of completion times the MBE and/or WBE dollar amount, minus the amount already paid to MBEs and/or WBEs for Work performed under the contract, minus any amounts withheld for previous non-compliance.

8. RECOURSE

- A. The Owner has the option not to impose sanctions if the Contractor demonstrates, to the satisfaction of the Department, that the Contractor has taken every possible measure to comply with Section 00.73.39. This may constitute a reason for waiving this Section in whole or in part.
- B. To demonstrate every possible measure, the Contractor shall furnish:
 - (.1) the name of each firm solicited for quotations on each Subcontract, the price quoted by each, and whether or not the firm solicited was a minority or woman-owned business;
 - (.2) the reason for not subcontracting with a minority or woman-owned business enterprise when applicable;
 - (.3) evidence showing efforts by the Contractor to supplement its own and SDO lists of minority and woman-owned business sources by contacting the Small Business Administration, trade organizations, the General Services Administration (U.S. Government), minority contractors' organizations, community organizations and other likely sources of names of additional minority or woman-owned business firms capable of performing the Work; and
 - (.4) evidence showing other efforts to comply with this Section 00.73.39.

9. WAIVERS

The Department or the Supplier Diversity Office has the discretion to determine that compliance with the participation benchmarks is not feasible and may reduce or waive these benchmarks. To reduce or waive the MBE/WBE participation benchmarks the general bidders must make this request in writing to the EOHLIC **PRIOR** to the general bid opening. **See Article 3.3 - Instructions to Bidders.**

10. SEVERABILITY

The provisions of this section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions of the Contract.

End of 00.73.39

**SUPPLIER DIVERSITY PROGRAM - EXECUTIVE ORDER 524
MINORITY AND WOMEN OWNED BUSINESS ENTERPRISES**

SDO CERTIFIED MBE/WBE PARTICIPATION SCHEDULE

- This form must be submitted by the apparent low general bidder to EOHLIC within five working days of receipt of bids.
- Letters of Intent from all MBEs or WBEs listed must be submitted with this Participation Schedule.

Project

Holbrook Housing Authority, Project # _____, EOHLIC #133064

Name of Project

The undersigned intends to subcontract with the following firms for the listed work and dollar amounts:

Name of Company	Description of Work	MBE or WBE	Supplier or Subcontractor	Value of Participation
1 _____	_____	_____	_____	\$ _____
2 _____	_____	_____	_____	\$ _____
3 _____	_____	_____	_____	\$ _____
4 _____	_____	_____	_____	\$ _____
5 _____	_____	_____	_____	\$ _____
6 _____	_____	_____	_____	\$ _____
7 _____	_____	_____	_____	\$ _____
8 _____	_____	_____	_____	\$ _____
Dollar Value of MBE Commitment:				\$ _____
Dollar Value of WBE Commitment:				\$ _____
Total Dollar Value Commitment:				\$ _____

BIDDER CERTIFICATION

The undersigned certifies under the penalties of perjury that (1) it intends to subcontract with the above listed firms for the identified work and dollar amounts unless a waiver or partial waiver has been granted by the Owner and (2) certifies that he/she has read Section 00.73.39 conditions contained in the contract documents with regards to MBE/WBE participation and is authorized to bind the contractor to the commitment set forth above.

Date _____

Name of General Contractor

Authorized Signature

Address

City, State & Zip Code

SDO CERTIFIED MBE/WBE LETTER OF INTENT

- This form is provided for SDOA Certified MBEs and WBEs being utilized as on this contract.
- This form must be completed by each SDO Certified MBE or WBE and submitted by the general bidder to EOHLIC.
- General bidders or filed sub-bidders that are SDO Certified MBEs and WBEs may omit this form.

TO: General Bidder

FROM SDO Certified MBE or WBE

Name: _____
Street Address: _____
City/Town _____
Phone: _____
Fax: _____
Email: _____

Name: _____
Street Address: _____
City/Town _____
Phone: _____
Fax: _____
Email: _____

RE: Project: _____
Name of Project

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

- an individual a corporation a partnership
- a joint venture with _____
- other (explain) _____

2. My company is certified by SDO as a MBE WBE in the following categories:

3. My company has not changed its ownership, control, or management in any ways that affect certification since obtaining SDO certification

4. My company understands that if your company is awarded the contract, your company intends to enter into an agreement to perform the work described below for the price indicated. My company also understands that your company will make substitutions only as allowed by Section 00.73.39 of the above project

5. My company intends to _____

This Work includes: Labor & Materials Labor Only Materials only

for a total amount of _____ Dollars \$ _____

Date _____

Authorized Signature of SCE

Name and Title

Please advise the Owner immediately if either party attempts to renegotiate this agreement

SECTION 00.73.43
PREVAILING WAGES and LABOR REGULATIONS

1. PREVAILING 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 attached "Minimum Wage Rates" as determined by the Commissioner of the Massachusetts Department of Labor Division of Occupational Safety. This schedule shall continue to be the minimum rate of wages for said employees during the life of this Contract. Any questions relative to the applicability of any wage rate shall be directed to the Division of Occupational Safety.
- B. Keep a legible copy of said schedule posted on the site at all times. Provide the Owner, on a weekly basis, and keep an on-site file of the wage rates and classifications of labor employed on this Work in order that they may be available for inspection by the Owner, Department, Architect, or any agency having jurisdiction.
- C. Pay reserve police officers employed on the Work the prevailing rate of wages paid to regular police officers as required by MGL c149 § 34B, as amended. Such police officers shall be covered by Worker's Compensation Insurance and Employers Liability Insurance provided by the Contractor.

2. WAGE RATE REPORTING

- A. The Contractor and all subcontractors shall provide certified payroll affidavits verifying compliance with MGL c.149 §§26 - 27H.
- B. The Contractor and all subcontractors shall provide a Statement of Compliance within 15 days of the completion of its portion of the work. This statement shall be submitted to the Owner on the form found elsewhere in this section.
- C. [Weekly Payroll Form](http://www.mass.gov/lwd/docs/dos/prevaling-wage/pw-payroll.pdf) www.mass.gov/lwd/docs/dos/prevaling-wage/pw-payroll.pdf
- D. [Statement of Compliance](http://www.mass.gov/lwd/docs/dos/prevaling-wage/pw-compliance.pdf) www.mass.gov/lwd/docs/dos/prevaling-wage/pw-compliance.pdf

3. APPRENTICE REQUIREMENTS

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.

4. EMPLOYEE OSHA SAFETY TRAINING

- A. All employees who work on this construction site must have no less than 10 hours of OSHA-approved safety and health training. See Chapter 306 of the Acts of 2004.
- B. The Contractor and all Subcontractors shall furnish to the Owner, with the certified payroll reports, documentation indicating that each employee has successfully completed 10 hours of a course in construction safety and health. This course must be approved by the United States Occupational Health and Safety Administration (OSHA).

INSERT WAGE RATES OBTAINED FROM
Department of Labor, Division of Occupational Safety

END OF PREVAILING WAGE AND LABOR REGULATIONS
00.73.43

SECTION 01 05 00

CONDUCT OF WORK

PART 1- GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including the General and Supplementary Conditions and Division 0 – Bidding Documents, Contract Forms, and Conditions of the Contract and Division 1 – General Requirements, apply to the work of this Section.
- B. Carefully examine all the Contract Documents for requirements which affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specification sections and other Contract Documents.
- C. This Section contains general information that applies to all work performed under this Contract and is inherently made a part of each Specification Section.

1.02 SUMMARY:

- A. This Section specifies administrative and supervisory requirements necessary to perform the work.
- B. Nothing in this Section shall be construed as limiting the Contractor's responsibility for coordination of the work, materials and methods, meeting the project construction schedule, or for the safety of persons or property.

1.03 PROJECT DIRECTORY:

- A. Within 15 days of Notice to Proceed, submit a Project Directory. Provide contact information for the Contracting Officer and, if applicable, the Contracting Officer's representatives, Contractor's Tenant Coordinators, Architect, Architect's Consultants, and Contractor's principal staff, including the Superintendent, Project Manager and other personnel in attendance at the site. Identify individuals, their duties and responsibilities; list their addresses and telephone numbers. Update and redistribute the Project Directory as information changes.
 - 1. Include contact information for each principal subcontractor, major suppliers, and other entities of interest to the Project.
 - 2. Also include project safety information, including contract numbers for police, fire, emergency medical services, and nearest hospital.
 - 3. Post copies of the list in the Project meeting room, the temporary field office, and by each temporary telephone.
 - 4. Provide 24-hour emergency numbers for the Contractor's Superintendent and another responsible person authorized to act on behalf of the Contractor.

1.04 HOURS OF WORK

- A. Unless specifically authorized by the Contracting Officer, in writing, the work must be conducted between the hours of **8:00 AM and 4:30 PM Monday through Friday**. No work shall be conducted on holidays in the Town of Holbrook, Saturdays, or Sundays other than for emergencies or unless specifically authorized by the Contracting Officer. Hours of operation are as listed in Section 4.3.7 of the General Conditions for the Contract for Construction.
- B. Construction shall conform to the Construction Project Schedule approved by the Contracting Officer and in accordance with the Contract between the Authority and the Contractor.
- C. Co-ordinate work with the HHA's Integrated Pest Management Program "IPM".
1. Include IPM contractor on Project Directory.
 2. At kick-off meeting, review IPM requirements.
 3. Seal holes at openings caused by the work.
 4. Plug holes at the end of the shift at incomplete work that would allow pest access.
- D. If such work is authorized by the Contracting Officer, representatives of the Authority's Operations Department and the Construction Representative must be present on site at all times at the expense of the Contractor. The Contractor shall reimburse the Authority for the worker's time at their hourly rate established in the Contract with the Authority, including, but not limited to, overtime pay, fringe benefits, and labor burden. The Contractor shall reimburse the Authority with a check made out to the Holbrook Housing Authority and delivered to the Contracting Officer. The Contractor shall not directly compensate the Contracting Officer.
- E. No work is to be done on Saturdays, Sundays, or the following holidays, other than for emergencies:
1. New Year's Day.
 2. Martin Luther King Day.
 3. President's Day.
 4. Evacuation Day (St. Patrick's Day. Note: Work may be permitted on this day upon written request of the Contractor to the Contracting Officer.)
 5. Patriot's Day.
 6. Memorial Day.
 7. Bunker Hill Day. (Note: Work may be permitted on this day upon written request of the Contractor to the Contracting Officer.)
 8. Juneteenth Day (June 19th).
 9. Independence Day (July 4th).
 10. Labor Day.
 11. Columbus Day.
 12. Veteran's Day.
 13. Thanksgiving.
 14. Christmas Day.

1.05 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit his use of the premises for the Work and for storage, to allow for:
 - 1. Authority occupancy.
 - 2. Tenant occupancy.
 - 3. Public use.
 - 4. Work by other Contractors.
- B. Coordinate use of premises under direction of Architect and the Contracting Officer.
- C. Assume full responsibility for the protection and safekeeping of Products under this Contract, stored on the site. Any injury which may come to it from frost, water, accident, or any other cause and any injury which may come to any of the work shall be repaired immediately by the Contractor at his own expense and without additional cost to the Authority, this shall also apply to any abutting or adjoining work on or adjacent to the premises. The Contractor shall be responsible for any damage and in the event of such damage, the Contractor shall repair the damage immediately at his own cost and without additional cost to the Authority.
- D. Move any stored Products, under Contractor's control, which interfere with operations of the Authority or separate contractor.
- E. Obtain and pay for the use of additional storage or work areas needed for operations.
- F. Debris or any nature shall be completely removed from the site at the end of each days work and disposed of in accordance with all Federal, State and local regulations.
 - 1. At the Preconstruction Conference, the Contractor shall list and identify the disposal contractor/s and the dump site to be used for this work. The disposal contractor/s and dumpsite are subject to the Contracting Officer's approval, and shall not be changed without the Contracting Officer's written approval.

1.06 AUTHORITY'S OCCUPANCY

- A. Full Occupancy by the Authority: The Authority will occupy the site and existing buildings for during the entire construction period. Perform work under the Contract in a manner so as not to interfere with the Authority's operations. Cooperate with the Authority at all times in order to minimize conflicts and facilitate Authority's usage.
 - 1. The Contractor's attention is especially called to the fact that continuous operation of services for this housing project is mandatory. During the period of construction of the new work and/or alterations to the existing work, the progress and sequence of installation shall be carefully planned by the Contractor and approved by the Contracting Officer, If the project is to be left without heat, hot water, city water, electricity, gas, sanitary facilities, or any other services, the Contractor shall provide **72 hours** written notification to the Contracting Officer

before proceeding.

B. RELOCATION: AE/PM – INDICATE RELOCATION PLAN

1. Upon no less than **72 hours** advance written notice, the Contracting Officer will arrange for 8-hour (work day) vacancy where required for construction operations, for up to 5 consecutive work days for spaces affected by the work.
2. Plumbing, mechanical and electrical (fire alarm) work must be conducted in such a way as to restore all services to occupied units above the work area at the end of each day.
3. The Contractor shall bear the costs of any overnight tenant relocation due to the Contractor's inability to complete the work in the time permitted.

C. Considerations for residents during construction:

1. The Contractor shall take all necessary precautions to ensure the public safety and convenience of the occupants during construction.
2. If a unit is to left without heat, hot water, domestic water, electricity, gas, sanitary facilities, or any other services, the Contractor must provide written notification to residents a minimum of **48 hours** in advance of any shutdown of services. If the Contracting Officer will not allow this shutdown, but wants instead a temporary means of supplying said services, the Contractor shall supply all labor, materials, and whatever may be required to supply said temporary services at no extra cost to the Authority and in accordance with the state and local regulations on health and safety.
3. If the work shall affect the residents of any unit in any manner, or if the Contractor must gain access to the interior of a dwelling unit, the Contractor shall notify the Contracting Officer a minimum of **72 hours** in advance and the Contractor will direct its Tenant Coordinator(s) to provide required written notification to all affected residents. No work that shall affect the residents of any unit in any manner as determined by the Contracting Officer shall begin unless residents are provided **48-hour** written notification as required by this Section and the Contracting Officer has approved the form and timing of the notification.
4. The work shall be done with as little inconvenience as reasonably possible and without danger to the occupants and to the permanent structures, within the project area. Any damage to buildings, roads, public roads, bituminous concrete areas, fences, lawn areas, trees, shrubbery, electric or telephone poles, underground utilities, etc. shall be repaired by the Contractor at his/her own expense. Damaged property shall be returned to its original condition prior to the damages within a reasonable time period, except all utility outages shall be repaired immediately.
5. The Contractor shall be aware that special consideration must be made to the fact that they are working in an occupied residential development and/or urban neighborhood location. **Tools, construction equipment, and construction**

materials are not to be left unattended at any time, unless in a secured area with no public access. Open areas left during the course of construction must be covered or otherwise made safe. Any considerations made for the safety of the residents and their families shall be made to the Contracting Officer's satisfaction.

6. The Contractor shall, at all times, leave an unobstructed way along the roadways and walks, and shall maintain barriers and lights for the protection of all persons and property in all locations where he has material stored or work going on, and during the entire time such work is going on or material is stored.
7. The Contractor shall not gain access to the roof areas or exterior walls by use of interior stairs, elevators, public spaces, or residential units.
8. Only materials and/or equipment intended and necessary for immediate use shall be brought into the dwelling units. At the end of each work day and at the completion of each phase of work, equipment and leftover or unused materials shall be removed from each dwelling unit. There shall be no storage of materials, tools, and/or equipment within any of the occupied dwelling units. Any storage on site must be authorized by the Contracting Officer, in writing.
9. Residents will be requested by the Contractor's Tenant Coordinator(s) to move personal belongings out of the way of the work. However, it shall be the Contractor's responsibility to move any personal belongings out of way in order to avoid any delay in the work. Air conditioners, if left in windows, shall be protected by the Contractor so that the air conditioners are not damaged due to the work or any fallen debris or dust that arises out of the work. Any items moved or removed by the Contractor shall be put back in place. Items may include, but not limited to, window treatments, plant holders, etc.
10. Should any openings work (such as coring through floors) be made between units as a result of the, the openings shall be made secure or temporarily closed overnight and at all times throughout the work except for reasonable, minimal time periods necessary in order for the work to progress.
11. Only materials and/or equipment intended and necessary for immediate use shall be brought into the common areas used by the Authority. At the end of each work day and at the completion of each phase of work, equipment and leftover or unused materials shall be removed from all common areas.
12. Workers shall refrain from smoking any while performing work inside dwelling units and common areas, including basements. The Contractor shall remove from the project workers who consistently violate this provision.
13. The Contractor shall cooperate at all times with the Contracting Officer and the Architect, and ensure the cooperation of its key personnel and that of its subcontractors.
14. The Contractor shall require all construction personnel to limit or moderate unnecessary noise, especially radios and noisy speech in common areas.

1.12 COMMUNICATIONS

- A. All notices, demand, requests, instructions, approvals, and claims must be in writing.
- B. Any such notice shall be deemed to have been given as of the time of delivery, or of actual receipt by hand or in the case of mailing, when it should have been received in due course of post.
- C. For communicating purposes, the office address of the Contractor shall be that stated on the signature page of the Contract; that of the Contracting Officer shall be as stated in the Notice to Contractors. Any subsequent change in address of either party shall be communicated to the other in writing.

1.13 CONTRACT DOCUMENTS (PLANS AND SPECIFICATIONS)

- A. The Authority will furnish to the Contractor, without charge, all copies of the Contract Documents (Drawings and Specifications) reasonably necessary for performance of Work.

1.14 WORK BY HOUSING AUTHORITY

- A. The Contracting Officer will enable the Contractor to perform the construction work in accordance with the approved operational plan and remove obstructions under the Authority's control that may prevent work to assure continuity of the work.

1.15 WORK PLAN REQUIREMENTS

- A. Operation and Sequencing Plan: Submit a detailed operation and sequencing plan for approval, detailing order, work method, and schedule in which all construction activities will be completed in each address. Any changes to this operational plan shall be approved by the Contracting Officer.
- B. Work Order, General: Except as otherwise indicated in this Article, the work shall be performed continuously, with each trade and subcontractor completing work at each site.
 - 1. Coordinate and schedule all trades to comply with this requirement. The Contracting Officer will not accept as the basis for a change order or extension of contract time, any cost or delays incurred by the Contractor's or any subcontractor's failure to meet the approved schedule.
 - 2. Work that in the sole opinion of the Architect does not affect building occupancy, inconvenience residents, or interfere with the Authority's operations, may be performed in any order at Contractor's option.
 - 3. For purpose of limiting Contractor's responsibility for damage caused by occupancy, the Work will be accepted by the Contracting Officer in phases, a building, or part thereof, at a time. Warranties and guarantee periods shall begin on the date all work is determined to be Complete. Refer to Section 01700.
- C. Work Order Phasing Requirements: Comply with the following phasing requirements:
 - 1. AE - List specific requirements.

D. Scheduling Considerations:

1. Coordinate work of all trades which may affect occupied adjacent areas to maximize the amount of work done during days when there are system shutdowns.
2. Holiday Periods: Do not begin work that requires a shutdown in any common area that would be incomplete (excepting correction of minor deficiencies) over a major holiday period (Thanksgiving, Christmas, New Year), or any Town holiday period.

1.16 DAILY WORK PROCEDURES

- A. The work must be completed in a continuous non-interrupted operation. The Contractor must use sufficient personnel and adequate equipment to complete all the necessary work requirements within a minimum period of time.
- B. The Contractor must retain on the Work during its progress a competent, non-working full-time representative/superintendent (“representative”, “superintendent” or “Project Superintendent”) satisfactory to the Contracting Officer. The representative/superintendent shall not be changed, except with the Contracting Officer’s consent. The representative/superintendent must be fully licensed to perform this work in the Town of Holbrook and shall be in full charge of the work and all instructions given to this person by the Architect shall be binding. A copy of the representative/superintendent’s current licenses (or the licenses of any representative/superintendent under consideration for change) shall be provided to the Contracting Officer before he/she begins the work.
- C. The Contractor must supply to the Contracting Officer the name and telephone/pager number of a responsible person who may be contacted during off-hour emergencies on the Project. **The Contractor shall remain “on call” 24 hours per day in the event of an emergency.** Response time shall be within **forty-five (45) minutes** of receiving verbal notification of an emergency. The Contractor’s Project Manager and/or Project Superintendent on site **must be able to be reached immediately** during the hours of work via beeper or telephone. Any work which is directly connected to the Scope of Work as outlined in this contract shall be corrected as soon as possible.
- D. All personnel working on site must sign in daily on “Sign In” sheets at the site office or at another designated area. The Contractor must check in daily with the Management Office prior to the start of the work.
- E. The Contractor is responsible for obtaining any keys necessary for access to work areas in a timely manner in order to prevent delay of the work. Keys shall be returned to the Contracting Officer at times approved by the Contracting Officer.
- F. The Contractor is responsible for the security of partially completed work until the project is finally accepted by the Contracting Officer.
- G. Workers shall refrain from smoking while performing any work inside buildings. The Contractor shall remove from the project workers who consistently violate this provision.
- H. Protect all landscaping and sitework. Any plantings, shrubbery, lawn areas, and all other site amenities damaged by the Contractor shall be replaced, re-seeded or otherwise

restored to their original condition, at the Contractor's expense.

- I. New roof surfaces and waterproofed surfaces shall not be subjected to traffic nor shall they be used for storage of materials. Where some activity must take place in order to carry out the Work, adequate protection must be provided.

1.17 CLEANING DURING CONSTRUCTION

- A. Conduct cleaning and disposal operations with local ordinances and anti-pollution laws.
 - 1. Do not burn rubbish and waste materials on site.
 - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 3. Do not dispose of wastes into streams or waterways.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Do not allow materials and rubbish to drop free or be thrown from upper floors but remove by use of a material hoist or rubbish chutes.
- D. Maintain the site free from accumulations of waste, debris, and rubbish. Broom clean exposed concrete surfaces, paved surfaces, window sills, roof areas, patios, or other areas below the work as often as reasonably required in order to maintain a clean site throughout the work acceptable to the Contracting Officer.
- E. Provide on-site covered containers for collection of waste materials and rubbish.
- F. At the end of each work day, remove and legally dispose waste materials and rubbish from site. Disposal shall be in compliance with all applicable laws, ordinances, codes, and by-laws.
- G. All precautions must be made to that the interior of buildings are not dirtied by the work. Interior public spaces and dwelling units are to be left as clean as they were prior to the commencement of the work every day. Should any debris or dust fall into any common area or dwelling unit as a result of construction activity, the Contractor shall, by the end of each work day:
 - 1. Dust furniture and surfaces, using oil or other cleaning.
 - 2. Mop floors using a cleaning agent and water.
 - 3. Vacuum rugs. Professionally clean rugs if vacuuming is inadequate to remove debris.
 - 4. Clean and polish windows and other glass or plastic glazing surfaces.
 - 5. Clean and polish all metal surfaces, including architectural hardware.

6. Use only cleaning materials recommended by the manufacturer of the surface to be cleaned, which will not create a hazard to the health or property, which will not damage surfaces, and which are approved by the Contracting Officer.
 7. Remove grease, mastic, adhesive, dust, dirt, debris, stains, labels, fingerprints, and other foreign materials from sight-exposed interior surfaces.
 8. Polish glossy surfaces to a clear shine.
 9. Leave pipe and duct spaces, plenums, furred spaces and the like clean of debris and decay able materials.
 10. Replace filters and clean ducts, blowers, and coils if units were operated during construction.
- H. The Authority's responsibility for cleaning commences at Substantial Completion or at acceptance of partially completed work.

1.18 TENANT COORDINATOR

- A. In accordance with and subject to the Authority's Section 3 Provision included in the Contract and the terms of this Section, the Contractor shall hire Tenant Coordinators who are Authority residents. If the Contract requires the Contractor to perform work in dwelling units, the Contractor shall hire Tenant Coordinators to accompany each crew that shall enter or perform work within a dwelling unit. If the Contract requires the Contractor to perform work at common areas, the Contractor shall hire Tenant Coordinators as necessary to act as liaisons between the Contractor and the tenants residing in buildings adjacent to the common area.
- B. Each of the Contractor's Tenant Coordinators shall be directed solely by the Contractor; authorized to act on the Contractor's behalf; and satisfactory to the Contracting Officer.
- C. The Tenant Coordinator will be responsible for notifying tenants of work scheduled to be performed in their buildings and perform other duties as necessary to act as liaison between tenants and Contractor as directed by the Contractor.
- D. The Tenant Coordinator shall obtain a resident's signed permission to enter the apartment if the resident will not be at home during work conducted in the resident's unit. The Tenant Coordinator shall obtain keys from the resident if he/she will not be home. As directed by the Contractor, the Tenant Coordinator shall request keys from the Contracting Officer for vacant apartments and public spaces when the work is scheduled. The Tenant Coordinator shall be responsible for the safe-keeping of such keys and shall return them at the end of the work day to the Contracting Officer or his/her designee.
- E. The Tenant Coordinator shall notify the Contractor who shall notify the Contracting Officer of any resident who refuses to cooperate with the Contractor's requests relating to the performance of the work or any resident who obstructs the performance of the Contractor's work.
- F. The Contractor shall hire and retain the Tenant Coordinator(s) for the duration of the

Project and for work hours and schedule specified as follows:

1. The number of hours for the Tenant Coordinator for this project shall be 40 hours per week.
 2. The Tenant Coordinator shall work each day the Contractor is working on site.
- G. The following minimum salaries shall be paid to the Tenant Coordinator(s):
1. Rate: One-and one-half times the minimum wage as set forth in 760 CMR 10.08.
 2. Hourly rates are inclusive of all benefits.
- H. At the Contractor's direction, the Contractor's Tenant Coordinator(s) shall provide written notification to each resident in writing forty-eight (48) hours before work is scheduled that may affect them in any manner. The Contractor shall notify the Contracting Officer seventy-two (72) hours in advance of any work requiring notification by the Contractor's Tenant Coordinator.
- 1.19 CONSTRUCTION REPRESENTATIVE
- A. If the Contracting Officer and Architect agree, the Authority may provide one or more Construction representatives to assist in carrying out the Architect's responsibilities at the site. The Construction Representative shall observe and report on construction activities such as number and category of workers on-site, schedule and progress, conformance to bid documents, safety and general conduct of the work, etc: and keep daily written reports, inform the Architect and the Contracting Officer immediately of any deviation from the contract requirements, attend weekly job meetings with the Contracting Officer, the Architect and the Contractor, and assists in reviewing payment requisitions and change proposal requests. Duties and limitations of the Construction Representative's shall be further explained at the pre-construction conference.

PART 2- PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS:

- A. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- B. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- C. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

- D. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision
- E. Recheck measurements and dimensions, before starting each installation.
- F. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- G. Mounting Heights: This intent of the project is to provide UFAS and MAAB compliant units. Mounting heights shall comply with the latest edition of referenced standards. Where mounting heights are not indicated, immediately notify the Architect.
- H. Tolerances: The Work shall comply with the construction tolerances as enumerated in the latest editions of UFAS and MAAB. Work not in compliance with referenced standards shall be corrected at the expense of the Contractor.
- I. Protect all landscaping and sitework. Any plantings, shrubbery, lawn areas, and all other site amenities damaged by the Contractor shall be replaced, re-seeded or otherwise restored to their original condition, at the Contractor's expense.
- J. The Contractor shall be aware that special consideration must be made to the fact they are working in a family development. **Tools, construction equipment, and construction materials are not to be left unattended at any time, unless in a secured area with no public access.** Open areas left during the course of construction must be covered or otherwise made safe. Any considerations made for the safety of the residents and their families shall be made to the Authority's approval.
- K. The Contractor is responsible for the security of partially completed work until the project is finally accepted by the Contracting Officer.

3.02 CLEANING AND PROTECTION:

- A. Provide dust-proof partitions or other approved physical barriers to separate the work area from the occupied portions of the structure. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period.
 - 1. Maintain the site free from accumulations of waste, debris, and rubbish. Broom clean exposed concrete surfaces, paved surfaces, window sills, roof areas, patios, or other areas below the work as often as reasonably required in order to maintain a clean site throughout the work acceptable to the Contracting Officer.

- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

**END OF SECTION 01.05.00
CONDUCT OF WORK**

SECTION 01 11 00 SUMMARY OF WORK

11.1 GENERAL SCOPE OF WORK

A. The work under the Contract consists of:

1. HVAC:
 - a. Provide ducted with exterior exhaust termination range hoods for all kitchens at both sites.
 - b. Provide all new range hoods with fire suppression canisters.
 - c. Replace all existing bath fans at 667-01 and 667-02 sites with new quiet fans properly sized with improved operation and control.
2. Electrical:
 - a. Disconnet and Reconnect of existing electrical as it pertains to the HVAC Sope of Work. The new kitchen hoods and bathroom exhaust fans will be connected to the existing branch circuitry currently serving the existing hoods and fans.
 - b. New switches shall be provided in accessible units for the kitchen hoods.
3. Hazardous Materials:
 - a. Asbestos remediation will take place where applicable.
4. All Work either shown on the drawings or included in the specifications unless specifically indicated as not to be done.

B. In addition, the Work under the Contract includes:

1. Work outside the project site as called for in the Contract Documents and as required for the performance of the Work.
2. The restoration of any items damaged or destroyed by encroaching upon areas outside of the project site.
3. Providing and restoring, where appropriate, all temporary facilities.

C. Additional Selection Criteria:

1. General Bidders must meet the additional selection criteria stated in Article 8.8 of the Instructions to Bidders.
2. If the Awarding Authority (Owner) cannot verify compliance with the additional selection criteria from the apparent low bidder's Update Statement, the Awarding Authority (Owner) or its Architect may request the bidder provide additional documentation demonstrating compliance with the Contract requirement. This may occur after the general bid opening, but prior to the Contract Award.

11.2 TIME OF COMPLETION

- A. In accordance with Article 9 of the General Conditions, the Work shall start as stated in the Notice to Proceed and shall be complete within **70** consecutive calendar days.

11.3 NOTICE TO PROCEED

- A. Upon the Department's Validation of the Owner Contractor Agreement the Owner shall Issue the Notice to Proceed for Construction. The Notice to Proceed shall include:
 - 1. The starting date and Construction Completion date for construction.
 - 2. The names of the Owner's contract Officer and Alternate Contract Officer.
- B. The Owner shall send three copies of the Notice to Proceed to the Contractor.
- C. The Contractor shall sign two originals and then;
 - 1. Return one to the Owner, and
 - 2. Keep one copy for its own records.

11.4 WORK UNDER SEPARATE CONTRACT

- A. **Coordination by Owner:**
 - 1. As provided in Article 7 of the General Conditions, the following items shall be provided by others under a separate agreement with the Owner for which the Owner has coordinating responsibility.
- B. **Coordination by the Contractor:**
 - 1. The following items shall be provided by the Contractor by other persons under a separate agreement with the Owner for which the Contractor has coordinating responsibility.
 - 2. The Contractors team should contact the city and be present to assist in any way needed for this work. The General Contractor is responsible for coordinating this and making sure it gets done.

11.5 ITEMS FURNISHED BY THE OWNER

- A. The following items will be furnished and delivered f.o.b. to the Project Site by others at no expense to the Contractor.
- B. The Contractor shall include in the Contract Sum the Cost of Unloading, uncrating and permanently installing the above listed items and remove and properly recycle or dispose off the Project Site all crating and packing materials.

11.6 SAMPLE APARTMENT OR WORK

- A. One apartment, or unit of work, as designated by the Architect shall be completed with all finishes, fixtures, and trim prior to starting the major finish work in the building. This apartment shall establish the acceptable standard of Work for the project.

11.7 TENANT COORDINATOR

- A. The Contractor shall carry the cost to employ (1) Tenant Coordinator for up to 80 hours for the purpose of the Bid. If the hours decrease or increase during construction, this shall be considered a change and shall need to be approved by the owner and a change order may be required.

- B. The Tenant Coordinator shall be paid one-and one-half times the minimum wage as set forth in 760 CMR 10.08. Contractor shall carry all other costs for insurance, Social Security, Medicare, State and Federal Taxes.

11.8 COORDINATION WITH PROJECT OCCUPANTS

- A. All dwelling units will be occupied during construction. The Contractor shall take all necessary precautions to ensure the public safety and convenience of the occupants during construction.
- B. The Owner shall assist the Contractor to perform the Work in accordance with the approved operational plan by removing obstructions that may be in the Contractor's way, upon proper notice from the Contractor.

