

**SECTION 01110**

**SUMMARY OF WORK**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The Bidding Documents, Contract Requirements, and General Conditions, and applicable parts of Division 01 - General Requirements, as listed in the Table of Contents, shall be included in and made a part of this Section. Refer to Special Conditions for additional requirements.

1.02 DESCRIPTION OF WORK

- A. The name of the Project is: **REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS AT ELM PARK TOWERS**, Worcester Housing Authority, Worcester, Massachusetts.
- B. The Work required under the Contract consists of providing all labor and materials in accordance with the Contract Documents and all equipment, accessories, and related devices required to execute the intentions of the Contract Documents.
- C. ABBREVIATED SUMMARY:
  - 1. 425 Pleasant Street: Replacement of Existing Plumbing Waste Pipe Risers.
- D. LIMIT OF CONSTRUCTION: Work of this Contract includes, without limitation, all work outside the Project site, property lines, construction limit lines as shown on the Drawings to the extent that such work is required for the proper performance and completion of the Work in this Contract, including restoration to its original condition of all work damaged or destroyed by work in areas outside the Project site.
- E. UTILITIES: Work of this Contract includes, without limitation, full coordination and cooperation with local utility companies. The Contractor shall be responsible for the full coordination of all utility services including, but not limited to, natural gas, electrical, water, sewer, and other utilities. The Contractor shall provide all work required by utility companies in support of the provision, shut-off, relocation, and installation of utilities, including that which is expressly and not expressly specified in the Contract Documents. The Contractor shall pay all charges and fees related to temporary and permanent utility services assessed by the utility companies.
- F. All work shall be in accordance with the design approved by the Owner, Worcester Housing Authority. Contract Documents were prepared by the Engineer, BLW Engineers, Inc. and include the following Construction Documents:
  - 1. PROJECT MANUAL, dated **November 23, 2011**
    - a. The Specifications are written and organized in general conformance with Construction Specifications Institute Masterformat System. The organization of Specifications Sections is not intended to define the scope or limit of work for individual trades or sub-contractors. The General Contractor is solely responsible for the allocation of responsibilities amongst his sub-contractors.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- b. The Specifications are intended to establish an acceptable level of performance. Designation of a specific product, system, or manufacturer as acceptable does not imply that no modifications or customizations are required to meet specified performance criteria.
2. DRAWINGS dated **November 23, 2011**: The Drawings show design intent only. The Contractor is responsible for methods, procedures, and sequencing of construction to achieve the design intent.
- G. Construction shall conform to the Construction Project Schedule and Conditions of the Contract established by the Owner in accordance with the Agreement between the Owner and the Contractor.
  - H. BUILDING CONDITIONS AND RESTRICTIONS: Comply with requirements of the Owner regarding use of site including restrictions and conditions established for the building and adjacent site and conditions and restrictions including neighborhood restrictions, adjacent properties, and all other municipal restrictions and ordinances.
  - I. PHASING: The Work shall be carried out in accordance with phasing guidelines established by the Owner. It is intended that new systems be installed parallel to the existing systems. All efforts should be made to maintain utilities to each unit. Should the Contractor have alternative methods to phase the project without disruption, the Contractor shall notify the Engineer and Owner prior to the commencement of work.

END OF SECTION

**SECTION 01401**

**ALTERNATES**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. Each General Bidder shall be held fully responsible for examining the scope of the alternate generally defined herein and for recognizing any modifications to his work caused by any Alternate, whether or not his particular trade section is mentioned therein.
- B. General Bidders shall enter a single amount in the appropriate space provided in the Form for General Bid which total amount shall consist of the amount for all work to be performed.
- C. The work to be performed under Alternates shall be in strict accordance with the requirements of the Specifications.

1.02 ALTERNATE NO. 1

- A. Flooring: Additive cost to the project to provide removal and replacement of flooring as noted and shown on Drawing FL100.

END OF SECTION

**SECTION 01410**

**UNIT PRICES**

PART 1 - GENERAL

1.01 CONTRACT DOCUMENTS

- A. The general provisions of the Contract Documents and General Requirements apply to the work in this section.

1.02 RELATED DOCUMENTS

- A. SECTION 15400 – PLUMBING

1.03 UNIT PRICES

- A. Reroute/replace existing water piping in the event of obstruction to sanitary piping installation.
- B. Remove/replaces existing 2 inch tub trap, remove replace existing 4 inch closet flange and associated piping.

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

**SECTION 01731**

**CUTTING AND PATCHING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The BIDDING DOCUMENTS, CONTRACT REQUIREMENTS, AND GENERAL CONDITIONS, and applicable parts of DIVISION 01 - GENERAL REQUIREMENTS, as listed in the Table of Contents, shall be included in and made a part of this Section.

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting, fitting, and patching work, including attendant excavation and backfill, required to complete the Work or to:
  - 1. Make its several parts fit together properly.
  - 2. Uncover portions of the Work to provide for installations of ill-timed work.
  - 3. Remove and replace defective work.
  - 4. Remove and replace work not conforming to requirements of Contract Documents.
  - 5. Remove samples of installed work as specified for testing.
  - 6. Provide routine penetrations of non-structural surfaces for installation of piping, ductwork, and conduit.

1.03 RELATED REQUIREMENTS

- A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
  - 1. Section 01110 SUMMARY OF WORK for; Description of Project.
  - 2. Section 01600, PRODUCT REQUIREMENTS; Substitutions and product options.
  - 3. Section 01700, EXECUTION REQUIREMENTS for disposal procedures.
  - 4. Coring shall be performed by the trade requiring it, per Divisions 02 through 15, technical sections.

1.04 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.05 SUBMITTALS

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- A. Submit a written request to Architect well in advance of executing any cutting or alteration which affects:
    - 1. Work of Owner or separate contractor.
    - 2. Structural value or integrity of any element of the Project.
    - 3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
    - 4. Efficiency, operational life, maintenance, or safety of operational elements.
    - 5. Visual qualities of sight-exposed elements.
  
  - B. Request shall include:
    - 1. Identification of the Project.
    - 2. Description of affected work.
    - 3. The necessity for cutting, alteration, or excavation.
    - 4. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.
    - 5. Description of proposed work:
      - a. Description of why cutting-and-patching cannot (reasonably) be avoided.
      - b. Scope of cutting, patching, alteration, or excavation.
      - c. How it will be performed.
      - d. How structural elements (if any) will be reinforced.
      - e. Trades who will execute the work.
      - f. Products proposed to be used.
      - g. Extent of refinishing to be done.
      - h. Approximate dates of the work, and anticipated results in terms of variations from the work as originally completed (structural, operational, visual, and other qualities of significance).
  
    - 6. Alternatives to cutting and patching.
    - 7. Cost proposal, when applicable.
    - 8. Written permission of any separate contractor whose work will be affected.
  
  - C. Should conditions of Work or the schedule indicate a change of products from original installation, Contractor shall submit request for substitution as specified in Section 01600, PRODUCT REQUIREMENTS.
  
  - D. Submit written notice to Architect designating date and time the work will be uncovered.
- 1.06 QUALITY ASSURANCE
- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
  
  - B. Permission to patch any items of work does not imply a waiver of the Architect's right to require complete removal and replacement in said areas and of said items if, in Architect's opinion, patching does not satisfactorily restore quality and appearance of work.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- C. Operational Elements: Do not cut and patch the following operating elements and related components in a manner that results in reducing their capacity to perform as intended or which results in increased maintenance or decreased operational life or safety.
  - 1. Primary operational systems and equipment.
  - 2. Electrical wiring systems.
  
- D. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, which results in reducing their capacity to perform as intended, or which results in increased maintenance or decreased operational life or safety.
  - 1. Water, moisture, and vapor barrier.
  - 2. Membranes and flashing.
  - 3. Exterior wall elements.
  - 4. Equipment supports.
  - 5. Piping, ductwork, vessels and equipment.
  - 6. Noise and vibration control elements and systems.
  
- E. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.07 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
  
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.
  - 2. Comply with specifications and standards for each specific product involved.
  - 3. Comply with building standards as applicable.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.03 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay. The scope and jurisdiction of this work is as follows:
  - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

4. Coring through asbestos-containing materials: Cut holes through wetted material, using a hepa shrouded drill. Work shall be performed by an abatement contractor.
  5. Excavating and Backfilling: Comply with requirements in applicable Division 02 Sections where required by cutting and patching operations.
  6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
  3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition.

END OF SECTION

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

**SECTION 02010**

**EXISTING CONDITIONS**

PART 1 - GENERAL

- 1.01 GENERAL PROVISIONS: All Contract Documents, including General and Supplementary Conditions, apply to the Work of this Section.

PART 2 - EXISTING CONDITIONS

- 2.01 Before submitting a bid, the Contractor shall make a thorough examination of the conditions at the site, checking the requirements of the Plans and Specifications with the existing conditions.
- 2.02 No claim for extra compensation or extension of time will be allowed on account of the Contractor's failure to estimate properly the quantities, locations, and measurements of all items required to complete the work which could be discerned from visiting the site.
- 2.03 The Contractor shall report any discrepancies to the Engineer and request an interpretation.

END OF SECTION

**SECTION 02070**  
**SELECTIVE DEMOLITION**

PART 1 - GENERAL

1.01 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.

1.02 SUMMARY

- A. This Section includes the following:
  - 1. Demolition and removal of selected portions of the building or structure.
  - 2. Repair procedures for selective demolition operations.
- B. Related Sections include the following:
  - 1. Division 01 Section "Summary" for use of the premises and phasing requirements.

1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged, or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.
- E. Remove and Abandon: Detach items from existing construction, dispose of the items off-site, and seal the area or opening that remains in such a way that it does not present a hazard.

1.04 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property, and shall be removed from Project site.

1.05 SUBMITTALS

- A. Proposed Dust-Control and Noise-Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- B. Schedule of Selective Demolition Activities: Indicate the following:
1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
  2. Interruption of utility services.
  3. Coordination for shut-off, capping, and continuation of utility services.
  4. Use of stairs and roof hatches.
  5. Locations of temporary partitions and means of egress.
  6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- D. Pre-Demolition Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.
- E. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes. Copies of all disposal manifests shall be presented to the Owner.

1.06 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-Demolition Conference: Conduct conference at Project site to comply with requirements in Division 01. Review methods and procedures related to selective demolition including, but not limited to, the following:
1. Inspect and discuss condition of construction to be selectively demolished.
  2. Review structural load limitations of existing structure.
  3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.07 PROJECT CONDITIONS

- A. The building will be occupied during the course of the selective demolition. Conduct selective demolition so building tenants will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect the building's occupants.
- B. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

1. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for condition of areas to be selectively demolished.
- D. The existing building materials may contain asbestos containing or lead based building materials. Contractor to be responsible for accomplishing all demolition and disposal efforts (and testing, if required) in accordance with all applicable local, state and federal laws and ordinances.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  1. Maintain fire-protection facilities in service during selective demolition operations.

1.08 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
  1. Retain a qualified installer or fabricator to patch the exposed areas damaged during selective demolition. If it is impossible to engage original Installer or fabricator, engage another recognized experienced and specialized firm.
  2. Any roof presently covered by a warranty shall be repaired by a Roofer that is certified to install/repair the affected roof product.

PART 2 - PRODUCTS

2.01 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
  1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  2. Use materials whose installed performance equal or surpass that of existing materials.
- B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

### 3.02 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
  - 1. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
  - 1. Owner will arrange to shut-off indicated utilities when requested by Contractor.
  - 2. Arrange to shut-off indicated utilities with utility companies.
  - 3. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
  - 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

### 3.03 PREPARATION

- A. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
  - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
  - 3. Protect existing site improvements, appurtenances, and landscaping to remain.
  - 4. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
- C. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- D. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- E. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration, and to separate areas from fumes and noise.
- F. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement, or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

#### 3.04 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
  2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas and in accordance with all local, state, federal laws and guidelines.
1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

#### 3.05 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly.
  10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
- B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition, and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.06 PATCHING AND REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- C. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

### 3.07 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials in accordance with all applicable local, state, and federal laws and ordinances. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- C. Disposal: Transport demolished materials and dispose of at designated legal locations in accordance with all local, state, and federal laws and ordinances. The Owner shall be presented with copies of all manifests for disposal of hazardous materials.

3.08 SELECTIVE DEMOLITION

- A. See Construction Documents.
- B. Existing Items to Be Removed and Salvaged: See Construction Documents.
- C. Existing Items to Be Removed and Reinstalled: See Construction Documents.
- D. Below may be used to inform Contractor of items that are to remain, such as those that occur in, or are adjacent to, construction being demolished, but are not being removed and reinstalled. Delete if not required.
- E. Existing Items to Remain: See Construction Documents.

END OF SECTION

**SECTION 06100**  
**ROUGH CARPENTRY**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following :
1. Framing with dimension lumber.
  2. Wood furring, grounds, nailers, and blocking.
  3. Sheathing.
  4. Subflooring.
  5. Underlayment.
  6. Rooftop equipment bases and support curbs.
  7. Fasteners and metal framing anchors.

1.02 REFERENCES

- A. American Forest and Paper Association (AFPA)
1. Manual for Wood Frame Construction
- B. American National Standards Institute (ANSI)
1. A208.1 Mat-Formed Manufactured Panels
- C. Engineered Wood Association
1. Form E30 Engineered Wood Design/Construction Guide
- D. American Society of Mechanical Engineers (ASME)
1. B18.2.1 Square and Hex Bolts and Screws - Inch Series
  2. B18.6.1 Wood Screws (Inch Series)
- E. American Society for Testing and Materials (ASTM)
1. A153 Specification for Zinc -Coating (Hot-Dip of Iron and Steel Hardware)
  2. A307 Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
  3. A563 Specification for Carbon and Alloy Steel Nuts
  4. A653 Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
  5. D245 Practice for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber
  6. D2555 Test Method for Establishing Clear Wood Strength Values
- F. American Wood Preservers Association (AWPA)
1. C2 Lumber, Pressure Treatment
  2. C9 Plywood, Pressure Treatment
  3. C20 Structural Lumber, Fire-Retardant Pressure Treatment
  4. C27 Plywood, Fire-Retardant Pressure Treatment
  5. M4 Standard for the Care of Preservative-Treated Wood Products

- G. Federal Specification (FS)
  - 1. FF-N-105B Nails, Brads, Staples and Spikes: Wire, Cut and Wrought
- H. International Conference of Building Officials (ICBO)
  - 1. International Building Code (IBC) Chapter 23 Wood
- I. U.S. Department of Commerce, National Institute of Standards and Technology
  - 1. PS 1 US Product Standard for Construction and Industrial Plywood
  - 2. PS 2 Performance Standard for Wood-Based Structural-Use Panels
  - 3. PS 20 American Softwood Lumber Standard (ASLS)

### 1.03 SUBMITTALS

- A. General: Submit the following in accordance with the conditions of Contract and Section 01330, "Submittal Procedures."
- B. Product Data: Submit manufacturer's product data for each distinct product specified.
- C. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use, and design values approved by American Lumber Standards Committee's (ALSC) Board of Review.
- D. Wood treatment data as follows, including chemical treatment manufacturer's warranty and instructions for handling, storing, installing, and finishing treated materials:
  - 1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
  - 2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.
  - 3. For fire-retardant-treated wood products, include certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials.
- E. LEED Submittals
  - 1. Credit EQ 4.1: Manufacturers' product data for construction adhesive, including printed statement of VOC content.
  - 2. Credit EQ 4.4: composite wood manufacturer's product data for each composite wood product used indication that bonding agent used contains no urea formaldehyde.
  - 3. Credit MR 7: Certificates of chain-of-custody signed by manufacturers certifying that products specified to be made from certified wood were made from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria". Include evidence that mill is certified for chain-of-custody by an FSC-accredited certification body.

1.04 QUALITY ASSURANCE

- A. Single-Source Responsibility for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product from one source and by single producer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wood products bundled or crated to provide adequate protection during transit and job storage, with required grade marks clearly identifiable. Inspect wood products for damage upon delivery. Remove and replace damaged materials.
- B. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks, and under temporary coverings.
1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.
- C. Protect sheet materials during handling to prevent breaking of corners and damage to surfaces.

PART 2 - PRODUCTS

2.01 LUMBER, GENERAL

- A. Lumber Standards: Comply with PS 20-99, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review. Lumber design values are to comply with ASTM D245 and ASTM D2555.
- B. Inspection Agencies: Inspection agencies, and their grading rules include the following:
1. Northeastern Lumber Manufacturers Association (NELMA)
- a. Standard Grading Rules
2. National Lumber Grades Authority (NLGA)(Canadian)
- a. Standard Grading Rules
3. Redwood Inspection Service (RIS)
- a. Standard Specifications for Grades of California Redwood Lumber
4. Southern Pine Inspection Bureau (SPIB)
- a. Standard Grading Rules for Southern Pine Lumber
5. West Coast Lumber Inspection Bureau (WCLIB)
- a. No. 17 Standard Grading Rules for West Coast Lumber
6. Western Wood Products Association (WWPA)
- a. Western Lumber Grading Rules

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
  - 1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.
- D. Where nominal sizes are indicated, provide actual sizes required by PS 20-99 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
  - 1. Provide dressed lumber, surfaced four sides (S4S), unless otherwise indicated.
  - 2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38 mm actual) thickness or less, unless otherwise indicated.

## 2.02 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWWA C2 (lumber) and AWWA C9 (plywood). Mark each treated item with Quality Mark Requirements of inspection agency approved by ALSC's Board of Review.
  - 1. For exposed items indicated to receive stained finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
- B. Pressure treat aboveground items with waterborne preservatives to minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m.). After treatment, kiln-dry lumber and plywood to maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
  - 3. Wood framing members less than 18 inches (460 mm) above grade.
  - 4. Wood floor plates installed over concrete slabs directly in contact with earth.
- C. Pressure treat wood members in contact with ground or freshwater with waterborne preservatives to minimum retention of 0.40 lb/cu. ft. (6.4 kg/cu. m.).
- D. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWWA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

## 2.03 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated wood is indicated, comply with applicable requirements of AWWA C20 (lumber) and AWWA C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of Underwriter Laboratory (UL), U.S. Testing, or Timber Products Inspection, Inc.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- B. Interior Type A: For interior locations, use chemical formulation that produces treated lumber and plywood with the following properties under conditions present after installation:
1. Bending strength, stiffness, and fastener-holding capacities are not reduced below values published by manufacturer of chemical formulation under elevated temperature and humidity conditions simulating installed conditions when tested.
  2. No form of degradation occurs due to acid hydrolysis or other causes related to treatment.
  3. Contact with treated wood does not promote corrosion of metal fasteners.
- C. Exterior Type: Use for exterior locations, and where indicated.
- D. Inspect each piece of treated lumber or plywood after drying, and discard damaged or defective pieces.

2.04 DIMENSION LUMBER

- A. General: If not indicated on Contract documents, provide dimension lumber of any species and grades indicated for applicable use category listed in table below. Lumber shall comply with ALSC National Grading Rule (NGR) provisions of inspection agency applicable to species.

PRODUCT (Nominal Dimension)	GRADE	USE
Structural Light Framing 2 to 4 inches thick 2 to 4 inches wide	Select Structural No. 1 No. 2 No. 3	Structural applications where highest design values are needed in light framing sizes.
Light Framing 2 to 4 inches thick 2 to 4 inches wide	Construction Standard Utility	Where high-strength values are not required, such as wall framing, plates, sills, cripples, and blocking.
Stud 2 to 4 inches thick 2 inches and wider	Stud	Optional all-purpose grade designed primarily for stud uses, including bearing walls.
Structural Joists and Planks 2 to 4 inches thick 5 inches and wider	Select Structural No. 1 No. 2 No. 3	Intended to fit engineering applications for lumber nominal 5 inches and wider, such as joists, rafters, headers, beams, trusses, and general framing.

- B. Species and grades must meet or exceed the following values, unless indicated otherwise on Contract documents.
1.  $F_b$  (extreme fiber stress in bending): Minimum 850 psi (5.9 MPa).
  2.  $E$  (modulus of elasticity): Minimum 1,300,000 psi (8950 MPa).
- C. Exposed Framing: Refers to dimension lumber which is not concealed by other work, and is indicated to receive stained, painted, or natural finish.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

1. Provide material hand-selected from lumber of species and grade indicated for type of use, for uniformity of appearance, and freedom from characteristics that would impair finish appearance.

