SECTION 224500 - EMERGENCY PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Emergency showers.
2. Eyewash equipment.
3. Eye/face wash equipment.
4. Combination units.
5. Laboratory recessed safety station.
6. Supplemental equipment.
7. Water-tempering equipment.

1.2 DEFINITIONS

A. Accessible Fixture: Emergency plumbing fixture that can be approached, entered, and used by people with disabilities.

B. Plumbed Emergency Plumbing Fixture: Fixture with fixed, potable-water supply.

C. Portable, Self-Contained Emergency Plumbing Fixture: Fixture with flushing-fluid supply.

D. Tepid: Between 60 and 100 deg F.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include flow rates and capacities, furnished specialties, and accessories.

B. Shop Drawings:

1. Plans, elevations, sections, and details.
2. Details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.
4. Diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Field Quality-Control Submittals:

1. Field quality-control reports.

B. Emergency fixture third-party certification documentation.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For emergency plumbing fixtures.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Extra Stock Material: Furnish extra materials to Owner that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Flushing-Fluid Solution: Separate lot and equal to at least 200 percent of amount of solution installed for each self-contained unit.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ANSI/ISEA Z358.1 for emergency plumbing fixtures including third-party certification of fixtures.

B. Comply with ASSE 1071 for temperature-actuated mixing valves for plumbed emergency fixtures.

C. Comply with ASME A112.18.1/CSA B125.1 for water-supply fittings.

D. Comply with ASME A112.18.2/CSA B125.2 for plumbing waste fittings.

E. Comply with NSF 61 and NSF 372 for fixture materials that will be in contact with potable water.

F. Comply with requirements in ICC A117.1 for plumbing fixtures for people with disabilities.

G. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 EMERGENCY SHOWERS

A. Emergency Showers - Freestanding, Plumbed:

1. Source Limitations: Obtain emergency showers, freestanding, plumbed, from single manufacturer.
2. Capacity: Not less than 20 gpm for at least 15 minutes.
3. Supply Piping: galvanized steel, chrome-plated brass, stainless steel, or PVC with flow regulator and stay-open control valve.

4. Control-Valve Actuator: Pull rod.
5. Shower Head: 8-inch-minimum-diameter, chrome-plated brass, stainless steel, or plastic.
6. Accessories:

    a. Thermostatic mixing valve assembly including ball valve shutoffs and outlet temperature gauge.
    b. Flow switch; single pole.
    c. Modesty curtain.
    d. Magnetically actuated proximity switch.
    e. 60-inch pull rod.
    f. Stainless steel ball valve.

2.3 EYEWASH EQUIPMENT

A. Eyewash Units - Standard, Freestanding, Plumbed:

1. Source Limitations: Obtain eyewash units, standard, freestanding, plumbed, from single manufacturer.
2. Capacity: Not less than 0.4 gpm for at least 15 minutes.
3. Supply Piping: NPS 1/2 chrome-plated brass or stainless steel with flow regulator and stay-open control valve.
4. Control-Valve Actuator: Paddle or Treadle.
5. Spray-Head Assembly: Two receptor-mounted spray heads.
6. Receptor: Chrome-plated brass or stainless steel bowl.
7. Drain Piping:

    a. Size: NPS 1-1/4 minimum.
    b. Finish: Chrome-plated brass.
    c. Fittings: Receptor drain, P-trap, waste to wall, and wall flange.

8. Mounting: Pedestal.
9. Accessories:

    a. Thermostatic mixing valve assembly including ball valve shutoffs and outlet temperature gauge.
    b. Flow switch; single pole.
    c. Dust covers.
    d. Magnetically actuated proximity switch.
    e. Scald protection valve.
    f. stainless steel ball valve.

B. Eyewash Units - Standard, Wall Mounted, Plumbed:

1. Source Limitations: Obtain eyewash units, standard, wall mounted, plumbed, from single manufacturer.
2. Capacity: Not less than 0.4 gpm for at least 15 minutes.
3. Supply Piping: NPS 1/2 chrome-plated brass or stainless steel with flow regulator and stay-open control valve.
4. Control-Valve Actuator: Paddle.
5. Spray-Head Assembly: Two receptor-mounted spray heads.

6. Receptor: Chrome-plated brass or stainless steel bowl.
7. Drain Piping:

    a. Size: NPS 1-1/4 minimum.
    b. Finish: Chrome-plated brass.
    c. Fittings: Receptor drain, P-trap, waste to wall, and wall flange.

8. Mounting: Wall bracket.
9. Accessories:

    a. Thermostatic mixing valve assembly including ball valve shutoffs and outlet temperature gauge.
    b. Flow switch; single pole.
    c. Dust covers.
    d. Magnetically actuated proximity switch.
    e. Scald protection valve.
    f. stainless steel ball valve.