11.9 HOURS OF OPERATION AND HOLIDAYS:

- A. Hours of operation are as listed in Section 4.3.7 of the General Conditions for the Contract for Construction. The HHA holidays are [New Year's Day; Martin Luther King, Jr. Day; President's Day; Evacuation Day; Patriots Day; Memorial Day; Bunker Hill Day; Juneteenth (June 19th); Independence Day (July 4th); Labor Day; Columbus Day; Veterans Day; Thanksgiving Day; and Christmas Day.]

**END OF SECTION 01.11.00
SUMMARY OF WORK**

SECTION 01.25.00
OR EQUALS
PRODUCT SUBSTITUTION PROCEDURES

25.1 SCOPE/GENERAL REQUIREMENTS

- A.** This section Supplements the General Conditions and other sections of Division 1 and supersedes any provisions regarding material substitutions/Or equals found in any of the technical sections of the specifications.
- B.** The requirements of this section are in addition to any provisions of all other sections of these specifications.
- C.** Definition - Whenever a specification section names one or more brands for a given item, and the Contractor wishes to submit, for consideration, another brand, the submission shall be considered an "or-equal" or a "material substitution". For the purposes of this Contract, the terms "or-equal" and "material substitution" shall be considered synonymous
- D.** In no case may an item be furnished on the Work other than the item named or described, unless the Architect, with the Administrator's written concurrence, shall consider the item equal to the Item so named or described, as provided by M.G.L. c.30 § 39M.
- E.** 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 submitting the substitution.
- F.** The Architect and/or the Department may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor shall bear full cost for providing, delivering, and disposal of all such samples.
- G.** The Contractor 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 that may be caused by such substitution.

25.2 RELATED SECTIONS

- A.** 01.33.00 SUBMITTALS, SHOP DRAWINGS AND SAMPLES

25.3 OR EQUAL APPROVAL PROCESS

- A.** On the transmittal, or on a separate sheet attached to the submission, the Contractor shall direct attention to any deviations, including minor limitations and variations, from the Contract Documents.
 - (1)** The Contractor 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 and the product named or described in the Contract Documents.
 - (2)** Such submittal shall in no event be made later than 90 calendar days after the Award of the Contract or 120 calendar days prior to the incorporation of the item into the Work. In any case in which the time period specified in the Contract Documents from the Notice to Proceed to Substantial Completion is less than 120 days, this requirement can be modified by the Architect.
 - (3)** The Contractor shall be completely responsible for the timely submission of supporting documentation.
 - (4)** 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 and in accordance with the provisions of MGL c.30§39M.

- (5) Upon conclusion of the investigation, the Architect shall promptly advise the Construction Advisor with written notice that the item is, or is not, considered acceptable as on Or-Equal substitution with documentation to support the determination.
- (6) The Construction Advisor will then solicit the concurrence of the Administrator as to the equality of the submitted item.
- (7) Should the Architect determine that the submitted product substitution is not equal to the specified standard the Architect shall send written notice of this to the Contractor.
- (8) Proceeding with work using the submitted item without the concurrence of the Administrator may result in rejection of the work and removal and replacement at the expense of the Contractor.

END OF SECTION 01.25.00

SECTION 01 26 00 CONTRACT MODIFICATION PROCEDURES

1. GENERAL

This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

2. RELATED DOCUMENTS

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

B. Related Sections include the following:

1. Section 01.22.00 Unit Prices for administrative requirements for using unit prices.
2. Section 01.29.00 Payment Procedures for administrative requirements for Applications for Payments and payment for Work perform relative to this section.
3. Section 01.74.19 Construction and Demolition Waste Management.

3. MINOR CHANGES IN THE WORK

The Architect will issue in consultation with the Construction Advisor supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time and in accordance with the requirements of Article 8 of the General Conditions.

4. CHANGE REQUESTS

A. Owner-Initiated Proposals (Change Requests): The Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Change Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in the Change Request, but in no event more than 20 days after receipt of Change Request, submit a written quotation (Change Estimate) estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change. Change Estimates shall include:
 - (a.) A list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made.
 - (b.) The amount of workforce labor required or eliminated based on the hourly wage rates found elsewhere in these documents.
 - (c.) Applicable, delivery charges, equipment rental, and amounts of trade discounts.
 - (d.) A written statement as to the impact on the construction schedule.

B. Contractor-Initiated Proposals: (Change Requests) If latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a change request to the Architect which:

- (1.) Includes a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

- (2.) Includes a Change Estimate that itemizes the quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - (3.) Indicates the amount of workforce labor required or eliminated based on the hourly wage rates found elsewhere in these documents.
 - (4.) Indicates applicable, delivery charges, equipment rental, and amounts of trade discounts.
 - (5.) Complies with requirements in Division 1 Section 01.25.13 OR Equals Product Substitutions if the proposed change requires substitution of one product or system for a product or system specified.
5. The Contractor shall submit claims for increased costs because of a change in scope in the Contract Documents before starting work on any unforeseen or unknown condition. The Owner will reject claims submitted prior to such authorization unless a method of monitoring the impact on Contract Sum and Contract Time has been authorized

6 CHANGE ORDER PROCEDURES

- A. Upon the Architect's agreement with a Contractor's Change Estimate, **the Architect** will prepare a Change Order for signatures of the Owner, Contractor, and Department subject to the policies described in the DHCD Construction Handbook.
- B. The Change Order form (01.26.00.01) can be found in DHCD Construction Handbook or on the DHCD Website and a sample can be seen at the end of this section
- C. The Contractor shall provide necessary supporting documentation for the prompt approval of Change Orders by the Owner and Department. The Contractor shall be fully responsible for any delays caused by a lack of adequate supporting documentation.
- D. All change Orders require a voted approval of the Housing Authority Board.
- E. Change Orders over \$5,000 or those that will result in a cumulative added total of 5% or more of the Original Contract Sum must also be approved by the Administrator.
- F. Payment for Change Order Work shall be by the regular payment procedure described in Section 00.29.00 and the Construction Handbook.
- G. The Owner will be responsible for disseminating copies of all approved Change Orders.

7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: A Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order as required by Article 8 of the general Conditions..
 - (1.). A Construction Change Directive contains a complete description of a change in the Work. It also designates the method to be followed to determine any change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - (1.). After completion of a change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
 - (2.) These costs must be incorporated into a Change Order which must be approved following the process described in Paragraph 6 Above.

- C. The process for when and how to utilize a Construction Change Directive and the necessary methods for monitoring said Work are described in the Construction Handbook.
- D. The Construction Change Directive form (01.26.00.02) can be found in the EOHLC Construction Handbook or on the EOHLC website, .and a sample can be seen at the end of this section.
- E. Payment for work completed under the auspices of a Construction Change Directive must be included in an approved Change Order before any payment for extra work can be made per the process described in Section 01.29.00.

**END OF SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES**

CHANGE ORDER

Number _____

Owner: _____ Housing Authority Date: _____ FISH No: _____

Development Number(s): _____

Contractor: _____ Architect: _____

Telephone No: _____ Telephone No: _____

Fax: _____ Fax: _____

Email: _____ Email: _____

The following change is ordered in accordance with Article 8 of the General Conditions of the Contract:

The Work described above shall (increase) (decrease) (not affect) the Contract Sum by: \$ _____

The Work described above represents an increase in the Original Contract Sum of _____ %

The effect of all Change Orders (including this one) is to increase in the Original Contract Sum by: _____ %

The Work described above shall (increase) (not affect) the Contract Time by _____ calendar days

The conditions hereinbefore referred to are as follows:

- A. The aforementioned change and work affected thereby is subject to all contract stipulations and covenants.
- B. The rights of the Owner are not prejudiced.
- C. All claims against the Owner which are incidental to or a consequence of the aforementioned change are satisfied.
- D. This change order is not valid until approved by the Owner, Architect, and GC & @7.
- E. Signature of the Contractor indicates agreement herewith, including adjustment to contract sum and/or contract time.

The above named Housing Authority met on _____ and voted to approve this Change Order:

Certified: _____
Contract Officer

Approved: Architect _____

Firm: _____

By: _____

Date: _____

Reviewed: Construction Advisor

9I YW[h]j Y'C ZZ]W'cZ' < ci g]b['UbX'@j UV'Y'7ca a i b]h]Yg

By: _____

Date: _____

Approved: Contractor _____

Firm: _____

By: _____

Date: _____

Approved: Director of Construction Management

9I YW[h]j Y'C ZZ]W'cZ' < ci g]b['UbX'@j UV'Y'7ca a i b]h]Yg

By: _____

Date: _____

CONSTRUCTION CHANGE DIRECTIVE

Commonwealth of Massachusetts
Department of Housing & Community Development

CHANGE DIRECTIVE NO: _____

Owner: _____ **Housing Authority**

Date: _____

Development Number: _____

EOHLC FISH Number _____

Contractor _____

Architect _____

Telephone No: _____

Telephone No: _____

Fax: _____

Fax: _____

Pursuant to Article 8 of the General Conditions you are hereby directed to make the following change(s) in this Contract

DO NOT USE THIS FORM FOR LUMP SUM CHANGES OR TIME EXTENSIONS .

The Contract Sum shall be adjusted by the following method (please check one)

- A. Unit Price of \$ _____ per _____
- B. Unit Prices found in Section 01.20.00 of the specifications.
- C. Unit Prices found on the Attached list.
- D. Time and materials basis per Article 8.3.1.3 of the General Conditions
- E. Subject to the Conditions of Article 8.5 and 8.7 of the General Conditions **"Work Done Under Protest"**. The Contractor is not relieved of the obligation to notify the Owner's Representative when protested work is being performed, to allow for accurate monitoring. Failure to provide such notice may jeopardize the Contractor's right to compensation.
- F. As follows: _____

THE NOT TO EXCEED LIMIT FOR THIS CHANGE DIRECTIVE IS \$ _____ .

- The Contract time shall be properly adjusted upon completion of any compensable work.
- Payment for the aforementioned work cannot be processed until executing an appropriate change order(s) to adjust the contract sum.
- When signed by the Owner and EOHLC and received by the Contractor, this Construction Change Directive becomes effective IMMEDIATELY, and the Contractor shall proceed with the change(s) described above.
- This change directive is not valid until approved by the Owner and EOHLC

Approved: Architect

Approved: Owner

Firm: _____

_____ **Housing Authority**

By: _____

By: _____

Date: _____

Date: _____

**Reviewed Construction Advisor
Department of Housing & Community Development**

**Approved: Director of Construction Management
Department of Housing & Community Development**

By: _____

By: _____

Date: _____

Date: _____

SECTION 01 29 00 PAYMENT PROCEDURES

1 GENERAL

This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

2. RELATED DOCUMENTS

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

B Related Specification Sections include the following:

- (1.) Section 01.26.00 Contract Modification Procedures for administrative procedures for handling changes to the Contract.
- (2.) Section 01.22.00 Unit Prices for administrative requirements governing use of unit prices.
- (3.) Section 01.74.19 Construction Waste and Demolition Management
- (4.) Section 01.77.00 Completion Project Completion Procedures
- (5.) Section 01.78.39 Project Record Drawings

3. SCHEDULE OF VALUES

A. Definition - Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

B. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

(1.) Correlate line items in the Schedule of Values with other required administrative forms and schedules, some which can be found in the EOHLC Construction Handbook or at the end of this section:

- (a.) Application for Payment forms with Continuation Sheets.
- (b.) Submittals Schedule.
- (c.) Contractor's Construction Schedule.

(2.) Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of the initial Application for Payment.

(3.) Sub-schedules: Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

C. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Summary Schedule of Values. Provide a minimum of at least one line item for each Specification Section. Provide additional breakdown of larger sections when requested by the Architect

(1.) Identification: Include the following Project identification on the Schedule of Values:

- (a.) Project name and location.
- (b.) Name of Architect.
- (c.) Department's FISH number.

- (d.) Contractor's name and address.
 - (e.) Date of submittal.
- (2.) Submit draft Schedule of Values using the Application for Payment Continuation Sheets (01.29.00.02). Copies can be found in the Construction Handbook. A sample can be seen at the end of this section
 - (3.) Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - (a.) Related Specification Section or Division.
 - (b.) Description of the Work.
 - (c.) Name of subcontractor.
 - (d.) Change Orders Approved by the LHA and Department.
 - (e.) Dollar value.
 - (4.) Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts in accordance with the examples shown in the Construction Handbook.
 - (5.) Subdivide filed subcontract amounts into major tasks.
 - (6.) Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 - (7.) Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - (a.) Differentiate between items stored on-site and items stored off-site. Include evidence of Transfer of Title of material and proof of ownership by the contractor, insurance or bonded warehousing.
 - (8.) Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 - (9.) Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - (a.) Temporary facilities and other major cost items that are not direct cost of actual work in place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at EOHLC Construction Advisor's option.

4. APPLICATIONS FOR PAYMENT

- A Payment Application Content:** Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
- B The Initial Application for Payment,** Application for Payment at time of Substantial Completion, and final Application for Payment involves additional requirements
- C Payment Application Times:** Progress payments shall be submitted to the Architect on a day agreed to at the beginning of the work by the Architect, Owner, and EOHLC Construction Advisor. The period covered by each Application for Payment is one month, ending on the last day of the month.
- D. Payment Applications Forms:** Use the Application for Payment and Continuation forms found in the Construction Handbook. These forms are also available on the EOHLC Web site <https://www.mass.gov/orgs/executive-office-of-housing-and-livable-communities> and a sample can be seen at the end of this section.

- E. Application Preparation:** Complete every entry on the form. The form shall be executed and notarized by a person authorized to sign legal documents on behalf of Contractor. The Architect will return incomplete applications without action for not being in proper form.
- (1.) Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - (2.) Include amounts of Change Orders approved by the Owner and Department before the last day of the construction period covered by application.
- F. Transmittal:** Submit 1 signed and notarized original copy of each Application for Payment to the Architect by a method ensuring receipt within 24 hours.
- F. Initial Application for Payment:** Administrative actions and submittals that must precede or coincide with the submittal of first Application for Payment include the following:
- (1.) Project Directory.
 - (2.) Schedule of Values.
 - (3.) Contractor's Construction Schedule
 - (4.) Products list
 - (5.) Any proposed product substitutions/or equals
 - (6.) Submittals Schedule
 - (7.) List of Contractor's staff assignments (Project Directory).
 - (8.) List of Contractor's principal consultants.
 - (9.) Copies of building permits.
 - (10.) Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
- G. Payroll Certifications** – In addition to the requirement to provide weekly payroll certifications as required by MGL c.149 §§26 - 27H, the Contractor shall provide evidence that required each Application for Payment that such submissions are current. Applications received without such certified payroll documentation shall be considered not in proper form and returned to the Contractor for re-submittal with required documentation.
- H. Application for Payment at Substantial Completion:** After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
- (1.) Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - (2.) This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application:** Submit the final Application for Payment with supporting documentation required by Section 01.77.00 Close out Procedures and 01.78.39 Project Record Drawings.

**END OF SECTION 01 29 00
Payment Procedures**

Contractor: _____ To: _____ Housing Authority

 Telephone: _____ Telephone: _____
 Fax: _____ Fax: _____
 Email: _____ Email: _____
 Development No. _____ Period Ending: _____
 Contract for: _____ FISH No: _____

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below in connection with the Continuation Sheet Attached.

	Number
1. ORIGINAL CONTRACT SUM	\$.00
2. Net change by Approved Change Orders <i>List On Attached Continuation Sheet</i>	\$.00
3. CONTRACT SUM TO DATE (Line 1 + Line 2)	\$.00
4. TOTAL COMPLETED & STORED TO DATE	\$.00
5. RETAINAGE - 5% of Total Completed and Stored to Date	\$.00
6. TOTAL COMPLETED LESS RETAINAGE (Line 4 - Line 5)	\$.00
7. LESS PREVIOUS APPROVED CERTIFICATES FOR PAYMENT	\$.00
8. CURRENT PAYMENT DUE (Line 6 - Line 7)	\$.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, that all workers used on this project have been paid in accordance with M.G.L. c. 149 §§26-27H, that all subcontractors have been paid in accordance with M.G.L. c.30 §39F, that the Contractor has complied with all applicable tax laws pursuant to M.G.L. c.62(c) §49(a), and that the current payment shown herein is now due. Acceptance of the final payment due under this contract shall operate as a release to the Owner, Department and Architect from all claims and liability.

CONTRACTOR:

State of _____ County of: _____
 On this _____ day of _____ 20____ before me, the undersigned notary public, _____ personally appeared, proved to me through satisfactory evidence which was _____ to be the person whose name is signed on the preceding document in my presence
 By: _____ Date _____
 NOTARY SEAL
 Notary Public:
 My Commission expires: _____

ARCHITECT/ENGINEER'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on site observations and the data comprising the application, the Architect/Engineer certifies to the Owner that to the best of the Architect/Engineer's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

ARCHITECT/ENGINEER AMOUNT CERTIFIED \$ _____

By: _____ Date _____ Attach an explanation if the amount certified differs from the amount claimed due by the Contractor on line 8 above. Initial all figures on the application and any continuation sheet that changed in accordance with M.G.L. c.30 §39K.
 Title _____

_____ Housing Authority EOHLIC Construction Advisor: EOHLIC - Director Construction Management
 By: _____ By: _____ By: _____
 Date: _____ Date: _____ Date: _____

For Greater than 95%

EOHLIC AMOUNT APPROVED \$ _____

Project:
Continuation Sheet

Page **of**

Payment Application Number:
Period to:

A	B	C	D	E	F	G	H	I
Spec. Section	Description of Work	Scheduled Value	Previously Approved	Completed this Period	Materials Stored Not in D or E	Total Completed and Stored to Date D+E+F	%	Balance to Finish
SAMPLE								

SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION

31.1 GENERAL PROVISIONS

The Conditions of the Contract and other Sections of Division I, General Requirements apply to this section.

31.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Related Specification Sections include the following:
 - (1.) Section 01.45.00 Quality Control
 - (2.) Section 01.50.00 Temporary Facilities and Controls
 - (3.) Section 01.74.19 Construction Waste and Demolition Management

31.3 PROJECT MANAGEMENT

- A. The Contractor's attention is directed to Article 4 of the General Conditions.
- B. Project Superintendent.
 - (1.) The Contractor shall employ a Superintendent and necessary assistant who shall be in attendance at the Project site during performance of the Work. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.
 - (2.) The Superintendent shall be a competent and responsible employee, satisfactory to the Owner, who is regularly employed by the Contractor and is designated by the Contractor as its representative to be in full time attendance at the Project site throughout the construction of the Work.
 - (3.) The Superintendent shall be responsible for coordinating all the Work of the Contractor and the Subcontractors. The Superintendent shall be licensed consistent with the Massachusetts Building Code.
 - (4.) The Superintendent's resume shall be submitted to the Owner prior to commencement of construction and must demonstrate to the Owner's reasonable satisfaction that the Superintendent has performed the same duties on previous construction projects similar to the Project
 - (5.) The Superintendent shall attend each job meeting.
- C. The Contractor must supply to the Owner the home telephone number of a responsible person who may be contacted during non-work-hours for emergencies on the Project.
- D. Project Meetings
 - (1.) Prior to commencement of the Work, the Contractor shall meet in conference with representatives of the Owner, Department, and Architect to discuss and develop mutual understandings relative to administration of the quality assurance program, safety program, labor provisions, the schedule of work, and other Contract procedures.
 - (2.) The Architect will regularly conduct job meetings, and keep the Owner informed of the progress and quality of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work. The Architect's minutes of meetings shall be the official minutes kept on the Project. The Architect shall provide copies of the meeting minutes to the Contractor, Owner, Construction Advisor, and under

separate cover forward a copy (for informational purposes only) to the Department's Architectural and Engineering Services Unit.

- E. The Department's procedures, forms, and practices which must be employed on the Project are described in the Construction Handbook, and will be explained at the pre-construction conference.

31.4 COORDINATION

- A. All dwelling units will be occupied during construction. The Contractor shall take all necessary precautions to ensure the public safety and convenience of the occupants during construction
- B. The Contractor is responsible for the security of partially completed work until the project is accepted by the Owner.

31.5 LABOR

- A. The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them, and whenever the Owner shall notify the Contractor, in writing, that any worker is, in its opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the Work and shall not again be employed on the Project except with the consent of the Owner.
- B. Workers shall refrain from smoking while performing work inside dwelling units, including basement areas. The Contractor shall remove from the project workers who consistently violate this provision.

31.6 SHUTDOWN OF SERVICES

- A. The Contractor's attention is especially called to the fact that the continuous operation of services for this housing development is mandatory. If the development is to be left without heat, hot water, domestic water, electricity, gas, sanitary facilities, or any other services for more than an eight-hour period, the Contractor shall submit a letter to the Owner and obtain written approval from the Owner before proceeding.
- B. If the Owner will not allow this shutdown, but wants instead a temporary means of supplying said services, the Contractor shall supply all labor, materials or whatever may be required to supply said temporary services at no extra cost to the Owner and in accordance with the state and local regulations on health and safety.

31.7 COORDINATION

- A. The Contractor shall submit for approval to the Owner a detailed operational plan showing the sequence of operations prior to commencement of any work at the site. The Owner must approve any changes to this operational plan.
- B. The work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient personnel and adequate equipment to complete all the necessary work requirements within a minimum period of time.
- C. Unless specifically authorized by the Owner, in writing, the work must be conducted between the hours of 8:00 a.m. and 4:30 p.m. on Monday through Friday. No work is to be done on holidays, Saturdays, or Sundays other than for emergencies.
- D. There shall be no storage of materials, tools, and/or equipment within any of the occupied dwelling units. Any storage within unoccupied dwelling units or other space controlled by the Owner must be authorized by the Owner, in writing.

- E. Only materials and/or equipment intended and necessary for immediate use shall be brought into the dwelling units. At the end of each work day and at the completion of each phase of work, equipment and leftover or unused materials shall be removed from each dwelling unit.
- F. Whenever work is to be done inside occupied units the Contractor's superintendent and an Owner's representative shall conduct a pre-work inspection of each unit to make note of existing conditions in the unit. Special attention should be paid to areas where new work will meet existing conditions.

31.8 OWNER'S COOPERATION

- A. The Owner shall assist the Contractor to perform the Work in accordance with the approved operational plan by removing obstructions that may be in the Contractor's way, upon proper notice from the Contractor.
- B. The Contractor shall carry the cost to employ (1) Tenant Coordinator for up to 80 hours for the purpose of the Bid. The Tenant Coordinator shall act as liaison with residents and to assist the Contractor in fulfilling the following:
 - (1.) Notifying all residents two (2) weeks before any work is scheduled in their apartments.
 - (2.) Notifying each resident in writing forty-eight (48) hours before work is scheduled in his or her particular apartment.
 - (3.) Obtaining signed permission to enter the apartment, if the resident will not be at home.
 - (4.) Obtain from the Owner the keys for any vacant apartment(s) or any apartment(s) where the resident is not at home. The Tenant Coordinator will be responsible for the safekeeping of such keys and shall return them at the end of the workday to the Owner.
 - (5.) Notify the Owner of any resident who refuses to cooperate with the proposed operational plan.

**END OF PROJECT MANAGEMENT AND COORDINATION
SECTION 01.31.00**

SECTION 01.33.00
SUBMITTALS - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

1. RELATED DOCUMENTS

- A. This Section supplements Subparagraphs 4.6.3 and 5.3.5 and Paragraphs 4.7, 4.8, and 4.15 of the General Conditions.
- B. Consult the individual sections of the specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.
- C. Section 01.25.00 OR Equals - Product Substitution Procedures
- D. Section 01.74.19 Construction and Demolition Waste Management

2. 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 is not 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. Sequence - The Contractor shall transmit each submittal in a sequence which will not result in the Architect's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.
- C. 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.
- D. Architect's Action - The Architect will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings:
 - (1) Final Unrestricted Release: Where marked "Approved" the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.
 - (2) Final-But-Restricted Release: When marked "Approved as 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 on these compliances.
 - (3) Returned for Resubmittal: When marked "Revise and Resubmit" or "Disapproved" the Work covered by the submittal (such as 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.
- E. 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.

3. OR EQUALS

- A.** Definition - Whenever a specification section names one or more brands for a given item, and the Contractor wishes to submit, for consideration, another brand, the submission shall be considered an "or-equal" or a "material substitution". For the purposes of this Contract, the terms "or-equal" and "material substitution" shall be considered synonymous.
- B.** In no case may an item be furnished on the Work other than the item named or described, unless the Architect, with the Administrator's written concurrence, shall consider the item equal to the Item so named or described, as provided by M.G.L. c.30 § 39M.
- C.** 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 submitting the substitution in accordance with the process described in Section 01.25.00 of these specifications.

4. SUBMISSION OF PRODUCT DATA

- A.** The Contractor shall submit 7 copies of Product Data to the Architect. All such data shall be specific and identification of material or equipment submitted shall be clearly marked in ink. Data of general nature will not be accepted.
- B.** Product Data shall be accompanied by a transmittal notice. The Contractor's stamp of approval shall appear on the printed information itself, in a location which will not impair legibility.
- C.** Product Data returned by the Architect as "Disapproved" shall be resubmitted in 7 copies until the Architects approval is obtained.
- D.** When the Product Data are acceptable, the Architect will stamp them "Approved" or "Approved as Corrected", retain 3 copies, and return 4 copies to the Contractor. The Contractor shall provide and distribute additional copies as may be required to complete the Work.
- E.** The Contractor shall maintain one full set of approved, original, Product Data at the site.

5. SUBMISSION OF SHOP DRAWINGS

- A.** Shop Drawings shall be complete, giving all information necessary or requested in the individual section of the specifications. They shall also show adjoining Work and details of connection thereto.
- B.** Shop Drawings shall be for whole systems. Partial submissions will not be accepted.
- C.** The Architect reserves the right to review and approve shop drawings only after approval of related product data and samples.
- D.** Shop drawings shall be properly identified and contain the name of the project, name of the firm submitting the shop drawings, shop drawing number, date of shop drawings and revisions, Contractor's stamp of approval, and sufficient spaces near the title block for the Architect's stamp.
- E.** The Contractor shall submit to the Architect seven (7) black line prints of each shop drawing. Prints shall be mailed or delivered in roll form. Each submittal shall be accompanied by a transmittal notice bearing the Contractor's approval stamp.
- F.** In addition to the hard copies described above, the Architect and Contractor may utilize a mutually acceptable electronic system to expedite the submittal process. This electronic system shall not be used as a substitute for the hard copy process.
- G.** When the Architect returns a marked submittal with the stamp "Revise and Resubmit" or "Disapproved", the Contractor shall correct the original drawing or prepare a new drawing and resubmit seven prints thereof to the Architect for approval. This procedure shall be repeated until the Architect's approval is obtained.

- H. When the Architect returns submittal with the stamp "Approved" or "Approved as Corrected", the Contractor shall provide and distribute the prints for all Contractor and Subcontractors use, and in addition submit, within 10 calendar days after approval, 4 prints to the Architect.
- I. The Contractor shall maintain one full set of approved shop drawings at the site.

6. SUBMISSION OF SAMPLES

- A. Unless otherwise specified in the individual section, the Contractor shall submit two specimens of each sample.
- B. A transmittal notice with the Contractors stamp of approval shall be included with all sample submittals.
- C. Samples shall be of adequate size to permit proper evaluation of materials. Where variations in color or in other characteristics are to be expected, samples shall show the maximum range of variation. Materials exceeding the variation of approved samples will not be approved on the Work.
- D. Samples of items of interior finishes shall be submitted all at once to permit a coordinated selection of colors and finishes.
- E. Samples that can be conveniently mailed shall be sent directly to the Architect, accompanied by a transmittal notice. All transmittals shall be stamped with the Contractor's approval stamp of the material submitted.
- F. All other samples shall be delivered at the field office of the Project Representative with sample identification tag attached and properly filled in.
- G. Transmittal notice of samples so delivered with the Contractor's stamp of approval shall be mailed to the Architect.
- H. If a sample is rejected by the Architect, a new sample shall be resubmitted in the specified manner. This procedure shall be repeated until the Architect approves the sample
- I. Samples will not be returned unless return is requested at the time of submission. The right is reserved to require submission of samples whether or not particular mention is made in the specifications, at no additional cost to the Owner.

**END OF SUBMITTALS
SECTION 01.33.00**

SECTION 01.45.00 QUALITY CONTROL

45.1 GENERAL SCOPE OF THE WORK

- A. General Contractor's quality control and control of installation.
- B. Tolerances.
- C. References.
- D. Mock up requirements.
- E. Testing and Inspection Services.
- F. Manufacturers' field services.
- G. Examination.

45.2 RELATED DOCUMENTS

- A. This section supplements the General Conditions, Supplementary Conditions, the Drawings, and all other parts of the Contract Documents.
- B. Consult the individual sections of the specifications for specific items required under those sections.

45.3 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. The General Contractor shall provide inspections, tests, and quality control services specified herein and in individual specification sections and required by governing authorities having jurisdiction, except where they are specifically required under a filed sub-bid section of the specification. In those cases, they will be the responsibility of the filed subcontractor. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturer's instructions, including each step-in sequence.
- C. When manufacturer's instructions conflict with the Contract Documents, request clarification from the Architect before proceeding.
- D. Comply with specified standards as minimum quality of Work except where more stringent tolerances, codes, or specific requirements indicate higher standards or workmanship.
- E. Perform the Work using persons qualified to produce the required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by the manufacturer.
- G. Secure products in place with appropriate positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

45.4 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not allow tolerances to accumulate.
- B. Comply with manufacturer's tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from the Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products into place.

45.5 REFERENCES

- A. For products or workmanship specified by associations, trade or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on the date of Bid Opening. Except where specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- E. Neither contractual relationships, duties, nor responsibilities of parties, nor those of the Architect shall be altered from the Contract Documents by mention or inference otherwise in reference documents.

45.6 MOCK UP REQUIREMENTS Tests will be performed under provisions identified in this section and identified in respective product specifications.

- B. Assemble and erection specified items with specified attachment and anchorage devices, flashings, seals and finishes.
- C. Accepted mock-ups shall be the comparison standard for remaining Work.
- D. Where mock-up has been accepted by the Architect and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by the Architect.

45.7 TESTING AND INSPECTION SERVICES

- A. The Owner may employ and pay for specified services of an independent firm to perform testing and inspection.
- B. Reports will be submitted by the independent firm to the Architect and Contractor indicating observations and results of tests.
- C. The Contractor and all Subcontractors shall cooperate with the independent firm, furnish sample materials, design mixes, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - (1.) Notify the Architect 24 hours prior to expected time for operations requiring services.
 - (2.) The Architect will make the final decision as to when services or testing will or will not be performed.
 - (3.) Make arrangements with the independent firm and pay for additional samples and tests for the Contractor's use.

- D. Testing and employment of testing agency or laboratory shall not relieve the Contractor of the obligation to perform work in accordance with the requirements of the Contract Documents.
- E. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect. Payment for re-testing or re-inspection will be charged to the Contractor by deducting testing charges from the Contract Sum.
- F. Testing Agency responsibilities:
 - (1.) Test samples of mixes submitted by the Contractor.
 - (2.) Provide qualified personnel at the site. Cooperate with the Architect and Contractor in performance of services.
 - (3.) Perform specified sampling and testing of products in accordance with specified standards.
 - (4.) Promptly notify the Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - (5.) Perform additional tests required by the Architect.
 - (6.) Attend progress meetings if requested by the Architect.
- G. Testing Agency Reports: After each test, promptly submit two copies of the report to the Architect and to the Contractor. Provide interpretation of the results when requested by the Architect. All test reports shall include:
 - (1.) Date issued.
 - (2.) Project title and number.
 - (3.) Name of inspector.
 - (4.) Date and time of sampling or inspection.
 - (5.) Identification of product and specification section(s).
 - (6.) Test location.
 - (7.) Type of inspection or test.
 - (8.) Date of test.
 - (9.) Results of tests or inspection.
 - (10.) Conformance with Contract Documents.
- H. Limits of Testing Agency Authority
 - (1.) Testing Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - (2.) Testing Agency may not approve or accept any portion of the Work.
 - (3.) Testing Agency may not assume duties of the Contractor.
 - (4.) Resting Agency has no authority to stop Work.

45.8 MANUFACTURERS' FIELD SERVICES

- A. When individual specification section(s), require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces to receive work, and installation quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable and to initiate instructions when necessary, these services shall be provided at no additional cost to the Owner.
- B. Submit the qualifications of any observers to the Architect and Owner prior to of required observations. Observers are subject to the approval of the Owner based on the observer's credentials. This submission shall be made allowing adequate time for the Architect to review the observer's credentials. This approval does not relieve the Contractor of any obligation to complete the Work in accordance with the Contract Documents.
- C. Report to the Architect, observations and site decisions or instruction given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

45.9 EXAMINATION

- A. The Contractor shall verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. The Contractor shall verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. The Contractor shall examine and verify specific conditions described in individual specification sections.
- D. The Contractor shall verify utility services are available, of correct characteristics, and in correct locations.