2.05 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated, and into shapes shown on Contract documents.
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- D. Grade and Species: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common or Standard grade per WWPA of any species.

2.06 WOOD-BASED STRUCTURAL-USE PANELS, GENERAL

- A. Structural-Use Panel Standards: Panel thickness, grade, veneer qualities and group number or span rating, shall be as shown on Drawings, and in accordance with recommendations of APA. Comply with PS 1 for plywood panels, and PS 2 for products not manufactured under PS 1 provisions.
  1. Panels which have any edge or surface permanently exposed to weather shall be classed Exterior Grade.
  2. Panel thickness, grade, and group number or span rating shall be at least equal to that shown on Drawings.
  3. Application shall be in accordance with recommendations of APA.
  4. Trademark: Factory-mark each structural-use panel with APA trademark evidencing compliance with grade requirements.

2.07 CONCEALED, PERFORMANCE-RATED STRUCTURAL-USE PANELS

- A. General: Where structural-use panels are indicated for concealed types of applications, provide APA performance rated panels complying with requirements indicated for grade designation, span rating, exposure durability classification, and edge detail (where applicable).
  1. Provide panel clips for edge support as recommended by panel manufacturer, or where required by IBC.
  2. Provide panels of thickness meeting requirements specified, but not less than thickness indicated.
- B. Combination Subfloor-Underlayment: APA- rated Sturd-I-Floor.
  1. Exposure Durability Classification: Exposure 1.
  2. Span Rating: As required to suit joist spacing indicated.
  3. Edge Detail: Tongue and groove.
  4. Surface Finish: Fully sanded face.

- C. Subflooring: APA-rated sheathing.
  - 1. Exposure Durability Classification: Exposure 1.
  - 2. Span Rating: As required to suit joist spacing indicated.
- D. Wall Sheathing: APA-rated sheathing.
  - 1. Exposure Durability Classification: Exposure 1. Where sheathing is exposed on any side, it shall be Exposure Durability Classification "Exterior."
  - 2. Span Rating: As required to suit stud spacing indicated.
- E. Roof Sheathing: APA-rated sheathing.
  - 1. Exposure Durability Classification: Exposure 1.
  - 2. Span Rating: As required to suit joist or truss spacing indicated.

#### 2.08 STRUCTURAL-USE PANELS FOR BACKING

- A. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant-treated plywood panels with grade C-D plugged Exposure 1, in thickness indicated on Contract documents or, if not otherwise indicated, not less than 15/32 inch (11.9 mm) thick.

#### 2.09 STRUCTURAL-USE PANELS FOR UNDERLAYMENT

- A. General: Over smooth subfloors, provide underlayment not less than 1/4 inch (6.4 mm) thick. Over board or uneven subfloors, provide underlayment not less than 11/32 inch (8.7 mm) thick.
- B. Plywood Underlayment for Resilient Flooring: For underlayment under 19/32 inch (15.1 mm) thick, provide plywood panels with fully sanded face, APA Underlayment grade, Exposure 1.
- C. Structural-Use Panel Underlayment for Resilient Flooring: For underlayment 19/32 inch (15.1 mm) thick or more, provide fully sanded, veneer-faced, APA-rated, Sturd-I-Floor panels, Exposure 1.
- D. Plywood Underlayment for Ceramic Tile: Provide APA-rated, Underlayment grade, exterior plywood, 5/8 inch (15.9 mm) thick, for ceramic tile set in epoxy mortar.
- E. Plywood Underlayment for Carpet: For underlayment under 19/32 inch (15.1 mm) thick, provide plywood panels with fully sanded face, APA Underlayment grade, Exposure 1.
- F. Structural-Use Panel Underlayment for Carpet: For underlayment 19/32 inch (15.1 mm) thick or more, provide APA-rated Sturd-I-Floor panels with touch-sanded face, Exposure 1.

#### 2.10 PARTICLEBOARD

- A. General: Comply with and factory mark each panel according to ANSI A208.1. Provide thickness indicated on Contract documents.
- B. Particleboard Underlayment: Grade PBU.
- C. Particleboard Subflooring: Grade M-3-Exterior Glue.

- D. Particleboard Wall Sheathing: Grade M-1-Exterior Glue.

## 2.11 FASTENERS

- A. General: Provide fasteners of size and type indicated, that comply with requirements specified.
  - 1. Where rough carpentry work is exposed to weather, in ground contact, or in areas of high relative humidity, provide fasteners with hot-dip, zinc-coating per ASTM A153
- B. Nails, Wire, Brads, and Staples: ASTM F1667
- C. Wood Screws: ASME B18.6.1.
- D. Lag Bolts: ASME B18.2.1.
- E. Bolts: Steel bolts complying with ASTM A307, Grade A with ASTM A563 hex nuts and, where indicated, flat washers.

## 2.12 METAL FRAMING ANCHORS

- A. General: Provide galvanized steel framing anchors of structural capacity, type, and size indicated, with allowable design loads as published by manufacturer that meet or exceed those indicated.
- B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653, G60 coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.

## PART 3 - EXECUTION

### 3.01 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.
- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with IBC Table 2304.9.1 Fastening Schedule.

### 3.02 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

- A. Install wood grounds, nailers, blocking, and sleepers where shown, and where required for screeding or attaching other work. Form to shapes shown and cut as

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

required for true line and level of attached work. Coordinate locations with other work involved.

- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.
- C. Install permanent grounds of dressed, preservative-treated, key-beveled lumber not less than 1-1/2 inches (38.1 mm) wide, and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

### 3.03 WOOD FURRING

- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
- B. Firestop furred spaces of walls at each floor level, and at ceiling with wood blocking or noncombustible materials, accurately fitted to close furred spaces.

### 3.04 WOOD FRAMING, GENERAL

- A. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.
- B. Install framing members of size and at spacing indicated.
- C. Do not splice structural members between supports.
- D. Firestop concealed spaces of wood-framed walls and partitions at each floor level and at ceiling line of top story. Where firestopping is not inherent in framing system used, provide closely fitted wood blocks of 2-inch nominal (38 mm actual) thickness lumber of same width as framing members.
- E. Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow face is parallel.
  - 1. Provide single bottom plate and double top plates using members of 2-inch nominal (38 mm actual) thickness whose widths equal that of studs; except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction, unless otherwise indicated.
  - 2. For exterior walls, provide 2 by 6-inch nominal (38 by 140 mm actual) size wood studs spaced 24 inches (610 mm) o.c., except where otherwise indicated or required.
  - 3. For interior partitions and walls, provide 2 by 4-inch nominal (38 by 89 mm actual) size wood studs spaced 16 inches (406 mm) o.c., except where otherwise indicated or required.
- F. Construct corners and intersections with three (3) or more studs. Provide miscellaneous blocking and framing as shown, and as required to support facing materials, fixtures, specialty items, and trim.
  - 1. Provide continuous horizontal blocking at midheight of single-story partitions over 96 inches (2.4 m) high and multistory partitions, using members of 2-inch nominal (38 mm actual) thickness and of same width as wall or partitions.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- G. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs.
1. For non-load-bearing partitions, provide double-jamb studs with headers not less than 4-inch nominal (89 mm actual) depth for openings 36 inches (914 mm) and less in width, and not less than 6-inch nominal (140 mm actual) depth for wider openings.
  2. For load-bearing walls, provide double-jamb studs for openings 72 inches (1.8 m) and less in width, and triple-jamb studs for wider openings. Provide headers of depth shown as indicated on Contract documents.
- H. Provide bracing in exterior walls and at interior load-bearing walls (that are not more than 25 feet (7.6 m) from other parallel braced walls) at each end and at not more than 25 feet (7.6 m) apart, to comply with IBC Section 2308.9.3 "Bracing" and IBC Table 2308.9.3(I).

3.05 RAFTER AND CEILING JOIST FRAMING

- A. Ceiling Joists: Install ceiling joists with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.
- B. Rafters: Notch to fit exterior wall plates and toe nail or use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
- C. Provide collar beams (ties) as shown or, if not shown, provide 1 by 6-inch nominal (19 by 140 mm actual) size boards between every third pair of rafters, but not more than 48 inches (1219 mm) o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.
- D. Rafter Ties: Tie straps shall be provided from each roof framing member to exterior studs, posts or other supporting members below the roof. Opposing rafters at ridges shall be aligned and connected with straps.

3.06 INSTALLATION OF STRUCTURAL-USE PANELS

- A. General: Comply with applicable recommendations contained in APA Form No. E30, for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated below:
1. Combination Subflooring-Underlayment: Glue subflooring and underlayment to floor joists, and screw to joists. Space panels 1/8 inch (3.18 mm) at edges and ends.
  2. Subflooring: Glue subflooring to floor joists, and screw to joists. Space panels 1/8 inch (3.18 m) at edge and ends.
  3. Sheathing: Nail to framing. Space panels 1/8 inch (3.18 mm) at edges and ends.
  4. Underlayment: Nail to subflooring. Space panels 1/32 inch (0.8 mm) at edges and ends.
  5. Plywood Backing Panels: Nail or screw to supports.

3.07 PARTICLEBOARD UNDERLAYMENT

- A. Install to comply with the recommendations of the National Particleboard Association (NPA) for type of subfloor indicated.
  - 1. Fill and sand gouges, gaps, and chipped edges. Sand uneven joints flush.
  - 2. Glue and nail underlayment to subflooring throughout.

END OF SECTION

**SECTION 06200**

**FINISH CARPENTRY**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 01, General Requirements, are included as a part of this Section as though bound herein.

1.02 SECTION INCLUDES

- A. "Finish Carpentry" is defined to include miscellaneous exposed wood members commonly known as architectural woodwork, unless such items are specified under another Section of these Specifications.
  - 1. Plastic laminate herein refers to millwork items as indicated that are not included on Casework Schedules.
- B. The types of Finish Carpentry include, but are not necessarily limited to, the following paragraphs:
  - 1. Items Installed by this Section, but provided by other Sections:
    - a. Painting to be furnished in Section 09900 PAINTING

1.03 SUBMITTALS

- A. Provide manufacturer's product data for purchased items installed in millwork prior to delivery and for each type of product and process specified in this section and incorporated into items of architectural woodwork during fabrication, finishing, and installation.
- B. Submit complete shop drawings by approved fabricator for proposed millwork items requiring shop fabrication processes.
- C. Samples of:
  - 1. Proposed solid woods for transparent finish (three 3/4" by 3" by 8" pieces of each species and cut).
  - 2. Proposed veneered woods for transparent finish (three 3/4" by 8" by 8" pieces of each species and cut).
  - 3. Available color and pattern choices for plastic laminate surfacing (one complete chain).
- D. Product certificates signed by woodwork manufacturer certifying that products comply with specified requirements.
- E. Product Data: Provide product data for all hardware and accessories. Unless otherwise indicated, submit the following for each type of product provided under work of this Section:

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

1. Submit environmental data in accordance with Table 1 of ASTM E2129 for products provided under work of this Section.

1.04 QUALITY ASSURANCE

- A. Quality Standards: Except as otherwise shown or specified, comply with specified provisions of the Architectural Woodwork Institute (AWI) "Quality Standards."
- B. Optimum Moisture Content: Kiln-dry woodwork to an average moisture content within the following ranges or as otherwise recommended by applicable Quality Standards for the regional climatic conditions involved.
  1. Exterior woodwork - 9 to 15 percent.
  2. Interior woodwork - 5 to 10 percent.
- C. Sustainably Harvested Wood: Certification Organizations shall be accredited by the Forest Stewardship Council, Sustainable Forestry Board, or Canadian Standards Association.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soiling, and deterioration.
- B. Do not deliver woodwork until painting, wet work, grinding, and similar operations which could damage, soil, or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, woodwork must be stored in other than installation areas, store only in areas which meet the requirements specified for installation areas.
- C. Wood to be painted shall be sealed upon delivery to the site; refer to Sections 09900.

1.06 PROJECT CONDITIONS

- A. Examination of Substrate and Conditions: The Installer must examine the substrate and the conditions under which the Work under this Section is to be performed and notify the Contractor in writing of any unsatisfactory conditions. Do not proceed with Work under this Section until unsatisfactory conditions have been corrected.
- B. Do not install woodwork until the required temperature and relative humidity have been stabilized in installation areas.
- C. Maintain temperature and relative humidity as required for a tolerance of plus or minus one percent of the specified optimum moisture content until woodwork receives specified finishes. Maintain temperature and humidity conditions until acceptance of the Work by the Owner.
- D. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of work.
- E. Protect installed woodwork from damage by other trades until Owner's acceptance of the Work. Advise Contractor of required protection procedures.

PART 2 - PRODUCTS

2.01 INTERIOR MATERIALS

A. General: Provide materials that comply with requirements of the AWI Woodworking Standard for each type of woodwork and quality grade indicated and, where the following products are part of woodwork, with requirements of the referenced product standards, that apply to product characteristics indicated:

1. High Pressure Laminate: NEMA LD3.
2. Softwood Plywood: PS 1.
3. Hardwood Plywood and Face Veneers: HPVA HP-1.
4. Formaldehyde Emission Levels: Comply with formaldehyde emission requirements of each voluntary standard referenced below:
  - a. Hardwood Plywood: HPMA FE

2.02 EXTERIOR MATERIALS

A. Materials, General

1. Lumber Standards: Comply with PS 20 "American Softwood Lumber Standard" for lumber and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee Board of Review.
2. Plywood Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood and, for products not manufactured under PS 1, with APA PRP-108.
3. Grade Stamps: Provide lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

2.03 FASTENERS AND ANCHORS

A. Screws: Select material, type, size, and finish required for each use. Comply with FS FF-S-111 for applicable requirements.

1. For metal framing supports, provide screws as recommended by metal framing manufacturer.

B. Anchors: Select material, type, size, and finish required by each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry work for subsequent woodwork anchorage.

2.04 FACTORY FINISHING OF INTERIOR WOODWORK

A. Quality standard comply with AWI Section 1500 unless otherwise indicated.

B. General: Finishing of interior architectural woodwork is to be preformed at factory as specified in this section.

1. For painted finishes, refer to Section 09900 – Painting for final finishing of installed architectural woodwork and for material and application requirements of prime coats for woodwork not specified to receive final finish in this section.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces and similar preparations for finishing of architectural woodwork, as applicable to each unit of work

PART 3 - EXECUTION

3.01 PREPARATION

- A. Condition finish carpentry to average prevailing humidity conditions in installation areas prior to installing.
- B. Before installing finished carpentry, examine shop fabricated work for completion and complete work as required, including back priming and removal of packing.

3.02 FINISH CARPENTRY INSTALLATION

- A. Quality Standard: Install woodwork to comply with AWI Section 1700 for same grade specified in Part 2 of this section for type of woodwork involved.
- B. Install, plumb, level, true, and straight with no distortions. Shim as required using concealed shims.
- C. Cut to fit unless specified to be shop fabricated or shop cut to exact size. Where woodwork abuts other finished work, scribe and cut for accurate fit. Before making cutouts, drill pilot holes at corners.
- D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use screws or fine finishing nails for exposed fasteners, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- E. Distribute defects allowed in the quality grade specified to the best overall advantage when installing job assembled woodwork items.

END OF SECTION

**SECTION 07500**

**MEMBRANE ROOFING**

**(ROOFING INSULATION ADHESIVE)**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Roofing adhesive used to attach compatible roof insulation boards to roof decks and substrates.
  - 1. Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 01 References Section may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

1.02 REFERENCES

- A. Underwriters Laboratories, Inc. (UL):
  - 1. UL 1897 Standard for Safety for Uplift Tests for Roof Covering Systems.
- B. Factory Mutual (FM):
  - 1. Factory Mutual Approval Guide.
    - a. Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Omit descriptions to composite and operational properties to extent necessary to link multiple components of a system and to interface with other systems.
    - b. Specifier Note: Compatible roof insulations include expanded polystyrene, high density wood fiber, perlite, polyisocyanurate, Foamglas. Compatible roof decks and substrates include lightweight structural concrete, poured-in-place concrete (cured 28 days minimum), precast concrete, cementitious wood fiber plank (pull test required), lightweight structural plank, vapor retarders approved by The Dow Chemical Company, nongraveled (bald) Class I built-up roofs (pull test required), graveled built-up roofs

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
  - 1. FM Flat Roof by Firestone
- B. Performance Requirements: Provide adhered systems which have been fabricated and installed to meet the following criteria:

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

1. Roof shall be installed and repaired in accordance to Firestone standards. Installer shall be licensed to repair/install Firestone roofs. Contractor shall perform all work as required to maintain existing warranties, should they exist.
  - a. Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor either before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 01 Submittal Procedures Section.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal Procedures Section.
- B. Product Data: Submit manufacturer's product data, including manufacturer's SPEC-DATA sheet and installation instructions.
- C. Quality Assurance/Control Submittals: Submit the following:
  1. Test Reports: Upon request, submit test reports demonstrating compliance with specified design and performance criteria.
- D. Closeout Submittals: Submit the following:
  1. Warranty documents specified herein.
    - a. Specifier Note: Article below should include prerequisites, standards, limitations and criteria which establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 01 Quality Assurance Section.

1.05 QUALITY ASSURANCE

- A. Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 01 Regulatory Requirements Section. Repetitive statements should be avoided.
- B. Qualifications: Utilize an installer with demonstrated experience on projects of similar scope and complexity.
- C. Regulatory Requirements and Approvals:
  1. [Firestone Corporation] [Massachusetts Building Code] [Local Building Inspector] [Worcester Housing Authority] [Engineer of Record]
- D. Preinstallation Meetings: Contractor to attend pre-installation meeting prior to commencement of work as required by Engineer and Owner.
  1. Specifier Note: Article below should include special and unique requirements. Coordinate article below with Division 01 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 01 Product Requirement Section.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
  - 1. Store product between 45 °F and 75 °F (7 °C and 24 °C).
  - 2. Do not apply product which has passed its expiration date.

1.07 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Comply with the following requirements:
  - 1. Do not apply product when temperature of adhesive is below 70 °F (21 °C).
  - 2. Do not apply product when ambient and surface temperatures are below 40 °F (4 °C).
  - 3. Do not apply product during inclement weather.
  - 4. Do not apply product on wet surfaces or on decks with standing water.
    - a. Specifier Note: Coordinate article below with Conditions of the Contract and with Division 01 Closeout Submittals (Warranty) Section.

1.08 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.
  - 1. Comply with manufacturer's warranty application procedures, including submitting to manufacturer, prior to project commencement, a "Pre-Job Qualification Form," signed "Letter of Intent to Warrant," proof of purchase and a signed copy of the "Job Completion Notice."
    - a. Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements. Specify desired warranty period. Standard warranty period is 10 years. Extended warranty periods of 15 years and 20 years are available to owner for an additional cost.
  - 2. Warranty Period: 20 years.

PART 2 - PRODUCTS

- 2.01 Specifier Note: Retain article below for proprietary method specification. Add product attributes performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.02 ROOFING INSULATION ADHESIVE

- A. Specifier Note: Paragraph below is an addition to CSI SectionFormat and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.
- B. Manufacturer: The Dow Chemical Company, North American Systems House, Building Products Group.
  - 1. Contact: 1881 West Oak Parkway, Marietta, GA 30062; Telephone: (888) 868-1183; Fax: (770) 423-4395; E-mail: stikit@ flexpro.com; website: www.flexibleproducts.com.
- C. Proprietary Products/Systems. Roof insulation adhesive, including the following:
  - 1. Dow INSTA-STIK Professional Roof Insulation Adhesive:
    - a. Material: Single component, moisture cured polyurethane adhesive.
      - 1) Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 01 Project Requirements (Product Substitutions Procedures) Section.

2.03 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.
  - 1. Specifier Note: Retain article below if applicable to project such as roof repair or rehab work.

2.04 EXISTING PRODUCTS

- A. [Specify requirements for existing products.].

2.05 ACCESSORY MATERIALS

- A. Accessory Materials: Refer to other sections for related materials.

PART 3 - EXECUTION

- A. Specifier Note: Article below is an addition to the CSI SectionFormat and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

3.02 MANUFACTURER'S INSTRUCTIONS

- A. Comply with the instructions and recommendations of the roof insulation adhesive manufacturer.

