SECTION 15300

FIRE PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Supplementary Conditions of the specification apply to Work of this Section.

B. Provide all labor, supervision, services, quality control, design and engineering, materials, transportation, tools, appliances and miscellaneous accessories required to design, fabricate, supply, test and install a complete working wet-pipe automatic fire protection sprinkler system in strict accordance with the Project Manual, Drawings and as required by the National Fire Protection Association and the State Fire Marshal. Scope of work is to install a new automatic sprinkler system in area indicated on the drawings.

C. The Contractor shall obtain the services of a Licensed Sprinkler Contractor. This Contractor shall be responsible to provide the required flow to the most distant sprinkler head.

D. All new areas shall be completely sprinklered unless noted otherwise with an automatic fire protection sprinkler system conforming to NFPA 13, Louisiana State Fire Marshal requirements, and City of New Orleans. Valve bodies shall be tapped and prepared as required for flow detectors and tamper switches.

1.2 DESIGN

A. The fire protection system shall be hydraulically designed in conformance with National Fire Protection Association Standard 13 (latest edition), and in conformance with all State and Local codes, laws, rules, regulations, requirements, and ordinances. Systems must qualify for the best available fire insurance rate credit for each type of system.

B. Design shall be based on the densities indicated on drawings (as a minimum) and the existing available water supply.

1.3 QUALITY ASSURANCE

A. Qualifications of Designer, Fabricator, and Installers

1. The entire automatic sprinkler and hose system shall be designed, fabricated, installed, and tested by experienced workmen completely familiar with the items required and the manufacturer's current recommended method of installation. Adequate supervision must be provided at all times. All Fire Protection work shall be performed by a Louisiana State Certified Fire Protection Contractor. Hydraulic system design shall be computer generated and shall be performed by a Louisiana State Certified Fire Protection System Designer.

B. Contract Drawings

1. Drawings are diagrammatic. Obtain full approval of the reviewing authorities before Installing any part of the system. Comply with all codes and regulations including:

   a. National Fire Protection Association (NFPA)
   b. Office of Lousiana State Fire Marshal

c. Owner's Insurance Company

2. Contract drawings and details are shown to limit and explain structural conditions, requirements, and manner of erecting work. Drawings are intended to convey the scope of work and indicate general arrangements of equipment, ducts and piping and approximate sizes and locations of equipment and outlets of various trades. Trades shall follow these drawings in laying out their work, but shall also check construction to familiarize themselves with all conditions affecting their work, and shall verify spaces in which their work will be installed. Coordinate work of this Section with the work of all other Sections.

3. It is understood that these Specifications, together with the accompanying drawings, contemplate apparatus fully erected, complete and in successful operating condition with the Contractor furnishing and installing everything that may be necessary to complete the job.

4. Where uncertain about the method of installation, request details. Lack of details, not requested, will not be an excuse for improper installation and any such work must be corrected, at no additional cost to the Owner.

1.4 PERMITS, ORDINANCES, RULES AND REGULATIONS

A. Obtain and pay for all necessary permits, inspection, connection charges, fees, insurance, bonds, licenses, and comply with all governing laws, ordinances, rules and regulations including those of the National Fire Protection Association, Factory Mutual municipal and state authorities having jurisdiction over the work. Submit shop drawings, calculations, and product information to the Architect, ready for submittal to the Louisiana State Fire Marshal and obtain approval.

B. Material, equipment, etc., installed under these Specifications shall conform to rules, codes, etc., as recommended or adopted by the national association governing the manufacture, rating and testing of these items.

1.5 SUBMITTALS

A. Shop Drawings

1. Make submittals of equipment and drawings in accordance with the provisions of this specification. Shop drawings shall fully describe each system in detail.

2. Checking of shop drawings shall in no way modify the contract or relieve the Contractor from compliance with the contract unless the difference is clearly stated in the submission and specific acceptance is given by the Contracting Owner's Representative as a change to the contract.

3. Names and manufacturers or catalog numbers, if mentioned herein, are to establish a standard for the type, general design, and quality of the product required. Where "or equal" is indicated, other products similar in design and of equal quality and complying with the drawings and specifications will be approved if found acceptable, by the Engineer.