**END OF QUALITY CONTROL
SECTION 01.45.00**

SECTION 01.50.00 TEMPORARY FACILITIES AND CONTROLS

50.00 GENERAL REQUIREMENTS

- 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 re-providing any facility removed prior to Substantial Completion.
- B.** Removal of all temporary facilities shall be a condition precedent to Substantial Completion unless directed otherwise by the Architect or specifically noted in the specifications.
- C.** The Contractor must comply with all safety laws and regulations of the Commonwealth of Massachusetts, the United States Government, and local government agencies applicable to Work under this contract. The Contractor's attention is directed to the Commonwealth of Massachusetts, Department of Labor, and Division of Occupational Safety Regulations.

50.01 TEMPORARY ELECTRICITY

- A.** Temporary service and lighting shall be provided by a licensed electrician selected and paid for by the Contractor. This 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. This service shall include coordination with the local utility and other authorities having jurisdiction.
- B.** The Contractor may make use of the electricity available at the site, metered and paid for by the Owner.
- C.** Where heavy duty electric equipment drawing current in excess of 15 amperes is involved, the trade requiring such excessive amperage shall provide temporary service to supply the power.
- D.** All temporary work shall be provided in conformity with the National Electric Code, State laws, and requirements of the power company. Particular attention is called to Commonwealth of Massachusetts, Department of Labor Division of Occupational Safety Regulations.
- E.** Temporary Electric Service and Lighting shall include but not be limited to:
 - 1.** All labor, materials, and equipment necessary to supply temporary power of adequate capacity for the project.
 - 2.** Transformers and meters, when required by the power company, furnished by the power company and paid for by the Contractor.
 - 3.** Temporary work of a special nature, not otherwise specified hereunder, shall be provided, maintained, and paid for by the trade requiring same.
 - 4.** The Contractor shall furnish, install, and maintain lamps in operating condition.
 - 5.** The Contractor, and each Subcontractor, shall furnish their own extension cords and additional lamps as may be required for their work.
 - 6.** All lamps installed in permanent lighting fixtures and used as temporary lights during the construction period shall be removed and replaced shortly before Substantial Completion by the appropriate set of lamps required to be provided under the Electrical section of the specifications.
 - 7.** The temporary electrical facilities shall be dismantled and completely removed from the project site. This removal shall occur when the permanent electrical system is operational and accepted by the Architect. Removal shall be done by a properly licensed electrician.

50.02 TEMPORARY FIRE PROTECTION

- A.** The Contractor shall take necessary precautions to insure against fire during construction. The Contractor shall be responsible to insure that the area within contract limits is kept orderly and clean and that combustible rubbish and construction debris is promptly removed from the site.
- B.** Installation of equipment suitable for fire protection shall be done as soon as possible after commencement of the Work. The Contractor's attention is directed to the requirements of the Commonwealth of Massachusetts, Department of Labor and Workforce Development Regulation 454 CMR.

50.03 TEMPORARY HEAT

- A.** Providing temporary heating service and equipment in interior spaces:
 - 1.** The Contractor shall be completely responsible for providing all equipment and labor required to comply with this section.
 - 2.** The Contractor shall utilize the services of a qualified Heating subcontractor for providing Temporary Heat. These services shall be paid for by the Contractor.
- B.** The Contractor shall provide a minimum temperature of 70 degrees Fahrenheit to all occupied areas of the Project (This shall include common and public areas affected by the work).
- C.** The Contractor shall provide thermometers at places designated by the Architect in order to determine if specified temperatures are being maintained.
- D.** Temporary heating system work shall be performed under the direct supervision of individuals properly licensed to perform the necessary work.
- E.** All temporary work shall be provided in conformity with all applicable codes, State laws, and requirements of the utility company. Particular attention is called to Commonwealth of Massachusetts, Department of Labor Division of Occupational Safety Regulations.
- F.** The Contractor shall pay the costs of all fuel and electricity required for temporary heating until Substantial Completion unless specified otherwise.
- G.** Utilizing the Permanent Heating System for Temporary Heat:
 - 1.** The Contractor may, with the approval of the Owner, elect to utilize the permanent heating system for temporary heat. This may be allowed if the building is enclosed and after the heating system has been tested and is ready to operate and providing the Contractor complies with all provisions stated elsewhere in the Contract Documents.
 - 2.** If the permanent heating system cannot be utilized or if work requires a shutdown of the existing system the Contractor shall make arrangements, acceptable to the Owner, to comply with this requirement at no additional cost to the Owner.
 - 3.** The Contractor shall furnish and pay the costs of any materials and equipment which are not part of the permanent heating system and which may be required to operate the permanent heating system on a temporary basis.
 - 4.** The Contractor shall have a qualified heating mechanic check the heating system a minimum of twice daily, when no work is being performed at the site.
 - 5.** It shall be the Contractor's responsibility to have all portions of the permanent heating system that are used for heating during construction thoroughly cleaned and restored to first class condition, to the satisfaction of the Owner.
 - 6.** No parts of the air handling system shall be used until temporary filters have been installed satisfactory to the Architect. Such filters shall be kept clean and in efficient working condition, and

at the time of Substantial Completion shall be replaced by the permanent filters at no cost to the Owner.

7. The Owner's warranty for the permanent heating system shall begin on the date of Substantial Completion of the entire project
- H. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices.
- I. Unit heaters, if used, shall be of the smokeless type and be installed and operated in such a way that finished work will not be damaged. "Salamanders" shall not be used.
- J. Providing temporary heating service and equipment for exterior work:
 1. Temporary heat in outside areas shall be in compliance with MGL c149 §44G.
 2. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices.
 3. Unit heaters, if used, shall be of the smokeless type and be installed and operated in such a way that finished work will not be damaged. "Salamanders" shall not be used.

50.04 TEMPORARY TELECOMMUNICATIONS & FIELD OFFICE

- A. The Contractor shall be available through mobile phone service at all times and shall provide a 24-hour phone number and contact in case of emergencies.
- B. Location of Staging Area and Material Storage:
 1. Materials will be very small and should be brought in the day of use.

50.05 TEMPORARY WATER

- A. The Contractor may make use of the available water supply at the site for construction purposes, provided the permission of the Owner is obtained beforehand, water is verified at the source and only as long as the water is not used wastefully.
- B. The Contractor shall provide all necessary piping and hoses to utilize the available sources of water.
- C. The Contractor shall provide an adequate supply of cool potable drinking water with individual drinking cups for personnel on the job.

50.06 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. Subcontractors shall provide their own temporary buildings and trailers. Storage shall be located where directed by the Owner.
- 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.
- C. The Contractor must obtain the permission of the Owner for the use of any storage facilities available on site, but the Owner assumes no responsibility for articles stored.
- D. Lawns, paving or other surfaces within areas used by the Contractor shall be restored to original condition when temporary structures are removed.

50.07 SANITARY FACILITIES

- 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 Architect and shall be maintained by the Contractor in a clean and orderly condition in compliance with all local and state health requirements.

- C. Under no circumstances will the Contractor's personnel be allowed to use Resident's toilets.

50.08 TEMPORARY USE OF ELEVATOR

- A. Should the Contractor need to use the elevator, special arrangements shall be made with the Owner.
- B. The Contractor shall leave the elevator in the same condition as it was at the time it was turned over for temporary service. The Contractor shall pay for all expenses for repairs or replacement necessary to restore the apparatus to its original condition.

50.09 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. All such hoisting service shall be without cost to the Subcontractors.

50.10 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 over 8 ft. in height, as required for the use of all trades for proper execution of the Work.
- B. The Contractor shall furnish, install, maintain in safe condition, 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.
- C. Permanent stairs shall be erected as soon as possible, for which the Contractor shall provide temporary protective treads, risers, handrails, and shaft protection.
- D. The Contractor shall furnish, install, maintain, and remove covered chutes from openings in the exterior walls of upper floors. Such shall be in convenient locations and permit disposal of rubbish directly into trucks or disposal units.
- E. Debris shall not be allowed to fall freely from upper levels of the building. Materials shall not be dropped from open windows.

50.11 TEMPORARY PARKING

- A. Parking shall be coordinated with the Development.

50.12 TEMPORARY TRAFFIC CONTROL

- A. Temporary traffic control shall be coordinated with the Development.

50.13 TEMPORARY PROTECTION

- A. All dwelling units will be occupied during construction. The Contractor shall take all necessary precautions to ensure the public safety and convenience of the occupants during construction.
- B. Any damage to buildings, roads, (public and private), 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.
- C. 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.

50.15 NOISE AND DUST CONTROL

- A. The Contractor shall take special measures to protect the residents, neighbors, and general public from noise, dust, and other disturbances by:
 - 1. Keeping common pedestrian and vehicular circulation areas clean and unobstructed;

2. Insulating work area from occupied portions as far as possible; and
3. Sealing dust and fumes from contaminating occupied spaces.

50.16 TEMPORARY BARRICADES

A. The Contractor shall:

1. In addition to the weather protection during the months of November to March specified elsewhere, provide temporary watertight enclosures for openings in exterior walls and in roof decks when and as required to protect the Work from damage by inclement weather. Temporary enclosures shall be provided with adequate means of ventilation to prevent accumulation of moisture in the buildings.
2. Provide temporary wood doors for exterior entrances and elsewhere as required. Permanent door enclosures shall not be used as temporary enclosures.
3. Protect sills, jambs, and heads of openings through which materials are handled.
4. Protect decks and slabs to receive work by other trades from any soiling which will prevent proper adhesion of subsequent Work. Decks and slabs shall be left clean and free of blemishes at the time other trades begin the application of their work.
5. Protect concrete slabs to remain exposed and finished floors against mechanical damage, plaster droppings, oil, grease, paint, or other material which will stain the floor finish. Install and maintain adequate strips of building paper or other protection on finished floors in rooms where other trades will do future Work.
6. Protect all surfaces to receive work by other trades from any soiling which will prevent proper execution of subsequent work
7. Protect other areas, furniture, and private property of the residents and the Owner. Any areas damaged by the Contractor shall be restored to the original condition or compensated at the Contractor's expense.

B. Roof surfaces and waterproofed surfaces shall not be subjected to traffic nor shall they be used for storage of materials. Where some activity must take place in order to carry out the Work, adequate protection must be provided.

C. After the installation of any Work is completed, the Contractor shall be responsible for its protection and for repairing, replacing, or cleaning any such Work which has been damaged by other trades or by any other cause, so that all Work is in first class condition at the time of Substantial Completion.

50.17 TEMPORARY PROTECTIVE WALKWAYS

A. The Contractor shall, at all times, leave an unobstructed way along walks and roadways, and shall maintain barriers and lights for the protection of all persons and property in all locations where materials are stored or work is in progress.

50.18 TEMPORARY CONSTRUCTION FENCE

A. The Contractor shall be responsible for providing and maintaining temporary fencing or barricades around the construction as may be necessary to assure the safety of all persons authorized or unauthorized. Such protective measures shall be located and constructed as required by local, state, and federal ordinances, laws, codes, or regulations.

50.19 SECURITY

A. The Contractor shall be responsible for providing all security precautions necessary to protect the Contractor's and Owner's interests.

- B. Where excavation is involved, the Contractor shall be responsible for providing continuous watchmen service as necessary, to insure adequate protection of the general public.

50.20 TEMPORARY STORM WATER POLLUTION CONTROL

- A. Protect excavations, trenches, buildings, and materials at all times from rain water, ground water, backing-up, or leakage of sewers, drains, or other piping, or from water damage of any origin. Provide all pumps, piping, coverings, and other materials and equipment as required by job conditions to accomplish this requirement

50.21 WEATHER PROTECTION

- A. The Contractor shall provide temporary enclosures and heat to permit work to be carried on during the months of November through March in compliance with MGL c.149 §44G (d). These specifications are not to be construed as requiring enclosures or heat for operations that are not economically feasible in the opinion of the Owner. Without limitation this includes such items as excavation, pile driving, steel erection, erection of certain exterior wall panels, roofing, and similar operations.
- B. "Weather Protection" means the temporary protection of that Work adversely affected by moisture, wind, and cold by covering, enclosing, and/or heating. This protection shall provide adequate working areas during the months of November through March as determined by the Owner and consistent with the construction schedule to permit the continuous progress of all Work necessary to maintain an orderly and efficient sequence of construction operations. The Contractor shall furnish and install "Weather Protection" material and be responsible for all costs, including heating required to maintain a minimum of 40 degrees F. at the working surface. This provision does not supersede any specific requirements for methods of construction, curing of materials, or the applicable conditions set forth in the Contract Documents with added regard to performance obligations of the Contractor.
- C. Within 30 calendar days after award of the Contract, the Contractor shall submit in writing, to the Architect for approval, three (3) copies of the proposed methods for "Weather Protection".
- D. 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.
- E. Work damaged by frost shall be removed and replaced by and at the Contractor's expense and as directed by the Architect.
- F. It is to be specifically understood that the Contractor shall do no work under any conditions deemed unsuitable by the Contractor to the 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.

50.22 WIND PROTECTION

- A. Should high wind warnings be issued by the U.S. Weather Bureau, the Contractor shall take every precaution to minimize danger to persons, to the Work, and to the adjacent property.

END OF TEMPORARY FACILITIES AND CONTROLS SECTION 01.50.00

SECTION 01.73.29 CUTTING AND PATCHING

1. GENERAL SCOPE OF THE WORK

- A.** Unless specified elsewhere, the Contractor shall be responsible for:
 - (1.) All cutting and patching required for the project construction.
 - (2.) Products and installation for patching and extending Work.
 - (3.) Transition and adjustments.
 - (4.) Repair of damaged surfaces, finishes, and cleaning.
 - (5.) Coordination of any cutting and patching required by subtrades.
- B.** Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition
- C.** The Contractor must comply with all safety laws and regulations of the Commonwealth of Massachusetts, the United States Government, and local government agencies applicable to Work under this contract. The Contractor's attention is directed to the Commonwealth of Massachusetts, Department of Labor, Division of Occupational Safety Regulations.

2. RELATED SECTIONS

- A.** This section supplements the General Conditions including but not limited to Article 4.3. of the General Conditions.
- B.** Consult the individual sections of the specifications for specific items required under those sections.
- C.** Section 01.74.13 Progress Cleaning and Final Cleaning
- D.** Section 01.74.19 Construction and Demolition Waste Management

3. EXAMINATION

- A.** Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting, including elements subject to damage or movement during cutting and patching. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
- B.** Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace visually unacceptable areas of cutting and patching at no additional cost to the Owner.
- C.** Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D.** Beginning of cutting or patching means acceptance of existing conditions.
- E.** After uncovering existing Work, assess conditions affecting performance of work.

4. PREPARATION

- A. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
- B. Before proceeding, meet at the Project Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- D. Close openings in exterior surfaces to protect existing work [and salvage items] from weather and extremes of temperature and humidity. Insulate duct work and piping to prevent condensation in exposed areas.
- E. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- F. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- G. Remove debris and abandoned items from area and from concealed spaces.
- H. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

5. CUTTING

- A. Execute all cutting and fitting necessary to complete the Work.
- B. Where services are required to be remove, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions scheduled to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C. Uncover work to install improperly sequenced work.
- D. Remove and replace defective or non-conforming work.
- E. Provide openings in the Work for penetration of mechanical and electrical work. Cut holes and slots as small as possible, nearly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover opening when not in use.
- F. Employ skilled and experienced workers to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- G. Cut rigid materials using power saw or core drill. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill. Pneumatic tools shall not be allowed without prior approval.
- H. Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
- I. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
- J. Comply with requirements of applicable Specification Sections where cutting and patching requires excavating and backfilling or patching of pavement or concrete.

- K.** Do not cut structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
- L.** Do not cut operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
- M.** Perform cutting in a fashion that does not denigrate the energy performance of the building(s).

6. PATCHING

- A.** Execute patching to complement adjacent, undisturbed finishes.
- B.** Fit products together to integrate with other Work.
- C.** Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- D.** Perform patching in a fashion that does not denigrate the energy performance of the building(s).
- E.** Restore work with new products in accordance with requirements of Contract Documents.
- F.** Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G.** At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with appropriate material to full thickness of the penetrated element as necessary to maintain the required rating.
- H.** Where new work abuts or aligns with existing, perform a smooth and even transition. Patch work to match existing adjacent work in texture and appearance. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- I.** Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.
- J.** Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
- K.** Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
- L.** Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
- M.** Where walls or partitions are to be removed, patch and repair voids left in floor, wall and ceiling surfaces where the existing construction is removed. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
- N.** Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
- O.** Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
- P.** Where cutting and patching involves plaster refer to applicable Sections for plastering requirements. In lieu of specific requirements, comply with the following:

- (1.) Comply with ASTM C 842
- (2.) Comply with manufacturer's instructions and install thickness and coats as indicated.
- (3.) Unless otherwise indicated, provide 3-coat work.
- (4.) Base Coat: Ready-mixed, sand aggregate gypsum plaster base.
- (5.) Finish Coat: Ready-mixed gypsum finish plaster.
- (6.) Finish gypsum plaster to match existing adjacent surfaces. Sand lightly to remove trowel marks and arises.

7. CLEANING

- A.** In addition to cleaning specified in Section 01.74.13, clean all areas affected by the work of this Section including personal belongings affected by this work.
- B.** Completely inappropriate remove paint, mortar, oils, putty, and similar items.
- C.** Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- D.** When cutting and patching in occupied units clean affected areas daily and or immediately after completion of the cutting and/or patching work.

**END OF CUTTING AND PATCHING
SECTION 01.73.29**

SECTION 01 74 13 PROGRESS CLEANING - FINAL CLEANING

1. SCOPE

- A. This section specifies the requirements for maintaining a clean and orderly work site during and at the completion of the Work.
- B. Pay special attention to work areas that affect occupied residents' spaces and public areas.

2. RELATED DOCUMENTS

- A. This section supplements Article 4.17 of the General Conditions.
- B. Consult the individual sections of the specifications for cleaning of Work installed under those sections.
- C. Section 01.73.29 Cutting and Patching.
- D. Section 01.74.19 Construction Waste Management and Disposal.

3. CLEANING DURING CONSTRUCTION

- A. Conduct all cleaning and disposal operations to comply with all federal, state, and local laws, regulations, codes, ordinances and by-laws.
 - (1) Do not burn or bury rubbish and waste materials on the site.
 - (2) Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - (3) Do not dispose of wastes into streams or waterways.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Do not allow materials and rubbish to drop free or be thrown from upper floors, but remove by use of a material hoist or rubbish chutes.
- D. Maintain the Site free from accumulations of waste, debris, and rubbish.
- E. Do not leave debris in occupied units.
- F. Provide on-site containers for collection of waste materials and rubbish.
- G. At the end of each day, remove and legally dispose waste materials and rubbish from site.
- H. Vacuum clean interior building areas when ready to receive finish painting, and continue vacuum cleaning on an as-needed basis until Substantial Completion.
- I. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.
- J. Disposal of materials shall be in compliance with all applicable laws, regulations, ordinances, codes, and by-laws.

4. FINAL CLEANING

- A. Prior to submitting a request to the Architect to certify Substantial Completion of the Work, the Contractor shall inspect all interior and exterior spaces and verify that all waste materials, rubbish, tools, equipment, machinery, and surplus materials have been removed, and that all sight-exposed surfaces are clean. Leave the Project clean and ready for occupancy.
- B. Unless otherwise specified under other sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.

- C. Cleaning shall include all surfaces, interior and exterior, which the Contractor has had access to, whether new or existing.
- D. Employ experienced workmen or professional cleaners for final cleaning.
- E. Use only cleaning materials recommended by the manufacturer of the surface to be cleaned.
- F. Use cleaning materials which will not create a hazard to health or property and which will not damage surfaces.
- G. All broken or defective glass caused by the Contractor's Work shall be replaced at the expense of the Contractor.
- H. Remove grease, mastic, adhesive, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces. This includes cleaning of the Work of all finishing trades where needed, whether or not cleaning by such trades is included in their respective specifications.
- I. Clean and polish all new and existing glass and plastic glazing (if any) throughout the building(s), on both sides. Clean plastic glazing in accordance with the manufacturer's directions. This cleaning shall be completed by qualified window cleaners at the expense of the Contractor just prior to acceptance of the Work.
- J. Wash and polish all mirrors.
- K. Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.
- L. Polish glossy surfaces to a clear shine.
- M. Do the final cleaning of resilient floors and wood floors as specified under the respective sections of the Specifications.
- N. Leave all architectural metals, hardware, and fixtures in undamaged, polished conditions.
- O. Leave pipe and duct spaces, plenums, furred spaces and the like clean of debris and decayable materials.
- P. In cleaning items with manufacturer's finish or items previously finished by a Subcontractor, care shall be taken not to damage such manufacturer's or Subcontractor's finish. In cleaning glass and finish surfaces, care shall be taken not to use detergents or other cleaning agents which may stain adjoining finish surfaces. Any damage to finishes caused by cleaning operations shall be repaired at the Contractor's expense.
- Q. Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds.
- R. Ventilating systems - Replace filters and clean ducts, blowers, and coils if units were operated during construction.
- S. Owner's responsibility for cleaning commences at Substantial Completion.

**END OF PROGRESS CLEANING AND FINAL CLEANING
SECTION 01.74.13**

SECTION 01.74.19
CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

1.01 Description of Work

- A. This section describes the requirements for the Contractor and all subcontractors to minimize construction waste and debris and to reuse, salvage, and recycle to the greatest extent possible.
- B. This section specifies certain wastes that are required to be recycled.
- C. This section includes a standard Waste Management Report Template (01.74.19.01)

2.01 Related Sections

- A. 01.29.00 Payment Procedures
- B. 01.33.00 Submittals

3.01 Waste Management Goals

- A. The Owner's waste management goals include increased recycling and conservation of materials. Construction and Demolition Wastes have been identified as a particular target for reuse and recycling, for several reasons.

4.01 Pre-Construction Waste Management Report Submittal

- A. Prior to any waste removal, the Contractor shall submit a completed Draft Waste Management Report (01.74.19.01) to the Architect and
- B. The following databases may be used to find recyclers/haulers for construction debris:
 - (1.) Massachusetts Department of Environmental Protection www.Mass.gov/DEP/recycle.
 - (2.) The GSA Environmental Strategies and Safety www.wbdg.org/tools/cwm.php.
 - (3.) Recycling Works MA www.recyclingworksma.com.
Searchable web-based directories of recycling facilities for common construction materials as well as re-purposing materials with remaining useful life, such as structurally sound kitchen cabinets, fixtures, appliances, doors and windows. For specified guidance on a material not yet listed in the directory, contact one of the recycling advisors <mailto:info@recyclingworksma.com> or by calling hotline at (888) 254-5525.
 - (4.) For statewide contract recycling vendors with bona fide capabilities for porcelain (toilets) recycling:
New England Recycling (Taunton): Email: kbrady@nerecycling.com Phone: (508)813-1278,
EOMS Recycling Services (Brockton): Email: dmilhomme@eomsrecycling.com
Phone: (508)587-9686,
Republic Services (Auburn): Website: <http://www.republicservices.com> Phone: (508)721-2314,
ACME Recycling (Springfield): Website: www.acmerecoycling.com Phone: (413)737-3112, and
ABC Disposal Service (New Bedford): Website: abcdisposal.com Phone: (774)930-8989.

5.01 The Pre-Construction Waste Management Report

- A. The Contractor's Pre-Construction Waste Management Report submittal shall be reviewed as part of submittal process. The Contractor's submittal portion may be handwritten.

- B. The Report shall include a summary of the proposed jobsite wastes to be generated, including types and approximate quantities of each material.
 - (1.) Disposal options: The name of all landfill(s) and/or incinerator(s) proposed for trash disposal.
 - (2.) In addition to the Information provided on the Report Form provide supplemental information advising the Architect of the following:
 - (a.) Materials Handling Procedures: A brief description of how the Contractor proposes separating and stockpiling materials on site. What materials will be separated and how will they be temporarily stored.
 - (b.) Transportation: A description of the means of transportation of the recyclable materials (whether materials will be site-separated and hauled to designated markets, or whether mixed materials will be collected by a hauler and removed from the site and later separated for recycling). See the template (Form 01.74.19.01) at the end of this section.

6.01 Waste Management Implementation

- A. Manager: The Contractor shall designate a specific person responsible for explaining the procedures for project recycling to Contractor's personnel and new workers. This person should also manage and coordinate all transportation of waste to recyclers and landfills and maintain records of materials leaving site and destinations.
- B. Clearly marked containers or areas- to identify where different materials are to be stored.

7.01 Reporting Required at Time of Application for Payment

- A. The Schedule of Values shall include at least one line item representing the Waste Management requirements for this contract
- B. Application for Progress Payments: The Contractor shall submit with each Application for Progress Payment a Summary of Waste generated by the Project.
- C. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payments. The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information:
 - (1.) For each material recycled, reused, or salvaged from the Project, the amount (in tons or cubic yards), the date removed from the jobsite and the receiving party, Attach manifests, weight tickets, etc.
 - (2.) The amount (in tons) of material landfilled from the Project, the location of the landfill, and delivery manifests, weight tickets, etc.
- D. The Architects receipt and approval of all required Waste Management documentation shall be precedent to Final Payment.

END OF SECTION CONSTRUCTION & DEMOLITION WASTE MANAGEMENT SECTION 01.74.19

SECTION 01.77.00 PROJECT CLOSE OUT PROCEDURES

77.1. SCOPE

- A** This section lists the procedures required for the proper completion of this project including processing the Release of Retainage and making the Final Payment to the Contractor.
- B** Consult the Individual sections of the specifications for requirements affecting Project Close Out.

77.2. RELATED DOCUMENTS

- A** This section supplements the General Conditions.
- B** Consult the individual sections of the specifications for specific items required under those sections.
- C** Section 01.26.00 Contract modification Procedures
- D** Section 01.29.00 Payment Procedures
- E** Section 01.74.19 Construction and Demolition Waste Management

77.3. OCCUPANCY PERMIT

- A** The Contractor shall coordinate the efforts of all Subcontractors and obtain the Occupancy Permit from the local Building Department.
- B** The Owner shall pay any Building Department fee associated with the Occupancy Permit.

77.4. LETTERS OF COMPLIANCE

- A** The Contractor shall coordinate the efforts of all Subcontractors and obtain any required Letters of Compliance or Certificate of Reoccupancy from the Owner's lead consultant. The Owner shall pay any fee associated with these letters of compliance.
- B** The Contractor shall reimburse the Owner for any costs resulting from failed tests or inspections conducted to obtain a Letter of Compliance or Certificate of Reoccupancy. This reimbursement should be made as part of a credit change order following the procedures spelled out in the Construction Handbook

77.5. PARTIAL COMPLETION

- A** At the completion of Work within a Dwelling Unit the Contractor may notify the Architect that the Work within the unit(s) is Partially Complete. The Architect, or a designee, shall conduct a thorough inspection of the Work. If the Dwelling Unit is actively occupied this inspection shall occur within 24 hours of any written request. The Architect shall prepare a punch list, setting forth in accurate detail any items and additional items that are not acceptable or incomplete inside the dwelling unit. The Contractor shall coordinate all Subcontractors to achieve prompt completion of the punch list.
- B** Prior to requesting Partial Completion, the Contractor shall make a thorough inspection of the Work. During this inspection the Contractor shall prepare a comprehensive list of all items remaining to be completed or corrected. This list shall include all remaining Contractor and Subcontractor items to be provided under the Contract Documents.
- C** The Contractor shall not be relieved of the responsibility to provide Contract items left off the Architect's punch list.

- D** If the Architect determines that the Work within the dwelling unit is not Partially Complete, or not acceptable for the use for which it was intended, the Architect shall inform the Contractor of those items that must be completed before the Architect will prepare the punch list. Upon completion of those items, the Contractor shall again request the Architect to prepare a punch list.
- E** If the Contractor fails to request an inspection that Contractor will be responsible for the condition of the Work even if the Dwelling Unit is occupied.
- F** The date of Substantial Completion for the entire contract and the start of all associated warranties shall not occur until work in all units is complete.
- G** The Architect shall prepare the Certificate of Substantial Completion in accordance with Article 9.6 of the General Conditions after the work in all Dwelling Units is complete.
- H** Partial Payment of Retainage shall not be made until at least 65 days after the effective date of the final Certificate of Substantial Completion for the entire project.

77.6. SUBSTANTIAL COMPLETION

- A** Prior to requesting Substantial Completion as provided in Article 9.6 of the General Conditions the Contractor shall make a thorough inspection of the Work. During this inspection the Contractor shall prepare a comprehensive list of all items remaining to be completed or corrected. This list shall include all remaining Contractor and Subcontractor items to be provided under the Contract Documents.
- B** Upon completion of the items noted on the Contractor's list the Contractor shall notify the Architect that the Work is Substantially Complete. The Architect shall then conduct a similar thorough inspection. If the Architect agrees that the Work is Substantially Complete, the Architect will promptly make a thorough inspection and prepare a punch list, setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable or incomplete. The Contractor shall coordinate all Subcontractors to achieve prompt completion of the punch list.
- C** The Contractor shall not be relieved of the responsibility to provide Contract items left off of the Architect's punch list.
- D** If the Architect determines that the Work is not Substantially Complete, the Architect shall inform the Contractor of those items that must be completed before the Architect will prepare a punch list. Upon completion of those items, the Contractor shall again request the Architect to prepare a punch list.
- E** When the punch list has been prepared, the Architect will arrange a meeting with the Contractor and Subcontractors to identify and explain all punch list items and answer questions on work which must be done before final acceptance.
- F** The Architect may revise the punch list, from time to time, to ensure that all items of Work are properly completed.
- G** The Architect shall prepare the Certificate of Substantial Completion in accordance with Article 9.6 of the General Conditions.

77.7. 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 marked up As Built Drawings as required under other sections of the Specifications.

77.8. OPERATING AND MAINTENANCE INSTRUCTIONS

- A** Consult the individual sections of the specifications for the specific requirements for those sections and for further details and descriptions of the requirements
- B** Prior to final payment and completion, the Contractor shall provide all Operating Manuals and Maintenance Instructions as required by the Contract Documents.

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.

E ITEMS TO BE INCLUDED

- (1.)** Table of Contents
- (2.)** Contact Information of General Contractors
- (3.)** Contact Information of all Subcontractors
- (4.)** Contract list of Materials and Equipment Manufactures
- (5.)** General Contractor's written warranty for one year after substantial completion
- (6.)** Certificate of Substantial Completion
- (7.)** All warranties from sub-contractors
- (8.)** All warranties for products required in the specifications (Materials & Equipment)
- (9.)** All approved submittals/shop drawings
- (10.)** All Punch lists
- (11.)** Digital Files
- (12.)** All O & M Manuals and Training Documents
- (13.)** All Test Reports [Included as an appendix]
- (14.)** Reports and Logs [Included as an appendix]
- (15.)** Sequencing Reports, Diagrams and Documentation

77.9. FINAL COMPLETION

A RELATED REQUIREMENTS

The Contractor's attention is directed to Article 9.7 of the General Conditions and the Construction Handbook.

B FULL RELEASE OF RETAINAGE (FINAL PAYMENT)

- (1.) Upon completion of all work, and after receipt of all appropriate marked up As Built Drawings, Operating Manuals, Warranties, Guarantees, and Spare Parts required by the Contract Documents, the Architect shall prepare the Certificate of Final Completion (Form 01.77.00.03) a copy of which can be found in the Construction Handbook or on the DHCD website. A sample of this form can be found at the end of this section.
- (2.) This certificate shall be processed in accordance with the procedures described in the Construction Handbook.
- (3.) The Contractor's signature on this Certificate shall be notarized.
- (4.) The Contractor shall provide a final Application for Payment to complement the close-out process.

C PARTIAL RELEASE OF RETAINAGE

- (1.) If within 65 days after Substantial Completion, any of the items on the Architect's punch list are not complete or if the Contractor has not provided the appropriate marked up As Built Drawings, Operating Manuals, Warranties, Guarantees, or Spare Parts the Architect shall assign a monetary value for each incomplete item as well as any other items as provided by M.G.L. c.30 §39K, and the Architect shall prepare a Certificate for Partial Release of Retainage
- (2.) If the Architect is required to prepare a Certificate for Partial Release of Retainage (Form 01.77.00.02) the Contractor shall complete all remaining Work in accordance with the provisions of Article 9.7 of the General Conditions. A copy of this form can be found in the Construction Handbook or on the DHCD web site. There is also a sample at the end of this section.
- (3.) The Contractor's signature on this Certificate shall be notarized.
- (4.) The Contractor may make a request for additional releases of retainage when portions of the Work listed on the Architect's punch list have been satisfactorily completed. Each request shall be accompanied by a new application for payment and a new signed and notarized Certificate for Partial Release of Retainage.
- (5.) The Architect's inspections, required to complete the additional payment applications described in subparagraph C4 above, are subject to provisions of subparagraph 9.7.5 of the General Conditions.
- (6.) Upon completion of all remaining items, the Final Release of Retainage shall be processed in accordance with paragraph B above.

