SPECIFICATIONS

PROJECT: **3 Pleasant Avenue**
Portland, Maine 04103

OWNER: **Hardypond Development, LLC**
7 Tee Drive
Portland, Maine 04103

BUILDER: **Hardypond Construction**
7 Tee Drive
Portland, Maine 04103

ARCHITECT: **Shields Architecture**
216 Range Road
Cumberland, Maine 04021

STRUCTURAL ENGINEER:
Structural Design Consultants
2696 Lake Shore Road
Unit 130
Gilford, NH 03249-6219

CIVIL ENGINEER:
Fay, Spofford & Thorndike
778 Main Street
South Portland, ME 04106

Issued for Bid: 2/3/16

SECTION 00100

INDEX TO PROJECT MANUAL

Section:

Division 10 - Specialties

Division 11 – Equipment

Division 12 - Furnishings

Division 13 – Special Construction

13710 Sprinkler Performance Specification

Division 14 – Conveying Systems

Division 15 – Mechanical – DESIGN BUILD

15000 General Mechanical Requirements – Design Build

Division 16 – Electrical – DESIGN BUILD

16000 General Electrical Requirements – Design Build

.

END OF SECTION

SECTION 01045

CUTTING AND PATCHING

1. GENERAL

1.1 REFERENCES

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this Section.

B. Divisions 2 through 16.

1.2 DESCRIPTION OF WORK

A. Definition: "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition. This section does not apply to new work that has been installed as part of the Work.

B. The General Contractor shall anticipate encountering lead painted materials. His Sub-Contractors shall be certified under the Department of Environmental Protection “Lead Renovation, Repair and Painting Rule” and employ the “Work Practices” required by that rule.

C. Structural Work: Do not cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.

D. Operational/Safety Limitations: Do not cut-and-patch operational elements and safety components in a manner resulting in decreased performance, shortened useful life, or increased maintenance.

E. Visual/Quality Limitations: Do not cut-and-patch work exposed to view (exterior and interior) in a manner resulting in noticeable reduction of aesthetic qualities and similar qualities, as judged by the Architect.

F. Limitation on Approvals: The Architect/Engineer's approval to proceed with cutting and patching does not waive right to later require removal/replacement of work found to be cut-and-patched in an unsatisfactory manner, as judged by the Architect.

G. Materials marked to be removed and reused shall be repaired as necessary to maintain their existing condition. When repair is not sufficient, existing materials shall be disposed of and new materials installed to match existing materials.

H. Refer to other sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of work.

I. Unless otherwise specified, requirements of this Section apply to Mechanical and Electrical work. Refer to Divisions 15 and 16 for additional requirements and limitations on cutting and patching of mechanical and electrical work.

1.3 QUALITY ASSURANCE

A. Refer to Section 01631, Products and Substitutions, for general provisions covering product selection, substitutions, material storage and installation.

B. Refer to Section 01400, Quality Control Services, for provisions for testing and inspections.

C. Refer to specific Specification Section covering subject in question for quality assurance requirements.

1.4 SUBMITTALS

A. Issue submittals in accordance with Section 01300, Submittals.

B. Refer to specific Specification Section covering subject in question for submittal requirements.

2. PRODUCTS

2.1 GENERAL

A. Use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics.

B. Fire-stopping:

1. Seal openings in fire-rated walls and floors to make a tight fit with penetrating items, using appropriate non-combustible filler material. to provide a rating equivalent to wall/floor assemble.

2. Acceptable filler materials include:
   a. Concrete
   b. Cementitious proprietary product: Zonolite Firestop ZF-1

c. Blanket-type mineral-fiber or ceramic-fiber insulation (glass-fiber insulation is not acceptable)
d. Fire-resistant sealant: Domtar Fire-Halt, Dow Corning Fire Stop, Hilti CS 240 Firestop, or Nelson CLK or CMP
e. Fire-resistant silicone foam: Dow Corning RTV Foam Penetration Seal System, Hilti CB 120 Adhesive Filling and Sealing Foam, Tremco Fyre-Sil
f. Flexible intumescent strip wrapped around pipe penetrations: Dow Corning Fire Stop Intumescent Wrap, Hilti CS 24720 Intumescent Wrap, Nelson RSW, Tremco TREMstop WS
g. Intumescent fibrous material enclosed in a polyethylene envelope: Nelson PLW, Tremco TREMstop PS
h. Pliable intumescent putty: Nelson FSP Flameseal, Tremco TREMstop WBM
i. Water-based intumescent fire-protective coating for electrical cables: Nelson CTG

3. Neatly patch and seal exposed-to-view openings, using sealants, tooled mortar joints, escutcheons, or flanged collars, as appropriate.

3. EXECUTION

3.1 INSPECTION

A. Before cutting, examine surfaces to be cut and patched and conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

3.2 TEMPORARY SUPPORT

A. To prevent failure provide temporary support of work to be cut.

3.3 PROTECTION

A. Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.4 PERFORMANCE

A. Employ skilled workmen to perform cutting and patching work. Except as otherwise indicated or as approved by the Architect/Engineer, proceed with cutting and patching at the earliest feasible time and complete work without delay.

B. Cutting:

1. Cut the work using methods that are least likely to damage work to be retained or adjoining work. Provide dust barriers to prevent dust from entering existing building beyond immediate work area. Where possible, review proposed procedures with the original installer; comply with original installer's recommendations.

2. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and masonry using a cutting machine such as a carborundum saw or core drill to insure a neat hole. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.

3. Comply with requirements of applicable sections of Division 2 where cutting and patching requires excavating and backfilling.

4. By-pass utility services such as pipe and conduit, before cutting, where such utility services are shown or required to be removed, relocated or abandoned. Cut-off conduit and pipe in walls or partitions to be removed. After by-pass and cutting, cap, valve or plug and seal tight remaining portion of pipe and conduit to prevent entrance of moisture or other foreign matter.

C. Patching:

1. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

2. Where feasible, inspect and test patched areas to demonstrate integrity of work.

3. Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.

4. Where removal of walls or partitions extends one finished area into another finished area, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. If necessary to achieve uniform color and appearance, remove existing floor and wall coverings and replace with new materials.

5. Where patch occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing patch, after patched area has received prime and base coat.

6. Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.5 MAINTENANCE OF TRAFFIC, ACCESS, AND UTILITIES

A. Do not close or otherwise obstruct sidewalks, streets or means of egress without obtaining permission to do so.

B. Maintain accessibility from street at all times to any fire hydrants within construction area. Ensure that utilities serving adjacent buildings remain in service.

END OF SECTION

SECTION 01300

SUBMITTALS, MEETINGS AND RECORD DOCUMENTS

1. GENERAL

1.1 PRE-CONSTRUCTION MEETING

A. Architect will schedule a pre-construction meeting within 10 days of issuance of Notice to Proceed. At this time, Contractor shall make specified pre-construction submittals including following:

1. Typed list of sub-contractors with addresses and telephone numbers.
2. Certificates of insurance.
3. Approved construction schedule. See General Conditions, Paragraph 3.10.
4. Schedule of values.
5. Building permit and similar start-up authorization or certificates.

B. Pre-construction meeting agenda will include following:

1. Processing application for payment.
2. Processing and distribution of submittals.
3. MaineHousing Agenda.
4. Maintenance of record documents.
5. Procedure for field changes, change estimates, change orders, etc.
6. Site and building security.
7. Location and maintenance of temporary storage areas, field offices, vehicular parking and access, waste disposal, etc.
8. Safety and first-aid procedures.
9. Date and time for regular bi-weekly coordination and progress meeting (to be coordinated with monthly application for payment).

1.2 CONSTRUCTION SCHEDULE

A. Refer to General Conditions, Paragraph 3.10, for general provisions concerning construction progress schedule. Schedule shall show activities, itemized according to specification Section, and be organized in bar-chart or graph form so as to show both projected and actual progress of work.

B. Arrange schedule to indicate required sequencing of units, and to show time allowances for submittals, inspections, and similar time margins.

C. Show critical submittal dates related to each time bar, or prepare a separate coordinated listing of critical submittal dates.

D. Show phases of work within each time bar for major elements which involve purchase lead-time, fabrication, seasonal treatment, mockups, testing, or similar phases as well as installation.

E. Submit updated schedule monthly, together with application for payment.

1.3 SCHEDULE OF VALUES

A. Refer to General Conditions, Paragraph 9.2 for general provisions concerning schedule of values.

B. For these submittals, use AIA Document G702/703, Application and Certificate for Payment.

C. Use specifications Sections as listed in Table of Contents as basis for format for listing costs.

D. Itemize separately general cost items, such as bonds and allowances.

E. Itemize change orders separately as they are approved.

1.4 MEETINGS AND REPORTING

A. Contractor shall conduct general progress and coordination meetings twice each month, attended by a representative of each primary entity engaged for performance of work. Record discussions and decisions, and distribute copies to those attending and others affected, including Architect/Engineer.

B. Date and time of regular progress meetings shall be determined at the pre-construction meeting. Timing of this monthly meeting shall be coordinated with payment requests.

1.5 APPLICATION FOR PAYMENT

A. Refer to General Conditions, Paragraph 9.3, for general provisions concerning applications for payment.

B. Use AIA Form G702/703, fully completed and executed.

1.6 SHOP DRAWINGS, PROJECT DATA, SAMPLES

A. Refer to General Conditions, Product Data and Samples, paragraph 3.12, for general provisions covering this type of submittal.

B. Coordinate the preparation and processing of work-related submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities that require sequential activity. Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the necessity of reviewing a related submittal.

C. Architect Review:

1. Allow ten working days for the Architect initial processing of each submittal. Allow one week for reprocessing each submittal. No extension of time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the work.

2. The Architect will stamp each submittal to be returned with a uniform, self-explanatory action stamp, appropriately marked and executed to indicate the status of the submittal.

D. Mark each submittal with a permanent label for identification. Provide project name, date, name of Architect, name of Contractor, number and title of appropriate specification section and similar definitive information. Provide a space on the label for Contractors and Architect review markings.

E. Package each submittal appropriately for transmittal and handling. Send each submittal from the Contractor to the Architect and other destinations using AIA Transmittal Form G810.

F. Provide additional copies of submittals required by governing authorities that are in addition to copies specified for submittal to the Architect/Engineer.

G. Where it is necessary to provide intermediate submittals between the initial and final submittals, provide and process intermediate submittals in the same manner as for initial submittals.

H. Submit as follows:

1. Shop drawings (original drawings prepared by Contractor or sub-contractor illustrating fabrication, layout, erection details, etc.): send electronically in PDF format to Architect.

2. Manufacturers' specifications, installation instructions, charts, schedules, catalogs, brochures, etc.: send electronically in PDF format to Architect.

3. Samples: one sample to Architect only, unless otherwise specified.

4. In submitting shop drawings and product data to Architect, use separate transmittals for material in different specification Sections, with applicable specification Section clearly numbered.

I. Architect will review submittals within ten working days, measured from date of receipt by Architect until date of mailing. Contractor shall promptly make corrections and resubmit when so directed. Where submittal is marked "Reviewed as Noted" or similar do not delay fabrication, assembly and delivery pending receipt of entirely "Reviewed" submittal.

J. Distribute approved submittals to job site and record document files, and to suppliers and sub-contractors as required. Samples not designated by Contractor for incorporation into Work shall be kept on file until job completion. Any sample not reclaimed within 30 days after job completion will be considered unclaimed, and will be disposed of as directed by Architect.

1.7 PROJECT RECORD DOCUMENTS

A. Keep on file at job site one complete set of up-to-date Contract Documents, including drawings and specifications, addenda, shop drawings and product data, testing data, change orders, field orders, and other modifications. Documents shall be neatly and securely stored in files or on racks, clearly indexed by trade activity or specification Section, and shall not be used for construction purposes.

B. Legibly mark significant field changes such as following, using colored pencils or felt-tipped pens:

1. Drawings: locations of concealed utilities, field changes of dimension and detail, changes resulting from change order or field order, and details not on original drawings.

2. Specifications: manufacturer and model number of equipment actually installed.

3. Shop drawings and manufacturers' literature: changes made after Architect's review.

C. At completion of Work, deliver completed record documents to Architect. Final payment for Project will not be made until Architect reviews and approves these documents.

1.8 SUBSTANTIAL COMPLETION

A. Refer to General Conditions, Article 9, Substantial Completion, for general provision concerning substantial Completion.

B. Following issuance by Architect/Engineer of Certificate of Substantial Completion, Contractor may submit special payment request, provided the following have been completed:

1. Obtain permits, certificates of inspection and other approval and releases by governing authorities, required for Owner's occupancy and use of project.
2. Submit warranties and similar documentation.
3. Submit maintenance manuals and provide instruction of Owner's operational/maintenance personnel.
4. Complete final cleaning of the work.
5. Submit record documents.
6. Submit listing of work to be completed before final acceptance.

C. Following completion of the following requirements, final payment request may be submitted:

1. Complete work listed as incomplete at time of substantial completion, or otherwise assure Owner of subsequent completion of individual incomplete items.
2. Settle liens and other claims, or assure Owner of subsequent settlement.
3. Submit proof of payment on fees, taxes and similar obligations.
4. Transfer operational, access, security and similar provisions to Owner; and remove temporary facilities, tools and similar items.
5. Completion of requirements specified in "Project Closeout" section.
6. Obtain consent of surety for final payment.

END OF SECTION

SECTION 01400

QUALITY CONTROL SERVICES

1. GENERAL

1.1 DESCRIPTION

A. Quality control services include inspections and tests performed by independent agencies.

B. Inspection and testing services are intended to determine compliance of the work with requirements specified.

C. Refer to Statement of Special Inspections issued by the Engineer, David J. Tetreault, P.E. for required inspections and tests.

1.2 RESPONSIBILITIES

A. The Owner will engage and pay for services of an independent agency to perform the required inspections and tests.

D. Where results of inspections or tests do not indicate compliance with contract document, retests are the Contractor's responsibility.

E. The Contractor shall cooperate with independent agencies performing inspections or tests. Provide auxiliary services as are reasonable. Auxiliary services include:

1. Provide access to the work.
2. Assist taking samples.
3. Deliver samples to test laboratory.

1.3 COORDINATION

A. The Contractor and independent test agencies shall coordinate the sequence of their activities. Avoid removing and replacing work to accommodate inspections and tests. The Contractor is responsible for scheduling times for inspections and tests.