3.03 EXAMINATION

- A. Site Verification of Conditions:
  - 1. Verify conditions are acceptable for application of roof insulation adhesive.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

2. Do not apply roof insulation adhesive until unsatisfactory conditions have been corrected.

### 3.04 PREPARATION

#### A. Surface Preparation:

1. Lightweight Structural Concrete, Plywood and Cementitious Wood Fiber:
  - a. Surfaces must be free of any debris, dirt, grease, oil, diesel fuel or standing water.
2. Re-Cover Over Bituminous Asphalt Built-Up Roofing (BUR):
  - a. Completely remove existing roofing materials from old roof.
  - b. Clean surface of roof deck.
  - c. If residual asphalt is present on the deck surface from previous roof system, a field pull test must be performed to determine compatibility. Contact The Dow Chemical Company, Roofing Technical Support, at least fourteen (14) days in advance to schedule pull tests.
3. Steel Deck:
  - a. Upper flange of steel deck must be free of debris, dirt, grease, oil, diesel fuel and standing water. On new steel, the residual shop oil coating must be removed using acetone, naphtha or comparable cleaner.

### 3.05 APPLICATION

#### A. Insulation:

1. Review roofing insulation plan. The roof insulation boards to be attached must be no larger than 4' x 4' (1 x 1 m) as dictated by good roofing practices.
2. In multiple layers of insulation, the staggered joint method must be used to eliminate thermal breaks.
3. Dispense adhesive beads perpendicular to the direction beads were dispensed on previous layer.

#### B. Application Rate:

1. Dispense 1' (304.8 mm) of 3/4" - 1" (19.1 - 25.4 mm) diameter bead of adhesive for every square foot of insulation board to be attached. The application rate can vary with roof system configuration. An increased amount of adhesive may be required at the perimeter band of the roof, depending on building and parapet wall heights. Refer to "Letter of Intent to Warrant."
2. Place insulation boards onto adhesive beads within 3 minutes. Walk on the boards immediately to spread the beads for maximum contact.
3. Additional walking on the insulation boards is required every 5 - 7 minutes until the insulation is firmly attached, usually 20 - 45 minutes.

#### C. Roof Penetrations/Drains:

1. Additional adhesive is required around all roof penetrations and drains.
2. Use a parapet wall or gutter as a straight edge guide when dispensing the first bead of material.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

3. Dispense parallel 3/4" - 1" (19.1 - 25.4 mm) beads. Under normal application rate, place first bead 3" (76 mm) inside the outside edge of the insulation board to be attached. Apply 3 additional parallel beads approximately 14" (356 mm) apart so that the fourth bead is 3" (76 mm) inside the opposite edge of the insulation board. The result is 4 equidistant parallel beads (16 lineal feet (5 m) for each 4' (1 m) square (4' x 4' (1 x 1 m)) insulation board.
4. Dispense 4 beads of adhesive. Place the insulation boards onto the adhesive beads within 3 minutes and walk on the boards spreading the adhesive for maximum contact.
5. Additional walking on the insulation boards is required every 5 - 7 minutes until the insulation boards are firmly attached, usually 20 - 45 minutes.

D. Steel Deck Applications:

1. With the edge of the insulation board centered over an upper flange under normal application rate, apply a 3/4" - 1" (19.1 - 25.4 mm) bead of adhesive on the first full upper flange nearest the edge of the insulation board. Continue to apply 3/4" - 1" (19.1 - 25.4 mm) beads on every other upper flange.
2. Place the insulation board onto the beads within 3 minutes and walk on the boards spreading the adhesive for maximum contact.
3. Additional walking on the insulation boards is required every 5 - 7 minutes until the insulation boards are firmly attached, usually 20 - 45 minutes.

3.06 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Utilize manufacturer field services, including conducting of pull tests to verify existing bond capabilities.
1. Specifier Note: Coordinate article below with Division 01 Execution Requirements (Cleaning) Section.

3.07 CLEANING

- A. Remove roof insulation adhesive from all surfaces not specifically intended to be adhered.
1. Specifier Note: Coordinate article below with Division 01 Execution Requirements Section.

3.08 PROTECTION

- A. Protect work from damage due to subsequent construction activity on the site.

END OF SECTION

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

**SECTION 09250**

**GYPSUM BOARD SYSTEMS**

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the BIDDING DOCUMENTS, CONTRACT REQUIREMENTS, GENERAL CONDITIONS, and applicable parts of DIVISION 01 – GENERAL REQUIREMENTS, as listed in the Table of Contents.
- B. Carefully examine all of the Contract Documents for requirements which affect the work of this section. The exact scope of work of this section cannot be determined without a thorough review of all specification sections and other Contract Documents.

1.02 WORK INCLUDED

- A. Furnish all labor, materials, tools and equipment required for the complete installation of all gypsum wallboard systems. Include metal stud and furring systems, ceiling systems, gypsum wallboard, gypsum sheathing, required accessories and fastening devices.
- B. Patching of existing gypsum wallboard to remain, as indicated on the Drawings.
- C. Finishing of existing unfinished gypsum wallboard.
- D. New gypsum wallboard finish as indicated including gypsum base at new areas adjacent to new access panels.
- E. Steel stud framing.
- F. Other gypsum wallboard called for on the Drawings or reasonably required to complete the Project intent.

1.03 RELATED WORK

- A. Section 09900 PAINTING
  - 1. Section 02070, SELECTIVE DEMOLITION.
  - 2. Section 06100, ROUGH CARPENTRY; Wood framing, wood blocking, furring, and grounds.
  - 3. Section 06200, FINISH CARPENTRY; Interior wood trim.
  - 4. Section 09900, PAINTING; Painting.

1.04 SAMPLES

- A. Samples of the various materials to be furnished and installed under this section shall be submitted to the Architect for approval before starting the work of this section.

1.05 PROTECTION AND CLEANING

- A. Protect existing and new finishes against soiling and damage from the work of this trade.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- B. Upon completion, remove all rubbish, debris, scaffolding and tools from the work. Clean off any of the materials of this section from glass, brick, trim and all other finish surfaces, and leave the floors "broom clean."

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Materials and methods shall be in accordance with manufacturer's printed recommendations.
- B. Wallboard, interior partition framing, furring, ceiling suspension systems, gypsum wallboard, sheathing, joint tape, joint compounds, and other accessories shall be as manufactured by the National Gypsum Co., U.S. Gypsum Co., Johns-Manville, Georgia-Pacific or approved equal. Products of National Gypsum Company are specified to establish type and quality of materials.

2.02 MATERIALS

- A. Gypsum Wallboard - 5/8" thick Sta-Smooth Fire-Shield Wallboard on all soffit and ceiling surfaces scheduled to have GWB finish.
  - 1. Wallboard shall be 5/8" thick.
- B. Steel Studs - 20 gauge galvanized steel non-load bearing standard screw studs; width 3-5/8 inch and 4" for interior partitions unless otherwise specified or noted on the drawings and 6 inch 20 gauge galvanized steel non-load bearing standard screw studs for exterior walls.
- C. Screw Stud Track - 25 gauge galvanized steel.
- D. Furring channels - 7/8" x 2-3/4" hat type screw furring channels.
- E. Runner Angles - 2" x 2" x 20 gauge galvanized steel.
- F. Stiffening Channels - 1-1/2 CR channels 475 lbs./1000 LF.
- G. Control Joints - E-Z strip expansion joint.
- H. Screws
  - 1. Drywall to metal framing; Type S Bugle Head
  - 2. Metal components to Concrete or Masonry; HWH Tapcon Anchors
- I. Corner Beads - 1-1/4" x 1-1/4" galvanized standard corner bead with 1/8" ground.
- J. Casing Beads - No. 233 with vinyl gasket
- K. Acoustical Sealant - US Gypsum, National Gypsum or Tremco.
- L. Tape - Gold Bond Joint Tapes
- M. Joint Treatment Compound Sta-Smooth Joint Compound and Ready-Mix Topping Compound or approved equal.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- N. Adhesive - MC Adhesive.
- O. Ceiling and soffit framing screw type furring channels @ 16" o .c. supported by cold rolled channels or steel studs in accordance with manufacturers recommendations based on a 15 PSF load.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. This Contractor shall inspect job conditions and related work and report to the General Contractor conditions affecting his work. Commencement of work will constitute acceptance of conditions.
- B. Work under this section shall be properly coordinated with the work of other sections. In no case shall work of other sections that will be concealed by the work of this section be so concealed until it has been inspected and approved.
- C. The drawings shall be taken as diagrammatic. This Contractor shall fit his work to the building structure, and other finishes and around mechanical and electrical work previously installed, to produce a finished result.
- D. Protect all gypsum materials from moisture both during shipment and in storage. Do not store outdoors or in potentially damp locations. Protect metal goods from rusting.

3.02 INSTALLATION

- A. Interior partitions shall be constructed with screw studs, gypsum wallboard as detailed on the drawings.
- B. Metal stud framing and wallboard installation shall be in accordance with National Gypsum Co. General Specifications 1 and 2 for Drywall Products and Systems. All studs spaced not over 16 inches o c
- C. Gypsum wallboard ceilings and exterior soffits shall be constructed with 7/8" x 2-9/16" galvanized steel hat type screw furring channels, CR channels, strap hangers, and gypsum wallboard and gypsum soffits board.
- D. All exterior corners shall be provided with corner beads and where gypsum wallboard abuts dissimilar material a casing bead shall be installed.
- E. Gypsum wallboard and soffit board shall be installed and finished in accordance with the National Gypsum Company's Architectural Specifications/Drywall Products and Systems using the specified materials.

END OF SECTION

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

**SECTION 09650**

**RESILIENT FLOORS**

**(Filed Sub-Bid Required)**

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and Contract Conditions as listed in the Table of Contents, and applicable parts of Division 01 - GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law - Chapter 149, Sections 44A to 44J inclusive, as amended, and applicable Sections of the MGL, Public Contract Law - Chapter 30.

1.02 TIME, MANNER AND REQUIREMENTS FOR SUBMITTING SUB-BIDS

- A. Sub-bids for work under this Section shall be for the complete work and shall be filed in a separate sealed envelope with the Awarding Authority at a time and place as stipulated in Document INVITATION TO BID.

- 1. The following should appear on the upper left-hand corner of the envelope:

NAME OF BIDDER: \_\_\_\_\_  
PROJECT: WORCESTER HOUSING AUTHORITY  
SUB-BID FOR: Section 09650, RESILIENT FLOORS

- B. Every sub-bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended. Sub-bid forms are included in this Project Manual or may be obtained at the office of the Architect.
  - C. Sub-Bids filed with the Awarding Authority shall be accompanied by BID BOND or CASH or CERTIFIED CHECK or TREASURER'S or CASHIER'S CHECK issued by a responsible bank or trust company payable to the Worcester Housing Authority in the amount of five percent (5%) of the sub-bid. A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.

1.03 SUB-BID REQUIREMENTS

- A. Each Sub Bidder shall list in Paragraph E of the "Sub Bid Form" the name and bid price of each person, firm or corporation performing each class of work or part thereof for which the Section of the Specifications for the Sub-Trade requires such listing, provided that, in the absence of as contrary provision in the Specifications, any Sub Bidder may, without listing any bid price, list his own name in said Paragraph E for each such class of work or part thereof and perform that work with persons on his own payroll, if such Sub Bidder, after Sub Bid openings, shows to the satisfaction of the Awarding Authority, that he does customarily perform such class of work or the part thereof with persons on his own payroll and is qualified to do so. This Section of the

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

Specifications requires that the following class(es) of work shall be listed in Paragraph E under the conditions herein.

CLASS OF WORK

REFERENCE PARAGRAPHS

None Required Under This Section

PART 2 - PRODUCTS

2.01 DESCRIPTION OF WORK

- A. Provide resilient flooring and related items, as indicated on the Drawings and as specified herein. Work of this Section includes, but is not limited to:
1. Furnishing and installing vinyl composition tile (VCT\_) flooring.
  2. Furnishing and installing resilient (vinyl) wall base (VB \_).
  3. Furnishing and installing embossing leveler/patching compound over residual cutback adhesive surfaces.
  4. Furnishing and installing mastics and leveling compounds.
- B. Items To Be Installed Only: Not Applicable.
- C. Reference To Drawings: Work specified In RESILIENT FLOORS is subject to provisions of Section 44A to 44L inclusive, of Chapter 149 of General Laws of the Commonwealth of Massachusetts, as amended, and are indicated on the following Contract Drawings:
1. Drawings T001, P001, P002, P003, P004, P100, P101, P200, P201, P202, FL100.
  2. This Subcontractor shall carefully inspect all Drawings, not just those pertaining particularly to his subtrade unless specifically called for otherwise, regardless of where among the Drawings it appears.
- D. Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. Section 02070, SELECTIVE DEMOLITION.

2.02 SUBMITTALS

- A. Product Data: Submit manufacturer's printed product data, specifications, standard details, installation instructions, use limitations and recommendations for each material used. Provide certifications that materials and systems comply with specified requirements.
1. Certification by resilient flooring manufacturer that products supplied for resilient flooring installation comply with local regulations controlling use of volatile organic compounds (VOC's).
- B. Initial Selection Samples: Submit samples showing complete range of colors, textures, and finishes available for each material used.
- C. Verification Samples: Submit representative samples of each material that is to be exposed in the completed work, Show full color ranges and finish variations expected. Provide samples having minimum size of 144 sq. in.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- D. Product certificates, in lieu of laboratory test reports when permitted by Architect, signed by manufacturer certifying that each product complies with requirements.
- E. Maintenance data for resilient flooring to include in Operating and Maintenance Manual specified in Section 01770, CLOSEOUT PROCEDURES.

2.03 QUALITY ASSURANCE

- A. Single-Source Responsibility for Resilient Flooring: Obtain each type, color, and pattern of resilient flooring from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- B. Fire Performance Characteristics: Provide resilient flooring with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. Critical Radiant Flux: 0.45 watts per sq. cm or more per ASTM E 648.
  - 2. Smoke Density: Less than 450 per ASTM E 662.
- C. Adhesives shall meet or exceed the VOC content limits of the State of California South Coast Air Quality Management District (SCAQMD) Rule #1168 - Adhesive and Sealant Applications'.

2.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver resilient flooring and installation accessories to Project site in original manufacturer's unopened cartons and containers each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.
- B. Store resilient flooring materials in dry spaces protected from the weather with ambient temperatures maintained between 50 °F (10 °C) and 90 °F (32 °C).
- C. Store resilient flooring on flat surfaces. Move flooring and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

2.05 PROJECT CONDITIONS

- A. Maintain a minimum temperature of 70 °F (21 °C) in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55°F (13 °C).
- B. Do not install resilient flooring until they are at the same temperature as the space where they are to be installed.
- C. Close spaces to traffic during resilient flooring installation.

2.06 COORDINATION, SEQUENCING, AND SCHEDULING

- A. Coordinate work of this Section with work of other Sections affecting, or affected by, this work, as necessary to ensure completion of work of the Contract on schedule.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- B. It is intended that the resilient flooring work will be performed after completion of VAT and VCT removal and wall base removal.
- C. Do not install embossing leveler/patching compound over residual cutback adhesive surfaces or install resilient flooring over concrete slabs until the slabs are sufficiently dry to bond with adhesive as determined by floor tile manufacturer's recommended bond and moisture test.

2.07 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
  - 1. Furnish not less than one box for each 50 boxes or fraction thereof, of each class, wearing surface, color, pattern and size of resilient wall base installed.
  - 2. Furnish not less than one box for each 50 boxes or fraction thereof, of each class, wearing surface, color, pattern and size of vinyl composition floor tile installed.

2.08 WARRANTY

- A. Resilient Flooring: Provide manufacturer's warranty against excessive wear in accordance with the following:
  - 1. Vinyl Composition Tile Flooring: Five year limited warranty.
  - 2. Vinyl Wall Base: Five year limited warranty.
- B. Embossing Leveler/Patching Compound: Provide manufacturer's standard warranty for product materials.

PART 3 - PRODUCTS

3.01 GENERAL MATERIAL REQUIREMENTS

- A. Resilient materials shall be uniform in thickness and size.
- B. Resilient material shall be cut accurately with square, true edges.
- C. Plain colors shall be uniform throughout.
- D. Variegated colors and patterns shall be reasonably uniform so as not to mar appearance of floor.
- E. Except as otherwise indicated or specified, all colors shall be as selected by the Architect from the full range of manufacturer's standard colors.
- F. Resilient materials shall be free of objectionable odors, blisters, cracks, objectionable foreign material, or other physical defects affecting appearance or serviceability.

3.02 VINYL COMPOSITION TILE (VCT) FLOORING

- A. Acceptable Manufacturers: Provide products of one of the following manufacturers that meet or exceed specified requirements:

**WORCESTER HOUSING AUTHORITY**  
**REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS**  
**ELM PARK TOWER APARTMENTS -195 Units**  
**425 Pleasant Street, Worcester, MA 01605**

1. Armstrong World Industries (Armstrong).
  2. Tarkett Commercial.
  3. Mannington Commercial.
  4. American Biltrite, Inc.
- B. Vinyl Composition Tile (VCT<sub>2</sub>): 1/8" thick, 12" by 12" conforming to ASTM F 1066, Compo 1, Class 2. - Through Pattern equal to Armstrong Standard Excelon Imperial Texture, or approved equal by one of the above listed manufacturers.
- C. Vinyl Composition Tile Type and Pattern/Color: Provide vinyl composition tile flooring as indicated. Assume that flooring will be in a two tile pattern (field tile and accent tile) where accent tile may be up to 30% of flooring.
1. Vinyl Composition Tile Type 1 (VCT-1) - Field Tile: As selected by Architect.
  2. Vinyl Composition Tile Type 2 (VCT-2) - Accent Tile: As selected by Architect.

**3.03 RESILIENT (VINYL) WALL BASE**

- A. Acceptable Manufacturers: Provide products of one of the following manufacturers that meet or exceed specified requirements:
1. Armstrong.
  2. Johnsonite.
  3. Burke Industries; Burke Mercer.
  4. Roppe Corporation.
- B. Vinyl Wall Base: Provide vinyl wall base conforming to ASTM F 1861 Type TV (Vinyl), with matching end stops, and premolded corner units, and as follows:
1. Height: 4"
  2. Style: Top-set cove.
  3. Finish: Matte.
  4. Gauge: 1/8"
  5. Length: Continuous.
- C. Vinyl Base Types and Colors:
1. Vinyl Base Type 1 (VB-1): As selected by Architect.

**3.04 ACCESSORIES**

- A. Acceptable Manufacturers: Provide products of one of the following manufacturers that meet or exceed specified requirements:
1. Armstrong.
  2. Johnsonite.
  3. Burke Industries; Burke Mercer.
  4. Roppe Corporation.
- B. Vinyl Reduce: ' Strip: Provide where new VCT abuts unfinished floor surface.
- C. Vinyl Feature Strip: Provide 2" wide vinyl feature strip where new VCT abuts existing resilient flooring to remain.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

3.05 INSTALLATION MATERIALS

- A. Embossing Leveler/Patching Compound for Use as an Embossing Leveler or Patch Over Residual Cutback Adhesive Surfaces of Concrete Floor Slab:
1. Fast-setting, polymer-modified, cement-based patching compound, equal to Mapei Planipatch, manufactured by Mapei Corporation, telephone 1-800-426-2734; or approved equal and having the following properties and characteristics:
    - a. Pot Life: 8 to 10 minutes.
    - b. Required drying time before floor covering installation: 60 to 90 minutes, or once the product is completely dry.
    - c. Compressive strength, 28 days (ASTM C 109): Greater than 4,000 psi (27.6 MPa).
    - d. Shrinkage factor, 28 days: None.
    - e. Cleanability: With water while still fresh.
    - f. Shelf life: 12 months when stored in original container at 73 °F (23 °C) in a dry area.
    - g. Health and Safety: Per manufacturer's MSDS.
    - h. Recommended Thickness: Up to 1/8" (3 mm) when mixed with Planipatch Plus (full strength).
  2. Mixing Liquid: Provide an acrylic latex additive for use in mixing embossing leveler/patching compound shall be equal to Mapei Planipatch Plus, manufactured by Mapei Corporation, telephone 1-800-426-2734; or approved equal and having the following properties and characteristics:
    - a. Pot Life: 40 to 50 minutes.
    - b. Required drying time before floor covering installation: 55 to 60 minutes.
    - c. Shelf life: 24 months when stored in original container at 73 °F (23 °C) in a heated area.
    - d. Color: Milky white.
    - e. Health and Safety: Per manufacturer's MSDS.
  3. Mixture Proportions: Provide two mixtures of latex-modified embossing leveler/patching compound, as follows:
    - a. Initial (First) Application over Cutback Adhesive Residue: Provide three parts embossing leveler/patching compound (Planipatch powder) with one part acrylic latex admixture (Planipatch Plus) liquid to provide full-strength compound. Installed thickness shall be 1/16"(1.5 mm). This initial application shall be applied to completely cover cutback adhesive residue.
    - b. Second Application: Provide three parts embossing leveler/patching compound (Planipatch powder) with one part diluted acrylic latex admixture (one part Planipatch Plus mixed with three parts water) liquid to provide diluted mixture. Installed thickness shall be 1/32" (1.0 mm). This mixture creates a more porous substrate for water-based adhesives to perform properly.
  4. Mixing Instructions: Mix using a low-speed mixer (at 375 rpm maximum), mixing thoroughly to a smooth, lump-free consistency,
    - a. Do not mix more product than can be applied within 8 to 10 minutes.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- b. Avoid air entrapment and prolonged mixing to prevent shortened pot life.
- B. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.
- C. Adhesives for Resilient Flooring and Vinyl Base: Water-resistant type recommended by resilient flooring manufacturer to suit resilient products and substrate conditions indicated. Adhesives shall meet or exceed the VOC limits (50 grams / liter) of SCAQMD Rule #1168 - Adhesive and Sealant Applications'.

