SECTION 215250

FIRE SUPPRESSION SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

A. All work specified in this Section is governed by the Mechanical General Section 230100.

B. This Section 215250 and the accompanying drawings cover the provisions of all labor, equipment, appliances, and materials and performing all operations in connection with the engineering, design and construction of the fire suppression systems as specified herein and as shown.

C. Attention is called to the different hazards, classes and types of fire suppression systems required within the facility. Systems shall include, but not be limited to the following:
1. Light hazard
2. Ordinary hazard
3. Dry-pipe (in locations subject to freezing)

D. The work included under this Section 215250 shall include, but is not limited to, the following:
1. Risers including all check valves, indicator valves, alarms, etc.
2. Standpipes and hose connections
3. Siamese connections
4. Air compressor and controls
5. Piping and sprinkler heads
6. Hydraulic design computations
7. Shop drawings and procurement of all approvals

1.2 STANDARDS AND APPROVALS

A. The standpipes and sprinkler systems shall be designed and installed in conformance with the applicable standards of NFPA 13, NFPA 14, NFPA 20, NFPA 24, NFPA 72, Underwriters Laboratories (UL), the standards of the Underwriter (IRI/FM/ISO) and local codes.

B. The hydraulic calculations, standpipes and sprinkler system design and installation shop drawings shall be submitted and approved by the Fire Marshall. Approval is required prior to installation.

C. The standpipes and sprinkler systems shall be installed by a firm which is duly licensed to install such systems in the State of Georgia and carries a current certificate from the State Fire Marshal's Office.

1.3 RECORD DRAWINGS

A. Upon completion of the work, provide record as-built documentation of the fire protection systems as actually installed to the Owner. Drawings shall be to scale, and shall include all details required to accurately indicate the system as installed. Record drawings shall be produced in electronic format compatible with AUTOCAD 2006. Furnish two (2) CD’s with all drawings in dwg. format, one (1) vellum copy and two (2) bond copies of all drawing sheets.

1.4 IDENTIFICATION

A. All control, check, drain, test and alarm valves and alarms shall be provided with identification signs of the standard design as adopted by the sprinkler industry and as recommended for the particular services. The signs shall be securely attached to each piece of equipment.

1.5 HOSE THREADS

A. Hose threads shall conform to the standards of the local Fire Department. The exact threads used shall be verified with the Fire Department before ordering materials.

PART 2 - PRODUCTS

2.1 MINIMUM QUALITY LEVEL

A. All equipment and materials provided under this Section 21 52 50 shall be new and of the best grade commercial quality, shall be of the latest design of the manufacturer, and shall be listed and approved by U.L. and the Underwriter. Materials and equipment manufactured outside of the United States will not be acceptable. All components shall be suitable for the pressures indicated on the flow test. Do not use fire suppression systems that contain ozone-depleting substances such as CFC's HCFC's or halons.

2.2 FIRE PUMP AND ACCESSORIES

A. The fire protection system will utilize the fire pump provided for the connected office tower/deck.

2.3 AIR COMPRESSOR AND TRIM

A. Air compressor shall be a Reliable Model A, minimum ¾ HP. All trim, such as, but not limited to, the following shall also be provided to accomplish a dry-pipe installation:
   1. Air maintenance device
   2. Dry pipe valve
   3. Automatic controls

2.4 VALVES

A. Materials shall be as follows:
   1. Valves 2" and smaller: Bronze body
   2. Valves over 2": Iron body with bronze trim

B. Connections shall be as follows:
   1. Valves 4" and smaller: Threaded or flanged
   2. Valves over 4": Flanged

C. Gate valves shall be double seat; type as follows:
   1. Valves 2" and smaller: Rising stem type, except where space requires non-rising stem, solid wedge with union bonnet and replaceable seat rings.
   2. Valves over 2": Outside screw and yoke type with solid wedge and replaceable seat rings.

D. Butterfly valves shall have bronze or ductile iron discs, stainless steel shaft and lock bolts, Buna N liner and as follows:
   1. Valves through 6": Full lug type with lever operators

2. Valves over 6": Full lug type, gear operators

E. Fire department valves (FDV) shall be 2 1/2" screwed, U.L. approved, brass hose valves for working pressure of 175 psig with 2 1/2" male hose threads, 1 1/2" removable reducer, polished brass cap and chain.

F. Swing checks shall be gravity operated with renewable composition discs. Wafer checks shall have renewable clapper facings and non-stick coated clappers, valve shall be approved for both horizontal and vertical installation.

G. All valves shall comply with requirements of NFPA and shall be Underwriters' Laboratories, Inc. (UL) listed.

H. Working pressure of all valves shall be minimum 175 psig at 70 degrees F. water temperature.

I. All valves utilized for shut-off service shall be lockable in the open position.

J. Alarm valves shall have electrical circuit closers.

2.5 ROOF MANIFOLDS

A. Roof manifolds shall be Y-type, 4" x 2 1/2" x 2 1/2"; brass construction complete with caps and chains.

2.6 FIRE DEPARTMENT SIAMESE CONNECTIONS

A. Provide 2-1/2" x 2-1/2" x 4", chrome plated, lettered "Standpipe & Auto-Spkr", threads to match local Fire Department, with caps and chains.

