

## SECTION 21 00 00 – FIRE PROTECTION GENERAL PROVISIONS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions) and Division 00 and 01 as appropriate, apply to the Work specified in this Section.
- B. Refer to all Sections, as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding all work.

#### 1.2 SYSTEM DESCRIPTION

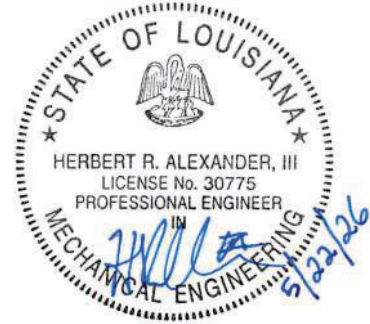
- A. Fire protection system shall be a system employing automatic sprinkler heads attached to a piping system containing water and connected to an adequate water supply so that water discharges immediately from the sprinklers opened by fire.
- B. The fire protection system shall be the following:
  - 1. Standard-Pressure Sprinkler Piping: Automatic Wet-Pipe and Dry-Pipe sprinkler system piping designed to operate at a working pressure of 175-psig maximum.
- C. The fire protection system shall be monitored by a fire alarm system.

#### 1.3 DEFINITIONS

- A. Working Plans as used in this Section means those documents (including drawings and calculations) prepared pursuant to the requirements contained in NFPA 13 for obtaining approval of the authority having jurisdiction (AHJ).
- B. Pipe sizes used in this Specification are Nominal Pipe Size (NPS).
- C. Refer to NFPA Standard 13 for additional definitions for fire protection systems.

#### 1.4 SCOPE OF WORK

- A. Furnish all materials, labor, tools, equipment and working plans necessary to install and place into operation the complete fire protection portion of this Contract as called for on the accompanying drawings and as specified herein.
- B. Interlock the fire protection system with the fire alarm system monitoring. If there is no fire alarm being provided under work of Division 26 – Electrical, this contractor shall provide a fire alarm communicator panel in the vicinity of the sprinkler entry riser. Contractor shall interlock the supervised valves (Post indicator valve, OS&Y valves, tamper switch(es), flow switch(es), etc.) with the communicator panel. The contractor shall provide a phone line to the communicator panel. Contractor shall provide one year of monitoring. Contractor shall coordinate turn-over of the monitoring service with the owner. Contractor shall provide a



- complete and operable system as per specifications.
- C. Prior to start of the working plans of the fire protection system, the contractor shall coordinate and complete the "Owner's Information Certificate" form required by the State Fire Marshal. The form can be found at the State Fire Marshal's website <http://sfm.dps.louisiana.gov>. The form shall identify special occupancies and commodity classifications and shall be given to the fire protection system designer before the start of design.
  - D. Contractor shall refer to the Architectural and Structural drawings and install equipment, piping, etc. to meet building and space requirements. No equipment shall be bid on or submitted for approval if it will not fit in the space provided.
  - E. It is the intention of these specifications that all fire protection systems shall be furnished complete with all necessary valves, controls, insulation, piping devices, equipment, etc. necessary to provide a satisfactory installation that is complete and in good working order.
  - F. Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the Contractor from the responsibility of installing his work to meet the conditions.
  - G. This Contractor shall protect the entire system and all parts thereof from injury throughout the project and up to acceptance of the work. Failure to do so shall be sufficient cause for the Architect to reject any piece of equipment.
  - H. Contractor shall include in the bid all offsets required in order to avoid conflict with ductwork, lights, grilles, structure, water lines, cable trays, conduits, etc. Offsets shall be made above intersecting ducts or pipes in order to minimize trapping of water.
  - I. Coordinate installation of piping with other trades to assure that the piping can fit in the space provided. In general, the sprinkler piping shall be run at maximum height above the finished floor or between joists in order to minimize conflict with other trades. Obtain latest plan of Architectural, Mechanical, Plumbing, Structural and Electrical before preparing finished drawings.
  - J. Contractor shall obtain the latest flow data from the local utility water company and assure prior to bid that adequate water pressures and flow are available for the system intended to be provided.

#### 1.5 DEMOLITION

- A. The contractor shall visit the site prior to bid to determine the extent of work required to complete the project.
- B. Contractor shall coordinate demolition with owner. All equipment shall be salvaged for owner. Locate equipment as directed by owner. All equipment and materials not salvaged by the owner shall be removed from the site and discarded at the contractor's expense in a lawful manner.
- C. Contractor shall coordinate all work with general contractor and phase work as required by project.

- D. All equipment piping, etc. required to be removed to accommodate the modifications shall be removed.
- E. Contractor shall maintain services to existing facilities which shall remain during and after construction is complete.
- F. Contractor shall coordinate any shutdown of services with the owner. It is intended that the building will remain occupied during construction. Contractor shall schedule shut down of services with the owner in order to prevent disruption of building occupancy.
- G. Contractor shall be responsible for draining down of existing systems to complete demolition. All work shall be scheduled with the owner. Contractor shall also be responsible for refilling system and removing all air in order to return the systems to proper operating conditions.

#### 1.6 BIDDING REQUIREMENTS AND RESPONSIBILITIES

- A. Each bidder shall be licensed to perform sprinkler work in the State of Louisiana and shall be recognized by the Property Insurance Association of Louisiana as a reliable sprinkler contractor.
- B. Prime bidder is responsible for all work, of all trades and sub-contractors bidding this project. It is the prime bidder's responsibility, prior to submitting a bid to ensure that sub-contractors coordinate all aspects of the work between trades, sub-contractors, etc. to the fullest extent possible.
- C. Prime bidder shall ensure that all sub-contractors, suppliers, equipment vendors, etc., obtain all necessary and pertinent contract document information pertaining to their work prior to the submission of a bid. Contractor shall realize that different sub-contractors may furnish equipment, accessories, devices, etc. necessary for a complete and working installation require provisions of services by another sub-contractor or trade.
- D. Bidders of all or any portions of this section or division are required to review all contract documents including but not limited to Architectural drawings, Structural drawings, Mechanical drawings, Plumbing drawings, Electrical drawings, etc. to coordinate requirements and responsibilities with and through prime bidder.
- E. Bidders of all or any portions of this section or division, by furnishing a bid on a portion of the prime contract are indicating that they have received all contract documents and coordinated services provided under their portion of the work with the prime bidder; they are indicating that they have expressed any pertinent questions (which would result from a detailed, thorough review of the entire set of contract documents) to the prime bidder in accordance with Division 00 & 01 requirements, prior to bidding.
- F. All timely, pertinent, questions provided in writing prior to bids, in accordance with Division 00 & 01 requirements, will be clarified, defined, or otherwise explained in a written addendum and/or addendums prior to bids, in accordance in Division 00 & 01 requirements.
- G. It is not the intention of these contract documents to leave any issue relating to coordination between trades or sub-contractors vaguely defined. The intention is to define all issues,

coordination matters, equipment requirements, sizes, routing, etc. to the satisfaction of the prime bidder, prior to receipt of bids.

- H. Bidders of all or any portions of this section or division, by virtue of the submission of a bid to the prime bidder, are indicating that they have reviewed the entire set of contract documents with due diligence and regard for the Owner's desire for a comprehensive and complete bid proposal; that they have expressed all concerns or questions requiring clarification on matters of coordination between trades and/or sub-contractors; that they have expressed any such concerns or questions in writing in accordance with Division 00 & 01 requirements.
- I. Prime bidders, by submission of a comprehensive bid on the project are indicating that the subcontractors selected in their bid have complied with all Division 00 & 01 requirements, that they have indicated in writing, prior to bidding, all questions or concerns requiring clarification and/or explanation and have documented any and all specific exclusions involving work that would generally be considered to be work of their trade.
- J. The prime bidder shall coordinate all work so that anything excluded by the bidder of all or any portions of this section or division, have been addressed prior to bids in one of the following manners:
  - 1. The work has been confirmed, by the prime bidder, to be work of another trade or subcontractor (whose proposal is also being accepted).
  - 2. Clarification of the matter has been made through the prime design professional via written addendum and is clearly and mutually understood by the prime bidder and the party raising the issue/question, or seeking clarification.
  - 3. The work has been accepted as the responsibility of the prime contractor directly.

#### 1.7 MATERIAL AND EQUIPMENT

- A. The term "provide" when used in the Contract Documents includes all items necessary for the proper execution and completion of the Work.
- B. Specific reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may at his option use any article, device, product, material, fixture, form or type of construction which in the judgment of the Architect expressed in writing is equal to that specified.
- C. Coordinate and properly relate all Work of this Division to building structure and work of all other trades.
- D. Visit premises and become thoroughly familiar with existing conditions; verify all dimensions in field. Advise Architect of any discrepancies prior to Bid Date in accordance with Division 00.
- E. Do not rough-in for any item or equipment furnished by others or noted "Not in Contract" (NIC), without first receiving rough-in information from physically examining the existing equipment, receiving specific cut sheet information from the Owner's representative, other

trades and/or Architect. Rough-in services for ANIC" equipment as required, as the work progresses.

- F. Provide storage and protection for all equipment and materials in accordance with requirements of Division 00 & 01. Replace any equipment and materials damaged by improper handling, storage, or protection, at no additional cost to Owner.
- G. Keep premises clean in accordance with requirements of Division 00 & 01.