3.06 CLEANER

- A. Cleaners and Polish: Floor cleaner shall be a commercial floor cleaner, equal to Armstrong "C-410", Hillyard "Super Shine-All", or Huntington Laboratories "Contract Floor Polish", as approved by the Architect.

PART 4 - EXECUTION

4.01 EXAMINATION

- A. General: Examine areas where installation of floor tiles will occur, with Installer present, to verify that substrates and conditions are satisfactory for tile installation and comply with tile manufacturer's requirements and those specified in this Section.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
  - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials whose presence would interfere with bonding of adhesive, Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by resilient flooring manufacturer.
  - 2. Finishes of subfloors comply with tolerances and other requirements of resilient flooring manufacturer.
  - 3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits of any kind.
  - 4. Floors with residual cutback adhesive surfaces shall be clean and free of ridges and any loose cutback adhesive material and shall be suitable to receive latex-modified embossing leveler/patching compound mixture.
- C. Perform alkalinity, bond, and moisture tests on concrete subfloors to determine sufficient curing and drying, and to ascertain presence of curing compounds. Test shall be performed simultaneously and test areas shall not be concentrated but located in various parts of the installation area. One unit shall be placed in the center and others at the perimeter but no closer than 5 feet from the edge of an area. There shall be one test for the first 1,000 sq. ft. and one test for each additional 1,000 sq. ft.
  - 1. Test concrete subfloors using the manufacturer's moisture detection test kit and in accordance with manufacturer's recommendations and ASTM F 1869. The concrete subfloors may also be tested using the Quantitative Calcium Chloride (RMA) Moisture Test in accordance with the manufacturer's instructions. Maximum acceptable moisture emission level shall be 3.0 pounds per 1,000 square feet per 24 hours.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

2. Perform alkalinity tests using the pH Paper Test or the Phenolphthaleim Test. Acceptable readings are 5 to 9 on the pH scale. If pH readings are above 9, neutralize the subfloor following flooring manufacturer's instructions.
  3. Perform bond tests in accordance with manufacturer's recommendations. Curing and parting compounds used on the subfloor shall be removed and a primer shall be applied following the flooring manufacturer's instructions. Comply with the requirements of ASTM F 710.
- D. Do not proceed with installation until unsatisfactory conditions have been corrected.
- 4.02 PREPARATION OF SURFACES AND INSTALLATION OF EMBOSSING LEVELER/PATCHING COMPOUND
- A. Initial Preparation Under Other Sections:
1. Surfaces to receive resilient materials shall be level, plumb, true and clean, free of projections, ridges, and waves, and free of loose dirt and dust, grease, oil, and other deleterious materials such as resin type curing compounds, paint, glue, and similar materials, ready to receive work of this Section. Filling of cracks with crack filler, as required, however, will be included as part of work of this Section.
  2. Surfaces of concrete floor slabs to which resilient flooring is to be applied shall be finished to tolerance recommended by resilient flooring manufacturer.
  3. When variation in finished surface exceeds allowable amount specified therein, it shall be brought within the allowable tolerance with latex type underlayment applied in strict accordance with manufacturer's instructions.
- B. Inspection of Surfaces and Final Preparation under this Section:
1. Thoroughly examine all surfaces to receive work of this Section, and notify the Architect in writing of all conditions which would adversely affect this work. Do not commence work in any area where such notice of adverse conditions has been sent until corrective work has been completed or waived. Start of work in any area without issuances of such notice shall constitute acceptance of conditions in the area as suitable to properly receive the work of this Section.
  2. Fill all cracks, control joints, etc., in sub-surfaces, using approved Crack Filler in accordance with manufacturer's published instructions. Do final cleaning of surfaces just prior to installation, removing all dust, dirt, and other loose particles which may have accumulated since initial cleaning.
  3. Allow concrete slabs to dry adequately before commencing application of flooring materials, checking the moisture content, if necessary, by means of primer tests, relative humidity tests, or mat moisture and bonding tests, all such tests being at the option of the Contractor, although the Architect may require any such tests to be done by the Contractor at the Contractor's expense, if he wishes to verify or record the moisture conditions.
- C. General: Comply with manufacturer's installation specifications to prepare substrates indicated to receive resilient flooring.
1. Use trowelable leveling and patching compounds per tile manufacturer's directions to fill cracks, holes, and depressions in substrates.
  2. Broom or vacuum clean substrates to be covered by tiles immediately before tile installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

3. For floor areas where residual cutback adhesive remains, prepare area to receive embossing leveler/patching compound mixture. Any remaining ridges of cutback shall be removed along with any loose cutback materials.
- D. Embossing Leveler/Patching Compound Mixture: Apply latex modified embossing leveler/patching compound in strict compliance with material manufacturer's recommended installation procedures. Apply using a fiat-edge steel trowel finishing the surface to the required smoothness. Apply in two applications as follows:
1. Initial (First) Application over Cutback Adhesive Residue: Install full-strength compound to a thickness shall of 1/16" (1.5 mm). This initial application shall be applied to completely cover cutback adhesive residue.
  2. Second Application: Install diluted mixture to a thickness shall of 1/32" (1.0 mm). This mixture creates a more porous substrate for water-based adhesives to perform properly.
  3. For each application, allow material to dry (approximately 60 minutes).

#### 4.03 FLOORING INSTALLATION, GENERAL

- A. Use only experienced workmen. Strictly adhere to printed instructions of manufacturer's of various materials: if found to be in conflict refer to Architect for decision.
- B. Maintain room temperatures in installation areas at not less than 65°F, for a period of at least 48 hours prior to commencement of tile work, and to at least 48 hours after completion, and not less than 60°F, from that time on
- C. Do not begin floor tile installation until all embossing leveler/patching compounds are completely dry.
- D. Lay resilient materials in manner to insure good, uniform contact with subsurface materials, and to produce finished surfaces which are smooth, even, and in true planes, free of buckles, waves, and other imperfections. Store and use adhesive in accordance with manufacturer's published instructions.
- E. Where different colors of resilient tile flooring occur in adjoining rooms or areas, and no threshold is called for, install feature strip under door or across center of doorless opening, of color selected by the Architect.
- F. Fit flooring neatly into breaks and recesses, against bases and thresholds, and around pipes, columns, and other projections. Cut, fit, and scribe borders after application of field tile.
- G. Install edge strips where resilient flooring materials terminate at points higher than contiguous finished flooring.
- H. Clean off surplus adhesive from resilient materials and adjacent surfaces.

#### 4.04 VINYL COMPOSITION TILE FLOOR INSTALLATION

- A. Lay tile square with room axis, with joints aligned in both directions, and with borders not less than 1/2 the width of the field tile, as directed or approved by the Architect. Direction of tile grain, when laid, shall lie in single direction. Use only full tile in the field.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- B. Adjust tiles that have not been seated level with surrounding tiles in manner recommended by manufacturer.
- C. Replace tile showing broken corners or fracture lines by warming tile, carefully removing, and replacing with new tile of same type, color, pattern, and thickness.
- D. Schedule of VCT Flooring:
  - 1. See drawing P001 for finish schedule

4.05 RESILIENT BASE AND ACCESSORIES – INSTALLATION

- A. Install resilient base and accessories in strict accordance with manufacturer's printed instructions, using recommended cement or other adhesive recommended by manufacturer.
  - 1. Install base in manner to ensure uniform positive contact with sub-surface, and to produce finished surfaces which are smooth, even, and in true planes, free of buckles, waves, and other imperfections.
  - 2. Store and use adhesive in accordance with manufacturer's printed instructions.
- B. Schedule of Vinyl Base (VB) Installation:
  - 1. See drawing P001 for finish schedule
- C. Accessories: Install vinyl reducer strips and vinyl feature strips where indicated on the Drawings.

4.06 CLEANING, POLISHING, AND PROTECTING OF VINYL COMPOSITION TILE FLOORING

- A. Allow flooring to set for at least five days without traffic.
- B. At end of setting period, wash with diluted commercial floor cleaner, rinse thoroughly, and apply one coat of commercial buffing floor polish, all in strict accordance with manufacturer's printed instructions.
- C. After application of floor polish, cover vinyl composition flooring with kraft paper or prohibit traffic completely.
- D. Immediately prior to Inspection for Substantial Completion, but not less than 48 hours after the first application of polish, dry or damp mop floors. Buff polished floors to high luster with mechanical buffer. In areas where the original coat of polish has become worn or damaged, thoroughly clean and, if necessary, strip original polish and apply new coat of same type and brand of polish. Buff new applications of polish as specified.

END OF SECTION

**SECTION 09900**

**PAINTING**

**(Filed Sub-Bid Required)**

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Attention is directed to the BIDDING DOCUMENTS, CONTRACT REQUIREMENTS, GENERAL CONDITIONS, and applicable parts of DIVISION 01 – GENERAL REQUIREMENTS, as listed in the Table of Contents.
- B. Carefully examine all of the Contract Documents for requirements which affect the work of this section. The exact scope of work of this section cannot be determined without a thorough review of all specification sections and other Contract Documents.

1.02 TIME, MANNER AND REQUIREMENTS FOR SUBMITTING SUB-BIDS

- A. Sub-bids for work under this Section shall be for the complete work and shall be filed in a separate sealed envelope with the Awarding Authority at a time and place as stipulated in Document INVITATION TO BID.

- 1. The following should appear on the upper left-hand corner of the envelope:

NAME OF BIDDER: \_\_\_\_\_

PROJECT: WORCESTER HOUSING AUTHORITY

SUB-BID FOR: Section 09900, PAINTING

- B. Every sub-bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended. Sub-bid forms are included in this Project Manual or may be obtained at the office of the Architect.
- C. Sub-Bids filed with the Awarding Authority shall be accompanied by BID BOND or CASH or CERTIFIED CHECK or TREASURER'S or CASHIER'S CHECK issued by a responsible bank or trust company payable to the Worcester Housing Authority in the amount of five percent (5%) of the sub-bid. A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.

1.03 SUB-BID REQUIREMENTS

- A. Each Sub Bidder shall list in Paragraph E of the "Sub Bid Form" the name and bid price of each person, firm or corporation performing each class of work or part thereof for which the Section of the Specifications for the Sub-Trade requires such listing, provided that, in the absence of as contrary provision in the Specifications, any Sub Bidder may, without listing any bid price, list his own name in said Paragraph E for each such class of work or part thereof and perform that work with persons on his own payroll, if such Sub Bidder, after Sub Bid openings, shows to the satisfaction of the Awarding Authority, that he does customarily perform such class of work or the part thereof with persons on his own payroll and is qualified to do so. This Section of the Specifications requires that the following class(es) of work shall be listed in Paragraph E under the conditions herein.

CLASS OF WORK

REFERENCE PARAGRAPHS

None Required Under This Section

1.04 RELATED DOCUMENTS

- A. Extent of painting work is shown on drawings and schedules and as herein specified.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section, P001, P200, and P201.
- C. Related specification sections and notes include but not limited to:
  - 1. Section 15400, PLUMBING
  - 2. Drawing Notes and Finish Schedule

1.05 SUMMARY

- A. This Section includes surface preparation and field painting of the following:
  - 1. Exposed interior items and surfaces.
  - 2. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
  - 3. Paint all walls floor to ceiling complete corridor, including elevator lobby. All doors, door casings and other metal trim not to be painted, will stay as existing. Stain kill and paint ceilings with ceiling white. A note should also go on the drawings.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
  - 1. Painting includes field painting of exposed bare and covered pipes and ducts, hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- C. The work includes painting and finishing of interior and exterior exposed items and surfaces throughout project except as otherwise indicated.
  - 1. Surface preparation, priming and coats of paint specified are in addition to any shop priming and surface treatment specified under other sections of work.
- D. The work includes field painting of exposed bare and covered pipes and ducts, and of hangers, exposed structure and roof deck, exposed steel and iron work and primed metal surfaces of equipment installed under mechanical and electrical work, including radiation covers, except as otherwise indicated.
- E. The work includes preparation of surfaces for refinishing, and finishing with coatings designated. The work includes the following items in accordance with related specification sections: existing gym and corridor lockers; metal casework; radiation covers, new and existing.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- F. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers and other applied materials whether used as prime, intermediate or finish coats.
- G. Paint exposed surfaces whether or not colors are designated in "schedules" except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas. If color or finish is not designated, Architect will select these from standard colors available for materials systems specified.
- H. Following categories of work are not included as part of field applied finish work, or are included in other sections of these specifications:
1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under various sections for structural steel, miscellaneous metal, hollow metal work and similar items. Also, for fabricated components such as Architectural woodwork, wood casework and shop fabricated or factory built mechanical and electrical equipment or accessories.
  2. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory finishing or Installer finishing is specified for such items as (but not limited to) prefinished doors, finished mechanical and electrical equipment including light fixtures and air diffusers, switchgear and distribution cabinets.
  3. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, and duct shafts.
  4. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting unless otherwise indicated.
  5. Operating Parts and Labels: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operations, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting unless otherwise indicated.
    - a. Do not paint over any code required labels such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.
- I. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
1. Prefinished items include the following factory-finished components:
    - a. Architectural woodwork and casework.
    - b. Acoustical wall panels.
    - c. Toilet enclosures.
    - d. Metal lockers (new).
    - e. Unit kitchens.
    - f. Finished mechanical and electrical equipment, unless listed in Article 1.2.A, exceptions, electrical raceways.
    - g. Light fixtures.
    - h. Distribution cabinets.
  2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
    - a. Foundation spaces.

- b. Furred areas.
  - c. Ceiling plenums.
  - d. Utility tunnels.
  - e. Pipe spaces.
  - f. Duct shafts.
  - g. Elevator shafts.
  - h. Mechanical heating system radiation fins.
3. Finished metal surfaces include the following:
- a. Anodized aluminum.
  - b. Stainless steel.
  - c. Chromium plate.
  - d. Copper.
  - e. Bronze and brass.
4. Operating parts include moving parts of operating equipment and the following:
- a. Valve and damper operators.
  - b. Linkages.
  - c. Sensing devices.
  - d. Motor and fan shafts.
5. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- J. Related Sections include the following:
- 1. Divisions 15: Painting of mechanical work is specified in Divisions 15.

#### 1.06 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
- 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
  - 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
  - 3. Satin or semi-gloss refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
  - 4. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

#### 1.07 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers and primers. Submit Manufacturers technical information, including paint label analysis and application instructions, for each material proposed to use.
- 1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by Manufacturer's catalog number and general classification.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

2. Manufacturer's Information: Provide Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
3. Certification by the Manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

1.08 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.
- B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same Manufacturer as the finish coats.
- C. Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials Manufacturers. Materials not displaying Manufacturer's identification as a standard, best grade product will not be acceptable.
  1. Proprietary names used to designate colors or materials are not intended to imply that products of named Manufacturers are required to exclusion of equivalent products of other Manufacturers.
  2. Provide undercoat paint produced by same Manufacturer as finish coats. Use only thinners approved by Paint Manufacturer, and use only within recommended limits.
- D. Materials are designated in schedules by reference to products of the Tnemec Co. and Benjamin Moore Co.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in Manufacturer's original, unopened packages and containers bearing Manufacturer's name and label, and the following information:
  1. Product name or title of material.
  2. Product description (generic classification or binder type).
  3. Manufacturer's stock number and date of manufacture.
  4. Contents by volume, for pigment and vehicle constituents.
  5. Thinning instructions.
  6. Application instructions.
  7. Color name and number.
  8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 °F (7 °C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
  1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.10 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 °F and 90 °F (10 °C and 32 °C).

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 °F and 95 °F (7.2 °C and 35 °C).
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 °F (3 °C) above the dew point; or to damp or wet surfaces.
  - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by Manufacturer during application and drying periods.
- D. Apply paint only with minimum 50 FC light provided at all surfaces.
- E. Provide barriers to occupied portions of the facility during painting and curing operations.
- F. At all interior applications, provide ventilation of at least 6 air changes per hour during painting and curing operations.
- G. Surface treatments and finishes are indicated in the Finish Schedule of the contract documents.
- H. Prior to beginning work, Architect will make selection from Manufacturer's complete range of colors for surfaces to be painted.
- I. Color Pigments
- J. Pure, non-fading, application types to suit substrates and service indicated.
  - 1. Lead content in pigment, if any, is limited to contain not more than 0.06% lead as lead metal based on the total non-volatile (dry film) or paint by weight.
- K. Paint Coordination: Provide finish coats which are compatible with prime paint used. Review other sections of these specifications in which prime paint are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information in characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

1.11 SUSTAINABLE CRITERIA

- A. Maximum limits on V.O.C emission factors for the following products:
  - 1. Interior coating:
    - a. Flat finishes: 50 g/l
    - b. Non-flat finishes: 150 g/l
  - 2. Exterior coating:
    - a. Flat finishes: 100 g/l
    - b. Non-flat finishes: 200 g/l

3. Installations:
  - a. Drywall and Panels: 200 g/l
  - b. Adhesive primer for plastic: 650 g/l
  - c. All others: 250 g/l
4. Substrates:
  - a. Porous material except wood: 120 g/l
  - b. Wood: 30 g/l
5. Sealants and Primers:
  - a. Architectural sealants: 250 g/l
  - b. Other sealants: 420 g/l
  - c. Non-porous Architectural sealant primers: 775 g/l
  - d. Other sealant primers: 750 g/l

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.
- B. Manufacturers Names: The following Manufacturers are referred to in the paint schedules by use of shortened versions of their names, which are shown in parentheses:
  1. Devoe & Raynolds Co. (Devoe).
  2. Benjamin Moore & Co. (Moore).
  3. Pratt & Lambert, Inc. (P & L).