END OF PROJECT CLOSEOUT PROCEDURES SECTION 01.77.00

CERTIFICATE OF SUBSTANTIAL COMPLETION

COMMONWEALTH OF MASSACHUSETTS

Executive Office of Housing and Livable Communities

Contractor _____ Owner _____ Housing Authority _____

Phone _____ Phone _____
Fax _____ Fax _____
Development No _____ FISH No _____
Contract for: _____

Pursuant to the General, Supplementary, and Special Conditions of the Contract Documents relative to Partial or Total Occupancy, you are hereby notified that the Housing Authority has satisfied itself that the portion(s) of the above mentioned project, as hereinafter enumerated, is (are) ready for use and or occupancy:

Identify the Buildings and/or areas to be occupied and or used: _____

The Housing Authority, through its undersigned representative hereby accepts from the Contractor, subject to contract stipulations, said portion(s) of the Project, effective 12:00 Noon on:

INSERT DATE  the _____ day of _____ 20 _____

The Contractor will be relieved of responsibility for performing further Work or supplying further materials, equipment, or other items, in accordance with the General, Supplementary, and Special Conditions of the Contract Documents (relative to partial or total occupancy), except for the following work:

Append a complete list of all incomplete and/or unsatisfactory items of the Work, which in the opinion of this Housing Authority, are attributable to the fault, negligence, or oversight of the of the Contractor, any subcontractors, material suppliers, agents, servants, or employees.

NOTE: Attach one copy of the "Punch List" items to each copy of this document.

The Use or Occupancy of the building(s) or portion(s) of this project by the Housing Authority shall ~~not~~

- constitute acceptance of any Work not performed in accordance with the Contract Documents;
- relieve the Contractor of the liability to perform any Work required by the Contract but not completed at the time of Use and or Occupancy; nor
- relieve the Contractor of liabilities with respect to any express warranties or guarantees required by the Contract.

CERTIFICATION OF HOUSING AUTHORITY BOARD VOTE

Must be completed by the Owner

The _____ Housing Authority met on _____ And voted to approve this Certificate:

Certified By: _____, Contract Officer

Approved: Architect

Firm: _____

By: _____

Date: _____

Accepted: Contractor

Firm: _____

By: _____

Date: _____

Reviewed: Construction Advisor

Executive Office of Housing and Livable Communities

By: _____

Date: _____

Approved: Director, Construction Management Unit

Executive Office of Housing and Livable Communities

By: _____

Date: _____

CERTIFICATE FOR PARTIAL RELEASE OF RETAINAGE

COMMONWEALTH OF MASSACHUSETTS

This form should originate with the Architect

Contractor _____	Owner: _____	Housing Authority _____
_____	_____	_____
Phone _____	Phone _____	
Fax _____	Fax _____	
Development No _____	Period _____	
Contract for: _____	Ending No: _____	

THE PARTIES AGREE THAT THE STATUS OF THE CONTRACT IS AS FOLLOWS:

I. CONTRACT TIME

- The Date of Substantial Completion is _____
- The Date of Substantial Completion as Extended by Change Order is _____
- The Actual Date of Substantial Completion is: _____
- Overrun in Contract Time _____

II. CONTRACT SUM

- The Original Contract Sum is _____ \$
- The Sum of Approved Change Orders to Date is _____ \$
- The Adjusted Contract Sum is _____ \$

LESS:

- Sum of authorized payments to date: _____ \$
- Sum of Moneitized Punch List _____ \$
- Sum of other claims by Owner _____ \$

III. THAT APPLICATION FOR PAYMENT NO. _____ IS DUE & PAYABLE IN THE AMOUNT OF: _____ \$

THE UNDERSIGNED CONTRACTOR HEREBY CERTIFIES THAT: *The Contractor should complete items 1-5 and certify below*

- All Work, including work required under change order(s) _____ has been performed in accordance with the terms of the Contract.
- All changes to the Work (except minor modifications and field adjustments) have been authorized in writing by the Owner.
- All laborers and mechanics have been paid at least the minimum wage rates as set forth in the Contract, and
- There have been no claims made for infringement of any patent.
- By accepting the payment shown in line III the Contractor releases the Owner from any and all claims arising under the Contract except for those set forth in A - B below. However if the Owner does not pay the Contractor the full amount of the payment shown above, such reduction shall not affect the validity of this release. Rather, the amount not paid shall be considered as another claim asserted by the Contractor.

EXCEPTIONS: CONTRACTOR'S CLAIMS AGAINST OWNER

A. _____

B. _____

CERTIFIED: CONTRACTOR

In witness Whereof the Undersigned has signed and sealed this Instrument this _____ day of _____ 20____

Firm: _____

By: _____ Date: _____

Title: _____

State of _____ County of _____ On this ____ day of _____ 20____

before me, the undersigned notary public, _____ personally appeared, proved to me through satisfactory evidence which was _____ to be the person whose name is signed on this document in my presence.

Notary Public: _____

My Commission Expires: _____

CERTIFICATION OF HOUSING AUTHORITY BOARD VOTE:

The _____ Housing Authority met on _____ And voted to approve this Certificate and Payment

Certified: _____, Contract Officer

APPROVED: ARCHITECT	REVIEWED: CONSTRUCTION ADVISOR	APPROVED: DIRECTOR CONST. MANAGEMENT UNIT
Firm: _____	_____ Housing Authority	_____
By: _____	By: _____	By: _____
Date: _____	Date: _____	Date: _____

CERTIFICATE OF FINAL COMPLETION

COMMONWEALTH OF MASSACHUSETTS

Executive office of Housing and Livable Communities

This form should originate with the Architect

Contractor _____	Owner: _____	Housing Authority _____
_____	_____	_____
_____	_____	_____
Phone _____	Phone _____	
Fax _____	Fax _____	
Development No _____	Period Ending _____	
Contract for: _____	FISH No: _____	

THE PARTIES AGREE THAT THE STATUS OF THE CONTRACT IS AS FOLLOWS:

I. CONTRACT TIME

1. The Date of Substantial Completion is _____
2. The Date of Substantial Completion as Extended by Change Order is _____
3. The Actual Date of Substantial Completion is: _____
4. Overrun in Contract Time _____

II. CONTRACT SUM

1. The Original Contract Sum is _____ \$
 2. The Sum of Approved Change Orders to Date is _____ \$
 3. The Adjusted Contract Sum is _____ \$
- LESS:**
4. Sum of authorized payments to date: _____ \$
 5. Sum of other claims by Owner: _____ \$

III. THAT APPLICATION FOR PAYMENT NO. _____ IS DUE & PAYABLE IN THE AMOUNT \$ _____

Copy Attached

THE UNDERSIGNED CONTRACTOR HEREBY CERTIFIES THAT: *The Contractor should complete items 1-5 and certify below*

1. All Work, including work required under change order(s) _____ has been performed in accordance with the terms of the Contract.
2. All changes to the Work (except minor modifications and field adjustments) have been authorized in writing by the Owner.
3. All laborers and mechanics have been paid at least the minimum wage rates as set forth in the Contract, and
4. There have been no claims made for infringement of any patent.
5. By accepting the payment shown in line III the Contractor releases the Owner from any and all claims arising under the Contract.

CERTIFIED: CONTRACTOR

In witness Whereof the Undersigned has signed and sealed this Instrument this _____ day of _____ 200

Firm: _____
By: _____ Date: _____
Title: _____

State of _____ County of _____ On this _____ day of _____ 20
before me, the undersigned notary public, _____ personally appeared,
proved to me through satisfactory evidence which was _____ to
be the person whose name is signed on this document in my presence.
Notary Public: _____
My Commission Expires: _____

CERTIFICATION OF HOUSING AUTHORITY BOARD VOTE:

The _____ Housing Authority met on _____ And voted to approve this Certificate and Payment
Certified: _____ Contract Officer

APPROVED: ARCHITECT

Firm: _____

REVIEWED: CONSTRUCTION AD

Executive Office of Housing and Livable Communities

APPROVED: DIRECTOR CONST. MANAGEMENT UNIT

Executive Office of Housing and Livable Communities

By: _____
Date: _____

By: _____
Date: _____

By: _____
Date: _____

SECTION 01.78.39 PROJECT RECORD DRAWINGS

1. GENERAL REQUIREMENTS

- A. This section specifies the requirements for maintaining and preparing Projects Record Drawings during and at the completion of the Work.
- B. Record Drawings shall consist of all the Contract Drawings.

2. RELATED DOCUMENTS

- A. This section supplements the General Conditions.
- B. Consult the individual sections of the specifications for cleaning of Work installed under those sections.
- C. Section 01.29.00 Payment Procedures.
- D. Section 01.77.00 Project Close Out

3. PROCEDURES DURING CONSTRUCTION

- A. 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.
- B. The Contractor and the above Subcontractors shall keep their marked up As Built 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.
- C. The Architect may periodically inspect the marked up As Built 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 applications for payment.

4. PROCEDURES AT COMPLETION

- A. At Substantial Completion the Contractor shall submit the complete set of marked up As Built drawings to the Architect. The Contractor shall check all marked up As-Builts prepared by subcontractors and certify in writing on the title sheet of the drawings that they are complete and correct, prior to submission to the Architect.
- B. The Architect shall review the marked up As Built drawings and verify by letter to the Owner that the Work is complete. The Architect shall incorporate all changes onto to original drawings.
- C. The Contractor may make a written request for copies of the completed Record Drawings. The Contractor shall reimburse the Owner directly for the cost of printing of any requested Record Drawings.
- D. Submission of accurate marked up As Built drawings and their approval by the Architect shall be a condition precedent to final payment.

**END OF PROJECT RECORD DRAWINGS
SECTION 01 78.39**

DIVISION 01

SECTION 01 35 43

ENVIRONMENTAL PROCEDURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. General Conditions, Supplementary Conditions and applicable parts of Division 1 form a part of this specification and the Contractor shall consult them in detail for instructions.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 RELATED WORK UNDER OTHER SECTIONS

- A. Asbestos Remediation.

1.03 HAZARDOUS MATERIALS PROCEDURE

- A. Asbestos:
 - 1. Asbestos Materials Exist On-Site: There are accessible and inaccessible asbestos containing materials (ACM). ACM affected by the renovation project are included under this contract. The General Contractor shall formally notify each subcontractor that there are ACM. Hidden ACM may only be found during Demolition. Refer to items 2 and 3 below.
 - 2. Unknown and inaccessible ACM: During the Demolition work of the Contract, it is possible that previously unknown asbestos materials may be discovered in currently concealed locations.
 - 3. Notification: If the General Contractor discover or encounter any ACM during the performance of the work, the General Contractor shall immediately:
 - a. Stop work, notify the Owner and Clerk of the Works about the presence of suspect ACM and request instructions for proper action, and
 - b. Take whatever steps and measures are necessary to reduce, control or eliminate the risk of exposure of workers and the public to the ACM.
 - c. Every effort will be made to obtain DEP (12 working day notification period) waivers to remove hidden or unforeseen ACM by the asbestos contractor. The General Contractor shall allow sufficient time for the removal of the ACM at no additional charges to the owner for delays and should waivers be denied.

4. Responsible Person On-Site: The General Contractor shall designate one of its senior on-site employees to be in charge of coordination between the Architect, the General Contractor, and all subcontractors with respect to hazardous materials issues.
5. Responsibility for Hazardous Material Discovery: It is the sole responsibility of the General Contractor and its Subcontractors to undertake whatever measures, methods or procedures are necessary, required or otherwise appropriate to safeguard the health and safety of all workers and members of the public with respect to identification and discovery of previously unknown hazardous materials during the work of the Project.
6. Indemnification: To the fullest extent permitted by law, the General Contractor shall indemnify and hold harmless the Owner and the Architect and their agents and employees from and against all claims, damages, losses and expenses including, but not limited to, attorneys' fees arising out of or relating to the performance of the Work, including the discovery or identification of any hazardous materials, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to damage to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom; and is caused in whole or in part by any negligent act or omission of the General Contractor and General Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

B. Lead:

1. The General Contractor shall be made aware that Lead Based Paint exists on painted surfaces throughout and shall comply with EPA RRP regulations.
2. All the work of this Contract shall conform to the standard set by all applicable Federal, State and Local laws, regulations, ordinance, and guidelines in such form in which they exist at the time of the work on the Contract and as may be required by subsequent regulations.
3. The following references are cited as current applicable publications. This project is subject to compliance with all regulations including but not limited to:
 - a. Commonwealth of Massachusetts, Department of Labor and Work Force Development 454 CMR 11.00, Structural Painting Safety Code, as currently amended.
 - b. Commonwealth of Massachusetts, Department of Environmental Protection, and Hazardous Materials Regulations at 310 CMR 30.00 as currently amended.
 - c. U. S. Department of Labor, Occupational Safety and Health Administration Title 29 CFR 1910.1025 and 29 CFR Part 1926.62.
 - d. U. S Department of Environmental Protection, Resources Conservation and Recovery Act.

- e. Commonwealth of Massachusetts, Department of Labor and Work Force Development 454 CMR 22.00.
- f. Commonwealth of Massachusetts, Department of Environmental Protection, 310 CMR 6.0-8.0.
- g. Commonwealth of Massachusetts, Department of Environmental Protection ABC rubble rules.

4. All above regulations are applicable to this project. Where there is a conflict between this section and the applicable regulations, the more stringent requirement shall prevail.

C. PCB's:

- 1. The General Contractor and Asbestos Contractor shall be made aware that buildings materials (Material) including but not limited to painted surfaces, glue, roofing, coatings, caulking and other buildings materials are likely to contain >1 ppm of Polychlorinated Biphenyls PCB's.
- 2. EPA does not require testing and therefore, testing will not be performed or permitted by any party.
- 3. The General Contractor and Asbestos Contractor are solely responsible for means and methods, and techniques used for demolition and control.

D. Silica Dust:

- 1. The General Contractor and Asbestos Contractor shall be made aware that buildings materials (Material) may contain Silica.
- 2. Due to the difficulty associated with exhaustive testing, the Owner has elected to direct the General Contractor and Asbestos Contractor to assume that Silica was found.
- 3. The General Contractor and Asbestos Contractor shall review and comply with most recent US Department of Labor Final Rule and shall take extra precautions to protect workers and other personnel on site.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

END OF SECTION

DIVISION 02

SECTION 02 10 01

REMOVAL OF EXISTING FACILITIES

PART 1 - GENERAL

1.01 CONTRACT DOCUMENTS

- A. Section 00 52 00 Owner – Contractor Agreement and Section 00.72.00 Conditions of the Contract and all sections of Division 01, General Requirements shall be part of this section unless otherwise specifically excluded.

1.02 RELATED DOCUMENTS

- A. SECTION 23 00 01 – HEATING, VENTILATING AND AIR CONDITIONING
- B. SECTION 26 00 01 – ELECTRICAL

1.03 DESCRIPTION

- A. The work covered under this section includes furnishing of all labor and equipment and coordinating the efforts of the contractors in connection with performing the required demolition/removal indicated on the Drawings, as required for the proper construction/installation of materials, equipment, and appurtenances as indicated on the Drawings and in accordance with these Specifications.
- B. This section is intended to clarify those items of removal/demolition which are the responsibility of the Contractor.
- C. All equipment and material called for removal shall become the property of the Contractor. If the Owner selects to retain ownership of said items, the Contractor doing the removal shall place the equipment in a location such that it is available for the Owner to pick up and transport in its own vehicles. All equipment and materials that the Owner decides to discard shall be properly disposed of off site by the Contractor at no cost to the Owner.
- D. The Contractor shall provide all labor, materials, equipment and scheduling necessary in order to demolish/remove those items specified on the Contract Drawings for demolition/removal and shall be responsible for any degree of unforeseen difficulty in the removal of said items.
- E. Every effort has been made to indicate to the Contractor those items to be removed or demolished. All removal and demolition work shall be included in the lump sum price bid for the respective contract. It is the Contractor's responsibility to visit the site of the construction to ascertain the extent and complexity of the work involved. There will be

no additional payment, due to the Contractor's failure to anticipate problems or due to delays caused by the need to coordinate the removal work with the installation of new materials or equipment or the work of other contractors.

1.04 RECORDS OF DEMOLITION WORK

- A. The Contractor shall be responsible for coordinating and recording demolition work.
- B. The Contractor shall record all removal work on a set of design drawings for the existing site.
- C. Immediately following completion of demolition work for each site, the Contractor shall submit a marked-up set of drawings to the Engineer showing all demolition work.

1.05 SUBMITTALS

- A. In compliance with the requirements established with the Contract, the Contractor shall provide the following:
 - 1. Permit for transport and disposal of debris.
 - 2. Demolition procedures and operational sequence for review and acceptance by the Owner, local authorities having jurisdiction and the Engineer.
 - 3. Signed receipts from disposal sites for hazardous and/or non-hazardous wastes.

PART 2 - PRODUCTS

- A. Not Applicable.

PART 3 - EXECUTION

3.01 GENERAL

- A. No removal or demolition shall occur without the approval of the Engineer. All demolition/removal shall be coordinated by the Contractor.

3.02 DEMOLITION BY THE CONTRACTOR

- A. The demolition work intended for the Contractor shall include overall coordination of the removal/demolition work and removal and storage of all associated materials.
- B. All items removed shall be properly disposed of, in accordance with state and local codes.

END OF SECTION

DIVISION 02

SECTION 02 28 20

ASBESTOS REMEDIATION

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. General Conditions, Supplementary Conditions and applicable parts of Division 1 form a part of this specification and the Contractor shall consult them in detail for instructions.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 RELATED WORK UNDER OTHER SECTIONS

- A. Environmental Procedures.

1.03 DESCRIPTION OF WORK

- A. The work includes the removal and disposal of asbestos containing materials (ACM) as indicated in Part 3 of this Section.
- B. The General or Demolition Contractor shall retain the services of a Massachusetts licensed asbestos abatement contractor. The asbestos contractor must include in his scope of work all required services included in Part 3.

1.04 POTENTIAL ASBESTOS HAZARD & DEBRIS

- A. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified ACM, take appropriate continuous measures as necessary to protect all building occupants from the potential hazard of exposure to airborne asbestos. Such measures shall include the procedures and methods described herein, and compliance with regulations of applicable federal, state, and local agencies.
- B. If the Contractor failed to comply with the requirements of the specifications, the Owner's Representative (Asbestos Project Monitor) may present a written stop of work order. The Contractor must immediately and automatically stop all work until authorized in writing by the Asbestos Project Monitor to commence work. All costs related to delays shall be at the Contractor's expense.

1.05 DEFINITIONS

- A. Abatement: Procedures to control fiber release from ACM. Includes encapsulation, enclosure, and removal.
- B. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time.
- C. Area Monitoring: Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area, which is representative of the airborne concentrations of asbestos fibers, which may reach the breathing zone.
- D. Asbestos: The name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure are incombustible and are separable into fibers. Asbestos includes Chrysotile, Crocidolite, Amosite, Anthophyllite, and Actinolite.
- E. ACM: Any material containing equal to 1% or greater by weight of asbestos of any type or mixture of types. State laws may vary in their definition of asbestos containing material.
- F. Barrier: Any surface that seals off the work area to inhibit the movement of fibers.
- G. Critical Barrier: A solid, asbestos impermeable partition erected so as to constitute a work area closure; the outer perimeter of an asbestos work area, usually erected across corridors or other open spaces to complete containment.
- H. Designer: Commonwealth of Massachusetts licensed Designer Ammar Dieb, Universal Environmental Consultants (AD-900326).
- I. Enclosure: All herein specified procedures necessary to complete enclosure of all ACM behind airtight, impermeable, permanent barriers.
- J. Friable Asbestos Material: Material that contains more than one percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
- K. HEPA Filter: A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.
- L. Asbestos Project Monitor: An Asbestos Project Monitor certified in the Commonwealth of Massachusetts to perform monitoring.
- M. Removal: All herein specified procedures necessary to strip all ACM from the designated areas and to dispose of these materials at an acceptable site.
- N. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

- O. Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.
- P. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as asbestos contaminated waste.
- Q. Work Area: Any area indicated on the Drawings as asbestos abatement areas or as areas containing friable asbestos material.
- R. Worker Decontamination Enclosure System: A decontamination enclosure system for workers, typically consisting of a clean room, a shower room, and an equipment room.

1.06 STOP WORK

- A. Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
- B. Keep driveways, parking, and entrances serving premises clear and available to Owner, Owner's employees, traffic, upon Owner occupancy, and emergency vehicles at all times. Do not use these areas for parking or storage of materials, unless authorized in writing by the Owner
- C. Smoking or open fires will not be permitted within the building enclosure or on the premises

1.07 CONTRACTOR'S USE OF THE EXISTING BUILDING

- A. Keep existing driveways and entrances serving the premises clear and available to the Owner and his employees at all times. Do not use these areas for parking or storage of materials, unless authorized in writing by the Owner.
- B. Smoking or open fires will not be permitted within the building enclosure or on the premises.

1.08 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. Provide a full time Site Supervisor for work under this Section with all appropriate state licenses, who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel and disposal procedures. This person is the Competent Person in accordance with 29 CFR 1926 for the Contractor and is the Contractor's representative responsible for compliance with all applicable federal, state, and local regulations, particularly those relating to ACM. This person shall have completed a course at an EPA Training Center or

equivalent certificate course in asbestos abatement procedures, have had a minimum of two years on the job training and meet all additional requirements set forth in 29 CFR 1926 for a Competent Person.

- B. The Site Supervisor must be certified by the State of Massachusetts. Asbestos Contractor shall provide proof of such certification to the Asbestos Project Monitor not less than 10 days prior to commencing any work.

1.09 SPECIAL REPORTS

- A. Except as otherwise indicated, submit special reports directly to the Asbestos Project Monitor within one day of occurrence requiring special report, with copies to all others affected by the occurrence.
- B. When an event of unusual and significant nature occurs at the site (examples: failure of negative pressure system, rupture of temporary enclosures, unauthorized entry into work areas), prepare and submit a special report listing date and time of event, chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise the Asbestos Project Monitor in advance at earliest possible date.
- C. Prepare and submit special reports of significant accidents, at the site and anywhere else work is in progress related to this project. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

1.10 CONTINGENCY PLAN

- A. Prepare a contingency plan for emergencies including fire, accident, power failure or any other event that may require modification of decontamination or work area isolation procedures. Include in the plan specific procedures for decontamination or work area isolation. A copy of the plan shall be submitted to and approved by the Asbestos Project Monitor prior to any work being done.
- B. Post in the clean room of the decontamination unit and in the Contractor's office trailer telephone numbers and locations of emergency services including but not limited to fire, ambulance, doctor, hospital, and police.

1.11 PERMITS AND NOTIFICATIONS

- A. Secure necessary permits in conjunction with asbestos removal, hauling, and disposition and provide timely notification as may be required by federal, state, regional, and local authorities. Notify the Department of Environmental Protection (DEP) and the Massachusetts Department of Labor Standards (DLS) and provide copies of the

notification to the Designer, Asbestos Project Monitor, and the State Environmental Regulatory Agency 10 working days (Document Submission Date) prior to commencement of the work.

- B. No later than the Document Submission Date, notify the local fire, police, and Health Departments, in writing, of proposed asbestos abatement work. Advise the fire department of the nature of the asbestos abatement work, and the necessity that all firefighting personnel who may enter the work site in the case of fire wear self-contained breathing apparatus. Provide one copy of the notices to the Asbestos Project Monitor prior to commencing the work.
- C. No later than the Document Submission Date, submit proof satisfactory to the Asbestos Project Monitor that all required permits, site location, and arrangements for transport and disposal of asbestos containing or contaminated materials, supplies, and the like have been obtained.

1.12 SAFETY COMPLIANCE

- A. Comply with laws, ordinances, rules, and regulations of federal, state, regional, and local authorities regarding handling, storing, transporting, and disposing of asbestos waste materials.
- B. Comply with the applicable requirements of the current issue of 29CFR 1926.1101 and 40CFR 61, Subparts A and B. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting the work.

1.13 RESPIRATOR PROGRAM

- A. Establish a respirator program by ANSI Z88.2 and 29 CFR 1926.1101 (h), 1926.103, and 1910.134.

1.14 PERSONNEL PROTECTION

- A. Prior to commencement of work, workers shall be instructed in and shall be knowledgeable of the hazards of asbestos exposure; use and fitting of respirators; use of showers; entry and exit from work areas, and all aspects of work procedures and protective measures.
- B. All asbestos abatement workers shall receive training and shall be accredited per 40 CFR 763.90(g). Training and accreditation shall be in accordance with 40 CFR 763, Appendix C to Subpart E. Training shall also be provided to meet the requirements of OSHA Regulations contained in 29 CFR 1926.
- C. Prior to the start of work, the Asbestos Contractor shall provide medical examinations for all employees in accordance with 29CFR 1926.1101 (m). All employees hired by the

Asbestos Contractor after start of work shall have medical examinations in accordance with this paragraph before being put to work.

- D. Maintain complete and accurate records of employee's medical examinations, during employment and make records of the required medical examinations available for inspection and copying to: The Assistant Secretary of OSHA, the Director of The National Institute for Occupation Safety and Health (NIOSH), authorized representatives of either of them, and an employee's physician upon the request of the employee or former employee.
- E. Provide personnel exposed to airborne concentrations of asbestos fibers with fire retardant disposable protective whole-body clothing, head coverings, gloves, and foot coverings. Provide gloves to protect hands. Make sleeves secure at the wrists and make foot coverings secure at the ankles by the use of tape. Asbestos Contractor shall require and monitor the use of complete protective clothing. A competent person designated by the Asbestos Contractor in accordance with 29CFR 1926.1101 shall periodically examine protective clothing worn by employees in the work area for rips or tears. When rips or tears are detected, they shall be immediately mended or replaced.
- F. Provide goggles to personnel engaged in asbestos operations when the use of a full-face respirator is not required.
- G. Provide authorized visitors with suitable protective clothing, headgear, eye protection and footwear, whenever they are required to enter the work area, to a maximum of 3 changes for 3 visitors per day. One of the sets of protective clothing shall be available for full time use by the Asbestos Project Monitor.
- H. Provide all persons with personally issued and marked respiratory equipment approved by NIOSH and OSHA. The appropriate respiratory protection shall be selected according to the most recent Massachusetts regulations.
- I. Once all visible asbestos material has been removed during decontamination, cartridge type respirators will be allowed during the final cleanup provided the measured airborne concentrations do not exceed 0.1 fibers per cubic centimeter. Where respirators with disposable filters are employed, provide sufficient filters for replacement to the worker or applicable regulation.
- J. If the permissible respirators fail to provide sufficient protection against volatiles Organic Compounds, emitted by any sealant used, the services of a qualified Certified Industrial Hygienist will be procured, at the Asbestos Contractor's expense, to determine proper respiratory protection. The Owner and Asbestos Project Monitor will not be liable for the cost of increased respiratory protection.
- K. Select respirators from those approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and

Health (NIOSH), Department of Health and Human Services. All personnel wearing negative pressure respirators shall have respirator fit tests within the last six months and signed statements shall be available.

1.15 REFERENCE STANDARDS

- A. Unless otherwise indicated, all referenced standards shall be the latest edition available at the time of bidding. Requirements of this Section shall in no way invalidate the minimum requirements of the referenced standards. Comply with the provisions of the following codes and standards, except as otherwise shown or specified. Where conflict among requirements or with this Section exists, the more stringent requirements shall apply.
- B. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) requirements, which govern asbestos abatement work or hauling and disposal of asbestos waste materials.
- C. U.S. Environmental Protection Agency (EPA) requirements, which govern asbestos abatement work or hauling and disposal of asbestos waste materials.
- D. U.S. Department of Environmental Protection (DEP) 310 CMR 7.15 and the Massachusetts Department of Labor Standards (DLS) 454 CMR 28.

1.16 SUBMITTALS

- A. No work may commence until submittals have been approved by the Designer. Complete submittals are to be submitted no less 10-working days prior to desired commencement of the work. The submittals shall include the following:
 - 1. Submit all licenses and certification required.
 - 2. Submit written evidence that the landfill to be used for disposal of asbestos is approved for disposal of asbestos by the EPA.
 - 3. Submit all required items previously listed in this section.
 - 4. Secure necessary permits in conjunction with asbestos removal, hauling, and disposition and provide timely notification as may be required by federal, state, regional, and local authorities. Notify the Department of Environmental Protection (DEP) and the Massachusetts Department of Labor Standards (DLS) and provide copies of the notification.
 - 5. Notify the local fire, police, and Health Departments, in writing, of proposed asbestos abatement work. Advise the fire department of the nature of the asbestos abatement work, and the necessity that all firefighting personnel who may enter the work site in the case of fire wear self-contained breathing apparatus. Provide one copy of the notices.

6. Submit proof that all required permits, site location, and arrangements for transport and disposal of asbestos containing or contaminated materials, supplies, and the like have been obtained.
7. The Contractor shall submit a plan for managing the waste including all collection, storage, disposal, and decontamination practices/waste disposal.
8. Submit medical examinations for all employees in accordance with 29CFR 1926.1101 (m). All employees hired by the Asbestos Contractor after start of work shall have medical examinations in accordance with this paragraph before being put to work.
9. Provide MSDS for all used products on this Project.
10. Submit the negative pressure system. Include in the submittal at a minimum:
 - a. Number of negative air machines required and the calculations necessary to determine the number of machines.
 - b. Description of projected airflow within the work area and methods required providing adequate airflow in all portions of the work area.
 - c. Location of machines in the work area.
 - d. Location of pressure differential measurement equipment.
 - e. Manufacturers product data on equipment used to monitor pressure differential.
11. Submit the form of security and safety log, which will be maintained on the project.
12. Submit written evidence that the landfill to be used for disposal of asbestos is approved for disposal of asbestos by the Department of Environmental Protection.
13. Submit proof that training requirements as specified in 29CFR 1926.1101 (k) (3) and by appropriate state agencies has been complied with.
14. Submit a description of the plans for construction of decontamination enclosure systems and for isolation of the work areas in compliance with this specification and all applicable regulations.
15. Submit a detailed schedule including work dates, work shift time, number of employees, dates of start and completion of all work activities (including mobilization, work area preparation, asbestos abatement, inspection and clearance monitoring, each phase of refinishing, and final inspections). Schedule shall be updated with each partial payment request.

1.17 REPORTING

- A. Maintain on site a daily log documenting the dates and time of the following items, as well as other significant events:
 1. Minutes of meetings: purpose, attendees, and brief discussion
 2. Visitations: authorized and unauthorized
 3. Personnel: by name, entering and leaving the work area

4. Special or unusual events
 5. Personnel air monitoring tests and results
- B. Documentation with confirmation signature of the Asbestos Project Monitor of the following:
1. Inspection of work area preparation prior to start of removal and daily thereafter.
 2. Removal of any polyethylene barriers.
 3. Removal of waste materials from work area and transport and disposal at approved site.
 4. Decontamination of equipment.
 5. Waste Shipment Records. No final payment will be approved until all above documents have been submitted.
- C. Provide two bound copies of this log to the Asbestos Project Monitor with the application for final payment.

1.18 AIR MONITORING

- A. Throughout the entire removal and cleaning operations, air monitoring will be conducted to ensure that the Asbestos Contractor is complying with the EPA and OSHA regulations and any applicable state and local government regulations. The Owner will provide an Asbestos Project Monitor (Universal Environmental Consultants) to take air samples at the job site at no cost to the Asbestos Contractor.
- B. The purpose of the Asbestos Project Monitor's air monitoring will be to detect faults in the work area isolation such as:
1. Contamination of the building outside of the work area with airborne asbestos fibers,
 2. Failure of filtration or rupture in the negative pressure system,
 3. Contamination of the exterior of the building with airborne asbestos fibers.
 4. Should any of the above occur, the Asbestos Contractor should immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until authorized by the Asbestos Project Monitor.
- C. The Asbestos Project Monitor will monitor airborne fiber counts in the work area. The purpose of this air monitoring will be to detect airborne fiber counts higher than the Action Level of 0.1- f/cc which may significantly challenge the ability of the work area isolation procedures to protect the balance of the building from contamination by airborne fibers.
- D. The Asbestos Contractor shall be responsible for providing his/her own personnel monitoring within the work area in accordance with CFR 1926.1101.

