



TABLE OF CONTENTS

- 15300 — Basic Fire Protection Requirements
- 15301 — Fire Protection
- 15304 — Electric Fire Pumps
- 15371 — Kitchen Hood Fire Suppression
- 15390 — Fire Stopping

END OF SECTION



DIVISION 15

SECTION 15300 — BASIC FIRE PROTECTION REQUIREMENTS

PART 1 – GENERAL

1.01 EXTENT OF SECTION

- A. This Section specifies the basic requirements for fire protection system installations and includes requirements common to more than one section of Division 15. It expands and supplements the requirements specified in sections of Division 1. It outlines the basic requirements for the complete Division 15 installation.
- B. The intent of the PCSB STANDARDS is for the DESIGN PROFESSIONAL (DP) to comply with the minimum general project requirements and the specific project specifications shall be generated and provided by the DP.

1.02 ACCESSIBILITY

- A. Install equipment and materials to provide required access for servicing and maintenance. Coordinate the final location of equipment and devices requiring access with final location of required access panels, walls, and doors. Allow ample space for removal of all parts that require replacement or servicing.

1.03 RESPONSIBILITY: All fire protection CONTRACTORS and subcontractors shall review and comply with all Division 15 specification sections.

1.04 FIRE PROTECTION SYSTEMS INSTALLATIONS

- A. Coordinate equipment and materials installation with other building components. Verify all dimensions by field measurements. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected. Arrange for chases, slots, and openings in other building components to allow for installations.
- B. Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed. Sequence, coordinate, and integrate installations of materials and equipment for efficient flow of the work. Coordinate the cutting and patching of building components to accommodate the installation of equipment and materials.
- C. Where piping elevations are not detailed or dimensioned, install overhead piping to provide the maximum headroom possible. Coordinate the installation of piping above ceilings with suspension system, light fixtures, and other installations.
- D. Coordinate connection of fire protection systems with exterior underground utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.



DIVISION 15

SECTION 15300 — BASIC FIRE PROTECTION REQUIREMENTS

1.05 DRAWINGS AND SPECIFICATIONS

- A. Separate divisional drawings and specifications shall not relieve the CONTRACTOR from full responsibility to complete all work which may be indicated on any of the drawings or in any division of the specification.
- B. The specifications and drawings are complementary and are to be taken together for a complete interpretation of the work.
- C. The drawings of necessity utilize symbols and schematic diagrams to indicate various items of work. Therefore, no interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for a complete installation are excluded.
- D. Certain details appear on the drawings which are specific with regard to the dimensioning and positioning of the work. These details are intended only for the purpose of establishing general feasibility. They do not obviate field coordination for the indicated work.
- E. Examine the architectural, structural, electrical and mechanical drawings and specifications prior to submitting bid. Architectural and structural drawings take precedence over fire protection drawings with reference to building construction, location of plumbing fixtures, and any other similar fixed items.
- F. The DP shall be notified of any discrepancies, omissions, conflicts or interferences which occur between drawings and specifications. If such notification is received in adequate time, additional data or changes will be issued by addendum to all bidders.
- G. In the event of a discrepancy or conflict in the Contract Documents not clarified in an Addendum, the CONTRACTOR shall include in his proposal the more expensive method or material.

1.06 CUTTING AND PATCHING

- A. Do not endanger or damage installed work through procedures and processes of cutting and patching. Do not cut structural members without prior written approval of the DP.
- B. Arrange for repairs required to restore other work, because of damage caused as a result of fire protection system installations. No additional compensation will be authorized for cutting and patching work that is necessitated by ill-timed, defective, or non-conforming installations.
- C. Cut, remove and legally dispose of selected fire protection equipment, components, and materials as indicated, including, but not limited to removal of piping, valves, fittings, sprinklers, and other fire protection system items made obsolete by the new work.
- D. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.



