

# SECTION 15330 - WET PIPE SPRINKLER SYSTEM

## City of San Diego, CWP Guidelines

### PART 1 -- GENERAL

#### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing performance requirements for a wet pipe sprinkler system to be designed and installed by a specialist sprinkler company.

#### 1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 02200 Earthwork
2. Section 15020 Pipe Support
3. Section 15310 Fire Protection Piping
4. Section 15375 Standpipe and Hose
5. Section 15380 Fire Pumps
6. Section 16050 Basic Electrical Materials and Methods

#### 1.3 CODES

- A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:

1. Uniform Fire Code
2. National Electrical Code

#### 1.4 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. ANSI/NEMA MG 1           Motors and Generators
2. ANSI/UL 448           Pumps for Fire Protection Service
3. NEMA 250           Enclosures for Electrical Equipment (1000 Volt Maximum)
4. NFPA 13           Installation of Sprinkler Systems
5. NFPA 20           Installation of Centrifugal Fire Pumps

#### 1.5 SYSTEM DESCRIPTION

- A. System shall provide coverage for [entire building] [building areas indicated].

- B. System shall interface with [building control system] [building fire and smoke alarm system].
- C. System shall comply with NFPA 13 [light hazard] [ordinary hazard, Group 1] [ordinary hazard, Group 2] [ordinary hazard, Group 3] [extra hazard] occupancy requirements.
- D. Emergency pressure system shall include [electric motor] [diesel engine] driven fire pump].
- E. Fire department connection shall be provided [as indicated].

#### 1.6 QUALIFICATIONS OF INSTALLER

- A. Specialist firm shall be a company specializing in sprinkler systems.

#### 1.7 SHOP DRAWINGS AND SAMPLES

- A. The following shall be submitted in compliance with Section 01300:
  - 1. Hydraulic calculations, detailed pipe layout, hangers and supports, components and accessories.
  - 2. [Shop drawings] [Product data] [Hydraulic calculations] shall be furnished to the [authority having jurisdiction] [Fire Marshal] for approval. Proof of approval shall be submitted to CONSTRUCTION MANAGER.
  - [3. Pump type, capacity and power requirements.]
  - [4. Certified pump curves showing pump, performance characteristics with pump and system operating point plotted and NPSH curve when applicable.]

#### 1.8 OWNER'S MANUAL

- A. The following shall be included in the OWNER'S MANUAL in compliance with Section 01300:
  - 1. Written maintenance data on components of system and servicing requirements.
  - 2. Pump operation, if any, maintenance, and inspection data, replacement part numbers and availability, and location and numbers of service depot.

#### 1.9 REGULATORY REQUIREMENTS

- A. The WORK of this Section shall include the following:
  - 1. Submission to CONSTRUCTION MANAGER of hydraulic calculations, product data, shop drawings, and low water pressure cut-in controller bearing stamp of approval of [authority having jurisdiction] [Fire Marshal].

#### 1.10 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. **Delivery of Materials:** Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.

- B. **Storage:** Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

## PART 2 -- PRODUCTS

### 2.1 GENERAL

- A. Wet pipe sprinkler system shall be designed and installed to conform to NFPA 13.
- B. Equipment and components shall bear [UL] [FM] [ ] label or marking.

### 2.2 PIPING MATERIAL

- A. Piping material shall comply with the following:
1. Buried Piping: [Cast] [Ductile] iron.
  2. Above Ground Inside Building Piping: [Steel, Schedule [ ] [black] [galvanized]] [Copper tube, Type [ ]] [As permitted by NFPA 13]
- B. Pipe and appurtenances shall be supported in accordance with Section 15020.

### 2.3 PIPING SPECIALTIES

- A. Piping specialties shall include the following:
1. Automatic Sprinkler Valve: Flow detector with alarm circuits, pressure switch and pressure retard chamber.
  2. Alarm Gong: [Water] [Electric] type.
  3. Fire Department Connection: [Standard wall] [Flush mounted wall] [Free standing] type; [ductile iron;] [brass;] [chrome plated] [ ] finish; thread size to suit fire department hardware; [two] [ ] way threaded dust cap and chain of same material and finish, [3/4] [ ] inch automatic drip[;] [connected to drain; marked "Sprinkler -Fire Department Connection".

### 2.4 SPRINKLER HEADS

- A. Sprinkler heads shall comply with the following where indicated:
1. Suspended Ceiling Type: [Standard] [Semi-recessed] [Recessed] [Concealed] pendant type with [brass] [chrome plated] finish, with matching escutcheon.
  2. Exposed Area Type: Standard upright type with [brass] [chrome plated] finish.
  3. Sidewall Type: [Brass] [Chrome plated] finish with matching escutcheon.
  4. Fusible Link: Temperature rated for specific area hazard.
  - [5. Guards: Finish to match sprinkler head.]

## [2.5 PUMP CONSTRUCTION

### A. Pumps shall be:

1. Statically and dynamically balanced.
2. Constructed to permit complete servicing without breaking pipe or motor connections.
3. Designed to operate at [1,750] [ ] rev/min.]
4. Provided with labels showing the manufacturer's name, model number, and rating/capacity. ]

## [2.6 HORIZONTAL CENTRIFUGAL PUMPS

### A. Horizontal centrifugal pumps shall comply with the following:

1. Type: Centrifugal, direct connected.
2. Casing: Cast iron, split case, single or double suction, rated for greater of [150] [ ] psig or 1.25 times actual working discharge pressure, renewable bronze wearing rings, flanged suction and discharge.
3. Impeller: Bronze, fully enclosed, keyed to shaft.
4. Shaft: High grade alloy steel with copper, bronze, or stainless steel shaft sleeves.
5. Bearings: Grease lubricated ball bearings.
6. Drive: Flexible coupling with coupling guard.
7. Seals: Packing gland with minimum four rings [graphited asbestos] [ ] packing.
8. Baseplate: High grade heat-treated cast iron or reinforced heavy steel with integral drain rim, and grout base.]

