

SECTION 01.11.00 SUMMARY OF WORK

11.1 GENERAL SCOPE OF WORK

A. The work under the Contract consists of:

- (1.) Applying and paying for and obtaining all permits required for the work, including but not limited to building, electrical, plumbing, fire protection and other permits, requesting and attending all inspections of the work;
- (2.) Provision of carbon monoxide (CO) alarms in each dwelling unit as shown and specified;
- (3.) All fire alarm/electrical work as shown or required;
- (4.) Record drawings, and photographs of the work in progress;
- (5.) All cutting and patching required to install the work, and restore areas affected;
- (6.) 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.

11.2 TIME OF COMPLETION

- A. In accordance with the General Conditions, the Work shall start as stated in the Notice to Proceed and shall be complete within **90** consecutive calendar days

11.3 NOTICE TO PROCEED

- A. Upon the Owner's Validation of the Owner Contractor Agreement the Owner shall Issue the Notice to Proceed for Construction.

B. 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.

- C. The Owner shall send three copies of the Notice to Proceed to the Contractor.

D. The Contractor shall sign the originals and then;

- (1.) return one to the Owner, and
- (2.) send one copy to the Engineer, and
- (3.) keep one copy for its own records.

11.4 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 movable obstructions that may be in the Contractor's way, upon proper notice from the Contractor.

END OF SECTION 00.11.00

**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 Owner 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 in accordance with the provisions of MGL c. 30§39M.
 - (5) Upon conclusion of the investigation, the Architect shall promptly advise the Owner 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 Owner will then determine their concurrence 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 01.29.00 Payment Procedures for administrative requirements for Applications for Payments and payment for Work perform relative to this section.

3. MINOR CHANGES IN THE WORK

- A. The Architect will issue in consultation with the Owner, 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 Clause 29 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 of 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 and Contractor.
 - B. The Contractor shall provide necessary supporting documentation for the prompt approval of Change Orders by the Owner. The Contractor shall be fully responsible for any delays caused by a lack of adequate supporting documentation.
 - C. All change Orders require a voted approval of the Housing Authority Board.
 - D. Payment for Change Order Work shall be by the regular payment procedure described in Section 01.29.00 Payment Procedures.
 - E. 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 Clause 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. 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 Payment Procedures.

END OF SECTION 01.26.00

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 01.77.00 Project Closeout
 - (3.) 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.
 - (a.) Periodic Estimate for Partial Payment (HUD 51001) form.
 - (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.) Authorities name and address.
 - (b.) Contractor's name and address.
 - (c.) Date of submittal.
 - (2.) Submit draft Schedule of Values using the Schedule of Amounts for Contract Payments (HUD 51000). Copies can be found 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 Owner.
 - (e.) Dollar value.
- (4.) Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of the Periodic Estimate for Partial Payment reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract.
 - (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 the Periodic Estimate for Partial 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 Periodic Estimate for Partial 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.

D. Initial Periodic Estimate for Partial Payment: Administrative actions and submittals that must precede or coincide with the submittal of first Periodic Estimate for Partial Payment include the following:

- (1.) Project Directory.
- (2.) Schedule of Values.
- (3.) Contractor's Construction Schedule
- (4.) Any proposed product substitutions/or equals
- (5.) List of Contractor's staff assignments (Project Directory).
- (6.) Copies of permits
- (7.) Operational Plan.

E. Submit and have approved a schedule of values* (NOT a pencil requisition!) Include cover and continuation sheets.

- (1) Awarding Authority name and location.
- (2) Contractor's name and address
- (3) Date of submittal
- (4) Include line item for "General Conditions" at ~10%, less items 5 through 9.
- (5) Include line item for "Approved & Distributed Project Directory" - \$250.00 minimum.
- (6) Include line item for "Approved Schedules" - \$200.00 per month minimum.
- (7) Include line item for "Approved submittals to Owner" \$500 or 1% of contract value, whichever is greater.
- (8) Include line item for "Approved O&M Manuals", \$1,000 or 1% of contract value, whichever is greater.
- (9) Include line item for "Approved record/as-built plans", \$1,000 or 2% of contract value, whichever is greater.
- (10) Bonds and insurance may be a separate item for first req.
- (11) If mobilization is included, de-mobilization must also be included.
- (12) If sitework is included as a line item, site restoration must be a separate line item.
- (13) Break out all work AT LEAST by spec division and section.
- (14) Submit on HUD forms.

4. PERIODIC ESTIMATE FOR PARTIAL PAYMENT

- A. Payment Application Content:** Each Periodic Estimate for Partial Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
- B. The Initial Periodic Estimate for Partial Payment, Periodic Estimate for Partial Payment at time of Substantial Completion, and final Periodic Estimate for Partial 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 and Owner. 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 Periodic Estimate for Partial Payment form at the end of this section or found on the HUD website.
- Incorrect forms, or forms sent to the Owner will be ignored.
- E. Application Preparation:** Complete every entry on the form. The form shall be executed 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 before the last day of the construction period covered by application.
 - (3.) Submit a draft ("pencil") application for payment for approval prior to submitting a signed and notarized original Periodic Estimate for Partial Payment.
- F. Transmittal:** Submit 1 signed and notarized original copy of each Periodic Estimate for Partial Payment to the Architect by a method ensuring receipt within 24 hours.
- 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 a Statement of Compliance per General Conditions clause 46(c)(2)(ii). 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.

END OF SECTION 01.29.00

Periodic Estimate for Partial Payment

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

OMB Approval No. 2577-0157
(exp. 1/31/2017)

Submit original and one copy to the Public Housing Agency.
Complete instructions are on the back of this form.

Public reporting burden for this collection of information is estimated to average 3.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless that collection displays a valid OMB control number.

This information is collected under the authority of Section 6(c) of the U.S Housing Act of 1937 and HUD regulations. HAs are responsible for contract administration to ensure that the work for project development is done in accordance with State laws and HUD requirements. The contractor/subcontractor reports provide details and summaries on payments, change orders, and schedule of materials stored for the project. The information will be used to ensure that the total development costs, identified in the ACC, are kept as low as possible and consistent with HUD construction requirements. Responses to the collection are necessary to obtain a benefit. The information requested does not lend itself to confidentiality.

Name of Public Housing Agency	Periodic Estimate Number	Period From (mm/dd/yyyy) To (mm/dd/yyyy)
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Location of Project	Project Number
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Name of Contractor	Contract Number
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Item Number (1)	Description of Item (2)	Completed to Date (3)
		\$

Value of Contract Work Completed to Date (Transfer this total to line 5 on back of this sheet)	\$
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Instructions

Headings. Enter all identifying data required. Periodic estimates must be numbered in sequence beginning with the number 1.

Columns 1 and 2. The "Item Number" and "Description of Item" must correspond to the number and descriptive title assigned to each principal division of work in the "Schedule of Amounts for Contract Payments", form HUD-51000.