### 2.02 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by Manufacturer based on testing and field experience.
- B. Material Quality: Provide Manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying Manufacturer's product identification will not be acceptable.
  1. Proprietary Names: Use of Manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other Manufacturers. Furnish Manufacturer's material data and certificates of performance for proposed substitutions.
- C. Colors: Provide custom colors of the finished paint systems to match the existing adjacent colors.
- D. Colors: Match colors indicated by reference to Manufacturer's color designations.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
  - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
  - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Applicator must examine areas and conditions under which painting work is to be applied, and notify Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.
- C. Starting of painting work will be construed as Applicator's acceptance of surfaces and other conditions within any particular area.
- D. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces or conditions otherwise detrimental to formation of a durable paint film.
- E. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
  - 1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.02 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
  - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
  - 2. Wash all surfaces with solution of trisodium phosphate or equal cleaner, followed by a wash with clear water.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to Manufacturer's written instructions for each particular substrate condition and as specified.
  - 1. Provide barrier coats over incompatible primers or remove and reprime.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

2. General: Perform preparation and cleaning procedures in accordance with Paint Manufacturer's instructions and as herein specified for each particular substrate condition.
    - a. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures and similar items in place and not to be finish painted, or provide surface applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.
    - b. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning, program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly painted surfaces.
  3. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
    - a. Use abrasive blast-cleaning methods if recommended by Paint Manufacturer.
    - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in Manufacturer's written instructions.
    - c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
  4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Materials Preparation: Mix and prepare paint materials according to Manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
  2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
  3. Use only thinners approved by Paint Manufacturer and only within recommended limits.
  4. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue. Maintain limited storage quantities as acceptable to the Fire Department.
- E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

- A. General: Apply paint according to Manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the schedules.
  2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
  3. Provide finish coats that are compatible with primers used.
  4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
  5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
  7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
  8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
  9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
  10. Sand lightly between each succeeding enamel or varnish coat.
  11. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed equivalent to that of flat surfaces.
  12. Omit first coat (primer) on metal surfaces which have been shop primed and touch-up painted unless otherwise indicated.
  13. Finish all Mechanical system radiation covers to match the color of the adjacent wall paint, unless otherwise indicated by the Architect, with satin electrostatic paint.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the Manufacturer. If sanding is required to produce a smooth, even surface according to Manufacturer's written instructions, sand between applications.
  2. Omit primer on metal surfaces that have been shop primed and touchup painted.
  3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
  4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to Manufacturer's written instructions.
1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
  2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the Manufacturer for the material and texture required.
  3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the Manufacturer for the material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than indicated on the plans. Provide the total dry film thickness of the entire system as recommended by the Manufacturer.
- E. Exposed Structural Steel, Metal Deck, Pipes, Conduit, and Ductwork: Wash all surfaces with degreasing solution to remove mill scale and oil. Hand wipe all joints.
- F. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.
- G. Mechanical items to be field painted include, but are not limited to, the following:
1. Gas Piping.
  2. Chimney Masonry Support
  3. Gypsum board at chimney support
  4. Floors in mechanical room where affected
  5. Handrail in mechanical room being temporarily removed
- H. Electrical items to be painted include, but are not limited to, the following:
1. Conduit and fittings.
- I. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the Manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
- J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
1. Provide satin finish for final coats unless otherwise indicated.
- L. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
- M. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 FIELD QUALITY CONTROL

- A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:
1. The Painting Subcontractor will engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor and Owner's Rep.
  2. The testing agency will perform appropriate tests for the following characteristics:
    - a. Quantitative material analysis.
    - b. Abrasion resistance.
    - c. Apparent reflectivity.
    - d. Flexibility.
    - e. Washability.
    - f. Absorption.
    - g. Accelerated weathering.
    - h. Dry opacity.
    - i. Accelerated yellowness.
    - j. Recoating.
    - k. Skinning.
    - l. Color retention.
    - m. Alkali and mildew resistance.
  3. The Architect may direct the Contractor to stop painting if test results show material being used does not comply with specified requirements. The Contractor shall remove non-complying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings are incompatible.

3.05 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.06 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.07 SCOPE OF WORK

A. New Work:

1. Finish all new materials with field finishes as indicated in the plans, specifications, and above list of paint products.

B. New and Existing:

1. Paint all exposed surfaces and systems as shown on the plans.

3.08 INTERIOR PAINT SCHEDULE

- A. Concrete and Masonry (Other than Concrete Masonry Units): Provide paint systems over interior concrete and brick masonry surfaces as shown on the plans.

END OF SECTION

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

**SECTION 15400**

**PLUMBING**

**(Filed Sub-Bid Required)**

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and Contract Conditions as listed in the Table of Contents, and applicable parts of Division 01 - GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Work of this Section requires Filed Sub-Bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law - Chapter 149, Sections 44A to 44J inclusive, as amended, and applicable Sections of the MGL, Public Contract Law - Chapter 30.

1.02 TIME, MANNER AND REQUIREMENTS FOR SUBMITTING SUB-BIDS

- A. Sub-bids for work under this Section shall be for the complete work and shall be filed in a separate sealed envelope with the Awarding Authority at a time and place as stipulated in Document INVITATION TO BID.

- 1. The following should appear on the upper left-hand corner of the envelope:

NAME OF BIDDER: \_\_\_\_\_  
PROJECT: WORCESTER HOUSING AUTHORITY  
SUB-BID FOR: Section 15400, PLUMBING

- B. Every sub-bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended. Sub-bid forms are included in this Project Manual or may be obtained at the office of the Architect.
  - C. Sub-Bids filed with the Awarding Authority shall be accompanied by BID BOND or CASH or CERTIFIED CHECK or TREASURER'S or CASHIER'S CHECK issued by a responsible bank or trust company payable to the Worcester Housing Authority in the amount of five percent (5%) of the sub-bid. A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.

1.03 SUB-BID REQUIREMENTS

- A. Each Sub Bidder shall list in Paragraph E of the "Sub Bid Form" the name and bid price of each person, firm or corporation performing each class of work or part thereof for which the Section of the Specifications for the Sub-Trade requires such listing, provided that, in the absence of as contrary provision in the Specifications, any Sub Bidder may, without listing any bid price, list his own name in said Paragraph E for each such class of work or part thereof and perform that work with persons on his own payroll, if such Sub Bidder, after Sub Bid openings, shows to the satisfaction of the Awarding Authority, that he does customarily perform such class of work or the part thereof with persons on his own payroll and is qualified to do so. This Section of the

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

Specifications requires that the following class(es) of work shall be listed in Paragraph E under the conditions herein.

CLASS OF WORK

REFERENCE PARAGRAPHS

None Required Under This Section

1.04 RELATED DOCUMENTS

- A. Include GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS and applicable parts of Division 01 as part of this Section.
- B. Examine all Project Specifications and Drawings for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.
- D. The following definitions apply to the Drawings and Specifications
  - 1. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
  - 2. Install: The term "install" is used to describe operations at project site including actual "unloading, unpacking, rigging in place, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
  - 3. Provide: The term "provide" means to "furnish and install, complete and ready for intended use."
  - 4. Installer: An "installer" is the contractor or an entity engaged by the contractor, either as an employee, subcontractor, or sub-subcontractor for a performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
  - 5. Contractor: The term "Contractor" shall mean Plumbing Contractor.

1.05 WORK INCLUDED

- A. Work in this section includes providing labor, materials, equipment and services necessary for a complete and safe installation in accordance with the Contract Documents and all applicable codes and authorities having jurisdiction.
- B. Building:
  - 1. New "single pipe" sanitary and vent systems similar to the So Vent brand system within building including final connections for all new plumbing fixtures. The new sanitary systems shall be taken a point inside the building and connections made to existing sanitary/vent systems.
  - 2. Cleaning, caulking, testing and adjusting of all plumbing fixtures.
  - 3. Furnish access panels for installation by the related trades of surfaces in which they are installed.
  - 4. Core drilling, patching and sealing of existing walls and floors.
  - 5. Complete balancing and testing of all plumbing systems.
  - 6. Furnish, set up and maintain all derricks, hoisting machinery, scaffolds, staging and planking as required for the work.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

7. Coordination with all existing conditions at the site.
8. Connections to existing plumbing services.

C. General

1. Cleanouts
2. Sleeves, inserts, hangers and accessories
3. Pipe identification tags
4. Fire-safing at piping and sleeves
5. Cleaning, testing and balancing
6. Cutting and patching
7. Access panels
8. Supplementary steel for piping and equipment supports
9. Operating and maintenance manuals
10. Guarantee
11. Shop drawings and reproducible record drawings
12. Complete coordination drawings
13. Necessary supervision and coordination information to any other trades involved in the construction, to accommodate space, support or service requirements for equipment and piping provided under this Section of the Specifications.
14. All materials and labor necessary for installation and operation of equipment, furnished by others, requiring plumbing services and/or work that would fall under the jurisdiction or review of the plumbing inspector.
15. Cutting and Patching as outlined in this section.
16. Demolition of existing sanitary piping
17. Coordination of all piping authorized factory representative.

D. Scope Requirements

1. It is the intent of this project that a "single pipe" waste and vent system is utilized. It shall be similar or equal to the So Vent piping system. Contractor shall coordinate with Factory Rep. to review all installations, shop drawings and submittals of project.
2. The system is intended to be installed parallel to the existing waste and vent stacks. Each unit may be tied into the new system individually thus keeping disruption to the tenants to a minimum. The existing building is occupied and the contractor shall take extreme care to limit disruption to tenants as much as possible. Under no circumstances shall any tenant be kept without plumbing services after the end of a working day. All shut downs and "tie ins" shall be closely coordinated with the owner/engineer. No work affecting tenants shall commence without the prior approval of the owner/engineer.

1.06 RELATED WORK AND REQUIREMENTS

- A. Principal classes of work related to the work of this Section are listed below, and are specified to be performed under the indicated sections of the Specifications. Refer to the indicated sections for description of the extent and nature of the indicated work, and for coordination with related trades. This listing may not include all related work items, and it is the responsibility of the contractor to fully coordinate the work of this Section with that of all other trades.

1. Section 02070 – SELECTIVE DEMOLITION
2. Section 06200 - FINISH CARPENTRY
3. Section 06100 – ROUGH CARPENTRY

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

4. Section 09900 – PAINTING

1.07 REFERENCES

- A. For products or workmanship specified by association, trade, or federal standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as the Bid date, except when a specific date is specified.
- C. Schedule of References:
  - 1. ANSI American National Standards
  - 2. ASME American Society of Mechanical Engineers
  - 3. ASTM American Society for Testing and Materials
  - 4. AWWA American Water Works Association
  - 5. FM Factory Mutual System
  - 6. IEEE Institute of Electrical & Electronics Engineers
  - 7. CISPI Cast Iron Soil Pipe Institute
  - 8. PDI Plumbing and Drainage Institute
  - 9. NEMA National Electrical Manufacturer's Association
  - 10. NFPA National Fire Protection Association
  - 11. UL Underwriters' Laboratories, Inc.
  - 12. OSHA Occupational Safety and Health Administration
  - 13. MSS Manufacturers Standardization Society

1.08 SUBMITTALS

- A. Conform to the requirements of the submittals section for schedule and form of all submittals. Coordinate this submittal with submittals for all other finishes.
- B. Materials List: Before purchasing materials for the work, submit to the Architect/Engineer a complete list showing (1) the materials specified, and (2) the equivalent materials proposed for use, including description of product, if the Plumbing Contractor desires to use materials other than those specified.
  - 1. All materials shall be approved by the Architect/Engineer before commitment for materials is made. Intention of using specified materials shall not relieve the Contractor from submitting the items listed herein.
- C. Proposed Products List:
  - 1. Hangers and Supports
  - 2. Insulation
  - 3. Piping, Fittings, Unions and Couplings
  - 4. Access Panels
  - 5. Cleanouts
  - 6. Plumbing Coordination Drawings
- D. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal.
- E. Mark dimensions and values in units to match those specified.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- F. Submit Material Safety Data Sheets (MSD) on each product with submittal.

1.09 CODES, ORDINANCES, AND PERMITS

- A. Installation of systems and equipment provided under this section shall be done in strict accordance with the Massachusetts State Building and Plumbing Codes, with local supplements, Department of Environmental Protection Agency, NFPA, Massachusetts Architectural Access Board and any and all state and local requirements of the Authority Having Jurisdiction.
- B. All materials and installation provided under this Contract shall be approved for use in the State of Massachusetts, and done in strict accordance with the Massachusetts State Plumbing Code and NFPA.
- C. Give all notices, file all plans, obtain all permits, pay all fees, and licenses and obtain all necessary approvals from authorities having jurisdiction. Deliver all certificates of inspection to the authorities having jurisdiction. No work shall be covered before examination and approval by Architect/Engineer, inspectors, and authorities having jurisdiction. Replace imperfect or condemned work conforming to requirements, satisfactory to Architect, and without extra cost to the Owner. If work is covered before due inspection and approval, the installing contractors shall pay costs of uncovering and reinstalling the covering, whether it meets contract requirements or not.

1.10 SEQUENCING AND SCHEDULING

- A. Construct work in sequence under provisions of Division 01.

1.11 RECORD DRAWINGS

- A. Refer to DIVISION 01, of the Specifications for record drawings and procedures to be provided under this section.

1.12 JURISDICTIONAL DISPUTES

- A. In order to avoid any jurisdictional disputes and work stoppage that could arise during the completion of the work shown on the Drawings or as specified herein, the Plumbing Contractor will be held responsible for subletting any work shown or specified herein, but not classified as plumbing work.

1.13 COORDINATION AND RESPONSIBILITY

- A. The structure and its appurtenances, clearances and the related services, such as heating, ventilation and electric service have been planned to be legal, adequate and suitable for the installation of equipment specified under this section. The Owner will not assume any increase in cost caused by differing requirements peculiar to a particular make or type of equipment, and any incidental cost shall be borne by the Contractor. He shall be responsible for the proper location of his required sleeves, chases, inserts, etc., and see that they are set in the forms before the concrete is poured. He shall be responsible for his work and equipment furnished and installed by him until the completion and final acceptance of this contract, and he shall replace any work which may be damaged, lost or stolen, without additional cost to the Owner.
- B. Where the Plumbing Contractor proposes to use an item of material or equipment other than that shown or specified in the Contract Documents, he shall assume the cost of and entire responsibility for any change in his work from the work as shown or

**WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605**

specified occasioned by approval of such item. In addition, the Plumbing Contractor shall make all such arrangements and assume all cost occasioned by changes in the work of other trades that may be required in order to install the approved substitution; such changes shall not be a matter for subsequent Change Order increasing the Contract Sum.

- C. The contractor shall be responsible for visiting the site and reviewing the drawings to become familiar with the scope of work and the existing conditions. The contractor shall coordinate with all trades and all existing conditions prior to the commencement of work, in order to insure that no interferences occur with other trades or with existing conditions, and to insure that the work of this section will fit into the space.

**1.14 PROTECTION OF WORK AND PROPERTY**

- A. The Plumbing Contractor shall be responsible for the care and protection of all work included under this Section until it has been tested and accepted.
- B. Protect all equipment and materials from damage from all causes including theft. All materials and equipment damaged or stolen shall be repaired or replaced with equal material or equipment.
- C. Protect all equipment, outlets and openings with temporary plugs, caps and covers. Protect work and materials of other trades from damage that might be caused by work or workmen under this Section and make good damage thus caused.

**1.15 SAFETY PRECAUTIONS**

- A. Life safety shall be a primary consideration. The contractor shall provide all required and prudent material, labor and equipment to comply with applicable safety regulations. Further, the Plumbing Contractor shall similarly provide all material, labor and equipment to comply with reasonable or generally accepted safety precautions as directed by the Owner or the Architect.
- B. Comply with all of the safety requirements of OSHA throughout the entire construction period of the project.
- C. Furnish, place and maintain proper guards for prevention of accidents and any other necessary construction required to secure safety of life and property.
- D. Perform work only in areas of the building as approved by the Owner or his representative. Personnel and equipment access to the site, laydown areas, parking areas and areas of work shall only be as designated and allowed by the Owner.
- E. Also refer to Division 01, Safety Requirements.

**1.16 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS**

- A. It is the intention of the Specifications and Drawings to call for complete, finished work, tested and ready for continuous operation. Any apparatus, appliance, material or work not shown on the Drawings, but mentioned in the Specifications or vice-versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, even if not particularly specified, shall be provided by the Plumbing Contractor without additional expense to the Owner.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- B. The Drawings are generally diagrammatic. The locations of all items that are not definitely fixed by dimensions are approximate only. The exact locations must be determined at the project and shall have the approval of the Architect before being installed. The Plumbing Contractor shall follow Drawings, including his shop drawings, in laying out work and shall check the Drawings of other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions. Where space conditions appear inadequate, notify the Architect before proceeding with the installation. The Plumbing Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.
- C. Refer to the Plumbing plans and coordinate location of all plumbing equipment and piping.
- D. Size of pipes and methods of running them are shown, but it is not intended to show every offset and fitting, nor every structural difficulty that may be encountered. To carry out the true intent and purpose of the Drawings, all necessary parts to make complete approved working systems ready for use, shall be furnished without extra charge. All work shall be installed in such a manner as to avoid being unsightly.
- E. Should it appear that there is a real or an apparent discrepancy between the drawings and specification, it shall be assumed that the Plumbing Contractor based his bid on doing work in a more expensive manner.

1.17 OPERATION AND MAINTENANCE MANUALS

- A. Prepare and submit maintenance and operating manuals as described in, PROJECT CLOSEOUT, section of specifications. Submit six (6) complete sets of operation and maintenance manuals. Submit a separate CD with scanned copies of the Maintenance & Operations Manuals. The contractor shall also provide a separate CD with scanned copies of the Maintenance & Operational Manuals.
- B. Table of Contents:
  - 1. Introduction
    - a. Explanation of Manual and its use.
    - b. Description of Piping Systems.
  - 2. System Operation
  - 3. Maintenance
    - a. Recommended List of Spare Parts: Furnish two (2) typed sets of instructions for ordering spare parts with sectional views of the fittings or equipment showing parts numbered or labeled to facilitate ordering replacements. Each set shall include a list with itemized prices of those parts recommended to be kept on hand as spares, as well as the name and address of where they may be obtained.
  - 4. Manufacturer's Literature:
    - a. All items as listed under Submittals.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

1.18 UNDERWRITERS LABEL AND LISTING

- A. All electrical apparatus furnished under this Section shall be approved by UL and shall be labeled or listed where such is applicable. Where custom-built equipment is specified and the UL label or listing is not applicable to the completed product, all components used in the construction of such equipment shall be labeled or listed by UL where such is applicable to the component.

1.19 CUTTING AND PATCHING

- A. All cutting and patching necessary for the proper installation of work to be performed under this Section and subsections shall be performed by the Plumbing Sub-Contractor. All cutting and patching associated with demolition work necessary for the installation of work under this section shall be by the General Contractor.
- B. All work shall be fully coordinated with all phases of construction, in order to minimize the requirements for cutting and patching.
- C. The Plumbing Contractor shall form all chases or openings for the installation of his own work, or shall cut the same in existing work and shall see that all sleeves or forms are in the work and properly set in ample time to prevent delays. He shall see that all such chases, openings, and sleeves are located accurately and are of the proper size and shape and shall consult with the Architect and the Contractors or Contractors concerned in reference to this work. In so doing, he shall confine the cutting to the smallest extent possible consistent with the work to be done. In no case shall piers or structural members be cut without the approval of the Architect/Engineer.
- D. The Plumbing Contractor shall carefully fit around, close up, repair, patch, and point around the work specified herein to match the adjacent surfaces and to the entire satisfaction of the Architect/Engineer.
- E. The Plumbing Contractor shall fill and patch all openings or holes left in the existing structures by the removal of existing equipment by himself.
- F. All of this work shall be carefully done by workmen competent to do such work and with the proper and smallest tools applicable.
- G. Any cost caused by defective or ill-timed work shall be borne by the Plumbing Contractor responsible therefore.
- H. Provide all cutting and patching work required for installation of materials and equipment under this section of the specifications, in such a manner so as to leave the work complete and in a condition that matches the corresponding area.
- I. When, in order to accommodate the work required under this section of the specifications, finished materials of other trades must be cut or fitted, furnish the necessary drawings and information to the trades whose materials must be cut or fitted.
- J. Do all required drilling and cutting of holes in concrete walls and floors for the installation of sleeves and supports provided under this section of the specification.
- K. After installation of pipe lines, the Contractor shall neatly patch, repair, and replace work where damaged, removed or altered for pipe line installation. This work shall be similar and equal in quality to the work removed or damaged, unless otherwise shown

**WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605**

or specified. Such work shall include patching of masonry work, and wherever any such patching work is indicated on drawings or otherwise required.

- L. The fire resistance rating of floors, walls, and ceilings shall be maintained. UL listed firestopping shall be installed in accordance with manufacturer's written instructions. Firestopping shall be performed in strict conformance with Division 07.

**1.20 GUARANTEE**

- A. Submit manufacturer's standard replacement warranties for material and equipment furnished under this Section. Such warranties shall be in addition to and not in lieu of all liabilities which the manufacturer and Contractor may have by law or by provisions of the Contract Documents. All warranties shall be submitted prior to Final Payment.
- B. All materials, equipment and work furnished under this Section shall be guaranteed against all defects in materials and workmanship for a minimum period of one (1) year commencing with the date of Substantial Completion. Any failure due to defective material, equipment or workmanship which may develop shall be corrected at no expense to the Owner including all damage to areas, materials and other systems resulting from such failures.
- C. Guarantee that all elements of each system meet the specified performance requirements as set forth herein or as indicated on the Drawings.
- D. Upon receipt of notice from the Owner of the failure of any part of the systems during the guarantee period, the affected parts shall be replaced. Any equipment requiring excessive service shall be considered defective and shall be replaced.