1.19 AIRBORNE FIBER COUNTS

- A. If any air sample taken outside of the work area exceeds the base line (background) conducted by the Asbestos Project Monitor, Immediately and automatically stop all work. If this air sample was taken inside the building and outside of critical barriers around the work area, immediately erect new critical barriers to isolate the affected area from the balance of the building.
1. Respiratory protection shall be worn in affected area.
 2. Leave critical barriers in place until completion of work and ensure that the operation of the negative pressure system in the work area results in a flow of air from the balance of the building into the affected area.
 3. A final inspection after removal of poly shall be completed by the Asbestos Contractor's Supervisor and the Asbestos Project Monitor.
- B. The following procedure shall be used to resolve any disputes regarding fiber types when work has been stopped due to excessive airborne fiber counts. "Airborne Fibers" referred to above include all fibers regardless of composition as counted in the NIOSH 7400 Procedure. If work has stopped due to high airborne fiber counts, air samples will be secured in the same area by the Asbestos Project Monitor for analysis by Transmission Electron microscopy (TEM). Airborne Fibers counted in samples analyzed by TEM shall be only asbestos fibers, but of any diameter and length. Subsequent to analysis by TEM the number of "Airborne Fibers" shall be determined by multiplying the number of fibers, regardless of composition, counted by the NIOSH 7400 procedure by a number equal to asbestos fibers counted divided by all fibers counted in the TEM analysis.
- C. If TEM is used to arrive at the basis for determining "Airborne Fiber" counts in accordance with the above paragraph, and if the average of airborne asbestos fibers in all samples taken outside the work area exceeds the base line, then the cost of such sampling and analysis will be born by the Asbestos Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Plastic Sheet: 6 mil minimum thickness, unless otherwise specified, in sizes to minimize the frequency of joints.
- B. Tape: Capable of sealing joints of adjacent sheets of plastic and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under dry and wet conditions, including use of amended water. Provide tape, which minimizes damage to surface finishes.

- C. Cleaning Materials: Use materials recommended by manufacturer of surface to be cleaned. Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

2.02 EQUIPMENT

- A. Supply the required number of asbestos air filtration units to the site in accordance with these specifications.

2.03 DANGER SIGNS AND LABELS

- A. Display danger signs at each location where airborne concentrations of asbestos fibers may be in excess of 0.01 fibers/cc. Post signs at such a distance from such a location so that an employee may read the signs and take necessary protective steps before entering the area marked by the signs.
- B. The sign shall also contain a pictorial representation of possible danger or hazard, such as a skull and cross bone, or other suitable warning as approved by the Asbestos Project Monitor. Sign shall meet the requirements of 29CFR 1926.200. A sample of the signs to be used shall be submitted to the Asbestos Project Monitor for approval prior to beginning work area preparation.
- C. Affix danger labels to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers.

2.04 PERSONNEL DECONTAMINATION UNIT

- A. Prior to any asbestos abatement work, including placement of plastic on walls that will contact or disturb asbestos containing surfaces, or removal of light fixtures or any items on asbestos containing surfaces, construct a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Changing Room, Shower Room, and Equipment Room. Require all persons without exception to pass through this decontamination unit for entry into and exiting from the work area for any purpose.
- B. Build suitable framing or use existing rooms, with the Asbestos Project Monitor written approval, connected with framed in tunnels if necessary; line with 6-mil plastic; seal with tape at all lap joints in the plastic for all enclosures and decontamination enclosure system rooms. Decontamination units and access tunnels constructed outside shall be constructed with tops made of 5/8" plywood or approved equal. In all cases, access between contaminated and uncontaminated rooms or areas shall be through an airlock. In all cases, access between any two rooms within the decontamination enclosure systems shall be through a curtained doorway.
- C. Provide a changing (clean) room for the purpose of changing into protective clothing. Construct using polyethylene sheeting, at least 6-mil in thickness, to provide an airtight seal between the Clean Room and the rest of the building. Locate so that access to work

area from Clean Room is through Shower Room. Separate Clean Room from the building by a sheet polyethylene flapped doorway.

- D. Require workers to remove all street clothes in this room, dress in clean disposable coveralls, and don respiratory protection equipment. Do not allow asbestos contaminated items to enter this room. Require workers to enter this room either from outside the structure dressed in street clothes, or naked from the showers.
- E. An existing room may be utilized as the changing room if it is suitably located and of a configuration whereby workmen may enter the Clean Room directly from the Shower Room. Protect all surfaces of room with sheet plastic. Authorization for this shall be obtained from the Asbestos Project Monitor in writing prior to start of construction.
 - 1. Maintain floor of changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in Changing Room.
 - 2. Damp wipe all surfaces twice after each shift change with a disinfectant solution.
 - 3. Provide a continuously adequate supply of disposable bath towels.
 - 4. Provide posted information for all emergency phone numbers and procedures.
 - 5. Provide one storage locker per employee.
 - 6. Provide all other components indicated in the Asbestos Remediation.
- F. Provide a completely watertight operational shower to be used for transit by cleanly dressed workers heading for the work area from the changing room, or for showering by workers headed out of the Work Area after undressing in the Equipment Room.
- G. Construct room by providing a shower pan and 2 shower walls in a configuration that will cause water running down walls to drip into pan. Install a freely draining wooden floor in shower pan at elevation of top of pan.
 - 1. Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene.
 - 2. Separate this room from the Clean and Equipment Rooms with airtight walls fabricated of 6-mil polyethylene.
 - 3. Provide showerhead and controls.
 - 4. Provide temporary extensions of existing hot and cold water and drainage, as necessary for a complete and operable shower.
 - 5. Provide a soap dish and a continuously adequate supply of soap and maintain in sanitary condition.
 - 6. Arrange so that water from showering does not splash into the Clean or Equipment Rooms.
 - 7. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the work area.
 - 8. Provide flexible hose shower head.

9. Pump wastewater to drain and provide 20 micron and 5-micron wastewater filters in line to drain or wastewater storage. Locate filter hose inside shower unit so that water lost during filter changes is caught by shower pan and pumped to exterior filtering system.
- H. Provide equipment room for contaminated area; work equipment, footwear and additional contaminated work clothing are to be left here. This is a change and transit area for workers. Separate this room from the work area by a 6-mil polyethylene flap doorway.
1. Separate this room from the rest of the building with airtight walls fabricated of 6-mil polyethylene.
 2. Separate this room from the Shower Room and work area with airtight walls fabricated of 6-mil polyethylene.
 3. Separate work area from the equipment Room by polyethylene barriers. If the airborne asbestos level in the work area is expected to be high, add an intermediate cleaning space between the Equipment room and the work area. Damp wipes clean all surfaces after each shift change.

2.05 EQUIPMENT DECONTAMINATION UNITS

- A. In areas with only one access, it may be impossible to utilize a separate Equipment Decontamination Unit. In this case, all equipment and waste materials will exit through the Personnel Decontamination Chambers.
- B. When two accesses to the work area are available, provide an Equipment Decontamination Unit consisting of a serial arrangement of rooms, Clean Room, Holding Room, Washroom for removal of equipment and material from work area. Do not allow personnel to enter or exit work area through Equipment Decontamination Unit.
- C. Provide an enclosed shower unit located in work area just outside Washroom as an equipment, bag, and container cleaning station.
- D. Provide Washroom for cleaning of bagged or containered asbestos containing waste materials passed from the work area. Construct Washroom of 2 by 4-inch (minimum) wood framing and polyethylene sheeting, at least 6-mil in thickness and located so that packaged materials, after being wiped clean can be passed to the Holding Room. Separate this room from the work area by flaps of 6-mil polyethylene sheeting, or rigid self-closing doors.
- E. Provide Holding Room as a drop location for bagged ACM passed from the Washroom. Construct Holding Room of 2 by 4-inch (minimum) wood framing and polyethylene sheeting, at least 6-mil in thickness and located so that bagged materials cannot be passed from the Washroom through the Holding Room to the Clean Room.

- F. Provide Clean Room to isolate the Holding Room from the building exterior. Construct Clean Room of 2 by 4-inch (minimum) wood framing and polyethylene sheeting, at least 6-mil in thickness and locate to provide access to the Holding Room from the building exterior. Separate this room from the exterior by flaps of 6 mil polyethylene sheeting, or rigid self-closing doors.

PART 3 - EXECUTION

3.01 SCOPE OF WORK:

- A. Bathrooms (80) Textured Ceiling Plaster/Joint Compound 2,800 SF

- B. Specific Notes:

- 1. It is the Asbestos Contractor's responsibility to inspect the site and confirm scope, condition, and quantities prior to the submission of his/her bid package. It is also the Asbestos Contractor's responsibility to review the demolition drawings, notes and phasing configurations.
- 2. Remove and dispose as ACM of the textured ceiling plaster, joint compound, insulation/paper, and all other related ceiling attachments. The asbestos Contractor must comply with DEP 310CMR 7.15 and DLS 454 CMR 28 regulations.
- 3. Remove and dispose as ACM of all debris that might be found or generated.
- 4. Disconnect, decontaminate and store for reuse of all ceiling mounted fixtures.

3.02 JOB CONDITIONS

- A. Do not commence asbestos abatement work until:

- 1. Arrangements have been made for disposal of waste at an acceptable site. Submittal shall be made no later than the Document Submission Date.
- 2. Arrangements have been made for containing and disposal of wastewater resulting from wet stripping or filtering through a 5-micron filter.

- B. All materials resulting from abatement work, except as specified otherwise shall become the property of the Asbestos Contractor and shall be disposed of as specified herein.

- C. Pre-clean all areas prior to commencement of any work.

- D. Clean all routes used to transport waste.

3.03 INSPECTION AND PREPARATION

- A. Examine the areas and conditions under which asbestos will be abated and notify the Asbestos Project Monitor in writing of conditions detrimental to the proper and timely completion of the work.
- B. Before any work commences, post danger signs in and around the Work Area to comply with 29 CFR 1926.1101 (k)(l) per federal and state regulations.

3.04 WORK PROCEDURE

- A. Perform asbestos related work in accordance with 29CFR 1926.1101 and as specified herein. Use wet removal procedures. Personnel shall wear and utilize protective clothing and equipment as specified herein. Personnel of other trades not engaged in the removal and demolition of asbestos shall not be exposed at any time to airborne concentrations of asbestos unless all the personnel protection provisions of this specification are complied with by the trade personnel. Provide and post, in the Equipment Room and the Clean Room, the decontamination and work procedures to be followed by workers, as described hereinafter.
- B. Each worker and authorized visitor shall, upon entering the job site, remove street clothes in the Clean Change Room and put on a respirator and clean protective clothing before entering the equipment room or the work area. All workers shall remove gross contamination before leaving the work area. All clothing such as coveralls, head covers, boots shall be removed and properly disposed of before leaving equipment room. With the exception of bathing suites and respirators, the workers shall proceed to the Shower Room. Under the shower, respirators shall be removed and cleaned. Cleaned respirators shall be placed in suitable clean plastic bags and carried by employees to Clean Room. Soap, towels shall be furnished by the Asbestos Contractor. The Asbestos Contractor shall maintain proper sanitary conditions. The Asbestos Contractor's designated competent person shall insure that these practices are being adhered to.
- C. Following showering and drying off, each worker and authorized visitor shall dispose of towels as contaminated waste and proceed directly to the Clean Change Room and dress in clean clothes at the end of each day's work, or before eating, smoking, or drinking. Before reentering the work area from the Clean Change Room, each worker and authorized visitor shall put on the applicable respirator and shall dress in clean protective clothing. Contaminated work footwear shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste.
- D. Contaminated work footwear shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or double bag for use at next site.
- E. Workers removing waste containers from the Equipment Decontamination Enclosure shall enter the holding area from outside wearing a respirator and dressed in clean

coveralls. No worker shall use this system as a means to leave or enter the washroom or the work area.

- F. Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos containing or contaminated materials and until final cleanup is completed. This includes the removal of any equipment in contact with ACM such as lights, HVAC grills and other related structures.

3.05 PREPARATION OF THE WORK AREA

- A. Seal off the work area by sealing large openings such as open doors, elevator doors, and passageways with a critical barrier. The critical barrier shall constitute the outermost boundary of the asbestos abatement project work area. Plastic sheeting on open framing is not a suitable critical barrier. Critical barriers may be erected of a suitable solid construction material such as plywood, sheetrock, gypsum board, or other related materials.
- B. Prior to any asbestos abatement work, clean the proposed work areas using HEPA filtered vacuum equipment and wet cleaning methods as appropriate. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters will not be permitted. Dispose of all cloths, which are used for cleaning as contaminated waste.
- C. Place all tools, scaffolding and staging necessary for the work in the area to be isolated prior to erection of plastic sheeting temporary enclosure.
- D. Shut down electric power. Provide temporary power and lighting and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements. Provide 24-volt safety lighting and provide ground fault interrupter circuits as power source for lights and electrical equipment.
- E. Seal off all openings, including but not limited to corridors, doorways, windows, skylights, ducts, grills, diffusers, and any other penetrations of the work areas, with 6-mil plastic sheeting and sealed with tape.
- F. Prior to any abatement activities seal all floor and ceiling openings or penetrations that have not already been sealed. This includes penetrations through ceiling and floor slabs, both empty holes and holes accommodating items such as cables, pipes, ducts, conduit and expansion joints in floors and wall and floor slab assemblies.
- G. Use combination fire stop foam and fire stop sealant equivalent to Dow Corning Fire Stop Foam and Dow Corning Fire Stop Sealant. Material shall be applied in accordance with manufacturer's recommendations.

- H. Maintain emergency and fire exits from the work areas, or establish alternative exits satisfactory to the local fire officials. Coordinate work with local fire and police departments, and Asbestos Project Monitor.
- I. Shut down and isolate heating, cooling, ventilating air systems in the contaminated areas to prevent contamination and fiber dispersal to other areas of the structure. During the work, seal vents within the work area with solid barriers, such as plywood and tape and plastic sheeting, or as indicated on the drawings.
- J. Remove all HVAC system filters. Pack disposable filters in sealable double 6 mil plastic bags for burial in the approved waste disposal site; replace with new filters after final cleanup. Wet clean permanent filters; reinstall after final cleanup.
- K. Before work is begun, clean all items, which can be removed without disrupting the asbestos material. Pre-clean movable furniture, [carpeting, clocks, speakers, books, and other objects] within the proposed areas using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate; remove such objects from work areas to a temporary location.
- L. Pre-clean non-removable furniture, book shelving, equipment, heat fans, fire alarms, pipes, ductwork, wires and conduits, lockers, skylights, speakers, and other fixed objects within the proposed work areas, using HEPA filtered vacuum equipment and wet cleaning methods as appropriate prior to abatement activities, and enclose with minimum 6 mil plastic sheeting sealed with tape.
- M. Remove and clean all ceiling mounted objects, such as lights, HVAC grills and other items not previously sealed off, that interfere with asbestos abatement. Use localized water spraying or HEPA filtered vacuum equipment during fixture removal to reduce fiber dispersal.
- N. The Asbestos Contractor will be required to supply a certified plumber to be available should any questions or problems arise.

3.06 MAINTENANCE OF ENCLOSURE SYSTEMS

- A. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery. Visually inspect enclosures at the beginning of each work period.
- B. Use smoke methods to test effectiveness of barriers when directed by the Asbestos Project Monitor.

3.07 CONTROL ACCESS

- A. Permit access to the work area only through the Decontamination Unit. All other means of access shall be closed off, warning signs displayed on the clean side of the sealed access.
- B. Large openings such as open doorways and passageways shall be sealed as a critical barrier. The critical barrier shall constitute the outmost boundary of the asbestos abatement work area.
- C. Plastic sheeting on open framing is not a suitable critical barrier. All cracks, seams, and openings in critical barriers shall be caulked or otherwise sealed, so as to prevent the movement of asbestos fibers out.

3.08 ISOLATION OF WORK AREA

- A. Completely separate the work area from other portions of the building and the outside by sheet plastic barriers at least 6 mil in thickness.
- B. Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, and other openings into the work area with duct tape alone or with polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape. Maintain seal until all work including work area decontamination is completed. All lighting fixtures shall have had power shut off.
- C. Provide sheet plastic barriers at least 6-mil in thickness needed to complete seal openings from the work area into adjacent areas. Seal the perimeter of all sheet plastic barriers with duct tape.

3.09 COVERING OF FLOOR AND WALL SURFACES

- A. Clean all contaminated furniture, equipment, and or supplies with a HEPA filtered vacuum cleaner or by wet cleaning prior to being moved or covered. All equipment, furniture, stored items in work area is to be deemed contaminated unless specifically declared as uncontaminated in writing by the Asbestos Project Monitor. Clean all surfaces in work area with a HEPA filtered vacuum or by wet wiping prior to the installation of any sheet plastic.
- B. Cover floor of work area with 2 individual layers of clear polyethylene sheeting, each at least 6 mil in thickness, turned up walls at least 12 inches. Form sharp right angle-bend at junction of floor and wall so that there is no radius, which could be stepped on causing the wall attachment to be pulled loose. Duct tape all seams in floor covering. Locate seams in top layer six feet from, or at right angles to, seams in bottom layer. Install sheeting so that top layer can be removed independently of bottom layer.
- C. Remove all general construction items such as cabinets, casework, doors and window trim, moldings, ceilings, and trim which cover the surface of the work to prevent interference with the work. Clean, decontaminate and reinstall, unless otherwise

indicated, all such materials, upon completion of all removal work with materials, finishes, and workmanship to match existing installations before start of work.

- D. Cover all walls in work area with two (2) layers of polyethylene sheeting, at least 6- mil in thickness, mechanically supported and sealed with duct tape. Tape all joints including the joining with the floor covering with duct tape or as otherwise indicated on the Asbestos Remediation or in writing by the Asbestos Project Monitor. There shall be no seams in the plastic sheet at wall to floor joints.
- E. If the enclosure barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add affected area to the work area, enclose it and decontaminate it.

3.10 NEGATIVE PRESSURE

- A. Establish negative pressure in the work area by installation of High Efficiency Particulate Air (HEPA) filter air-purifying devices. Comply with ANSI Z9.2, Local Exhaust Ventilation Requirements. Maintain system in operation 24 hours per day until decontamination of the work area is completed and area has been certified clean by air monitoring tests and visual inspections. Discharge of asbestos fibers to the outside of the building will not be permitted.
- B. Size negative air pressure system(s) to provide a minimum of one air change every 15 minutes for the area under negative pressure. Locate the exhaust unit(s) so that makeup air enters the work area primarily through the decontamination unit and traverses the work area as much as possible. The intent is to provide the air change specified in each work area (room), not just the specified negative pressure. Place the end of the unit or its exhaust duct through an opening in the plastic barrier or wall covering. Seal the plastic around the unit or duct with tape.
- C. The system shall maintain an air pressure differential of minus 0.02 inch of water. Test the negative pressure system prior to any abatement actions to ensure that the 0.02-inch differential is present. The Asbestos Project Monitor may require the use of ventilation smoke tubes to check the system performance.

3.11 REMOVAL OF ASBESTOS CONTAINING MATERIALS

- A. Thoroughly wet ACM to be removed prior to stripping to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal Encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for water or removal Encapsulant to penetrate material thoroughly. If a removal Encapsulant is used, apply in strict accordance with manufacturer's written instructions.
- B. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.

- C. Remove saturated ACM in small sections from all areas. Do not allow material to dry out. As it is removed, simultaneously pack material while still wet into disposal bags. Twist neck of bags bend over and seal with minimum three wraps of duct tape. Clean outside and move to wash down station adjacent to material decontamination unit.
- D. For the removal of pipe and joint insulation, the density of asbestos containing pipe covering seldom allows the material to be removed in a completely wet state. However, every attempt should be made to keep the insulation material as wet as possible to prevent release of asbestos fibers.
- E. Cut the cloth covering on the pipe insulation along the top seam to allow wetting of the asbestos insulation. Do not allow the pipe insulation to fall to the ground or adjacent surfaces. Wet the insulation material and immediately place in a double 6 mil, minimum thickness labeled plastic bag.
- F. In certain areas, asbestos pipe insulation will be removed with glove-bags (with prior approval by the Asbestos Project Monitor).
 - 1. Seal all critical barriers.
 - 2. Pre-clean if necessary and place one layer of polyethylene under the pipe to be removed.
 - 3. Negative air machines with HEPA filtration will be used in the area.
 - 4. Glove bags will be smoke tested.
 - 5. Place necessary tools into pouch located inside glove-bag. This will usually include bone saw, utility knife, rags, scrub brush, wire cutters, tin snips, and pre-wetted cloth.
 - 6. Place one strip of duct tape along the edge of the open top slit of glove-bag for reinforcement.
 - 7. Place the glove bag around section of pipe to be worked on and staple top together through reinforcing duct tape. Next, duct tape the ends of glove-bag to pipe itself, where previously covered with plastic or duct tape.
 - 8. Place additional layers of tape along the top of the glove-bag to seal the staple holes and to securely support the bag on the pipe.
 - 9. Fill each bag with 2 inches of water to thoroughly wet the removed insulation.
 - 10. Attach vacuum hose through port in bag and tape tightly to prevent leakage.
 - 11. Insert spray nozzle into bag and tape tightly to prevent leakage.
 - 12. One person places his hands into the long-sleeved gloves while the second person directs garden sprayer at the work.
 - 13. Use bone saw, if required, to cut insulation at each end of the section to be removed. A bone saw is a serrated heavy gauge wire with ring-type handles at each end. Throughout this process, spray amended water or removal Encapsulant on the cutting area to keep dust to a minimum.
 - 14. Remove insulation using putty knives or other tools. Place pieces in bottom of bag without dropping.

15. Using nylon scrub brush, rags, and water scrub and wipe down the exposed pipe.
16. Wipe down the inside of the bag with the rags. Remove the water nozzle and tape shut.
17. Encapsulate the exposed ends and cover any exposed ends of pipe insulation with the re-wettable clothe. This shall be done prior to removing the bag.
18. Place the cleaned tools either into the next glove bag or put into the glove and pulled out. Twist the glove, tape at least twice and cut through the tape. The tools can be dropped into a bucket of water to clean them.
19. Twist the bag several times and turn on HEPA vacuum to remove the air. Tape the twist several times.
20. Slip a 6-mil disposal bag under the glove-bag and while running the vacuum sufficiently to collapse the bag, cut the glove-bag off.
21. Encapsulate all exposed pipe and elbows to lock down any remaining fibers.
22. Remove disposable suits and place these into bag with waste.
23. Collapse the disposal bag with a HEPA vacuum, twist top of bag, seal with at least 3 wraps of duct tape, bend over and seal again with at least 3 wraps of duct tape.

3.12 DECONTAMINATION OF WORK AREA

- A. Maintain premises and public properties free from accumulation of waste, debris, and rubbish, caused by operations. Remove visible accumulations of asbestos material and debris. Wet clean all surfaces within the work area.
- B. Remove the plastic sheets from walls and floors only. Take proper care in folding up plastic sheeting to minimize dispersal of residual asbestos containing debris.
- C. Leave the windows, doors, and HVAC vents sealed. Maintain HEPA filtered negative air pressure systems, air filtration and decontamination enclosure systems in service.
- D. Remove all debris from floor of work area. This includes all trash, scraps of lumber, pipes, and all visible asbestos debris. The asbestos debris is primarily deteriorated pipe insulation that has fallen to the ground. Dispose of all debris removed as asbestos contaminated waste. HEPA vacuum the entire floor.
- E. Clean all surfaces in the work area and any other contaminated areas with water and with HEPA filtered vacuum equipment. After cleaning the work area, wait 24 hours to allow for settlement of dust, and again wet clean and clean with HEPA filtered vacuum equipment all surfaces in the work area. After completion of the second cleaning operation, perform a complete visual inspection of the work area to ensure that the work area is free of visible asbestos debris. The negative pressure system may be shut down only after clean air has been achieved.

- F. Include sealed drums and all equipment used in the work area in the cleanup and remove from work areas, via the equipment decontamination enclosure system, at an appropriate time in the clean sequence.
- G. Conduct cleaning and disposal operations to comply with applicable ordinances and antipollution laws. Do not burn or bury rubbish and waste materials on job site. Do not dispose of volatile wastes in storm or sanitary drains. Do not dispose of wastes into streams or waterways.
- H. Store volatile wastes in covered metal containers during work hours and remove from premises at end of workday. Prevent accumulation of wastes, which create hazardous conditions. Provide adequate ventilation during use of volatile or noxious substances.
- I. If the Asbestos Project Monitor, within 24 hours after the second cleaning, finds visible accumulations of asbestos debris in the work area, repeat the wet cleaning until the work area is in compliance, at no additional expense to the Owner.
- J. Remove the first layer of plastic sheet from walls and floors only. Take proper care in folding up plastic sheeting to minimize dispersal of residual asbestos containing debris.
- K. Leave the windows, doors, and HVAC vents sealed. Maintain HEPA filtered negative air pressure systems, air filtration and decontamination enclosure systems in service.
- L. Following the final visual inspection by the ASBESTOS PROJECT MONITOR, after the removal of asbestos-containing materials and decontamination of work areas, and while space enclosures systems remain in place, seal all surfaces from which asbestos-containing material have been removed to assure immobilization of any remaining fibers. Use a colored sealant so that complete coverage may be ensured by a visible inspection by the ASBESTOS PROJECT MONITOR to verify that asbestos-containing material has been adequately removed. Apply sealer in accordance with manufacturer's recommendations using airless spray equipment.
- M. Clearance air samples will be taken by the ASBESTOS PROJECT MONITOR using aggressive air sampling. Analysis will be made using Phase Contrast Microscopy or Transmission Electron Microscopy.
- N. Clean all access routes used to transport ACM.

3.13 WORK AREA CLEARANCE

- A. The work is complete when the work area is visually clean and airborne fiber levels have been reduced to the level specified below. When this has occurred, the Asbestos Contractor will notify the Asbestos Project Monitor that the area is ready for clearance.
- B. The number and volume of air samples taken, and analytical methods used by the Asbestos Project Monitor will be in accordance with applicable regulations.

- C. The Owner will pay for the initial testing required for clearance. Should the initial testing fail, the Contractor will reimburse the Owner for the cost of all additional testing based on \$90.00 per hour for project monitor, \$30.00 per each PCM.

3.14 DISPOSAL OF ACM AND ASBESTOS CONTAMINATED WASTE

- A. To prevent exceeding available storage capacity on site, remove sealed and labeled containers of asbestos waste and dispose of such containers at an authorized disposal site in accordance with the requirements of disposal authority.
- B. Comply with 29 CFR 1926.1101.
- C. Seal all asbestos and asbestos contaminated waste material with double thickness 6-mil, sealable plastic bags. Label the bags; transport and dispose of all in accordance with the applicable OSHA and EPA regulations. At the conclusion of the job, place all polyethylene material, tape, cleaning material and clothing in the plastic lined drum. Seal, correctly label, and dispose of as asbestos waste material.
- D. Transport the bags to the approved waste disposal site. Asbestos Contractor shall obtain trip tickets at the landfill to document disposal of asbestos containing materials. A form shall be signed, not initialed, by all parties. Copies of all trip tickets shall be submitted to the Asbestos Project Monitor.
- E. If a rental vehicle is used to transport asbestos waste, Asbestos Contractor shall provide to the vehicle's owner a written statement as to the intended use of the vehicle. A copy of such notice, signed by the vehicle owner, shall be provided to the Asbestos Project Monitor prior to transporting materials in the vehicle. Two layers of 6-mil plastic sheet shall be placed on the floor and walls of the rental vehicle prior to loading any containers of asbestos waste.
- F. Consider wastewater from showers and sinks to be contaminated waste and dispose of in accordance with this Section unless water has been filtered through a 5-micron filter.

3.15 DISPOSAL OF NON-CONTAMINATED WASTE

- A. Remove from the site all non-contaminated debris and rubbish resulting from demolition operations. Transport materials removed from demolished areas and dispose of offsite in a legal manner.
- B. During progress of work, clean site, and public properties, and dispose of waste materials, debris, and rubbish. Provide onsite containers for collection of waste materials, debris, and rubbish. Remove waste materials, debris, and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.

END OF SECTION

DIVISION 07

SECTION 07 84 13

PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section 00 52 00 Owner – Contractor Agreement and Section 00 72 00 Conditions of the Contract and all sections of Division 01, General Requirements shall be part of this section unless otherwise specifically excluded.
- B. This Section includes through-penetration firestop systems for penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items.

1.02 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E 814 or UL 1479:
 - 1. Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
 - 2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
 - a. Penetrations located outside wall cavities.
 - b. Penetrations located outside fire-resistance-rated shaft enclosures.
 - 3. L-Rated Systems: Where through-penetration firestop systems are indicated in smoke barriers, provide through-penetration firestop systems with L-ratings indicated of not more than 3.0 cfm/sq. ft at both ambient temperatures and 400 deg F.

- C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
 - 1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - 2. For floor penetrations with annular spaces exceeding 4 inches (100 mm) in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 - 3. For penetrations involving insulated piping, provide through-penetration fire-stop systems not requiring removal of insulation.
- D. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each through-penetration firestop system, submit documentation, including illustrations, from a qualified testing and inspecting agency, showing each type of construction condition penetrated, relationships to adjoining construction, and type of penetrating item.
 - 1. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.
- C. Qualification Data: For Installer.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FMG according to FMG 4991, "Approval of Firestop Contractors."
- B. Installation Responsibility: Assign installation of through-penetration firestop systems and fire-resistive joint systems in Project to a single qualified installer.
- C. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in Part 1 "Performance Requirements" Article:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency are UL or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
 2. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
- D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by Owner's inspecting agency and building inspector, if required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

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

2.02 FIRESTOPPING

- A. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.
- B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with Part 1 "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by qualified testing and inspecting agency for firestop systems indicated.

PART 3 - EXECUTION

3.01 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

- A. General: Install through-penetration firestop systems to comply with Part 1 "Performance Requirements" Article and with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- C. Install fill materials for firestop systems by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.
- D. Identification: Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. Include the following information on labels:
 - 1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Through-penetration firestop system designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Through-penetration firestop system manufacturer's name.
 - 6. Installer's name.

3.02 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage an independent inspecting agency to inspect through-penetration firestops. Independent inspecting agency shall comply with ASTM E 2174 requirements including those related to qualifications, conducting inspections, and preparing test reports.
- B. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.
- C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements.

3.03 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE

- A. Firestop Systems for Metallic Pipes, Conduit, or Tubing FS-<#>:
 - 1. Available UL-Classified Systems: C-AJ- C-BJ- C-BK- F-A- F-B- F-C- W-J- W-K- W-L- 1001-1999.
- B. Where UL-classified systems are indicated, they refer to alpha-alpha-numeric designations listed in UL's "Fire Resistance Directory" under product Category XHEZ.
- C. Firestop Systems for Nonmetallic Pipe, Conduit, or Tubing FS-<#>:
 - 1. Available UL-Classified Systems: C-AJ- C-BJ- F-A- F-B- F-C- W-J- W-L- 2001-2999.
- D. Firestop Systems for Electrical Cables FS-<#>:
 - 1. Available UL-Classified Systems: C-AJ- C-BJ- F-A- F-B- F-C- W-J- W-L- 3001-3999.
- E. Firestop Systems for Miscellaneous Electrical Penetrants FS-<#>:
 - 1. Available UL-Classified Systems: C-AJ- F-A- W-L- 6001-6999.

END OF SECTION

DIVISION 09

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Section 00 52 00 Owner – Contractor Agreement and Section 00 72 00 Conditions of the Contract and all sections of Division 01, General Requirements shall be part of this section unless otherwise specifically excluded.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Non-load-bearing steel framing members for interior wall framing.
 - 2. Interior gypsum board.
- B. Related Sections include the following:
 - 1. Division 09 Section “Painting” for primers applied to gypsum board surfaces.

1.03 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide interior non-load-bearing metal framing capable of withstanding design loads within limits and under conditions indicated.
 - 1. Design Loads: In accordance with the Massachusetts State Building Code.
 - 2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
 - a. Interior Framing Systems:
 - 1) Maximum Deflection: $L/240$ at 5 psf, stud spacing at 16 inches O.C.
 - 3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on

fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 °F.

4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
 - a. Upward and downward movement of 3/4 inch.
- B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
 1. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.
 2. Provide interior framing systems sized to accommodate maximum deflection using limiting heights of metal studs without contribution of gypsum wallboard (non-composite).