Column 3. Enter the accumulated value of each principal division of work completed as of the closing date of the periodic estimate. Enter the total in the space provided.

Certifications. The certification of the contractor includes the analysis of amounts used to determine the net balance due. In the first paragraph, enter the name of the Public Housing Agency, the contractor, and the date of the contract. Enter the calculations used in arriving at the "Balance Due This Payment" on lines 1 through 16.

Enter the contractor's name and signature in the certification following line 16.

The latter portion of this certification relating to payment of legal rates of wages, is required by the contract before any payment may be made. However, if the contractor does not choose to certify on behalf of his/her subcontractors to wage payments made by them, he/she may modify the language to cover only himself /herself and attach a list of all subcontractors who employed labor on the site during the period covered by the Periodic Estimate, together with the individual certifications of each.

Certification of the Contractor or Duly Authorized Representative

According to the best of my knowledge and belief, I certify that all items and amounts shown on the other side of this form are correct; that all work has been performed and material supplied in full accordance with the items and conditions of the contract between the (name of owner) _____ and (contractor) _____

dated (mm/dd/yyyy) _____, and duly authorized deviations, substitutions, alterations, and additions; that the following is a true and correct statement of the Contract Account up to and including the last day of the period covered by this estimate, and that no part of the "Balance Due This Payment" has been received.

1. Original Contract Amount \$ _____

Approved Change Orders:

2. Additions (Total from Col. 3, form HUD-51002) \$ _____

3. Deductions (Total from Col. 5, form HUD-51002) \$ _____ (net) \$ _____

4. Current Adjusted Contract Amount (line 1 plus or minus net) \$ _____

Computation of Balance Due this Payment

5. Value of Original Contract work completed to date (from other side of this form) \$ _____

Completed Under Approved Change Orders

6. Additions (from Col. 4, form HUD-51002) \$ _____

7. Deductions (from Col. 5, form HUD-51002) \$ _____ (net) \$ _____

8. Total Value of Work in Place (line 5 plus or minus net line 7) \$ _____

9. Less: Retainage, _____ % \$ _____

10. Net amount earned to date (line 8 less line 9) \$ _____

11. Less: Previously earned (line 10, last Periodic Estimate) \$ _____

12. Net amount due, work in place (line 10 less line 11) \$ _____

Value of Materials Properly Stored

13. At close of this period (from form HUD-51004) \$ _____

14. Less: Allowed last period \$ _____

15. Increase (decrease) from amount allowed last period \$ _____

16. Balance Due This Payment \$ _____

I further certify that all just and lawful bills against the undersigned and his/her subcontractors for labor, material, and equipment employed in the performance of this contract have been paid in full in accordance with the terms and conditions of this contract, and that the undersigned and his/her subcontractors have complied with, or that there is an honest dispute with respect to, the labor provisions of this contract.

Name of Contractor _____ Signature of Authorized Representative _____ Title _____ Date (mm/dd/yyyy) _____

Certificate of Authorized Project Representative and of Contracting Officer

Each of us certifies that he/she has checked and verified this Periodic Estimate No. _____; that to the best of his/her knowledge and belief it is a true statement of the value of work performed and material supplied by the contractor; that all work and material included in this estimate has been inspected by him/her or by his/her authorized assistants; and that such work has been performed or supplied in full accordance with the drawings and specifications, the terms and conditions of the contract, and duly authorized deviations, substitutions, alterations, and additions, all of which have been duly approved.

We, therefore, approve as the "Balance Due this Payment" the amount of \$ _____

Authorized Project Representative _____ Date (mm/dd/yyyy) _____ Contracting Officer _____ Date (mm/dd/yyyy) _____

Warning: HUD will prosecute false claims and statements. Conviction may result in criminal and/or civil penalties. (18 U.S.C. 1001, 1010, 1012; 31 U.S.C. 3729, 3802)

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 01.50.00 Temporary Facilities and Controls

31.3 PROJECT MANAGEMENT

- A. Project Superintendent.
 - (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.
 - (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.
- B. 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.
- C. Project Meetings
 - (1.) Prior to commencement of the Work, the Contractor shall meet in conference with representatives of the Owner, 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 and Owner.

31.4 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 not smoke while performing work inside the buildings, including basement areas. The contractor shall permanently remove from the project workers who violate this provision.

31.5 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, fire protection, 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.

31.6 COORDINATION

- A. Prior to the start of work the Contractor shall submit for approval 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. The Contractor may be required to pay for space in unoccupied units.
- 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.

31.7 OWNER'S COOPERATION

- A. The Owner may provide a Resident Coordinator to 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 Resident 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.

31.8 SEQUENCE OF WORK

- A. The Contractor shall perform the work in accordance with the time for Completion as listed in Section 01.11.00 of this specification and the Contractor's Schedule.
 - B. The Contractor shall move all and replace all tenant furnishings as required to complete the Work. The Contractor shall notify tenants of any loose items on top of such furnishings, which must be removed, and the Tenant shall be responsible for same. This shall not apply to large objects such as televisions, heavy items, etc., which shall be moved and replaced by the Contractor.
 - C. All new work shall be installed to the maximum extent possible prior to the removal of existing devices, equipment, wiring, or disconnection of power.
 - D. The contractor shall note the following:
 - (1.) All existing ceiling boxes not being reused shall be removed, patched, and painted.
 - (2.) All existing wall back boxes shall be removed, patched, and painted.
 - (3.) All wiring in finished spaces shall be run concealed. Surface metal raceway shall not be used unless explicitly specified and shown on drawings.
 - E. The Contractor may enter each dwelling for not more than three (3) periods. The sequence of the periods shall generally be as follows:
 - (1.) Install new Work (maximum one (1) day)
 - (2.) Demolish existing Work (maximum one (1) day)
 - (3.) Patch, paint and final clean-up (maximum one (1) day)
- The periods noted above may overlap as required. Each subsequent period shall immediately follow the preceding period, with no more than one (1) day between periods. The Contractor shall submit his proposed Work plan for approval by the Authority and the Engineer.
- F. The Contractor shall complete all Work within a sample unit (to be designated by the Authority) prior to moving on to remaining work. Upon completion of the sample work, the Authority and Engineer will inspect the sample work, and provide any comments. The sample unit shall establish the level of workmanship and scope required for the remaining work.
 - G. All units will be occupied during all periods of Work.
 - H. The Contractor shall not in any way impede the Tenants who will occupy their units throughout the Work. This shall include maintaining the Tenants' access to the hallways, and all interior areas of the building.

END OF SECTION 01.31.00

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

1. RELATED DOCUMENTS

- A. This Section supplements Clause 11 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

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.
- F. **Check, stamp and mark** with project name shop drawings and product data before submitting for approval. All submittals shall include a certification signed by an officer of the contracting firm that the submittal material, work, product, etc. complies with the contract fully, or complies with the contract with deviations. Specifically indicate on shop drawing any deviations from Contract Documents because of standard shop practice or other reason. The contractor shall list any and all deviations. Failure to list any deviations shall be grounds for Owner to order the material be removed and replaced.
- G. The Contractor is solely and completely responsible for providing materials compliant with the Contract Documents. The Designer's review and approval of materials shall be for general conformance to the requirements, but Designer's acceptance is based primarily on the Contractor's certification that the material is compliant with the Contract, or compliant with indicated deviations.