**1.21 OBTAINING INFORMATION**

- A. Obtain from the manufacturer the proper method of installation and connection of the equipment that is to be furnished and installed. Obtain all information that is necessary to facilitate the work and to complete the project.

**1.22 GIVING INFORMATION**

- A. Keep fully informed as to the size and shape and location of all openings required for all apparatus and give full information to all other Contractors. Furnish all supports required for installation of apparatus herein specified.

**1.23 COOPERATION AND COORDINATION WITH OTHER TRADES**

- A. The work shall be so performed that the progress of the entire building construction including all other trades shall not be delayed nor interfered with. Materials and apparatus shall be installed as fast as conditions of the building will permit and must be installed promptly when and as desired.
- B. Confer with all other trades relative to location of all apparatus and equipment to be installed and select locations so as not to conflict with work of other Sections. Any conflicts shall be referred immediately to the Architect/Engineer for decision to prevent delay in installation of work. All work and materials placed in violation of this clause shall be readjusted to the Architect's satisfaction, at no expense to the Owner.
- C. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section will interfere with work of

**WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605**

other sections, assist in working out space conditions to make satisfactory adjustment. Prepare and submit for approval 3/8 inch scale or larger working drawings and sections, clearly showing how this work is to be installed in relation to the work of other sections. If the work of this section is installed before coordinating with other trades or so as to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.

- D. Keep fully informed as to the shape, size and position of all openings required for all apparatus and give information in advance to build openings into the work. Furnish and set in place all sleeves, pockets, supports and incidentals.
- E. All distribution systems which require pitch or slope such as storm and sanitary drains and water piping shall have the right of way over those which do not. Confer with other trades as to the location of pipes, ducts, lights and apparatus and install work to avoid interferences.
- F. The Plumbing Contractor shall, with the approval of the Architect and without extra charge, make reasonable modifications in his work as required by normal structural interferences, or by interference with work of other trades, or for proper execution of the work.
- G. The Plumbing Contractor shall protect all materials and work of other trades from damage that may be caused by his work and shall make good any damages so caused.
- H. This contractor shall submit Requests for Information (RFI's) regarding the work of this section in accordance with the provisions of Division 01.

**1.24 MATERIAL AND EQUIPMENT STANDARDS**

- A. All equipment and material must be approved by the Architect/Engineer prior to use. Substitutions may be offered for review provided the material, equipment or process offered for consideration is equal in every respect to that indicated or specified and only if the term "approved equal" appears. The request for each substitution must be accompanied by complete specifications together with drawings or samples to properly appraise the materials, equipment or process.
- B. If a substitution of materials or equipment in whole or in part is made, the Plumbing Contractor shall bear the cost of any changes necessitated by any other trade as a result of said substitution.
- C. All materials, equipment and accessories provided under this section shall be new and unused products of recognized manufacturers as approved by the Massachusetts State Board of Plumbers and Gas Fitters.

**1.25 CERTIFICATES OF APPROVAL**

- A. Upon completion of all work, furnish, in duplicate, certificates of inspections from the manufacturers stating that authorized factory engineers have inspected and tested the operation of their respective equipment and found same to be in satisfactory operating condition.

**1.26 SUPERVISION**

- A. Supply the service of an experienced and competent supervisor who shall be in charge of the plumbing work at the site.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

1.27 DELIVERY, STORAGE AND HANDLING

- A. All manufactured materials shall be delivered to the site in original packages or containers bearing the manufacturer's labels and product identification.
- B. Protect materials against dampness. Store off floors, under cover, and adequately protected from damage.
- C. Deliver products to site and store and protect same under the provisions of Division 01.
- D. Thoroughly inspect all plumbing equipment and materials upon receipt at the job site for damage and correctness.

1.28 ACCESSIBILITY

- A. All work shall be installed so that parts requiring inspection, operation, maintenance and repair are readily accessible. Minor deviations from the drawings may be made to accomplish this, but changes of substantial magnitude shall not be made prior to written approval from the Architect.

1.29 ACCESS PANELS

- A. Furnish access panels for walls and ceilings at locations indicated on drawings or as required to permit access for adjustment, removal, replacement and servicing of all concealed plumbing equipment requiring access and all other items requiring maintenance and adjustment. In addition to where indicated on this Drawing, access doors shall be required for access to each concealed piping system isolation valve. Access panels shall be in strict conformance with Division 08. All access panels shall be submitted to the Architect for approval.
- B. Installation shall be by the General Contractor.
- C. All access panels shall be located and positioned so that the equipment can be easily reached, and the size shall be sufficient for this purpose (min. 24" x 24").

1.30 SLEEVES, INSERTS, ANCHOR BOLTS, AND PLATES

- A. Be responsible for the location of and the maintaining in proper position all sleeves, inserts and anchor bolts supplied and/or set in place. In the event that failure to do so requires cutting and patching of finished work, it shall be done at this Contractor's expense without any additional cost to the Owner.
- B. Sleeves passing through fire walls and fire rated floors and barriers, shall be made tight using approved caulking or fireproofing materials as necessary. Fire rated material shall be UL listed and shall match the rating of the wall, floor or barrier penetrated.
- C. The fire resistance rating of floors, walls, and ceilings shall be maintained. UL listed firestopping shall be installed in accordance with manufacturer's written instructions.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

1.31 SUPPLEMENTARY STEEL, CHANNELS AND SUPPORTS

- A. Provide all supplementary steel, channels and supports required for the proper installation, mounting and support of all plumbing equipment, piping, etc., required by the Specifications.
- B. Supplementary steel and channels shall be firmly connected to building construction in a manner approved by the Architect/Engineer.
- C. The type and size of the supporting channels and supplementary steel shall be determined by the Plumbing Contractor and shall be of sufficient strength and size to allow only a minimum deflection in conformance with the manufacturer's requirements for loading.

1.32 DEFINITIONS

- A. As used in this Section, the following items are understood to have the following meaning:
  - 1. Work shall mean all labor, materials, equipment, apparatus, controls, accessories and all other items required for a proper and complete installation.
  - 2. Concealed shall mean hidden from sight in chases, furred-in spaces, shafts, hung ceilings, embedded in construction or in a crawl space.
  - 3. Exposed shall mean not installed underground or concealed as defined above.
  - 4. Provide shall mean furnish and install.
  - 5. Contractor shall mean plumbing sub-contractor.

1.33 HOISTING, SCAFFOLDING AND PLANKING

- A. The work to be done under this Section of the Specifications shall include the furnishing, set-up and maintenance of all derricks, hoisting machinery, scaffolds, staging and planking as required for the work.

1.34 COORDINATION

- A. Work shall be performed in cooperation with other trades on the project and so scheduled as to allow speedy and efficient completion of the project.
- B. Furnish to all other trades advance information on location and size of all equipment, frames, boxes, sleeves, and openings needed for the work under this section of the specifications, and also furnish layout information and shop drawings necessary to permit trades affected by the work under this section of the specifications to install their work properly coordinated and without delay.
- C. Where there is evidence that work installed under this section of the specifications interferes with the work of other trades, assist in working out space conditions to make satisfactory adjustments.
- D. With the approval of the Architect/Engineer and without extra cost to the Owner, make reasonable modifications in work specified under this section of the specifications required to coordinate with normal structural interferences, lights, diffusers, and ductwork or for proper execution of specified work.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- E. If work is installed before coordinating with other trades so as to cause interference with the work of such trades, make all necessary changes in work under this section of the specifications at no additional cost to the Contract.
- F. Protect all materials and work of other trades from damage that may be caused by the work required under this section of the specifications and be responsible for repairing any damages caused by such work without any additional cost to the Contract.
- G. Where work of this section will be installed in close proximity to work of other sections or where there is evidence that the work of this section will interfere with work of other sections or existing conditions, assist in working out space conditions to make satisfactory adjustment. Prepare and submit for approval 3/8 inch scale or larger working drawings and sections, clearly showing how this work is to be installed in relation to the work of other sections. If the work of this section is installed before coordinating with other trades or so to cause interference with work of other trades, make changes necessary to protect conditions without extra charge.
- H. The plumbing contractor shall carefully coordinate with all existing conditions at the site while preparing the coordination drawings. All work shown on the plumbing contractor's coordination drawings shall be fully coordinated with all existing conditions at the site to insure that all work shall fit in the spaces. Contractor shall be responsible for compiling a full set of coordination drawings. The plumbing contractor shall make reasonable changes to the contract drawings in order to accommodate existing conditions without extra charge. No work shall commence until a full set of coordination drawings has been submitted and approved by the Owner, So Vent Representative and Engineer.

1.35 COORDINATION DRAWINGS

- A. General: General Contractor shall prepare and provide one accurately scaled set of building "base sheets" in CAD format for production of Coordination Drawings. The Coordination Drawings shall at not less than at 1/8" for all areas. General Contractor shall establish CAD layer standards for each trade and shall be responsible for distribution to each trade. The sequence of Coordination Drawings shall be Contractor-Structural-HVAC-Electrical-Plumbing-Fire Protection-Contractor. Upon review and approval of coordination drawings, the General Contractor shall provide a complete set to the owner on 4 mil reproducible mylar and electronic files in CAD format.
- B. The Contractor shall coordinate all HVAC, plumbing, electrical, structural and fire protection work with that of each trade in order to:
  - 1. Avoid interferences between general construction, mechanical, electrical, structural and other specialty trades.
  - 2. Maintain clearances and advise other trades of clearance requirements for operation, repair, removal and testing of mechanical equipment.
  - 3. Indicate aisle ways and access ways required on coordinated shop drawings for mechanical equipment rooms, electrical rooms.
  - 4. Coordinate location of sleeves and inserts.
  - 5. Coordinate installation sequence.
- C. Plumbing Coordination Drawings
  - 1. The Plumbing Sub-Contractor shall prepare Coordination Drawings showing all work to be installed as part of Section 15400. The Plumbing Coordination Drawings shall show all equipment, work, pipes, sleeves, inserts, and supports.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

2. The Plumbing Sub-Contractor, after showing all of the Plumbing work, shall forward the reproducible coordination drawings to the General Contractor.
3. The Plumbing Sub-Contractor shall attend a series of meetings arranged by the Engineer to resolve any real or apparent interferences or conflicts with the work of the other contractors or with ceiling heights shown on the drawings.
4. The Plumbing Sub-Contractor shall then make adjustments to his work on the Coordination Drawings to resolve any real or apparent interferences or conflicts and forward to the Contractor.
5. After any real or apparent interferences and conflicts have been incorporated into the Coordination Drawings, the General Contractor shall prepare the final Coordination Drawings and submit to the Engineer.
6. The Plumbing Sub-Contractor shall not install any of his work prior to the preparation of the final Coordination Drawings. If Plumbing work proceeds prior to the final Coordination Drawings, any change to the Plumbing work to correct the interferences and conflicts which result will be made by the Plumbing Sub-Contractor at no additional cost to the Owner.
7. Coordination Drawings are for the Plumbing Sub-Contractor's and Architect's use during construction and shall not be construed as replacing any shop, "as-built", or Record Drawings required elsewhere in these Contract Documents.
8. Review of Coordination Drawings shall not relieve the Plumbing Sub-Contractor from his overall responsibility for coordination of all work performed pursuant to the Contract or from any other requirements of the Contract.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

- A. Materials and equipment shall be of the best quality manufacture, new, unused and free from all defects, and burrs. All piping shall be de-burred before installation.
- B. Reference to specifications or recognized authorities to establish basis of quality shall be latest edition in force at date of bidding.

2.02 SANITARY WASTE, SO VENT AND VENT PIPE AND FITTINGS

- A. Buried or under floor shall meet the following:
  1. Buried or under floor shall be service weight cast-iron soil pipe and fittings, coated tar or asphaltum. Joints to be made mechanical joint with resilient gaskets.
  2. Marking - Each length of pipe and each fitting shall be plainly marked with the manufacturer's initials or registered trademark by which he can be readily identified, and with letters to indicate the proper classification, as follows: SV Service Weight.
  3. Coating - The pipe and fittings shall be uniformly coated with coal tar pitch, or similar bituminous material suitable for the purpose, that is adherent and without a tendency to scale or become brittle. The coating shall be applied to all surfaces, except in threaded openings.
  4. The cast-iron pipe shall meet the specifications of the seal of the Cast-Iron Soil Pipe Institute.
- B. Above grade shall be one of the following:
  1. Service weight cast iron soil pipe and fittings, tarred or plain. Joints shall be made with mechanical joint with resilient gaskets.

**WORCESTER HOUSING AUTHORITY**  
**REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS**  
**ELM PARK TOWER APARTMENTS -195 Units**  
**425 Pleasant Street, Worcester, MA 01605**

2. Hubless cast iron soil pipe and fittings, manufactured in accordance with CISPI Standard 301--75, joined with a 4 band stainless steel clamp from a list of approved clamps and installed in accordance with CISPI Pamphlet Designation 310-78. Pipe 8" and larger shall have pipe clamps and rods at each fitting.
3. Copper pipe with cast brass drainage fittings.
4. Hard drawn Type DWV copper tubing ASTM B 306, with cast brass or wrought copper drainage pattern fittings for piping up to 2" size only.
5. PVC shall not be used on the project per code.

**2.03 HANGERS, INSERTS AND SUPPORTS**

- A. All piping shall be rigidly supported from the building structures by means of approved hangers and supports. Piping shall be supported to maintain required grading and pitching of line, to prevent vibration and to secure piping in place, and shall be arranged so as to provide for expansion and contraction. In no case shall risers or mains contact building structures. Seismic restraints shall be provided on gas piping systems as required.
- B. All materials specified in this section which occur above suspended ceilings shall be supported directly from the building structures. The suspended ceiling system shall not be utilized to support any plumbing materials. All hangers, inserts and supports shall be Carpenter Patterson, Calco, Walworth, or equal.
- C. All hangers shall be secured to approved adjustable type, stainless steel inserts wherever possible and practicable. Field drilling, where required, shall be by the Plumbing Contractor. The use of explosives is prohibited.
- D. All sanitary, waste, vent, storm drain and water pipes shall have friction clamps at each floor.
- E. Hangers shall be installed, as required, to meet code compliance as to location/spacing and Manufacturer's Standardization Society (MSS) Standard Practice Bulletins SP-58 and 69.
- F. Hanger material shall be compatible with piping materials with which it comes into contact unless otherwise noted.
- G. Hangers shall be installed, in addition to the above, at all changes of direction (horizontal and vertical), valves and equipment connections. Hangers shall be located so that their removal is not required to service, assemble or remove equipment.
- H. Horizontal runs may use Type "1A" band hangers up to 4" size. Piping larger than 4" shall be provided with clevis type.
- I. Vertical support shall be by means of riser clamps (anchors with split ring type allowable up to 2" size only) and adjustable pipe support with flange anchored to floor.
- J. Where three or more pipes are running parallel to each other, factory fabricated gang pipe hangers with pipe saddle clips or rollers may be used in lieu of the hereinbefore specified hangers. These hangers shall be sized to provide for insulation protectors as hereinafter specified. Pipe saddle clips shall be not less than 16 gauge metal. Where pipe rollers are provided for insulated copper piping, insulation protectors shall be provided at each set of rollers and filled with a section of heavy density fiberglass pipe covering that extends a minimum of 12" beyond the roller.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- K. Insulation protectors (shields) for horizontal piping shall be constructed of galvanized steel formed to a 180 degree arc and 12 inches long, 18 gauge for hangers 5 inches in size and smaller, 16 gauge for hangers larger than 5 inches in size.
- L. Rods, clamps and hangers shall be electro-galvanized coated.
- M. Valve and piping supports, from the floor, shall be adjustable pipe support and complete with pipe standard and flange, anchored to floor. Supports shall be installed at each control valve, riser tee or elbow and where any unsupported section exceeds 4'-0" in length measured along piping centerline.

2.04 SLEEVES

- A. All pipes passing through floors, walls, or partitions shall be provided with sleeves having an internal diameter with a minimum of two inches larger than the outside diameter of the pipe or insulation on covered lines.
- B. Sleeves through outside walls and slabs on grade shall be Schedule 40 galvanized steel pipe with a 150 pound steel slip on welding flanges, welded at the center of the sleeve and shall be painted with one coat of bitumastic paint, inside and outside.
- C. Sleeves through masonry floors and interior masonry walls shall be Schedule 40, black, steel pipe. Sleeves through interior non-masonry walls or partitions shall be 22 gauge galvanized sheet steel.
- D. The sleeves through outside walls and slab on grade shall be provided with pipe to wall penetration closures. Seals shall be mechanical type of interlocking rubber links shaped to fill space between pipe and sleeve. Links shall be assembled with bolts to form a belt around the pipe with pressure plate under each bolt head and nut. After seal assembly is positioned, tightening of bolts will provide watertight seal. The Plumbing Contractor shall determine the required inside diameter of each individual sleeve before ordering, fabricating or installing. The inside diameter of each sleeve shall be sized as recommended by the manufacturer to fit the pipe and Link-Seal to assure a watertight joint.
- E. Sleeves through walls shall terminate flush with face of wall. Sleeves through floor shall terminate 1" above finished floor.
- F. Required fire resistance of floors and walls shall be maintained where penetrations occur. Fire stopping at sleeves shall be installed per manufacturer recommendations. Fire stopping material shall be UL listed for the service and fire rating. Provide asbestos-free firestopping material capable of maintaining an effective barrier against flame, gases, and temperature. Provide noncombustible firestopping that is nontoxic to human beings during installation or during fire conditions. Devices and equipment for firestopping service shall be UL FRD listed or FM P7825 approved for use with applicable construction, and penetrating items.
  - 1. Fire Hazard Classification: Material shall have a flame spread of 25 or less, a smoke developed rating of 50 or less when tested in accordance with UL 723 or UL listed and accepted.
  - 2. Firestopping Rating: Firestopping materials shall be UL FRD listed or FM P7825 approved for "F" and "T" ratings at least equal to fire-rating of fire wall or floor in which penetrated openings are to be protected, except that "F" and "T" ratings may be 3 hours for firestopping in through-penetrations of 4-hour fire rated wall or floor.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- G. Escutcheons shall be provided with a set screw to properly hold escutcheon in place and provided at all exposed floor and wall penetrations. Escutcheons on C.P. piping shall be chrome plated.

2.05 CLEANOUTS

- A. Bodies of cleanout ferrules in hub and spigot or no-hub piping shall be standard pipe size conforming in thickness to that required for pipe and fittings, and shall extend not less than 3/4 inch high. Cleanouts in copper waste piping shall be soldered brass cleanout fittings with extra heavy brass screw plugs of the same size as the pipe line. Cleanouts in threaded waste piping shall be cast iron drainage "T" pattern 90 degree branch fittings with extra heavy brass screw plugs of the same size as the pipe.
- B. Floor cleanouts shall be J.R. Smith, Zurn, or Wade, heavy duty cast iron body with ductile iron cover.
- C. Exterior cleanouts (GCO) to grade shall be same as for floor cleanouts and shall be encased in concrete at a minimum of 6" beyond the greatest outside dimension and a minimum of 6" depth. Top of cleanout shall be set 1/2" below finished grade and concrete collar shall be shaped to finished grade.
- D. Wall cleanouts, ZN1445-1 cast iron supreme cleanout tee with cadmium plated plug, lead seal and round stainless steel access cover with securing screw, or approved equal.
- E. Provide owner with three (3) wrenches for removing flush cleanout plugs.
- F. Plastic Cleanout plugs will not be allowed.

PART 3 - EXECUTION

3.01 IDENTIFICATION

- A. General
  - 1. All equipment and piping provided under this Section of the Specifications shall be marked for ease of identification.
  - 2. Marking shall be done using self-adhering labels applied to clean, smooth surfaces. All lettering shall have a sharply contrasting background for ease of identification. Colors shall be in accordance with ANSI Standards. Samples of stickers together with color schedules shall be submitted for approval.
  - 3. The Plumbing Contractor shall label all equipment. Subcontractors will provide The Owner with excel spreadsheets of all items to be labeled, The Owner will assign numbers, assign names, print out labels and provide subcontractors with labels. Subcontractor will then affix the labels to the equipment. Brass tags are eliminated. As-builts and manuals will reference Stem Middle School provided numbers and names.
- B. Equipment
  - 1. Equipment marking shall be prominently located on the normally visible side of the equipment.
  - 2. Equipment identification designations shall be taken from equipment schedules as indicated on the Drawings.