#### 1.8 EXTRA MATERIALS

- A. Sprinkler heads and cabinets: Provide spare sprinkler heads of each style included in the project. Furnish each style with its own special wrenches and in quantities as specified by NFPA 13. Minimum of six (6) spare heads required.
- B. Identify the storage cabinet and each spare sprinkler head with labels describing contents.

#### 1.9 SUBSTITUTIONS

- A. Substitutions are only allowed by approval of the Architect prior to Bid Date as stipulated in Division 00 & 01.
- B. Design of systems is based on specific equipment. If the use of other manufacturer's equipment, even though approved by Architect, involves additional cost due to space requirements, foundation requirements, increased mechanical or electrical services, the cost of such extra work shall be borne by Contractor. Even though a manufacturer's name appears in the Contract Documents as having acceptable equipment, their equipment with different model numbers shall be classified as being a substitute to the equipment originally designed for and named in the Contract Documents. Substitute equipment, materials, etc., will not be allowed to deviate from Contract Document requirements. Furnish all options specified or reasonably implied from the contract documents. Specifically identify any variance in regard to submittal versus specified performance on the cover sheet of each submittal.

#### 1.10 POST-BID VALUE ENGINEERING (V/E):

- A. While it may be in the project Owner=s interest to consider the first cost money saving that may be generated via alternatives and options generated via participation in Value Engineering, Division 21 contractor shall realize that substantive offers of Value Engineering (V/E), if accepted by the Owner, constitute a design-build agreement (offer and acceptance) with the owner, and drastically change the design concept of the project, as developed by the Professional of Record identified on the Contract Documents.
- B. Should contractor offer, and the owner accept value engineering options that alter aspects of the system design, equipment, performance and/or performance verification or monitoring of respective systems, Division 21 contractor shall provide duly licensed professional engineering consultants working on behalf of the Division 21 contractor (including sub-contractors and equipment vendors/manufacturers) to review, approve and take professional responsibility for performance and suitability of V/E hybrid systems, materials or operational changes related to respective V/E items. The Division 21 contractor=s licensed professional

engineering consultants and the Division 21 contractor assume any and all responsibility for the design and suitability in terms of performance, of hybrid systems installed, as Division 21 contractor=s Professional of Record, absolving the original project Professional of Record (identified on the original Contract Documents, released for the original project Bid/Negotiation) from responsibility for the V/E hybrid systems portion of the work.

- C. Division 21 contractor, via the offer and acceptance of value engineering items on the project agrees to provide professional engineering design services and take full and complete responsibility for the hybrid design.
- D. Further, the Division 21 contractor=s (V/E Items) professional of record (either employees, or independent consultants to the Division 21 contractor) through the offer and acceptance of V/E items, agree to indemnify and hold harmless the project owner, the owner=s original A/E team (Professional of Record on behalf of the owner for the original Contract Documents) their heirs and assigns in regard to the V/E changes and their impact on the Division 21 systems altered, affected or modified, in whole or in part.
- E. The Professional of Record shown on the original Contract Documents in regard to the systems altered, adjusted, revised, modified or otherwise affected by the value engineering items implemented, shall be absolved of design responsibility as a result of implementation of V/E items, and their original use of Engineering Seals used for original Contract Documents, shall not apply.

#### 1.11 DRAWINGS AND SPECIFICATIONS

- A. The specific intent of these Contract Documents is to provide the various systems, equipment, etc. to the Owner complete and in a thoroughly calibrated functional condition.
- B. The Drawings shall not be construed as shop drawings. In the event of a possible interference with piping or equipment of another trade, items requiring set grade and elevations shall have precedence over other items should any major interference develop, immediately notify the Architect.
- C. In laying out Work, refer to mechanical, electrical, structural, and architectural drawings at all times in order to avoid interference and undue delays in the progress of the Work.

#### 1.12 CODES AND REGULATIONS

- A. Work shall be in full accord with the most stringent interpretation of the local AHJ, local ordinances, building codes, and other applicable national, local, and state regulations.
- B. Equipment shall conform to requirements and recommendations of the National bureau of Fire Underwriters and National Fire Protection Association (NFPA).
- C. Items provided under this Division shall comply with the American National Standards Institute (ANSI) "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People," ANSI A 117.1
- D. In the possible event of conflict between codes or regulations and Contract Documents, the most stringent interpretation of either shall govern (provided it exceeds the requirements of other codes). In the event of an irreconcilable difference between codes or regulations notify

- the Architect/Engineer immediately.
- E. In addition to the codes heretofore mentioned, all work and equipment shall conform to the applicable portions of the following promulgated specifications, codes and/or regulations:
1. NFPA 13
  2. NFPA 101
  3. National Electrical Code (NEC)
  4. International Building Code (2021 IBC)
  5. Underwriters Laboratories (UL)
  6. LA State Fire Marshal Regulations
- F. All materials, equipment and accessories installed under this Contract shall conform to all rules, codes, etc. as recommended by National Associations governing the manufacturer, rating and testing of such materials, equipment and accessories. All materials shall be new and of the best quality and first class in every respect. Whenever directed by the Architect, the Contractor shall submit a sample for approval before proceeding.
- G. Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories, whether or not called for in these Specifications.
- H. All unfired and fired pressure vessels shall be built in accordance with the A.S.M.E. Code and so stamped. Furnish shop certificates for each vessel. Contractor shall provide and pay for first operating certificate as per State Fire Marshal Regulations.

#### 1.13 FEES, PERMITS, AND TAXES

- A. Obtain and pay for permits required for the Work of this Division. Pay fees in connection therewith, including necessary inspection fees.
- B. All permits, fees, certificates, etc. for the installation, inspections, plan review, service connections locations, and/or construction of the work which are required by any authority and/or agencies having jurisdiction, shall be obtained and paid for by the Contractor.
- C. The Contractor shall make all tests required by the Architect, Engineer or other governing authorities at no additional cost to the Owner.

#### 1.14 REQUEST FOR APPEAL

- A. The Contractor shall be required to complete any appeal to the State of Louisiana Fire Marshal's Office required to address review comments associated with the fire protection system shop drawings. The Contractor shall be responsible for completing the appeal forms and submitting to the AHJ. The Contractor shall be responsible for the associated cost of the appeals associated with this project.

#### 1.15 SUBMITTALS

- A. Product Data: Include each manufacturer's data sheet for each type sprinkler head, valve, pipe, piping specialty, fire protection specialty, specified.



- B. Plans and Diagrams: Working plans (drawings) shall be prepared by the contractor and found acceptable by all Authorities Having Jurisdiction before commencing fire protection installation.
- C. Contractor shall pay all applicable fees required, by all Authorities Having Jurisdiction, for the project thru completion of project.
- D. All drawings shall be made at minimum 1/8" scale and arranged same as contract drawings.
- E. Shop Drawings: Submit working drawings which have been prepared in accordance with the requirements contained herein and identified as "Working Drawings," including hydraulic calculations and manufacturers data sheets.
  - 1. Submit one (1) copy of the working drawings printed to scale, manufacturers' product data sheets, and hydraulic calculations to the Architect/Engineer for review.
  - 2. If the submittal is found acceptable the shop drawing review stamp will be applied to the shop drawing submittal. The submittal will then be scanned and a pdf copy will be transmitted to the contractor for electronic submittal to the State Fire Marshal's Office and all other Authorities Having Jurisdiction for review.
- F. Quality Control Submittals:
  - 1. Welders' qualification certificates.
  - 2. Test Reports and Certificates: Include "Contractor's Material & Test Certificate for Aboveground Piping" and "Contractor's Material & Test Certificate for Underground Piping" as described in NFPA 13.

#### 1.16 QUALITY ASSURANCE

- A. Installer's Qualifications: Installation and alterations of fire protection piping, equipment, specialties, and accessories, and repair and servicing of equipment shall be performed only by a qualified installer. The term qualified means experienced in such work (experienced shall mean having a minimum of five (5) previous projects similar in size and scope to this project), familiar with all precautions required, and has complied with all the requirements of the Authority Having Jurisdiction. Upon request, submit evidence of such qualifications to the Engineer. Refer to Division-01 Section: "Definitions and Standards" for definitions for "Installers."

#### 1.17 QUALIFICATIONS OF CONTRACTOR:

- A. The contractor shall be a qualified fire protection contractor, licensed by the State of Louisiana and directly engaged in the installation of automatic fire sprinkler systems and other fire protection equipment.
- B. Qualifications for Welding Processes and Operators: Comply with the requirements of AWS D10.9, Specifications for Qualifications of Welding Procedures and Welders for Piping and Tubing, Level AR-3."
- C. Regulatory Requirements: Comply with the requirements of the following codes (Latest Edition):



1. NFPA 13 - Standard for the Installation of Sprinkler Systems.
2. 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.

#### 1.18 MANUFACTURER'S DIRECTIONS

- A. Install and operate equipment and material in strict accord with manufacturer's installation and operating instructions. The manufacturer's instructions shall become part of the Contract Documents and shall supplement Drawings and Specifications.

#### 1.19 GROUNDS AND CHASES

- A. This Contractor shall see that all required chases, grounds, holes and accessories necessary for the installation of his work are properly built in as the work progresses; otherwise, he shall bear the cost of providing them.