4. Shop drawings and Brochure submittals must be approved by the Engineer prior to fabrication. Certified system designer and Mechanical P. E. must stamp and sign each sheet of drawings prior to submittal.

5. Shop Drawings shall include:

a. Detailed layout drawings of each automatic sprinkler system and each hose indicating relationship of items including lighting fixtures, grilles, louvers, speakers, alarm system components, structrue and other items.

b. Complete details and sections as required to define clearly and clarify proposed materials by manufacturer's name and catalog number.

c. Catalog cut sheets and performance data pertaining to material and equipment proposed for use. Every component of the system shall be detailed by manufacturer's catalog cut sheets, specifications, and approvals.

B. Submit complete computer generated hydraulic calculations for each system proving that their performance meets the requirements of these specifications, the Contract Drawings, NFPA, Louisiana State Fire Marshal, and national standards. Certified system designer must stamp and sign each set of calculations.

C. Manual

1. Upon completion of this portion of the Work and as a condition of its acceptance, deliver to the Architect (4) copies of a Sprinkler Manual. Include in each copy of the manual, a copy of the record drawings, description of the control valves, sprinkler heads, operation, maintenance, etc.

D. Sprinkler Designer/Contractor shall be responsible for submitting the calculations and shop drawings to the Engineer and the Fire Marshal for approval. Sprinkler Designer/Contractor shall complete the required review application and pay associated fees. Submit to required authorities having jurisdiction after Contracting Officer has reviewed and approved submittals.

1.6 EXISTING CONDITIONS

A. Sprinkler Designer/Contractor shall verify the characteristics of the existing water system and the available water pressures and volumes with field flow tests performed in accordance with NFPA requirements. Contractors flow test reports shall be submitted to the Architect with the calculations and shop drawings.

1.7 COOPERATION WITH OTHERS

A. Contractor shall cooperate with others to avoid complications between the installation of his equipment and equipment of other trades so that all parts of the work fit properly.

1.8 PRODUCT HANDLING

A. Protect fire protection system materials before, during and after installation and do not damage the installed Work of other trades. Store materials in protected environment.

B. Replacements

1. In the event of damage, immediately make repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

PART 2 – PRODUCTS

2.1 DESIGN

A. General

1. Every component and every material of each system shall be Factory Mutual approved and UL listed and shall conform to the appropriate NFPA standard.

2. Materials, equipment, etc., shall be new and of design, type and strength to accomplish satisfactorily the purpose intended. Materials required which are not covered by the detailed specifications shall meet the requirements of ASTM specifications and shall be of the required class, grade, and type.
3. The system shall be complete in all regards and shall include, but not necessarily be limited to piping pertaining to the fire protection systems including all required pipe, valves, escutcheons, cabinets, hangers, excavating, backfilling and other items.
4. Piping in areas with finished ceilings shall be concealed. Paint all exposed piping and fittings. Exposed piping shall be installed parallel to or at right angles to the column lines of the building. Do not paint any moving parts of operating units such as valve operators, linkages, sprinkler heads, sensing devices, etc. Do not paint over required labels or equipment identification, performance ratings, name or nomenclature plates. Surfaces shall be thoroughly cleaned and shall be completely free from dirt, oil, grease, rust, and scale prior to applying paint.

B. Sprinkler Heads

1. Provide heads of style, type, size, K-factor, temperature rating and materials as appropriate to protected area, and as approved by the Architect.
2. Provide a metal cabinet containing extra heads and a sprinkler wrench as required in NFPA 13.. Cabinets to be installed where designated by Architect.

2.2 MATERIALS

A. General

1. The quality of materials required for this installation shall be not less than that quality required by the agencies having jurisdiction.
2. Material, including piping, shall be clean and free of rust.
3. Sprinkler equipment shall be by Star Sprinkler Corp., Viking Corp., Reliable Sprinkler Co., Grinell or approved equal.