- H. Cross out, but do not obliterate, material, options, accessories, etc. not intended for inclusion in the Work. Clearly indicate material, options, accessories, etc. to be included in the Work.
- I. Submit for approval all materials incorporated in the Work. Installation of material, which is not approved, shall be at the risk of the Contractor, and the Owner may order the material be removed and/or replaced.
- J. All re-submittals shall be complete. Partial re-submittals will be returned without action.
- K. Manner of Delivery – The Contractor may deliver materials which are in 8.5"x11 format to the Engineer's office in hard copy, or electronically (via email), but not both. Closeout submittals or Submittals which are in other the 8.5"x11" format shall be delivered via hard copy only.
 - (1.) If submittals are delivered to the Engineer by hard copy, the Engineer will return the submittals to the Contractor with a submittal attachment, indicating the Engineer's Action, but keep one (1) copy for his files, and in the case of approved submittals, keep one (1) additional copy for the Owner.
 - (2.) If submittals are delivered to the Engineer electronically, the Engineer will return electronically only a submittal attachment indicating the Engineer's Action. Submittals delivered in electronic format shall be in .pdf format, no larger than 8.5"x11" and shall be clear and legible. The Contractor shall be responsible for ensuring the complete and correct transmission of files. All other submittal requirements, including Contractors approval, transmittal sheet, identification of products to be provided, etc. shall still be complied with. The Contractor will be responsible for forwarding approved/approved as noted copies of submittals to subcontractors, vendors and others as they may require, and a hard copy of the submittal with submittal attachment to the Owner within seven (7) days.
- M. The Engineer will review one initial submittal and one re-submittal of any item. If review of re-submittals beyond the first re-submittal; are required, the Contractor shall bear the Engineer's cost to review the re-submittals. If materials which have previously been approved or approved-as-noted are re-submitted, the Contractor shall bear the Engineer's cost to review the re-submittal.
- N. If the Contractor does not abide by these submittal requirements, the Engineer may then require that the specified material be provided, at no increase in contract cost.

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 Owner'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 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 until the Architects approval is obtained.
- D. When the Product Data are acceptable, the Architect will stamp them "Approved" or "Approved as Corrected", and return-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 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. 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 to the Architect for approval. This procedure shall be repeated until the Architect's approval is obtained.
- G. When the Architect returns submittal with the stamp "Approved" or "Approved as Noted", the Contractor shall provide and distribute the prints for all Contractor and Subcontractors use, and in addition submit, within 10 calendar days after approval, 2 prints to the Architect.
- H. 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.

7. PRECONSTRUCTION SUBMITTALS

PRIOR TO STARTING WORK AT THE SITE YOU MUST:

- A. Submit and have approved a **project directory***. Include name, address, telephone/fax number and e-mail addresses for:

1. Emergency (police, fire, ambulance) telephone numbers.
 2. General Contractor day contact info (office PM and site superintendent).
 3. General Contractor after hours (emergency) contact info.
 4. All Subcontractors and their principal contact.
 5. Site contact number, and fax (if applicable).
 6. Owner personnel (Executive Director, Mod. Coordinator, Maint. Supervisor, etc.)
 7. Utility contacts (electric, gas, water, etc.) if applicable.
 8. Architect/Engineer personnel.
 9. Any other persons or firms involved in the project.
- B. Submit and have approved a **schedule of values*** (NOT a pencil requisition!)**
1. Awarding Authority name and location
 2. Contractor's name and address
 3. Date of submittal
 4. Include line item for "General Conditions" at ~10%, less items 5 through 9.
 5. Include line item for "Approved & Distributed Project Directory" - \$250.00 minimum.
 6. Include line item for "Approved Schedules" - \$200.00 per month minimum.
 7. Include line item for "Approved submittals to Owner" \$500 or 1% of contract value, whichever is greater.
 8. Include line item for "Approved O&M Manuals", \$1,000 or 1% of contract value, whichever is greater.
 9. Include line item for "Approved record/as-built plans", \$1,000 or 2% of contract value, whichever is greater.
 10. Bonds and insurance may be a separate item for first req.
 11. If mobilization is included, de-mobilization must also be included.
 12. If earthwork is included as a line item, restoration must be a separate line item.
 13. Break out all work AT LEAST by spec division and section.
- C. Submit and have approved a **project schedule**.**
1. List contract NTP date.
 2. List contract duration in calendar days.
 3. List contract completion date.
 4. Note all holidays (no work).
 5. Allow 30 days minimum for material submittals.
 6. Indicate when testing and inspections will occur.
 7. Update and re-submit schedule AT LEAST monthly.
- D. Apply for, obtain and post all required **permits**.**
1. Building permit.
 2. Plumbing permit (if applicable).
 3. Gas permit (if applicable).
 4. Electrical permit (if applicable).
 5. Fire alarm permit (if applicable).
 6. Carbon Monoxide permit (if applicable).
- E. Designate a set of **record drawings** for the job site, and maintain throughout the project.**
- F. Designate a set of site **plans and specs** to be held at the job site.**
- G. NOTE – APPLICATIONS FOR PAYMENT *WILL NOT BE PROCESSED* UNTIL ITEMS A thru F ARE SATISFIED.**

END OF SECTION 01.33.00

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. The Contractor shall provide a suitable office at the site for use by Contractor personnel.
- C. The offices shall be set in a location approved by the Architect and the Awarding Authority, and shall be maintained by the Contractor in a clean and orderly condition.

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.

50.10 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 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.
- D. The Contractor is responsible for the security of partially completed work until the project is accepted by the Owner.

50.12 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.

50.13 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.

50.14 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.
- C. The Contractor's Forces, including any and all subcontractors, who access dwelling units or buildings on the site, shall wear identifying clothing, such as shirts, jackets, etc. while on site. The identifying clothing shall be worn at all times while on-site, and shall be subject to the approval of the Engineer.

50.15 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

50.16 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.

50.17 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 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.
- 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

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.

8. PAINTING

- A.** Patched areas shall be touch-up painted. One coat of latex wallboard primer shall be applied to raw, prepared surfaces and allowed to dry. Two coats of enamel paint shall then be applied. Finish paint for touch-up painting within units shall be furnished to the Contractor by the Housing Authority. Primer shall be compatible with the paint provided by the Housing Authority.
- B.** Do not paint unsuitable surfaces. Correct surface then paint. Clean up all drips, runs and spatters of paint immediately, before allowed to dry. Do not leave painting materials within units. Take materials in and out of units as painting progresses. Provide "Wet Paint" signs to protect freshly painted surfaces, left in place until surface has cured. Repair any touched up surfaces which may be inadvertently disturbed by Tenants.