#### 1.20 CUTTING AND PATCHING

- A. Initial cutting and patching shall be the responsibility of the General Contractor, with the various trades being responsible for laying out and marking any and all holes required for the reception of his work. No structural beams or joists shall be cut or thimble without first receiving the approval of the Architect. After initial surfacing has been done, any further cutting, patching and painting shall be done at this Contractor's expense.

#### 1.21 PROTECTION OF EQUIPMENT AND MATERIALS

- A. During the project the Contractor shall safe guard and take the necessary precautions to protect the equipment and materials from damage. Failure on the part of the Contractor to comply with the above to the entire satisfaction of the Professional of Record shall be a sufficient cause for rejection of the damaged piece of equipment, material and/or assembly. In this case the Contractor shall be responsible for replacing the damaged piece of equipment, material and/or assembly to the satisfaction of the Professional of Record.

#### 1.22 CLEANING AND ADJUSTING:

- A. Upon completion of his work, the Contractor shall clean and adjust all equipment, controls, valves, etc.; clean all piping, ductwork, etc.; and leave the entire installation in good working order.

#### 1.23 LOCAL CONDITIONS

- A. The location and elevation of all utility services is based on available surveys and utility maps and are believed to be reasonably accurate; however, these shall serve as a general guide only, and the Contractor shall visit the site and verify the location and elevation of all services to his satisfaction in order to determine the amount of work required for the execution of the Contract.
- B. In case major changes are required, this fact, together with the reasons therefore, shall be submitted to the Architect, in writing, not less than seven (7) days before the date of bidding.

Failure to comply with this requirement will make the Contractor liable for any changes, additions and expenses necessary for the successful completion of the project.

#### 1.24 MINOR DEVIATIONS

- A. Plans and detail sketches are submitted to limit, explain and define conditions, specified requirements, pipe sizes, etc. Structural or other conditions may require certain modifications from the manner of installation shown, and such deviations are permissible and shall be made as required. However, specified sizes and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift ducts or pipes, or to change the shape of ducts, and these changes shall be made as required. All such changes shall be referred to the Architect for approval before proceeding. Extra charges shall not be allowed for these changes.
- B. Only typical details are shown on the Plans. In cases where the Contractor is not certain about the installation of his work, he shall ask for details. Lack of details will not be an excuse for improper installation.
- C. In general, the drawings are diagrammatic and the Contractor shall install his work in a manner so that interferences between the various trades are avoided. In cases where interferences do occur, the Architect is to state which item was first installed.
- D. Contractor shall make note that the sprinkler head locations and piping layout are diagrammatic and the spaces shall have proper number of heads and proper pipe size in the contractor's bid.

#### 1.25 PROJECT RECORD DOCUMENTS

- A. Keep Project Record Documents in accordance with requirements of Division 00 & 01.
- B. During construction period, keep accurate records of installations made under this Division, paying particular attention to major interior and exterior underground and concealed piping, ductwork, etc.
- C. The Contractor shall obtain at his cost, two sets of prints of the original bid documents by the Architect. One print set shall be kept on the site with all information as referenced below, and shall update same as the work progresses. The other print set will be utilized to record all field changes to a permanent record copy for the Owner.
- D. If the Contractor elects to vary from the Contract Documents and secures prior approval from the Architect for any phase of the work, he shall record in a neat and readable manner, all such variances on the print set in red. The original print set shall be returned to the Architect for documentation.
- E. Provide electronic (PDF) copies of all documentation included in Final Report.
- F. All deviations from sizes, locations, and from all other features of the installations shown in the Contract Documents shall be recorded.

- G. In addition, it shall be possible using these drawings to correctly and easily locate, identify and establish sizes of all piping, directions and the like, as well as other features of the work which will be concealed underground and/or in the finished building.
- H. Locations of underground work shall be established by dimensions to columns, lines or walls, locating all turns, etc., and by properly referenced centerline or invert elevations and rates of fall.
- I. For work concealed in the building, sufficient information shall be given so it can be located with reasonable accuracy and ease. In some cases, this may be by dimension. In others, it may be sufficient to illustrate the work on the drawings in relation to the spaces in the building near which it was actually installed. The Architect's/Engineer's decision in this matter will be final.
- J. The following requirements apply to all "As-Built" drawings:
  - 1. They shall be maintained at the Contractor's expense.
  - 2. All such drawings shall be done carefully and neatly, and in a form approved by the Architect/Engineer.
  - 3. Additional drawings shall be provided as necessary for clarifications.
  - 4. These drawings shall be kept up-to-date during the entire course of the work and shall be available upon request for examination by the Architect/Engineer; and when necessary, to establish clearances for other parts of the work.
  - 5. "As-built" drawings shall be returned to the Architect upon completion of the work and are subject to approval of the Architect/Engineer.

#### 1.26 USE OF ELECTRONIC (CAD) MEDIA

- A. Electronic media (cadfiles) can be made available to the Contractor by filling in the information on the next page, agreeing to the single use waiver and submitting to the Architect/Engineer.

## NAME OF PROJECT: \_\_\_\_\_

COMPANY NAME OF CONTRACTOR

CONTRACTOR AUTHORIZED CONTACT NAME (PRINTED) / TITLE

AUTHORIZED SIGNATURE

DATE \_\_\_\_\_

**LIST SPECIFIC DRAWINGS (SHEET #) & SHEET TITLES REQUESTED IN BOX BELOW:**

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1.27 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Provide the owner a copy of NFPA 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems" to be kept on site.
- B. Provide the Owner with three (3) copies of printed instructions indicating various pieces of equipment by name and model number, complete with parts lists, maintenance and repair instructions and test and balance report.

1.28 GUARANTEE

- A. The Contractor shall guarantee all materials, equipment and workmanship for a period of one (1) year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc. necessary to restore the project to first class condition. This guarantee shall exclude only the changing or cleaning of filters. Warranties exceeding one (1) year are hereinafter specified with individual pieces of equipment.
- B. If the Contractor's office is in excess of a fifty (50) mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The name of the contractor appointed to provide emergency services shall be submitted to the Architect for his approval.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION (Not applicable)

END OF SECTION 21 00 00

## SECTION 21 11 00 – SPRINKLER PIPING



### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. Pipe, fittings, valves, covers, and connections for combination sprinkler and standpipe systems including exterior piping systems.

#### 1.2 RELATED SECTIONS

- A. Division 21, Section 21 00 00- "Fire Protection General Provisions"
- B. Division 21, Section 21 13 19 - "Sprinkler Systems"

#### 1.3 REFERENCES

- A. ASME Boiler and Pressure Vessel Code Section IX - Welding and Brazing Qualifications.
- B. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Class 250.
- C. ASME B16.3 - Malleable Iron Threaded Fittings, Class 300.
- D. ASME B16.4 - Cast Iron Threaded Fittings, Class 250.
- E. ASME B16.5 - Pipe Flanges and Flanged Fittings.
- F. ASME B16.9 - Factory-made Wrought Steel Buttwelding Fittings.
- G. ASME B16.11 - Forged Steel Fittings, Socket-welding and Threaded.
- H. ASME B16.25 - Buttwelding Ends.
- I. ASME B36.10 - Welded and Seamless Wrought Steel Pipe.
- J. ASTM A135 - Electric-Resistance-Welded Steel Pipe.
- K. ASTM A47 - Malleable Iron Castings.
- L. ASTM A53 - Pipe, Steel, Black and Hot-Dipped, Zinc-coated Welded and Seamless.
- M. ASTM A795 - Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use.
- N. AWWA C110 - Ductile Iron and Gray Iron Fittings.
- O. AWWA C151 - Ductile Iron Pipe, Centrifugally Cast.

- P. NFPA 13 - Installation of Sprinkler Systems.
- Q. NFPA 24 - Installation of Private Fire Service Mains and Their Appurtenances.
- R. UL - Fire Resistance Directory.
- S. UL 262 - Gate Valves for Fire-Protection Service.
- T. UL 312 - Check Valves for Fire-Protection Service.
- U. UL 405 - Fire Department Connections.

#### 1.4 SUBMITTALS FOR REVIEW

- A. Section - "Submittal Procedures": Procedures for submittals.
- B. Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings.
  - 1. Grooved joint couplings and fittings shall be referred to on drawings and product submittals, and be identified by the manufacturer's listed model or series designation.
- C. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.
  - 1. Sprinklers shall be referred to on drawings, submittals and other documentation, by the sprinkler identification number or Series designation as specifically published in the appropriate agency listing or approval.

#### 1.5 SUBMITTALS AT PROJECT CLOSEOUT

- A. Section - "Closeout Submittals": Record actual locations of components and tag numbering.
- B. Operation and Maintenance Data: Include installation instructions and spare parts lists.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
  - 1. All grooved couplings, fittings, valves, and specialties shall be the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components.
  - 2. All castings used for couplings housings, fittings, or valve and specialty bodies shall be date stamped for quality assurance and traceability.



- B. Installer Qualifications: Company specializing in performing the work of this section and shall be licensed to perform sprinkler work in the State of Louisiana.