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
 1. For non-load-bearing metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer licensed in the Commonwealth of Massachusetts responsible for their preparation.
 2. Include calculations for span capabilities of cold-formed metal framing for deflection criteria specified.
- C. Samples: For the following products:
 1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.
- D. Qualification Data: For professional engineer.
- E. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:

1. Steel sheet.
 2. Expansion anchors.
 3. Power-actuated anchors.
 4. Mechanical fasteners.
- F. Research/Evaluation Reports: For cold-formed metal framing.
- G. Warranty: Special warranty included in this Section.

1.05 QUALITY ASSURANCE

- A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the Commonwealth of Massachusetts and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.
- D. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- E. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."

1.06 DELIVERY, STORAGE, AND HANDLING

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

1.07 PROJECT CONDITIONS

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

1.08 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace exterior gypsum sheathing that fails in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 INTERIOR NON-LOAD-BEARING STEEL FRAMING

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

1. Non-Structural Studs: Cold-formed galvanized steel C-studs as per ASTM C 645 for conditions indicated below:
 - a. Flange Size: 1-1/4-inch.
 - b. Web Depth: As indicated on Drawings.
 - 1) Minimum Thickness: 0.033 inch.
 - 2) Minimum Design Thickness: 0.0346 inch.
- D. Slip-Type Head Joints: Where indicated, provide the following:
 1. Double-Runner System: ASTM C 645 top runners, inside runner with 2-inch-deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.

2.02 GYPSUM PANELS, GENERAL

- A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.03 INTERIOR GYPSUM BOARD

- A. General: Complying with ASTM C 36 or ASTM C 1396, as applicable to type of gypsum board indicated and whichever is more stringent.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. G-P Gypsum.
 - b. Lafarge / Continental.
 - c. National Gypsum Company.
 - d. USG Corporation.
- B. Moisture Resistant and Type X:
 1. Core: 5/8 inch.
 2. Long Edges: Tapered.
 3. Moisture Resistance: ASTM D 3273, score of 10.
 4. Fire Rated: ASTM C 1396/C 1396M.
 5. Products: Subject to compliance with requirements, provide one of the following:

2.04 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.
 - 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - d. Expansion (control) joint.

2.05 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Wallboard: Paper.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 - 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.06 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."
- C. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

2.07 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- C. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing board to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.
 1. For steel framing less than 0.0329 inch thick, attach sheathing to comply with ASTM C 1002.
 2. For steel framing from 0.033 to 0.112 inch thick, attach sheathing to comply with ASTM C 954.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of areas and substrates.

3.02 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.03 INTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- B. Install studs so flanges within framing system point in same direction.
 - 1. Space studs for all applications at 16 inches o.c., unless otherwise indicated.
- C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb, unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
- D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.04 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track, and to bottom track only where deflection track is indicated. Space studs as follows:
 1. Stud Spacing: 16 inches o.c.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
 1. Install single-leg deflection tracks and anchor to building structure, where indicated.
- E. Install horizontal bridging in wall studs, spaced in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.
 1. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 12 inches of single deflection track. Install a combination of flat, taut, steel sheet straps of width and thickness indicated and stud or stud-track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 - a. Install solid blocking at 96-inch centers.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable wall-framing system.

3.05 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.

- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.06 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Moisture Resistant Type X: As indicated on Drawings.
- B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels either vertically (parallel to framing) or horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.07 GYPSUM SHEATHING INSTALLATION, GENERAL

- A. Apply panels perpendicular to supports, with end joints staggered and located over supports.
 1. Install with 1/4-inch open space where panels abut other construction or structural penetrations.
 2. Fasten with corrosion-resistant screws.
- B. Do not use materials with defects that impair quality of sheathing or pieces that are too

3.08 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints at locations indicated on Drawings, or if not indicated, according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 1. Cornerbead: Use at outside corners.
 2. LC-Bead: Use at exposed panel edges.

3.09 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare

gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.

3.10 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

DIVISION 09

SECTION 09 91 01

PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The 00.72.00 Conditions of the Contract and all sections of Division 01, General Requirements shall be part of this section unless otherwise specifically excluded.

1.02 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following substrates:
 - 1. New gypsum board.
 - 2. Wall patching
 - 3. Ceiling patching
- B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Prefinished items include the following factory-finished components:
 - a. Finished mechanical and electrical equipment.
 - b. Light fixtures and wiring devices.
 - c. Switchgear.
 - d. Distribution cabinets in closets or equipment rooms.
 - 2. Finished metal surfaces include the following:
 - a. Anodized or coated aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper and copper alloys.

- e. Bronze and brass.
- 3. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.03 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 - 3. Semi-gloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 - 4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 - 2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
 - 3. Certification by the manufacturer that products supplied comply with Commonwealth of Massachusetts Ozone Transportation Commission (OTC) regulations controlling use of volatile organic compounds (VOCs).
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architects and Owners, and other information specified.

- D. Product List: For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 2. VOC content.

1.05 MAINTENANCE MATERIAL SUBMITTALS

- A. Owner shall provide contractor paint color and finish.

1.06 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
 3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.
 4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 °F.
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.08 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 °F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 °F above the dew point; or to damp or wet surfaces.
- C. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 °F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Benjamin Moore & Co.
 - 2. PPG Architectural Finishes, Inc.; Pittsburgh Paints.
 - 3. Sherwin-Williams Co.

2.02 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content for Interior Paints and Coatings:
 - 1. All interior paints and coatings shall comply with the VOC content regulations of the Ozone Transportation Commission (OTC) effective in the Commonwealth of Massachusetts. For interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - a. Nonflat Coatings: 150 g/L.
 - b. Nonflat-High Gloss Coatings: 250 g/L.
 - c. Primers, sealers and undercoaters: 200 g/L.

- d. Anti-corrosive and Anti-rust Paints Applied to Ferrous Metals: 250 g/L.
- C. Colors: As selected by Architect from manufacturer's full range.

2.03 INTERIOR PRIMERS

- A. General: Provide tinted primers as required for dark colors.
- B. Interior Metal Primer: Factory-formulated metal primer (**250 g/L**).
 - 1. Benjamin Moore; Super Spec Acrylic Metal Primer No. P04: Applied at a dry film thickness of not less than 1.7 mils.
 - 2. Pittsburgh Paints; 90-912 Series Pitt-Tech Interior/Exterior Primer/Finish DTM Industrial Enamel: Applied at a dry film thickness of not less than 2.0 mils.
 - 3. Sherwin-Williams; Pro Industrial Pro-Cryl Universal Acrylic Primer B66 Series: Applied at a dry film thickness of not less than 2.0 mils.
- C. Interior Gypsum Board: Factory-formulated latex-based primer for interior application (**100 g/L**).
 - 1. Benjamin Moore, Ultra Spec 500 Interior Latex Primer N534: Applied at a dry film thickness of not less than 1.8 mils.
 - 2. Glidden Professional; PVA Interior Primer Sealer 1030-1200N: Applied at a dry film thickness of not less than 1.2 mils.
 - 3. Pittsburgh Paints; 6-2 Speedhide Interior Latex Sealer Quick-Drying: Applied at a dry film thickness of not less than 1.0 mil.
 - 4. Sherwin-Williams; ProMar 200 Zero VOC Primer B28W2600: Applied at a dry film thickness of not less than 1.5 mils.

2.04 INTERIOR PAINTS

- A. Interior Semi-Gloss Acrylic Enamel for Metal Surfaces: Factory-formulated semi-gloss acrylic interior enamel (**250 g/L**).
 - 1. Benjamin Moore; Super Spec HP DTM Acrylic Semi-Gloss Enamel P29: Applied at a dry film thickness of not less than 1.5 mils.
 - 2. Pittsburgh Paints; 90-1210 Series Pitt-Tech Plus Interior/Exterior Semi-Gloss DTM Industrial Enamel: Applied at a dry film thickness of not less than 2.0 mils.
 - 3. Sherwin-Williams; Pro Industrial Acrylic B66-650 Series Semi-Gloss: Applied at a dry film thickness of not less than 2.5 mils.
- B. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel for walls (**150 g/L**) (**100 g/L CHPS**).

1. Benjamin Moore, Ultra Spec 500 Interior Eggshell N538: Applied at a dry film thickness of not less than 1.8 mils.
2. Glidden Professional; Ultra-Hide 150 Interior Eggshell Paint 1412V: Applied at a dry film thickness of not less than 1.3 mils.
3. Pittsburgh Paints; 6-411 Series Speedhide Interior Enamel Latex Eggshell: Applied at a dry film thickness of not less than 1.5 mils.
4. Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Egg-Shell Enamel B20-2600 Series: Applied at a dry film thickness of not less than 1.6 mils.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove hardware, plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

3.03 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 3. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.04 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.05 INTERIOR PAINTING SCHEDULE

- A. Ferrous Metal: Provide the following finish systems over ferrous metal:
 - 1. Semi-Gloss Acrylic-Enamel Finish: Two finish coats over a metal primer.
 - a. Primer: Metal primer, including surfaces with factory prime coat.
 - b. Finish Coats: Interior semi-gloss acrylic enamel for metal surfaces.
- B. Gypsum Board: Provide the following finish systems over interior gypsum board and plaster surfaces:
 - 1. Low-Luster Acrylic-Enamel Finish (Walls): Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.

END OF SECTION

DIVISION 23

SECTION 23 00 01

HEATING, VENTILATING AND AIR CONDITIONING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and Contract Conditions as listed in the Table of Contents, and applicable parts of Division 01 - GENERAL REQUIREMENTS, shall be included in and made a part of this Section.

1.02 RELATED DOCUMENTS

- A. Examine all Project Specifications and Drawings for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- B. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- C. When open-flame or spark producing tools such as blower torches, welding equipment, etc., are required in the process of executing the work, the General Contractor shall be notified not less than 24 hours in advance of the time that the work is to begin and the location where the work is to be performed. Provide, where necessary, fire protective covering and maintain a constant non-working fire watch where work is being performed and until completed.
- D. The following definitions apply to the Drawings and Specifications
 - 1. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
 - 2. Install: The term "install" is used to describe operations at project site including actual "unloading, unpacking, rigging in place, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
 - 3. Provide: The term "provide" means to "furnish and install, complete and ready for intended use."
 - 4. Installer: An "installer" is the contractor or an entity engaged by the contractor, either as an employee, subcontractor, or sub-subcontractor for a performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

5. Contractor: The term "Contractor" shall mean HVAC Contractor.

1.03 SCOPE OF WORK

- A. The work under this Section shall include the furnishing of all materials, labor, equipment and supplies and the performance of all operations to provide complete working systems, in general, to include the following items:
1. Fans
 2. Range Hoods
 3. Wall and Roof Caps
 4. Sheet Metal
 5. Insulation
 6. Testing and Balancing of Air Systems
 7. Provide a complete system of automatic temperature controls, as shown on the Drawings and called for in this Specification.
 8. Systems shall be complete, including all appurtenances for fully workable systems.
 9. Cutting and Patching
 10. Firestopping
 11. Demolition as indicated on designed plans.
 12. Vibration Isolation
- B. Provide any other component or related system (whether or not listed) which is part of the overall design and basic equipment and deemed necessary for its completion, thoroughness and readiness for operation in perfect condition.
- C. Furnish, set up and maintain all derricks, hoisting machinery, scaffolds, staging and planking as required for the work.
- D. Supply the service of an experienced and competent supervisor who shall be in charge of the HVAC Contractor's work at the site.
- E. The HVAC Contractor shall be held responsible for subletting any work shown or specified herein, but not classified as HVAC work in order to avoid any jurisdictional disputes and work stoppage arising therefrom.
- F. All electrical apparatus and controls furnished as a part of the HVAC work shall conform to applicable requirements under SECTION 26 00 00 ELECTRICAL.
- G. All work shall be coordinated with the Construction Schedule.

1.04 WORK NOT INCLUDED

- A. Power wiring is specified in Section 16100 - Electrical, and will be provided by the Electrical Subcontractor.

1.05 PRODUCTS FURNISHED, BUT NOT INSTALLED UNDER THIS SECTION

- A. Furnish access panels and doors for installation by the General Contractor.

1.06 EXAMINATION OF SITE AND DOCUMENTS

- A. Bidders are expected to examine and to be thoroughly familiar with all contract documents and with the conditions under which work will be carried out. The Awarding Authority (Owner) will not be responsible for errors, omissions and/or charges for extra work arising from General Contractor's or Filed Subcontractor's failure to familiarize themselves with the Contract Documents or existing conditions. By submitting a bid, the Bidder agrees and warrants that he has had the opportunity to examine the site and the Contract Documents, that he is familiar with the conditions and requirements of both and where they require, in any part of the work a given result to be produced, that the Contract Documents are adequate and that he will produce the required results.

1.07 CODES, ORDINANCES, AND PERMITS

- A. Installation of systems and equipment provided under this section shall be done in strict accordance with Massachusetts Department of Public Safety Codes, Massachusetts Department of Environmental Protection, Massachusetts State Building and Mechanical Code, and City or Town Regulations having jurisdiction.
- B. All pressure vessels shall conform to ASME and state codes and regulations.
- C. All work, where applicable, shall conform to NFPA codes and all material shall be U.L. approved.
- D. All electrical apparatus furnished under this section shall be approved by the U.L. and shall be so labeled or listed where such is applicable. Where custom-built equipment is specified and the U.L. label or listing is not applicable to the completed product, all components used in the construction of such equipment shall be labeled or listed by U.L. where such is applicable to the component.
- E. Give notices, file plans, obtain permits and licenses, pay fees and obtain necessary approvals from authorities having jurisdiction. Deliver certificates of inspection to Engineer. No work shall be covered before examination and approval by Engineer, inspectors, and authorities having jurisdiction. Replace imperfect or condemned work conforming to requirements, satisfactory to Engineer, and without extra cost to the Owner. If work is covered before due inspection and approval, the installing contractors shall pay costs of uncovering and reinstalling the covering, whether it meets contract requirements or not.

1.08 RECORD DRAWINGS

- A. Refer to DIVISION 01 - GENERAL REQUIREMENTS, of the Specifications for record drawings, closeout procedures and closeout submittals to be provided under this section.

1.09 CLEANING

- A. During the progress of the heating, ventilating and air conditioning work, clean up and remove all oil, grease and other debris caused by this work. At completion, the contractor shall clean all equipment, piping and duct systems and leave all work in perfect operating condition.

1.10 RESPONSIBILITY

- A. The structure and its appurtenances, clearances and the related services, such as plumbing, heating, ventilation and electric service have been planned to be legal, adequate and suitable for the installation of equipment specified under this section. The Owner will not assume any increase in cost caused by differing requirements peculiar to a particular make or type of equipment, and any incidental cost shall be borne by the HVAC Contractor. He shall be responsible for the proper location of his required sleeves, chases, inserts, etc., and see that they are set in the forms before the concrete is poured. He shall be responsible for his work and equipment furnished and installed by him until the completion and final acceptance of this contract, and he shall replace any work which may be damaged, lost or stolen, without additional cost to the Owner.

1.11 PROTECTION OF MATERIALS, WORK, AND GROUNDS

- A. Materials, fixtures and equipment shall be properly protected and all pipe and duct openings shall be temporarily closed so as to prevent obstruction and damage.
- B. Protect and preserve all materials, supplies and equipment of every description and all work performed. Protect all existing equipment and property of any kind from damage during the operations. Damage shall be repaired or replaced promptly by the contractor at his expense.

1.12 DRAWINGS

- A. It is the intention of the Specifications and Drawings to call for finished work, tested and ready for operation. Any apparatus, appliance, material or work not shown on the Drawings, but mentioned in the Specifications or vice-versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, even if not particularly specified, shall be provided by the contractor without additional expense to the Owner.
- B. The Drawings are generally diagrammatic. The locations of all items that are not definitely fixed by dimensions are approximate only. The exact locations must be determined at the project and shall have the approval of the Engineer before being installed. The contractor shall follow Drawings, including his shop drawings, in laying out work and shall check the Drawings of other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions. Where space conditions appear inadequate, notify the Engineer before proceeding with the

installation. The contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

- C. Size of ducts and pipes and methods of running them are shown, but it is not intended to show every offset and fitting, nor every structural difficulty that may be encountered. To carry out the true intent and purpose of the Drawings, all necessary parts to make complete approved working systems ready for use, shall be furnished without extra charge. All work shall be installed in such a manner as to avoid being unsightly.
- D. All measurements shall be taken at the building by the contractor, prior to purchasing and installing the equipment and piping.

1.13 SHOP DRAWINGS

- A. Provide five (5) sets of shop drawings for the following:
 - 1. Fans
 - 2. Range Hoods
 - 3. Wall and Roof Caps
 - 4. Automatic Temperature Controls components complete with wiring diagrams
 - 5. Sequence of Controls
 - 6. Sheetmetal Standards
 - 7. Sheetmetal Shop Drawings
 - 8. Vibration Isolation
 - 9. Insulation
- B. Contractor shall provide a complete set of approved submittals to the owners. Project Representative for Utility Rebate requirements within 30 Days of receiving approval of final submittal.

1.14 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Submit operation and maintenance data complete with at least the following:
 - 1. Table of Contents
 - 2. Introduction:
 - a. Explanation of manual and its use
 - b. Description of all systems
 - 3. Plant Operation:
 - a. Operating instructions for all HVAC apparatus.
 - 4. Maintenance:

- a. Maintenance and lubricating chart: Furnish three sets of charts indicating equipment tag number, location of equipment, equipment service, greasing and lubricating requirements, lubricants and intervals of lubrication.
5. Recommended list of spare parts: Furnish two typed sets of instructions for ordering spare parts with sectional views of the fittings or equipment showing parts numbered or labeled to facilitate ordering replacements, including a list with itemized prices of those parts recommended to be kept on hand as spares, as well as the name and address of where they may be obtained.
6. Valve Chart
7. Manufacturer's Literature:
 - a. Automatic Temperature Controls
 - b. Sequence of Control
 - c. Exhaust Systems

1.15 UNDERWRITERS' LABEL AND LISTING

- A. All electrical apparatus furnished under this Section shall be approved by the UL and shall be labeled or listed where such is applicable. Where custom-built equipment is specified and the UL label or listing is not applicable to the completed product, all components used in the construction of such equipment shall be labeled or listed by UL where such is applicable to the component.

1.16 CUTTING AND PATCHING

- A. All cutting and patching one (1) square foot and less in area necessary for the proper installation of work to be performed under this Section and subsections shall be performed by the HVAC Contractor. All cutting and patching associated with demolition work and greater than one (1) square foot in area for the installation of work under this section shall be by the General Contractor.
- B. All work shall be fully coordinated with all phases of construction, in order to minimize the requirements for cutting and patching.
- C. The Contractor shall see that all such chases, openings, and sleeves are located accurately and are of the proper size and shape and shall consult with the Engineer in reference to this work. In so doing, he shall confine the cutting to the smallest extent possible consistent with the work to be done. In no case shall piers or structural members be cut without the approval of the Engineer.
- D. Carefully fit around, close up, repair, patch, and point around the work specified herein to the entire satisfaction of the Engineer.
- E. Fill and patch all openings or holes left in the existing structures by the removal of existing equipment by himself, his subcontractors or other filed subcontractors.

- F. All of this work shall be carefully done by workmen competent to do such work and with the proper and smallest tools applicable.
- G. Any cost caused by defective or ill-timed work shall be the Contractor's responsibility therefore.
- H. The fire resistance rating of floors, walls, and ceilings shall be maintained. UL listed firestopping shall be installed in accordance with manufacturer's written instructions.

1.17 GUARANTEE

- A. Guarantee that all work installed will be free from any and all defects in workmanship and/or materials and that all apparatus will develop capacities and characteristics specified.
- B. If, during a period of one year from the date of final completion and acceptance of the work, any such defects in workmanship, material or performance appear, the HVAC Contractor will, without cost to the Owner, remedy such defects within a reasonable time to be specified in notice from the Architect.
- C. Provide all refrigeration compressors with the manufacturer's extended replacement warranty for a total of five years. All warranties must have been submitted prior to Final Payment.
- D. Correct all damage to insulation, paint or building caused by defects in his work, equipment, and its operation. Guarantee shall include startup, shutdown, maintenance, and 24-hour service during the guarantee period.
- E. Any apparatus that requires excessive service during the warranty period will be considered defective and shall be replaced.

1.18 ELECTRICAL

- A. All electrical apparatus and controls furnished as a part of this Section shall conform to applicable requirements under SECTION 260000 - ELECTRICAL.
- B. All motors furnished under this Section shall be furnished by the manufacturer of the equipment served and shall be mounted and aligned so as to run free and true. Each motor shall be built to conform to the latest applicable NEMA, ANSI and IEEE standards for the type and duty of service it is to perform.
- C. Each motor shall be designed to operate on 60 Hz, and each shall be expressly wound for the voltage specified. Each motor shall operate satisfactorily at rated load and frequency with a voltage variation no greater than plus or minus 10 percent of voltage specified. Dual voltage 208/220 motors will not be accepted.

- D. All motors shall be provided with adequate starting and protective equipment and each shall have a terminal box of adequate size to accommodate the required conduit and wires.
- E. Motor controllers shall be equipped with all poles, auxiliary contacts and other devices necessary to permit the interlocking and control sequences required. Controller operating coils shall be generally designed for 120-volt operation, and 3 phase motors shall be provided with thermal overload protection in all phases.
- F. Furnish all magnetic starters for each and every motor furnished under this section of the specification, except where otherwise indicated. The Electrical Contractor shall install and wire the starter. The Contractor shall provide disconnects for all HVAC equipment. The Electric Contractor shall install and wire all disconnects. All starters for motors over 10 HP shall be solid state with reduced inrush design. The maximum allowable inrush shall be 2.5 times running load amperage. All starters for fractional HP motors shall be provided with manufacturer's standard motor starter.
- G. Furnish and install all low voltage and/or line voltage control wiring for the boiler/burner units, rooftop units, heat recovery unit, pumps, fans, and all equipment provided in this section. All wiring shall be performed by a licensed electrician.

1.19 PAINTING

- A. All finish field painting shall be provided by the General Contractor.

1.20 STANDARDS

- A. The latest published issue of the standards, recommendations, or requirements of the following listed societies, associations, or institutes in effect at the date of Contract are part of this Specification. These shall be considered as minimum requirements; specific requirements of this specification and/or associated drawings shall have precedence. In case of conflict between published requirements, the Owner's representative shall determine which is to be followed.

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|-----|--------|---|
| 1. | AMCA | Air Moving and Conditioning Association |
| 2. | ANSI | American National Standards Institute |
| 3. | ASHRAE | American Society for Heating, Refrigerating, and Air Conditioning Engineers |
| 4. | ASME | American Society of Mechanical Engineers |
| 5. | ASTM | American Society for Testing and Materials |
| 6. | FIA | Factory Insurance Association |
| 7. | IEEE | Institute of Electrical and Electronic Engineers |
| 8. | MCAA | Mechanical Contractors Association of America |
| 9. | NEMA | National Electrical Manufacturers Association |
| 10. | NFPA | National Fire Protection Association |

- | | | |
|-----|--------|--|
| 11. | SMACNA | Sheet Metal and Air Conditioning Contractors' National Association |
| 12. | UL | Underwriters' Laboratories, Inc. |
| 13. | OSHA | Occupational Safety and Health Act |
| 14. | NEC | National Electric Code |

1.21 COOPERATION AND COORDINATION WITH OTHER TRADES

- A. The work shall be so performed that the progress of the entire building construction including all other trades, shall not be delayed nor interfered with. Materials and apparatus shall be installed as fast as conditions of the building will permit and must be installed promptly when and as desired.
- B. Confer with all other trades relative to location of all apparatus and equipment to be installed and select locations so as not to conflict with work of other Sections. Any conflicts shall be referred immediately to the Architect for decision to prevent delay in installation of work. All work and materials placed in violation of this clause shall be readjusted to the Architect's satisfaction, at no expense to the Owner.
- C. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section will interfere with work of other sections, assist in working out space conditions to make satisfactory adjustment. Prepare and submit for approval 3/8" scale or larger working drawings and sections, clearly showing how this work is to be installed in relation to the work of other sections. If the work of this section is installed before coordinating with other trades or so as to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.
- D. Keep fully informed as to the shape, size and position of all openings required for all apparatus and give information in advance to build openings into the work. Furnish and set in place all sleeves, pockets, supports and incidentals.
- E. All distribution systems which require pitch or slope such as storm and sanitary drains and water piping shall have the right of way over those which do not. Confer with other trades as to the location of pipes, lights and apparatus and install work to avoid interferences.
- F. This Contractor shall, with the approval of the Architect and without extra charge, make reasonable modifications in his work as required by normal structural interferences, or by interference with work of other trades, or for proper execution of the work.
- G. This Contractor shall protect all materials and work of other trades from damage that may be caused by his work and shall make good any damages so caused.

1.22 FINAL ACCEPTANCE

- A. Final acceptance of Ownership of the HVAC system installed within this scope of work shall be contingent on passing a satisfactory system pressure test, mechanical performance test and cooling and heating function test to determine that the system will perform according to the contract requirements. The above tests shall be witnessed by the Engineer and the Owner at his option and acceptance will only be granted in writing by the Owner after receipt of certification from the Engineer that the design criteria have been met.
- B. The work shall be so performed that the progress of the entire building construction, including all other trades, shall not be delayed or interfered with. Materials and apparatus shall be installed as fast as conditions permit and must be installed promptly when and as desired.
- C. Confer with all other trades relative to location of all apparatus and equipment to be installed and select locations so as not to conflict with work of other Sections. Any conflicts shall be referred immediately to the Engineer for decision to prevent delay in installation of work. All work and materials placed in violation of this clause shall be readjusted to the Engineer's satisfaction, at no expense to the Owner.
- D. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section will interfere with work of other sections, assist in working out space conditions to make satisfactory adjustment. If so directed, prepare and submit for approval 3/8" scale or larger working drawings and sections, clearly showing how this work is to be installed in relation to the work of other sections. If the work of this section is installed before coordinating with other trades or so as to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.

1.23 SEQUENCING

- A. Coordinate work of this Filed Contract with that of other trades, affecting or affected by this work, and cooperate with the other trades as is necessary to assure the steady progress of work.
- B. Do not order or deliver any materials until all submittals, required in the listed Specification Sections included as part of this Filed Contract, have been received and approved by the Architect.
- C. Before proceeding with installation work, inspect all project conditions and all work of other trades to assure that all such conditions and work are suitable to satisfactorily receive the work of this Section and notify the Architect in writing of any which are not. Do not proceed further until corrective work has been completed or waived.

PART 2 - PRODUCTS

2.01 FANS

- A. Manufacturers: Delta Breeze, Panasonic, Greenheck, or approved equal.
- B. Certification: per AMCA for sound and capacity.
- C. Ceiling Fan
 - 1. General Description:
 - a. Base fan performance at standard conditions (density 0.075 Lb/ft³)
 - b. Ceiling mounted applications
 - c. Performance capabilities up to 110 cubic feet per minute (cfm) and static pressure to 0.80 inches of water gauge
 - d. Sound levels <0.3 sones
 - e. UL/cUL listed for above bathtub exhaust
 - f. Fans are UL/cUL listed 507 - Electric Fans
 - g. Energy Star Most Efficient
 - h. ASHRAE 62.2
 - i. California Title 24
 - j. Each fan shall bear a permanently affixed manufacture's nameplate containing the model number and individual serial number
 - 2. Wheel:
 - a. Forward curved centrifugal wheel
 - b. Constructed of polypropylene
 - 3. Motors:
 - a. Motor enclosures shall be totally enclosed (TE)
 - b. Motors are permanently lubricated bearing type to match with the fan load and furnished at the specific voltage and phase
 - c. Overload protection
 - d. EC Motor
 - 4. Housing:
 - a. Constructed of galvanized steel
 - 5. Backdraft Damper:
 - a. Prevents air from entering back into the building when fan is off
 - 6. Outlet:
 - a. Type of outlet: Round
 - b. Duct collar shall include an aluminum backdraft damper

7. Grille:
 - a. Type: Standard
 - b. Attached directly to housing with torsion springs
 - c. Constructed of high impact polystyrene.
8. Mounting Brackets:
 - a. Fully adjustable for multiple installation conditions
9. Options/Accessories:
 - a. Ceiling Radiation Damper:
 - 1) UL classified and shall be rated for up to three hours of fire resistance
 - 2) Mounted directly beneath the fan
 - 3) National Fire Protection Association (NFPA), Standard 90A, requires the opening in fire rated ceiling/floors must be protected by rated CRD's
 - b. Disconnect Switches:
 - 1) Positive electrical shut-off
 - 2) Wired from fan motor to junction box installed within motor compartment
 - c. Motion Detectors:
 - 1) Motion detector shall automatically turn on the fan at the set high speed.
 - 2) Viewing area of 180 degrees
 - 3) Time delay shutoff setting of 20 minutes.
 - d. Humidity Sensors:
 - 1) Humidity sensor shall automatically turn on the fan at the set high speed when above user-set setpoint.
 - 2) Adjustable setpoints between 50% to 90% RH.
 - e. Control/Operation
 - 1) Two speed with adjustable lower CFM setting

2.02 RANGE HOODS

- A. Manufacturers shall be GE or approved equal.
- B. Range hoods shall be ducted range hoods.
- C. CFM airflows shall match what is listed in the schedules.
- D. Range hoods shall be provided with two (2) fire suppression cannisters.

2.03 WALL AND ROOF CAPS

- A. Make / Model shall match what is shown on the plans.
- B. Provide backdraft damper and bird screen.

2.04 SHEET METAL WORK

- A. Furnish all sheet metal work and accessories specified herein.
- B. References to "Duct Manual" herein refer to the latest edition of the HVAC Duct Construction Standards as published by the Sheet Metal and Air Conditioning Contractor National Association, Inc (hereinafter referred to as SMACNA).
- C. All ducts shall be of galvanized steel construction as specified. Ducts shall be properly stiffened to prevent drumming when the fans are in operation.
- D. All galvanized duct thicknesses shall be in accordance with the latest edition of SMACNA for the service indicated.
- E. Seal all low-pressure duct joints (Class B) and medium pressure ducts (Class A) with sealant as manufactured by Minnesota Mining Company, Foster, General Electric, or approved equal. Excess sealant must be removed immediately to provide a neat appearance.
- F. All low-pressure ducts shall be fabricated for 2 inches water gauge pressure. Low pressure ducts shall include all ductwork.
 - 1. All ducts shall be constructed in accordance with Table 1 and Figure 1-5 through 1-13 of the Duct Manual.
 - 2. Duct joints shall be constructed in accordance with Fig. 1-4 of the Duct Manual.
 - 3. Duct seams shall be constructed in accordance with Fig. 1-5 of the Duct Manual.
 - 4. Duct reinforcement shall be per Table 1-18, Figures 1-9, 1-10 and 1-11 of the Duct Manual.
 - 5. Fittings and special installations shall be constructed in accordance with Figure 2-1 through 2-10 of the Duct Manual.

6. Register and grille connections shall be in accordance with Figure 2-16 of the Duct Manual.
7. Flexible connections shall be 4" wide connections, in accordance with Fig. 2-19 of the Duct Manual, constructed of Vent glass heavy glass fabric double coated with neoprene and shall be as manufactured by Vent Fabrics, Inc. Flexible connections shall meet the requirements of the National Board of Fire Underwriters. Exterior flexible connection shall be weathertight.
8. Hangers and supporting systems shall be in accordance with Figure 4-1 through 4-8 and Tables 4-1 through 4-3 of the Duct Manual.

2.05 INSULATION

- A. Furnish all insulation required for the HVAC system, including:
 1. Exhaust air ductwork
- B. Insulation shall be Owens-Corning, Knauf, Certainteed, or approved equal.
- C. Ductwork insulation: See insulation schedule on drawings for type and wall thickness.
- D. Fiberglass Insulation: Fiberglass shall meet ASTM C 335 for thermal efficiency with UV protection.
- E. Ends of insulation shall be sealed with material as recommended by the manufacturer.
- F. A complete moisture and vapor seal shall be provided wherever insulation terminates against metal hangers, anchors and other projections through insulation on cold surfaces.
- G. Fire Hazard Rating: Insulation materials, coatings and other accessories shall individually have a fire hazard rating not to exceed 25 for flame spread and 50 for fuel contributed and smoke developed. Ratings shall be determined by U.L. "Test Method for Fire Hazard Classification of Building Materials", No. 823 or NFPA No. 225 or ASTM E84.
- H. Identification: Furnish and apply piping identification to all piping, showing direction of flow approximately 30'-0" O.C. on bottom, side or top of all pipes. Furnish and apply name or classification of service adjacent to each arrow. Piping identification shall be plastic cloth pipe markers.