B. Components - Wet Pipe Systems - shall include, but not necessarily be limited to the following:

1. Control valve with wall post indicator and tamper switch, connected to alarm/detection system.
2. Piping, fittings and heads. Heads shall be U.L. listed F.M. approved.
3. UL approved wet-pipe alarm check valve and trim to meet the requirements of NFPA and FM.
4. Water motor alarm, weatherproof guarded type.
5. Drains at base of each riser and auxiliary drains, 2" size and system drains. Drains shall be piped to discharge at a safe point outside of building.
6. Pressure gauges on system side and supply side of alarm valve.
7. Two (2) inlet Fire department connection with UL approved straight way check valve installed in pumper connection. Mount between 12" and 48" above finished grade. Fire department siamese connection shall have threads to meet requirements of local fire department.
8. Flushing connection - 2' x 4" long nipple with the cup for flushing scale, etc. from pipes.

9. Inspector's test connection at highest and most remote part of each system.
10. Identification signs.
11. Hangers - UL labeled.
12. Flow alarm switches shall be Grinnell Model WFD or equal.
13. Insulate lines subject to freezing.

C. Piping Materials

1. Piping above grade at the wet pipe systems shall be standard weight steel, schedule 40, with cast iron fittings, ASTM A135 and A 53, Type E, Grade A.
2. Schedule 10 pipe is NOT acceptable
3. Contractor, at his option, may use UL and F.M. approved victaulic couplings and/or UL and F.M. labeled welded outlet fittings.
4. Pipe and fittings shall be supplied free of rust.

D. Valves

1. Valves: Gate valves shall be O.S. & Y. type, iron body with brass trim and shall be designed for 175 pounds water working pressure. Screwed-end gate valves shall be bronze and shall conform to WW-V-54. Check valves shall be of a type having iron body, brass seat and discs, clearway swinging designed for 175 pounds water working pressure. Screwed-end angle, check and globe valves shall be bronze and shall conform to WW-V-51.
2. Sprinkler system zone control valves shall be UL listed butterfly valves with integral tamper resistant DPDT 120v monitoring switches, Grinnel Series 8000FP or approved equivalent.
3. Sprinkler control valves size 2-1/2" and smaller shall be Milwaukee Valve Company Model BB-SLS or equal.
4. Sprinkler system valves 1" and smaller shall be ball valves.

2.3 FIRE DEPARTMENT CONNECTION

A. Fire Department connection shall be Potter-Roemer, Inc., or equal, 2-1/2" x 2-1/2" x 4". Siamese connection shall be brass with two individual drop clapper valves, plugs and chains. Threads to meet specifications of local Fire Department. Provide brass caps.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection

1. Prior to commencement of each stage of the fire protection system installation, carefully inspect the installed Work of other trades and verify that such Work is complete and correct to the point where this installation may properly commence.
2. Verify that installation of the fire protection system will be installed in complete accordance with pertinent codes and regulations and the approved Shop Drawings.

3. Avoid interferences with air conditioning ducts, lights and mechanical and electrical piping and equipment. It is not the intent of the Contract Drawings to show clearances.

B. Discrepancies

1. In the event of discrepancy, immediately notify the Architect and the Engineer.
2. Do not proceed with installation in areas of discrepancy until such discrepancies have been completely resolved.

3.2 INSTALLATION

A. Governing Authorities

1. Install the complete wet-pipe automatic sprinkler system in strict accordance with pertinent codes and regulations of the Louisiana State Fire Marshal, NFPA and the Owner’s insurance company. Obtain required inspections and approvals from State and local agencies having jurisdiction.

B. Layout

1. The Contractor shall lay out his work and shall be responsible for its correctness. Take such measurements necessary to assure approved fitting and proper installation of his work, and permit proper installation by other trades depending thereon.
2. Systems shall be capable of being completely drained. Slope piping as required. Avoid water traps and air pockets. Provide drains as required from every portion of every system.