#### 1.7 REGULATORY REQUIREMENTS

- A. Conform as a minimum to UL and FM.
- B. Sprinkler Systems: As a minimum, conform work to NFPA 13.
- C. Welding Materials and Procedures: Conform to ASME Code and AWS D10.9.
- D. Valves: Bear UL and/or FM label or marking. Provide manufacturer's name and pressure rating marked on valve body.
- E. Products Requiring Electrical Connection: Listed and classified as suitable for the purpose specified and indicated.

#### 1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Refer to Architectural Specification Section - "Temporary Facilities & Controls": Transport, handle, store, and protect products.
- B. Deliver and store valves in shipping containers, with labeling in place.
- C. Provide temporary protective coating on cast iron and steel valves.
- D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- E. Store all materials a minimum of 12" above grade when stored in exterior environment, 6" when stored on slab. Do not allow materials to contact ground. Provide end caps on all piping to prevent dirt or other construction debris from entering piping while stored.

#### 1.9 EXTRA MATERIALS

- A. Provide two sets of valve stem packings for each size and type of valve installed.

### PART 2 - PRODUCTS

#### 2.1 BACKFLOW PREVENTOR ASSEMBLY

- A. Backflow Preventors:
  - 1. Provide Reduced Pressure Principal or Double Check Assembly as required by local governing authority and at a location approved by the Authority Having Jurisdiction.
  - 2. Enclose backflow assembly in a heated enclosure.
- B. Heated Valve Assembly Enclosure
  - 1. Provide factory assembled, heated, backflow preventor assembly enclosure. Enclosure shall be constructed and approved to ASSE Standard 1060 as a "Class

I Freeze Protection Enclosure”.

- a. Acceptable Manufacturers
  - i. Hot Box
  - ii. Safe - T - Cover
2. Provide insulated valve enclosure on all above ground exposed fire protection piping. Insulate fire protection piping which is NOT located in heated valve box assembly.
3. Insulation shall be polyisocyanurate foam sprayed in place with a minimum of 1-inch thickness average coverage.
  - a. Dimensional stability shall be less than 2% linear shrinkage.
  - b. Compressive strength shall be 20 psi or greater.
  - c. Flame spread rating shall not exceed 25.
4. Enclosure shall be of aluminum.
5. Structural components shall be of aluminum.
6. Multi-sectional enclosures shall be fitted together with overlapping “tongue & groove” joints.
7. The enclosure shall be securely attached to a concrete base with anchor brackets installed on the interior of the enclosure, through the flange base of the enclosure itself or through a stainless steel anchor hinge.
8. Access panels shall be provided to allow access for operations and inspections without the removal of the entire enclosure.
9. Heating equipment shall be furnished by the enclosure manufacturer to maintain a temperature of 40 deg F with an outside temperature of (-) 10 deg. F.
  - a. Factory assemble heater shall be ETL, UL, or CSA certified.
  - b. Heating equipment shall be installed above the level of the backflow equipment.
  - c. Electrical power source shall be GFI protected, with a minimum of 18" clearance from the receptacle base to the top of slab.
10. Enclosure shall have the following text/lettering posted on all four exterior walls of the enclosure.
  - a. “FIRE DEPARTMENT USE, SPRINKLER CONTROL VAVLES”
  - b. Lettering shall be RED in color and shall be no smaller than three (3) inches in height.

## 2.2 HEAT TRACE SYSTEM

### A. Heat Trace System:

1. Exposed exterior system piping shall be insulated in accordance with Division 22 - “Mechanical Insulation” and heat traced.
  - a. Heat trace tape shall be UL 515 Listed for fire line applications.
  - b. Contractor shall install a listed controller as recommended by the manufacturer of the heat trace cable, to permit the power to the heat trace cable to be electrically supervised by the fire alarm control panel.
  - c. Heat trace tape shall be installed and then insulated. Provide applicable power kits and end strips.
    - i. Heat Trace Manufacturers:
      1. Chromalox Incorporated
      2. Thermon Manufacturing Company
      3. Raychem

## 2.3 BURIED PIPING

- A. Ductile Iron Pipe: AWWA C151.
  - 1. Fittings: AWWA C110, standard thickness.
  - 2. Joints: AWWA C111, rubber gasket.
  - 3. Mechanical Couplings: Shaped composition sealing gasket, stainless steel bolts, nuts, and washers.
  - 4. Listed and internally lined with cement or epoxy coated.
- B. PVC Pipe (On exterior of building) - ASTM - D2241; AWWA - C-900, Class 150-DR-18.
  - 1. Fittings - AWWA C110.
  - 2. Joints - ASTM F-477'; AWWA C-111.
  - 3. Mechanical Couplings - Shaped composition sealing gasket, stainless steel bolts, nuts and washers.
- C. Refer to Architectural Specification - "Excavation, Filling and Grading" for further specific trenching and backfilling requirements.

## 2.4 ABOVE GROUND PIPING

- A. General: Refer to PART 3 - Article 3.2 "PIPE APPLICATIONS" or on individual plan sheets for identification and type of piping where the below materials are used.
  - 1. All above ground fire protection piping located within non-heated enclosures shall be insulated.
- B. Steel Pipe (Galvanized steel pipe manufactured in Korea shall not be accepted): ASTM A53; ASTM A135; ASTM A795; Schedule 10 and 40, black and galvanized.
  - 1. Steel Fittings: ASME B16.9, wrought steel, butt welded; ASME B16.25, butt weld ends; ASME B16.5, steel flanges and fittings; ASME B16.11, forged steel socket welded and threaded.
  - 2. Ductile Iron Fittings: ASME B16.1, flanges and flanged fittings; ASME B16.4, threaded fittings; or ASTM A536 Grade 65-45-12 grooved end fittings.
    - a. Grooved - In applicable sizes, fittings shall be short-pattern, with flow equal to standard pattern fittings. Basis of Design: Victaulic FireLock.
  - 3. Malleable Iron Fittings: ASME B16.3, threaded fittings
  - 4. Mechanical Roll Grooved Couplings (Cut grooves not acceptable): Two (2) ductile iron housing clamps to engage and lock, "C" shaped or center-leg elastomeric sealing gasket with pipe stop to ensure proper groove engagement, alignment, and pipe insertion depth, ASTM A449 compliant steel bolts, nuts, and washers; galvanized for galvanized pipe. Anvil and Victaulic:
    - a. Rigid: Victaulic Style 009-EZ and 107N
    - b. Flexible: Victaulic Style 177 Installation Ready and Style 77
    - c. Listed for dry or wet pipe use.
    - d. Grooves shall be rolled (cut grooves not allowed).

- e. Couplings shall be Installation-Ready in applicable sizes, for direct stab installation without field disassembly.
- 5. Installation-Ready™ fittings for Schedule 40 grooved end steel piping in fire protection applications sizes NPS 1-¼ thru 2½ (DN 32 thru DN 65). Fittings shall consist of a ductile iron housing with Installation-Ready™ ends, prelubricated Grade “E” EPDM Type ‘A’ gasket, and ASTM A449 electroplated steel bolts and nuts. UL listed for a working pressure of 300 psi (2065 kPa) and FM approved for working pressure 365 psi (2517kPa).
- 6. In lieu of threaded steel piping systems, the Victaulic FireLock IGS System with “Installation-Ready™ fittings and couplings may be used for NPS 1 (DN 25) Schedule 40 carbon steel pipe in fire protection applications. System rated for a working pressure to 365 psi (2517 kPa).
  - a. Groove: IGS “Innovative Groove System” groove with shortened “A” dimension and tapered groove backside for ease of installation.
  - b. Grooving Tool: Victaulic RG2100, with IGS Confirmation Gauge.
  - c. Fittings: Ductile iron housing conforming to ASTM A-536, Grade 65-45-12. Orange enamel coated or galvanized.
  - d. Victaulic Style 101 (90-degree elbow), Style 102 (tee), and Style 108 (coupling) with Installation-Ready™ ends.
  - e. Style 108 single-bolt coupling provided with EPDM Type A pressure responsive gasket with Vic-Plus lubricant, and ASTM A449 compliant electroplated steel bolt and nut. CrMo alloy steel coupling linkage.

## 2.5 PIPE HANGERS AND SUPPORTS

- A. Conform to the General Requirements of NFPA 13 and the additional design and installation requirements as listed below:
  - 1. Provide hangers and vertical piping restraints within 12 inches on all sprinkler drops at end of branch where system pressure exceeds 100 psig in accordance with NFPA 13.
  - 2. Provide hangers within 12 inches of each turn of direction (horizontal elbow) in sprinkler piping.
  - 3. Powder- driven Studs are not acceptable.
  - 4. Prime coat all sprinkler pipe hangers where indicated in Part 3 - “Execution”
  - 5. Hangers for Pipe Sizes 1 through 6 Inch: Provide Carbon steel, adjustable swivel, split ring hangers.
  - 6. Multiple or Trapeze Hangers: Steel pipe or steel angles with welded spacers and hanger rods.
  - 7. Vertical Support: Steel riser clamps.
  - 8. Floor Support: Cast iron adjustable pipe saddles, lock nut, nipple, floor flange, and concrete pier or steel support.

## 2.6 FIRE PROTECTION GATE VALVES

- A. Up to and including 2 Inches:
  - 1. Manufacturers:
    - a. Nibco Model T-104-O.
    - b. Kennedy Model KS-FW
  - 2. Bronze body, bronze trim, rising stem, handwheel, solid wedge or disc, threaded ends.