END OF 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 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.

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. Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.
- J. Leave pipe and duct spaces, plenums, furred spaces and the like clean of debris and decayable materials.
- K. 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.
- L. Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds.
- M. Ventilating systems - Replace filters and clean ducts, blowers, and coils if units were operated during construction.
- N. Owner's responsibility for cleaning commences at Substantial Completion.

END OF SECTION 01.74.13

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

77.3. SUBSTANTIAL COMPLETION

- A. Prior to requesting Substantial Completion as provided in Clause 20 of the General Conditions the Contractor shall make a thorough inspection of the Work. During this inspection the Contractor shall prepare and submit 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. Incomplete lists will be disregarded and shall delay determination of substantial completion.
- B. Upon completion of the items noted on the Contractor's list the Contractor shall complete and submit to the Engineer a **Request for Determination** of Substantial Completion Form (Form 01.77.00.00), including required attachments. A sample of this form can be found at the end of this section.
- C. The date of substantial completion shall be no earlier than the date of request for determination.
- D. If the Engineer agrees that the Work is Substantially Complete, the Engineer will make an inspection and prepare a punch list, setting forth in 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.
- E. The Contractor shall not be relieved of the responsibility to provide Contract items left off of the Engineer's punch list.
- F. If the Engineer determines that the Work is not Substantially Complete, the Engineer shall inform the Contractor of those items that must be completed before the Engineer will determine substantial completion and prepare a punch list. Upon completion of those items, the Contractor shall again complete and submit to the Engineer a **Request for Determination** of Substantial Completion Form (Form 01.77.00.00), including required attachments. Again, the date of substantial completion shall be no earlier than the date of request for same.
- G. When the punch list has been prepared, the Engineer will send the Punchlist to the Contractor listing work which must be done before final acceptance.
- H. The Engineer may revise the punch list, from time to time, to ensure that all items of Work are properly completed.

77.4. 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.

- C Once approved the Contractor shall provide to the Engineer an electronic copy of the as-built plans, in .pdf format. The as-built plans will only be considered complete when the .pdf copy is received by the Engineer.

77.5. 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 50% payment and completion the Contractor shall provide all Operating Manuals and Maintenance Instructions as required by the Contract Documents.
- C Submission and approval of operation and maintenance instructions shall be a condition precedent to payment beyond 50% of the Contract value.

D 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 and approval of operating and maintenance instructions shall be a condition precedent to payment beyond 50% of the Contract value.
- (4.) Prior to 50% payment and completion the Contractor shall provide all Operating Manuals and Maintenance Instructions as required by the Contract Documents.

E 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.

77.9 PROJECT FILE

- A. The Contractor shall create and submit for review a Project File for the Owner's file. The Project File shall contain the following items, three hole punched and bound in a heavy duty three ring binder, with front and edge labeling, machine printed separator tabs, and table of contents:
 - 1. A copy of any addenda
 - 2. An unaltered copy of the Project Manual
 - 3. An unaltered full size copy of the contract drawings (if any).
 - 4. A copy of the Notice to Proceed.
 - 5. A copy of the approved Project Directory.
 - 6. A copy of all project schedules.
 - 7. A copy of all change orders and other modifications.
 - 8. A copy of all material submittals, product data and shop drawings, showing approval.
 - 9. An Annual Financial Statement, audited, including an Accountant's Report
(Note - for contracts over one year only)
 - 10. Quarterly and Weekly Workforce tables.
 - 11. Executed Contractor's Affidavit(s) of Payment to Minority/Women Business Enterprises
(Note- for Contracts with M/WBE requirement only)
 - 12. Waste Management reports.
 - 13. Certificates of Inspection, signed by AHJs.
 - 14. Completed Record of Completion, including all original signatures.
(Note – only for projects with fire alarm scope)
 - 15. A copy of the Certificate of Substantial completion and all attachments.

16. Any other item(s) as the Designer may request.

- B. Include with the Project File an unaltered full size copy of the contract drawings (if any).
- C. The Project File shall be submitted not less than 30 days prior to the date established for final completion of the project. The project file shall be 100% complete prior to submittal. Incomplete or partial submittals will not be accepted, and will delay or void final payment.
- D. The Contractor shall include with the submittal a pre-paid USPS or UPS waybill for return shipping of the Project File to the Contractor if not approved, or forwarding of the Project File to the Owner if approved.

77.6. FINAL COMPLETION

A RELATED REQUIREMENTS

The Contractor's attention is directed to the General Conditions.

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 Engineer shall prepare the Certificate of Release and Certificate of Completion.
- (2.) The Contractor's signature on this Certificate shall be notarized.
- (3.) The Contractor shall attach a final Application for Payment to the Certificate of Release and Certificate of Completion 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 Engineer'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 Engineer is required to prepare a Certificate for Partial Release of Retainage the Contractor shall complete all remaining Work in accordance with the provisions of the General Conditions.
- (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 Engineer'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 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 SECTION 01.77.00

REQUEST FOR DETERMINATION OF SUBSTANTIAL COMPLETION

TO BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE DESIGNER AT SUBSTANTIAL COMPLETION.

Contractor _____	Owner _____	Housing Authority _____
_____	_____	_____
_____	_____	_____
Phone _____	Phone _____	
E-mail _____	E-mail _____	
Development No _____	FISH No _____	
Contract for: _____		

Pursuant to the General, Supplementary, and Special Conditions of the Contract Documents relative to Partial or Total Occupancy, we hereby request that the project listed above be determined to be substantially complete, as of

INSERT DATE  the ____ day of _____ 20 ____
--

Note – date not to be prior to date of submission of this form.

And we attach hereto the following:

- Contractor's punchlist (Append a complete list of all incomplete and/or unsatisfactory items of the Work, closeout documents, etc. Missing or incomplete list will delay determination of substantial completion.)
- Record drawings (attach the record drawings which were marked in the field. If no drawings are issued, disregard.)

Certified by the Contractor:

By submitting and certifying this form, we certify that the work is substantially complete, and the Owner has beneficial use of the work as of the date listed above.

Name: _____
Signature: _____

In accordance with Section 01.77.00, upon receipt of this form and its attachments, the Designer will determine if the work may be substantially complete, and if so, will make an inspection of the work.

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 complete and submit this form and its attachments.