1.5 SUBMITTALS

A. Notify the Engineer of the testing schedule.

B. Submit a certified written report of each inspection test or similar service, electronically in PDF format, to the Engineer copying the Architect.

1.6 REPORT DATA

A. Written inspection or test reports shall include:

1. Name of testing agency or test laboratory.
2. Dates and locations of samples, tests or inspections.
3. Names of individuals present.
4. Complete inspection or test data.
5. Test results.
6. Interpretations.
7. Recommendations.
8. In addition to Owner and Architect, written inspection and test reports are to be sent from the testing agency directly to MaineHousing.

B. Reports shall be provided to the Engineer in a timely manner.

1.7 REPAIR AND PROTECTION

A. Upon completion of inspection or testing repair damaged work and restore substrates and finishes. Comply with requirements for "Cutting and Patching".

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES

1. GENERAL

1.1 DESCRIPTION OF REQUIREMENTS: Provide temporary services and facilities ready for use when first needed to avoid delay in the work. Maintain, expand and modify as needed. Do not remove until no longer needed, or replaced by authorized use of permanent facilities.

1.2 USE CHARGES: Usage charges for temporary services or facilities are not chargeable to the Owner or Architect/Engineer.

1.3 REGULATIONS: Comply with requirements of local laws and regulations governing construction and local industry standards, in the installation and maintenance of temporary services and facilities.

1.4 STANDARDS: Comply with the requirements of NFPA Code 241, "Building Construction and Demolition Operations", the ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and the NECA National Joint Guideline NJG-6 "Temporary Job Utilities and Services".

1.5 INSPECTIONS: Inspect and test each service before placing temporary utilities in use. Arrange for inspections and tests by governing authorities, and obtain certifications and permits for use.

1.6 SUBMITTALS: Submit copies of reports and permits required or necessary for installation and operation, including reports of tests, inspections and meter readings performed on temporary utilities, and permits and easements necessary for installation, use and operation.

1.7 MATERIALS AND EQUIPMENT

A. Provide materials and equipment that are suitable for the intended use.

B. Provide new materials and equipment for temporary services and facilities; if acceptable to the Architect/Engineer, used materials and equipment that are undamaged may be used.

1.8 INSTALLATION

A. Use qualified tradesmen for installation.

B. Locate temporary services and facilities where they will serve the project adequately and result in minimum interference with the work.

1.9 TEMPORARY UTILITY INSTALLATION

A. Engage, or make arrangements if necessary with, the local utility company to make connections to existing service.

B. Arrange with the companies and existing users for an acceptable time when service can be interrupted to make connections.

C. Establish a service implementation and termination schedule. As early as possible change to use of permanent service, to enable removal of the temporary utility and eliminate possible interference with completion of the work.

D. Provide adequate capacity at each stage of construction. Prior to availability at the site, provide, trucked-in services for start up of construction operations.

E. Obtain and pay for easements required to bring temporary utilities to the site, where the Owner's easement cannot be utilized for that purpose.

1.10 ELECTRIC POWER SERVICE

A. Provide weathertight, grounded temporary electrical service-entrance and distribution system, with ground-fault circuit interrupters and ground-fault interrupter features of proper types, sizes, electrical ratings and characteristics to fulfill project requirements.

B. Comply with applicable requirements of NEMA, NECA and UL standards and governing regulations.

C. Install temporary lighting of adequate illumination levels to perform the work specified.

D. Comply with NEC pertaining to installation of temporary wiring service and grounding. Provide meters, transformers, and overcurrent protective devices at main distribution panel for power and light circuitry. Provide disconnects for equipment circuits.

1.11 POWER DISTRIBUTION SYSTEM

A. Provide circuits of proper sizes, characteristics, and ratings for each use indicated.

B. Install wiring overhead, and risers vertically where least exposed to damage.

C. Provide rigid steel conduit to protect wiring on grade, floors, decks or other areas exposed to possible damage.

D. Provide 20 amp, 4-gang receptacle outlets, equipped with ground-fault circuit interrupters, reset button and pilot light, spaced that a 100 foot extension cord can reach

each area of work. Use only grounded extension cords; use "hard- service" cords where exposed to abrasion and traffic.

E. Provide warning signs at power outlets that are other than 110/120 volt. Provide outlets of proper NEMA configuration to prevent insertion of 110/120 volt plugs into higher voltage outlets.

1.12 TEMPORARY LIGHTING

A. Provide general service incandescent lamps of wattage required for adequate illumination.

B. Protect lamps with guard cages or tempered glass enclosures, where exposed to breakage.

C. Provide exterior type fixtures where exposed to weather or moisture.

D. Provide one 200-watt incandescent lamp per 1000 square feet of floor area for general construction lighting, one 100-watt incandescent lamp every 50 feet in corridors, and one lamp per story, located to illuminate each landing and flight in stairways.

E. Install temporary lighting to fulfill security and protection requirements, without having to operate the entire temporary lighting system.

1.13 TEMPORARY TELEPHONES

A. Provide project manager’s and supervisor’s cell phone number to Architect.

1.14 TEMPORARY HEAT

A. Provide temporary heat where needed for performance of work, for curing or drying of recently installed work or for protection of work in place from adverse effects of low temperatures or high humidity.

B. Provide UL or FM tested and labeled heating units known to be safe and without adverse effect upon work in place or being installed. Coordinate with ventilation requirements to produce the ambient condition.

C. Maintain a minimum temperature of 45 deg. F (7 deg. C) in permanently enclosed portions of the building and areas where finished work has been installed.

D. Except where use of the permanent heating system is available and authorized, provide properly vented self-contained LP gas or fuel oil heaters with individual space thermostatic control for temporary heat. Do not use open burning or salamander type heating units.

1.15 SANITARY FACILITIES

A. Sanitary facilities include temporary toilets.

B. Comply with governing regulations including safety and health codes for the type, number, location, operation and maintenance of fixtures and facilities.

C. Supply toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each facility. Provide covered waste containers for used material.

D. Install single occupant self-contained toilet units of the chemical, aerated recirculation or combustion type, properly vented and fully enclosed with glass fiber reinforced polyester shell. Use of pit-type privies will not be permitted.

E. Provide separate toilet facilities for male and female construction personnel.

F Provide drinking water fountains where and when piped potable water, approved by local authorities, is reasonably accessible from permanent or temporary lines. Otherwise, provide containerized tap-dispenser bottled-water type drinking water units.

1.16 FIRST AID SUPPLIES: Comply with governing regulations and recognized recommendations within the construction industry.

1.17 DEWATERING FACILITIES AND DRAINS

A. Maintain the site, excavations and construction free of water.

B. Dispose of rainwater in a lawful manner which will not result in flooding and project or adjoining property, nor endanger either permanent work or temporary facilities.

1.18 TEMPORARY ENCLOSURE

A. Provide temporary enclosure of materials, equipment, work in progress and completed portions of the Work to provide protection from exposure, foul weather, other construction operations, and similar activities.

B. Provide enclosures where temporary heat is needed and the permanent building enclosure is not completed, and there is no other provision for containment of heat. Coordinate with ventilating and material drying or curing requirements to avoid dangerous conditions.

C. Provide temporary enclosures by installing waterproof, fire- resistant, UL labeled tarpaulins with a flame-spread rating of 15 or less, using a minimum of wood framing. Use translucent nylon reinforced laminated polyethylene tarpaulins to admit the

maximum amount of daylight. Individual openings of 25 square feet or less may be closed with plywood or similar materials.

D. Close openings through the floor or roof decks and other horizontal surfaces with substantial load-bearing wood-framed or similar construction.

1.19 COLLECTION AND DISPOSAL OF WASTES

A. Establish a system for daily collection and disposal of waste materials. Do not hold collected materials longer than 7 days.

B. Handle waste materials that are hazardous, dangerous, or unsanitary separately from other waste by containerizing.

C. Burying or burning of waste materials on the site or washing waste material down sewers will not be permitted.

1.20 MISCELLANEOUS SERVICES AND FACILITIES

A. Design, construct, and maintain miscellaneous services and facilities as needed to accommodate performance of the work, including temporary stairs, ramps, ladders, staging, shoring, scaffolding, temporary partitions, waste chutes and similar items.

1.21 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Provide a neat and uniform appearance in security and protection facilities acceptable to the Architect/Engineer and the Owner.

B. Maintain site in a safe, lawful and publicly acceptable manner.

C. Take necessary measures to prevent erosion.

D. Except for utilization of permanent fire protection facilities, as soon as available, do not change over to use of permanent facilities until substantial completion.

1.23 TEMPORARY FIRE PROTECTION

A. Until fire protection needs may be fulfilled by permanent facilities, install and maintain temporary fire protection of the types needed to protect against losses.

B. Comply with recommendations of NFPA Standard 10.

C. Locate fire extinguishers where most effective; provide not less than one on each floor at or near each stairwell.

D. Provide type "A" fire extinguishers for temporary offices and spaces where there is minimal danger of electrical or flammable liquid fires, and type "ABC" dry chemical extinguishers elsewhere.

E. Store combustible materials in containers in fire-safe locations.

F. Review fire prevention and protection needs with local fire department officials and establish procedures to be followed in the event of fire. Instruct personnel in procedures and post warnings and information.

G. Maintain unobstructed access to fire extinguishers, temporary fire protection facilities, stairways and other access routes.

H. Prohibit smoking in hazardous areas.

I. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of ignition.

J. At temporary water outlets provide hoses of sufficient length to reach construction areas. Hang hoses with a warning sign, indicating that hoses are for fire protection purposes and are not to be removed.

K. At the earliest feasible date complete installation of the permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel at the site on how to use facilities which may not be self-explanatory.

1.24 BARRICADES, WARNING SIGNS AND LIGHTS

A. Comply with recognized standards and code requirements for erection of substantial, barricades where needed to prevent accidents.

B. Paint with appropriate colors and warning signs to inform personnel at the site and the public, of the hazard being protected against.

C. Provide lighting where needed, including flashing red lights where appropriate.

1.25 SECURITY ENCLOSURE AND LOCKUP: Where materials and equipment must be temporarily stored, and are of substantial value or attractive for possible theft, provide a secure lockup.

1.26 ENVIRONMENTAL PROTECTION

A. Conduct construction activities, and by methods that comply with environmental regulations, minimize the possibility that air, waterways and subsoil might be

contaminated or polluted, or that other undesirable effects might result from the performance of work at the site.

B. Avoid the use of tools and equipment which produce harmful noise.

C. Restrict the use of noise making tools and equipment to hours of use that will minimize complaints.

1.27 OPERATION, TERMINATION AND REMOVAL

A. Limit availability of temporary services and facilities to essential and intended uses to minimize waste and abuse. Do not permit temporary installations to be abused or endangered.

B. Operate and maintain temporary services and facilities in good operating condition and in a safe and efficient manner until removal is authorized. Do not overload services or facilities. Protect from damage by freezing temperatures and similar elements.

C. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the site.

D. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24- hour basis where required to achieve indicated results and avoid the possibility of damage to the Work or to temporary facilities.

E. Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation.

F. Remove each temporary service and facility promptly when need has ended, or when replaced by use of a permanent facility, but no later than substantial completion. Complete, or, if necessary, restore permanent work delayed because of interference with the temporary service or facility. Repair damaged work, clean exposed surfaces and replace work which cannot be repaired.

G. At substantial completion, clean and renovate permanent services and facilities that have been used to provide temporary services and facilities during the construction period.

1.28 PROJECT IDENTIFICATION AND TEMPORARY SIGNS

A. Prepare a 4'x8' project identification sign as per Architect's requirements. Use 3/4" exterior plywood, and exterior grade acrylic latex-base enamel. Install at location indicated by Architect.

B. Support on suitable posts or framing of treated wood or steel. Maintain in a manner which will properly inform the public and persons seeking entrance to the project.

C. Do not permit installation of unauthorized signs that are visible outside the site.

END OF SECTION

SECTION 01631

PRODUCTS AND SUBSTITUTIONS

1. GENERAL

1.1 PROCEDURAL REQUIREMENTS

A. Source Limitations:

1. To the fullest extent possible, provide products of the same generic kind, from a single source, for each unit of work. Where it is not possible to do so, match separate procurements as closely as possible.

2. To the extent that the product selection process is under the Contractor's control, provide products that are compatible with previously selected products.

3. Where standard products are available that comply with specified requirements, provide those standard products that have been used successfully before in similar applications, and that are recommended by the manufacturers for the applications indicated.

1.2 PRODUCT SELECTION LIMITATIONS

A. Product Selections: Comply with the following requirements in the selection of products, materials and equipment:

1. Single Product Name: Where only a single product or manufacturer is named provide the product, or approved equal, unless it is incompatible with existing work, or does not comply with specified requirements or governing regulations.

2. "Or Approved Equal" Provisions": Where products or manufacturers are specified by name provide either the product named, or comply with the requirements for gaining approval of "substitutions" for the use of an unnamed product.

4. Compliance with Standards: Where the specifications require only compliance with an imposed standard, code or regulation, the Contractor has the option of selecting any product that complies with specified requirements provided no product names are indicated.

5. Performance Requirements: Where the specifications require compliance with indicated performance requirements, the Contractor has the option of selecting any product that complies with the specific performance requirements, provided no product names are indicated.

6. Visual Requirements: Where the specifications indicate that a product is to be selected from the manufacturer's standard options, without naming the manufacturer, the Architect/Engineer has the option of making the selection, after the Contractor has determined or selected the manufacturer.

B. Nameplates: Except as otherwise indicated for required labels and operating data, do not permanently attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on the exterior of the completed project.

1.3 SUBSTITUTIONS

A. Conditions: The Contractor's requests for substitutions will be considered when they are reasonable, timely, fully documented, and when they qualify under one or more of the following circumstances.

1. The proposed substitution is related to an "or approved equal" or similar provision in the contract documents.

2. The required product cannot be supplied in time for compliance with Contract Time requirements.

3. The required product is not acceptable to governing authorities.

4. The required product cannot be properly coordinated with other materials in the work, or cannot be warranted or insured as specified.

5. The proposed substitution will offer a substantial advantage to the Owner after deducting offsetting disadvantages including delays, additional compensation to the Architect/Engineer for redesign, evaluation and other necessary services, and similar considerations.