B. Over 2 Inches:

1. Manufacturers:
  - a. Nibco Model F-697-0., F-609
  - b. Kennedy Model KS-FW
  - c. Victaulic Series 771
2. Iron body, bronze trim, rising stem, pre-grooved for mounting tamper switch, handwheel, OS&Y, solid bronze or cast iron wedge, flanged, or grooved ends. 250 psi pressure rated

2.7 BALL VALVES

A. Up to and including 2 Inches (Ball valves are not to be used over 2 inches):

1. Manufacturers:
  - a. NIBCO KG-505-W-8
  - b. Victaulic Series 728
2. Brass two piece body, chrome-plated brass, full port, chrome plated bronze, or stainless steel ball, teflon seats and stuffing box ring, weatherproof actuator housing with supervisory switches and handwheel or lever handle and balancing stops, threaded or grooved ends. 300 psi pressure rated.

2.8 AUTOMATIC AIR VENT VALVES

A. Automatic Air Vent:

1. Manufacturers:
  - a. Potter Model "PAV" with ball valve and Potter Model RBVS tamper switch
2. Manufacturers:
  - a. Engineered Corrosion Solutions Model "PAV-W" Automatic Air Vent with ball valve and Potter Model RBVS tamper switch

2.9 BUTTERFLY VALVES

A. Cast or Ductile Iron Body:

1. Manufacturers:
  - a. Kennedy Fig. G300 or 01G
  - b. Victaulic Series 705
2. Cast or ductile iron, chrome or electroless-nickel plated ductile iron or aluminum bronze disc, pressure responsive resilient replaceable EPDM seat, stainless steel stem (offset from the disc centerline to provide complete 360-degree circumferential seating), wafer, lug, or grooved ends, extended neck, with weatherproof actuator housing and handwheel with gear drive and integral indicating device, and internal tamper switches rated 10 amp at 125 volt AC. 300 psi pressure rated.

2.10 CHECK VALVES

- A. Up to and including 2 Inches:
  - 1. Manufacturers:
    - a. Nibco Model KT403W
    - b. Victaulic Series 717
  - 2. Bronze body and swing disc, rubber seat, threaded ends.
  - 3. Ductile iron body with stainless steel spring for vertical or horizontal installation, grooved ends. 250 psi rated.
- B. Over 2 Inches:
  - 1. Manufacturers:
    - a. Nibco Model G917-W
    - b. Victaulic Series 717
  - 2. Ductile iron body, bronze trim, spring-assisted swing check for vertical or horizontal installation with stainless steel or rubber / elastomer encapsulated disc, renewable disc and seat, grooved or flanged ends with automatic ball check. 250 psi pressure rated.

## 2.11 BACKFLOW PREVENTER VALVE ASSEMBLY

- A. Manufacturer
  - 1. Wilkins
    - a. Model 350 ASTDA with by-pass meter, bypass double check valve assembly OS&Y Valves and tamper switches
  - 2. Apollo Valves
    - a. Model DCDALF 4A with by-pass meter, bypass double check valve assembly, OS&Y Valves and tamper switches

## PART 3 - - EXECUTION

### 3.1 PREPARATION

- A. Ream pipe and tube ends.
  - 1. Remove burrs.
  - 2. Bevel or groove plain end ferrous pipe.
  - 3. Remove scale and foreign material, from inside and outside, before assembly.
  - 4. Prepare piping connections to equipment with flanges or unions.
  - 5. Unions and flanges for servicing or disconnect are not required in installations using grooved mechanical joint couplings.

### 3.2 PIPE APPLICATIONS

- A. Underground Pipe: Listed, lined, ductile iron pipe and fittings, 250 lb working pressure. Refer to Architectural Specification - "Excavation, Filling and Grading" for further specific trenching and backfilling requirements.
  - 1. Depth of Bury:
    - a. Minimum 36 inches depth of bury from top of pipe to finished grade in

accordance with NFPA 24.

- i. Provide pipe tape markers and # 12 copper trace wire over entire length of pipe.
  - b. Minimum 42 inches depth of bury under driveways, slabs, parking lots, etc., in accordance with NFPA 24.
    - i. Provide pipe tape markers and # 12 copper trace wire over entire length of pipe.
- B. Underground Pipe: Listed C900 DR 18 PVC pipe and ductile iron fittings, 150 lb working pressure. Refer to Architectural Specification - "Excavation, Filling and Grading" for further specific trenching and backfilling requirements.
  1. Depth of Bury:
    - a. Minimum 36 inches depth of bury from top of pipe to finished grade in accordance with NFPA 24.
      - i. Provide pipe tape markers and # 12 copper trace wire over entire length of pipe.
    - b. Minimum 42 inches depth of bury under driveways, slabs, parking lots, etc., in accordance with NFPA 24.
      - i. Provide pipe tape markers and # 12 copper trace wire over entire length of pipe.
- C. Above Ground Pipe: Provide piping in accordance with the following schedule of systems:
  1. Sprinkler pipe (wet pipe - 1 1/4 inches & below): Schedule 40 steel pipe - screwed fittings or with rolled grooves and roll grooved fittings where the fittings are designed to prevent the pipe from rotating.
  2. Sprinkler pipe (wet pipe - 1 1/2 thru 5 inches): Schedule 40 steel pipe with rolled grooves and roll grooved fittings.
  3. Sprinkler pipe (wet pipe - 6 inches and larger): Schedule 10 steel pipe with rolled grooves and roll grooved fittings.
  4. Sprinkler pipe (dry pipe systems 1 1/4 inches and below): Schedule 40, Hot Dipped Galvanized – with screwed fittings or rolled grooves and roll grooved fittings where the fittings are designed to prevent the pipe from rotating.
  5. Sprinkler pipe (dry pipe systems - 1 1/2 thru 5 inches): Hot Dipped Galvanized Schedule 40 steel pipe with rolled grooves and rolled grooved fittings.
  6. Sprinkler pipe (dry pipe systems - 6 inches and larger): Hot Dipped Galvanized Schedule 10 steel pipe with rolled grooves and rolled grooved fittings.
  7. Air compressor lines: Schedule 40 steel pipe - screwed fittings.
  8. Drain lines: Schedule 40 galvanized steel pipe - screwed or grooved fittings.

\*All exposed sprinkler pipe where indicated to be painted shall be properly prepared for painting

### 3.3 INSTALLATION

- A. Heated Backflow Prevention Device enclosure shall be assembled and mounted on concrete pad in accordance with the manufacturer's published installation instructions.
  1. Enclosure shall be installed plumb, level, and square.



- B. Install piping in accordance with NFPA 13 for Sprinkler Systems, NFPA 14 for Standpipe and Hose systems, and NFPA 24 for service mains. Refer to Architectural Specification "Excavation, Filling and Grading" for further specific trenching and backfilling requirements.
- C. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- D. Install piping to conserve building space, to not interfere with use of space and other work.
- E. Group piping whenever practical at common elevations.
- F. Sleeve pipes passing through partitions, walls, and floors.
- G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- H. Pipe Hangers and Supports:
  - 1. Install in accordance with NFPA 13 and NFPA 14 except where specifically indicated in order to raise the minimum standards set by NFPA.
  - 2. Install hangers to provide minimum ½ inch space between finished covering and adjacent work.
  - 3. Place hangers within 12 inches of each horizontal elbow.
  - 4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
  - 5. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
  - 6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
  - 7. Prime coat exposed steel hangers and supports or provide factory primed hangers and supports. Refer to Section - "Painting". Hangers and supports located in areas not generally in view of the general public including crawl spaces, pipe shafts, and above suspended ceiling spaces are not considered exposed.
- I. Electrical Service to Fire Protection Systems:
  - 1. Except for high voltage electrical service to fire pumps, jockey pumps, and pump controllers, if electrical circuits or services are required for the operation of the fire protection system(s) at a location selected by sprinkler designer, the sprinkler contractor shall coordinate the location and placement of required electrical circuit(s) with the electrical sub-contractor. It is the responsibility of the sprinkler contractor to coordinate the number, size, type, and location of electrical circuits in the field with other trades. The fire protection contractor shall be responsible for providing and/or paying for all costs associated with providing electrical service for his equipment prior to bidding.
- J. Drains:

1. Where sanitary sewer drains, storm drains, hub drains, floor drains, etc., are required for the draining of fire protection systems at a location indicated or selected by the sprinkler designer, the sprinkler contractor shall coordinate the location and placement of required drains with the plumbing sub-contractor. It is the responsibility of the sprinkler contractor to coordinate the number, type, and location of drains in field with other trades. Contractor shall be responsible for covering all costs associated with providing for and/or paying for drainage piping for his equipment prior to bidding.
- K. Slope piping and arrange systems to drain at low points.
  1. Use eccentric reducers to maintain top of pipe level.
- L. Do not penetrate building structural members unless indicated.
- M. Provide sleeves when penetrating building footings, floors and walls. Seal pipe and sleeve penetrations to achieve fire resistance rating equivalent to fire separation required.
- N. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.
- O. Die cut threaded joints with full cut standard taper pipe threads with red lead and linseed oil or other non-toxic joint compound applied to male threads only.
- P. Grooved Joints: Install in accordance with the manufacturers latest published installation instructions. Pipe ends shall be clean and free from indentations, projections, and roll marks in the area from the pipe end to (and including) the groove. Gasket shall be verified as suitable for the intended service. Contractor shall remove and replace any improperly installed products. Grooved coupling manufacturer's factory trained field representative shall provide on-site training for contractor's field personnel in the proper use of grooving tools, application of groove, and installation of grooved piping products. Factory trained representative shall periodically visit the jobsite to ensure best practices in grooved product installation are being followed. Contractor shall remove and replace any improperly installed products.
- Q. Install valves with stems upright or horizontal, not inverted. Remove protective coatings after installation.
  1. Provide gate or butterfly valves for shut-off or isolating service.
  2. Provide drain valves at main shut-off valves, low points of piping and apparatus.