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. This shall include:
 - (1) The location and dimensions of underground and concealed Work, and any architectural, mechanical, or electrical variations from the Contract Drawings.
 - (2) All changes, including those issued by Addendum, Change Order, or instructions by the Architect shall be recorded.
- C. Marked up As Built drawings shall be prepared for the entire project and include all Work, including but not limited to:
 - (1) The location of all underground utilities and appurtenances referenced to permanent surface improvements, both horizontally and vertically at ten (10) foot intervals and at all changes of direction.
 - (2) The location of all internal utilities and appurtenances, concealed by finish materials, including but not limited to valves, coils, dampers, vents, cleanouts, strainers, pipes, junction boxes, turning vanes, variable and constant volume boxes, ducts, traps, and maintenance devices.
 - (3) The location of these, items shall be shown by offsets to structure and drawing grid lines.
- D. The tolerance for the actual location of these items on the marked up As Built Drawings shall be plus or minus two (2) inches.
- E. Each item shall be referenced by showing a tag number, areas served, and function on the marked up As Built drawing
- F. 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 or before a request for determination of 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 Built 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. Once approved, the Contractor shall provide to the Engineer an electronic copy of the as-built plans, in .pdf format. The as-built plans will only be considered complete when the .pdf copy is received by the Engineer.
- 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 SECTION 01 78.39

SECTION 26.00.00

ELECTRICAL

PART 1 – GENERAL

1.01 GENERAL

- A. The Conditions of the Contract and other sections of Division 1, General Requirements, apply to work of this Section.

1.02 WORK TO BE PERFORMED

- A. The scope of work under this Section, without limiting the generality thereof, includes the furnishing of all labor, materials, equipment, services and incidentals necessary to complete all of the Work in accordance with the Contract Documents which are intended to describe and provide for a finished piece of Work, and are to be cooperative; what is called for by either shall be complete in every detail, notwithstanding whether or not every item necessarily involved is particularly mentioned.
- B. Electrical Work shall generally consist of, but not be limited to:
 - 1. Pay for and obtain all permits and inspections;
 - 2. Selective demolition of items as noted or shown;
 - 3. Provide all wire and cable, connectors and connections;
 - 4. Provide all raceways, fittings and supports;
 - 5. Provide all device, pull, outlet and junction boxes;
 - 6. Provide all circuit breakers as shown or scheduled;
 - 7. Provide all carbon monoxide (CO) alarm devices and ancillary devices as required;
 - 8. Testing, training, commissioning and demonstration of all systems;
 - 9. Record Drawings;
 - 10. Operation and Maintenance Instruction and Manuals;
 - 11. Warranties.
- C. This Contractor shall ensure power is restored to each unit at the end of each day. In the event this Contractor starts work in a unit, and is unable to complete the work, this Contractor shall provide temporary power until such time as the new installation is in operation and tested by this Contractor.
- D. Be prepared for, and accommodate work-arounds, given the likelihood that this Contractor will not be able to access some units or portions of units at some times. It is expected that this Contractor will then work in other areas of the Project, including other dwelling units. Required work-arounds shall not be the basis of any claim for additional compensation.
- E. Restore to match surrounding surfaces any area disturbed or exposed by the Work of this contract.
- F. 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 others 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 the Contractors' work.

- G. 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.
- H. 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. Indicate actual circuiting, light fixture locations, device outlet locations, switch assignments, loadcenter schedule, etc.

1.03 RELATED WORK SPECIFIED UNDER OTHER SECTIONS

- A. All removal and disposal of demolished items shall be provided by the Contractor.
- B. All cutting, patching and touch-up painting required for the work shall be provided by the General Contractor.

1.04 SAMPLE UNIT

- A. **Complete** one unit completely, including services and utilities, and obtain the approval of the Engineer, Owner and local inspectors prior to proceeding with any additional units. The sample unit shall be as designated by the Owner. The unit as accepted shall establish the standard of workmanship and scope required for the remaining units.
- B. Locate and/or relocate devices and wiring within the sample unit to suit field conditions. Wiring shall be routed as required to minimize cutting and patching required. Devices shall be located to comply with code required locations, and to avoid field obstructions, and to comply generally with locations as shown on the drawings. Devices and wiring in remaining units shall then be arranged as the sample unit. The relocation of devices and related work within 10 feet of location shown on plans shall be included in the contract price.

1.05 SUBMITTALS

- A. Submit shop drawings and manufacturer's product data in accordance with the provisions of the General Conditions. Submit quantity of copies as requested.
- B. List of material and equipment requiring shop drawings shall include, but is not limited to:
 - 1. Wire and Cable
 - 2. Wire and Cable Connectors and Devices
 - 3. Boxes
 - 4. Circuit Breakers
 - 5. CO Alarms
- C. Submittals shall be indexed from list above. Add additional items to end of list. Check, stamp and mark with project name shop drawings and product data before submitting for approval. Specifically indicate on shop drawing transmittal form or by separate letter any deviations from Contract Documents because of standard shop practice or other reason. Cross out, but do not obliterate, material not intended for inclusion in the Work. Clearly indicate material to be included in the Work.

- D. Submit for approval all materials incorporated in the Work. Installation of material which is not approved shall be at the risk of this Contractor, and the Owner may order that it be removed and/or replaced.
- E. Submit samples of any material or equipment requested, prior to approval.
- F. The Engineer will review one initial submittal, and one re-submittal of any item. If review, of re-submittals beyond the first re-submittal are required; this Contractor shall bear the Engineer's cost to review the re-submittal. If materials which have previously been approved or approved-as-noted are re-submitted, this Contractor shall bear the Engineer's cost to review the re-submittal.

1.06 CODES, ORDINANCES AND PERMITS

- A. All Work shall be done in strict accordance with the Codes, rules and regulations governing electrical work in the City of Lowell, and the Commonwealth of Massachusetts, and the Massachusetts Electrical Code. If there is any conflict between plans or specifications and such rules and regulations, the rules and regulations shall take precedence.
- B. The publications and/or standards listed below form a part of this specification. The publications are referenced in text by the basic designation only.
 - 1. National Fire Protection Association (NFPA) - USA:
 - a. No. 70 National Electrical Code (NEC)
 - b. No. 72 National Fire Alarm and Signaling Code
 - c. No. 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations
 - 2. Commonwealth of Massachusetts
 - a. 527 CMR 12.00 Massachusetts Electrical Code
 - b. 780 CMR Massachusetts State Building Code, 9th Edition and it's reference standards
 - c. 521 CMR Massachusetts Regulations of the Architectural Access Board
- C. 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.
- D. Give notices, file plans, obtain permits and licenses, and obtain all necessary approvals from authorities that have jurisdiction. Coordinate with General Contractor for submission of, and/or prepare and submit, an NFPA 241 plan as required by the AHJ. Deliver all certificates of inspection to the Architect. No work shall be covered before examination and approval by the Authority Having Jurisdiction. Replace any imperfect or condemned work with materials conforming to the requirements, and satisfactory to the Architect, without extra cost to the Owner. This Contractor is responsible to obtain all permits.
- E. Where the Engineer is to witness testing or perform inspections of work, provide not less than seven (7) calendar days notice to the Engineer of such inspections or testing. At or before request for completion inspection, provide completed as-built plans for review by the Engineer at the final inspection.
- F. Where the local Authority Having Jurisdiction (AHJ) requires work which is not included in the Contract, and where such work will result in an added cost to the Owner, this Contractor shall obtain such requirement from the AHJ in writing. Such requirements shall be supported by applicable code, ordinance or law citation(s), or other justification, to the full satisfaction of the Owner.