DIVISION 15

SECTION 15300 — BASIC FIRE PROTECTION REQUIREMENTS

- E. Locate identify, and protect mechanical and electrical services passing through remodeling or demolition area and serving other areas required to be maintained operational. When transit services must be interrupted, provide temporary services for the affected areas and notify the PROJECT COORDINATOR prior to change over.
- 1.07 FIRE PROTECTION SUBMITTALS:** Refer to the Conditions of the Contract (General and Supplementary), Division 1 and Division 15 Section: SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES for submittal definitions, requirements, and procedures. Submittal of shop drawings, product data, and samples will be accepted only when submitted by the CONTRACTOR. Data submitted from subcontractors and material suppliers directly to the DP will not be processed.
- 1.08 PRODUCT LISTING:** Prepare listing of major mechanical equipment and materials for the project. Submit this listing as a part of the submittal requirement specified.
- 1.09 PRODUCTS:** When two or more items of same material or equipment are required (valves, sprinklers, hangers, fitting types, etc.) they shall be of the same manufacturer. Provide products which are compatible within systems and other connected items.
- 1.10 DELIVERY, STORAGE, AND HANDLING**
- A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.
 - B. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage.
 - C. CONTRACTOR shall store all materials raised above grade level, covered, and protected from the elements. Piping shall be stored with temporary plastic caps and/or plugs at each open end of piping to protect threads and prevent accumulation of foreign material.
- 1.11 RECORD DOCUMENTS**
- A. Refer to the Division 1 Section: PROJECT CLOSEOUT or PROJECT RECORD DOCUMENTS for requirements. The following paragraphs supplement the requirements of Division 1.
 - B. Submit one set of reproducible CAD-generated installation/shop drawings of the same size as the contract documents, including all revisions to piping size and location both exterior and interior; locations of sprinklers, valves, tamper, flow, pressure, or other supervisory devices, actual equipment locations, actual locations of underground piping; concealed equipment dimensioned to column lines; and with all items requiring maintenance located. C/D's shall contain files compatible with the most current version of AutoCAD. Hard copy drawings shall have the CONTRACTOR'S mark-ups clearly indicated in "red".



DIVISION 15

SECTION 15300 — BASIC FIRE PROTECTION REQUIREMENTS

- C. Mark Specifications to indicate approved substitutions; Change Orders; actual equipment and materials used.

1.12 OPERATION AND MAINTENANCE DATA

- A. In addition to the information required by Division 1 for Maintenance Data, include the following information:
 - 1. Description of function, normal operating characteristics, pump performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
 - 2. Manufacturer's printed operating procedures to include normal operating instructions, control, stopping, shut-down, and emergency instructions.
 - 3. Procedures for routine preventative maintenance and inspections.

1.13 WARRANTIES

- A. Compile and assemble the warranties specified in Division 15, into a separated set of vinyl covered, three ring binders, tabulated and indexed for easy reference.
- B. Provide complete warranty information for each item to include product or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

1.14 CLEANING

- A. Refer to the Division 1 Section: PROJECT CLOSEOUT or FINAL CLEANING for general requirements for final cleaning.
- B. Refer to Division 15 Section: TESTING, ADJUSTING, AND BALANCING for requirements for cleaning filters, strainers, and mechanical systems prior to final acceptance.

END OF SECTION



DIVISION 15

SECTION 15301 — FIRE PROTECTION

PART 1 – GENERAL

1.01 EXTENT OF SECTION

- A. This section includes the following requirements for most fire protection systems:
 - 1. Equipment Requirements,
 - 2. Valves,
 - 3. Piping
 - 4. Pipe Hangers and Supports,
 - 5. Sprinklers,
 - 6. Fire Department Connections,
 - 7. Tests, Inspections, and Operations.
- B. The intent of the PCSB STANDARDS is for the DESIGN PROFESSIONAL (DP) to comply with the minimum general project requirements and the specific project specifications shall be generated and provided by the DP.