### 3.4 TRAINING & DEMONSTRATION

- A. Demonstration Services: Arrange and pay for a factory-authorized service representative to train Owner's maintenance personnel on the following:
  1. Procedures and schedules related to start-up and shut down, troubleshooting, servicing, preventative maintenance, and how to obtain replacement parts.
  2. Familiarization with contents of Operating and Maintenance Manuals specified

in Architectural Specification - "Closeout Submittals" and Division 15, Section -  
"Basic Mechanical Materials & Methods."

3. Provide Service Manuals for each sprinkler system specified.

B. Provide three (3) hours of factory authorized training and demonstration.

1. Refer to Section - "Mechanical General Provisions" for video taping requirements.
2. Schedule training with a minimum of seven (7) days notice to Owner's Representative.

END OF SECTION 21 11 00

## SECTION 21 13 19 - SPRINKLER SYSTEMS

### PART 1 - GENERAL

#### 1.1 REQUIRED PRE-BID FLOW TESTS

- A. Prior to submitting a bid, the Sprinkler Contractor shall perform a flow test utilizing the nearest municipal fire hydrant(s) at the Project site in order to substantiate the basis of the Contractor's design. The flow test shall be performed using gauges which have been calibrated within twelve (12) months of the flow test. The flow test shall be performed in accordance with the recommendations included in NFPA 291.
  - 1. The Contractor shall utilize a five (5) psig reduction/safety factor in the field flow test data (static & residual) and a ten (10) percent reduction/safety factor in the flow in GPM obtained during the flow test for the basis of design in order to calculate and/or perform a hydraulic analysis of the proposed system.
- B. All flow test data shall be performed by the Contractor at no cost to Owner.
  - 1. Contractor shall notify the Owner's Representative a minimum of seven (7) days prior to flow tests being performed.
  - 2. Owner's Representative shall witness all flow tests.
  - 3. Provide a report to Owner's Representative stating location, time and duration of test.

#### 1.2 SECTION INCLUDES

- A. Wet-pipe and dry-pipe sprinkler systems. Note!: Unless specifically so noted on plan sheets, the utilization of glycol anti-freeze wet-pipe sprinkler systems for freeze protection is not allowed!
- B. Sprinkler system design, installation, and certification including site work and insurances.
- C. Fire department connections.

#### 1.3 RELATED SECTIONS

- A. Division 21, Section 21 00 00 - "Fire Protection General Provisions"
- B. Division 21, Section 21 11 00 - "Sprinkler Piping"

#### 1.4 REFERENCES

- A. NFPA 13 - Installation of Sprinkler Systems.
- B. FM - Factory Mutual Approval Guide.
- C. NFPA 70 - National Electrical Code.



- D. UL - Fire Resistance Directory.
- E. UL 199 - Automatic Sprinklers.
- F. Warnock Hersey - Certification Listings.

## 1.5 SYSTEM DESCRIPTION

- A. The sprinkler system is to provide coverage for the entire building.
  - 1. Note: It is not the intent of this specification to design or to construct the sprinkler system in accordance with the “minimum” design criteria allowed by the applicable codes. Where indicated, certain areas, specific equipment or methods may exceed the “minimum” criteria required by applicable codes. Refer to Section - “Mechanical General Provisions”, Article 1.3 - “Compliance with National & Local Code Requirements.”
  - 2. The contractor shall refer to both plans and specifications in order to accomplish the design intent.
- B. Provide a system designed in accordance with NFPA 13 for Light hazard, Ordinary hazard, Group 1, Ordinary hazard, Group 2, or other hazard classification as indicated on the various plan sheet.
- C. Interface the sprinkler system with the building Fire and Smoke Alarm Systems and Smoke Evacuation systems. Coordinate electrical power requirements or control interfaces with the various sub-contractors.
- D. Provide fire department connections where indicated. Coordinate thread patterns with the local fire department serving the site.

## 1.6 ELECTRICAL REQUIREMENTS

- A. Note: It is the intent of this section that prior to bidding, the fire protection contractor shall coordinate and either provide, or pay to provide, all of the minor electrical power and control services, circuits, wiring and conduit required for the fire protection equipment.
- B. It is not the intent of this section that the fire protection contractor provide or pay for the necessary electrical service to the emergency fire pump, jockey pump, controllers or associated wiring and conduit required to connect fire protection devices (such as limit switches, flow switches, tamper switches, etc.) to the fire alarm system. Other coordination issues and requirements between sub-contractors however, remain.

## 1.7 PLUMBING REQUIREMENTS

- A. Sprinkler Drains: “Note” - Where sewer or storm drains are required for any component of the sprinkler system such as pre-action cabinets, standpipes, risers, etc., the sprinkler contractor shall provide such drains as required to prevent spillage of water onto or within the building. Contractor shall coordinate with other trades and pay for and/or provide at the point of discharge, all floor drains, hub drains, catch basins, etc., needed for the maintenance and draining of the sprinkler system.

## 1.8 SUBMITTALS FOR REVIEW

- A. Refer to Architectural Specification - "Submittal Procedures": for full submittal requirements.
- B. Product Data: Provide data on all system components including fire pumps (if applicable), pipes, sprinklers, valves, flow switches, pressure reducing devices, meters, and other specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections. Contractor shall submit a minimum of one (1) printed set of shop drawings, hydraulic calculations, and equipment cut sheets to the Architect/Engineer for review. Architect/Engineer will review the submittal, and if it is found to be acceptable for submittal to the State Fire Marshals office for review, the Architect/Engineer will stamp it with their shop drawing review stamp. This stamped submittal will be scanned and a "PDF" copy will be E-mailed to the contractor for electronic submittal to the State Fire Marshall for review. Contractor shall be responsible for all fees and costs as may be required for final acceptance of system(s) by all Authorities Having Jurisdiction.
  - 1. Sprinklers shall be referred to on drawings, submittals and other documentation, by the sprinkler identification number or Model/Series designations as specifically published in the appropriate agency listing or approval.
- C. Shop Drawings: Submittal to the State Fire Marshal shall occur after Contractor has obtained a "No Exception Taken", or "Appears to Comply" comment on the System Shop Drawings from the Architect/Engineer. No payment will be made to the contractor for any automatic sprinkler system work until submittal is forwarded to the AHJ for approval.
  - 1. Provide project name, project address, occupancy and owner on application. Drawings shall include "Preparer of Shop Drawings" indicated on each sheet.
  - 2. Drawing shall be legible and drawn to a scale suitable for proper definition and clarity. In no case shall the scale be less than 1/8" = 1'- 0". Indicate partitions or small enclosures in which no sprinklers are to be installed. Provide graphic representation of the scale used on all plans.
  - 3. Submittal shall include a master list of all materials and equipment which is to be utilized for the project. Include manufacturers model number, size, color, and quantity of each.
  - 4. Provide the number of sprinklers on each riser per floor.
  - 5. Provide the total number of sprinklers on each dry pipe system, pre-action system, combined dry pipe pre-action system, or deluge system.
  - 6. Provide the approximate capacity in gallons of each dry pipe system.
  - 7. Provide the location and electrical characteristics of all air compressors, pre-action cabinets, and any and all other components which require electrical services.
  - 8. Provide type of fittings and joints and location of all welds and bends. The contractor shall specify on the drawing any sections to be shop welded and the type of fittings or formations to be used.
  - 9. Indicate piping provisions for flushing.
  - 10. Provide kind, type and location of alarm bells.