2.06 VIBRATION ISOLATION

- A. General
 1. All vibration isolators shall be the product of a single approved manufacturer.

2. Model numbers hereinafter specified are from Mason Industries. Other equivalent units by Consolidated Kinetics, Vibration Mountings and Controls or approved equal are acceptable.
- B. All vibration isolators for mechanical equipment hung in ceiling shall be selected in accordance with the weight distribution of the equipment to be served so as to produce a uniform deflection. Deflections shall be as hereinbefore specified.
- C. Submittals shall include all spring deflections, spring diameters, scale drawings, attachment details, and rated capacity indicating adequacy for each piece of equipment served.

2.07 FIRE STOPPING

- A. Manufacturers:
 1. 3M, Hilti, STI
- B. Description:
 1. Non-slump, ready-to-use, single-component, neutral-cure, elastomeric silicone sealant that cures upon exposure to atmospheric humidity to form a flexible firestop. Also acts as a barrier to airborne sound transmission. Used to seal construction joints, openings and through penetrations in fire-rated construction. Provides up to 3-hour fire protection. Light gray color, \pm 31% movement capability.

2.08 AUTOMATIC TEMPERATURE CONTROL

- A. Furnish and install all control components of automatic temperature controls. The automatic temperature control shall be complete in all respects including all labor, materials, equipment and services necessary and shall be installed by personnel employed by the ATC Contractor.
- B. Scope:
 1. The control system provided to consist of all transformers, transducers, relays, thermostats, dampers, damper operators, valves, valve operators, wiring and all other necessary control components, along with a complete system, interlocking and communication wiring/cabling to fill the intent of the specification and provide for a complete and operable system. Provide damper operators for equipment such as mixing dampers, where such operators are not supplied by the equipment manufacturers.
- C. Electric Wiring:

1. All electric wiring, wiring connections and all interlocking required for the installation of the temperature control system, as herein specified, to be provided by the ATC contractor, unless specifically shown on the Electrical drawings or called for in the Electrical Specifications, Division 16. Power to valves and actuators to be by the ATC contractor, except as specifically noted in the Electrical drawings and specifications.
2. All wiring and wiring methods to comply with the requirements of the Electrical Section of the specifications.
3. Provide, on magnetic starters, all necessary auxiliary contacts, with buttons and switches in required configurations.
4. All electrical devices within the panels shall be factory pre-wired to a numbered terminal strip. All wiring within the panel shall be in accordance with NEMA and UL Standards and shall meet all Local Codes. All wiring in occupied spaces shall be concealed whenever possible. Any exposed wiring shall be enclosed in painted wiremold.
5. Sequences of Operation: Provide control components for each system as required for the sequence of operation indicated on the contract drawings.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install all items specified under PART 2 - PRODUCTS, according to the applicable manufacturer's recommendations and shop drawings, the details shown on the drawings and as specified under this section. Provide all required hangers and supports.
- B. All welding done under this section shall be performed by experienced welders in a neat and workmanlike manner. All welding done on piping, pressure vessels and structural steel under this section shall be performed only by persons who are currently qualified in accordance with ANSI Code B31.1 for Pressure Piping and certified by the American Welding Society, ASME or an approved independent testing laboratory; and each such welder shall present his certificate attesting his qualifications to the Engineer's representative whenever requested to do so on the job.
- C. All pipe welding shall be oxyacetylene or electric arc. High test welding rods suitable for the material to be welded shall be used throughout. All special fittings shall be carefully laid out and joints shall be accurately matched intersections. Care shall be exercised to prevent the occurrence of protruded weld metal into the pipe. All welds shall be of sound metal free from laps, cold shots, gas pockets, oxide inclusions and similar defects.
- D. All necessary precautions shall be taken to prevent fire or damage occurring as the result of welding operations.

3.02 EQUIPMENT

- A. Equipment shall be installed complete with all required hangers and supports in accordance with the manufacturer's recommendations.
- B. Furnish and install all steel structural support members for proper hanging and support of equipment. Provide vibration isolation on all hangers.
- C. All equipment shall be installed in strict accordance with manufacturer's written installation instructions.
- D. All equipment and associated components requiring access for periodic inspection, filter changes, or maintenance shall be located over accessible ceilings; if located above inaccessible ceilings with approval of Architect and Engineer, provide access panels with appropriate fire ratings for required access at no additional cost to the project.

3.03 SHEET METAL WORK

- A. All of the sheet metal work shall be done by Contractors regularly engaged in this type of work.
- B. Neatly erect all sheet metal work as shown on plans or as may be required to carry out the intent of these plans and specifications.
- C. All necessary allowances and provisions must be made by this Contractor in the case of beams, posts, pipes, iron work or other obstructions in the construction of the building or the work of other trades whether or not the same is shown on plans.
- D. All ducts are to be rigid and are to be strongly and carefully supported with suitable braces or angles to keep them true to shape and to prevent buckling.
- E. All joints are to be made tight and all interior surfaces are to be made smooth.
- F. Protect all work under this section from injury during the progress of erection and until final acceptance by the Architect.
- G. All metal work in dead or furred down spaces is to be erected in time to occasion no delay in the work of other trades on the building.
- H. Supply collars to diffusers shall be installed inside the neck of the diffusers. Dampers on all registers and diffusers shall be installed in the open position.
- I. Joints in all ductwork throughout shall be sealed, Class-B. All ductwork shall be taped and sealed.
- J. During the progress of the work and after the completion of the same, this Contractor shall remove from the premises all dirt, debris, rubbish, waste materials, etc., cause by him in the performance of this work, together with all his tools and appliances.

3.04 MISCELLANEOUS IRON AND STEEL

- A. Provide steel supports and hangers required to support fans, ductwork, and other equipment or materials. Submit details of steel supports and method of fabrication for approval.
- B. All work shall be cut, assembled, welded and finished by skilled mechanics. Welds shall be ground smooth. Stands, brackets, and framework shall be properly sized and strongly constructed.
- C. Measurements shall be taken on the job and worked out to suit adjoining and connecting work. All work shall be by experienced metal working mechanics. Members shall be straight and true and accurately fitted. Scale, rust, and burrs shall be removed. Welded joints shall be ground smooth where exposed. Drilling, cutting and fitting shall be done as required to properly install the work and accommodate the work of other trades as directed by them.
- D. Members shall be generally welded, except that bolting may be used for field assembly where welding would be impractical. Welders shall be skilled.
- E. All shop-fabricated iron and steel work shall be cleaned and dried and given a shop coat of paint on all surfaces and in all openings and crevices.

3.05 BALANCING, ADJUSTING, OPERATING, AND INSTRUCTIONS

- A. The HVAC Contractor shall engage the services of an independent firm to perform testing, adjusting and balancing of the HVAC systems. The HVAC Contractor shall submit to the owner at least three (3) qualified firms for the owner's review and acceptance in accordance with Division I, start up and adjusting.
- B. Engage a balancing company to adjust, balance, and operate the heating, ventilating and air-conditioning system and thoroughly instruct the Owner's personnel in all phases of care and operation of the systems. The Balancing Company shall be certified by Associated Air Balance Council or by the National Environmental Balancing Bureau.
- C. Before the air systems are tested and balanced, ducts and equipment shall be thoroughly cleaned by the Contractor so that no dirt, dust, or other foreign matter will be deposited in or carried through the systems. For this purpose, cheesecloth shall be placed over each opening for entraining such particles during the cleaning operation.
- D. The Contractor as a part of this contract shall provide all materials, labor, and service of all Contractors for fulfillment of air and water balancing of all systems. The Balancing Company shall inform Contractor of all requirements ahead of time.
- E. HVAC Contractor shall provide additional sheaves, drives, belts, etc. as required for balancing of all fans within the specified fan horsepower at no extra cost to the project.

- F. All equipment shall be operated and adjusted and all air systems shall be adjusted and balanced, readings taken and recorded on an approved form submitted to the Engineer for approval, readjusted and rebalanced in accordance with the Engineer's review comments and resubmitted.
- G. Air Systems
1. Adjustments shall be made by the Balancing Company to volume dampers at air outlets to produce the least pressure drop consistent with volume requirements.
 2. After completion of balancing and adjusting, settings of dampers, shall be permanently marked by the Balancing Company so that they can be restored if disturbed at any time.
 3. Direct reading velocity meters may be used by the Balancing Company for comparative adjustment of individual outlets, but air quantities in ducts have velocity of 1,000 feet per minute or greater, shall be measured by means of pitot tubes and inclined gauge manometers. Instrument test opening enclosures as specified shall be provided as required.
 4. Adjustment of the temperature controls shall be coordinated by the person in charge of the balancing and adjusting and shall be performed coincidental therewith. In conjunction with the Automatic Temperature Control System, simulate a complete cycle of operation for each system.
 5. After completion of the testing, balancing and adjusting of the air systems, six copies of a report showing the following information shall be submitted to the Engineer for review and approval. The report shall be arranged as follows:
 - a. Location of each air inlet.
 - b. Dimensions or size of each inlet.
 - c. Type: diffuser, grille, register, supply, return exhaust, and Ak value for each.
 - d. CFM of air as indicated on drawings for each inlet.
 - e. CFM of air as measured, after each complete system has been balanced and adjusted, for each inlet.
 - f. After each complete system has been balanced and adjusted, the total CFM at fan discharge, static pressure at fan outlet, total static pressure for apparatus, fan speed, motor amperage for each phase and voltage shall be listed.
 - g. The Balancing Company shall provide all instruments and accessories required to perform the tests.
 - h. Upon completion of the systems, during the first stages of the first cooling season, the Balancing Company shall operate the systems until temperatures in all areas are uniform. The period of time shall be no less than a five-day, forty-hour period. During these times, the Balancing Company shall keep at least two men on the job continuously,

together with a man from the temperature control contractor for the purpose of testing and balancing systems.

- H. The Balancing Company shall provide all instruments and accessories required to perform the tests.

END OF SECTION

DIVISION 26
SECTION 26 00 01
ELECTRICAL
(FILED SUB-BID REQUIRED)

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, PART A and all Sections within DIVISION 1 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications

1.02 TIME, MANNER AND REQUIREMENTS FOR SUBMITTING FILED SUB-BIDS

- A. The work of this Section pertains to a publicly-bid Filed Sub-Bid and includes the following requirements:
1. Filed Sub-bids shall be submitted in accordance with provisions of the Massachusetts General Laws, Chapter 149, Section 44A to 44L inclusive, as amended. The time and place for submission of Filed Sub-Bids are set forth under the Advertisement. Procedures and requirements for submitted Filed Sub-Bids are set forth in the Instructions to Bidders.
 2. Sub-bidders must be DCAMM certified in the listed trade and shall include a current DCAMM Sub-bidder Certificate of Eligibility and a signed DCAMM Sub-Bidder's Update Statement with the bid.
 3. The Work of this Filed Sub-Bid is shown on the following listed Drawings & specifications, not just those pertaining particularly to this Filed Sub-Bid, unless specifically called out otherwise, regardless of where among the Drawings it appears:
 - a. E series dwgs; E001 thru E100 inclusive
 4. Coordination with:
 - a. All other trades inclusive.
 5. Work associate with the following specification section and shown on electrical dwgs listed above:
 - a. 26 0000 Electrical
 6. The remaining Contract Drawings are included for reference and coordination.

7. Sub-sub-bids are not required for this Section. Paragraph E of the "Form for Sub-Bid" shall be left blank or marked "N/A".
8. Each Sub-Bid filed with the Awarding Authority must be accompanied by Bid Bond, Cash, or Certified Check, or by a Treasurer's Check or Cashier's Check, issued by a responsible bank or trust company, payable to the client in the amount stipulated in the "Instructions to Bidders." A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.
9. Each Sub-Bid submitted for the work under this Section shall be on a form furnished by the Awarding Authority, as required by Section 44 F of Chapter 149 of the Massachusetts General Laws, as amended.

1.03 RELATED DOCUMENTS

- A. Examine all Project Specifications and Drawings for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- B. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- C. All Drawings and the provisions of Division 01 of the Specifications apply to this Section. In addition, other portions of the Specifications should be consulted for various coordination purposes. Also, attached panel schedules shall be included along with the plans and specifications, as part of this contract.
- D. Perform work and provide material and equipment as shown on Drawings and as specified or indicated in this Section of the Specifications. Completely coordinate work of this Section with work of other trades and provide a complete and fully functional installation. Drawings and Specifications form complimentary requirements; provide work specified and not shown, and work shown and not specified as though explicitly required by both. 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. Remove all debris caused by work.

1.04 RELATED SECTIONS

- A. Section 23 00 01 – HEATING, VENTILATING AND AIR CONDITIONING

1.05 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals necessary to provide complete electrical systems and general coordination work, as shown on the drawings and as specified herein.

- B. Furnish all labor and materials to perform demolition work as shown on the Drawings, as required for the installation of new work, and as specified hereinafter.

1.06 DESCRIPTION OF WORK

- A. Examine Drawings and other Sections of Specifications for requirements that affect work of this Section.
- B. Perform work and provide material and equipment as shown on Drawings and as specified or indicated in this Section of the Specifications. Completely coordinate work of this Section with work of other trades and provide a complete and fully functional installation. Drawings and Specifications form complimentary requirements; provide work specified and not shown, and work shown and not specified as though explicitly required by both. 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. Remove all debris caused by contractors' work.
- C. Drawings are diagrammatic and indicate general arrangement of systems and work included in Contract. It is not intended to specify or to show every offset, fitting or component; however, Contract Documents require components and materials whether or not indicated or specified as necessary to make the installation complete and operational.
- D. Perform work strictly as required by rules, regulations, standards, codes, ordinances, and laws of local, state, and federal government, and other authorities that have lawful jurisdiction.
- E. Give notices, file plans, obtain permits and licenses, pay fees and obtain necessary approvals from authorities that have jurisdiction.
- F. As work progresses and for duration of Contract, maintain complete and separate set of prints of Contract Drawings at job site at all times. Record work completed and all changes from original Contract Drawings clearly and accurately, including work installed as a modification or addition to the original design.
- G. Work shall include, but shall not be limited to, the following:
 - 1. Disconnect and make safe existing kitchen exhaust hoods and bathroom exhaust fans for removal by mechanical contractor.
 - 2. Installation of new kitchen exhaust hoods and bathroom exhaust fans.
 - 3. Branch circuit wiring for new equipment.
 - 4. Conduit and raceways.
 - 5. Wire and cable.
 - 6. Supervision and approval.
 - 7. Operating and maintenance instructions and manuals.

8. Coordination drawings and shop drawings.

1.07 DEFINITIONS

- A. The following definitions apply to the Drawings and Specifications;
 1. Furnish: The term “furnish” is used to mean “supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.”
 2. Install: The term “install” is used to describe operations at project site including actual “unloading, unpacking, rigging in place, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.”
 3. Provide: The term “provide” means to “furnish and install, complete and ready for intended use.”
 4. Installer: An “installer” is the contractor or an entity engaged by the contractor, either as an employee, subcontractor, or sub-subcontractor for a performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1.08 CONTRACT DOCUMENTS.

- A. Work to be performed under this Section is shown on the Electrical Drawings.
- B. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any item, in the drawings or specifications or both, carries with it the instruction to furnish and install the item, regardless of whether or not this instruction is explicitly stated as part of the indication or description.
- C. Items referred to in singular number in Contract Documents shall be provided in quantities necessary to complete work.
- D. Information and components shown on riser diagrams, but not shown on plans, and vice versa, shall apply or be provided as if expressly required on both.

1.09 DISCREPANCIES IN DOCUMENTS

- A. Address questions regarding drawings to Architect in writing before award of contract; otherwise, Architect’s interpretation of meaning and intent of drawings shall be final.

1.10 CODES, STANDARDS, AUTHORITIES AND PERMITS

- A. Perform work in strict accordance with the rules, regulations, standards, codes, ordinances, and laws of local, state and federal governments and other authorities having legal jurisdiction over the site.

- B. Installation of systems and equipment provided under this section shall be done in strict accordance with Massachusetts Department of Public Safety Codes, Massachusetts Department of Environmental Protection, Massachusetts State Building Code and City/Town Regulations having jurisdiction.
- C. All pressure vessels shall conform to ASME and Massachusetts codes and regulations.
- D. All work, where applicable, shall conform to NFPA codes and all material shall be U.L. approved.
- E. Underwriters' Laboratories (UL) shall list material and equipment.
- F. Give notices, file plans, obtain permits and licenses, pay fees and back charges, and obtain necessary approvals from authorities that have jurisdiction.
- G. All electrical apparatus furnished under this section shall be approved by the U.L. and shall be so labeled or listed where such is applicable. Where custom-built equipment is specified and the U.L. label or listing is not applicable to the completed product, all components used in the construction of such equipment shall be labeled or listed by U.L. where such is applicable to the component.
- H. Give notices, file plans, obtain permits and licenses, pay fees and obtain necessary approvals from authorities having jurisdiction. Deliver certificates of inspection to Architect. No work shall be covered before examination and approval by Architect, inspectors, and authorities having jurisdiction. Replace imperfect or condemned work conforming to requirements, satisfactory to Architect, and without extra cost to the Owner. If work is covered before due inspection and approval, the installing contractors shall pay costs of uncovering and reinstalling the covering, whether it meets contract requirements or not.

1.11 RECORD DRAWINGS

- A. Refer to DIVISION 01 - GENERAL REQUIREMENTS, of the Specifications for record drawings and procedures to be provided under this section.

1.12 CLEANING

- A. During the progress of the Electrical work, clean up and remove all dust, dirt and other debris caused by this work. At completion, the Contractor shall clean all equipment, conduit and wiring systems and leave all work in perfect operating condition.

1.13 RESPONSIBILITY

- A. The structure and its appurtenances, clearances and the related services, such as plumbing, heating, ventilation and electric service have been planned to be legal, adequate and suitable for the installation of equipment specified under this section.

The Owner will not assume any increase in cost caused by differing requirements peculiar to a particular make or type of equipment, and any incidental cost shall be borne by the Electrical Sub-Contractor. He shall be responsible for the proper location of his required sleeves, chases, inserts, etc., and see that they are set in the forms before the concrete is poured. He shall be responsible for his work and equipment furnished and installed by him until the completion and final acceptance of this contract, and he shall replace any work which may be damaged, lost or stolen, without additional cost to the Owner.

1.14 GUARANTEE

- A. Guarantee work in writing for one year from date of substantial completion. Repair or replace defective materials or installation at no cost to Owner. Correct damage caused in making necessary repairs and replacements under guarantee at no cost to Owner.
- B. Submit guarantee to Architect before final payment.
- C. Statement of guarantee requirements shall not be interpreted to limit Owner's rights under law and this contract.

1.15 PROTECTION OF MATERIALS, WORK, AND GROUNDS

- A. Materials, fixtures and equipment shall be properly protected and all raceway openings shall be temporarily closed so as to prevent obstruction and damage.
- B. Protect and preserve all materials, supplies and equipment of every description and all work performed. Protect all existing equipment and property of any kind from damage during the operations. Damage shall be repaired or replaced promptly by the Electrical Contractor at his expense.

1.16 DRAWINGS

- A. It is the intention of the Specifications and Drawings to call for finished work, tested and ready for operation. Any apparatus, appliance, material or work not shown on the Drawings, but mentioned in the Specifications or vice-versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, even if not particularly specified, shall be provided by the Electrical Contractor without additional expense to the Owner.
- B. The Drawings are generally diagrammatic. The locations of all items that are not definitely fixed by dimensions are approximate only. The exact locations must be determined at the project and shall have the approval of the Engineer before being installed. The Electrical Contractor shall follow Drawings, including his shop drawings, in laying out work and shall check the Drawings of other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions. Where space conditions appear inadequate, notify the Engineer before proceeding with the

installation. The Electrical Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

- C. Size of raceways and methods of running them are shown, but it is not intended to show every offset and fitting, nor every structural difficulty that may be encountered. To carry out the true intent and purpose of the Drawings, all necessary parts to make complete approved working systems ready for use, shall be furnished without extra charge. All work shall be installed in such a manner as to avoid being unsightly.
- D. All measurements shall be taken at the building by the Electrical Contractor, prior to purchasing and installing the equipment and raceways.

1.17 APPROVAL OF MANUFACTURERS AND SHOP DRAWINGS

- A. Submit five (5) copies of the following in accordance with Section 01 33 00.
 - 1. Coordination drawings
 - 2. Installation and wiring of motor starters and controls
 - 3. Motor connections and controls
 - 4. Disconnects and Safety Switches
 - 5. Fuses
 - 6. General Materials
 - 7. Wire and Cable
 - 8. Branch circuit wiring
 - 9. Wiring Devices and Plates
 - 10. Conduit and Raceways
- B. Individual information shall be submitted for each type of equipment. Where multiple products of various sizes, capacities or ratings are indicated on the same page of a submittal, the Electrical Contractor shall clearly identify which items are being submitted. Unmarked submittals will be returned without action. Additional requirements for shop drawings may be contained under individual items.

1.18 UNDERWRITERS' LABEL AND LISTING

- A. All electrical apparatus furnished under this Section shall be approved by the UL and shall be labeled or listed where such is applicable. Where custom-built equipment is specified and the UL label or listing is not applicable to the completed product, all components used in the construction of such equipment shall be labeled or listed by UL where such is applicable to the component.

1.19 CUTTING AND PATCHING

- A. All cutting and patching one (1) square foot and less in area necessary for the proper installation of work to be performed under this Section and subsections shall be performed by the Electrical Sub-Contractor. All cutting and patching associated with demolition work and greater than one (1) square foot in area for the installation of work under this section shall be by the General Contractor.
- B. All work shall be fully coordinated with all phases of construction, in order to minimize the requirements for cutting and patching.
- C. The contractor shall see that all such chases, openings, and sleeves are located accurately and are of the proper size and shape and shall consult with the Architect in reference to this work. In so doing, he shall confine the cutting to the smallest extent possible consistent with the work to be done. In no case shall piers or structural members be cut without the approval of the Architect.
- D. Carefully fit around, close up, repair, patch, and point around the work specified herein to the entire satisfaction of the Architect.
- E. Fill and patch all openings or holes left in the existing structures by the removal of existing equipment by himself, his subcontractors or other filed subcontractors.
- F. All of this work shall be carefully done by workmen competent to do such work and with the proper and smallest tools applicable.
- G. Any cost caused by defective or ill-timed work shall be the contractor's responsibility therefore.
- H. The fire resistance rating of floors, walls, and ceilings shall be maintained. UL listed firestopping shall be installed in accordance with manufacturer's written instructions. Electrical Contractor shall refer to Division 07 of the specifications for fire stopping requirements.
- I. Electrical Contractor shall refer to specification Division 01 for cutting and patching requirements.
- J. Any disturbance of existing-to-remain plaster, including but not limited to cutting, drilling, and sanding, should be performed by the hazardous materials abatement subcontractor. Locations of work should be coordinated between the general contractor, the Electrical subcontractor, and the abatement subcontractor.

1.20 ELECTRICAL

- A. All furnished electrical apparatus and controls shall conform to applicable requirements under DIVISION 26 - ELECTRICAL.

- B. The Mechanical Contractor shall furnish all magnetic starters and VFD for each and every motor furnished under other sections of the specification, except where otherwise indicated. The Electrical Contractor shall install and wire the starter and VFD's.

1.21 VERIFYING EXISTING CONDITIONS

- A. Each bidder shall make note of the existing conditions affecting hauling, rigging transportation, installation, etc., in connection for his work and shall make all provisions for transportation such of all materials and equipment.
- B. Where field conditions require, the Electrical Contractor shall arrange for equipment to be shipped to the job, dismantled and assembled in place.

1.22 PAINTING

- A. All finish field painting shall be provided by the Mechanical Contractor.

1.23 REFERENCE STANDARDS

- A. The latest published issue of the standards, recommendations, or requirements of the following listed societies, associations, or institutes in effect at the date of Contract are part of this Specification. These shall be considered as minimum requirements; specific requirements of this specification and/or associated drawings shall have precedence. In case of conflict between published requirements, the Engineer and/or Owner's representative shall determine which is to be followed.
- B. Electrical equipment, installation and workmanship shall conform to the latest editions of the applicable codes and standards of the following organizations.
 - 1. Institute of Electrical and Electronic Engineers (IEEE)
 - 2. American National Standards Institute (ANSI)
 - 3. Massachusetts and National Electrical Code (MEC/NEC)
 - 4. Underwriters' Laboratories (UL)
 - 5. National Bureau of Standards (NBS)
 - a. H33-Safety Rules-Electrical Utilization Equipment.
 - b. H51-Safety Rules-Installation and Maintenance of Electric Supply and Communication Lines.
 - 6. National Electrical Manufacturers Association (NEMA)
 - 7. American Society for Testing and Materials (ASTM)
 - 8. Insulated Power Cable Engineers Association (IPCEA)
 - 9. Occupational Safety and Health Act (OSHA)

1.24 COOPERATION AND COORDINATION WITH OTHER TRADES

- A. The work shall be so performed that the progress of the entire building construction, including all other trades, shall not be delayed or interfered with. Materials and apparatus shall be installed as fast as conditions of the building will permit and must be installed promptly when and as desired.
- B. Confer with all other trades relative to location of all apparatus and equipment to be installed and select locations so as not to conflict with work of other Sections. Any conflicts shall be referred immediately to the Engineer for decision to prevent delay in installation of work. All work and materials placed in violation of this clause shall be readjusted to the Engineer's satisfaction, at no expense to the Owner.
- C. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section will interfere with work of other sections, assist in working out space conditions to make satisfactory adjustment. If so directed by the Engineer, prepare and submit for approval 1/8" scale or larger working drawings and sections, clearly showing how this work is to be installed in relation to the work of other sections. If the work of this section is installed before coordinating with other trades or so as to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.

1.25 WORKING CONDITIONS AND SAFETY

- A. Whereas the building may be occupied during the construction period, it is of utmost importance for occupant's safety and that the building functions be maintained. The Electrical Contractor shall not disrupt the normal operations of the building and shall be required to cease work during occupied hours if, in the opinion of the Owner's Representative or the Engineer, the work creates a disruption. The Electrical Contractor will then be required to perform such disruptive work during unoccupied business hours. No work shall commence until the site has been properly prepared.

1.26 MATERIAL AND WORKMANSHIP

- A. All material provided shall be new and approved for the intended service.
- B. Defective equipment or equipment damaged in the course of installation or testing shall be replaced by the Electrical Contractor at no cost to the Owner.
- C. All work shall be executed in the best and most thorough manner known to each trade. Employ careful, competent, experienced journeymen, and insofar as possible, keep the same foreman and workmen from the beginning to the completion of the job.

1.27 PRODUCT HANDLING AND STORAGE

- A. Arrange for, and provide, a storage space or area at the job site for all electrical equipment and materials to be installed or reinstalled in the project. The exact location

of portable storage vans at the job site or protected storage areas within the building construction, conditions permitting, shall be arranged with the Engineer.

- B. All electrical equipment and materials, upon receipt at the job site shall be thoroughly inspected as to their type and condition and the quantity received.
- C. After inspection, all electrical equipment and materials shall be moved to the storage area designated.

1.28 OUTAGES

- A. The Electrical Contractor shall coordinate all power outages with Owner's Representative.

1.29 HOISTING, SCAFFOLDING, STAGING AND PLANKING

- A. Provide, set up and maintain all required derricks, hoisting, machinery, scaffolding, staging and planting for the work of this section.
- B. Scaffolding is to have solid backs and floors to prevent dropping materials to the floors or ground.

1.30 FINAL ACCEPTANCE

- A. Final acceptance of Ownership of the Electrical system installed within this scope of work shall be contingent on passing a satisfactory system pressure test, mechanical performance test and cooling and heating function test to determine that the system will perform according to the contract requirements. The above tests shall be witnessed by the Architect and the Owner at his option and acceptance will only be granted in writing by the Owner after receipt of certification from the Architect that the design criteria have been met. Commissioning shall be provided for fire alarm systems, lighting control systems, electrical systems including all panel boards and distribution prior to final acceptance.
- B. The work shall be so performed that the progress of the entire building construction, including all other trades, shall not be delayed or interfered with. Materials and apparatus shall be installed as fast as conditions permit and must be installed promptly when and as desired.
- C. Confer with all other trades relative to location of all apparatus and equipment to be installed and select locations so as not to conflict with work of other Sections. Any conflicts shall be referred immediately to the Architect for decision to prevent delay in installation of work. All work and materials placed in violation of this clause shall be readjusted to the Architect's satisfaction, at no expense to the Owner.

- D. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section will interfere with work of other sections, assist in working out space conditions to make satisfactory adjustment. If so directed, prepare and submit for approval 3/8" scale or larger working drawings and sections, clearly showing how this work is to be installed in relation to the work of other sections. If the work of this section is installed before coordinating with other trades or so as to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.

PART 2 - MATERIALS

2.01 RACEWAYS AND FITTINGS

- A. Rigid metallic conduit shall be zinc-coated steel that conforms to industry standards, by Allied Tube and Conduit, Republic Steel, Wheatland Tube or approved equal.
- B. Electrical metallic tubing (EMT) shall be zinc-coated steel that conforms to industry standards, by Republic Steel, Allied Tube and Conduit, Triangle/PWC or approved equal.
- C. Wireways shall be sheet steel with hinged spring-latched covers, galvanized or painted to protect against corrosion. Provide necessary bends, couplings, connectors and other appurtenances. Interior parts shall be smooth and free of sharp edges and burrs. Wireways shall be by Square D or approved equal.
- D. Non-metallic conduit shall be Schedule 40 100% virgin polyvinyl chloride (PVC), 90 °C UL-rated, by Carlon or approved equal. EC shall provide schedule 80 as indicated on drawings and for all exterior direct buried conduit. Direct buried conduit shall be packed in a minimum of 3" of sand. Utility conduits shall be concrete encased and shall meet all requirements of the Utility and Utility Handbook for 2008.
1. Conduit shall meet NEMA requirements and shall be UL-listed as required by Article 347 of NEC.
 2. Conduit, fittings and solvent cement shall be by single approved manufacturer.
 3. Material shall have minimum tensile strength of 7,000 psi at 73.4 °F, minimum flexural strength of 11,000 psi, and minimum compressive strength of 8,600 psi.
- E. Installed in accordance with NEC Article 330. Flexible metal conduit shall be type MC aluminum armor cable with current carrying conductors as required. MC cable shall also have full size separate copper grounding conductor. Flexible conduit shall be used above hung ceiling areas, in wall partitions and in other concealed areas not subject to moisture or physical abuse. Flexible conduit used for lighting fixture final connections shall be limited to a maximum length of six feet.

Flexible conduit shall not be used as follows:

1. In attic areas where exposed to physical damage;

2. In basement areas, where exposed to physical damage;
3. Surface-mounted in electrical closets;
4. In all other areas where conduit is surface-mounted or exposed.

Flexible conduit shall be manufactured by American Flexible Conduit, Eastern Wiring Conduit, International Metal Hose Company, or equal.

- F. Liquid-tight flexible metal conduit shall be galvanized steel with separate copper grounding conductor. The outer jacket shall be an extruded, moisture and oil proof, covering of polyvinyl chloride. Liquid-tight flexible metal conduit shall be used for the final connections to all roof top equipment and in all areas where motors and other equipment are subject to an oil or moisture type environment. Liquid-tight flexible metal conduit shall be manufactured by American Flexible Conduit, Eastern Wiring Conduit, International Metal Hose Company, or equal.
- G. All floor, masonry walls and structural ceiling penetrations shall be sleeved.
- H. Provide fire/moisture seal for wall, floor or ceiling penetrations.
- I. Conduit expansion fittings shall be threaded hot-dipped galvanized malleable iron with internal bonding assembly by O.Z./Gedney or approved equal.
- J. Conduit fire seat fittings shall have heat-activated intumescent material for fire rating equal to or higher than that of floor or wall by O.Z./Gedney or approved equal.
- K. Provide water-tight gland sealing assemblies with pressure bushings as required for penetrations.
- L. Provide threaded malleable iron or steel connectors and couplings with insulated throats; manufactured elbows; locknuts; and plastic or bakelite bushings at terminations, as necessary. Couplings and connectors shall be gland and ring compression or stainless steel multiple point locking or steel concrete-tight set screw. Compression couplings and connectors shall form positive ground. Set-screw connectors and couplings shall have wall thickness equal to conduit, case-hardened, hex-head screws and separate ground wire. Bushings for rigid steel conduit and connectors for EMT shall have insulating inserts that meet requirements of UL 514 flame test.