## [2.7 VERTICAL TURBINE PUMPS

### A. Vertical turbine pumps shall comply with the following:

1. Type: Vertical, centrifugal, turbine.
2. Casing: Cast iron, rated for greater of [125] [ ] psig or 1.25 times actual discharge working pressure, discharge gauge, air vent, wear rings, seal flush connection, drain plug, and flanged discharge.
3. Impeller: Bronze, fully enclosed, keyed to shaft or secured with locknut.
4. Shaft: Stainless steel or carbon steel with bronze or stainless steel sleeve through seal chamber.

5. Seals: Packing gland with minimum four rings [graphited asbestos] [ ] packing.]

## [2.8 FIRE PUMP ACCESSORIES

### A. Fire pump accessories shall include:

1. Check valve in discharge pipe.
2. Outside stem and yoke (OS&Y) gate or butterfly valves on system side of check valve and on supply side of pump.
3. Fire pump bypass fitted with OS&Y gauge or butterfly valves and check valve.
- [4. Relief valve and [closed] [open] type cone.]
5. Pressure gauges, suction and discharge.
6. Circulation relief valve.
7. Umbrella cock, automatic air release.
8. Splash shield between pump and motor.
9. Manifold with hose gate valves.
- [10. Flow metering system for closed loop testing.]

## [2.9 ELECTRIC MOTOR DRIVE - EMERGENCY

### A. The emergency electric motor drive shall include:

1. Motor: [Squirrel cage] [ ] type; in [open] [drip proof] [NEMA 250] [ ] enclosure.
2. Controller: Limited service type with [auto-transformer] [primary resistor] reduced voltage, [part winding] [across-the-line] [ ] starter, in [ANSI/NEMA MG 1] [ ] enclosure, including the following:
3. Two circuit breakers of [10,000] [ ] amperes interrupting capacity (one for emergency start).
4. Magnetic starter capable of being energized by pressure switch or manually.
5. Alarm circuit for power failure.]

## [2.10 DIESEL ENGINE DRIVE - EMERGENCY

### A. The emergency diesel engine drive shall include:

1. Controller:

Common local alarm bell with individual trouble lamps to indicate low oil pressure, high cooling water temperature, engine failure to start, shut down from overspeed, or battery failure.

Automatic provision for alternate use of two separate storage batteries.

Intermittent cranking of engine with lockout if engine fails to start after [ ] attempts.

Provision for lockout alarm if battery is disconnected or becomes inoperative.

Provision for [10] [ ] second delayed start.

Circuits for cooling water line solenoid valve and outside air damper location.]

## [2.11 FIRE PUMP ASSEMBLY CONTROLS

A. Fire pump assembly controls shall comply with the following:

1. Controller: Hands-off automatic switch, fire water pressure switch to operate pump drive, fire water pressure switches for alarms.
2. Local Alarms: With indicating lights for low fire water pressure and high fire water pressure.

[3. Contacts for remote circuits to indicate pump operational status and alarm status.]]

## [2.12 PRESSURE BOOSTER (JOCKEY) PUMP

A. The pressure booster jockey pump shall include the following:

1. Electrically operated pressure booster pump to maintain pressure.
2. Shut-off valves, check valve, and relief valves.]

## 2.13 SPARE PARTS

A. The WORK of this Section includes the following spare parts:

1. [2] [ ] sprinkler heads for each type of sprinkler.
2. Wrenches for each head type.
3. Metal storage cabinet in location designated.

[4. [1] [2] [ ] set of [gaskets] [screens] [ ] for each pump type and model supplied.]

## **PART 3 -- EXECUTION**

### 3.1 INSTALLATION - PIPING

A. Buried shut-off valves shall be installed in valve box with post indicator.

B. Double check valve assembly shall be installed at sprinkler system water source connection.

- C. Fire department connection shall be located with sufficient clearance from walls, obstructions, or adjacent siamese connectors to allow full swing of fire department wrench handle.
- D. Outside alarm gong shall be located on building wall [as indicated].
- E. Piping shall be placed in concealed spaces above finished ceilings.
- F. Heads shall be placed in [two directions in ceiling tile with piping offsets as required.] [one direction only in ceiling tile with location in other direction variable, dependent upon spacing and coordination with ceiling elements.]
- G. Strippable tape or paper cover shall be applied to ensure concealed sprinkler head cover plates do not receive field paint finish.

### [3.2 INSTALLATION - PUMP

- A. Drains from pump bases, pump stuffing boxes, and pump casings shall be piped to floor drains.
- B. Air vent valves shall be installed on pump cases.
- C. Long radius elbows shall be installed on suction side of pumps.
- D. Piping shall not be supported from pump casing.
- E. Base mounted pumps shall be aligned.]

### [3.3 INSTALLATION - EMERGENCY [MOTOR] [ENGINE]

- A. Emergency [motor] [engine] shall be installed to comply with NFPA 13.]

### 3.4 CLEANING

- A. Piping system shall be flushed of foreign matter.

### 3.5 SYSTEM TESTS

- A. System shall be hydrostatically tested.
- B. Test shall be witnessed by [Fire Marshal] [authority having jurisdiction] [CONSTRUCTION MANAGER].

\*\* END OF SECTION \*\*