11. Provide size, location, of hose outlets, hand hose, and related equipment if used. The hydraulic reference point shown on plans shall correspond with comparable reference points on the hydraulic calculation sheets.
12. Provide full height cross section of building or schematic diagram.
13. Provide the occupancy class or each area or room identified.
14. All sprinklers shall be identified by make, type, orifice size, temperature rating, thermal sensitivity including if applicable, all existing heads affecting the submitted scope of work.
15. For large storage areas, provide the storage height, method of storage, description of commodities, etc. If the project is a specialized storage design, provide a complete design statement denoting the methodology for arriving at the project area/densities.
16. All piping shall be identified by size, type, inside diameter, and schedule.
17. Submit layout of finished ceiling areas indicating sprinkler head locations and type, fully coordinated with ceiling installation. Provide ceiling information such as heights, architectural profiles, (vaults, coffers, furrings, etc.), construction assembly, (combustible ceiling or framing, significant combustibles in ceiling cavity, etc.).
18. Provide sprinkler obstructions denoted (suspended light fixtures, duct work, fire alarm strobes, fire alarm horns, speakers, motion detectors, or other architectural items.)
19. Show all HVAC openings and all ductwork over 48" in width/height.
20. Indicate the method of maintaining the sprinkler system at or above 40 deg F. Describe all unheated applicable areas and explain the methodology of all sizes, types, locations, etc. of freeze protection devices.
21. Graphically highlight each hydraulic area (perimeter dashed lines, etc.) title each area on the plans with matching title on each calculation sheet.
22. Provide the locations and ratings of fire walls, unprotected vertical openings, and other assemblies affecting sprinkler design.
23. Provide a site plan showing location and size of city mains at street, denoting dead end or circulating or denote private supply system.
24. Provide the total area protected by each system on each floor.
25. Provide and indicate the location, type, and listing of each pipe hanger.
26. Provide the underground pipe size, length, location, type, point of connection to city main, bury depth, thrust blocks, and all appurtenances (valve types, water meters, backflow preventors, valve pits, etc.) with appropriate back-up data sheets denoting manufacturer's fire protection equipment listing and friction/pressure loss for each device.
27. Provide all hydraulic nameplate information.
28. Hydraulic reference points shall coordinate between the drawings and calculations.
29. Provide the setting for pressure reducing devices denoted.
30. Submit hydraulic calculations, building sections, site plan indicating piping layout, detailed building piping layouts, hangers and supports locations, sprinklers, components and accessories. Indicate system controls.

D. Hydraulic Calculations:

1. Verify that the water supply, test location, date (must be 4 months current) of peak demand time (or calculated adjustment) and account for test elevations at calculations. Reduce the static and residual pressures by 5 psig and calculate on



- this basis.
2. Verify the hazard classification (light, ordinary, special occupancy, etc.).
  3. Verify the design criteria (density/sq. ft. over the hydraulic design area).
  4. Verify the location of the design area calculated (most hydraulically demanding not always the most physically remote).
  5. Verify the physical dimensions of the area calculated (design area shall not extend beyond the designated area served by each sprinkler). Sufficient length parallel to the branch lines or cross mains, as required.
  6. Verify the densities (sprinklers flowing at or above minimum required flow rate).
  7. Verify the pipe sizes, lengths, equivalent lengths of fittings, and flow paths (account for all pressure losses).
  8. Verify the hose demand and provide the total quantity of water and the pressure required for hose streams both inside and outside.
  9. Confirm that the system demand is at or less than the available water supply (include demand versus supply graph).
  10. Sprinkler Drains: "Note" - Where drains are required for any component of the sprinkler system such as pre-action cabinets, standpipes, etc. the sprinkler contractor shall provide such drains as required to prevent spillage of water onto or within the building. Contractor shall coordinate with other trades and pay for and/or provide floor drains, hub drains, catch basins, etc. needed for the maintenance and draining of the sprinkler system.
  11. Samples: Submit two samples of each style of sprinkler head specified.

#### 1.9 SUBMITTALS AT PROJECT CLOSEOUT

- A. Section - Project Record Documents: Record actual locations of sprinklers and deviations of piping from drawings. Indicate drain and test locations.
- B. Manufacturer's Certificate: Certify that system has been tested and meets or exceeds code requirements.
- C. Operation and Maintenance Data: Include components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location and numbers of service depot.
- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- E. Provide a copy of NFPA 25 - "Standard for Inspection, Testing, and Maintenance of Water Based Fire Protection Systems."

#### 1.10 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 13. Maintain one copy on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

- D. Design system under direct supervision of a NICET III Certified Technician experienced in design of this work and licensed in the State of Louisiana. The Fire Protection contractor shall be licensed for fire protection work in the State of Louisiana.

#### 1.11 REGULATORY REQUIREMENTS

- A. Conform to UL, FM.
- B. Perform Work in accordance with NFPA 13.
- C. Equipment and Components: Bear UL, FM, label or marking.
- D. Products Requiring Electrical Connection: Provide products that are listed and classified by Underwriters Laboratories Inc., or other testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.
- E. Fire Protection Contractor shall be licensed to perform fire protection systems design and installation in the State of Louisiana.

#### 1.12 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section.
  - 1. Provide seven (7) days advanced notice to Owner's Representative.

#### 1.13 DELIVERY, STORAGE, AND PROTECTION

- A. Section - Product Requirements: Transport, handle, store, and protect products.
- B. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

#### 1.14 EXTRA MATERIALS

- A. Provide extra sprinklers under provisions of NFPA 13.
- B. Provide suitable wrenches for each sprinkler type.
- C. Provide metal storage cabinet in location designated.

### PART 2 - PRODUCTS

#### 2.1 SPRINKLERS

- A. Sprinklers shall be glass bulb type, with hex shaped wrench boss integrally cast into the sprinkler body to reduce the risk of damage during installation.
  - 1. Wrenches shall be provided by the sprinkler manufacturer that directly engage the hex-shaped wrench boss integrally cast in the sprinkler body.

- B. Both threaded and grooved sprinklers are accepted.
  - 1. UL listed and FM approved rigid coupling to join sprinklers with IGS profile grooved ends to matching 1" IGS outlets; Coupling consists of two cast copper-alloy housing segments for connection of 1/2", 3/4", and 1" sprinklers. Coupling includes an EPDM Type A gasket, with zinc-plated cap screws conforming to ASTM F835, and nylon insert locknut. Installation-ready, for direct push installation without field disassembly. Rated for a working pressure to 175 psi.
- C. Dry Sprinklers:
  - 1. Manufacturers:
    - a. Victaulic Series FL-QR/DRY/C or FL-DRY/VicFlex
    - b. Viking Model M SIN No. VK 194
    - c. Reliable SIN RA 5114
  - 2. Type: Quick response, standard coverage, concealed pendant type with push on Cover plate.
  - 3. Finish: Brass
  - 4. Cover Plate Finish: Color by Architect.
  - 5. Fusible Link: Glass bulb type temperature rated for specific area hazard.
  - 6. Guards: Finish to match sprinkler finish.
- D. Suspended/Finished Ceilings
  - 1. Manufacturers:
    - a. Victaulic Series FL-QR/C
    - b. Viking Microfast -Quick Response Concealed Sin No. VK 462
    - c. Reliable SIN RA3415
  - 2. Type: Concealed Quick Response pendant type with push on thread off cover plate.
  - 3. Finish: Color by Architect.
  - 4. Cover Plate Finish: Color by Architect.
  - 5. Fusible Link: Glass bulb type temperature rated for specific area hazard.
  - 6. Location: In center of modular ceiling tile
- E. Exposed Area Type:
  - 1. Manufacturers:
    - a. Victaulic Series FL-QR
    - b. Viking Microfast. Model M Sin No. VK 302
    - c. Reliable SIN RA 1414
  - 2. Type: Standard coverage Quick Response Pendant type.
  - 3. Finish: Brass.
  - 4. Fusible Link: Glass bulb type temperature rated for specific area hazard.
- F. Exposed Area Type:
  - 1. Manufacturers:
    - a. Victaulic Series FL-QR
    - b. Viking Microfast. Model M Sin No. VK 300

- c. Reliable SIN RA 1425
2. Type: Standard coverage Quick Response Upright type.
3. Finish: Brass.
4. Fusible Link: Glass bulb type temperature rated for specific area hazard.

## 2.2 PIPING SPECIALTIES

### A. Wet Pipe Sprinkler Riser Check Alarm Valve:

1. Manufacturers
  - a. Victaulic Series 751 Series or UMC Riser Check Assembly
  - b. Viking Easy Riser Swing Check Valve Model E-1, F-1
  - c. Reliable Model G
2. Check type valve with divided seat ring, rubber faced clapper to automatically actuate electric alarm, with test and drain valve.

### B. Electric Alarm Bell:

1. Manufacturers
  - a. Potter Electric Model MBA-6-24
  - b. System Sensor Model SSM 24-6
2. Electrically operated red enameled gong.

### C. Fire Department Connections:

1. Manufacturers:
  - a. Potter Roemer Model 5761
  - b. Guardian Model 6224
2. Type: Free standing type with chrome plated finish.
3. Outlets: Two (2)-way with thread size to suit fire department hardware; threaded dust cap and chain of matching material and finish.
4. Drain: 3/4 inch automatic drip, outside.
5. Label: "Auto. Sprinkler - Fire Department Connection".
6. At the low point near each fire department connection, install a 90-degree elbow with drain connection to allow for localized system drainage. Basis of Design: Victaulic #10-DR.
7. Sign: Provide metal sign that reads "FDC"
  - a. Lettering shall be minimum three (3) inches in height and colored RED.

### D. Supervisory Switches:

1. Manufacturers
  - a. Potter Electric Model OSYSU-2, PCVS
  - b. System Sensor. Model OSY-2, PIBV2

### E. Flow Switches:

1. Manufacturers
  - a. Potter Electric Model VSR-F
  - b. System Sensor Model WFD Series

F. Test and Drain Valve

1. Manufacturers
  - a. Victaulic Series UTD (Universal Test and Drain)
  - b. AGF Model 1011A
  - c. Guardian Model 9210
  - d. Reliable Model "TD"

G. Dry Pipe Sprinkler Alarm Valve: Check type valve with divided seat ring, aluminum-bronze clapper with EPDM clapper seal or rubber face clapper to automatically actuate electric alarm, with tank mounted air compressor, test and drain valve. Required air pressure shall be 13-psi (90-kPa). Valve internal components shall be replaceable without removal of valve from installed position. Valve shall be externally re-settable.