1.03 INTRODUCTION

- A. The most current adopted editions of the Florida Fire Prevention Code will determine if a fire sprinkler system will be required. Generally, educational occupancy buildings exceeding 20,000 sq. ft., buildings 4 or more stories in height, buildings with unprotected openings, and/or every portion of buildings below the level of exit discharge will be required to be protected. New and Existing assembly occupancies (gymnasiums, auditoriums) having an occupant load exceeding 300, regular stages exceeding 1,000 sq. ft., and all legitimate stages are required to be sprinkled and to be equipped with 1 ½” hose lines for first aid firefighting at each side of the stage.
- B. Renovations of existing schools exceeding the square footage threshold per the Florida Fire Prevention Code may trigger the need to retrofit existing facilities with fire sprinkler systems. If a sprinkler system is required, sprinkler system design criteria and requirements will vary depending on the uses (occupancies) of the areas and/or facility being protected.

1.04 SYSTEM DESCRIPTION

- A. System to be a hydraulically calculated, automatic fire sprinkler system utilizing quick response sprinklers designed and installed in accordance with NFPA-13 standards. Provide full coverage for entire building(s) as noted.
- B. System shall include connection to municipal water supply, backflow preventer, underground piping, stub-ins, isolation valves, and fire department connections. Determine volume and pressure of incoming water supply from current (less than 12 months old) water flow test data. When not available, request new hydrant flow test be performed. If the available water pressure is insufficient to provide the required demand for the fire sprinkler systems, provide fire pump system in accordance with NFPA-20 standards.



DIVISION 15

SECTION 15301 — FIRE PROTECTION

- C. Fire pumps, where required, must be located in a dedicated, 1-hour rated room with a door to the building exterior. Lighting, heat, and ventilation is required.
- D. Each building, as far as practical, is to have its own dedicated riser. Separate buildings joined by covered walkways must have separate systems.
- E. System risers, control valves, drain valves, and components requiring access for routine testing, maintenance and inspection must be located in secure (not student accessible) areas such as dedicated closets, mechanical equipment rooms, and/or storage rooms, preferably with a door to the building exterior.
- F. Systems must be provided with control valves to accommodate individual isolation for each floor of the building.
- G. All control, isolation, drain, and test valves shall be conveniently accessible from floor level without use of a ladder, all valve operating mechanisms (handles, levers, wheels, etc.) shall be located no higher than 80" above finished floor.
- H. All control valves, with the exception of underground NRS, PIV, and backflow preventer control valves, shall be equipped with a supervisory switch which will activate a trouble signal at the fire alarm panel if the valve is closed.
- I. Inspector's test valves are to be provided at the most remote point of each system, zone, or floor, to facilitate flushing and verification of water flow throughout system.
- J. Inspector's test connections shall be fitted with sight glasses and shall discharge to the building exterior, away from public view or access ways, and arranged to avoid damaging landscaping, causing local area flooding, and/or staining exterior walls or sidewalks.
- K. In an effort to reduce fire sprinkler system material and labor costs, extended coverage sprinklers should be utilized in large open areas such as: classrooms, multipurpose rooms, cafeteria, and reading rooms.
- L. Hydraulic Calculations: Prepare in accordance with NFPA-13, calculations shall include a summary sheet, detailed worksheets, and a graph sheet. Calculations shall include a safety factor of at least 10 psi or 10% of the available residual pressure. Provide three (3) additional stamped and/or engraved hydraulic information placards to PROJECT COORDINATOR in close-out document submittal.
- M. Shop drawings and hydraulic calculations, signed and sealed by a registered professional engineer, shall be submitted to the PROJECT COORDINATOR and local Fire Marshal (Authority Having Jurisdiction) for their review and approval.

1.05 REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings.
 - 2. ASME B16.11 - Forged Steel Fittings - Socket-Welding and Threaded.