2.02 OUTLET BOXES

- A. Outlet boxes on concealed work shall be at least 4" square or octagonal, galvanized pressed steel with plaster rings as required. Outlet boxes for exposed conduit work shall be cast aluminum alloy with cast aluminum alloy covers.
- B. Where installed in plaster, boxes shall be fitted with galvanized steel plaster covers of required depth to finish flush with finished wall or ceiling.

- C. Switch boxes, receptacle boxes and other outlet boxes shall be standard 4" square with plaster rings or gang covers as required.
- D. Outlet boxes shall be by Steel City Electric Company, Appleton Electric Company and National Electric Products Company or approved equal.
- E. Outlet boxes for various systems and components shall be as required by manufacturer.
- F. Waterproof boxes shall be Condulet Cast Boxes with water-proof devices and covers. Provide hot-dipped galvanized corrosion-resistant epoxy enamel finish or PVC-coated products, where noted on Drawings.
- G. Provide screw-joint outlet boxes, with gasketed weatherproof covers in exterior locations, where exposed to moisture, at kitchen and cafeteria equipment with or next to water or steam connections, and where indicated as weatherproof on Drawings.
- H. Provide only enough conduit openings to accommodate conduits at individual location. Each box shall be large enough to accommodate number and sizes of conduits, wires and splices to meet NEC requirements, but shall be at least size shown or specified. Necessary volume shall be obtained by using boxes of proper dimensions. Box depths greater than 2-1/8" shall not be used to obtain necessary volume, but may be used with Architect's approval to facilitate installation. Standard concrete boxes may be 6" deep where necessary to permit entrance of conduits into sides of boxes without interference with reinforcing bars. Octagonal hung ceiling boxes with suspension bars may be 3-1/2" deep. Rectangular boxes for inter-connection of branch circuit conduits may be 2-1/2" deep.

2.03 WIRING DEVICES

- A. Provide wiring devices by single manufacturer. Arrow-Hart (Division of Crouse-Hinds), Leviton, Bryant, Hubbell or approved equal. Catalog designations of Arrow-Hart are specified to establish standards of quality for materials and performance. Devices shall be white with matching white cover plates.
- B. Toggle Switches:
 - 1. Single-pole shall be No. 1991, 20A, 120-277 V AC.
 - 2. Double-pole shall be No. 1992, 20A., 120-277 V AC.
 - 3. Three-way shall be No. 1993, 20A., 120-277 V AC.
 - 4. Four-way shall be No. 1994, 20A., 120-277 V AC.
- C. Receptacles - 20A Tamper Resistant Commercial Grade
 - 1. Duplex receptacles shall be grounding type, rated 20 amperes, 125 volts. Receptacles shall be back and side wired with screw type terminals. Screw

terminals shall be utilized. Receptacles shall have a mechanical shutter system for reliable tamper resistant design.

D. Receptacles - 20A Commercial Grade

1. Duplex receptacles shall be grounding type, rated 20 amperes, 125 volts. Receptacles shall be back and side wired with screw type terminals or pressure type, screwless terminals having suitable conductor release arrangement. Receptacles shall be standard grade, Pass & Seymour Model No. **5352**.

E. Special receptacles for single equipment, where required, shall have additional grounding leg and shall be of capacity and configuration for the equipment to be connected.

F. Receptacles - 20A GFI - Commercial Grade

1. Provide GFI duplex receptacles as indicated on the Drawings. Receptacles shall each have GFI tripping (no feed-through is permitted). Receptacles shall be rated 20 amp, 125 volt similar, or equal to Pass and Seymour Model No. **2091-SI**.

G. Weatherproof Receptacles – Damp Locations

1. Receptacles indicated to be weatherproof shall have an enclosure that is weatherproof when the receptacle is covered (attachment lug not inserted and receptacle covers closed). Damp proof cover shall be similar or equal to Hubbell Model HBL5205WO.

H. Weatherproof Receptacles – Wet Locations

1. Receptacles indicated to be weatherproof shall conform to NEC Article 406.8(B)(i). Receptacles shall have an enclosure that is weatherproof whether or not the attachment plug cap is inserted. Provide receptacle with cover equal to Pass & Seymour Cat. No. WIUC10-G (for grey) or WIUC10-C (for clear)

2.04 WIRING DEVICE PLATES

- A. Coordinate all device plate covers with the architect. Plastic device plates by Arrow-Hart, Bryant, Hubbell or approved equal. Device plates shall be by the device manufacturer and shall be one continuous piece.
- B. Nameplate designations for device plates shall be engraved directly on plates and filled in.
- C. Telephone outlet plates shall have brushed hole or split plate.

- D. Device plates shall be manufacturer of wiring devices.
- E. Outlets shall be flush to surface.

2.05 DEVICE, PULL AND JUNCTION BOXES

- A. Provide code gauge galvanized steel junction and pull boxes for conduit 1-1/4" trade size and larger, where indicated and as necessary to facilitate installation, of required dimensions, with accessible, removable screw-on covers. Provide junction and pull boxes in special sizes and shapes determined in field where necessary.
- B. Junction box covers shall be accessible. Do not install junction boxes above suspended ceilings except where ceiling is removable or where access panel is provided. EC shall refer to Specification Section 08 3050 for access panel requirements.
- C. Sheet metal pull boxes shall be supported adequately to maintain shape. Larger boxes shall have structural steel bracing welded into rigid assembly formed adequately to maintain alignment in shipment and installation. Secure covers with corrosion-resistant screws or bolts.
 - 1. Pull boxes exposed to rain or in wet locations shall be weatherproof.
 - 2. Pull boxes used with aluminum conduit shall be metal compatible with aluminum.
 - 3. Provide clamps, grids and other appurtenances to secure cables. No cable shall be unsupported for more than 30".
 - 4. No pull box shall be within 2 feet of another.
 - 5. Provided sealed, cast-alloy, hazardous-location boxes with sealing fittings in garages and other areas in which flammable gases or vapors may be present to prevent transmission of gases or vapors through conduits.
 - 6. Pull boxes connected to concealed conduits shall be mounted with covers flush with finished wall or ceiling. No aluminum pull box shall be embedded in concrete.
- D. Provide cable troughs of special shapes, design and construction required to install, support and enclose feeder cable throughout indicated routing. Troughs shall be as specified above for junction and pull boxes, with reinforcing, insulating supports and clamping for cable installation. Cables shall be continuous throughout troughs, and shall be racked in distributed phase groupings arranged with phase cables surrounding neutral conductors.

2.06 WIRE AND CABLE

- A. Provide single-conductor, annealed copper wire and cable with insulation rated 600 V, of sizes specified and scheduled on Drawings, by General Electric, Rome, Okonite or approved equal, for secondary service, feeders, branch and system wiring. Wire

insulated for 300 V may be used where voltage is less than 100 V, if isolated from higher voltages. Wire sizes shown and specified are American Wire Gauge for copper.

- B. SER cable constructed with aluminum alloy, compacted stranded conductors. The conductors are covered with a sunlight resistant Type XHHW-2 or Type THHN/THWN-2 insulation. A reinforcement tape is wrapped around the conductors for added strength and conformity. A gray sunlight-resistant polyvinyl chloride (PVC) outer jacket covers the entire assembly. SER style with two, three or four phase conductors and a bare neutral. SER shall only be used in accordance with applicable code requirements for building construction type and number of floors.
- C. Non-metallic conduit, type NMC/Romex shall only be used within individual apartments only and in accordance with code requirements for building construction type and number of floors. Minimum size shall be 12/2 with ground. All wiring shall be rated for 600 volt.
- D. Wire #8 and larger shall be stranded; #10 and smaller shall be solid. Wire and cable shall have THWN-THHN or XHHW insulation.
- E. Provide MC plenum rated or conduit and wire in any installation of the building that are classified as a plenum space. Examples include unit mechanical closets with vertical fan coil units.
- F. Motor control circuits and signal wiring may be #14 if NEC requirements are met. Branch circuits longer than 75' for 120 V from panel to last outlet.
- G. Wiring within light fixtures and other high-temperature equipment shall have 150 °C insulation as required by NEC.
- H. Splices and Terminations
 1. Make splices in branch circuit wiring with UL-listed, solderless connectors rated 600 V, of sizes and types required by manufacturer's recommendations with temperature ratings equal to those of wires. Splice connectors shall be screw-on. Insulate splices with integral covers or with plastic or rubber friction tape to preserve characteristics of wire and cable insulation.
 2. Provide standard bolt-on lugs with hex screws to attach copper wire and cable to panelboards, switchboards, disconnect switches and electrical equipment.
 3. Make terminations and splices for conductors #6 and larger with corrosion-resistant, high-conductivity pressure indent, hex screw or bolt-clamp connectors, with or without tongues, designed specifically for intended service. Connectors for cables 250 MCM and larger shall have two clamping elements or compression indents. Terminals for bus connections shall have two bolt holes.
 4. Ampacity of splices and connectors shall be equal to those of associated wires and cables.

- I. Arc-proofing
 - 1. Provide flexible, flame-retardant, organic-composition-coated elastomer arc-proofing tape on power cable in manholes and handholes, suitable to withstand 200 A arc for 30 seconds. Tape shall be self-extinguishing and shall not support combustion.
 - 2. Apply tape in single, half-lapped layer as required by manufacturer's recommendations. Secure with strips of red plastic film tape on 208Y/120V conductors.
- J. Provide three-ply marlin twine lacing or self-extinguishing nylon straps with -65 °F to 350 °F range for bundling conductors.

2.07 WIRE PULLING EQUIPMENT

- A. Provide polyethylene ropes for pulling wire.

2.08 SAFETY DISCONNECT SWITCHES

- A. Provide quick-make/quick-break safety switches: Type HD, heavy duty, Class 3, Design 3, unless specified otherwise. Provide NEMA 1 or NEMA 12 enclosure for dry applications and NEMA 3R for wet. Switches shall be rated 240 V minimum as required for voltage of associated circuit and shall be rated in horsepower. Fuses shall interrupt locked rotor current of associated motor or ten times full rates load current, whichever is greater.
- B. Mount switch parts on insulating bases to facilitate replacement from front of switch. Current-carrying parts shall be high-conductivity copper. Contacts shall be silver-tungsten or plated. Provide positive pressure fuse clips and switch operating mechanism suitable for continuous use at rated capacity without auxiliary springs in current path.
- C. Switches shall withstand available fault current or let-through current before operating, without damage or rating change.

2.09 FUSES

- A. Provide current-limiting, high-interrupting-capacity fuses for equipment provided under this and other Sections. Except as specified otherwise, provide 10% spares at least three of each size, in cabinet in main electric room. Cabinet trim shall match that of panelboard trim. Coordinate with equipment manufacturers and with work of other Sections.
- B. Fuses larger than 600 A shall be Class L time delay Bussman KRP-C or approved equal. Fuses 600 A and smaller that serve motors, fusible circuit breaker panelboards,

transformers and motor control centers shall be dual-element current limiting Class RFI or approved equal.

- C. Submit specific fuse locations, types, manufacturers and ratings. Test data will be waived if fuses are products of single manufacturer and selectivity is substantiated by published catalog data. Provide data for short circuit and protection coordination study as directed.
- D. Switch sizes and fuse ratings shown on Drawings and specified represent general approximate values for each motor hp delineated. Coordinate fuse values with motor switch sizes. Obtain recommended fuse rating data from fuse manufacturer. In case of discrepancy between Contract Documents and manufacturer's recommendations, manufacturer's recommendations shall govern work. Revise switch sizes to accommodate recommended fuse values and revise assembled equipment as necessary. Furnish necessary change information to equipment manufacturers. Submit changes in switch sizes to Architect for approval. Certify that motor circuits have adequate short circuit protection with fuses provided.

2.10 GROUNDING

- A. Cables shall be of solid or stranded copper size as specified on the drawings. Cables shall be bare when installed in soil or in open air, and shall be insulated with 600-volt green jackets in all runs installed in conduit.
- B. The grounding conductor bonding jumper shall be attached to the circuits, conduits, cabinets, equipment and the like, which are to be grounded by means of suitable lugs, pressure connectors and clamps.
- C. All feeder and three phase motor circuits shall be provided with an appropriately sized grounding conductor. Sizes shall be based on NEC Table 250-95. Grounding conductors shall also be provided wherever the raceway is not a suitable grounding conductor.

2.11 IDENTIFICATION

- A. Wire and Cable Identification
 - 1. Conductor labels shall be white, adhesive self-laminating type. All text shall be typed. String tags shall not be accepted. Temporary tagging during construction shall be allowed, but all permanent adhesive tags shall be in place prior to requesting final acceptance.

PART 3 - EXECUTION

3.01 MATERIALS AND WORKMANSHIP

- A. Work shall be executed in workmanlike manner and shall present neat, rectilinear and mechanical appearance when completed. Maintain maximum headroom at all times. Do not run conduits or wiring exposed unless shown exposed on drawings. Material and equipment shall be new and installed according to manufacturer's recommended best practice so that completed installation shall operate safely and efficiently.

3.02 CONTINUITY OF SERVICES

- A. Do not interrupt existing services without Owner's and Architect's approvals.

3.03 SPECIAL RESPONSIBILITIES

- A. Coordinate work of this Section with work of other Sections.
 - 1. Provide information about items furnished under this Section to be installed under other Sections, as necessary.
 - 2. Obtain detailed information from manufacturers of equipment provided under this Section as to proper methods of installation.
 - 3. Obtain final roughing dimensions and other information as needed for complete installation of items furnished under other Sections or by Owner.
 - 4. Keep fully informed of shape, size and position of openings required for material and equipment provided under this and other Sections. Ensure that openings required for work of this Section are coordinated with work of other Sections. Provide cutting and patching as necessary.

3.04 SPECIAL COORDINATION INSTRUCTIONS

- A. Coordination with work of other trades is required. The following special instructions shall also be carefully noted:
 - 1. Locations and mounting height of all wall outlets shall be verified with the Engineer prior to roughing-in conduits. Refer to details and wall elevations on the architectural Drawings; mounting heights indicated on these architectural Drawings and/or specific dimensional information given to this Contractor by the Engineer shall take precedence over such information indicated on the electrical Drawings.
 - 2. All feeder, branch circuit or auxiliary system wiring passing through pull boxes and/or being made up in panelboards shall be properly grouped, bound, and tied together in a neat and orderly manner, in keeping with the highest standards of the trade, with plastic cable ties.
 - 3. All duplex convenience and power receptacles shall be mounted vertically with the grounding post to the bottom as the outlet is viewed from the front.
 - 4. All miscellaneous hardware and support accessories, including support rods, nuts, bolts, screws, and other such items, shall be of a galvanized or cadmium plated finish, or of other approved rust-inhibiting coatings. Care should be taken

that fixtures shall not be installed on both sides of existing or new building expansion joints.

5. The Electrical Contractor shall provide all materials, equipment, and workmanship to provide for adequate protection of all electrical equipment during the course of construction of the project.
6. The Electrical Contractor shall furnish and install approved insulation at terminal connection points for all electrical conducting materials, such as transformer terminals, terminal studs, and at any other special locations as directed by the Engineer.
7. Prior to installation of conduit and wire, the Electrical Contractor shall coordinate wiring requirements with actual equipment supplied.
8. The electrical Drawings indicate wire, conduit, and overcurrent protective devices to be installed for certain HVAC units. These sizes are based on certain manufacturers requirements. Should the General Contractor allow the Mechanical Contractor to substitute HVAC equipment different than specified, then the General Contractor shall provide the required revised electrical wiring, conduit, and overcurrent protective devices in accordance with the manufacturer's recommendations at no additional charge to the owner.

3.05 NAMEPLATES

- A. Provide nameplates in or on panelboards, junction boxes and cabinets, and for special purpose switches, motor disconnect switches, remote control stations, starters or other controls furnished or installed under this Section. Nameplates shall designate equipment controlled and function.
- B. Nameplates shall be laminated black bakelite with 1/4" high white recessed letters. Nameplates shall be securely attached to the equipment with galvanized screws. Adhesives or cements shall not be used.

3.06 GROUNDING

- A. A complete grounding system shall be furnished and installed in full compliance with the latest edition of the NEC.
- B. Ground all systems and equipment in accordance with the best industry practice. Size all conductors per the latest addition of the NEC.
- C. Conductors utilized for grounding and bonding shall have type "THHN" or better insulation, color-coded green.
- D. For each feeder or run of appliance branch circuitry, include equipment and raceway grounding conductors run within the raceways. The indicated quantities of conductors do not include the ground wires.

- E. Provide supplementary ground bonding where metallic conduits terminate at metal clad equipment (or at the metal pull box of equipment) for which a ground bus is specified. Accomplish this by equipping the conduits with bushings of the grounding type connected individually by means of jumpers to the ground bus.

The grounding stud of each three-phase dry type transformer shall be connected separately to the cold water pipe. Connection shall be by means of an insulated conductor, run in steel conduit size in accordance with the following:

Transformer kVA	Grounding Conductor & Conduit Size	
0 – 45	1 #6	¾" c
46 – 75	1 #2	¾" c
76 – 150	1 #3/0	1" c
151 and larger	1 #250 mcm	1¼" c

- F. Provide equipment grounding system where shown on Drawings. Grounds may be daisy-chained but shall be #3/0 in size. Equipment grounding system shall be designed so metallic structures, enclosures, raceways, junction boxes, outlet boxes, cabinets, machine frames, portable equipment and other conductive items in close proximity with electrical circuits operate continuously at ground potential and provide low impedance path for possible ground fault currents.
- G. System shall meet NEC requirements, modified as shown on Drawings and as specified.
- H. Provide separate green insulated equipment grounding conductor for each single or three-phase feeder and each branch circuit. Install grounding conductor in common conduit with related phase or neutral conductors, or both. Parallel feeders installed in more than one raceway shall have individual full size green insulated equipment ground conductors.
- I. Determine numbers and sizes of screw terminals for equipment grounding bars in panelboards and other electrical equipment. Provide screw terminals for active circuits, spares and spaces.
- J. Provide green insulated grounding conductor in same raceway with associated phase conductors, as follows:
1. From green ground terminals of receptacles to green 10-32 washer-in-head outlet box machine screw. (Receptacles with special cast boxes and factory-designed and approved ground path do not require separate ground jumper.)
 2. From green 10-32 washer-in-head machine screw in ceiling outlet box or junction box through flexible metallic conduit to ground terminal in fixture.

3. From green 10-32 washer-in-head machine screw in ceiling outlet box or junction box through flexible metallic conduit to green 10-32 washer-in-head machine screw in switch outlet box in movable partitions.
4. From green 10-32 washer-in-head machine screw in junction box or disconnect switch through flexible metallic conduit to ground terminal in connection box mounted on single phase fractional horsepower motor.

3.07 NEUTRAL WIRING

- A. For 120-volt branch circuit wiring to receptacles, common neutrals shall not be permitted.
- B. Individual neutral conductors shall be installed within the raceways and be run with the branch circuit.
- C. Conductors utilized for neutral wiring shall have type "TW" or better insulation, color coded white.

3.08 WIRING METHODS

- A. Install wire and cable in approved raceways as specified and as approved by authorities that have jurisdiction. Surface metal raceways shall not be used unless explicitly specified and shown on Drawings. Do not use surface raceways on floor. Do not use armored cable except as approved by local code for lighting and receptacle circuits in suspended ceilings and stud-wall partitions. Homeruns for lighting circuits shall be 3-phase, 4-wire run in conduit.
- B. Wire from point of service connection to receptacles, lighting fixtures, devices, equipment, outlets for future extension, and other electrical apparatus as shown on Drawings. Provide slack wire for connections. Tape ends of wires and provide blank covers for outlet boxes designated for future use.
- C. Conductors #10 and smaller in branch circuit panelboards, signal cabinets, signal control boards, switchboards and motor control centers shall be bundled. Conductors larger than #10 in switchboards, motor control centers and pull boxes shall be cabled in individual circuits.
- D. Two or more conduits installed instead of single conduit shall contain duplicate conductors, including neutrals and ground conductors where required; total capacity of duplicate conductors shall be at least equal to capacity of conductors replaced.
- E. Follow homerun circuit numbers shown on Drawings to connect circuits to panelboards. Where homerun circuit numbers are not shown on Drawings, divide similar types of connected loads among phase buses so that currents are approximately equal in normal usage. Connect each branch circuit homerun with two or more circuits and common neutral to circuit breaker or switch in three-wire or four-wire branch circuit panelboard

so that no two circuits are fed from same bus. Where panelboard cabinets are recessed, provide conduits with sufficient capacity for future conductors for spare branch circuit protective devices and spaces in panelboard; stub up concealed to junction box. Provide extensions above ceiling.

- F. Electrical metallic tubing may be used generally, if approved by local codes, for lighting fixture and receptacle circuits, telephone, inter-communications, signal and instrumentation circuits, and for control circuits. EMT may be used generally, if approved by authorities, in masonry walls, above hung ceilings, in equipment rooms, in mechanical and electrical chases and closets, in exposed locations along ceilings or walls above normal traffic level and where not subject to accidental damage or abuse. Do not run EMT exposed below 8 feet above finished floor. Conduit below 8'-0" AFF exposed shall be rigid steel this shall include the basement area except the new main electric room, the life safety closet and the MDF where EMT may be utilized below 8'-0".
- G. Install connectors and couplings as recommended by manufacturers. Compression fittings shall not be used with rigid steel, intermediate metallic or aluminum conduit. Set screw fittings shall not be used with rigid aluminum conduit and shall not be used for other applications, unless specified and approved by Architect. If set-screw connectors are used, tighten to imbed screws in conduit.
- H. Conduit in concrete shall be rigid steel. EMT shall not be installed underground, in slabs on grade, in wet locations, in hazardous areas, or for circuits operating at more than 600 V. Buried metallic conduit shall be rigid steel. Run conduit in slabs above bottom steel reinforcing, below top reinforcing and inside beam stirrup, wall reinforcements and column ties.
- I. Rigid non-metallic conduit as specified in Part 2 of this Section may be used, if approved by local authorities, for installation in concrete slabs when installed as required by NEC and manufacturer's requirements. Penetrations from concrete slabs shall be made with rigid steel conduit and rigid steel conduit fittings only.
- J. Maximum outside diameters of raceways in conduit shall be 1/3 slab thickness. No more than two 3/4" raceways shall cross in floor slab at a single point. Submit raceway crossing locations for approval before pouring slabs and relocate at no expense to Owner as directed by Architect. Lateral spacing of parallel raceways shall be at least 6" on centers. Do not run conduit in slab less than 3" thick without express approval and direction of Architect.
- K. Raceways with outside diameters larger than 1/3 slab thickness shall be run concealed in hung ceilings in finished areas, exposed in unfinished Mechanical/Electrical and storage areas, below slabs on grade.

- L. Penetrate waterproof walls of structural slabs and foundation walls only where approved by Architect. Submit proposed penetration points, size openings and penetration methods to Architect for approval.
- M. Provide flexible conduits for connections to electrical equipment and to equipment furnished under Divisions 14 and 22 that are subject to movement, vibration or misalignment; where available space dictates; and where noise transmission must be eliminated or reduced. Flexible conduit shall be liquid-tight under following conditions:
 - 1. Exterior locations
 - 2. Moisture or humidity-laden atmospheres (This shall include the basement area)
 - 3. Corrosive atmospheres
 - 4. Where wash-down operations are possible
 - 5. Where seepage or dripping of oil, grease or water is possible
- N. Run concealed conduit and EMT in as direct lines as possible with minimum number of bends of longest possible radius. Run exposed conduit and EMT parallel to or at right angles to building lines. Ends shall be free from dents or flattening.
- O. Conduit and EMT runs shall be mechanically and electrically continuous from service entrance to outlets. Conduit shall enter and be secured to cabinet, junction box, pull box or outlet box with locknut outside and bushing inside, or with liquid-tight, threaded, self-locking, cold-weld wedge adapter. Provide additional locknut for rigid conduit and wrench-tighten locknut for EMT or flexible conduit where circuit voltage exceeds 250 V. Locknuts and bushings or self-locking adapters will not be required where conduits are screwed into tapped connections. Vertical conduit runs that terminate in bottoms of wall boxes or cabinets shall be protected from entrance of foreign material before installation of conductors.
- P. Size rigid steel conduit, EMT and flexible metallic conduit as required by NEC except as specified or shown on Drawings otherwise. Unless shown otherwise on Drawings, telephone conduits shall be at least 1".
- Q. Check raceway sizes to determine that green equipment ground conductor fits in same raceway with phase and neutral conductors to meet NEC percentage of fill requirements. Increase duct, conduit, tubing and raceway sizes shown or specified as required to accommodate conductors.
- R. Unless specified or shown on Drawings otherwise, install conduit and EMT concealed. Unless specified or shown otherwise, conduit and EMT may be run exposed on unfinished walls and unfurred basement ceilings and in unfinished penthouses, attics and roof spaces. Provide stand-off clips for conduits on exterior masonry walls.
- S. Install conduit systems complete before drawing in conductors. Blow through and swab after plaster is finished and dry, and before conductors are installed.

- T. Expansion/Deflection Fittings: Conduit buried or secured rigidly on opposite sides of building expansion joints and long runs of exposed conduit subject to stress shall have expansion fittings. Fittings shall safely deflect and expand to twice distance of structural movement.
1. Provide separate external copper bonding jumper secured with grounding straps on each end of fitting.
 2. Conduits buried in concrete shall cross building expansion joints at right angles; provide expansion fittings as required by manufacturer's instructions. Provide insulated bushings at ends of conduits.
- U. Sealing Fittings: Threaded sealing fittings for rigid steel conduits shall be zinc- or cadmium-coated, cast or malleable iron; sealing fittings for aluminum conduit shall be threaded cast aluminum. Fittings that prevent passage of water vapor shall be continuous drain.
1. Install and seal fittings as required by manufacturer's recommendations. In concealed work, install fittings in flush steel box with blank cover plate.
 2. Install sealing fittings at following points, and elsewhere as shown:
 - a. Where conduits enter or leave hazardous areas equipped with explosion-proof lighting fixtures, switches, receptacles and other electrical devices.
 - b. Where conduits pass from warm to cold locations.
 - c. Where required by NEC.
 3. Secure conduit system as required by NEC.
- V. Attach pull ropes to conductors with basket-weave grips on pulling eyes. Pull cables that share conduit at same time.
- W. Do not lay cable or conduit on or support from suspended ceiling or piping and ductwork.
- X. Provide inserts, hangers, anchors and steel supports as necessary.

3.09 COLOR CODING

- A. Provide color coding for secondary service, feeders, and branch circuits as follows:

<u>PHASE</u>	<u>COLOR</u>
120/208V, 3-phase, 4-wire, wye:	
A	Black
B	Red
C	Blue

<u>PHASE</u>	<u>COLOR</u>
Neutral	White
Equipment Ground	Green
120/240V, 1-phase, 3-wire, wye:	
A	Black w/stripe
B	Red w/stripe
Neutral	White w/stripe
Ground	Green w/stripe

- B. Colors shall be factory-applied entire length of conductors by one of the following methods except as noted and limited below:
1. solid color compound
 2. solid color coating
 3. colored stripping (2 stripes 180 degrees apart)
 4. colored bands or hash marks with maximum spacing of 18"
 5. colored fibrous covering
 6. surface printing every 12", maximum spacing of 18".
- C. Branch circuit conductors #12 and #10 shall have solid color compound, solid color coating. Neutrals and equipment grounds shall have solid compound or solid color coating (white, gray and green), except that neutrals with colored stripe shall be used where required by NEC. Conductors #8 and larger with stripes, bands or hash marks shall have background color other than white, green and gray.
- D. Solid color coating, stripes, bands or hash marks shall be strongly adherent paint or dye, sufficiently wide and clear to be readily distinguishable after installation.
- E. Alternative field-applied color coding methods may be used for wire #10 or larger, with color code specified in Subparagraph A:
1. Apply 3/4" colored pressure-sensitive plastic tape in half overlapping turns for 6" from all terminal points and in boxes in which splices or taps are made. Apply last two laps of tape with no tension. Do not cover cable identification markings.
 2. Identify with nylon, self-extinguishing, self-locking colored cable ties. Ties shall accommodate wire sizes 1/16" through 1-3/4" in diameter and shall not be less than 0.18" wide. Minimum tensile strength shall be at least 50 lbs. Temperature range shall be -65 °F to +350 °F. Provide three ties to each wire at each terminal point starting 3" from terminal and spaced 3" apart and three ties to each wire in boxes where splices or taps are made with special tool or pliers, and cut off excess.

3.10 MOTORS, CONNECTIONS, AND CONTROLS

A. Splices and Terminations:

1. Make splices and terminations equivalent electrically and mechanically to conductor insulation.
2. Make splices in branch circuit wiring with solderless, screw-on connectors Ideal, Scotchlok, T&B or equal, rated 600V, of size and type required by manufacturer's recommendation, with temperature ratings equal to those of cable insulation. Insulate splices with integral covers or with plastic, rubber, or friction tape, Permacal or equal, to maintain integrity of cable insulation.
3. Make splices and terminations to conductors #8 and larger with corrosion-resistant, high conductivity, pressure indent, hex screw or bolt clamp connections, with or without tongues, designed specifically for intended service. Connectors for cables 250 MCM and larger shall have two clamping elements or compression indents. Terminals for bus connections shall have two bolt holes. Split bolt connectors, Burndy or equal, shall be acceptable for all splices of conductors #8 and larger.
4. Make splices at motor junction boxes with pressure indent connectors or split-bolt connectors as specified herein.
5. Provide standard bolt-on lugs with Allen cap screws to attach copper wire and cable to disconnect switches and other electrical equipment.

3.11 SUPPORTS AND ATTACHMENTS

- A. Boxes and pendants for surface-mounted fixtures shall be supported in an approved manner. Boxes and supports shall be fastened with bolts and expansion shields on concrete or brick, with toggle bolts on hollow masonry units, with machine screws on steel work with locknuts. Threaded studs shall be provided with lock-washers and nuts.

3.12 QUIET OPERATION

- A. All equipment and material furnished by the Electrical Contractor shall operate under all conditions of load without objectionable noises or vibrations, which, in the opinion of the Engineer, is objectionable. Where sound or vibration conditions arise which are considered objectionable by the Engineer, the Electrical Contractor shall eliminate same in a manner approved by the Engineer.

3.13 TESTING, INSPECTION AND CLEANING

- A. Furnish all labor, material, instruments, supplies, and services and bear all costs for the accomplishment of tests herein specified. Correct all defects appearing under test. Repeat the tests until no defects are disclosed. Leave the equipment clean and ready for use.

- B. The Electrical Contractor shall perform any test other than herein specified which may be specified by legal authorities or by agencies to whose requirements this work is to conform.
- C. The Electrical Contractor shall perform any test other than herein specified which may be specified by legal authorities or by agencies to whose requirements this work is to conform.
- D. Prior to test, feeders and branches shall be continuous from service contact point to each outlet; all panels, feeders, and devices connected and fuses in place. Test system free from short circuits and grounds with insulation resistances not less than outlines in the National Electrical Code. Provide testing equipment necessary and conduct test in presence of the Owner's authorized representative.
- E. Test and inspect work provided under this Section as required by Contract Documents, codes, standards and authorities that have jurisdiction, to satisfaction of Architect. Notify Architect and authorities at least 48 hours before testing or inspection. Do not cover work before testing or inspection.
- F. Furnish Engineer with certificates of testing and inspection for electrical systems, indicating approval of authorities that have jurisdiction and conformance with requirements of Contract Documents.
- G. Test wiring and connections for continuity and grounds before fixtures are connected; demonstrate insulation resistance by megger test as required. Insulation resistance between conductors and grounds for secondary distributions systems shall meet NEC requirements.
- H. Provide necessary testing equipment and testing.
- I. Failure or defects in workmanship or materials revealed by tests or inspection shall be corrected promptly and retested. Replace defective material.
- J. Clean switchboard, panels and other equipment. Panelboard interiors shall be cleaned and vacuumed. Equipment with damage to painted finish shall be repaired to Architect's satisfaction.
- K. Equipment
 - 1. After completion of project, clean the exterior surface of equipment included in this section, including concrete residue.
- L. The electrical contractor shall provide complete certification of completion for the fire alarm system prior to final inspection and testing.
- M. The final inspection and test shall include the following:

1. Testing of branch and feeder conductors for continuity.
2. Testing of panelboards to verify proper current balance and voltage.
3. Testing of motors, verifying proper current balance and voltage.
4. Testing of all ground fault protective devices in accordance with the National Electrical Code, Section 230-95.

END OF SECTION