B. Submittals: Include the following information, as appropriate, in each request for substitution:

1. Provide complete product documentation, including product data and samples, where appropriate.

2. Provide detailed performance comparisons and evaluation, including testing laboratory reports where applicable.

3. Provide coordination information indicating the effect of the substitution on other work and the time schedule.

4. Provide cost information for the proposed change order.

5. Provide the Contractor's general certification of the recommended substitution.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Receive, store and handle products, materials and equipment in a manner which will prevent loss, deterioration and damage.

B. Schedule deliveries so as to minimize long-term storage at the project site.

END OF SECTION

SECTION 01700

PROJECT CLOSEOUT

1. GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Provisions of this section apply to the procedural requirements for the actual closeout of the Work, not to administrative matters such as final payment or the change over of insurance.

B. Closeout requirements relate to both substantial and final completion of the Work; they also apply to individual portions of completed work as well as the total Work.

C. Specific requirements contained in other sections have precedence over the general requirements contained in this section.

1.2 PROCEDURES AT SUBSTANTIAL COMPLETION

A. Prerequisites: Comply with General Conditions and complete the following before requesting Architect's/Engineer's inspection of the Work, or a designated portion of the Work, for certification of substantial completion.

1. Submit executed warranties, workmanship bonds, maintenance agreements, inspection certificates and similar required documentation for specific units of work, enabling owner's unrestricted occupancy and use.

2. Submit record documentation, maintenance manuals, tools, spare parts, keys and similar operational items.

3. Complete instruction of Owner's operating personnel, and start-up of systems.

4. Complete final cleaning, and remove temporary facilities and tools.

B. Inspection Procedures:

1. Upon receipt of Contractor's request, Architect/Engineer will either proceed with inspection or advise Contractor of prerequisites not fulfilled.

2. Following initial inspection, Architect/Engineer will either prepare certificate of substantial completion, or advise Contractor of work which must be performed prior to issuance of the certificate of substantial completion.

3. The Architect/Engineer will repeat the inspection when requested and assure that the Work has been substantially completed.

4. Results of the completed inspection will form the initial "punch-list" for final acceptance.

1.3 PROCEDURES AT FINAL ACCEPTANCE

A. Re-inspection Procedure:

1. The Architect/Engineer will re-inspect the Work upon receipt of the Contractor's notice that, except for those items whose completion has been delayed due to circumstances that are acceptable to the Architect/Engineer, the Work has been completed, including punch-list items from earlier inspections.

2. Upon completion of re-inspection, the Architect/Engineer will either recommend final acceptance and final payment, or will advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, this procedure will be repeated.

1.4 RECORD DOCUMENTATION

A. Record Drawings:

1. Maintain a complete set of either blue- or black-line prints of the contract drawings and shop drawing for record mark-up purposes throughout the Contract Time.

2. Mark-up these drawings during the course of the work to show both changes and the actual installation for all trades, in sufficient detail to form a complete record for the Owner's purposes. Give particular attention to work which will be concealed and difficult to measure and record at a later date, and work which may require servicing or replacement during the life of the project.

3. Require the entities marking prints to sign and date each mark-up.

4. Bind prints into manageable sets, with durable paper covers, appropriately labeled.

B. Maintenance Manuals:

1. Provide 3-ring vinyl-covered binders containing required maintenance manuals, properly identified and indexed.

2. Include operating and maintenance instructions extended to cover emergencies, spare parts, warranties, inspection procedures, diagrams, safety, security, and similar appropriate data for each system or equipment item.

1.5 GENERAL CLOSEOUT REQUIREMENTS

A. Operator Instructions: Require each Installer of systems requiring continued operation and maintenance by owner's operating personnel, to provide on-location instruction to Owner's personnel, sufficient to ensure safe, secure, efficient, non-failing utilization and operation of systems. Provide instructions for the following categories of work:

1. Mechanical/electrical/electronic systems (not limited to work of Divisions 15 and 16).
2. Live plant materials and lawns.
3. Roofing, flashing, joint sealers.
4. Floor finishes.

B. Final Cleaning: At the time of project close out, clean or reclean the Work to the condition expected from a normal, commercial building cleaning and maintenance program. Complete the following cleaning operations before requesting the Architect/Engineer's inspection for certification of substantial completions.

1. Remove non-permanent protection and labels.
2. Polish glass.
3. Clean exposed finishes.
4. Touch-up minor finish damage.
5. Clean or replace mechanical systems filters.
6. Remove debris.
7. Broom-clean unoccupied spaces.
8. Sanitize plumbing and food service facilities.
9. Clean light fixtures and replace burned-out lamps.
10 Sweep and wash paved areas.
11. Police yards and grounds.

C. Owner and Contractor to comply with MaineHousing close-out requirements including fulfillment of MaineHousing Construction Services Final Completion Checklist.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

1. GENERAL

1.1 GENERAL PROVISIONS

A. SCOPE: Drawings and general provisions of Contract, including General Conditions and Division 1 specifications, apply to work in this section. Performance shall meet the requirements of these Specifications.

1.2 DESCRIPTION OF WORK

A. The work covered by this section of Specifications consists of the following:

1. All rough carpentry work as required by Drawings and as specified under this section to include: framing, blocking, sheathing, miscellaneous siding and exterior trim, vents, access panels, certain site improvements and temporary structures, and other misc. items specified elsewhere and shown on Drawings.

2. Installation of metal and other items furnished by other trades, if specifically noted in these specifications and cutting/patching for other trades as necessary for proper execution of their work.

2. PRODUCTS:

2.1 ALL LUMBER shall be as shown on Drawings or called for in this section. Lumber shall be live stock, thoroughly seasoned, and well manufactured. Materials shall be free from warp that cannot be corrected by bridging or nailing.

2.2 FRAMING LUMBER: "S" dried Eastern Spruce, NELMA #2 grade or better. Lumber shall be stamped "S" dry with moisture content not to exceed 19%, dressed four sides sound and free from significant warps, checks, splits, and knots. Dressed sizes shall comply with American Lumber Standards and sizes shown on Drawings are nominal unless shown as actual by inch (") notations.

2.3 PRESSURE TREATED LUMBER where used in contact with concrete, water, or earth shall meet AWPA C-2 for acceptable water-borne preservative process (no creosote or Pentachlorophenal). Timber shall be Southern Yellow Pine treated with CCA to 0.4 # c.f., in contact with concrete (0.6 where buried), in accordance with AWPA C-18.

2.4 SHEATHING: All sheathing shall bear A.P.A. stamp.

2.5 WALL SHEATHING: APA Rated sheathing 24/16, 1/2" minimum thickness.

2.6 ROOF SHEATHING: APA Rated sheathing to be; Exterior 19/32, APA rated sheathing 48/24 for 24" o.c.

2.7 TRIM FLASHING: Aluminum "Z" flashing 24 gauge with ¼" lower lip. Trim Flashing shall be a minimum of .032" thickness.

2.9 NAILS: As noted in these Specifications and on Drawings.

2.10 SCREWS, BOLTS AND OTHER FASTENERS: as shown on Drawings and of length adequate to support loads where shown; where not shown, consult Architect.

2.11 SILL SEALER: See Section 07200 - Insulation.

2.12 FLOORING UNDERLAYMENT: ¼" thick APA rated plywood multiply underlayment.

2.13 SUBFLOOR: AdvenTech 19/32" subflooring. Treads & risers at stairs shall be APA rated plywood sheathing or hard pine board.

3. EXECUTION:

3.1 GENERAL: The Contractor shall carefully lay out and erect all structural members of rough carpentry, framing, sheathing, blocking, bridging and other items of work as necessary to install the finished work as shown on Drawings and as noted in Specifications. All members shall be properly braced, plumbed and leveled. A sufficient number of nails, as shown on Drawings and nailing schedule, screws and bolts shall be used to insure the rigidity of the construction.

3.2 FRAMING:

A. All framing shall be installed closely fitted, accurately set in place to the required lines and levels, and shall be of the dimensions shown on Drawings. Do not impair structural members by improper cutting or drilling. Contractor must follow truss manufacturer limitation of cutouts. Columns shall be continuous without splices from base to girder and shall be joined by nailing alternate sides with 2-16d nails 12" o.c.

B. Joints of girders shall be centered over supports. Framing joists into side of wood beams or girders shall be done with steel joist hangers or connectors as shown on Drawings.

3.3 BLOCKING:

A. (2x6, 2x8 or wider) shall be provided as necessary for the application of plumbing and fixtures, toilet accessories, grab bars, kitchen cabinets, and other wall mounted accessories, electrical and communications equipment. Provide blocking in closet back walls for closet rod/shelf bracket.

B. Provide solid blocking at panel joints of horizontally laid plywood in all external walls.

3.4 WALL SHEATHING: Applied horizontally. Blocking required at horizontal joint leave 1/8" - 1/4" space at panel side joints and end joints, unless otherwise recommended by manufacturer. Nail 1/2" sheathing with 8d common nails at 4" o.c. at edges, 16" o.c. at intermediate supports, 3/8" minimum crown, 1" minimum penetration in studs at 4" o.c. at edges and 8" o.c. at intermediate supports. Unless otherwise noted on the Drawings. Installation of oriented strand board must meet manufacturer's recommendations for cut edge treatment, protection and all other aspects of this product.

3.5 ROOF SHEATHING: Shall be installed continuous over two or more spans with long dimension across supports. End joints shall be over supports and staggered in adjacent courses. Leave 1/4" space at panel edge joints and 1/8" space at panel end joints; unless otherwise recommended by manufacturer. Nail: 8d common at 6" o.c. at panel edges, 16" o.c. at intermediate supports. H" clips required at joints perpendicular to framing midway between every support.

3.6 SUBFLOORING: Installation per manufacturer's written recommended installation instructions for gluing, spacing and fastening.

3.7 UNDERLAYMENT: Shall be installed at all areas to receive resilient vinyl flooring, carpet, walk-off mat and rubber or vinyl treads / risers / stair landings. To install, use 1" screws driven every 8 to 12 inches along the edges of the board. Sink the heads of the screws slightly below the surface of the plywood. Pepper the field of the plywood with 1" screws about 12 inches apart from each other. Allow for 1/4" between each sheet of plywood and along walls to allow for expansion. At vinyl resilient flooring installations, patch the screw divots and seams with floor patching compound and sand down the dried compound and any irregular spots in the plywood.

3.8 DOOR FRAMES: Shall be securely anchored to the supporting construction. Install double studs at jambs and solid wood blocking at all hinges and door latch locations. Framing shall be so door can be hung true and plumb (See Section 08200 Doors).

END OF SECTION

SECTION 06200

FINISH CARPENTRY

1. GENERAL

1.1 GENERAL PROVISIONS: Drawings and general provisions of Contract, including General Conditions and Division 1 specifications, apply to work in this section.

1.2 DESCRIPTION OF WORK:

A. The extent of work shall be as shown on Drawings and called for in these Specifications. Performance shall meet the requirements of these Specifications. The work covered by this section of Specifications consists of the following:

1. All finished carpentry work and millwork as required by Drawings and as specified under this section.
2. Installation of metal and other items furnished by other trades, if specifically noted in these Specifications.

2. PRODUCTS:

2.1 BOARD LUMBER shall comply with the American Lumber Standards Simplified Practice Recommendation No. 16. Grade of board lumber shall be suitable for its intended use. Finish lumber is to be painted and shall be dressed free of tool marks and other objectionable defects. All exposed lumber to be architectural quality grade: Custom.

2.2 NAILS: 6d for 1/2" finish stock and 4d finish for thinner wood. Use 8d generally for nailing 3/4" wood trim to framing. All nails used with cellular PVC trim shall be stainless steel finish nails.

2.3 SCREWS, BOLTS & OTHER FASTENERS: as shown on Drawings with penetration into framing or blocking adequate to support loads shown. Where not shown, consult Architect.

2.4 CLOSET SHELVING: At each clothes closet pre-manufactured plastic coated wire shelving with integral clothes hanger, Closet Maid or equal. In each linen closet - five shelves.

2.5 INTERIOR TRIM: Door and window trim: #1 poplar – 1x4. Wall base: #1 poplar – 1x6.

2.6 EXTERIOR TRIM & CORNERBOARDS: Expanded rigid PVC trim and cornerboards by Azek.

2.7 PORCH FINISHES: By Railing Dynamics, Inc. (DFI)

1. Vinyl wrapped railing system, “Original Rail” by DFI.
2. Vinyl wrapped handrail system, “Endurance Handrail” by DFI.
3. Vinyl post sleeve, post cap and column wrap by DFI.
4. Vinyl beadboard ceiling.

2.8 STAIR SKIRTBOARDS: #1 pine or poplar.

2.9 STAIR RISERS & TREADS: ¾” APA plywood or hard pine board.

2.10 STAIR HANDRAIL BRACKETS: Satin brass handrail brackets providing 2 ¼" clear stand-off from wall secured with #8 or #10 brass screws of adequate length for wall condition, minimum 1 ¼" into blocking and 4' on center.

2.11 STAIR RAILINGS: Fir railings, 1 ½" diameter.

2.12 COUNTERTOPS: Rounded-edge pre-formed plastic laminate countertops, color by Architect. See Section 11450 – Residential Equipment & Kitchens.

2.13 UNIT NUMBERS: 2" rigid plastic adhesive backed letters, style and color by Architect, for interior apartment entry doors.

2.14 BUILDING NUMBER: 2" satin brass, location per Architect.

2.15 EXTERIOR GABLE VENT: 3 square feet fixed factory painted aluminum vent with insect screening and galvanized pan behind with drain to exterior.

2.16 ATTIC ACCESS PANEL: 2'-0" x 3'-0" (1) hour rated access panel with keyed lock.

2.17 EXTERIOR ALUMINUM COIL STOCK: nominal 0.022 thick painted aluminum coil stock, attach with aluminum or stainless steel nails, hem material to stiffen it.

2.18 FLOORING UNDERLAYMENT: ¼" thick APA rated plywood multiply underlayment.

3. EXECUTION:

3.1 ALL ITEMS OF MILLWORK shall be carefully erected, leveled and plumbed with tight-fitting joints and square corners, carefully cut and secured. Exposed nails shall be set adequately for putty. Moulds and faces shall be free from hammer or other tool marks, clean-cut and true pattern. All work shall be thoroughly cleaned and sanded to receive the finish. Sharp corners of small members of finished woodwork shall be slightly rounded. All trim baseboards, etc. fastened to walls shall be secured to wall framing members and nails set. Care shall be taken to avoid splitting ends of trim boards.