DIVISION 15

SECTION 15301 — FIRE PROTECTION

3. ASME B16.3 - Malleable Iron Threaded Fittings.
 4. ASME B16.4 - Gray Iron Threaded Fittings.
 5. ASME B16.5 - Pipe Flanges and Flanged Fittings.
 6. ASME B16.9 - Factory-Made Wrought Steel Buttwelding Fittings.
 7. ASME B36.10M - Welded and Seamless Wrought Steel Pipe.
- B. ASTM International:
1. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 2. ASTM A135 - Standard Specification for Electric-Resistance-Welded Steel Pipe.
 3. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
 4. ASTM A795/A795M - Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use.
- C. American Welding Society:
1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
 2. AWS D1.1 - Structural Welding Code - Steel.
- D. American Water Works Association:
1. AWWA C110 - American National Standard for Ductile-Iron and Grey-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids.
 2. AWWA C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 3. AWWA C151 - American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
- E. National Fire Protection Association:
1. NFPA 13 - Installation of Sprinkler Systems
 2. NFPA 14 - Installation of Standpipe and Hose Systems
 3. NFPA 20 - Standard for the Installation of Stationary Pumps for Fire Protection
 4. NFPA 24 - Installation of Private Fire Service Mains and Their Appurtenances
 5. NFPA 72 - National Fire Alarm and Signaling Code

1.06 EQUIPMENT REQUIREMENTS

- A. Materials, sprinkler devices, pipe, fittings, valves, and hangers used in the system installation shall be on the approved or acceptable list of the current issue of Inspected Fire Protection Equipment and Materials, as published by Underwriters Laboratories, Inc., and shall be NFPA approved, as well as acceptable to the underwriters and the PROJECT COORDINATOR.
- B. Hangers and supports shall conform to the National Fire Protection Association Standards.
- C. All materials shall be new, rust-free and first class, and as far as practical, the products of one manufacturer.



DIVISION 15

SECTION 15301 — FIRE PROTECTION

- D. Hose threads shall conform to the accepted standards of the local authority having jurisdiction.
- E. The fire riser assembly and its appurtenances shall be so arranged and equipped in an approved manner that the transmission of accidental water flow alarms due to water pressure surges and/or expansion/contraction of trapped air within the system piping will be prevented.
- F. Approved devices shall be installed for the automatic transmission of water flow alarms and connected to the fire alarm system and shall be such that a flow of water equal to or greater than that from a single sprinkler head will cause the transmission of a fire alarm and the sounding of an audible local alarm bell.
- G. Identification signs shall be provided for all control, drain, test, and alarm valves. Signs shall be a minimum of 20 gauge sheet metal, pickled and treated, with baked on enamel white lettering and border on red background.
- H. Sprinkler risers and all exposed sprinkler system piping shall be cleaned, primed, and painted red for identification purposes.
- I. Exterior post indicator valves (PIV's) and fire department connections (FDC's) shall be clearly stenciled (in contrasting color) to indicate building served.
- J. Underground-Type Plastic Line Markers: Refer to section 02500.
- K. Trace Wire: Refer to section 02500.

1.07 QUALITY ASSURANCE

- A. Materials, sprinkler devices, pipe, fittings, valves, and hangers used in the system installation shall be on the approved or acceptable list of the current issue of Inspected Fire Protection Equipment and Materials, as published by Underwriters Laboratories, Inc., and shall be NFPA approved, as well as acceptable to the underwriters and the PROJECT COORDINATOR.
- B. Qualifications for Welding and 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. All of the CONTRACTOR'S forces are to display, at all times when on PCSB property, a current Florida Public Schools security photo I.D. badge.
- D. Maintain two copies of each document on site. Approved shop drawings, material submittals, and permit drawings, as-built drawings, test certificates, and MSDS sheets.
- E. All fire protection system valves are required to be manufactured in America. Foreign manufactured valves are not acceptable.