C. Method

1. Screw or grooved fittings shall be used for sprinkler branches in wet systems. Flanged joints shall be used at risers and at all line feed runs of pipe; or grooved method with UL listed couplings. Pipe shall be installed without springing or forcing. Do not bend pipes.
2. All hangers shall be securely fastened and shall be UL approved hangers and shall be in no case greater than twelve (12) feet apart. Every branch line length of pipe, except stated lengths, less than eighteen (18) inches, shall have at least one hanger. Pipes shall be hung as follows: up to 1-1/4" at 8'-0" on center, 1-1/2" to 3" at 10'-0" on center, 4" to 8" at 12'-0" on center and/or as required by NFPA #13. Support vertical pipes at every floor with riser clamps.
3. Install on each system an inspector's test connection for the purpose of allowing an inspector to open inspector's test valve and prove that each sprinkler system is operating correctly.
4. Painted or printed metal identification signs shall be provided for all control valves, drains, test valves and other items required by NFPA. These signs shall indicate identity, use and/or purpose of each item provided with said sign. The signs for the siamese connections shall indicate diagramatically and in words which systems are being charged and which portions of the building are protected by such systems. Signs at test valves and auxiliary drains shall indicate which system they are a part of. Each system shall be assigned a number for all identification purposes. Signs shall conform to NFPA 13. Provide hydraulic calculation sign at each riser.

3.3 CUTTING AND PATCHING

A. Perform cutting, fitting and other Work required to make the parts come together and fit. Do not endanger any work by cutting, digging or otherwise and do not cut or alter existing Work, except with the consent of the Architect.

3.4 ESCUTCHEON PLATES

A. Where any pipe or riser passes through walls, partitions, floors or ceilings, use chrome plated escutcheon plates. Plates shall be large enough to completely close the hole around the pipes and shall be round with the least dimension not less than 1-1/2" larger than the diameter of the pipe and secured in a manner approved by the Engineer. Chrome coating shall be heavy enough to resist corrosion.

3.5 FIRE STOPPING

A. A UL listed firestop assembly shall be used where any pipe or riser passes through a fire rated wall, partion, floor or ceiling.

3.6 TESTING

A. Owner’s representative will conduct inspections and witness field tests. Equipment, materials, or work rejected because of defects or non-conformance to contract requirements shall be replaced or corrected by the Contractor at no additional cost to the Owner.

Upon completion of the fire protection system installation, furnish all personnel and equipment, required to test and retest the complete system, making all adjustments necessary to secure the approval of the Authorities having jurisdiction. All piping shall be tested hydrostatically at a pressure of 200 psi for two (2) hours and proved tight. Contractor shall monitor pressure gauges during test and shall inspect each joint using a soap solution to detect leaks. Notify Architect at least twenty-four (24) hours prior to the time of the test.

B. Contractor's Material and Test Certificate: Upon completion of Work, furnish the Architect, four (4) copies of completed material and test certificate in accordance with NFPA 13, Article 1-12, and Article 5-6.1.12.

3.7 PAINTING

A. Do not paint sprinkler heads, moving parts of valves, sensing devices or identification labels.

B. Sprinkler piping to remain exposed shall be cleaned of dirt, grease, loose rust and scale and other deleterious matter and shall receive paint system as specified in Section 09900. Color to be red.

3.8 CLEANING

A. When Work has been finally tested, Contractor shall clean areas and spaces affected by his Work.

B. Finished, exposed products shall be thoroughly cleaned and/or polished.

C. Piping shall be free from all obstructions.

D. Remove rubbish generated by this work on a daily basis.

3.9 ACCEPTANCE

A. As a condition of the acceptance of the fire protection system, after the fire protection system has been completely approved, secure a letter of final acceptance or certificate of inspection from the State Fire Marshall's office. Deliver three (3) copies of the letter to the Architect. This document should indicate full conformity of the installation with local and state requirements. Any required corrections to the system shall be performed by the Contractor without additional cost to the Owner.

B. As a condition of the acceptance of the fire protection system, the Contractor shall provide the Owner with training in the operations and maintenance of the system. This training shall consist of Classroom type session(s) and/or "hands-on" type field instructions, at the discretion of the sprinkler contractor. The training shall be of sufficient content and duration as required to render the Owner's designated personnel knowledgeable enough to properly operate and maintain the system. The cost of this training shall be included in the Base Bid and shall be a mininmum of 2 hours duration for the personnel selected by Owner. Allow 7 days advance notice for the training and coordinate acceptable time and date with Owner.

3.10 GUARANTEE

A. Within twelve (12) months from final acceptance by Owner, the Contractor shall repair defective materials and work; replace with new materials and/or equipment, any materials and/or equipment failing to give satisfactory service, at no cost to the Owner.

B. During the period of guarantee, any defects in equipment, materials or workmanship shall be promptly corrected by the Contractor without cost to the Owner.

END OF SECTION