3.2 INTERIOR TRIM: Install trim with finishing nails and glue where required to assure permanent, tight joints, according to Drawing details.

END OF SECTION

SECTION 07200

INSULATION, SAFB & VAPOR BARRIERS

1. GENERAL:

1.1 GENERAL PROVISIONS: Drawings and general provisions of Contract, including General Conditions and Division 1 specifications, apply to work in this section.

1.2 DESCRIPTION OF WORK: The extent of work shall be as shown on Drawings and called for in these Specifications. Performance shall meet the requirements of the Specifications. The work covered by this section of Specifications consists of the following:

1. Installation of rigid insulation.
2. Installation of blown-in cellulose insulation, dense-pack method.
2. Installation of foam insulation: closed cell with fire barrier in basement walls, open cell otherwise.
3. Vapor barriers to be installed as shown.

2. PRODUCTS:

2.1 RIGID INSULATION:

1. Foundation Insulation: Type SM Styrofoam insulation by Dow Chemical, or approved equal.
2. Roof Insulation: Tapered and flat roof insulation to be polyisocyanurate closed-cell foam core with manufacturer's standard facing laminated to both sides, complying with FS HH-I-1972/2, Class 1. 1/8" per foot tapered polyisocyanurate will be required. Roof insulation to be ISO 95+ by Firestone, H-Shield by Hunter Panels or approved equal.
3. Wall Insulation: 1” thick Thermax polyisocyanurate closed-cell foam core with manufacturer's standard facing laminated to both sides.

2.2 SPRAY FOAM INSULATION TYPE:

1. Basement Insulation: closed cell type.
2. Wall, roof Insulation: open cell type.

2.3 BLOWN-IN CELLULOSE INSULATION: dry cellulose using dense-pack installation method.

2.3 THERMAL BARRIER OVER EXPOSED FOAM INSULATION: Cafco TB-415 or other product approved by State of Maine Fire Marshal Office.

2.4 MOISTURE PROTECTION: 6 mil. clear polyethylene film.

2.5 SILL SEALER: “Dow” ¼” x 5-1/2” fiberglass sill sealer.

2.6 SHEATHING PAPER: Tyvek.

2.7 SOUND ATTENUATION FIRE BLANKETS (SAFB): "SAFB 2.5 pcf "by Thermafiber.

END OF SECTION

SECTION 07300

ASPHALT SHINGLE ROOFING AND FLASHING

1. GENERAL

1.1 GENERAL PROVISIONS: Drawings and general provisions of Contract, including General Conditions and Division 1 specifications, apply to work in this section.

1.2 DESCRIPTION OF WORK:

A. The extent of work shall be as shown on Drawings and called for in these Specifications. Performance shall meet the requirements of these Specifications. The work covered by this section of Specifications consists of the following:

1. Complete installation of roofing as shown on Drawings or noted in these Specifications.
2. Installation of all flashings as needed to make the roof watertight.
3. Installation of flashings in connection with work of other trades and flashings furnished by others in connection with roof work.
4. Installation of drip edges.

1.3 SUBMITTALS: Contractor to submit manufacturer’s information on shingles.

2. PRODUCTS;

2.1 ASPHALT SHINGLES:

A. Shall be Class C of the Underwriters' Laboratories, Inc., and shall meet ASTM D-225 Type III, ASTM D3161 and UL Standard #997 for compliance with wind resistance.

B. Shingles shall be “architectural” type asphalt with 30 year warranty or equal. Color to be chosen by Architect.

2.2 ROOF FLASHINGS; shall be aluminum, minimum of 0.032” thickness.

2.3 DOOR, WINDOW & WALL FLASHING – “VycorPlus” self-adhering flashing by W.R. Grace or equal.

2.4 DRIPEDGES: shall be 8" preformed aluminum on fascia, 5" on rake min. 0.064”.

2.6 ROOFING FELTS: shall be 30# Asphalt Impregnated.

2.7 EAVE AND EDGE UNDERLAYMENT: Ice Shield: Bituthane ice and water shield underlayment by W.R. Grace. 36" wide roll x 40 mil thick rubberized asphalt membrane or equal. Contractor to be aware that the ice and water shield is to be applied for the first 6' at all eaves, a minimum of 3' in from rake edges and valleys, and over entire roof at pitches below 5:12. In addition, at all roof/wall intersections underlayment shall run up walls 18" minimum.

3. EXECUTION:

3.1 ALL ROOFING MATERIALS to be installed in accordance with manufacturer's recommendations. In no case shall any roofing materials be installed over snow, ice, frost or any other wet materials.

3.2 ROOFING FELT: Install felt as required over dry roof, fully secured and laid flat with no bubbles, humbles etc. Felt shall not be exposed to weather for more than 24 hours before shingles are installed.

3.3 ASPHALT SHINGLE ROOFING: Install asphalt shingles to provide at least double thickness at all points. Use eleven or twelve-gauge wire nails long enough to penetrate the sheathing. Number, spacing and pattern of nails shall be described in the attached Asphalt Roofing Manufacturer's Association Technical Bulletin.

3.4 INSTALL FLASHINGS:

A. At roof surface intersections and at intersections of roof surface with other parts of the building.

B. Install roof-to-wall flashings at all intersections leaving 1" exposed above roof plane as shown on Drawings.

C. Install sheet metal flashing in "step" fashion; one step at each shingle course.

D. Flashing to run up wall behind finish a minimum of 6", and run under shingles a minimum of 6", flashing overlap minimum 4".

E. Flash pipes projecting through roof with one-piece sheet metal or preformed synthetic rubber boot made for this purpose.

F. Install fascias, drip edges shown on Drawings or noted in these Specifications.

3.5 NOTE: All roofing, flashing and related work to be in accordance with "Asphalt Roofing Manufacturer's Association" application procedures. Handbook/guide shall be obtained by roofing installer.

END OF SECTION

SECTION 07464

VINYL SIDING

GENERAL

1.1 SECTION INCLUDES

A. Vinyl siding.
B. Accessories and trim.

1.2 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
D. Verification Samples: For each finish product specified, two samples, minimum size 12 inches (300 mm) long, representing actual product, color, and patterns.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Provide installer with not less than three years of experience with products specified.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation. Refer to manufacturer’s installation instructions for specific storage and handling requirements.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 WARRANTY

A. Provide manufacturer's standard lifetime limited warranty on siding products, transferable to new owners.

PRODUCTS

1.7 MANUFACTURERS

A. Acceptable Manufacturer: CertainTeed Corporation.
B. Substitutions: Or Equal.
C. Vinyl Siding and Components: Provide products made of extruded polyvinyl chloride as specified in this section and manufactured to comply with requirements of ASTM D 3679.
    1. Minimum thickness of vinyl siding and trim – 0.044”.
    2. Provide elongated nailing slots on nailing flanges to allow for movement.
    3. Factory-notch ends of horizontal panels to form overlapping joints.
    4. Provide products that meet weathering requirements of ASTM D 3679.
D. Shingle Style: Cedar Impressions® Double 7" Straight Edge Perfection Shingles by CertainTeed.
E. Clapboard Style: Monogram 46 by CertainTeed.
F. Vinyl siding shall simulate standard wood sidings as to exposure , shadow lines , depths, etc.

1.8 FASTENERS

A. Provide galvanized or other corrosion-resistant nails as recommended by manufacturer of siding products.

EXECUTION

1.9 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

1.10 PREPARATION

A. Examine, clean, and repair as necessary any substrate conditions which would be detrimental to proper installation.
B. Do not begin installation until unacceptable conditions have been corrected.

1.11 INSTALLATION

A. Install products in accordance with the latest printed instructions of the manufacturer.
B. Install products with all components true and plumb.
C. Nail horizontal panels by placing nail in center of slot. Nail vertical panels by placing first nail at top of top slot and remaining nails in center of slots. Drive nails straight, leaving 1/16 inch (1.6 mm) space between nail head and flange of panel. (NOTE: Refer to CTS205 Installation Manual for latest installation recommendations)
D. Allow space between both ends of siding panels and trim for thermal movement. Overlap horizontal panel ends one-half the width of factory pre-cut notches.
E. Stagger lap joints in horizontal siding in uniform pattern as successive courses of siding are installed.

1.12 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

1.13 CLEANING

A. At completion of work, remove debris caused by siding installation from project site.

END OF SECTION

SECTION 07500

EPDM ROOFING AND FLASHING

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. Fully adhered EPDM sheet roofing, tapered and flat roof insulation, elastomeric flashing, tapered edge strips.

1.02 CODES, REGULATIONS AND STANDARDS

A. Contractor Responsibility: The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State and local codes, regulations and standards pertaining to work practices, hauling, disposal, protection of workers and visitors to the site, and persons occupying areas adjacent to the site. This includes modification of procedures to comply with changes to codes, regulations and standards which occur during the work of this contract. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State and local regulations. The Contractor shall hold the Owner and Owner's Representatives harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulations on the part of himself, his employees or his subcontractors.

1.03 QUALITY ASSURANCE

A. Roofing contractor to be approved in writing by the membrane manufacturer. Contractor shall be able to substantiate that he has been trained by the membrane manufacturer.

B. Roofing and flashing workmanship to comply with industry standards. The National Roofing Contractors Association's (NRCA) *ROOFING AND WATERPROOFING MANUAL* along with *ARCHITECTURAL SHEET METAL MANUAL* as published by Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) will be used to establish industry standards.

1.04 SUBMITTALS

A. Sample fifteen (10) year watertight warranty for the EPDM membrane.

B. Sample twenty (20) year material warranty for the EPDM membrane.

C. Sample fifteen (15) year “full system” warranty.

D. Current EPDM membrane manufacturer's application specifications.

E. Shop drawings of each flashing condition, such as eave, curb, vent, wall termination, fascia and siding. Show securement of panels and clips, spacing, type and number of fasteners.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in their original, unopened containers, clearly labeled with manufacturer's name. All material to be stored in waterproof trailers or sheds, up on raised platforms, and under lock and key until use. Do not use materials damaged in handling or storage. Replace damaged material with new material. Store adhesives between 60 and 80 degrees F. Should they be exposed to lower temperatures, restore to room temperature for three to five days prior to use.

1.06 WARRANTY

A. A ten (10) year watertight warranty, a twenty (20) year material warranty and a fifteen (15) year “full system” warranty shall be issued by the EPDM membrane manufacturer.

B. The roofing contractor shall furnish the Owner with his personal two (2) year watertight warranty.

PART 2 PRODUCTS

2.01 ROOF INSULATION

A. Tapered and flat roof insulation to be polyisocyanurate closed-cell foam core with manufacturer's standard facing laminated to both sides, complying with FS HH-I-1972/2, Class 1. 1/8" per foot tapered isocyanurate will be required. Roof insulation to be ISO 95+ by Firestone, H-Shield by Hunter Panels or approved equal.

B. Over all foam insulation, install one layer of 1/2" high density fiberboard roof insulation. The high density fiberboard roof insulation to be Structodek by Wood Fiber Industries, High Density Fiberboard by the Celotex Corp. or approved equal.

C. Tapered edge strips to be 1-1/2" by 18" fiberboard. Use the tapered edge strips at the drains to create an additional sump for the drains.

2.02 MEMBRANE ROOF SYSTEM

A. Membrane roofing to be fully adhered .060" EPDM sheet roofing furnished in twenty five foot (25') wide (or wider) rolls by Firestone, Carlisle or Versico. Roof membrane to be fully adhered to the 1/2" high density fiberboard roof insulation.

B. Use the roof membrane for flashing of curbs and walls per the manufacturer's standard details. Use reinforced EPDM anchor strips to avoid splice joints at walls and

edges.

C. Adhesives, sealants, thinner, cleaner and accessories to be furnished by the membrane manufacturer.

D. Six inch (6") wide seam tape will be required for all field seams.

2.03 FASTENERS

A. Use fasteners recommended by the membrane manufacturer to secure anchor bars and termination bars.

B. Fasteners used to secure roof insulation to the wood deck to be #14-10 Heavy Duty Roofing Fasteners with CR-10 coating, a minimum shank diameter of 0.170" and a thread diameter of 0.125". Pressure plates to be 3" diameter Galvalume plates. Screws and plates to be manufactured by Olympic Fasteners or approved equal. Length, size and accessories to be as required by the EPDM membrane manufacturer selected.

PART 3 EXECUTION

3.01 PREPARATION OF SURFACES

A. Surfaces on which the roofing system is to be applied shall be clean, smooth, dry, free of fins, rot, sharp edges, loose and foreign materials, oil and grease.

3.02 ROOF INSULATION

A. Insulation shall be tightly butted with joints not more than 1/8" in width. Stagger joints with those in layer below. Fiberboard to be installed with a 1/16"-1/8" gap at all joints when board size is greater than 2' x 4'.

B. Fasten insulation to the roof deck with the appropriate screws and plates. Fastener quantity and layout must meet all requirements that may be imposed by the EPDM manufacturer to obtain their warranty.

C. Stagger joints in one direction for each course. For multiple layers, stagger joints in both directions between courses leaving no gaps, allowing a complete thermal envelope to be formed.

D. Provide tapered units to suit drainage pattern indicated.

E. Do not install more insulation in a day than can be covered with membrane before end of day or before start of inclement weather.

3.03 ROOF MEMBRANE

A. Adhere the .060" EPDM membrane to the 1/2" high density fiberboard in strict

accordance with the manufacturer's specifications.
B. Six inch (6") wide seam tape will be required for all field seams.

3.04 FLASHING - WALLS, PARAPETS, CURBS AND VENTS

A. Use the longest pieces of material which are practical. All flashing and terminations shall be done in accordance with the applicable manufacturer's details.

B. Care must be taken to set the elastomeric flashing so it does not bridge where there is a change of direction (i.e. where a parapet meets the roof deck). This can be accomplished by creasing the membrane into the angle change prior to adhering up the wall. Excess bridging will be cause for rejection and will be re-done at the contractor's expense.

C. Install termination bars at the top of all base flashing, fastening a minimum of 6" on center.

3.05 TEMPORARY WATER CUT-OFF

A. Temporary water cut-offs are to be constructed at the end of each working day to protect the insulation, roofing, building and building interior from damage due to wind, snow and rain.

B. Temporary water cut-offs are to be detailed by the contractor and approved by the manufacturer and Owner.

3.06 CLEAN UP

A. Site clean-up shall be complete and to the satisfaction of the Owner.

B. All roofs, building, landscape and parking areas shall be cleaned of all trash, debris and dirt caused by or associated with this work.

C. Any areas stained, dirtied, discolored or otherwise damaged due to this work shall be cleaned, restored and replaced as required.

D. All debris shall be removed from the premises promptly and the construction area left clean daily.

3.07 INSPECTION AND TESTING - THE OWNER RESERVES THE RIGHT TO INSPECT AND TEST ALL CONSTRUCTION OPERATIONS AND MATERIALS.

A. Any defect or noncompliance discovered by inspection shall be reported to the contractor who shall promptly remove any defective material from the site.

B. The Owner reserves the right to inspect the work or parts of it as he chooses. His

failure to inspect the work in progress shall not relieve the contractor of the responsibility for properly executing the contracted work, nor shall it impair the Owner's right to reject deficiencies he may subsequently discover.

PART 4 JOB CONDITIONS

A. Roofing to be applied in dry weather.

B. Completed roof areas shall not be trafficked. The work shall be coordinated to prevent this situation by working toward the roof edges.

C. This project is subject to compliance with all requirements of the Occupational Safety and Health Administration (OSHA). All work on this project must meet the requirements of all applicable state and local codes, laws and ordinances.

END OF SECTION

FIRE STOPPING

SECTION 07860

1. General

1.1 SECTION INCLUDES

1. Comply with Division 1, General Requirements and Documents referred to therein.

2. It is the intent of this section of the specifications to establish a single, competent source to be responsible for providing all labor, materials, products, equipment and services, to supply and install the fire stopping and smoke seal work for the entire project, at the following locations:

   Openings in fire rated walls, floors and roofs both empty and those containing penetrations such as cables, conduits, cable pipes, ducts and similar penetrating items.

   Gaps between fire-rated walls and exterior walls.

   Openings at each floor level in fire rated stairwells.

   Gaps between the tops of fire rated walls and underside of fire rated floor or roof assemblies.

   Penetrations through smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.

1.2 RELATED WORK SPECIFIED ELSEWHERE

1. Openings through Floors and Walls:

   Fire Rated: Metal sleeves for fire rated openings through floors and walls shall be provided under applicable mechanical and electrical specification sections.

   Non-Rated: Non-rated openings through floors and walls shall be sealed under applicable mechanical and electrical specification sections.

1.3 RELATED SECTIONS

1. Division 15 - Mechanical: Mechanical work requiring fire stopping.

2. Division 16 - Electrical: Electrical work requiring fire stopping.

1.4 REFERENCE STANDARDS

1. ANSI/UL 1479 - Fire Tests of Through-Penetration Fire stops

1.5 SYSTEM DESCRIPTION

1. Fire stopping Materials: Provide fire stopping system(s) of sufficient thickness, width and density to provide and maintain a fire resistance rating, as indicated on drawings and in accordance with UL or FM design numbers.

   Acceptable filler materials include:
   a. Concrete
   b. Cementitious proprietary product: Zonolite Firestop ZF-1
   c. Blanket-type mineral-fiber or ceramic-fiber insulation (glass-fiber insulation is not acceptable)
   d. Fire-resistant sealant: Domtar Fire-Halt, Dow Corning Fire Stop, Hilti CS 240 Firestop, or Nelson CLK or CMP
   e. Fire-resistant silicone foam: Dow Corning RTV Foam Penetration Seal System, Hilti CB 120 Adhesive Filling and Sealing Foam, Tremco Fyre-Sil
   f. Flexible intumescent strip wrapped around pipe penetrations: Dow Corning Fire Stop Intumescent Wrap, Hilti CS 24720 Intumescent Wrap, Nelson RSW, Tremco TREMstop WS
   g. Intumescent fibrous material enclosed in a polyethylene envelope: Nelson PLW, Tremco TREMstop PS
   h. Pliable intumescent putty: Nelson FSP Flameseal, Tremco TREMstop WBM
   i. Water-based intumescent fire-protective coating for electrical cables: Nelson CTG

2. Provide a seal completely filling all annular spaces to prevent the passage of flame, smoke and gases through the opening in the fire separation in which it is installed.

3. Material Compatibility: Provide materials which are compatible with all materials used in the system including materials used in or on penetrants as well as all construction materials used in conjunction or contiguous with the system.

4. Accessories: Provide components for each fire stopping system that are needed to install fill materials. Use only components specified by the fire stopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire resistance rated systems. Accessories include but are not limited to the following items:

   Permanent forming/damming/backing materials.
   Temporary forming materials.
   Substrate primers.

Collars.
Steel sleeves.

1.6 SUBMITTALS

1. Manufacturer's Data: Submit manufacturer's specifications, installation instructions and product data for each material required, in accordance with Section 01300. Include manufacturer's certification, if requested and UL, WH, ULC, CUL or FM test reports to show compliance with the Contract Documents.

2. Samples: If requested, submit samples of each type of fire stopping systems, smoke seals and accessories. Indicate location where material/system shall be utilized.

1.7 QUALITY ASSURANCE

1. Manufacturer: Company specializing in manufacturing products of this Section with minimum three (3) years documented experience.

2. Applicator: Company having a minimum of three (3) years experience in the installation of materials specified herein on projects comparable to this Project.

1.8 REGULATORY REQUIREMENTS

1. Conform to applicable local Building Codes for fire resistance ratings.

2. Provide materials, accessories and application procedures which have been listed by UL, FM or tested by a nationally recognized independent testing agency according the ANSI/UL 1479 or ASTM E814 to achieve the required fire protection rating.

1.9 ENVIRONMENTAL REQUIREMENTS

1. Do not proceed with the installation of fire stopping materials when temperatures or weather conditions exceed the manufacturer's recommended limitations for installation.

2. Ventilate solvent based fire stopping per fire stopping manufacturer's instructions by natural means or, where this is inadequate, forced air circulation.

1.10 DELIVERY, STORAGE AND HANDLING

1. Deliver materials to Site in manufacturer's sealed and labeled containers intact. Handle and store materials in accordance with manufacturer's instructions.

1.11 PROJECT/SITE CONDITIONS

1. Comply with manufacturer's recommended requirements for temperature, relative humidity and substrate moisture content during application and curing of materials.

1.12 SEQUENCING AND SCHEDULING

1. Do not install fire stopping system(s) until Work within opening has been completed. Coordinate with other applicable Sections. Schedule work of other trades so that fire stopping applications can be inspected prior to being covered by subsequent construction.

2. Products

2.1 MATERIALS

1. Provide a complete system of asbestos-free fire stopping and through-penetrations fire stopping. Firestop systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of ANSI/UL 1479 or ASTM E814 and listed by UL or FM and in addition are approved by jurisdictional authorities and the Consultant.

2. Fire stopping for Combustible Penetrating Items: For use in openings where either plastic pipe, non-rated insulated pipes or insulated cables are installed.

4. Firestop system ratings: Comply with Building Code requirements for locations and hourly ratings of F, FT, FH and FTH designations.

2.3 ACCESSORIES

.1 Damming and backup materials, supports and anchoring devices: Non-combustible, to manufacturer’s recommendations and in accordance with the tested system being installed as acceptable to jurisdictional authorities.

.2 Retainers: Galvanized clips approved by manufacturer to hold A/D FIREBARRIER Mineral Wool insulation in place.

.3 Primers: As required by fire stopping manufacturer and compatible with selected system and contiguous materials.

.4 Water: Potable.

.5 Sealants for vertical joints: Non-sagging.

.6 Sealants and fluid seals at floor openings: Self-leveling.

.7 Sealants and putty for vertical and overhead joints: Non-sagging.

.8 Tape: Pressure sensitive masking tape as recommended by the fire stopping manufacturer.

3 Execution

3.1 EXAMINATION

1. Examine substrates, openings, voids, adjoining construction and conditions under which the Work is to be installed. Confirm compatibility of surfaces scheduled to receive fire stopping.

2. Verify that penetrating elements are securely fixed and properly located with the proper space allowance between penetrations and surfaces of openings.

3. Do not proceed with Work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

1. Surfaces to receive fire stopping shall be free of dirt, dust, grease, oil, rust, loose materials, form release agents, frost, moisture or any other matter which would impair the bond of fire stopping material to the substrate of penetrating item(s).

2. Prime substrates in accordance with manufacturer's written instructions or recommendations. Confine primers to areas of bond; do not allow spillage or migration onto exposed surfaces.

3. Do not apply fire stopping and smoke seals to surfaces previously painted or treated with sealers, curing compounds, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

4. Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other related materials used in the actual fire tests are provided.

5. Mask where necessary to prevent fire stopping materials from contacting adjoining surfaces that will remain exposed upon completion of Work. Remove tape as soon as it is possible to do so without disturbing fire stopping's seal with substrates.

6. Installation is not to proceed until submittals have been completed.

3.3 INSTALLATION

1. Manufacturer's Instructions: Comply with UL or FM Listings and manufacturer's instructions for the type of material and condition of opening in each case. Consult with the manufacturer's technical representative to determine proper procedure for conditions not fully covered by printed instructions. Record in writing any oral instructions received, with copy to manufacturer.

2. Install fire stopping with sufficient pressure to properly fill and seal openings to ensure an effective smoke seal. Tool or trowel exposed surfaces. Remove excess fire stopping material promptly as the Work progresses and upon completion.

3. Damming: Provide leak-proof dams as required to seal openings and contain liquid sealants, putty or mortar until cured. Install damming in accordance with manufacturer's instructions.

4. Damming Boards: Install forming/damming materials and other accessories of type required to support fill materials during their application and in the position needed to produce the shapes and depths required to achieve fire ratings of through-penetration firestop systems.

   Combustible Type: For temporary dams only. Remove after fire stopping material has cured.

   Non-Combustible Type: For temporary or permanent dams. Provide non-combustible type wherever damming material cannot be removed after applying fire stopping materials.

5. Void Filler: Use materials recommended by the fire stopping manufacturer to seal gaps created by non-combustible type damming boards and to seal around cables, conduits, pipes and where void filler material becomes part of the fire rated assembly.

6. Sealant: Install damming material or mineral wool as required. Apply sealant so air voids are not present and sealant is in full contact with penetrating items. Tool sealant to ensure substrate contact. Remove excess sealant in accordance with manufacturer's recommendations.

7. Fire stopping Mineral Wool: Install fire stopping by compressing material to the minimum required by UL or FM listing. Apply fire stopping in sufficient thickness, depth and density so as to achieve the required fire resistance rating. Use impaling clips to support and secure fire stopping where required by tested system.

3.4 CLEANING AND PROTECTION

1. Upon completion of this work, remove all materials, equipment and debris from the site.

2. Leave work area and adjacent surfaces in a condition acceptable to the Consultant.

3. Leave installed work with sufficient protection to enable it to remain untouched until project turnover.

END OF SECTION

SECTION 07900

JOINT SEALERS

1. GENERAL:

1.1 REFERENCES:
   A. Drawings and general provisions of Contract, including General Conditions and Division 1 specifications, apply to work in this section.
   B. Section 01045, 2.1 B Cutting and Patching.

1.2 DESCRIPTION OF WORK: The extent of work shall be as shown on Drawings and called for in these Specifications. Performance shall meet requirements of these Specifications.

2. PRODUCTS:

2.1 CAULKING MATERIAL
   A. Tremco Dymonic; one part polyurethane on exterior walls for caulking joints and at all junctions as necessary to obtain complete watertight construction and caulking gap between bottom of wall and sheathing foundation wall face.
   B. Tremco Latex 839 for general interior caulking.

3. EXECUTION:

3.1 ALL POTENTIAL INFILTRATION cracks & joints to be caulked. Caulking shall be done only by workmen who are thoroughly experienced in this work. Exterior caulking shall be applied around all trim boards-corners, windows, doors, vents, utilities, at top of foundation, and any other infiltration "crack".

3.2 SEAL OPENINGS IN FIRE-RATED WALLS and floors to make a tight fit with penetrating items, using appropriate non-combustible filler material to provide a rating equivalent to wall/floor assemble. Neatly patch and seal exposed-to-view openings, using sealants, tooled mortar joints, escutcheons, or flanged collars, as appropriate.

3.2 NOTE: Apply caulking under corner boards and window, door trim as trim applied. Apply caulking under flange as window is installed.

3.3 INTERIOR CAULKING shall be applied to seal all penetrations through top plates of interior walls, (due to electrical or plumbing), and at tubs, showers, counter tops, bottom of party walls GWB, and other as shown on Drawings.

3.4 IN GENERAL, caulking to be done prior to (in conjunction with) siding installation. See Drawings for any additional applications. Joints and spaces to be caulked shall be dry and free from dust. Finished caulking "bead" shall be neat and smooth, free of gaps and sags and run continuously. Complete all caulking work and allow to stand for the manufacturer's

recommended time period before painting. Prime if required before finish coat of paint is applied.

3.5 NOTE: Vents penetrating siding shall be adequately “Wood Backed” for plumpness and tight seal, and caulked prior to installation.

3.6 Caulk at floor / GWB gap for air sealing at exterior walls and sound transmission at interior walls.

END OF SECTION

SECTION 08200

DOORS AND FINISH HARDWARE

A. GENERAL:

SCOPE: Furnishing and installing all doors, frames and hardware as called for in the Construction Documents.
NOTE: The Contractor shall submit drawings on every item specified in this section. There shall be no substitutions without a specific written explanation from the subcontractor that the specific item is equal with the item specified by the Architect. All substitutions shall be approved by the Architect and the Owner.

B. PRODUCTS - DOORS

All doors and frames shall be of the material, type and finish as called for on Drawings or in these Specifications. All dimensions shall be as shown by the Door Schedule on Drawings. Doors identified by manufacturer's name and type of brand name may be substituted for others of equal quality only with the approval of the Architect. Doors delivered for installation shall be carefully stored to prevent damage or warping.

FIRE-RATED DOORS: shall be 1-3/4” Cambridge solid core, moulded, smooth panel doors by Jeld Wen distributed by Brosco or equal. Units shall be pre-hung and primed.

NON-RATED DOORS: shall be 1-3/8” Cambridge, moulded, smooth panel doors by Jeld Wen distributed by Brosco or equal, units shall be pre-hung and primed. Doors shall be hollow or solid core as scheduled.

EXTERIOR DOORS: shall be insulated Steel All Panel Exterior Doors – Model 21 (Cambridge two panel style) by Jeld Wen.

1. Exterior Door Flashing: “VycorPlus” self-adhering flashing by W.R. Grace or equal.

ATTIC ACCESS DOOR: shall be “Fire Rated Insulated Access Door with Drywall Flange, Model BA-PFI-GYP, Size 24” x 36” as manufactured by Best Access Doors, www.BestAccessDoors.com.

Install doors after completion of all other work which would raise the moisture content of wood doors or damage door surfaces. Fit, hang and trim as required by the opening so the doors will close and not bind. Solid blocking at hinges and latch required. Provide even clearance of 1/8" at sides and top, 1/4" over thresholds, and 3/4" over floors. See also Section 06100 & 06200 Rough and Finish Carpentry.

Exterior doors shall be insulated core doors with a U value equal to 0.15 or less and air leakage rate of 0.30 cfm/sf or less. All exterior steel doors and frames are thermally broken and comply with the performance standards set forth on page 2 of MaineHousing’s 2013 Quality Standards and Procedures Manual.

C. PRODUCTS - HARDWARE:

NOTE: Hardware finish to be Satin Brass.

Locksets - shall be manufactured by Mark, available through Superior Lock & Key, Portland, ME. Function as scheduled.

Door Closers: At all fire-rated doors install a Super Stock Closer 1460 by LCN, to have hold-open arms delayed action option for handicapped use and adjustable spring power.

Adjustable Door Sweep: Slotted aluminum with brush insert #309 P by Pemko. Install at each exterior door.

Weather-Stripping: Install at each exterior door.

Door Stops: Provide wall or floor stop as appropriate for all swing doors. Wall - Ives 60 (3-3/4") or #62 (4-1/2"). Floor - Ives #430.

Silencers: Provide 3 rubber silencers compatible with door frame materials. Use Ives: # 20 or # 21.

Door Viewer: Schlage #698 Security Viewer at each unit entry door.

Smoke Gasket: Provide at each unit entry door.

Electric Latch Release: Provide electric latch release at doors #1 and #14. Coordinate with Intercom sub-contractor.

D. HARDWARE SUBMITTALS:

Samples: Submit representative samples of all items of finish hardware and finishes for approval of the Architect, upon the Architect's request. Samples shall show the design, material and finish proposed for use.

Hardware Schedule and Keying Chart: Prepare and submit a complete Hardware Schedule for approval of the Architect before any hardware is ordered. After approval of the Hardware Schedule, a key and master key chart shall be submitted to the Architect for the Owner's approval. No changes shall be made to the approved schedule or chart without the written consent of the Architect.

Templates: Provide hardware templates to the various trades and fabricators requiring them, immediately after receipt of approved Hardware Schedule, to assure accurate setting and finish hardware.

Hardware Packing and Marking: Shall have the required screws, bolts, and fastenings necessary for installation in the same package with the hardware, including keys and instructions. Each package shall be legibly marked and adequately labeled, indicating the part of the work for which it is intended. Each marking shall correspond to the number shown on the approved Hardware schedule. Within each packed lockset, keys shall be tagged and plainly marked on the face of the envelope with the key change number, door designation and all other identifying information as required.

Hardware Protection: All wrapping furnished by the manufacturer on knobs, handles and pulls shall be replaced upon the hardware as soon as it is installed and shall remain thereon until the completion of construction.

Key System: All locks shall be made to a two-step master key system. Two change keys shall be furnished for each lock and three master keys. Master keys shall be given directly to the Owner.

END OF SECTION

SECTION 08560

VINYL WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Single Hung New-Construction Type Vinyl Windows with 3 ½"" integral exterior flat vinyl casing and sill nose for vinyl siding.

1.2 RELATED SECTIONS

A. Section 06100: Rough Carpentry.

B. Section 06200: Finish Carpentry.

C. Section 07464: Vinyl Siding.

1.3 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Submit the following documents for each type of window.
1. Manufacturer's technical data, product descriptions and installation guides.
2. Elevation for each style window specified indicating its size, glazing type, muntin type and design.
3. Manufacturer's head, jamb and sill details for each window type specified.

C. Selection Samples: For each finish product specified, a complete set of color chips representing manufacturer's full range of available colors.

D. Verification Samples: Provide operating units of each style window specified.
1. Verification samples may be operating scaled-down mock-ups of actual-size units.
2. Operating hardware such as balances, sash locks and weather-stripping.
3. Verification samples will be returned to manufacturer's representative at project closeout.

E. Test Reports: Submit certified independent testing agency reports indicating window units meet or exceed specified performance requirements.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum ten (10) years producing vinyl (PVC) windows.

B. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size.

C. Source Limitations: Obtain window units from one manufacturer through a single source.

D. Provide window units independently tested and found to be in compliance with ANSI/AAMA/NWWDA 101/I.S.2-97 and current A440-05 performance standards listed above.

E. Specified fenestration with the following characteristics:
   1. Windows shall meet Energy Star (for Northern Climate).
   2. Tempered glazing – per 2009 IBC Section 2406.
   3. Insect screens.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver windows to project site in undamaged condition; handle windows to prevent damage to components and to finishes.

B. Store products in manufacturer's unopened packaging, out of direct sunlight or high temperature locations, until ready for installation.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY

A. Submit manufacturer's standard warranty against defects in workmanship and materials.

PART 2 PRODUCTS

A. Premium Single Hung window by Paradigm or equal.

B. Window Flashing: “VycorPlus” self-adhering flashing by W.R. Grace or equal.

2.2 EXAMINATION

A. Verify rough opening size is of sufficient size to receive window unit and complies with manufacturer's requirements for opening clearances.

B. Verify that sill plate is level.

C. Notify Architect of unacceptable conditions before proceeding with installation.

2.3 INSTALLATION

A. Install window unit in accordance with manufacturer's printed instructions.

B. Apply sealant around perimeter of window unit between nail fin and exterior of wall. Refer to Division 7 Section "Joint Sealants".

C. Install water proofing per Window Detail shown on Drawing A-10a.

D. Install window unit level and plumb. Center window unit in opening and secure window unit by nailing through nail fin and screw through jambs as indicated in manufacturer's instructions.

E. Flash window in accordance with AAMA's "Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction". Flashing: “VycorPlus” self-adhering flashing by W.R. Grace or equal.

2.4 Insulate between window frame and rough opening with spray foam insulation.

2.5 ADJUSTING

A. Adjust units for smooth operation without binding or racking.

B. Adjust sash locks and screens for smooth operation.

2.6 CLEANING

A. Clean soiled surfaces and glass prior to substantial completion.

2.7 PROTECTION

A. Protect window unit from damage until substantial completion. Repair or replace damaged units.

END OF SECTION

SECTION 09250

GYPSUM BOARD

1. GENERAL

1.1 REFERENCES:

A. Drawings and general provisions of Contract, including General Conditions and Division 1 specifications, apply to work in this section.

B. NOTE: Selection of Finish colors to be made by Architect. Contractor to notify Architect prior to commencing Gypsum Board work, to allow adequate time for color selections, Owner's approval and material ordering lead time.

1.2 DESCRIPTION OF WORK: The extent of work shall be as shown on Drawings and called for in these Specifications. Performance shall meet the requirements of these Specifications. The work covered by this section of Specifications consists of the following:

A. Drywall installation as required by Drawings and noted in these Specifications.
B. Taping and finishing all walls and ceilings, except where other kind of finish is specified.
C. At Existing G.B. Ceilings: Existing voids, holes, gaps, etc. in the g.b. ceiling as well as voids, holes, gaps, etc. as a result of demolition shall be taped and finished so as to maintain the integrity of the floor / ceiling assembly fire resistance rating.

2. PRODUCTS

2.1 NOTE: GWB types are shown as U.S.G. brand names “Sheetrock” and “Firecode C”. Substitutions must have equal U.L. and STC ratings. See Drawings for Specific assembly.

2.2 WALLS & CEILINGS: 5/8” thick gypsum board – Sheetrock or Firecode C as indicated on drawings.

2.3 BATHROOM WALLS & CEILINGS: 5/8” thick Type MR gypsum board to be provided at all walls and ceilings in bathrooms.

2.4 LAUNDRY 102 WALLS & CEILINGS: 5/8” thick Type MR gypsum board to be provided at all walls and ceiling.

2.5 JANITOR’S CLOSET 103 WALLS & CEILINGS: 5/8” thick Type MR gypsum board to be provided at all walls and ceiling.

3. EXECUTION

3.1 THE DRYWALL CONTRACTOR shall inspect all areas affected by his work to ascertain that all work is complete and has been accepted. Defective installations shall be corrected before finished surfaces are painted or sprayed with acoustical material.

3.2 DRYWALL INSTALLATION. Install drywall as shown on plans, noted in the UL Specifications, and as set forth in U.S.G. Handbook.

A. Spacing for attachment members shall not exceed 24" o.c. for walls and 16" o.c. for ceilings. All drywall shall be screwed with approved drywall screws made specifically for the purpose and of length adequate for wall types. On walls, screws shall not be placed more than 16" apart for 16" o.c. framing or 12" apart for 24" o.c. framing. Screw all edges 12" o.c. maximum.

B. The drywall contractor may use a few drywall nails to temporarily secure a sheet of drywall before securing with drywall screws. In this event, the drywall nails must be countersunk prior to taping. Corner beads shall be used on all corners and casing beads used whenever Gypsum Board abuts dissimilar material. Caulking to also be applied at these junctions.

C. At all walls, interior and exterior, provide for caulking joint along floor for air sealing and sound transmission by installing GWB 3/8” +/- off the floor.

D. Caulk at floor for air sealing at exterior walls and sound transmission at interior walls.

E. Drywall shall be laid vertically or horizontally. No tapered joints at floor base.

3.3 ON SURFACES TO BE PAINTED: tape and cement all joints and screw locations with three coats of compound, then sand to smooth finish, acceptable to paint.

3.4 DURING WORK PROGRESS, remove all excess materials and debris resulting from operations and after completion leave the premises broom clean.

END OF SECTION

SECTION 09900

PAINTING

1. GENERAL

1.1 DESCRIPTION OF WORK

A. Drawings and general provisions of Contract, including General Conditions and Division 1 specifications, apply to work in this section.

B. The extent of work shall be as shown on Drawings and called for in these Specifications. Performance shall meet the requirements of these Specifications. The work covered by this section of Specifications consists of the following:

1. Painting all interior and exterior surfaces as called for in the Finish Schedule, on Drawings or in these Specifications. Including, but not limited to the following:
    - Painting interior walls, door trim, doors, window trim, etc.
    - Painting all exterior doors as specified.
    - Painting and finishing any other work requiring finishing left unfinished by others.

2. The General Contractor shall anticipate encountering lead painted materials. His Sub-Contractor shall be certified under the Department of Environmental Protection “Lead Renovation, Repair and Painting Rule” and employ the “Work Practices” required by that rule.

3. All colors to be selected by Architect.

4. The number of paint colors selected by the Architect shall not exceed five (5).

1.2 SUBMITTALS

A. Issue submittals in accordance with Section 01300, Submittals.

B. Submit as follows:

1. Manufacturer's data, application instructions, and color chips on all specified products.

2. Paint schedule covering all surfaces to be painted.

3. Provide as maintenance material, a minimum of one gallon of each type and color of paint used on job, in labeled and well-sealed containers, for future touch-up.

Also provide typed list of each type and color of paint used on job, including name of distributor from whom paint may be obtained.

2. PRODUCTS

2.1 General

A. Paint: Acceptable manufacturers, unless specific manufacturer is noted: California Products Corporation, Benjamin Moors, Pratt & Lambert, Sherwin-Williams, Tnemec.

B. All products used shall be manufacturer's top quality product for each type of finish specified.

2.2 MATERIALS

A. Where primer is called for, use primer recommended by manufacturer for particular combination of substrate and finish coat. Where painting over shop-applied primers, verify that finish paint proposed for field application is compatible with shop primers actually used.

B. All Gypsum Walls to be painted:
- Walls – One (1) primer coat and two (2) finish coats. Primer - Benjamin Moore Vinyl Latex Primer Sealer, Finish - Benjamin Moore Moorcraft Latex Eggshell.

C. Exposed softwood woodwork, wood trim and baseboard as noted on Drawings: One (1) coat Primer; two (2) finish coats Semigloss Latex. NOTE: BIN all knots.

D. Wood Door frames, trim, & miscellaneous interior wood trim: Benjamin Moore Wood Primer and two (2) coats Latex Semigloss. NOTE: BIN all knots.

E. Molded Doors: Factory Primed & Two (2) coats Latex Semigloss.

F. Exterior Wood: One (1) coat primer, two (2) coats Latex Semigloss.

G. Steel-Clad Door - exterior and interior faces: Two (2) coats exterior enamel over factory primer. Doors shall be laid flat if sprayed. Doors may be rolled or brushed in place, however with no visible brush marks, drips or imperfections.

H. Brick & CMU Masonry: Two (2) coats exterior elastomeric masonry paint over one (1) coat exterior primer.

3. EXECUTION

3.1 JOB CONDITIONS

A. Store materials in sealed containers. Provide a fire extinguisher in storage room. Remove flammable rags and waste from building at end of day.

B. Do not perform exterior work in rain or when precipitation is forecast imminently; or in hot, dry, or windy weather which would cause finish to cure too rapidly, or be marred by windstorm dust; or at temperatures below 40 degrees F.

C. Maintain temperature at interior locations between 50 and 75 degrees F, maximum 80 percent relative humidity, while paint is being applied. Provide adequate ventilation, by mechanical means if necessary, for drying of paint and prevention of condensation and mildew. Do not apply finish in areas in which dust is being generated.

D. Protect finished surfaces and equipment not being painted with masking tape, canvas drop cloths, polyethylene sheets, etc. Items such as lighting switch covers, fixture canopies, and door handles shall be temporarily removed, carefully stored, and replaced after painting, or carefully covered during painting operations.

E. Allow new masonry to cure for 30 days before painting.

3.2 PREPARATION

A. Preparation of newly-installed materials to receive finish painting is specified under those Sections installing materials. This includes, but is not necessarily limited to: touch-up of damaged shop coats; taping, sealing and sanding of drywall; patching masonry; sanding finish wood; and cleaning off grease, oil, dirt, mildew, factory-applied protective coatings, and other foreign materials.