1.07 INSPECTION OF SITE

- A. Prior to submitting a bid, the bidder is advised to with prior arrangement with the Owner, visit the site (See Advertisement for site date) and shall at that time, inspect all existing conditions to ascertain the exact scope and nature of the work that is required under this Contract, how it relates to existing work to remain and all job conditions and restrictions.
- B. Bidders are advised to visit the site and inform themselves as to conditions under which this work will be performed, prior to submitting prices. Failure to do so will, in no way relieve the successful bidder from the responsibility of furnishing any materials or performing any work in accordance with the true intent of the Drawings and Specifications.
- C. No claim for extra compensation will be recognized if difficulties are encountered which an examination of the site conditions, Drawings and Specifications prior to executing the Contract would have revealed.

1.08 STORAGE AND REMOVAL OF MATERIALS

- A. Provide suitable containers on-site for storage of materials, or store material off-site. Type and location of containers shall be subject to the approval of the Engineer.
- B. Provide suitable containers for demolition materials. Empty containers when they become full, and remove from the site immediately upon completion of demolition activities. Type and location of containers shall be subject to the approval of the Engineer.
- C. Lawfully dispose of all demolished materials. Regulated materials shall be disposed of, with certified bills of lading turned over to the Owner. Fluorescent lamps and ballasts which may contain PCBs shall be picked up by a certified recycling/waste disposal firm from the site. The recycling/waste disposal firm shall provide to this Contractor a certificate of recycling or disposal as appropriate for all materials, which shall be turned over to the Owner. The certificate shall show 1) the date of pick-up, 2) the location of the pick-up, and 3) a detailed quantity and detailed description of the material picked up. Should this Contractor fail to provide such a certificate, this Contractor shall execute a release form releasing the Owner of all liability, and this Contractor shall assume all liability for any legal or other action which may result related to any hazardous materials at the site.

1.09 CHANGES IN THE WORK

- A. Any addition, deletion or change in the work which affects the contract sum will be addressed via a change order. The Contractor may be noticed to proceed with the work while the change order paperwork is being processed via a bulletin, construction change directive, or other document.
- B. In addition to any requirements listed in other sections of the contract, any proposals shall be fully supported by documentation of costs, including material quantities and unit costs, labor units, labor rates and any mark-ups in accordance with the contract. Any sub-contractor proposals shall be similarly detailed. Material unit costs shall be based on the proposer's actual costs, which shall be documented by vendor quotes, invoices or other upon request. Material prices from estimating or pricing guides will not be accepted. Material prices which are in excess of the retail costs of materials in the area will not be accepted.
- C. Any change order proposal shall also state the impact, if any, on the contract duration. If no such statement is made, the contract duration will remain unchanged.
- D. The proposer shall bear the costs associated with reviewing, documenting and processing any change orders which are the result of a failure to properly carry out the work, or other proposals which are 1) not requested by the Owner, Architect or Engineer, or 2) are not the result of differing conditions.

- E. Where the work is under construction control, any change to the work deviating from the approved construction documents must be submitted to and approved by the engineer in advance via a request for information (RFI). The reason(s) for the change must be clearly stated, such as field interference, AHJ request, convenience, etc. Unapproved changes will prevent the issuance of a Final Construction Control Document, acceptance of the work, and payment for unapproved work. The Engineer's costs for addressing RFIs as a result of proposed changes which are for the convenience of the Contractor shall be paid for by the Contractor. Regardless of the reason, approved changes shall be marked on the as-built drawings by the Contractor.

1.10 SAFETY

- A. The Contractor shall be solely and completely responsible for all safety on the Project. This shall include safety to the workers, Tenants, the Engineer and Owner and their respective employees. This Contractor shall develop and implement all safety programs required by mandated and industry standard regulations.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Products furnished shall be designed and approved for the intended use, shall meet all requirements of the Massachusetts Electrical Code (MEC), and local codes, shall be manufactured in accordance with the standard indicated, and shall meet the requirements specified in the Contract Documents. Materials and equipment shall be listed by a nationally recognized testing laboratory.
- B. All material incorporated in the Work shall be new and unused. Samples of any material or item shall be furnished upon request of the Engineer, prior to approval.
- C. All products shall be rated for and approved for use in the application shown, regardless of any notations on the plans. Equipment located outdoors or in wet locations shall be weatherproof, and/or enclosed in suitably rated enclosures. All equipment shall be rated for the current, voltage and phases at which they are applied.
- D. All workmanship shall be of the highest quality, as determined by the Engineer. This Contractor will be required to repair or replace all Work which is not of the highest quality and workmanship.
- E. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- F. It is the intent of the Specifications that one manufacturer be selected, not a combination, for any particular classification of material. For example, all wire of one manufacturer, all switches of one manufacturer, etc.
- G. Where materials, equipment, apparatus, or other products are specified by manufacturer, brand name, type or catalog number, such designation is to establish standards of performance, quality, type and style.
- H. This Contractor shall be responsible for ordering and furnishing the correct quantity of material required. Routing and equipment arrangements shown on the drawings are approximate only and are not warranted to be accurate.
- I. Devices and equipment shall not require batteries to operate, unless expressly specified.

2.02 WIRE AND CABLE

- A. General

1. Minimum wire size shall be No.14 AWG.
2. All conductors shall be annealed copper, 98% conductivity, Class B stranding, except No.10 AWG and smaller diameter may be solid.
3. Aluminum conductors are not allowed.
4. Minimum sizes shall be No. 12 AWG for power and lighting and No. 14 AWG for control.
5. Conductors shall be identified (colored) as required by the MEC.
6. Wire and cable in underground ducts shall be approved for use in wet locations.
7. Wire and cable shall be manufactured by General Cable Co., American Wire, Okonite, or approved equal.

B. NEC Type THWN/THHN: UL 83

1. Conductors for power, lighting, grounding and control; above grade; No. 14 AWG through No. 8 AWG; shall be NEC type THWN/THHN.

C. NEC Type MC: UL 1569, with full size grounding conductor, and steel or aluminum interlocked armor sheath.

1. Metal-Clad cable shall have full size green grounding conductors.
2. Metal-Clad cable shall be used in concealed locations only. Concealed locations include above ceilings and within dry wall partitions.
3. Metal-Clad cable shall be used in dry locations only.
4. Metal-Clad cable shall be used in all areas of assembly and immediately adjacent areas.

D. NEC Type NM-B: UL 719, with grounding conductor. Use for general purpose branch circuit wiring throughout, except where other wiring methods are required elsewhere in this specification or by Code.

2.03 WIRE AND CABLE CONNECTORS AND DEVICES

- A. Wire and Cable Connectors and Devices: UL 486.
- B. Ground conductors of # 14, 12 and 10 AWG shall be made up using only green wire nuts with grounding pigtail provisions.