**WORCESTER HOUSING AUTHORITY**  
**REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS**  
**ELM PARK TOWER APARTMENTS -195 Units**  
**425 Pleasant Street, Worcester, MA 01605**

C. Pipe Identification

1. Provide color coded pipe identification markers on all piping in the building installed under this Section. Pipe markers shall be heavy plastic faced cloth labels with heat resistant backing, "Set Mark" by Seton Nameplate Corporation, Zipper Tubing Co., or equal by the W. H. Brady Company or approved equal.
2. Provide an arrow marker with each pipe content marker to indicate the direction of flow.
3. Piping mains shall be labeled at 20' intervals and on entrance and exit from the Mechanical Room, adjacent to each valve and at both sides of wall penetrations. This work shall be done after finish painting has been completed.
4. The following color coding shall be used with names in black letters on backgrounds indicated:

SCHEDULE OF PIPING IDENTIFICATION		
Service	Legend	Background Color
Sanitary	Sanitary	Green
Vent	Vent	Green

5. In general, a 2" high legend shall be used for pipe lines 4" diameter and larger, and a 3/4" high legend shall be used for pipe lines 3" diameter and smaller.
6. All markers shall be OSHA approved.
7. All Exposed piping systems shall be painted in accordance with ANSI standards.

3.02 TESTING

A. General

1. All labor, materials, instruments, devices and power required for testing shall be provided by the Plumbing Contractor. The tests shall be performed in the presence and to the satisfaction of the Owner's Representative and such other parties as may have legal Jurisdiction. No piping in any location shall be closed up, furred in, or covered before testing.
2. Where portions of piping systems are to be covered or concealed before completion of the project, those portions shall be tested separately in the manner specified herein for the respective entire system.
3. Any piping or equipment that has been left unprotected and subject to mechanical or other injury shall be retested in part or in whole as directed.
4. The Architect/Engineer retains the right to request a recheck or resetting of any pump or instrument by this contractor during the guarantee period at no additional cost to the Contract.
5. Repair or replace any defective work with new work without extra charge to the Contract. Repeat tests as directed, until the work is proven to meet the requirements specified herein.
6. Restore to its finished condition any work, damaged or disturbed, provided by other contractors and engage the original contractor to do the work of restoration to the damaged or disturbed work.
7. The fixtures shall be tested for stability of support and satisfactory operation. The piping shall be tested when directed by the Contractor for stability.
8. After the fixtures are set and connected, and the piping systems to same have been tested, this Plumbing Contractor shall turn water on the fixtures, and equipment, fill the traps, etc., and the proper operation of all items shall be

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

demonstrated by him in the presence of and to the satisfaction of the Architect or their designated representatives.

9. Caulking of screwed joints or holes in piping will not be acceptable.
10. This Plumbing Contractor shall notify the any inspectors having jurisdiction, a minimum of 48 hours in advance of making any required tests so that arrangements may be made for their presence to witness his scheduled tests.

B. Specific:

1. Sanitary and Vent (Waste and Vent) Piping Systems:

- a. Before the installation of fixtures, and equipment each system including vents shall have all necessary openings plugged to permit the entire system to be filled with water to the level of the vent stack or roof drain of each system above the roof where practical. Each system shall hold this water for four hours without a drop in water level.
- b. Where a portion of the system is to be tested, the test shall be conducted in the same manner as specified herein for the entire system, except a vertical sack ten feet above the highest horizontal line to be tested may be installed, and filled with water to maintain sufficient pressure. A pump may be used to supply the required pressure. The pressure shall be maintained for a minimum of four hours for sufficient time to permit inspection of all joints.

3.03 SPECIAL TOOLS

- A. Provide any and all special tools, recommended by the manufacturer of items furnished, noted as not being commonly available.

3.04 CERTIFICATES OF APPROVAL

- A. Upon completion of the work, furnish to the Owner, in duplicate, certificates of inspection and/or approval from state and local Inspection authorities having jurisdiction indicating the installed systems compliance to their requirements.

3.05 QUIET OPERATION

- A. All work provided under this Section of the Specifications shall operate under conditions of load without sound or vibration which is abnormally objectionable for such equipment in the opinion of the Architect. In case of moving machinery, sound or vibration noticeable outside of the room in which it is installed, or annoyingly noticeable inside its own room will be considered objectionable shall be corrected in an approved manner by the Plumbing Contractor at no change in Contract amount.

3.06 SYSTEMS

- A. Sanitary, and Vent Piping (Interior)
1. The Plumbing Contractor shall be responsible for checking each pipe for alignment, center line elevation and invert grade for underground installations.
  2. At times when work is not in progress, open ends of pipe and fittings shall be securely closed so that no trench water, earth or other substance will enter the pipe or fittings. Pipe laid through rock excavation shall rest on a six inch of well compacted sand.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

3. The Sanitary and Acid (waste and vent), and storm drainage piping three inches and smaller in diameter shall pitch a minimum of ¼ inch per foot, and piping four inches and larger in diameter shall pitch a minimum of 1/8 inch per foot.
4. The vent stacks shall be connected as shown and extended through the roof. Waste and vent pipes shall be concealed, unless otherwise noted. All acid vent systems shall be kept separate from the sanitary vent systems.
5. Branch connections to each drainage system shall be made with "Wye" and long turn "Tee Wye" fittings. Installation of short radius ¼ bends, common offsets, double hub fittings and saddles will not be approved. Only fittings conforming to the Code shall be installed.
6. The changes in direction of each drainage system shall be made with "Wye" branches and 1/8 bends. Provide long sweep bends at bottom of stacks with a vertical cleanout just above the floor at places where a "Wye" and 1/8 bends at bottom of stacks and end cleanouts cannot be installed.
7. Every fixture, unless otherwise noted, shall be separately trapped and the traps must be vented, unless an approved battery or wet vented system is being installed. Floor drains shall be considered as a fixture.
8. Vents shall be connected to the discharge of each trap system, then carried individually to a point above the flood level of the fixture before connecting with any other vent pipes. Pitch the branch vents back to the fixtures.
9. Collect individual vent pipe together in branch vent lines and connect to vent stacks. Wherever possible, vent stack offsets shall be made with 45 degree fittings. The vents passing through the roof shall be a minimum size of one inch larger than connected vent stack. All acid vent systems shall be kept separate from Sanitary vent systems and shall be carried up thru the roof separately.
10. Cleanouts shall be provided in drainage piping at changes in directions, at foot of stacks or other required points so that all portions of the lines will be readily accessible for cleaning or rodding out.
11. Cleanouts shall be of the same size as the pipe installed in up to four inches in diameter and not less than four inches in diameter for piping larger than four inches in diameter.
12. The maximum horizontal distance between cleanouts; in piping four inches in diameter and smaller shall not be more than 50 feet apart; in piping five inches in diameter and larger shall not be more than 100 feet apart.
13. Traps on sanitary piping not integral with fixtures and in accessible locations shall be provided with a brass trap screw protected by the water seal, and will be regarded as a cleanout.
14. Test tees with brass cleanout plugs shall be provided at the foot of all vertical waste and storm drainage stacks and at each floor. Wherever cleanouts on vertical lines occur concealed behind finished walls, they shall be extended to back of finished wall and a wall plate shall be provided.

B. Buried Sanitary and Vent Piping

1. All pipes shall be accurately laid to lines and elevations shown on the drawing with particular care so that there are no sags in the slope and that a true and even surface is given to the invert. No pipe shall be covered with backfill until it has been approved by the Contractor and the governing authorities.
2. Sewer pipe shall be laid in a straight line and to uniform rate of grade as shown on drawings. Each length shall be checked for line and grade before competing joint.
3. Pipe bedding shall be in accordance with the Massachusetts State Plumbing Code.
4. Pipe joints and jointing material shall be made in accordance with the manufacturer's recommendations.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

5. Promptly install all piping after the excavation or cutting of same has been done, with all openings to be left overnight or longer, closed tightly.
6. Excavation for all underground lines shall be kept open until the drainage systems or portions thereof have been inspected, tested and approved.
7. If an inspection of the completed sanitary gravity sewers or any part thereof shows any manholes, pipes, or joints which allow the infiltration of water, the defective work or material shall be replaced or repaired as directed by the Owner's Representative or Architect/Engineer.

3.07 GENERAL INSTALLATION REQUIREMENTS

A. Piping Installation

1. Install piping approximately as shown on the drawings and as directed during installation by the Architect/Engineer.
2. Piping shall be installed as straight and direct as possible forming right angles or parallel lines with building walls, other piping and neatly spaced. Rough-ins at lavatories shall be centered at fixture.
3. The horizontal runs of piping, except where concealed in partitions, shall be installed as high as possible.
4. Piping or other apparatus shall not be installed in such a manner so as to interfere with the full swing of the doors and access to other equipment.
5. The arrangement, positions and connections of pipes, fixtures, drains, valves, and the like, indicated on the drawings shall be followed as closely as possible, but the right is reserved by the Architect/Engineer to change locations and elevations to accommodate the work, without additional compensation for such change.
6. It shall be possible to drain the water from all sections of cold water piping system. Pitch piping back to drain valves.
7. Screwed piping of brass or chrome plated brass shall be made up with special care to avoid marring or damaging pipe and fitting exterior and interior surfaces.
8. Small fittings shall be screwed up close to the shoulders of male threads. Lampwick, cord, wool, or any other similar material shall not be used to make up thread joints.
9. Screwed pipe and copper tubing shall be reamed smooth before installation.
10. All exposed piping in connection with fixtures and where exposed on finished walls or to view, shall be chrome plated. Where chrome plated piping is installed, cut and thread pipe so that no unplated pipe threads are visible when the work is completed.
11. Reducing fittings, unless otherwise approved in special cases, shall be provided in making reduction in size of pipe. Bushings will not be allowed unless specifically approved.
12. Remove and replace with new materials, any copper or brass piping (chrome plated or unplated) and valves showing visible tool marks.
13. Vertical risers shall be firmly supported by riser clamps, properly installed to relieve all weight from the fittings.
14. Any piece of pipe six inches or less in length shall be considered a nipple.
15. All water service piping shall be kept a sufficient distance from other work to permit finished covering to be not less than 1 inch from other work.
16. The pipe and fittings shall be manufactured in the United States of America and in accordance with the Commercial Standards, American National Standards Institute and American Society of Testing Materials.

**WORCESTER HOUSING AUTHORITY**  
**REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS**  
**ELM PARK TOWER APARTMENTS -195 Units**  
**425 Pleasant Street, Worcester, MA 01605**

**B. Hanger Installation**

1. All piping shall be supported from the building structure by means of approved hangers and supports, to maintain proper grading and pitching of lines, to prevent vibration and to secure piping in place, and shall be so arranged as to provide for expansion and contraction.
2. Maximum spacing of hangers on runs of pipe (vertical and horizontal) having no concentration of weight shall be as follows:

SCHEDULE			
MATERIAL	Steel	Copper	PVC
Pipe Size (inches)	Hanger Spacing in Feet/Pipe		
.50	6	6	
.75	8	6	
1.00	10	6	
1.25	10	10	
1.50	10	10	
2.00	10	10	
2.50	10	10	
3.00	10	10	
3.50	10	10	
4.00	10	10	
5.00	10		
6.00	10		
8.00	10		

3. Maximum spacing of hangers on soil pipe shall be five feet or at each fitting on straight lengths to maximum of 10' and hangers shall be provided at either side of all changes in direction. Vertical Hanger rods to support piping from the structure or supplementary steel shall not exceed four feet in total length vertically, this Contractor shall provide factory fabricated channels and all associated accessories.
4. Friction clamps shall be installed at the base of the plumbing risers and at each floor (above or below floor slabs). Friction clamps installed above floor slabs shall not be supported from or rest on floor sleeves.
5. Provide hangers at a maximum distance of two feet from both sides of all changes in direction (horizontal and vertical), on both sides of concentrated loads (equipment) and at valves.
6. Hangers, in general, for all horizontal piping shall be A Band type hangers for piping up to 4' size and Clevis type for piping 5" and larger. These hangers shall be sized to fit the outside diameter of the pipe insulation protectors (sheet metal shields) specified herein. Gang type hangers may be used for supply piping up to 3" size where applicable and in conformance with manufacturer's recommendations.
7. All vertical drops and runouts including insulated pipes shall be supported by split ring hangers with extension rods and wall plates or stamped type up to 2" size only.
8. Provide on all horizontal insulated lines, pipe covering protectors (shields) at each hanger. Each protector shall be sized to fit the outside diameter of the Pipe insulation.
9. Lock nuts or retaining straps shall be provided with all beam clamps.
10. All supplementary steel including factory fabricated channels and associated accessories, including 12 inch long sheet metal shields, throughout both

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

suspended and floor mounted shall be provided by this Contractor and shall be subject to the approval of the Architect/Engineer.

11. Hangers shall not pierce the insulation on any insulated pipe except when prior approval is given.
12. Wire, tape or wood fastenings for shims or support of any pipe or tubing shall not be used.
13. Remove all rust from the ferrous hanger equipment (hangers, rods, and bolts) and apply one coat of galvanized paint immediately after erection.
14. Piping at all equipment and each control valve shall be supported to prevent strains or distortions in the connected equipment and control valves. Piping and equipment shall be supported to allow for removal of equipment, valves and accessories with a minimum of dismantling and without requiring additional support after these items are removed.
15. All piping shall be independently supported from the building structure and not from the piping, ductwork, conduit or ceiling suspension systems of other systems.
16. Installation of hangers which permit wide lateral motion of any pipe will not be acceptable.
17. All hangers in contact with uninsulated piping shall be compatible with piping material.
18. Seismic hangers and bracing shall comply with local Building Codes.

C. Installation of Sleeves, Inserts and Escutcheons

1. Sleeves in floors shall set one (1) inch above the finished floor surface or as indicated on the Architectural Drawings.
2. Sleeves through interior masonry or non-masonry walls or partitions shall be set flush with the finished surfaces of the wall or partition.
3. Field drilling for inserts required for work under this section of the specifications shall be provided by the Plumbing Contractor.
4. Each interior wall or floor sleeve shall be firestopped to provide equivalent fire resistance to floor or wall penetration. Each sleeve penetration thru the slab on grade shall be made gas tight.
5. Escutcheons shall be installed around all exposed insulated or bare pipe, passing through a finished floor, wall or ceiling. Escutcheons shall fit snugly around the bare or insulated pipe. Escutcheons shall be chrome plated cast brass at fixture supplies and traps where exposed. Spun bell type escutcheons in these locations are unacceptable.

3.08 RECYCLING/DISPOSAL

- A. The contractor shall perform all necessary procedures in accordance with Specifications Section 02070.

3.09 EQUIPMENT

- A. Equipment shall be installed complete with all required hangers and supports in accordance with the manufacturer's recommendations.
- B. All equipment provided under this Section shall be installed in strict accordance with manufacturer's written installation instructions.
- C. Furnish and install all steel structural support members for proper hanging and support of equipment. Provide vibration isolation on all hangers.

WORCESTER HOUSING AUTHORITY  
REPLACEMENT OF EXISTING PLUMBING WASTE PIPE RISERS  
ELM PARK TOWER APARTMENTS -195 Units  
425 Pleasant Street, Worcester, MA 01605

- D. The Contractor shall label all equipment. Subcontractors will provide The Owner with excel spreadsheets of all items to be labeled, The Owner will assign numbers, assign names, print out labels and provide subcontractors with labels. Subcontractor will then affix the labels to the equipment. Brass tags are eliminated. As-builts and manuals will reference Elm Park Towers provided numbers and names.

END OF SECTION

General Decision Number: MA100002 10/21/2011 MA2

Superseded General Decision Number: MA20080002

State: Massachusetts

Construction Types: Building and Heavy (Heavy and Dredging)

BUILDING CONSTRUCTION PROJECTS (Does not include residential construction consisting of single family homes and apartments up to and including 4 stories); HEAVY CONSTRUCTION PROJECTS; AND MARINE CONSTRUCTION PROJECTS

County: Worcester County in Massachusetts.

BUILDING CONSTRUCTION PROJECTS (Does not include residential construction consisting of single family homes and apartments up to and including 4 stories); HEAVY CONSTRUCTION PROJECTS; AND MARINE CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	03/12/2010
1	04/09/2010
2	04/16/2010
3	04/23/2010
4	05/07/2010
5	05/14/2010
6	06/04/2010
7	07/16/2010
8	07/23/2010
9	08/06/2010
10	08/20/2010
11	09/03/2010
12	10/22/2010
13	11/05/2010
14	01/21/2011
15	02/18/2011
16	07/01/2011
17	07/08/2011
18	08/05/2011
19	08/26/2011
20	09/23/2011
21	10/14/2011
22	10/21/2011

ASBE0006-005 09/01/2010

	Rates	Fringes
Insulator/asbestos worker Includes the application of all insulating materials, protective coverings, coating, and finishes to all types of mechanical systems.....	\$ 36.59	21.18

BOIL0029-001 10/01/2009

Rates	Fringes
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BOILERMAKER..... \$ 38.25 17.04

BRMA0001-002 03/01/2010

SPRINGFIELD/PITTSFIELD CHAPTER WORCESTER (Warren County)

Rates Fringes

Bricklayer, Cement Mason,  
Plasterer & Stonemason..... \$ 33.75 22.42

BRMA0001-014 03/01/2010

WORCESTER CHAPTER

WORCESTER (Auburn Barre, Blackstone, Berlin, Bolton, Boylston, the Brookfields, Charlton, Clinton, Douglas, Dudley, Grafton, Hardwick, Holden, Leicester, Mendon, Milbury, Milville, New Braintree, Northboro, Northbridge, Oakham, Oxford, Paxton, Rutland, Shrewbury, Southbridge, Spencer, Sturbridge, Sutton, Upton, Uxbridge, Webster, Westboro, West Boylston, Worcester)

Rates Fringes

Bricklayer, Cement Mason,  
Plasterer & Stonemason..... \$ 43.86 24.15

BRMA0001-015 03/01/2010

LOWELL CHAPTER

WORCESTER (Hopedale, Milford, Southboro)

Rates Fringes

Bricklayer, Cement Mason,  
Plasterer & Stonemason..... \$ 43.86 24.15

BRMA0001-023 03/01/2010

LOWELL CHAPTER

WORCESTER (Ashburham, Athol, Fitchburg, Gardner, Harvard, Hubbardston, Lancaster, Leominster, Lunenburg, Petersham, Phillipston, Princeton, Royalston, Sterling, Templeton, Westminster, Winchendon)

Rates Fringes

Bricklayer, Cement Mason,  
Plasterer & Stonemason..... \$ 43.86 24.15

BRMA0003-001 08/01/2011

Rates Fringes

Marble & Tile Finisher..... \$ 35.52 25.47  
Marble, Tile & Terrazzo  
Workers..... \$ 46.60 22.66  
TERRAZZO FINISHER..... \$ 45.50 26.49

CARP0056-004 08/01/2011

Rates Fringes

Davis Bacon Wages MA 10.21.11.txt

DIVER TENDER.....	\$ 38.30	27.52
DIVER.....	\$ 53.62	27.52

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 CARP0056-008 08/01/2011

	Rates	Fri nges
PI LEDRI VERMAN.....	\$ 38.30	27.52

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 CARP0107-002 03/01/2011

WORCESTER (Except Gilbertville, Harwick, Warren, West Brookfield)

	Rates	Fri nges
Carpenter/Lather.....	\$ 32.05	24.68

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 CARP0108-001 10/04/2010

WORCESTER (Gilbertville, Hardwick, Warren, West Brookfield)

	Rates	Fri nges
Carpenter/Lather.....	\$ 28.40	20.02

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 CARP1121-001 05/02/2010

	Rates	Fri nges
MI LLWRI GHT.....	\$ 29.78	18.61

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 CARP2168-002 09/01/2011

	Rates	Fri nges
FLOOR LAYER: Carpet.....	\$ 35.95	23.46

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 ELEC0007-001 01/01/2011

WORCESTER (Warren)

	Rates	Fri nges
ELECTRI CI AN.....	\$ 32.86	17.74

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 \* ELEC0096-002 06/01/2011

WORCESTER (Except Warren)

	Rates	Fri nges
ELECTRI CI AN.....	\$ 36.75	18.70
Tel edata System Installer.....	\$ 25.86	16.38

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 ELEC0104-001 08/31/2009

	Rates	Fri nges
Li ne Constructi on: Cabl eman.....	\$ 34.89	7.50+A

Equipment Operator.....	\$ 34.89	11.50+A
Groundman.....	\$ 22.58	7.50+A
Lineman.....	\$ 41.05	14.43+A

A. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day and Columbus Day, provided the employee has been employed 5 working days prior to any one of the listed holidays.