2.4 EYE/FACE WASH EQUIPMENT

A. Eye/Face Wash Units - Standard, Freestanding, Plumbed:

1. Source Limitations: Obtain eye/face wash units, standard, freestanding, plumbed, from single manufacturer.
2. Capacity: Not less than 3.0 gpm for at least 15 minutes.
3. Supply Piping: NPS 1/2 chrome-plated brass or stainless steel with flow regulator and stay-open control valve.
4. Control-Valve Actuator: Paddle or Treadle.
5. Spray-Head Assembly: Two or four receptor-mounted spray heads.
6. Receptor: Chrome-plated brass or stainless steel bowl.
7. Drain Piping:

    a. Size: NPS 1-1/4 minimum.
    b. Finish: Chrome-plated brass.
    c. Fittings: Receptor drain, P-trap, waste to wall, and wall flange complying with ASME A112.18.2/CSA B125.2.

8. Mounting: Pedestal.
9. Accessories:

    a. Thermostatic mixing valve assembly including ball valve shutoffs and outlet temperature gauge.
    b. Flow switch; single pole.
    c. Dust covers.
    d. Magnetically actuated proximity switch.
    e. Scald protection valve.
    f. stainless steel ball valve.

B. Eyewash Units - Portable, Self-Contained:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Bradley; A Watts Brand
    b. Guardian Equipment
    c. Haws Co.

2. Source Limitations: Obtain eyewash units, portable, self-contained, from single manufacturer.
3. Capacity: Not less than 0.4 gpm for at least 15 minutes.
4. Pressure Tank: 10 gal., stainless steel, cylindrical, with pressure gage, and suitable for on-floor installation.
5. Flushing Fluid: Medically acceptable solution manufactured and labeled in accordance with applicable regulations.
6. Spray-Head Assembly: Chrome-plated copper alloy or stainless steel piping with flow regulator; paddle-actuated, stay-open control valve; and two spray heads mounted on tank.

C. Eye/Face Wash Units - Standard, Wall Mounted, Plumbed

1. Source Limitations: Obtain eye/face wash units, standard, wall mounted, plumbed, from single manufacturer.
2. Capacity: Not less than 3.0 gpm for at least 15 minutes.
3. Supply Piping: NPS 1/2 chrome-plated brass or stainless steel with flow regulator and stay-open control valve.
4. Control-Valve Actuator: Paddle.
5. Spray-Head Assembly: Two or four receptor-mounted spray heads.
6. Receptor: Chrome-plated brass or stainless steel bowl.
7. Drain Piping:

    a. Size: NPS 1-1/4 minimum.
    b. Finish: Chrome-plated brass.
    c. Fittings: Receptor drain, P-trap, waste to wall, and wall flange complying with ASME A112.18.2/CSA B125.2.

8. Mounting: Wall bracket.
9. Accessories:

    a. Thermostatic mixing valve assembly including ball valve shutoffs and outlet temperature gauge.
    b. Flow switch; single pole.
    c. Dust covers.
    d. Magnetically actuated proximity switch.
    e. Scald protection valve.
    f. stainless steel ball valve.

2.5 COMBINATION UNITS

A. Combination Units - Emergency Shower with Eyewash, Standard, Plumbed:

1. Source Limitations: Obtain combination units, emergency shower with eyewash, standard, plumbed, from single manufacturer.
2. Piping:

    a. Material: Galvanized steel, Chrome-plated brass, stainless steel, or PVC.
    b. Unit Drain: Outlet at back or side near bottom.

3. Shower:

    a. Capacity: Not less than 20 gpm for at least 15 minutes.
    b. Supply Piping: NPS 1 with flow regulator and stay-open control valve.
    c. Control-Valve Actuator: Pull rod or Treadle.
    d. Shower Head: 8-inch-minimum diameter, chrome-plated brass or stainless steel.
    e. Mounting: Pedestal.

4. Eyewash Unit:

    a. Capacity: Not less than 0.4 gpm for at least 15 minutes.
    b. Supply Piping: NPS 1/2 with flow regulator and stay-open control valve.
    c. Control-Valve Actuator: Paddle.
    d. Spray-Head Assembly: Two receptor-mounted spray heads.
    e. Receptor: Chrome-plated brass or stainless steel bowl.
    f. Mounting: Attached shower pedestal.
    g. Drench-Hose Option: May be provided instead of eyewash unit.

        1) Capacity: Not less than 0.4 gpm for at least 15 minutes.
        2) Drench Hose: Handheld spray head with squeeze-handle actuator and hose.
        3) Mounting: Bracket on shower pedestal.

5. Accessories:

    a. Thermostatic mixing valve assembly including ball valve shutoffs and outlet temperature gauge.
    b. Flow switch; single pole.
    c. Modesty curtain.
    d. Magnetically actuated proximity switch.
    e. 60-inch pull rod.
    f. stainless steel ball valve.