2.04 BOXES

- A. Outlet Boxes: UL listed, NEMA OS 1, with marked volume. Size boxes in accordance with volume requirements of MEC.
- B. Outlet boxes for devices shall be as follows, per the installed device, and device location:
 1. Alarm, all finished areas – 4" round, flush mounted old work type, with swing-out or spring type mounting ears, suitable for termination of Type NM cable. Material: plastic.
- C. Where required, provide outlet box extensions to bring front of outlet box flush with mounting surface, per MEC 314.22.

- D. Special care shall be taken to set all boxes correctly square and true with the building finish. Junction boxes and accessories shall be as manufactured by Steel City, Appleton, Raco, or approved equal.

2.05 CIRCUIT BREAKERS

- A. Circuit breakers shall be compatible with and listed for use in the existing ITE loadcenters.
- B. Circuit breakers shall be quick-make, quick-break molded case type in amperes and poles to suit, or as called for on the Drawings. Where serving lighting circuits, provide switch duty (SWD) rated circuit breakers.
- C. Circuit breakers shall be toggle type, manually operated, trip free with simultaneous opening/closing of all common poles. Trip units shall be thermal-magnetic type.
- D. Where located in dwelling units, provide arc fault circuit protecting circuit breakers.

2.06 EXISTING DISTRIBUTION EQUIPMENT

- A. Where connections are made in existing panelboards or other distribution equipment, the panel index shall be revised to indicate the new loads served. All existing panelboards that do not have a circuit directory card mounted in a frame with noncombustible plastic cover shall have one installed on the inside of the door. All directory cards shall be properly filled in, using a typewriter, and indicate areas and devices served by each unit. Where spares or spaces are provided, mark these designations in pencil by hand.
- B. New circuit breakers, disconnects, starters, etc. added to existing equipment shall be the same frame size and interrupting capacity as existing panelboards and circuit breakers. New circuit breakers installed in existing panelboards shall be listed as fully compatible with the panelboard.

2.07 CARBON MONOXIDE ALARMS

- A. Carbon Monoxide (CO) Detectors shall be 120 volt primary power with integral 9 volt battery backup. Unit shall be tandem connectable, with not less than 12 devices per tandem circuit. Unit shall have integral piezoelectric sounder, rated not less than 85 dB at 10 feet with four pulse temporal output. Device shall be self-diagnostic, include integral gasket to prevent the intrusion of outside air, and fully functional test provision. Provide battery installed in each device.
- B. CO detectors shall have multiple levels of exposure to CO based on time-weighted averages of the gas present per the requirements of UL 2034. Unit shall be listed to UL Standard 2075 for CO Detectors.
- C. Units shall be as manufactured by Kidde, BRK, Firex or approved equal.

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 raceway 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.
- B. This Contractor shall review installation details of all electrical equipment in public areas with the Architect and cooperate fully with the Architect in this regard. Any work installed which is not reviewed with and approved by the Architect is subject to re-work at no increase in contract price.

- C. All workmanship shall be of the highest quality, as determined by the Engineer. This Contractor will be required to repair or replace all Work which is not of the highest quality and workmanship.
- D. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- E. Conductor fasteners shall be tightened with a torque tool in good condition to factory specifications. At time of inspection, torque tool(s) shall be available to demonstrate proper torque.

3.02 DEMOLITION

- A. Demolish the existing systems to allow installation of the new systems. No components, items or materials are to be re-used, unless specifically noted herein. All demolition material shall become the property of the Contractor, for his lawful disposal, except any material which the Owner may salvage. Equipment to be turned over to the Owner as salvaged shall be moved to on-site storage as directed by the Owner.

3.03 CONTINUITY OF SERVICES

- A. Do not interrupt existing services without Owner's and Architect's approvals.

3.04 TESTING, INSPECTION AND CLEANING

- A. 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.
- B. Verify and correct as necessary: voltages, tap settings, trip settings and phasing on equipment from secondary distribution system to points of use. Test secondary voltages at loadcenters, and at other locations on distribution systems as necessary. Test secondary voltages under no-load and full-load conditions.
- C. Provide necessary testing equipment and testing.
- D. Failure or defects in workmanship or materials revealed by tests or inspection shall be corrected promptly and retested until satisfactory results are achieved. Replace defective material.
- E. Final Inspection
 - 1. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the systems function properly in every respect.
- F. After completion of project, clean the exterior surface of equipment included in this section.

3.05 WARRANTY

- A. Materials provided under this section shall be warranted against defects in materials and workmanship by this Contractor for not less than one (1) year from the date of substantial completion.
- B. This Contractor shall respond to the site to address any warranty contact from the Owner within 48 hours. If the defective item can be repaired, it shall be repaired within 48 hours. Repairs shall be to the full satisfaction of the Owner, and repairs which render an item in a condition less than new will not be accepted. If the item cannot be repaired within 48 hours, it shall be replaced within 48 hours. If the item cannot be repaired or replaced within 48 hours, the contractor shall provide such temporary work as directed by the Owner to address the issue until such time as

the issue is permanently addressed. If the issue appears to be across all same or similar products, the contractor shall be prepared to address (repair or replace) the remaining items.

3.06 OPERATION AND MAINTENANCE MANUALS

- A. The following information shall be submitted for record purposes at project closeout:
 - 1. Final as-built drawings and information for items listed in this paragraph
 - 2. Wiring diagrams
 - 3. Installation information
 - 4. Signed Permits/Certificate of Inspection
 - 5. Warranties.
- B. Two (2) Operation and Maintenance Manuals shall include the following information: one copy of all approved submittals, Instruction books and/or leaflet, recommended renewal parts list and list of local distributors who service installed system. O&M manuals shall be bound in properly sized, indexed and tabbed 3-ring binders, with front and edge labeling.
- C. INSTRUCTION: Provide instruction as required to the building personnel and fire and safety personnel. "Hands-on" demonstrations of the operation of the system shall be provided.

3.07 ACCESS AND ACCESS PANELS

- A. Provide proper access to material or equipment that require access, inspection, replacement, repair or service. If proper access cannot be provided, confer with Engineer as to best method of approach to minimize effects of reduced access.

3.08 FIRE BLOCKING AND STOPPING

- A. Provide all materials and labor to penetrate or remove and re-install existing fire blocking, or re-route wiring to avoid fire blocking.
- B. Provide fire stopping for all electrical conduits which enter or pass through fire rated walls or floors. Materials and methods of fire stopping shall be approved by UL. Fire seal fittings shall be used around cable, in sleeves, or in core drilled holes passing through fire rated walls and floors. Fire stopping shall be T&B Fire-Seal, O.Z. Gedney, Minnesota Mining and Manufacturing Company or approved equal.