1. Manufacturers
  - a. Viking Model F-1, G-4000
  - b. Tyco Model No. DPV-1
  - c. Victaulic Series No. 768N
  - d. Reliable Model EX

H. Alarm Pressure Switches:

1. Manufacturers
  - a. Potter Electric Model PS10-2A
  - b. System Sensor Model EPS10-2

I. High/Low Pressure Supervisory Switches:

1. Manufacturers
  - a. Potter Electric Model PS40-2A
  - b. System Sensor Model EPS40-2

J. Tank Mounted Air Compressors:

1. Manufacturers
  - a. General Air Model
  - b. Jenny Model
  - c. C-aire Model

K. Flexible Sprinkler Hose Fitting for Fire Protection Service:

1. Manufacturer: FlexHead Industries, Inc. and Victaulic Vic-Flex AH2/AH2CC
  - a. Substitutions: Allowed if substitute product meets regulatory requirements, performance criteria and material specifications listed below.
2. Description:
  - a. Regulatory Requirements: Provide flexible stainless steel hose fittings that comply with the following requirements:
    - i. In accordance with General Requirements contained in specification.

- ii. In accordance with NFPA 13.
- 3. Performance Criteria: Comply with the following to suit project requirements:
  - a. FM 1637 Approval Standard for Flexible Sprinkler Hose with Treaded End Fittings
  - b. UL 2443 Standard for Flexible Sprinkler Hose with Fitting for Fire Protection Service.
  - c. ICC-ES AC-156 Acceptance Criteria for Seismic Qualification by Shake-Table Testing of Nonstructural Components and System
- 4. Materials: Victaulic Vic-Flex Connection
  - a. Flexible Stainless Steel Sprinkler Drop System (with captured coupling style 108) may be used to locate sprinklers as required by final finished ceiling tiles and walls. The drop system shall consist of a braided type 304 stainless steel flexible tube, zinc plated steel Male threaded nipple or Victaulic Firelock IGS Groove Style 108 coupling for connection to branch-line piping, and a zinc plated steel reducer with a female thread for connection to a sprinkler head.
  - b. The drop shall include a UL approved Series AH1 with 3" bend radius; AH2 or AH2-CC braided hose with a bend radius to 2" to allow for proper installation in confined spaces.
  - c. The hose shall be listed for [(4) bends at 31" length]
  - d. Union joints shall be provided for ease of installation.
  - e. The flexible drop shall attach to the ceiling grid using a one-piece open gate Series AB1 or AB2 bracket. The bracket shall allow installation before the ceiling tile is in place.
  - f. The braided drop system is UL listed for sprinkler services to 175 psi (1206 kPa) and FM Approved to 200 psi (1380 kPa)
- 5. Materials: FlexHead Superflex Commercial Sprinkler Connection
  - a. FlexHead Superflex flexible stainless steel hose assemblies:
    - i. Straight Hose Assembly Lengths (3 ft. length, Model #2036SF-50), (4 ft. length, Model #2048SF-50), (6 ft. length, Model #2072SF-50)
      - 1) ½ inch outlet
      - 2) 175 psi maximum rated pressure.
      - 3) Fully welded non-mechanical fittings, braided, leak-tested with minimum 1 inch true-bore internal corrugated hose diameter made of 100% 304 stainless steel including end fittings.
  - b. FlexHead Ceiling Bracket: Direct attachment type having integrated snap-on clip ends positively attached to the ceiling using tamper-resistant screws and removable attachment hub with set screw for attaching and adjusting flexible hose.
- 6. For Dry systems, in lieu of rigid connections to dry sprinkler heads, a Victaulic VicFlex™ dry sprinkler, Model VS1, may be used. The sprinkler shall provide a vertical or horizontal flexible connection with a bend radius to 2" and allow for up to 4 bends.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install in accordance with NFPA 13
- B. Wrenches used to install the sprinkler heads shall be the wrench called for by the manufacturer of the sprinkler head. The use of any other wrench shall not be acceptable and contractor shall replace all heads which were improperly installed without the use of the correct sprinkler head wrench.
- C. Install equipment in accordance with manufacturers instructions.
- D. Install buried shut-off valves in valve box. Provide post indicator.
- E. Provide approved double detector check valve assembly at sprinkler system water source connection.
- F. Locate fire department connection with sufficient clearance from walls, obstructions, or adjacent siamese connections to allow full swing of fire department wrench handle.
- G. Locate outside alarm gong on building wall as indicated.
- H. Place pipe runs to minimize obstruction to other work.
- I. Do not install sprinkler heads that have been dropped, damaged, or show a visible loss of fluid. Never install sprinklers with cracked bulbs.
- J. Sprinkler bulb protector shall be removed by hand after installation. Do not use tools or any other device(s) that could damage the bulb in any way, to remove the protector.
- K. Place piping in concealed spaces above finished ceilings.
- L. Center sprinklers in two directions in ceiling tile and provide piping offsets as required, dependent upon spacing and coordination with ceiling elements.
- M. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.
- N. Flush entire piping system of foreign matter.
- O. Install guards on sprinklers where indicated.
- P. Hydrostatically test entire system.
- Q. Require test be witnessed by Fire Marshal and Architect.

### 3.2 INTERFACE WITH OTHER PRODUCTS

- A. Ensure required devices are installed and connected as required to fire alarm system.

### 3.3 PAINTING

- A. Refer to Section - "Mechanical General Provisions" for painting requirements and

Architectural Specification - "Painting". Coordinate the painting requirements of this section with the Contractor. Painting is typically performed by the Division 9 Contractor. This Contractor, however, shall either perform specialized painting as called for below in the following conditions or he shall advise the Contractor prior to bidding of these painting requirements set forth as follows:

1. All sprinkler risers in stairs/stairwells and riser closets shall be painted.
2. All fire protection piping in Fire pump Room shall be painted.
3. All exposed fire hose drops shall be painted.
4. All fire protection piping in Exhibits Area shall be painted.
5. All exposed fire protection piping in Central Plant shall be painted.
6. Thoroughly clean all mechanical surfaces, requiring prime painting, of rust, loose scale, oil and grease.
7. Dry all surfaces before painting.
8. Paint only under proper ambient conditions.
9. Do not paint over controls, or on equipment nameplates, factory labels or sprinkler heads.
10. Prepare pipe, fittings, supports, and accessories for finish painting.
11. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

### 3.4 TRAINING & DEMONSTRATION

- A. Demonstration Services: Arrange and pay for a factory-authorized service representative to train Owner's maintenance personnel on the following:
1. Procedures and schedules related to start-up and shut down, troubleshooting, servicing, preventative maintenance, and how to obtain replacement parts.
  2. Familiarization with contents of Operating and Maintenance Manuals specified in Division 1, Section- "Closeout Submittals" and Division 22, Section - "Basic Mechanical Requirements."
  3. Provide Service Manuals for each sprinkler system specified.
- B. Provide three (3) hours of factory authorized training.
1. Refer to Section - "Mechanical General Provisions" for video taping requirements.
  2. Provide seven (7) days advanced notice to Owner's Representative.

### 3.5 INSPECTIONS AND TESTS

- A. All fees, etc. for the installation, inspection, or construction of the work which are required by any authority and/or agencies having jurisdiction, shall be obtained and paid for by the contractor.
- B. All inspections, examination, and tests required shall be arranged and paid for by the contractor as necessary to obtain complete and final acceptance of the Fire Protection System. The contractor shall deliver certificates of all such inspections to the Architect/Engineer.
- C. Maintenance Instructions to the Owners: After installation of this system is completed



and before it is accepted by the owner, the sprinkler contractor shall instruct the

maintenance personnel on the care and maintenance of this system. Included in these instructions shall be the following:

1. Two (2) original copies of NFPA 25 shall be furnished to the owner's maintenance personnel.
2. Full sized copy of AS-BUILT sprinkler drawings, showing any modified locations of sprinkler heads/piping.
3. Full sized print of Louisiana State Fire Marshal reviewed/stamped submittal including material data sheets, hydraulic calculations, and shop drawings.
4. Normal conditions of the sprinkler system.
5. Weekly test of alarm valve.
6. Weekly test of waterflow indicator.
7. Semi-Annual test of alarm valve and water flow indicator.
8. Abnormal conditions and corrections.
9. Maintenance.

- D. After the above instruction has been completed, this contractor shall notify the Architect/Engineer by letter of such. This letter should state the name(s) of the individuals receiving instructions.

### 3.6 INSPECTIONS

- A. For a period of one (1) year after acceptance, this contractor shall make two (2) inspections on the sprinkler system. One shall be six (6) months after acceptance and the other one (1) year after acceptance. This contractor shall furnish the owner with all inspection certificates after each inspection and furnish the architect with two copies of the inspection certificate. After one year, the owner shall be responsible for arranging for inspections by a qualified sprinkler contractor.

END OF SECTION 21 13 19