2.6 WATER-TEMPERING EQUIPMENT

A. Water-Tempering Equipment - Hot and Cold Water:

1. Source Limitations: Obtain water-tempering equipment, hot and cold water, from single manufacturer.
2. Description: Factory-fabricated equipment with thermostatic mixing valve.

    a. Thermostatic Mixing Valve: Designed to provide 85 deg F tepid, potable water at emergency plumbing fixtures, to maintain temperature at plus or minus 5 deg F throughout required 15-minute test period, and in case of unit failure to continue

cold-water flow, with union connections, controls, metal piping, and corrosion-resistant enclosure.

b. Supply Connections: For hot and cold water.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water and waste piping systems to verify actual locations of piping connections before plumbed emergency plumbing fixture installation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATON OF EMERGENCY PLUMBING FIXTURE

A. Assemble emergency plumbing fixture piping, fittings, control valves, and other components.

B. Install fixtures level and plumb.

C. Fasten fixtures to substrate.

D. Install shutoff valves in water-supply piping to fixtures, to facilitate maintenance of equipment. Use ball or gate valve if specific type valve is not indicated. Install valves chained or locked in open position if permitted. Install valves in locations where they can easily be reached for operation. Comply with requirements for valves specified.

1. Exceptions:

a. Omit shutoff valve on supply to group of plumbing fixtures that includes emergency equipment.

b. Omit shutoff valve on supply to emergency equipment if prohibited by authorities having jurisdiction.

E. Install dielectric fitting in supply piping to emergency equipment if piping and equipment connections are made of different metals. Comply with requirements for dielectric fittings specified in Section 221116 "Domestic Water Piping."

F. Install thermometers in supply and outlet piping connections to water-tempering equipment. Comply with requirements for thermometers specified in Section 220519 "Meters and Gages for Plumbing Piping."

G. Install trap and waste piping on drain outlet of emergency equipment receptors that are indicated to be directly connected to drainage system. Comply with requirements for waste piping specified in Section 221316 "Sanitary Waste and Vent Piping."

H. Install indirect waste piping on drain outlet of emergency equipment receptors that are indicated to be indirectly connected to drainage system. Comply with requirements for waste piping specified in Section 221316 "Sanitary Waste and Vent Piping."

I. Install escutcheons on piping wall and ceiling penetrations in exposed, finished locations. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

J. Fill self-contained fixtures with flushing fluid.

3.3 PIPING CONNECTIONS

A. Connect cold-water-supply piping to plumbed emergency plumbing fixtures not having water-tempering equipment. Comply with requirements for cold-water piping specified in Section 221116 "Domestic Water Piping."

B. Connect hot- and cold-water-supply piping to hot- and cold-water, water-tempering equipment. Connect output from water-tempering equipment to emergency plumbing fixtures. Comply with requirements for hot- and cold-water piping specified in Section 221116 "Domestic Water Piping."

C. Connect cold water and electrical power to electric heating water-tempering equipment. Comply with requirements for cold-water piping specified in Section 221116 "Domestic Water Piping."

D. Directly connect emergency plumbing fixture receptors with trapped drain outlet to sanitary waste and vent piping. Comply with requirements for waste piping specified in Section 221316 "Sanitary Waste and Vent Piping."

E. Indirectly connect emergency plumbing fixture receptors without trapped drain outlet to sanitary waste or storm drainage piping.

F. Where installing piping adjacent to emergency plumbing fixtures, allow space for service and maintenance of fixtures.

3.4 ELECTRICAL CONNECTIONS

A. Connect wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. Ground equipment in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."

C. Install electrical devices furnished by manufacturer, but not factory mounted in accordance with NFPA 70.

D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.

1. Nameplate to be laminated acrylic or melamine plastic signs, as specified in Section 260553 "Identification for Electrical Systems."
2. Nameplate to be laminated acrylic or melamine plastic signs with a black background and engraved white letters at least 1/2 inch high.

3.5 IDENTIFICATION

A. Install equipment nameplates or equipment markers on emergency plumbing fixtures and equipment and equipment signs on water-tempering equipment. Comply with requirements for identification materials specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.6 FIELD QUALITY CONTROL

A. Mechanical-Component Testing: After plumbing connections have been made, test for compliance with requirements. Verify ability to achieve indicated capacities.

B. Tests and Inspections:

1. Perform each visual and mechanical inspection.
2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
5. Emergency plumbing fixtures and water-tempering equipment will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.7 ADJUSTING

A. Operate and adjust emergency plumbing fixtures and controls. Replace damaged and malfunctioning fixtures and controls.

B. Adjust or replace fixture flow regulators for proper flow.

C. Adjust equipment temperature settings.

3.8 CLEANING AND PROTECTION

A. Clean emergency plumbing fixtures with manufacturers' recommended cleaning methods and materials.

B. Install protective covering for installed emergency plumbing fixtures and fittings.

C. Do not allow use of emergency plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224500