3.09 WIRING METHODS

- A. Install wire and cable in approved raceways as specified and as approved by authorities that have jurisdiction.
- B. Surface metal raceways shall not be used unless explicitly specified and shown on Drawings, or approved in advance by the Engineer. Do not use surface raceways on floor. Surface raceways shall be secured to the mounting surface using concealed means. Use only fittings provided by the manufacturer of the raceway system provided. Use of surface metal raceways, where approved, in lieu of cutting, fishing wiring, patching and painting, shall not be the basis of any claim for additional compensation.
- C. Wiring methods shall be as follows:
 - 1. Interior, finished, dry locations, concealed – Type NM-B or Type MC Cable.
- D. Where ferrous metal conduit exits concrete, into soil, the first 12" of raceway from the concrete shall be continuously wrapped with an anti-corrosion barrier, 20 mill PVC tape or approved equal.

- E. Only the best possible workmanship for type MC cable installation shall be accepted. Type MC cable which is not properly supported, neatly installed, or bundled shall be removed and replaced at no additional cost. The acceptability of Type MC cable installation shall be solely the determination of the Engineer.
- F. Where AFCI protection is provided at the first outlet of a branch circuit, the branch circuit wiring between the over current device and first outlet shall be installed in conduit or be Type MC cable.
- G. Where type NM wiring is used, all wiring mounted on a basement or crawl space wall shall be installed in type EMT or RGS raceway from the point where the cable leaves the underside of the framing above. If a ceiling is installed at or below the underside of the framing, this point shall be above the ceiling.
- H. No more than eight (8) type NM cables of #12 or #14 AWG shall be run through any single opening in framing members. No more than eight (8) type NM cables of #12 or #14 AWG shall be bundled together when in contact with building insulation.
- I. All conductors shall be installed in raceways, or fished in, or run in attic spaces, as required by the NEC. Wiring shall be concealed in finished spaces.
- J. All wiring in finished spaces shall be run concealed, except where surface metal raceway systems are specifically noted on the plans or otherwise approved. Provide chases, soffets and boxouts, finished to match surrounding areas, as required.
- K. Splices shall be made only at device outlet boxes. Addition or re-use of boxes in finished areas solely for the purpose of splicing will not be accepted.
- L. All device outlet boxes shall be set flush to the final finish surface. All openings in the surface finish around the box shall be filled in accordance with the MEC. Where device outlet boxes are located in an area with existing device outlet boxes, match mounting heights, but not less than 18" above finish floor. Mount all boxes true and plumb. Patch and paint as needed.
- M. All wiring shall be new. Remove all existing wiring and raceways to the maximum extent possible. Cut back and abandon concealed wiring and raceways.
- N. All conductors shall be neatly arranged and bundled, without excess cable at any point, but with reasonable slack to allow installation and removal of the device.

3.10 GROUNDING

- A. Bond and ground equipment and systems connected under this Section in accordance with standards of MEC and other applicable regulations. Provide approved means for terminating and connecting grounding conductors, such as lugs, crimp-on terminals, green ground screws, grounding wirenuts, etc.
- B. Conduit system shall be electrically continuous throughout. Equipment frames, enclosures, boxes, etc. shall be grounded by use of green colored equipment ground conductor sized as per Table 250.122 of MEC. Raceway ground alone will not be accepted.
- C. Green bonding jumper shall be installed in flexible conduits.

3.11 CIRCUIT BREAKERS

- A. Install circuit breakers in panelboards. Mark panel schedule accordingly. Panel markings shall be printed by typewriter, printer or other suitable means. Handwriting will not be acceptable. Utilized circuits shall be marked in ink. Spare or spaces shall be so marked in pencil, and may be marked by hand. No circuit shall be described in a manner that depends on transient conditions of occupancy.

3.12 FIRE ALARM

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. Permitting
 - 1. It is recognized that various jurisdictions may have varying requirements for issuance of permits for work related to fire protection systems. Be responsible for determining the local authority(ies) having jurisdiction, what their requirements are, and providing all documents required for permitting. The Engineer will provide the contract document plans, specifications, and where requested by the AHJ, a fire protection construction documents narrative.
- C. Comply completely with 780 CMR 33, Safeguards During Construction. Comply with NFPA 241 as listed in 780 CMR 35.
- D. Testing:
 - 1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
 - 2. Check proper operation of all alarm notification devices.
 - 3. Check installation, and operation of CO alarms.
- E. System Acceptance
 - 1. Provide notice as required by applicable codes to the Owner, occupants, engineer, general contractor, authorities having jurisdiction of scheduled testing.
 - 2. Pre-test. Perform a 100% test of the systems, and correct any deviations or deficiencies. Measure and set the sound pressure level (SPL) in db, A weighted, to meet the code requirement for the area(s) served, and as required by the local AHJ. The pre-test shall include all related interfaced systems.
 - 3. Contractor's Certification. Following the pre-test, certify to the Engineer in writing that a 100% pre-test has been completed, and that the systems are installed and operate in accordance with the approved fire protection construction documents and applicable codes, identifying any deviations, or so stating if there are no deviations. The certification shall be notarized.
 - 4. Engineer's test. Request and attend a 100% functional test of the systems in the presence of the Engineer. Include all required material and equipment for complete testing including ladders, carbon monoxide gas, test magnets, etc., and access to all areas and devices.
 - 5. Provide not less than seven (7) days advance notice to the Engineer of the requested test date.
 - 6. Have in hand the acceptance submittals listed below for review by the Engineer. Engineer's certification. Following the observation of an acceptable 100% test of the fire protection system(s) and any related interfaced system(s), and an acceptable visual observation of the installed system, and approval of the submittals listed below, the Engineer will provide a certification that the fire protection systems have been installed in accordance with the approved fire protection construction documents, including any deviations.
 - 7. Fire Department Test. Following issuance of the certification noted above, arrange for and attend a 100% test for witness by the local AHJ(s). Advise the Engineer of the time and date of the test. Immediately advise the Owner and Engineer of the results of the test, such as acceptance, failure and why, etc.
 - 8. This Contractor shall be responsible for all costs associated with the failure to comply with this procedure explicitly. This Contractor shall be responsible for all costs associated with re-

testing due to issues with the installed systems, failure to properly pre-test the system, failure to have the proper staff and test equipment on hand for testing. Costs include, but are not limited to, the Owner's, AHJs and Engineer's travel and labor costs at current hourly rates. Any costs shall be paid prior to the issuance of the Engineer's certification.

9. Acceptance Submittals:

- a. Submit the following hard copy documents for review by the Engineer and acceptance by the local AHJ prior to requesting final acceptance testing. It is recommended that the acceptance submittals be submitted well before the acceptance testing. Allow 30 days for review and approval of acceptance submittals. The submittals shall be hard copies.
 - i. Provide a completed record of completion, including all original ink signatures (i.e. not word-processor printed).
 - ii. Provide material, test, performance and completion certificates, properly executed by the parties in accordance with applicable NFPA standards.
 - iii. Provide final as-built plans.
- b. Once the as-built plans have been certified, turn a copy over to the Owner, and obtain a certification from the Owner that they have received the as-built fire protection system as-built plans, shop drawings, and O&M manuals.

END OF SECTION 26.00.00

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