ELEV0041-002 01/01/2010

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 43.35	20.035+ a

a. Vacation pay credit:  
Employer contributes 8% of basic hourly rate for 5 years or more of service, and 6% of basic hourly rate for less than 5 years of service.

Paid Holidays:  
New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day.

ENGI 0004-003 06/01/2011

WORCESTER (Except Athol, Barre, Brookfield, East Brookfield, Hardwick, New Braintree, North Brookfield, Oakham, Petersham, Phillipston, Royalston, Strutbridge, Templeton, Warren, West Brookfield, Winchendon)

	Rates	Fringes
Power equipment operators: BUILDING, HEAVY & MARINE		
GROUP 1.....	\$ 39.09	23.04+A
GROUP 2.....	\$ 38.74	23.04+A
GROUP 3.....	\$ 27.71	23.04+A
GROUP 4.....	\$ 32.90	23.04+A
GROUP 5.....	\$ 21.14	23.04+A
GROUP 6.....	\$ 24.32	23.04+A

HOURLY PREMIUM FOR BOOM LENGTHS (Including Jib):

Over 150 ft.	+2.12
Over 185 ft.	+3.72
Over 210 ft.	+5.23
Over 250 ft.	+7.92
Over 295 ft.	+10.97
Over 350 ft.	+12.76

POWER EQUIPMENT OPERATORS CLASSIFICATIONS BUILDING AND HEAVY CONSTRUCTION

GROUP 1: Power shovel; crane; truck crane; derrick; pile driver; trenching machine; mechanical hoist pavement breaker; cement concrete paver; dragline; hoisting engine; three drum machine; pumpcrete machine; loaders; shovel dozer; front end loader; mucking machine; shaft hoist;

steam engine; backhoe; gradall; cable way; fork lift; cherry picker; boring machine; rotary drill; post hole hammer; port hole digger; asphalt plant on job site; concrete batching and/or mixing plant on job site; crusher plant on job site; paving concrete mixer; timber jack

GROUP 2: Sonic or vibratory hammer; grader; scraper; tandem scraper; bulldozer; tractor; mechanic - maintenance; York rake; mulching machine; paving screed machine; stationary steam boiler; paving concrete finishing machine; grout pump; portable steam boiler; portable steam generator; roller; spreader; asphalt paver; locomotives or machines used in place thereof; tamper (self propelled or tractor-draw); cal tracks; ballast regulator; rail anchor machine; switch tamper; tire truck

GROUP 3: Pumps (1-3 grouped); compressor; welding machines (1-3 grouped); generator; sighting plant; heaters (power driven, 1- 5); syphon-pul someter; concrete mixer; valves controlling permanent plant air steam, conveyor, wellpoint system (operating)

GROUP 4: Assistant engineer (fireman)

GROUP 5: Oiler (other than truck cranes and gradalls)

GROUP 6: Oiler (on truck cranes and gradalls)

#### POWER EQUIPMENT OPERATORS CLASSIFICATIONS MARINE CONSTRUCTION

GROUP 1: Shovel; crane; truck crane; cherry picker; derrick; pile driver; two or more drum machines; lighters; derrick boats; trenching machines; mechanic hoist pavement breakers; cement concrete pavers; draglines; hoisting engines; pumpcrete machines; elevating graders; shovel dozer; front end loader; backhoe; gradall; cable ways; boring machine; rotary drill; post hole hammer; post hole digger; fork lift; timber jack; asphalt plant (on site); concrete batching and/or mixing plant (on site); crusher plant (on site); paving concrete mixer

GROUP 2: Portable steam boiler; portable steam generator; sonic or vibratory hammer; grader; scraper; tandem scraper; concrete pump; bulldozer; tractor; York rake; mulching machine; roller; spreader; tamper (self-propelled or tractor-drawn); asphalt paver; concrete mixer with side loader; mechanic - maintenance; cal tracks; ballast regulator; switch tamper; rail anchor machine; tire truck

GROUP 3: Pumps (1-3 grouped); compressor; welding machines (1-3 grouped); generator; lighting plant; heaters (power driven 1-5); syphon-pul someter; concrete mixer; valves controlling permanent plant air or steam; conveyor; well point systems; auger (powered by independent engines and attached to pile drivers); hydraulic saws

GROUP 4: Fireman

GROUP 5: Assistant engineer (other than truck crane and gradall)

GROUP 6: Assistant engineer (on truck crane and gradall)

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Day

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ENGI 0004-007 06/01/2011

WORCESTER (Area East of a line formed by the Eastern boundaries of the following townships: Barre, Brookfield, East Brookfield, North Brookfield, Oakham, Sturbridge, Templeton, and Winchendon)

	Rates	Fringes
Power equipment operators: (BUILDING)		
GROUP 1.....	\$ 39.09	23.04+A
GROUP 2.....	\$ 38.74	23.04+A
GROUP 3.....	\$ 27.71	23.04+A

HOURLY PREMIUM FOR BOOM LENGTHS (Including Jib):

Over 150 ft.	+2.12
Over 185 ft.	+3.72
Over 210 ft.	+5.23
Over 250 ft.	+7.92

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Backhoe, Front End Loader, Crane

GROUP 2: Bulldozer

GROUP 3: Pumps

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

A. Paid Holidays: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day

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ENGI 0098-005 12/01/2009

	Rates	Fringes
Power equipment operators: (HEAVY CONSTRUCTION)		
Group 1.....	\$ 29.12	16.52+A
Group 2.....	\$ 28.81	16.52+A
Group 3.....	\$ 28.59	16.52+A
Group 4.....	\$ 27.98	16.52+A
Group 5.....	\$ 25.36	16.52+A
Group 6.....	\$ 24.24	16.52+A
Group 7.....	\$ 22.30	16.52+A
Group 8.....	\$ 30.18	16.52+A
Group 9.....	\$ 24.28	16.52+A
Group 10.....	\$ 30.61	16.52+A
Group 11.....	\$ 30.12	16.52+A
Group 12.....	\$ 31.62	16.52+A
Group 13.....	\$ 32.62	16.52+A

Group 14.....	\$ 33.62	16.52+A
Group 15.....	\$ 35.12	16.52+A

HAZARDOUS WASTE PREMIUM \$2.00

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

Group 1: Shovels; crawlers and truck cranes including all tower; self-propelled hydraulic cranes 10 tons and over; draglines; clam shells; cableways; shaft hoists; mucking machines derricks; backhoes; bulldozers; gradalls; elevating graders; pile drivers; concrete pavers; trenching machines; front end loaders- 5 1/2 cu yds and over; dual drum paver; automatic grader-excavator(C.M.I. or equal); scrapers towing pan or wagon; tandem dozers or push cats(2 units in tandem); shotcrete machine; tunnel boring machine; combination backhoe/loader 3/4 cu yd hoe or over; jet engine dryer; tree shredder; post hole digger; post hole hammer; post extractor; truck mounted concrete pump with boom; roto-mill; Grader; Horizontal Drilling Machine; John Henry Rock Drill and similar equipment.

Group 2: Rotary drill with mounted compressor; compressor house (3 to 6 compressors); rock and earth boring machines (excluding McCarthy and similar drills); front end loaders 4 cu yds to 5 1/2 cu yds); forklifts-7 ft lift and over 3 ton capacity; scraper 21 yds and over (struck load); sonic hammer console; reclaimers road planer/milling machine; cal tracks; ballast regulators; rail anchor machines; switch tampers, asphalt pavers; mechanic; welder and transfer machine.

Group 3: Combination backhoe/loader up to 3/4 cu yd; scrapers up to 21 cu yd (struck load, self propelled or tractor drawn); tireman; front end loaders up to 4 yds; well drillers; engineer or fireman on high pressure boiler; self-loading batch plant; well point operators electric pumps used in well point system; pumps, 16 inches and over (total discharge); compressor, one or two 900 cu ft and over; powered grease truck; tunnel locomotives and dingys; grout pumps; hydraulic jacks; boom truck; hydraulic cranes-up to 10 ton.

Group 4: Asphalt rollers; self-powered rollers and compactors; tractor without blade drawing sheepsfoot roller; rubber tire roller; vibratory roller or other type of compactors including machines for pulverizing and aerating soil; york rake.

Group 5: Hoists; conveyors; power pavement breakers; self-powered concrete pavement finishing machines; two bag mixers with skip; McCarthy and similar drills; batch plants (not self loading); bulk cement plants; self-propelled material spreaders; three or more 10 KW light plants; 30 KW or more generators; power broom.

Group 6: Compressor (one or two) 315 cu ft to 900 cu ft; pumps 4 inches to 16 inches (total discharge).

Group 7: Compressors up to 315 cu ft; small mixers with skip; pumps up to 4 inches; power heaters; oiler; A-frame trucks; forklifts-up to 7 ft. lift and up to 3 ton capacity; hydro broom; stud welder.

Group 8: Truck crane crews

Group 9: Oiler

Group 10: Master Mechanic

Group 11: Boom lengths over 150 feet including jib

Group 12: Boom lengths over 200 feet including jib

Group 13: Boom lengths over 250 feet including jib

Group 14: Boom lengths over 300 feet including jib

Group 15: Boom lengths over 350 feet including jib

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

A. Paid Holidays: New year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day

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ENGI0098-006 12/01/2009

WORCESTER (Area west of a line formed by the Eastern boundaries of the following Townships: Barre, Brookfield, East Brookfield, North Brookfield, Oakham, Sturbridge, Templeton, and Winchendon)

	Rates	Fringes
Power equipment operators: (BUILDING)		
GROUP 1.....	\$ 29.12	16.52+a
GROUP 2.....	\$ 28.81	16.52+a
GROUP 3.....	\$ 28.59	16.52+a
GROUP 4.....	\$ 27.98	16.52+a

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

- GROUP 1: Backhoe; Bulldozer; Front End Loader, 5 1/2 cu yd and over; Crane
- GROUP 2: Front End Loader, 4 cu yd to 5 1/2 cu yd
- GROUP 3: Front End Loader up to 4 cu yd
- GROUP 4: Roller, all types

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

A. Paid Holidays: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day

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IRON0007-012 03/16/2011

	Rates	Fringes
IRONWORKER.....	\$ 35.98	26.41

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LAB00022-001 06/01/2010

	Rates	Fringes
Laborers: (HEAVY CONSTRUCTION)		

Davis Bacon Wages MA 10.21.11.txt

GROUP 1.....	\$ 27.85	17.35
GROUP 2.....	\$ 28.10	17.35
GROUP 3.....	\$ 28.60	17.35
GROUP 4.....	\$ 28.85	17.35
GROUP 5.....	\$ 21.70	17.35
GROUP 6.....	\$ 29.85	17.35

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; carpenter tenders; cement finisher tenders, plasterer tenders

GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tender; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drill operator, jack hammer operator, pavement breaker, carbide core drilling machine, chain saw operator, barco type jumping tampers, concrete pump, motorized mortar mixer, ride-on-motorized buggy

GROUP 3: Air track operator; block paver; rammer; curb setter, hydraulic and similar self powered drills

GROUP 4: Blaster; powderman

GROUP 5: Flagger

GROUP 6: Asbestos Abatement; Toxic and Hazardous Waste Laborers

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LAB00022-013 06/01/2010

	Rates	Fringes
Laborers:		
(FREE AIR OPERATION):		
SHIELD DRIVEN AND LINER		
PLATE IN FREE AIR)		
GROUP 1.....	\$ 32.90	20.30+A
GROUP 2.....	\$ 32.90	20.30+A
(OPEN AIR CASSONS,		
UNDERPINNING AND TEST		
BORING INDUSTRIES):		
TEST BORING & WELL DRILLING		
Driller.....	\$ 31.05	18.90+A
Laborer.....	\$ 29.65	18.90+A
(OPEN AIR CASSONS,		
UNDERPINNING AND TEST		
BORING INDUSTRIES):		
OPEN AIR CASSON,		
UNDERPINNING WORK & BORING		
CREW		
Bottom man.....	\$ 30.80	18.90+A
Laborers; Top man.....	\$ 29.65	18.90+A
(TUNNELS, CAISSON &		
CYLINDER WORK IN		
COMPRESSED AIR)		

Davis Bacon Wages MA 10.21.11.txt

GROUP 1.....	\$ 30.35	20.30+A
GROUP 2.....	\$ 40.83	20.30+A
GROUP 3.....	\$ 40.83	20.30+A
GROUP 4.....	\$ 40.83	20.30+A
GROUP 5.....	\$ 40.83	20.30+A
GROUP 6.....	\$ 42.83	20.30+A
CLEANING CONCRETE AND CAULKING TUNNEL (Both New & Existing)		
GROUP 1.....	\$ 32.90	20.30+A
GROUP 2.....	\$ 32.90	20.30+A
ROCK SHAFT, CONCRETE LINING OF SAME AND TUNNEL IN FREE AIR		
GROUP 1.....	\$ 30.35	20.30+A
GROUP 2.....	\$ 32.90	20.30+A
GROUP 3.....	\$ 32.90	20.30+A
GROUP 4.....	\$ 32.90	20.30+A
GROUP 5.....	\$ 34.90	20.30+A

LABORERS CLASSIFICATIONS for TUNNELS, CAISSON & CYLINDER WORK  
IN COMPRESSED AIR

GROUP 1: Powder watchman; Top man on iron bolt; change house attendant

GROUP 2: Brakeman; trackman; groutman; tunnel laborer; outside lock tender; lock tender; guage tender

GROUP 3: Motorman, miner

GROUP 4: Blaster

GROUP 5: Mucking machine operator

GROUP 6: Hazardous Waste work within the "HOT" zone. (A premium of two dollars \$2.00 per hour over the basic wage rate.

LABORERS CLASSIFICATIONS for (FREE AIR OPERATION): SHIELD  
DRIVEN AND LINER PLATE IN FREE AIR

GROUP 1: Miner; miner welder; conveyor operator; motorman; mucking machine operator; nozzle man; grout man-; pumps, shaft and tunnel steel and rodman; shield and erector arm operators, mole nipper, outside motorman, burner, TBM operator, safety miner; laborer topside; heading motormen; erecting operators; top signal men

GROUP 2: Brakeman; trackman

LABORERS CLASSIFICATIONS FOR CLEANING CONCRETE AND CAULKING  
TUNNEL (Both New & Existing)

GROUP 1: Concrete workers; strippers and form movers (wood & steel), cement finisher

GROUP 2: Form erector (wood & steel and all accessories)

LABORERS CLASSIFICATIONS for ROCK SHAFT, CONCRETE LINING OF

SAME AND TUNNE IN FREE AIR

GROUP 1: Change house attendants

GROUP 2: Laborers, topside, bottom men (when heading is 50 ft. from shaft) and all other laborers

GROUP 3: Brakeman; trackman; tunnel laborers; shaft laborers

GROUP 4: Miner; cage tender; bellman

GROUP 5: Hazardous Waste work within the "HOT" zone. (A premium of two dollars \$2.00 per hour over the basic wage rate)

FOOTNOTE FOR LABORERS:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Patriot's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, and Christmas Day

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LAB01421-003 06/01/2011

	Rates	Fringes
Laborers:		
Group 1.....	\$ 31.05	19.75
Group 2.....	\$ 31.80	19.75
Group 3.....	\$ 32.05	19.75
Group 4.....	\$ 27.05	19.75
Group 5.....	\$ 30.15	19.75
Group 6.....	\$ 31.05	19.75

- Group 1: Adzeman, Wrecking Laborer.
- Group 2: Burners, Jackhammers.
- Group 3: Small Backhoes, Loaders on tracks, Bobcat Type Loaders, Hydraulic "Brock" Type Hammer Operators, Concrete Cutting Saws.
- Group 4: Yardman (Salvage Yard Only).
- Group 5: Yardman, Burners, Sawyers.
- Group 6: Asbestos, Lead Paint, Toxic and Hazardous Waste.

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PAI N0035-006 01/01/2011

	Rates	Fringes
Painters:		
NEW CONSTRUCTION:		
Bridge.....	\$ 43.01	21.40
Brush, Taper.....	\$ 32.51	21.40
Spray, Sandblast.....	\$ 33.91	21.40
REPAINT		
Bridge.....	\$ 43.01	21.40
Brush, Taper.....	\$ 30.57	21.40
Spray, Sandblast.....	\$ 31.97	21.40

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PAI N0035-021 01/01/2011

GLAZIER.....\$ 32.51 21.40

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 PLUM0004-002 09/01/2011

WORCESTER (Except Hopedale and Southboro)

Rates Fringes

Plumbers and Pipefitters.....\$ 39.14 23.36

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 PLUM0012-002 09/01/2011

WORCESTER (Hopedale and Southboro)

Rates Fringes

PLUMBER.....\$ 46.01 23.31

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 ROOF0033-001 08/01/2011

Rates Fringes

Roofers:

All Tear-off and/or  
 removal of any types of  
 roofing and all spudding,  
 sweeping, vacuuming and/or  
 cleanup of any and all  
 areas of any type where a  
 roof is to be relaid.....\$ 35.56 20.87

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 SFMA0669-002 04/01/2011

Rates Fringes

SPRINKLER FITTER.....\$ 36.13 18.65

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 SHEE0017-004 04/01/2010

WORCESTER (Harvard, Lancaster)

Rates Fringes

Sheet metal worker.....\$ 39.37 27.65

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 SHEE0063-002 01/01/2011

WORCESTER (Except Harvard & Lancaster)

Rates Fringes

Sheet metal worker.....\$ 30.75 22.62

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 SUMA1989-001 05/01/1989

BUILDING CONSTRUCTION ONLY:

Rates Fringes

Laborers:

Landscape.....\$ 8.28  
 Unskilled.....\$ 12.71 3.60

Truck drivers:  
2-AXLE.....\$ 11.77

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TEAM0379-003 06/01/2010

	Rates	Fri nges
Truck drivers: (EXCEPT BUILDING CONSTRUCTION)		
Group 1.....	\$ 29.28	14.98+A+B
Group 2.....	\$ 29.45	14.98+A+B
Group 3.....	\$ 29.52	14.98+A+B
Group 4.....	\$ 29.64	14.98+A+B
Group 5.....	\$ 29.74	14.98+A+B
Group 6.....	\$ 30.03	14.98+A+B
Group 7.....	\$ 30.32	14.98+A+B

TRUCK DRIVERS CLASSIFICATIONS

Group 1: Station wagons; panel trucks; and pickup trucks

Group 2: Two axle equipment; & forklift operator

Group 3: Three axle equipment and tireman

Group 4: Four and Five Axle equipment

Group 5: Specialized earth moving equipment under 35 tons  
other than conventional type trucks; low bed; vachual;  
mechanics, paving restoration equipment

Group 6: Specialized earth moving equipment over 35 tons

Group 7: Trailers for earth moving equipment (double hookup)

POWER TRUCKS \$.25 DIFFERENTIAL BY AXLE TUNNEL WORK  
(UNDERGROUND ONLY) \$.40 DIFFERENTIAL BY AXLE HAZARDOUS  
MATERIALS (In Hot Zone Only) \$2.00 premium

FOOTNOTES: A. PAID HOLIDAYS: New Year's Day, Washington's  
Birthday, Memorial Day, Independence Day, Labor Day,  
Patriot's Day, Columbus Day, Veteran's Day, Thanksgi ving  
Day, & Christmas Day

B. PAID VACATION: Employees with 4 months to 1 year of  
service receive 1/2 day's pay per month; 1 week vacati on  
for 1 - 5 years of service; 2 weeks vacati on for 5 - 10  
years of service; and 3 weeks vacati on for more than 10  
years of servi ce

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WELDERS - Receive rate prescribed for craft performing  
operati on to whi ch weldi ng is inci dental .  
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Unl isted classi fications needed for work not i ncl uded wi thi n  
the scope of the classi fications l isted may be added after  
award only as provided i n the labor standards contract cl auses  
(29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

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WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION