BID PACKAGE

PART IV

SPECIFICATIONS

DMH Project#2019-061A
Installation of Water-Based Fire Suppression System
391 Varnum Ave.
Lowell, MA 01854
THE COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF HUMAN SERVICES  
DEPARTMENT OF MENTAL HEALTH

SPECIFICATIONS

FOR

INSTALLATION OF WATER-BASED  
FIRE SUPPRESSION SYSTEM  
H. C. SOLOMON MENTAL HEALTH CENTER

AT

397 VARNUM AVENUE  
LOWELL, MASSACHUSETTS

PROJECT 2019-061A

DEPARTMENT OF MENTAL HEALTH  
OFFICE OF ENGINEERING AND FACILITIES MANAGEMENT  
167 LYMAN STREET  
WESTBOROUGH, MA 01581

PREPARED BY: FRED BERGSTROM

REVIEWED BY: JOHN O’DONNELL  
BRIAN KELLEY

DATE: February 20, 2019
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>DIVISION 1</th>
<th>CONTENTS</th>
<th>PAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>011000</td>
<td>SUMMARY OF THE WORK</td>
<td>3 TO 14</td>
</tr>
<tr>
<td>013300</td>
<td>SUBMITTALS</td>
<td>15 TO 17</td>
</tr>
<tr>
<td>015000</td>
<td>TEMPORARY FACILITIES AND CONTROLS</td>
<td>18 TO 20</td>
</tr>
<tr>
<td>016000</td>
<td>PRODUCT REQUIREMENTS</td>
<td>21 TO 22</td>
</tr>
<tr>
<td>017000</td>
<td>CLOSEOUT PROCEDURES</td>
<td>23 TO 24</td>
</tr>
</tbody>
</table>

**DIVISION 2**

| 024119     | SELECTIVE DEMOLITION                         | 25 TO 28 |

**DIVISION 21**

| 211000     | WET-PIPE SPRINKLER SYSTEM                    | 29 TO 43 |
SECTION 011000
SUMMARY OF THE WORK

PART 1 – GENERAL

1.1 CONTRACT REFERENCES

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within Division 1 – GENERAL REQUIREMENTS that are hereby made a part of this Section of the Specifications.

1.2 DEFINITIONS

A. The following terms shall be applicable to these Specifications:

1. **DMH Project Manager**: Refers to Fred Bergstrom, Massachusetts Department of Mental Health, Engineering and Facilities Management, 167 Lyman Street, Westborough, MA 01581. (508) 616-2245.

2. **DMH Site Director**: Refers to Eva Toscano, Massachusetts Department of Mental Health, 397 Varnum Avenue, Lowell, MA 01854. (978) 322-5059.

3. **DMH Facility Manager**: Refers to Brian Kelley, Massachusetts Department of Mental Health, 397 Varnum Avenue, Lowell, MA 01854. (978) 322-5076.

4. **Designer**: EFI Global, Inc. 155 West Street, Suite 6 Wilmington, MA. 01887. Phone: 978-688-3736, 800-659-1202.

5. **Contractor**: Refers to the Contractor who has been awarded the overall contract for the work outlined by the Contract Documents.

6. **Subcontractor**: Refers to any contractor who is working under the direct supervision of the Contractor including but not limited to: electrician, carpenter, painter, and trucking/transport companies.

7. **SITE**: Refers to H.C. Solomon Mental Health Center, 397 Varnum Avenue, Lowell, MA 01854.

B. The terms are provided to facilitate communication but do not supersede the legal definitions provided in the Contract.

1.3 WORK UNDER THIS CONTRACT

A. The work described under this Contract is for the upgrades to the fire suppression system located in the basement of the SITE. The installation, modernization, and refurbishment shall be in conformity with the *International Building Code (IBC), 2015 Edition, the Massachusetts Amendments to the International Building Code 2015, Ninth Edition, 780*
CMR, National Fire Protection Association (NFPA) 13, 20002 Edition and the International Fire Code (IFC), including modifications.

B. Scope of Work - The general scope of work under the bid includes but is not limited to the following:

1. Application of, paying for, and securing any and all permits required from local, state, fire and federal agencies, and other authorities having jurisdiction over construction on the Site, including submitting, revising, and resubmitting all required plans, permits, and notifications.

2. Preparation and submission of project work plan and schedules. The Plan shall include all requirements necessary to keep all facilities open at all times for safe public access and use.

3. Mobilization to the Site including but not limited to establishment of the Contractor’s space within the Building.

4. Establish work area perimeter and dust control measures.

5. Perform required selective demolition, including but not limited to, removal of affected ceiling area, partial existing system in the basement, removal and disposal of materials.

6. Refer to Section 211000, Water Based Fire Suppression System, Sub-section 1.2 Summary, for fully definitive scope of work.

1.4 CONTRACT INTENT

A. The intent of this project is to install and pressure test a new sprinkler infrastructure system that is connected to the existing system. The new system will not include sprinkler heads as final determination of ceiling heights has not been established.

B. Intent of these specifications is to cover selected demolition, installation, testing, inspection, and warranty service complete and operable in every respect as well as standby and access for other contractor’s completion of their work in proximity to the work specified under this Contract. It is not intended to give every detail in specifications. DMH is not responsible for absence of existing equipment or any detail Contractor may require. The Contractor shall furnish all material and equipment usually provided with such system and/or needed to make a complete and safe operating installation, whether specifically mentioned or not, omitting only such parts as are specific exceptions from the specifications.

C. The fire suppression system control equipment will be non-proprietary design and contain materials that will maintain the ease of complete maintenance of all aspects of the system.
1.5 **EXISTING CONDITIONS**

A. The SITE is a two-story structure with a basement. The building was constructed in 1976 and was originally designed and built without a sprinkler system. The Building now is partially sprinkled in the southeast wing of the second floor and a small area of the basement. The existing basement system shall be demolished as indicated on the Drawings.

1.6 **EXAMINATION OF SITE AND DOCUMENTS**

A. A mandatory pre-bid conference will be held at the job site on the date and at the time indicated in the Invitation to Bid.

B. Bidders are expected to examine and to be thoroughly familiar with all contract documents and with the conditions under which the work is to be carried out. The Commonwealth will not be responsible for errors, omissions, and/or charges for extra work arising from the Contractors or Subcontractors failure to familiarize themselves with the contract documents, that he is familiar with the conditions and requirements of both where they require, in any part of the work a given result to be produced, that the contract documents are adequate and he will produce the required results.

1.7 **CONTRACTOR QUALIFICATIONS**

A. The Contractor shall be a Division of Capital Asset Management and Maintenance (DCAMM) certified fire suppression system contractor with a current certification.

B. Within three business days from the bid opening, the apparent low bidder shall submit a certification in writing that it has successfully performed at least three recent (within last three years) projects of similar size, scope, and cost. The apparent low bidder shall submit the following information for each project:

1. Project Description
2. Project Value
3. Date was conducted
4. Reference with contact information for the Owner who was the recipient of the work.

C. It is the Bidder’s responsibility to obtain the necessary forms from DCAMM and make application to DCAMM not less than three weeks prior to advertised bid opening for DCAMM to evaluate the application and issue a Certificate of Eligibility.
D. The Contractor’s Updated Statement is not a public record as defined in M.G.L., Chapter 4, Section 7, and will not be open to public inspection.

1.8 CONTRACT METHOD

A. Work under this Contract shall be lump sum price, for the scopes of work as described in these Specifications.

B. Should additional work be required, the procedures specified in the Contract shall apply.

C. The Massachusetts Standard Labor Wage rates, as included in the Contract exhibits, will be used for base contract work, as well as any change order work.

1.9 SUPERVISION OF THE WORK

A. The Contractor shall be held directly responsible for the correct installation of all work performed under this Contract. The Contractor must make good repair, without expense to the Commonwealth, of any part of the new work, or existing work to remain, which may become inoperative on account of leaving the work unprotected or unsupervised during construction of the system or which may break or give out in any manner by reason of poor workmanship, defective materials or any lack of space to allow for expansion and contraction of the work during the Contractor's warranty period, from the date of final acceptance of the work by DMH.

B. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with his direct work.

1. Training certificates to be submitted on assigned employees prior to commencement of any work or services.

1.10 CONTRACTOR’S USE OF THE PREMISES

A. The Contractor can gain access to the premises during the hours specified below. In addition the Contractor and his personnel will limit themselves to only within the Limits of Work during working hours. If work needs to be scheduled during times other than those listed below, Contractor shall inform the DMH Project Manager one week prior to work and request approval

1. Deliveries: 7:00 am to 8:30 am and after 1:00 pm.
2. General Access: 7:00 am to 4:00 pm.
B. Confine operations at the site to areas permitted by:

1. Laws
2. Ordinances
3. Permits
4. Contract Documents
5. DMH Requirements

C. All on-site workers will be required to wear identifying name badges.

D. The Contractor shall supervise the use of the SITE related to construction and be responsible for correcting any damage identified by DMH to DMH’s satisfaction.

E. An existing conditions survey shall be conducted prior to any work being performed with the DMH Project Manager and the DMH Site Director or their representatives.

F. Existing utilities within the interior Limits of Work will be available for use during construction unless indicated otherwise. These utilities would include water, sewer, and electricity. Temporary connections to these utilities, all metering, transformers, removal, usage, and their associated costs will be the responsibility of the Contractor.

G. All apparatus, storage, and the operation of workmen in connection with activities under this Section shall be confined to the Limits of Work as shown on the Drawings. Storage of project-specific equipment and materials will be permitted on the property upon approval of the DMH Project Manager.

H. All parking regulations shall be observed.

I. All vehicles carrying loose, dry material such as demolition debris, refuse, construction debris, etc., shall be covered by tarpaulins to prevent blowing away or spillage of contents. All spillage of whatever nature shall be promptly taken up and removed.

1.11 COORDINATION

A. The Contractor shall be responsible for the proper fitting of all the work and for the coordination of the operations of all trades, subcontractors or material and men engaged upon the work. The Contractor shall do, or cause his agents to do, all cutting, fitting, adjusting, and repair necessary in order to make the several parts of the work come together properly.
1. Examine Contract Documents in advance of start of construction and identify in writing questions, irregularities or interference to the DMH Project Manager in writing. Failure to identify and address such issues in advance becomes the sole responsibility of the Contractor.

B. Execute the work in an orderly and careful manner with due regard to the occupants of the facility, the public, the employees, and the normal function of the facility.

C. The work sequence shall follow planning and schedule established by the Contractor as approved by the DMH Project Manager. The work shall commence promptly and be executed with full simultaneous progress. Work operations which require the interruption of utilities, service, and access shall be scheduled so as to involve minimum disruption and inconvenience, and to be expedited so as to insure minimum duration of any periods of disruption or inconvenience.

D. The Contractor shall review the tolerances established in the specifications for each type of work and as established by trade organizations. The Contractor shall coordinate the various trades and resolve any conflicts that may exist between trade tolerances without additional cost to DMH. The Contractor shall provide any chipping, leveling, shoring or surveys to ensure that the various materials align.

E. The Contractor shall coordinate all work that impacts the fire suppression and alarm system with the Fire Alarm Company of Record including preparation, demolition, modernization, and testing. Costs associated with the Fire Alarm Company that are directly related to this Contract are to be included in the Contract price.

1.12 REFERENCE STANDARDS

A. For products specified by association or trade standards, comply with requirements for the standard, except where more rigid requirements are specified or are required by codes. Refer to the specific Specification for specific references.

B. Where reference is made in the Contractual Documents to Publications and Standards issued by Associations or Societies, the intent shall be understood to specify the current edition of such Publications or Standards (including tentative revision) in effect on the date of the contract advertisement notwithstanding any reference to a particular date.
1.13 PRECONSTRUCTION CONFERENCE

A. In accordance with Article V of the CONTRACT AND GENERAL CONDITIONS, a pre-construction conference to review the work will be conducted by the DMH Project Manager.

B. Representatives of the following shall be required to attend this conference:

1. DMH Project Manager
2. DMH Site Director
3. Contractor
4. All Subcontractors

C. The Contractor shall have a responsible representative at the pre-construction conference, as well as representatives of field or office forces and major subcontractors. All such representatives shall have authority to act for their respective firms. The pre-construction conference is to be held within five days of Notice to Proceed, or as otherwise determined by DMH.

1.14 WORK BY DMH

A. DMH will provide Site Access

B. DMH will designate parking and staging areas.

C. DMH will provide access to water, electrical, and sanitary facilities. Note that electrical service in the Building is 110 volt2000A, 120/208 Volt Three Phase4-Wire System. If the Contractor requires additional power, the Contractor is responsible to provide the additional power under the base contract fee.

1.15 SUBCONTRACTORS

A. After selection, the successful Bidder shall submit a list of subcontractors proposed for the performance of the Work to DMH for approval. The list shall include the name, address, contact person, and MA tax identification number for each subcontractor.

1.16 PROJECT MEETINGS

A. Project meetings shall be held on a weekly basis and as required subject to the discretion of the DMH Project Manager.
B. As a prerequisite for monthly payments, ordering schedules, shop drawing schedules, and coordination meeting schedules shall be prepared and maintained by the Contractor and shall be revised and updated on a monthly basis, and a copy shall be submitted to the DMH Project Manager.

C. In order to expedite construction progress on this project, the Contractor shall order all materials immediately after the approval of shop drawings and shall obtain a fixed date of delivery to the project site for all materials ordered which shall not impede or otherwise interfere with construction progress. The Contractor shall present a list and written proof of all materials and equipment ordered (through purchase orders). Such list shall be presented at the meetings and shall be continuously updated.

D. Scheduling shall be discussed with all concerned parties, and methods shall be presented by the Contractor which shall reflect construction completion not being deferred or foreshortened. Identify critical long-lead items and other special scheduling requirements. The project schedule is to include time for submission of shop drawing submittals, time for review, and allowance for resubmittal and review.

E. Project meetings shall be chaired by the DMH Project Manager.

F. Minutes of the project meetings shall be prepared by the DMH Project Manager and shall be distributed to all present within 72 hours of the Project Meeting.

1.17 PERMITS, INSPECTION AND TESTING REQUIRED BY GOVERNING AUTHORITIES

A. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having any jurisdiction require any portion of the Work to be inspected, tested, or approved, the Contractor shall give the DMH Project Manager or his/her designated representative, and such Authority timely notice of its readiness so the DMH Project Manager may observe such inspecting, testing, or approval.

B. Prior to the start of construction, the Contractor shall complete application to the applicable Building Code enforcement authority for a Building Permit. Such Permit shall be displayed in a conspicuous location at the project site.

C. Unless otherwise specified under the Sections of the Specifications, the Contractor shall pay such proper and legal fees to public officers and others as may be necessary for the due and faithful performance of the work and which may arise incidental to the fulfilling of this Contract. As
such, all fees, charges and assessments in connection with the above shall be paid by the Contractor.

1.18 CUTTING, CORING, AND PATCHING, UNLESS OTHERWISE INDICATED

A. The Contractor shall do all cutting, coring, fitting and patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of the Subcontractors as indicated in the Specifications.

B. The Contractor shall not endanger any work by cutting and coring or otherwise altering the work and shall not cut or alter the work of any other Subcontractor except with the written consent of the DMH Project Manager.

C. Submit a written request to the DMH Project Manager well in advance of executing any cutting or alteration which affects:

1. Work of DMH or separate contractor.
2. Structural value or integrity of any element of the SITE.
3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
4. Efficiency, operational life, maintenance, or safety of operational elements.
5. Visual qualities of sight-exposed elements.
6. Request shall include:
   a. Identification of the Project.
   b. Description of affected work.
   c. The necessity for cutting, alteration, or excavation.
   d. Effect on work of DMH or any separate contractor, or on structural or weatherproof integrity of SITE.
   e. Description of proposed work:
   f. Alternatives to cutting and patching.
   g. Cost proposal, when applicable.
   h. Written permission of any separate contractor whose work will be affected.
7. Should conditions of Work or the schedule indicate a change of products from original installation, Contractor shall submit request for substitution to the DMH Project Manager.
8. Submit written notice to the DMH Project Manager designating date and time the work will be uncovered a minimum of three business days in advance.
D. Performance:

1. Execute cutting and patching by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.
   a. In general, where mechanical cutting is required, cut work with sawing and grinding tools, not with hammering and chopping tools, core drill openings through concrete work.
   b. Prior to cutting and structural steel or concrete work, contact the DMH Project Manager in writing. Do not cut any structural steel and concrete work until approval has been granted by the DMH Project Manager.

2. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

3. Restore work which has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.

4. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

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

6. Restore exposed finishes of patched areas; and, where necessary extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching.
   a. Where patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch.

7. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
   a. For continuous surfaces, refinish to nearest intersection.
   b. For an assembly, refinish entire unit.

E. Existing Utilities Services:

1. Interruptions to critical existing utility services will not be allowed.

2. The Contractor shall locate and record on Drawings all existing utilities along the course of the work by such means as the DMH Project Manager may approve, and shall preserve such marked locations until the work has progressed to the point where the encountered utility is fully exposed and protected as required. It shall be the Contractor’s responsibility to notify the proper authorities and/or utility company before interfering therewith.

3. All exposed conduits, wires, and/or cables shall be provided with sufficient protection and support to prevent failure, fraying, or damage due to backfilling or other construction operations.
4. The Contractor shall not obstruct access to existing active utility system manholes and catch basins which continue to serve facilities other than the project construction site. The Contractor shall exercise measures as necessary to prevent the placement of impediments that limit continuous access by authorized utility company or DMH maintenance personnel and shall be required to reimburse the utility company or DMH for any expense incurred as a result of need to remove any such impediments to access.

1.19 SECURITY REQUIREMENTS

A. The Contractor shall familiarize himself with DMH’s security requirements and shall abide by and conform to such established regulations at all times. The Contractor shall submit a list of on-site personnel. List shall be kept current by Contractor and a copy kept on-site.

B. Proper identification must be worn at all times.

1.20 SAFETY REQUIREMENTS

A. OSHA Safety and Health Course Documentation Records: Chapter 306 of the Massachusetts Acts of 2004 requires that everyone employed at the jobsite must complete a minimum 10-hour long course in construction safety and health approved by the U.S. Occupational Safety and Health Administration (OSHA) prior to working at the jobsite. Compliance is required for the Contractor’s and subcontractors’ on-site employees at all levels. This requirement does not apply to home-office employees visiting the Site or to suppliers’ employees who are making deliveries.

B. Documentation records shall be initially complied by the Contractor and subcontractors as part of certified payrolls, and the Contractor shall create and maintain a copy of the documentation on-site at all times.

C. The SITE will be occupied during execution of work. Work shall be conducted in a manner to afford maximum protection of building, facilities, employees and the public and to prevent unreasonable delay or interference with normal functioning of the building.

D. Provide fire extinguishers so that they shall be readily available at all times.

E. All accident reports are to be transmitted to the DMH Project Manager within 24 hours of occurrences.
1.21 SUBSTANTIAL COMPLETION

A. Substantial Completion shall be considered to be when the fire suppression system has been inspected and a Certificate of Use has been issued by the State Building Inspector, local Fire Marshal and provided to the DMH Project Manager.

**** END OF SECTION ****
SECTION 013300
SUBMITTALS

PART 1 – GENERAL

1.1 PROVISIONS INCLUDED

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the specification.

1.2 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. The Contractor shall review and submit to the DMH Project Manager, shop drawings and product data required by Specification Section.

B. Shop Drawings:

  1. Original drawings shall be prepared by Contractor, Subcontractor, supplier or distributors, which illustrate some portion of the work; show fabrication, layout, setting or erection details.
     a. Shop drawings shall be prepared by a qualified detailer.
     b. Details shall be identified by reference to sheet and detail number shown.
     c. Maximum sheet size shall be 30 inch by 42 inch.
     d. Reproductions for submittals shall be reproducible with the required number of opaque prints specified herein.

C. Project Data:

  1. Manufacturer’s standard schematic drawings:
     a. Modify drawings to delete information which is not applicable to project.
     b. Supplement standard information to provide additional information applicable to project.

  2. Manufacturer’s catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data:
     a. Clearly mark each copy to identify pertinent materials, products or models.
     b. Show dimensions and clearances required.
     c. Show performance characteristics and capacities.
1.3 CONTRACTORS RESPONSIBILITIES

A. The Contractor shall coordinate each submittal with requirements of work and contract documents.

B. The Contractor’s responsibility for errors and omissions in submittals is not relieved by DMH Project Manager’s review of submittals.

C. Notify DMH Project Manager in writing at time of submission, of deviations in submittals from requirements of contract documents or previous submissions.

D. Work that requires submittals shall not commence unless submittals have DMH Project Manager’s stamp and initials or signature indicating review and approval.

E. After DMH Project Manager’s review, the Contractor shall distribute required copies.

1.4 SUBMISSION REQUIREMENTS:

A. Make submittals promptly and in such sequence as to cause no delay in the work.

B. Submit four (4) opaque copies of shop drawings, and number of copies of product data which the Contractor requires for distribution, plus two (2) copies which will be retained by the DMH Project Manager.

C. Submit number of samples specified in each Specification Section.

D. Forward submittals with transmittal letter.

E. Submittals shall include:
   1. Date and revision date.
   2. Project title.
   3. The names of:
      a. Contractor
      b. Subcontractor
      c. Supplier
      d. Manufacturer
   4. Identification of product or material.
   5. Relation to adjacent structure of materials.
   6. Field dimensions, clearly defined as such.
   7. Specification Section number.
8. Applicable standards, such as ASTM number.
9. A blank space 5 inches by 4 inch, for the DMH Project Manager’s stamp.
10. Identification of deviations from contract document.
11. Contractors stamp, initialized or signed, certifying review and approval of submittals.

1.5 RESUBMISSION REQUIREMENTS

A. Shop Drawings:
   1. Drawings shall be designated approved, approved as noted, revise and resubmit or rejected.
   2. Revise drawings as required and resubmit as specified for previous submittal.
   3. Product Data: Submit new data as required from previous submittals.

1.6 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

A. Distribute copies of shop drawings and project data which display the DMH Project Manager’s written approval to appropriate Subcontractors.

1.7 SCHEDULE OF VALUES

A. Prior to the first request for payment, the Contractor shall submit to the DMH Project Manager, a draft Schedule of Values of the various portions of the work in sufficient detail to reflect various major components of each trade, including quantities when requested, aggregating the total contract sum, and divided so as to facilitate payments for work under each Section.

B. The draft Schedule of Values shall be prepared in such form as specified or as DMH may approve and it shall include data to substantiate its accuracy.

C. Each item in the Schedule of Values shall include its proper share of overhead and profit. This Schedule including breakdown and values requires the approval of DMH and shall be used only as a basis for the Contractor’s request for payment.

**** END OF SECTION ****
SECTION 015000
TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION

A. The Contractor shall be responsible for providing and maintaining temporary construction facilities and controls as specified herein.

1.3 HOISTING EQUIPMENT AND MACHINERY

A. All hoisting equipment and machinery required for the proper and expeditious prosecution and progress of the work shall be furnished, installed, operated and maintained in safe condition by the Contractor for the use of all Subcontractor’s material and/or equipment delivered to the designated hoisting area except that which is specifically required to be provided by the Subcontractors themselves and is so stated in each appropriately related Section of the Specifications. All costs for hoisting operating services shall be borne by the Contractor.

1.4 STAGING AND TEMPORARY LADDERS, RAMPS, RUNWAYS, ETC.

A. All staging, exterior and interior, required to be over eight feet in height, shall be furnished and erected by the Contractor and maintained in safe condition by him without change to, and for the use of all trades as needed by them for proper execution of their work.

1.5 DUST CONTROL

A. The Contractor shall provide adequate means for the purpose of preventing dust caused by construction operations throughout the period of the construction contract.

B. This provision does not supersede any specific requirements for methods of construction or applicable general conditions set forth in the contract articles with added regard to performance obligations of the Contractor.
C. The Contractor shall provide and maintain floor mats at access points to prevent the tracking of dust.

1.6 NOISE CONTROL

A. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum.

B. Execute construction work by methods and by use of equipment which will reduce excess noise.
   1. Equip air compressors with silencers and power equipment with mufflers.

1.7 CLEANING DURING CONSTRUCTION

A. The Contractor shall perform clean-up operations during construction as herein specified.

B. The Contractor shall at all times during the progress of the work, keep the work area and other adjacent areas from accumulation of waste materials or rubbish.

C. Cleaning and removal of waste material and/or rubbish must be performed on a daily basis.

D. Control accumulation of waste materials and rubbish, periodically dispose of off-site. The Contractor shall bear all costs, including fees resulting from such disposal.

E. Store volatile wastes in covered metal containers, and remove from premises.

F. Prevent accumulation of wastes which create hazardous conditions.

G. Provide adequate ventilation during use of volatile or noxious substances.

H. Conduct cleaning and disposal operation to comply with local ordinances and anti-pollution laws.
   1. Do not burn rubbish and waste materials on site.
   2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

I. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
J. Use only those cleaning materials and methods recommended by manufacturer of surface materials to be cleaned.

K. Provide on-site containers for collection of waste materials, debris and rubbish.

L. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas off the construction site.

**** END OF SECTION ****
PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 PRODUCTS

A. Products include material, equipment and systems. Products shall be new, best of their respective kinds and free from defects.

B. Comply with Specifications and referenced standards as a minimum requirement.

C. Components required to be supplied in quantity within a Specification Section shall be the same, and shall be interchangeable.

D. Do not use materials and equipment removed from existing structures, except as specifically required, or allowed, by the contract documents.

E. Materials and equipment of similar application: same manufacturer, except as noted.

F. Secure approval of materials, equipment and installation

1.3 WORKMANSHIP

A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.

B. Perform work by persons qualified to produce workmanship of specified quality.

C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration and racking.
1.4 MANUFACTURER’S INSTRUCTIONS

A. When work is specified to comply with manufacturer’s instructions, submit copies as specified in Section 013300 - SUBMITTALS.

B. Perform work in accordance with details of instructions and specified requirements.

1.5 TRANSPORTATION AND HANDLING

A. Refer to CONTRACT and GENERAL CONDITIONS and Specification Sections for requirements pertaining to transportation and handling of materials and equipment.

B. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer’s unopened containers or packaging, dry.

C. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

D. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct and products are undamaged.

1.6 STORAGE AND PROTECTION

A. Refer to CONTRACT and GENERAL CONDITIONS and Specification Sections for requirements pertaining to storage and protection of materials and equipment.

B. Store products in accordance with manufacturer’s instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer’s instructions.

C. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

D. Arrange storage to provide access for inspection. Periodically inspect to assure that products are undamaged, and are maintained under required conditions.

**** END OF SECTION ****
SECTION 017000
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 FINAL CLEANING

A. Upon completion of the work under this Contract, the Contractor shall leave the SITE ready for use without the need for further cleaning or directly related painting of any kind and with all work in perfect order. The Contractor shall perform final cleaning operations as herein specified prior to final inspection.

B. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.

C. Cleaning shall include all surfaces, interior and exterior in which the Contractor has had access whether existing or new.

D. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

E. Use only those cleaning materials and methods that are recommended by the manufacturer of surface material to be cleaned.

F. Employ experienced workmen or professional cleaners for final cleaning operations.

G. Remove grease, mastic, adhesives, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces.

H. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.

I. In addition, the Contractor shall remove from the SITE, all building rubbish, unused materials belonging to him or used under his direction during construction or impairing the use or appearance of the property and
shall restore such areas affected by the work to their original condition, unless other provisions for completion have been specified.

J. Prior to final completion or DMH Use and Occupancy, the Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.

1.3 PROJECT DOCUMENTS

A. Maintenance Data: The maintenance manual shall describe in detail the purpose and function of all sprinkler system devices and valves. The manual shall also include all necessary inspection, testing and maintenance forms. Include one (1) original, softbound copy of NFPA 25, *Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems*.

B. As-Built Drawings: Showing all field changes from original Working Plans. Submit full-size hard copy and electronic AutoCAD files on compact disk. Coordinate AutoCAD version with DMH at time of submittal.

C. Valve Chart: Provide a drawing on 11-inch x 17-inch paper identifying the location of the control valves for the fire sprinkler system shown on the floor plan of the building. This valve chart shall be framed and permanently installed adjacent to the fire alarm control unit.

1.4 GUARANTEES AND WARRANTIES

A. The Contractor shall submit to the DMH Project Manager all extended guarantees and warranties that have been specified in various, individual Sections of the Specifications.

B. The Contractor shall guarantee to DMH all work installed to be free from any and all defects in workmanship and/or materials and that all apparatus will develop capacities and characteristics specified and that if, during a period of one year from date of certificate of completion and acceptance of work, unless a longer period is specified, any such defects in workmanship, material or performance appear, he will remedy them without cost to DMH.

C. Should Contractor fail to remedy such defects within the agreed length of time, to be specified in notice from DMH, then DMH may have such work performed by another contractor and charge the entire cost to the Contractor.
SECTION 024119
SELECTIVE DEMOLITION

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of the CONTRACT and GENERAL CONDITIONS.

1.2 DESCRIPTION

A. The work includes the removal of existing piping, hangers, sprinklers, and associated components within the Limits of Work. Demolition includes all piping downstream of 4-inch the fire sprinkler main within the renovation area.

B. It is not the intent herein to describe all the items and work required to be removed under this Section. The Contractor shall assure himself that all of the work to be removed, not otherwise specified herein or described under other Sections shall be removed under this Section at no additional cost to the Commonwealth.

C. The Contractor shall also examine other Sections of these Specifications and familiarize himself with their provisions regarding the removal of existing items and work. He shall understand that all items and work not specifically mentioned to be removed by the requirements of other Sections of these Specifications shall be removed as part of the work under this Section.

D. The scope of work consists of material and services to be furnished under this Section, and without limiting the generality thereof, includes labor, equipment and services required for the removal of existing work, special protection and all work incidental thereto as specified herein and as shown on the Drawings.

1.3 RELATED WORK

A. The following work is not included in this Section and is to be performed under the contracted scope of work:
1. Movable items and items of DMH’s equipment in the areas of the existing building affected by the work under this Contract will be removed by DMH.

2. Cutting and core drilling for any possible new sprinkler work will be performed by these respective trades.

3. The patching and repair of ceilings, floors and walls caused by work performed under this scope of work is to be included under these Specifications describing similar construction. The Contractor shall do his utmost to keep such necessary patching and repairing to a minimum.

4. Disconnecting of existing services, as required, will be done by a licensed subcontractor.

1.4 SCHEDULING

A. Before beginning demolition activities, the Contractor shall consult jointly with the DMH Site Director and DMH Project Manager to determine the schedule of work, exact places, times and days during which the demolition work may, or may not be carried on, and to determine further reasonable requirements, particularly in regards to noise prevention, dust prevention, weather protection, and safety precautions.

B. No work shall be started without prior approval of the Facility. The Contractor shall give the DMH Site Director adequate advance notice of his readiness to start such work in order that they may properly rearrange activities or evacuate the spaces to be affected.

1.5 EXAMINATION OF PREMISES

A. The Contractor will be held to have examined the premises before submitting proposals for the work and to have satisfied himself as to the existing conditions under which he will be obliged to operate or that will in any way affect the work.

B. The Contractor is responsible to determine the character and amount of materials and debris to be removed. No allowances will be made in this connection for error or negligence of the Contractor.

1.6 ENCLOSURES

A. Provide temporary partitions as required to separate work areas from DMH’s occupied areas, to prevent penetration of dust and moisture into occupied areas, to prevent damage to existing areas and equipment.
Construction shall be framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces.

B. Provide plastic sheet material and tape to seal HVAC supplies and exhaust. Insure that dust does not enter the ductwork.

1.7 PROTECTION

A. The removal of the designated fire sprinkler system shall be done with utmost care, using tools and methods that will not transfer any heavy shocks to the remaining portions of the existing building. All possible care shall be taken to avoid vibration and other disturbances.

B. When removing materials and making openings in walls, floors, etc., the Contractor shall take all precautions and use whatever protective devices, shoring, guardrails, and the like as may be required to assure that the remaining and adjacent portions of the existing work which is to remain is substantially supported and/or not loaded beyond safe limits.

PART 2 – PRODUCTS

A. Procurement and installation of ceiling tiles is not the responsibility of the Contractor.

PART 3 – EXECUTION

3.1 PREPARATION

A. Before starting the removal of work, the Contractor shall arrange for the disconnection of active utility services in the areas where construction work is to take place. All work on existing utilities shall be accomplished by the respective subcontractor or utility companies having jurisdiction.

3.2 REMOVAL OF EXISTING WORK

A. Removal of the designated existing suppression system.

B. Removal and disposal of existing acoustical or hard ceilings which interfere with the installation of the new fire suppression system.

C. Provide dust protection to contain dust and debris to the work area.

D. Disconnect utilities as required.
3.3 CLEAN-UP

A. At the completion of work, all rubbish, debris, waste, materials, and salvaged materials shall be removed from the site. All tools, scaffolds, apparatus and appliances used in connection with work under this Section shall be removed by the Contractor, and the premises shall be left in clean condition, ready for the alteration work as described under other Sections of these Specifications.

3.4 DISPOSAL OF WORK REMOVED

A. All refuse and debris which accumulates as a result of work under this Section shall be removed. No refuse or debris of any nature shall be allowed to accumulate to the detriment of the work.

B. Remove debris in covered containers on a route designated by the DMH Project Manager.

**** END OF SECTION ****
SECTION 211000
WATER-BASED FIRE-SUPPRESSION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Attention is directed to the CONTRACT and GENERAL CONDITIONS and all Sections within DIVISION 1 – GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of the CONTRACT and GENERAL CONDITIONS.

1.2 SUMMARY

A. The Work includes all labor, materials, tools, transportation, and temporary construction necessary to design, fabricate, install, test and flush fully operational and code compliant automatic wet-pipe fire sprinkler systems for the designated basement area. The Contractor shall hydrostatically test the entire sprinkler/standpipe piping arrangements according to NFPA.

B. The work includes furnishing and installing sprinklers including piping, hangers and other associated components in areas of the building discovered during survey or installation that are not necessarily represented on the design drawings that are required to be provided with sprinkler protection at no additional cost to DMH.

C. The work includes additional fittings not shown on the contract drawings required for the installation of the sprinkler systems.

D. The work includes the connection of the new water flow and valve supervisory switches to the fire alarm system in the building. The Contractor shall be responsible to coordinate these wiring connections with a licensed fire alarm technician/electrician.

E. The work includes modifications to the existing sprinkler mains where indicated on the contract documents. The existing backflow prevention device, riser check valves, and riser assemblies as shown are to remain. Provide new fire sprinkler isolation valves and water flow switches as indicated on the Drawings. The fire department connections and piping shall be flushed and hydrostatically tested in accordance with NFPA 13, 2002 and FM Global Standards. New outlet caps shall be required where necessary.
F. The work includes the installation of test and drain assemblies for each fire sprinkler zone as shown on the Drawings.

G. The work includes relocation of all obstructions to new sprinkler piping. Obstructions include but are not limited to emergency lighting, battery boxes, telecom equipment and wiring.

H. The work includes installation of new zone control valve assemblies as shown. Each zone assembly shall contain at a minimum, a supervised control valve, check valve, inspector's test connection, drain valve, and vane-type water flow switch. See Drawings.

I. The work includes all cutting, drilling, core drilling, etc. to install the fire sprinkler system through the existing walls. Masonry walls shall be core drilled in a professional manner.

J. The work includes firestopping, patching and painting of all penetrations that were made for installation of new sprinkler piping through existing interior and exterior building walls. The firestopping shall be conducted by a manufacturer's trained personnel acceptable to DMH.

K. The work includes submitting detailed working plans, hydraulic calculations and product data to the Designer for review prior to submitting same to local officials for permit. The Contractor shall not fabricate piping, assemble components or begin installation until the Designer has approved the submittal documents.

L. The work includes developing as-built sprinkler plans of the areas of the building where sprinkler protection is currently provided. The plans shall show a minimum of pipe routing and pipe diameter.

M. The work includes identifying to DMH Project Manager and the Designer any observed deficiencies in the existing sprinkler system that may create an immediate threat to the operability of the sprinkler system in that area or in the entire building. Also identify to the Designer any deficiencies that are observed that may be corrected during the construction process where these deficiencies may not satisfy all requirements of NFPA 13 or the manufacturer's installation instructions. The Designer will then determine how to proceed with correcting each deficiency.

N. The work includes performing field quality control and commissioning activities.

O. The work includes documenting and submitting the results of integrity and functional testing.
P. The work includes submitting as-built plans and closeout documentation to the Designer for review prior to scheduling DMH demonstration training.

Q. The work includes training DMH personnel on the operation of the system, required maintenance tasks and frequencies, and the locations of all spare tools and equipment, valves, flow switches, risers and equipment necessary to maintain and operate the sprinkler system.

1.3 PERFORMANCE REQUIREMENTS

A. Wet-pipe, hydraulically calculated automatic fire sprinkler systems shall be installed within the Limits of Work and connected to the existing automatic sprinkler system. System shall be designed and installed to State and NFPA requirements.

B. Water Flow Test Data

1. A hydrant flow test has been conducted by the Engineer as indicated on the Drawings. The Contractor shall conduct a new test with no additional cost to DMH prior to developing shop drawings.

C. Pipe sizes for piping downstream and including floor control assemblies shall be determined by hydraulic calculations in accordance with NFPA 13. Verify that field modifications to the systems which require the addition of fittings and pipe do not affect the hydraulic demand of the automatic fire sprinkler systems.

1. If, given the available water supply as indicated on the drawings, the automatic fire sprinkler system cannot be installed in compliance with this specification and the applicable codes and standards, provide a report to the Owner documenting the design options that have been investigated. Additionally, copies of the hydraulic calculations, which demonstrate the inability of the water distribution system to supply the necessary water for the sprinkler system demand, shall be submitted for each option.

1.4 ORDER OF PRECEDENCE

A. Should conflicts arise out of discrepancies between documents referenced in this specification, the most stringent requirement shall apply; however, should a level of stringency be indeterminable, the discrepancies shall be resolved as follows:

1. State and local codes shall take precedence over this specification.
2. The National Fire Protection Association Standards shall take precedence over this specification.
3. This specification shall take precedence over the drawings.

1.5 SUBMITTALS

A. Pre-Installation Documentation: Absolutely no work or material fabrication shall be conducted prior to submittal and approval by the Designer.

1. Product Data: For each product specified in Part 2. Submittal shall indicate listing and approvals, selected options, finishes, etc. and electrical characteristics.
2. Working Plans: Minimum 1/8”=1’-0” scale inclusive of information required by NFPA 13-2002 requirements.
3. Electronic Working Plans: Minimum 1/8”=1’-0” scale inclusive of information required by NFPA 13 requirements. The electronic versions of the hard-copy plans shall be submitted on compact disks in PDF format.

B. Acceptance Documentation:

1. Field Test Reports and Certificates (Aboveground): Completed NFPA 13 "Contractor's Material and Test Certificate for Aboveground Piping" including dates of successful hydrostatic tests, functional waterfront tests, and other fire alarm supervisory tests. Tests and documents shall be witnessed and countersigned by the Engineer. Annotate portions of the Certificate form that do not apply to the project as “not applicable”. Make submittal after commissioning and prior to acceptance testing.
2. Testing documentation of the backflow prevention devices.
3. Statement of Completion: Upon completion of the installation of the automatic sprinkler system, a signed written statement, substantially in the form as follows:
   a. “The undersigned, having been engaged as the Sprinkler Contractor for the automatic sprinkler systems for HC Solomon Building, Lowell Massachusetts, confirms that the automatic fire sprinkler system equipment was installed in accordance with the diagrams, instructions, directions, and technical specifications provided to us by the Designer and Manufacturer.”
1.6 QUALITY ASSURANCE

A. Equipment and devices shall be labeled and listed for the intended use in the most recent Underwriters Laboratories, Inc. (UL), UL FPED Fire Protection Equipment Directory and most recent FM Global Approval Guide.

B. Electrical components, devices, and accessories shall be Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

C. All materials and equipment shall be new and unused.

D. All equipment shall be first quality and capable of complying with all requirements of this specification and shall have been in continuous production and in service in commercial applications for at least one year. Obsolete equipment shall not be used.

E. Installer Qualifications:

1. Licensed in the State of Massachusetts and experienced in the installation of automatic fire sprinkler systems in buildings similar to the Work described herein and has obtained design and inspection approvals for similar projects from authorities having jurisdiction.

2. Foreman: Provide proof of competence of both their company and the individual foreman that will be assigned to this project, in the area of installing automatic fire sprinkler systems for at least five (5) years and acceptable to DMH. Once assigned, the foreman shall not be changed without the approval of DMH.

F. The automatic fire sprinkler systems shall comply with all applicable state and local codes, including the Massachusetts State Building Code (MSBC).

G. Products, installation and testing shall be in accordance with the applicable provisions of the following as referenced by the MSBC:


2. NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances.


4. NFPA 70, National Electrical Code.

5. NFPA 72, National Fire Alarm Code.

1.7 COORDINATION

A. Coordinate sprinkler location and installation with existing conditions and other portions of the Work to ensure sprinkler locations are at the highest possible elevations and generally located to minimize the risk of mechanical damage.

B. Coordinate sprinkler installation with existing conditions and other portions of the Work to comply with NFPA 13 requirements for obstruction to sprinkler discharge.

C. Coordinate pipe installation with existing conditions and other portions of the Work to facilitate suspended ceiling installation, proper pitch and accessibility for components installed.

D. Coordinate with the Fire Alarm portion of the Work for the connection and testing of waterflow, pressure and valve supervisory switches.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the requirements of this section, product selection shall be limited to those offered by manufacturers included in the “Available Manufacturer” lists in each Part 2 article. Substitution of the products listed requires approval by the Designer in writing prior to installation.

B. Where lists are not indicated, products, subject to compliance with the requirements of this section, may be obtained from an approved domestic manufacturer.

2.2 PIPE AND TUBE


2.3 PIPE AND TUBE FITTINGS

A. Cast-Iron Threaded Fittings: ASME B16.4; Class 125 or Class 250 pattern as required by application.

B. Malleable-Iron Threaded Fittings: ASME B16.3; ASME B16.4; Class 125 or Class 250 pattern as required by application.

C. Steel Threaded Couplings: ASTM A865; ASME B16.4; Class 125 or Class 250 pattern as required by application.

D. Steel Welding Fittings: ASTM A234/A 234M, ASME B16.9, or ASME B16.11; 300-psi pressure rating.

E. Cast-Iron Threaded Flanges: ASME B16.1; ASME B16.4; Class 125 plain face or Class 250 raised face pattern as required by application.

F. Steel Flanges and Flanged Fittings: ASME B16.5; ASME B16.4; Class 125 plain-face or Class 250 raised face pattern as required by application.

G. Flange Gaskets and Bolts
   1. Plain-face Flanges: ASME B18.2.2 heavy-series hex-nuts and ASME B18.22.1 plain washers with ASME B16.21 1/8” full-face rubber gasket.

H. Mechanical Grooved-End Fittings:
   1. Assembly Pressure Rating: 300-psi
   2. Fittings and Couplings: UL 213; ASTM A536 ductile iron body.
   3. Couplings: UL 213; ASTM A536 ductile iron rigid or flexible pattern as required by application.
   4. Gaskets and Bolts: Pre-lubricated EPDM gaskets with ASTM A183 zinc-plated nuts and bolts. Tri-seal grade E-EPDM gaskets shall be used for dry sprinkler system grooved fittings.
   5. Available Manufacturers
      a. Grinnell Co.
      b. Victaulic Fire Protection, Inc.

2.4 VALVES

A. General: Minimum 175-psig (1200-kPa) non-shock working-pressure rating unless higher pressure rating is required by application or otherwise
indicated. Valves for grooved-end pipe may be furnished with grooved ends instead of flanged ends.

B. Gate Valves; NPS 2 (DN50) and Smaller: UL 262; cast-bronze, threaded ends; solid wedge; OS&Y; and pre-grooved rising stem. NPS 2-1/2 (DN65) and Larger: UL 262, iron body, bronze mounted, tapered wedge, OS&Y, and pre-grooved rising stem. Include replaceable, bronze, wedge facing rings and flanged ends.

1. Available Manufacturers
   a. McWane, Inc; Kennedy Valve Div.
   b. Mueller Co.
   c. NIBCO Inc.
   d. Stockham Valves & Fittings

D. Swing Check Valves; NPS 2 (DN50) and Smaller: UL 312; cast-bronze, threaded ends. NPS 2-1/2 (DN65) and Larger: UL 312, cast-iron body and bolted cap, with bronze disc or cast-iron disc with bronze-disc ring and flanged ends.

1. Available Manufacturers
   a. Grinnell Corp.
   b. McWane, Inc; Kennedy Valve Div.
   c. Mueller Co.
   d. NIBCO Inc.
   e. Stockham Valves & Fittings
   f. Victaulic Co.
   g. Viking Corp.

E. Indicating Valves; NPS 2 (DN65) and Smaller: UL 1091; butterfly or ball-type, bronze body with threaded ends; and integral indicating device and pre-wired supervisory switch. NPS 2-1/2 (DN65) and Larger: UL 1091; butterfly-type, ductile-iron body with grooved ends; and integral indicating device and pre-wired supervisory switch.

1. Available Manufacturers
   a. Tyco SimplexGrinnell Co.
   b. Milwaukee Valve Co.
   c. Reliable Sprinkler Co.
   d. Victaulic Co.
   e. Viking Corp.

F. Ball Drip Valves: UL 1726, automatic drain valve, NPS 3/4 (DN20), ball check device with threaded ends.
2.5 FIRE ALARM MONITORING DEVICES

A. General: NEMA enclosure suitable for intended application; include tamper resistant cover with switch that transmits signal upon removal of cover; 250-psi (1752-kPa) pressure rating; two sets, single-pole double-throw form ‘C’ contacts.

B. Water-Flow Indicators: UL 346 vane-type with field adjustable 0-90 second retard feature.

C. Valve Supervisory Switches: UL 753 with normally closed contacts and compatible with valve stem to be monitored.

D. Pressure Switches: UL 753 field adjustable and configured to allow for function as either a waterflow indicator upon pressure increase or as a low-pressure indicator upon pressure decrease.

E. Available Manufacturers

2. Potter Electric Signal Co.

2.6 PIPE SLEEVES

A. General: Provide pipe sleeves where piping passes entirely through walls, floors and partitions. Secure sleeves in position during construction. Provide sleeves of sufficient length to pass through entire thickness of walls and floors. Provide 1 inch minimum clearance between exterior of piping and interior of sleeve or core-drilled hole. Firmly pack space with mineral wool insulation. Seal space at both ends of the sleeve or core-drilled hole with plastic waterproof cement, which will dry to a firm but pliable mass, or provide a mechanically adjustable segmented elastomeric material. Penetrations of fire-rated barriers, wall and floor assemblies shall be sealed with a listed through penetration fire stop- ping assembly.

1. Sleeves in Masonry and Concrete Walls: Provide hot-dip galvanized steel, ductile-iron, or cast-iron sleeves. Core-drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.

2.7 PRESSURE GAGES

A. Water Pressure Gages: UL 393, 3-1/2- to 4-1/2-inch- (90- to 115-mm-) diameter dial with dial range of 0 to 250 psig (0 to 1725 kPa).
PART 3 EXECUTION

3.1 EXAMINATION

A. Coordinate examinations with the Engineer and DMH Project Manager.

B. Examine and verify actual locations of risers, mains and branch line piping prior to preparing pre-installation submittal.

C. Examine and verify points of connection to existing system components.

D. Examine walls and partitions for suitable thickness, fire- and smoke-rated construction, framing and other conditions where pipes, risers and cross-mains are to be installed prior to preparing pre-installation submittal.

E. Promptly report conflicts with proposed solutions.

3.2 PREPARATION

A. Prepare and submit a minimum of six (6) complete three ring bound “Pre-Installation Documentation” submittal packages to the Designer for review prior to submitting same to local officials for approval and permit. Resubmit portions or entirety of submittal to address Engineer comments prior to submitting package to local officials for approval and permit. See Part 1 “Submittals” for submittal content.

B. Obtain authority approval and permits with reviewed “Pre-Installation Documentation” submittal package.

3.3 PIPING APPLICATIONS

A. Use the following for wet-pipe system piping:

1. NPS 6 (DN150) to NPS 2.5 (DN65): Schedule 10 steel pipe with roll grooved ends; steel, grooved-end fittings with rubber gaskets; and grooved joint couplings.

2. NPS 2 (DN50) and Smaller: Schedule 40 steel pipe with threaded ends, cast- or malleable-iron threaded fittings, and threaded joints.

B. Branch Line Connections to Cross Mains shall be shop welded or cast- or malleable-iron threaded fittings, and threaded joints. Mechanical tees and crosses are not permitted.
3.4 PIPING INSTALLATION

A. Refer to manufacturer’s specifications and NFPA 13-2002 for basic piping installation.

B. Where shown to install exposed piping in normally occupied areas as tight to ceiling as possible. Rise with elbows in series as necessary to adjust final height of piping. Cut hanger rods to length that allows nuts to be tightened flush with ceiling and leaves band hangers at the highest elevation possible.

C. Use approved fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes. Additional fittings not shown on the contract drawings but required for the installation of the sprinkler systems shall be provided and installed at no additional cost to the owner.

D. Install unions adjacent to each valve in pipes NPS 2 (DN50) and smaller. Unions are not required on flanged devices or in piping installations using grooved joints.

E. Install flanges or flange adapters on valves, apparatus, and equipment having NPS 2-1/2 (DN65) and larger connections.

F. Install sprinkler piping with drains for complete system drainage. All drain piping shall be routed to a location approved by the Designer.

G. Install "Inspector's Test Connections" in sprinkler piping, complete with shutoff valve, sized and located according to NFPA 13. The outlet shall discharge to the exterior of the building.

H. Install alarm devices in piping systems.

I. Hangers and Supports: Install according to NFPA 13 for sprinkler piping.

J. Seismic Restraint: Restrain new piping according to NFPA 13 requirements for protection against earthquake damage.

K. Install piping with grooved joints according to manufacturer's written instructions. Construct rigid piping joints, unless otherwise required by NFPA 13-2002 for protection against Earthquake damage through masonry penetrations. Provide flexible couplings on piping penetrating rigid walls (i.e. masonry walls), within 1-foot on each side of the penetration.

L. Install pressure gages on riser or feed main, at each sprinkler test connection and on both sides of every check valve. Include pressure gages
with connection not less than NPS ¼ (DN8) and with soft metal seated 3-way valve, plugged at one end and arranged for draining pipe between gage and valve. Install gages to permit removal, and install where they will not be subject to freezing.

M. Welded joints shall not be used with galvanized steel pipe.

N. Flanges, unions, and transition and special fittings with pressure ratings the same as or higher than the systems pressure rating may be used in aboveground applications, unless otherwise indicated.

3.5 JOINT CONSTRUCTION

A. Refer to manufacturer’s specifications for basic piping joint construction.

B. Steel-Piping, Grooved Joints: Use Schedule 40 steel pipe with threaded ends or Schedule 10 steel pipe with roll-grooved ends; steel, grooved-end fittings; and groove couplings. Assemble joints with couplings, gaskets, lubricant, and bolts according to manufacturer's written instructions.

C. Dissimilar-Piping-Material Joints: Construct joints using adapters or couplings compatible with both piping materials. Use dielectric fittings if both piping materials are metal.

D. Refer to Manufacturer’s specifications for grooved pipe fittings, pipe-flange gasket materials and welding filler metals.

E. Joint compound or tape shall be applied to male pipe threads only for all threaded joints.

F. Transition Couplings: AWWA C219, sleeve type, or other manufactured fitting the same size as, with pressure rating at least equal to, and with ends compatible with piping to be joined.

3.6 VALVE APPLICATIONS

A. Drawings indicate valve types to be used.

3.7 VALVE INSTALLATION

A. Install valves in accessible locations with indicators clearly visible from floor level.
3.8 FIRE ALARM MONITORING DEVICE INSTALLATION

A. Install water flow, pressure and valve supervisory switches to be connected by the Fire Alarm portion of the Work.

B. Adjust retard feature of “zone” water flow indicating switches to 35 seconds.

C. Adjust retard feature of “main” water flow indicating switches to 45 seconds.

3.9 EXTERIOR WALL PENETRATIONS

A. All exterior wall penetrations for drain piping and fire department connections shall be water tight sealed.

3.10 LABELING AND IDENTIFICATION

A. Install labeling, signs and pipe markers on valves, equipment and piping in accordance with NFPA 13.

B. Signs and label styles and locations shall be coordinated with and approved by the Designer and the authorities having jurisdiction prior to installation.

C. Install hydraulic design information sign on the “main system riser”.

3.11 FIELD QUALITY CONTROL

A. Perform hydrostatic test of entire sprinkler system and inspect sprinkler piping according to NFPA 13, "System Acceptance". Coordinate hydrostatic test date(s) and time(s) with the Designer and DMH Project Manager.

1. Replace piping system components that do not pass test procedures and retest to demonstrate compliance. Repeat procedure until satisfactory results are obtained.

2. Use the NFPA 13 "Contractor's Material and Test Certificate for Aboveground Piping" to document the hydrostatic test results. Prepare a separate form for each sprinkler zone. Obtain dated signature from Designer for each test. Tests that are not witnessed must be repeated.
3.12 COMMISSIONING

A. Verify that specialty valves, trim, fittings, controls, and accessories are installed and operate correctly.

B. Verify that specified tests of piping are complete.

C. Verify that potable-water supplies have correct types of backflow prevention devices and have been tested.

D. Verify that labeling, identification and signage is installed.

E. Energize circuits to electrical equipment and devices.

G. Coordinate with fire alarm pre-acceptance tests. Operate as required.
   1. Use the NFPA 13 “Contractor's Material and Test Certificate for Aboveground Piping" to document the water flow switch activation times and other functional test results. Obtain dated signature from Owner's designee for each test. Tests that are not witnessed must be repeated. Use common form for each zone that indicates results of previous hydrostatic testing and fire alarm functional tests.

3.13 CLEANING AND PROTECTION

A. Clean dirt and debris from pipes.

B. Wipe all excess pipe joint compounds from threaded pipe joints.

C. Wipe all excess oil from the exterior surface of sprinkler mains and branch line pipes.

3.14 AUTHORITY HAVING JURISDICTION FINAL SYSTEM ACCEPTANCE

A. Prepare and submit a minimum of six (6) complete three ring bound “Approval Documentation” submittal packages to the Designer for review prior to submitting same to local officials for final system approval. Resubmit portions or entirety of submittal to address Designer comments prior to submitting package to local officials. See Part 1 “Submittals” for submittal content.

B. Submit reviewed “Approval Documentation” submittal package to authority and coordinate scheduling of common fire sprinkler and fire alarm system acceptance testing.
C. Coordinate with fire alarm portion of final acceptance tests. Operate as required. Demonstrate system components to authority having jurisdiction as necessary.

3.15 PROJECT CLOSEOUT PROCEDURES

A. Prepare and submit a minimum of six (6) three ring bound closeout documentation packages to the DMH Project Manager for review prior to scheduling DMH Facility Manager demonstration and training. Resubmit portions or entirety of submittal to address DMH Project Manager comments prior to scheduling demonstration and training. See Part 1 “Submittals” for submittal content.

B. Schedule DMH Facility Manager demonstration and training with the DMH Project Manager. Provide at least five (5) working days’ notice.

C. Demonstrate equipment, specialties, and accessories with the DMH Facility Manager and the DMH Project Manager. Review operating and maintenance information with the DMH Facility Manager and the DMH Project Manager.

*****END OF SECTION*****