2.7 DRAINS

A. Drains shall be provided in all risers and auxiliary drains at all low points in the system. Inspector's test drains shall be installed on each sprinkler system.

B. Pipe the main drain and test lines full size to the outside. Do not spill on walkways.

C. Pipe small drips and drains to the outside of the building or to an indirect drain within the building.

2.8 WATER FLOW SWITCHES

A. Water flow switches with normally closed electrical contacts shall be provided in all required locations to open the electrical contacts at any time water flows in the associated riser or zone piping system.

2.9 TAMPER SWITCHES

A. Tamper switches with normally closed electrical contacts shall be provided in all required locations to open the electrical contacts at any time the associated valve is not fully open.

2.10 ALARM SYSTEM

A. Provide interlocks to the building fire alarm system to provide automatic signaling to an approved remote location with adequate dialing and communication system to alert the

local fire department. Connection and leased line shall be provided by owner.

2.11 SPRINKLER HEADS

A. All sprinkler heads shall be automatic quick response heads or as otherwise required by NFPA.

B. Sprinkler Heads in Ceilings:
1. All areas shall have heads equal to Reliable Model G, fully-recessed type. Finish shall be white, as selected by the Architect.

C. Sprinkler heads installed in storage, utility, mechanical equipment rooms and similar “back-of-house” areas without ceilings shall be bronze heads in the upright position unless otherwise noted.

D. The temperature rating of the sprinkler heads shall be in accordance with applicable code and the recommendations of the Underwriter.

E. Sprinkler guards shall be provided for all heads within seven feet of the floor, in mechanical, electrical and storage rooms, and elsewhere as required by the Underwriter.

F. Provide to the Owner a cabinet containing two (2) head wrenches and a minimum of six (6) spare heads of each type and temperature rating used in the systems.

G. All heads installed in areas with tile ceilings shall have the heads centered in the tile to within 3" of the center.

2.12 PIPING

A. Piping shall be Schedule 40, Grade A53 or A120; except that Schedule 10 piping is acceptable on pipe sizes 2 1/2” and larger where permitted by the applicable codes and standards. Schedule 10 piping shall not be threaded nor cut-grooved. Couplings and fitting shall be Victaulic.

B. The use of light-wall threaded pipe such as Allied XL is prohibited.

C. At the contractor’s option, individual drops to sprinkler heads may be flexible corrugated stainless steel hose with stainless steel braid, approved by both Factory Mutual and U.L. Flexible hose shall be secured above the ceiling with galvanized sheetmetal brackets and clamps. Flexible hose, brackets and clamp shall be as manufactured by Flexhead Industries, Inc. or an approved equal.

D. Underground sprinkler entrance piping shall be Class 150 ductile iron pipe with mechanical joints.

2.13 PIPE HANGERS AND SUPPORTS

A. Provide all necessary hangers, supports, bracing, accessories, etc., as required for proper installation of the work, and only approved type hangers shall be used. All sprinkler piping shall be supported from building structure; sprinkler lines under ducts shall not be supported from ductwork but shall be supported from building structure with trapeze hangers where necessary.

B. Piping supported from floors shall be provided with steel support bases.

2.14 ESCUTCHEONS

A. Each penetration through walls and ceilings shall be equipped with a chrome-plated escutcheon at the point the pipe passes through the wall or ceiling.

PART 3 - EXECUTION

3.1 DESIGN AND INSTALLATION

A. The design and installation of the fire suppression systems shall be based on the hazards and classes required by the occupancies indicated.

B. Underground piping shall be provided with a minimum of 3'-0" of ground cover. Concrete thrust blocks shall be provided at all changes of direction. Provide restraining rods at all mechanical joints.

C. Provide connection to kitchen hood, laundry equipment, etc. as shown on the drawings.

D. Coordinate with Divisions 23 and 26 and provide all required interlocks to the fire alarm system.

E. Coordinate with Division 26 for power to air compressors. This scope shall be included in the fire suppression system bid.

F. Sprinklers shall be provided in the laundry chute at the top and bottom and every other level (as a minimum) in compliance with NFPA 82.

3.2 FLUSHING

A. All underground lines, before connecting to the sprinkler systems, shall be flushed thoroughly in accordance with NFPA procedures.

3.3 TESTING

A. The entire sprinkler system shall be tested at not less than 200 psi for not less than 2 hours. All leaks discovered shall be repaired by tightening, replacing or re-working the leaking component or joint.

3.4 EXISTING SYSTEM CONDITIONS

A. The existing dry sprinkler system serving the parking garage shall be modified as required to provide coverage to any new areas built for the hotel.

B. The Fire Protection System contractor shall review requirements for any existing system modification with the Fire Marshal.

END OF SECTION 215250

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