B. At wood surfaces to be painted, scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

C. Before beginning work under this Section, verify that preparation of substrates under other Sections has been done as specified. Thoroughly remove water, dirt, and dust with clean cloths, brooms, or brushes.

D. At masonry route out and fill cracks greater than 1/16”, scuff sand glossy surfaces.

3.3 APPLICATION

A. Apply all materials in accordance with the manufacturer's recommendations.

B. Apply materials with suitable brushes, rollers, and spraying equipment. Keep application equipment clean, dry, and free from contaminants. Thoroughly stir materials before applying, and periodically during application.

C. Rate and method of application and drying time between coats shall be strictly in accordance with manufacturer's recommendations.

D. Touch-up shop applied primers before field painting.

E. Do not apply first coat until surface is dry to touch. Moisture content of surface shall be within limitations recommended by paint manufacturer.

F. Leave all parts of moldings and ornaments clean and true to detail, without excessive paint in corners and depressions. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping. Paint surfaces visible through grilles one coat flat black.

G. Finish coats shall be smooth, free of brush marks, streaks, laps or pile-up of paint, and skipped or missed areas. Refinish whole wall if unacceptable finish is extensive or of such a nature that it cannot be repaired by normal touch-up.

H. After completion of painting work, remove spilled or spattered paint. Touch-up and repair finishes damaged in any way by work under this Section. Protect finished surfaces.

END OF SECTION

SECTION 13710

SPRINKLER PERFORMANCE SPECIFICATION

PART I. GENERAL

This is a performance specification. It requires performance of design work, preparation and submission of Drawings, procurement of approvals, and provisions for complete functional system of automatic sprinklers. As a result, this Section serves the dual purposes of providing specifications and indicating design criteria for Contractor's use and guidance in designing systems and preparing sprinkler Drawings for approvals.

1.01 SECTION INCLUDES

Provides equipment, material, devices, labor, and supervision necessary to fabricate and erect a Residential Sprinkler System.

1.02 CODES AND REGULATIONS

A. Sprinkler system design, equipment, materials, devices, and installation shall conform to NFPA codes and Requirements of Governmental Bodies and Bureaus as listed below:

1. NFPA -13R
2. Portland, ME Fire Department
3. State of Maine Fire Marshal
4. City Building Department
5. Fire Insurance Rating Bureau
6. IMC and IPC

B. UL and FM Compliance: Fire protection system materials and components shall be Underwriter's Laboratories listed and labeled, and Factory Mutual approved for the application anticipated.

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of

fire protection products of types, materials and sizes required, whose products have been in satisfactory use in similar service for not less than five years.

B. Installer's Qualifications: Firm with at least three years of successful installation experience on projects with fire protection work similar to that required for project.

C. Screw thread connections: comply with Portland, ME Fire Department/Chief requirements for sizes, threading and arrangement of connections for fire department equipment to sprinkler systems.

D. Zone valves: comply with Portland, ME Fire Department/Chief requirements for zone valves.

1.04 TESTS AND CERTIFICATION

A. The sprinkler contractor shall test system in accordance with Chapter 2, of NFPA-13R. Tests shall be conducted in the presence of the authority having jurisdiction and the General Contractor. The Contractor shall have available at the site, a copy of the prescribed test and shall give ample notice as to time for conducting tests.

B. Should any component of the system fail the prescribed test, Contractor shall replace such component with component of increased strength as required to withstand test.

C. Upon completion of installation and test, Contractor shall prepare "Contractor's Material and Test Certificate," as prescribed in Chapter 2, of NFPA-13R. The Certificate shall be signed by Contractor and Engineer/Architect. The Contractor shall furnish copies of the signed Certificate to Authorities with jurisdiction, Owner, Insurance Rating Bureau, and Engineer/Architect.

D. The Fire Protection/Sprinkler Contractor will be responsible for testing and assuring that the facilities water service pressure is adequate for the sprinkler systems proper operation. In the case that it is not will be responsible for providing and installing fire pump pressure boosting equipment as may be necessary.

1.05 WIRING

The Division 16--Contractor shall furnish wiring for signal and alarm devices furnished by Sprinkler Contractor, to interface with the Fire Alarm System. Devices to include tamper switches, flow switches, etc.

1.06 INSTRUCTION

A. Furnish typed instructions relative to sprinkler controls, alarm device operations, and emergency procedures.

B. Instructions shall be encased in a metal frame with glass or Lucite cover and shall be permanently installed next to sprinkler riser main.

1.07 SPRINKLER DESIGN

The wet sprinkler system shall be designed (discharge, number of heads, water demand, coverage, position etc.) as per NFPA -13R.

1.08 SUBMITTALS

A. Product data: Submit manufacturer's technical product data and installation instruction for fire protection materials and products.

B. Shop Drawings: Submit scaled layout Drawings for fire protection pipe and fittings including, but not necessarily limited to, pipe and tube sizes, locations, elevations, and slopes of horizontal runs, wall and floor penetrations, and connections. Indicate interface and spatial relationship between piping and proximate equipment.

C. Approval Drawings and calculations: Submit to the Architect, State Fire Marshal, Fire Chief and all local agencies for approval, water flow test results, hydraulic calculations, and a scaled layout for the fire protection system including, but not limited to, risers, pipe size and lengths, fittings, elevations and slopes of horizontal runs and wall and floor penetrations.

D. Certificate of installation: Submit certification upon completion of fire protection piping work which indicates that work has been tested in accordance with NFPA-13R, and also that system is operational, complete and had no defects.

E. At project close-out, submit record Drawings of installed fire protection piping and products.

F. Submit operating and maintenance data and parts lists for fire protection materials and products. Include this data, product data, shop Drawings, approval Drawings, approval calculations, certificate of installation, and record Drawings in maintenance manual.

PART II. PRODUCTS

2.01 PIPE MATERIAL

A. Underground piping: Class 150 cast iron mechanical joint water main, ANSI A21.6, ANSI A21.11.

B. Interior piping: Black Steel, Schedule 40, ASTM A120 or approved by local code. Schedule 10, ASTI

C. Screwed Fittings: Malleable iron, 175 psi cold water pressure. ANSI B2.1, ANSI B16.3.

D. Flanged fittings: Cast iron, 175 psi cold water pressure, ANSI B16.1

E. Flanged joint: Cast iron flanges, 175 psi cold water pressure. ANSI B16.1.

F. Grooved fittings: Listed combination of fitting gasket, and grooves. Only rolled groove type to be used with Schedule 10 pipe.

2.02 EQUIPMENT

Equipment listed includes, but is not limited to the following. Contractor will be responsible for a complete design and functioning system. Equipment listed herein shall be Grinnell, Viking, Potter Roemer, Reliable, Automatic Sprinkler, Star Sprinkler or engineer approved equivalent

1. Water flow detector alarm device.
3. System and water pressure gauges.
4. Valve drains and test connection.
5. Main shut-off valve, OS&Y pattern gate valve or FM approved butterfly valve. (Additional shut off for domestic water system)
6. Check valves.
8. Fire department connection.
9. Sprinkler heads and spares (3)
10. Underground piping Class 150 cast iron or copper.
11. Interior piping black steel schedule 40 or copper.
12. Zone valves.

2.03 SPRINKLER HEADS

A. Sprinkler heads shall be of the ordinary temperature range 135 to 175°F.

B. All sprinkler heads within a room or area shall be of the same type.

C. All sprinkler heads exposed to view will have a chrome finish.

2.04 SPARE STOCK AND SPRINKLER HEAD CABINET

A. Provide spare stock of sprinkler heads in accordance with NFPA-13R, but in no case less than three of each sprinkler head type and temperature rating.

B. Provide wall mounted sprinkler head cabinets with minimum of six of each type of sprinkler head used, together with required wrenches for replacing heads.

2.05 FIRE DEPARTMENT CONNECTIONS

Polished cast brass, flush wall type with wall escutcheon and two-way connections. Connection sizes shall be 4-inch outlet and two 2 l/2-inch female inlets, having fire department standard threads for the connections size indicated. Each inlet shall have a clapper valve, and plug and chain. Unit shall have wall escutcheon of cast brass, finish to match connections with words “AUTO SPKR--Fire Department Connection.”

2.06 VALVES

A. Sectional: OS&Y gate valves or butterfly valves; UL listed and FM approved.

B. Check: Swing check valves; UL listed.

2.07 WATER FLOW INDICATORS

Vane type water flow detector, rated to 250 psig; designed for horizontal or vertical installation; have 2-SPDT circuit switches to provide isolated alarm and auxiliary contacts, 7 ampere 125 volts AC and 0.25 ampere 24 volts DC; complete with factory-set, field-adjustable retard element to prevent false signals, and tamper proof cover which sends a signal when cover is removed.

2.08 ALARM SYSTEM

A. Install in each zone branch, a water flow indicator of vane-type with automatic reset and instant recycling retard and circuit closer, for connection by the fire alarm contractor.

B. Install on each zone shut-off valve, a tamper switch to indicate whether the valve is open or closed for connection by the fire alarm contractor.

2.09 GAGES

A. Provide gages approved for fire protection systems.

B. Pressure gauges, 0-250 psi range.

2.10 MISCELLANEOUS FIRE PROTECTION SPECIALTIES

Provide miscellaneous fire protection specialties not specified herein, UL listed and NFPA requirements. Miscellaneous fire protection specialties shall be UL listed. Provide sizes and types which mate and match piping and equipment connections.

PART III. EXECUTION

3.01 INSTALLATION

A. General: Comply with requirements of Division 15 sections and NFPA-13R for installation of fire sprinkler piping materials. Install fire sprinkler piping products in accordance with the manufacturer's written instructions, and in accordance with recognized industry practices to insure that fire sprinkler piping complies with requirements and serves intended purposes.

B. Install drain piping at low points of fire sprinkler piping.

C. Identification: Apply signs on drain and test valves to identify their purpose and function.

D. Make connections between under ground and above-ground piping using an approved transition piece strapped or fastened to prevent separation.

E. Install inspector's test connections where indicated, or at most remote point from riser.

F. Install pressure gage on the rise or feed main at or near each test connection. Provide gage with a connection not less than l/4 inch and having a soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gage to permit removal, and where they will not be subject to freezing.

G. Coordinate sprinkler Drawings with the mechanical and electrical Drawings. If drops for sprinkler heads are installed before the lighting, air ducts and air outlets are installed, the sprinkler contractor shall locate the heads so as to avoid interference with such items. Locations for mechanical and electrical items shall have priority over sprinkler piping and head locations.

3.02 SYSTEM DRAINAGE

A. Provide complete system drainage capabilities per NFPA 13R.

B. Pitch piping towards drain valves as required and provide auxiliary drains for trapped piping.

C. Route drainage lines to the floor drains. Drain piping sizes per NFPA-13R requirements. Provide fittings for flushing piping systems as required by NFPA.

3.04 ADJUST AND CLEAN

After fire sprinkler piping installation has been completed and before piping is placed in service, flush sprinkler system, as required to remove foreign substances, under pressure as specified by NFPA-13R. Continue flushing until water is clear, and check to insure that debris has not clogged sprinklers.

3.05 FIELD QUALITY CONTROL

A. Hydrostatic testing: After flushing system, test fire sprinkler piping hydrostatically, for a period of two hours, at not less than 200 psi in excess of maximum static pressure when the maximum static pressure is in excess of 150 psi. Check system for leakage at joints. Measure hydrostatic pressure at low point of each system or zone being tested.

B. Repair or replace piping system as required to eliminate leakage in accordance with NFPA standards for “little or no leakage,” and retest as specified to demonstrate compliance.

C. Instruct Owner’s personnel in the operation, inspection, testing and maintenance of all fire protection systems and equipment specified herein.

END OF SECTION 13710

SECTION 15000

GENERAL REQUIREMENTS FOR MECHANICAL WORK - DESIGN/BUILD

PART I

1.01 GENERAL REQUIREMENTS AND CONDITIONS

These general requirements for mechanical work are complimentary to the "General Conditions" of these specifications. The mechanical contractor shall include the conditions imposed by the "General Conditions" in their bidding. The term "Contractor" used in this section of the specifications shall mean the "mechanical contractor".

1.02 SCOPE

A. The Mechanical Contractor is responsible for providing design documentation of the Mechanical Work proposed – drawings and specifications - meeting the requirements of the Section.

B. The work to be performed at this facility will require installation of all new equipment. Demolition of existing mechanical equipment is involved. The new work shall include but is not limited to the furnishing of equipment, materials, supervision, quality control and labor for the fabrication, installation, start-up and testing for complete heating, ventilation, and plumbing system installation.

C. The Contractor shall examine project site and familiarize himself with all conditions which will affect his work. He shall also review the drawings and specifications of other trades and take note of conditions to be created which will affect his work. All conditions shall be considered in the preparation of bids; no additional compensation will be made on the behalf of this Contractor.

D. Where noted in these specifications, the Contractor for this division shall install equipment furnished by others, and shall make required service connections. Contractor shall verify with the supplier of the equipment the requirements for the installation.

1.03 SYSTEM DESCRIPTION

A. The heating requirements for this facility will be served by a forced hot water radiation system. The hot water will be generated by a high efficiency gas fired boiler vented in plastic.

B. Heating distribution for individual apartment units and common areas will be served by baseboard fin tube radiation with zone thermostats.

C. Bathroom exhaust ventilation will be supplied by individual ceiling exhaust centrifugal fans, vented individually with metal ductwork. All fans to be Energy Star certified and rated for use in 1 hour construction.

D. The kitchens are to be equipped with metal ductwork from the range hood individually vented to the outside.

E. The plumbing system requires basic drainage and domestic water systems for installation of bathrooms, kitchen sinks, laundry, janitor's closet and floor drain. Domestic hot water will be generated by indirect fired water heater with the energy supplied by the boiler system.

F. The following items shall be ADA compliant:
   1. Kitchen sinks and faucets.
   2. Shower enclosures. Roll-in shower enclosure is to include factory installed grab bars. Transfer shower enclosures are to include factory installed reinforcement for field installed grab bars.
   3. Toilets.
   4. Lavatories and faucets in bathrooms.

1.04 SUBMITTALS

Equipment cut sheets and/or shop drawings, along with manufacturers specifications shall be submitted by the Contractor to the Engineer for review on major equipment components.

1.05 MAJOR EQUIPMENT COMPONENTS

All materials shall be the standard product of a reputable manufacturer regularly

engaged in the manufacture of the specific product. All materials of the same type of class shall be the product of one manufacturer. For example, all pumps shall be from the same manufacturer.

1. Gas fired hot water boiler
2. Fin tube baseboard radiation
3. Indirect fired domestic water heaters
4. Exhaust fans
5. Kitchen hood exhaust ductwork
6. Pumps
7. Expansion tank and hot water specialty items
8. Boiler Venting
9. Water and air system balancing
10. Controls

1.06 COORDINATION

A. Coordinate work with that of other trades and adjacent projects to make the proper connection at locations, and at the time the work is ready for the connections to be made.

B. Contractor shall coordinate his work with that of the other trades, so that it may be installed in the most direct and workmanlike manner without hindering or handicapping the other trades.

1.07 CODES AND STANDARDS

A. Conform to 2009 International Building Code and 2009 International Mechanical Code.
B. Plumbing: Conform to 2009 International Plumbing Code and the Americans with Disabilities ACT (ADA).
C. Energy Code: Maine State Commercial Energy Code.
D. ASHRAE--American Society of Heating, Refrigerating and Air Conditioning Engineers.
E. SMACNA--Sheet Metal and Air Conditioning Contractors National Association
F. UL--Underwriters Laboratories, Inc.
G. ANSI -- American National Standards Institute

1.08 PERMITS AND APPROVALS

The Contractor shall obtain all permits, inspections and approvals, as required, by all authorities having jurisdiction. All fees and costs of any nature whatsoever incidental to these permits, inspections and approvals must be assumed and paid by this Contractor.

1.09 PROJECT DRAWING AND SITE CONDITIONS

A. The Mechanical Contractor shall examine the general construction drawings in connection with their work, and shall familiarize himself with all limitations caused by such conditions and take cognizance of same in submitting his bid.

B. The Mechanical Contractor shall visit the site of the proposed work and carefully examine the existing conditions and limitations, and shall include in his bid all costs of any kind which are incurred through limitations of the existing conditions.

1.10 NAMEPLATE DATA

Provide permanent operational data nameplate on each item of power operated mechanical equipment, indicating manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliance, and similar essential data. Locate nameplates in an accessible location.

1.11 ACCESSIBILITY

A. Install equipment and materials to provide required access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.

B. Extend all grease fittings to an accessible location.

1.12 HOISTING, SCAFFOLDING AND TRANSPORTATION

The Contractor shall provide his own hoisting facilities to set his materials and

equipment in place. The Contractor shall also be responsible for any scaffolding and transportation associated with his work.

1.14 DELIVERY AND STORAGE

A. The Contractor shall make his own provisions for the delivery and safe storage of his materials, and shall arrange with other contractors on the job for the introduction into the building of the equipment too large to pass through finished openings. He shall arrange to have materials delivered to the job at such stages of the work as will expedite the work as a whole. Said materials shall be marked and stored in such a manner as to be easily checked or inspected. Where materials are indicated to be furnished by others to the Contractor for installation, this Contractor shall make a complete and careful check of all materials delivered to him and shall furnish a receipt acknowledging acceptance of the delivery and condition of material delivered.

B. After such acceptance, the Contractor shall assume full responsibility for the safekeeping of same until such time as the complete installation has been approved and accepted.

C. Confine the storage of materials to the limits provided by law, ordinances, permits and as elsewhere specified.

1.15 CUTTING AND PATCHING

The Contractor shall notify the General Contractor and other Contractors, in ample time, of the locations and sizes of all chases, sleeves, and any other openings required for passage or concealment of pipes, or for installation of equipment in the building. Any cutting or patching necessary because of neglect of this provision, or any other cutting, shall be done at the direction and expense of the Contractor responsible.

1.16 WATERPROOFING

In any case where a Contractor finds it necessary to cut holes through the waterproofing or exterior walls or floor, he shall waterproof the hole with the same waterproofing materials as were used for the original waterproofing.

1.17 ROUGH-IN

Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

1.18 OWNER FURNISHED EQUIPMENT

This Contractor shall make rough-in connections for Owner furnished equipment. Coordinate final connections with Owner requirements.

1.19 SUPERVISION

A competent foreman or superintendent shall be available at the site to receive instructions and to act for the Contractor.

1.20 ELECTRICAL COORDINATION

A. Division 15 Responsibility

1. Mount all electrical power consuming equipment specified under Division 15; i.e., motors, and pre-wired control panels.

2. The electrical trade shall be responsible for providing only the field wiring and equipment as indicated in the wiring schematics on the electrical Drawings; any other wiring and/or equipment that is required and related to Division 15 work shall be the responsibility of Division 15 trades.

3. Furnish all necessary wiring diagrams, instructions, advice, supervision, materials, labor, etc., as may be necessary to accomplish power wiring.

4. Furnish, install and take responsibility for accuracy and completeness of temperature control wiring, interlock wiring, and any other mechanical equipment wiring not shown on the electrical Drawings.

B. Motor starters, disconnects, etc., not shown on the Electrical Drawings shall be provided with Division 15 equipment and shall comply with Division 16 requirements.

PART II PRODUCTS, EQUIPMENT AND MATERIALS

2.01 PIPE AND PIPE ACCESSORIES

A. Heating water and domestic water piping above grade to be type "L" hard drawn copper or PEX tubing.
B. Heating water and domestic water piping below grade to be type "K" hard drawn copper.
C. Condensate drains shall be PVC schedule 40 or type "L" hard drawn copper.
D. Sanitary waste below grade will be service weight cast iron soil pipe asphalt coated.
E. Sanitary waste and venting above grade will be PVC schedule 40.
F. Fittings, joints, nipples and unions to be of material strength and type appropriate and compatible with the piping material and application per American National Standards Institute (ANSI), American Society of Testing and Materials (ASTM) and all local, state and federal codes.
H. Provide materials, equipment, labor necessary to install all required hangers, supports, sleeves, escutcheons and guards recommended and required by American Society of Mechanical Engineers (ASME), IPC/IMC and local codes.

2.03 BATHROOM EXHAUST FANS (Based on Panasonic)

A. Furnish and install ceiling mounted centrifugal direct drive exhaust fans as shown on the drawing plans with exhaust capacity of 80 cfm.
B. Fan to be Energy Star Rated and UL classified (UL standard 555C).

2.04 BATHROOM EXHAUST FAN CONTROL:

A. The bathroom combination exhaust fan / light will be controlled by a wall switch supplied by the electrical contractor. The fan shall operate continuously – cfm shall be controlled by a humidistat.

2.05 CARTRIDGE CIRCULATORS (based on Taco)

A. The pump casing will be constructed of bronze and have a non-metallic replaceable cartridge type impeller.
B. The shaft will be ceramic and the bearings carbon.
C. The pumps will have a maximum pressure rating of 125 PSI and a temperature rating of 230 deg.
D. This pump will be direct drive with electrical characteristics as called for on the

drawing schedule.

2.06 FINNED TUBE RADIATION (based on Sterling)

A. Furnish and install where shown on the drawings, Sterling KOM-PAK fin tube enclosure and element as described or approved equal of both quality and BTU capacity. ratings are to be I=B=R approved.
B. The enclosure made of a heavy gauge sheet metal and finished with baked beige enamel.
C. The element with be constructed of ¾" copper tubing with 2.25" x 2.5" aluminum fins .011" thick and spaced at 50 per foot.

2.07 APARTMENT BASEBOARD FIN TUBE HEATING CONTROL:

A. The units will be supplied with heating only non-programmable thermostats (Honeywell T-87) which regulates the hot water flow through electric operated control valves.

PART III EXECUTION

3.01 GENERAL

All work by the Contractors shall be in a neat and workmanlike manner and in accordance with the best standards and practices of the trades, and shall present neat, finished appearance when completed.

3.02 GENERAL CLEANING

A. Dirt and refuse resulting from the performance of this work shall be removed from the premises as required to prevent accumulation, and the Contractor shall maintain reasonably clean premises at all time.

B. Immediately prior to final inspection, the Contractor shall make a final Clean up of dirt and refuse resulting from the work and shall make the premises broom clean.

C. Immediately prior to final inspection, the Contractor shall clean all materials and equipment installed under the Contract. Dirt, refuse and stains shall be

removed from all surfaces and damaged finishes restored to original condition.

3.03 TESTING, ADJUSTING AND BALANCING

A. Before completion of this project, the Contractors shall test all materials and equipment which normally require testing. All piping, etc. shall be tested and disinfected to meet code requirements. All equipment shall be operated sufficiently long to prove to the Owner, or his representative, that the equipment performs satisfactorily and meets the requirements set forth in the plans or in these Specifications. Adjustments will be made as required.

B. The water systems shall be completely balanced for proper system function. A system balancing report shall be submitted.

3.04 WARRANTIES

A. Compile and assemble all warranties for equipment specified in Division 15 in vinyl covered three-ring binders, tabulated and indexed for easy reference.

B. Provide complete warranty information for each item. Include product or equipment, date of beginning of warranty or bond, duration of warranty or bond, and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

3.05 GUARANTEE

A All work done, and all equipment and material furnished shall be guaranteed free from defects for a period of one (1) year from the date of acceptance of the entire installation.

B. The guarantees shall be in writing, in a form approved by the Owner, before final payment is made. If parts of the building are accepted before the entire installation is complete, the guarantee date for workmanship, equipment, and material shall begin on the date of beneficial use by the Owner. These dates shall be agreed upon in advance of beneficial use, and shall be in writing.

3.06 RECORD DOCUMENTS

A. Mark Drawings to indicate revisions to piping (size and

location), include locations of heat pumps, energy recovery units, heating coils, dampers and other control devices, filters, and similar equipment requiring periodic maintenance or repair. Show actual equipment locations dimensioned from column lines, actual inverts, concealed equipment dimensioned to column lines, locations of mains and branches of piping systems, numbered valves and control devices, concealed unions, items requiring maintenance (i.e., traps, strainers, expansion compensators, tanks, air vents, etc.), and control system, devices. Mark all change orders on the Drawings.

B. Mark specifications to indicate approved substitutions, change orders, and actual equipment and materials used.

3.07 OPERATION AND MAINTENANCE DATA

The Contractor shall provide the following information in a bound manual:

1. Description of function, normal operating characteristics and limitations performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
4. Servicing instructions and lubrication charts and schedules.
5. Copies of all approved submittals.

END OF SECTION 15000

SECTION 16000

GENERAL REQUIREMENTS FOR ELECTRICAL WORK - DESIGN/BUILD

PART 1:

1.01 WORK INCLUDED

A. In general, the work consists of removing existing equipment and connecting new equipment associated with new power and systems as indicated on the drawings and specifications including the following:

1. The Electrical Contractor is responsible for providing design documentation of the Electrical Work proposed – drawings and specifications - meeting the requirements of this Section.

1.02 QUALITY ASSURANCE

A. All wiring shall be in accordance with the latest issue of the National Electrical Code.

B. Note the following items:

1. Lamps and fixtures must be Energy Star rated.
2. Smoke and carbon monoxide detectors to be both audible and visual and powered from a circuit that includes essential light/device.
3. All circuits to be a minimum of 20 amps.

C. All electrical equipment shall be approved by the Underwriters Laboratories, Inc. Each system shall be products of a single manufacturer of established reputation and experience. The Contractor shall have supplied similar apparatus to comparable installations rendering satisfactory service for at least three years.

D. The Contractor shall guarantee all equipment and wiring free from inherent mechanical or electrical defects for one year from date of acceptance.

1.03 SUBMITTALS

A. Submit (2) copies of manufacturer's literature.

B. Submit (2) copies of floor plans showing the locations of new/relocated switches, outlets, thermostats, etc. Indicate location of fire alarm panel, intercom system, motion sensor lighting controls in common areas.

1.04 PROJECT CONDITIONS

A. Regulatory Requirements: Secure and pay for all permits and certificates as required by local and State laws.

1.05 WARRANTY

A. The Contractor shall guarantee all equipment and wiring free from inherent mechanical or electrical defects for one year from date of acceptance.

1.06 RELATED WORK

A. Division 15 - Mechanical

PART 2:

2.01 PRODUCTS

A. Products are Design/Build.

PART 3: EXECUTION

3.01 INSTALLATION

A. General:

1. All work shall be in accordance with the National Electrical Code requirements as amended to date, with the local electric utility company's rules, the Fire Underwriter's requirements, and all local, State and Federal laws and regulations.

2. Conduits shall be of sizes required by the National Electrical Code. Exposed conduits shall be installed with runs parallel or perpendicular to walls and ceiling, with right-angle turns consisting of bends, fittings, or outlet boxes. No wire shall be installed until work which might cause damage to wires or conduits has been completed. Conduits shall be thoroughly cleaned of water or other foreign matter before wire is installed.

3. All splices shall be mechanically and electrically perfect, using crimp type wire connectors.

6. A typewritten schedule of circuits, approved by the Owner's Representative shall be on the panel directory cards. Type the room numbers and items served on the cards. Three-complete separate copies of all directories, neatly bound, shall be delivered to the Owner's Representative.

7. Revise existing panelboard directories. Furnish new cards as needed.

B. Grounding:

1. The entire electrical system shall be permanently and effectively grounded in accordance with Code requirements.

C. Alterations:

1. The Contractor shall study all drawings and specifications and visit the site and acquaint himself with the existing conditions and the requirements of the plans and specifications. No claim will be recognized for extra compensation due to failure of Contractor to familiarize himself with the conditions and extent of the proposed work.

2. The Electrical Contractor shall execute all alterations, additions, removals, relocations or new work, etc., as indicated or required to provide a complete installation in accordance with the intent of the drawing and specifications.

3. Reconnect existing circuits to remain. Remove existing equipment to be

discontinued.

4. Any existing work disturbed or damaged by the alterations or new work shall be repaired or replaced to the Engineer's satisfaction.

5. Equipment relocated or removed and reinstalled shall be cleaned and repaired to first class condition before reinstallation.

D. Record Drawings: The Contractor shall keep on the job, a set of prints showing any changes to the installation. These shall be given to the Owner at the completion of the work.

E. Testing and Adjusting:

1. The entire installation shall be free from short-circuits and improper grounds.
2. Each individual lighting circuit shall be tested at the panel, and in testing for insulation resistance to ground, the lighting equipment shall be connected for proper operation. In no case shall the insulation resistance be less than that required by the National Electrical Code. Failures shall be corrected in a manner satisfactory to the Architects and Engineers.

END OF SECTION