DIVISION 15

SECTION 15301 — FIRE PROTECTION

1.08 EXTRA MATERIALS

- A. Head Wrenches: Furnish to the PROJECT COORDINATOR, one head wrench for each type of sprinkler head installed.
- B. Sprinkler Heads and Cabinet: Furnish stock of spare sprinkler heads of each style and temperature rating as those sprinklers used in the project. Quantities shall be as specified by NFPA-13.
- C. Escutcheons: Furnish to the PROJECT COORDINATOR, no less than six escutcheons of each type, style, and finish as those used in the project.
- D. Sprinkler List: A list of the sprinklers installed in the property shall be posted in the sprinkler cabinet and shall include a general description, manufacturer, model, orifice, deflector type, temperature rating, thermal sensitivity, pressure rating, sprinkler identification number (SIN), quantity of each type to be contained in cabinet, and issue or revision date of the list.
- E. Hydraulic Info. Placard: Provide hydraulic calculation information on a metal plate affixed to each sprinkler zone and/or riser. Information shall be stamped and/or engraved into plate surface, permanent marker and/or adhesive lettered tape is not acceptable. Provide three (3) additional placards to the PROJECT COORDINATOR in close-out document submittal.
- F. Provide plastic laminated, 24" x 36" plans of fire sprinkler system(s) with locations of all control, isolation, main drain, auxiliary drain, inspector's test valve, tamper switch, and flow switch location(s) highlighted.

PART 2 – PRODUCTS

2.01 VALVES

- A. Furnish materials in accordance with Florida State Fire Marshal's Office, local authority having jurisdiction, as well as all requirements of the Polk County School Board standards.
- B. Gate Valves:
 - 1. Up to and including 2 inches: 175/300 pound rated, bronze body and trim, block pattern, outside screw and yoke, solid wedge, threaded ends, UL/FM approved.
 - 2. Over 2 inches: 175/250 pound rated cast iron body, bolted bonnet, O.S.&Y., rising stem pre-grooved for mounting tamper switch, solid bronze or cast iron wedge, flanged ends.
- C. Butterfly Valves:
 - 1. Ductile iron body, ductile iron EPDM encapsulated disc, resilient replaceable seat, wafer, lug, or grooved ends, hand wheel and gear drive and integral indicating



DIVISION 15

SECTION 15301 — FIRE PROTECTION

device, built-in tamper proof switch rated 11 amp at 125 volt AC, UL/FM approved suitable for indoor and outdoor use.

D. Drain Valves:

1. 300 pound rated, cast bronze ball style body with threaded ends, UL listed, FM approved.
2. Full port, chrome plated brass ball, blowout proof stem, reinforced PTFE seat.
3. Multi-use (combined inspectors' test and drain valves) are not acceptable. Provide separate valves for each function.

E. Post Indicator Valves:

1. 300 pound rated, resilient seat gate valves shall comply with AWWA C515-09 standards and shall have a ductile iron body with mechanical joint ends in compliance with ANSI A21.11.
2. Valves shall be equipped with a 2" square operating nut indicating the direction of opening.
3. Stuffing box gland shall be capable of replacement under pressure with valve in the full open position.
4. Post shall be factory set with "OPEN" and "SHUT" targets positioned for left-hand opening valves. Post head, upper barrel, and wrench shall be painted red.
5. Unless specifically required by the local AHJ, PIV's should not be provided with supervisory switches but shall be padlocked in the open position.

F. Check Valves:

1. Up to and including 1 inch: 200 psi, Y-type, bronze body and horizontal swing disc, rubber seat, threaded ends.
2. Over 2 inches: 175/250/300 pound rated, cast or ductile iron body, bronze trim, swing check with rubber disc, with grooved ends.
3. 4 inches and Over: 175/250/300 pound rated, cast or ductile iron body, bronze disc with stainless steel spring, resilient seal, grooved, wafer, or flanged ends

G. Backflow Preventers:

1. Consult local water purveyor for acceptable devices.
2. UL listed, FM approved, lead free, ASSE, AWWA, and USC approved.
3. The unit shall be a complete assembly with resilient seat O.S. & Y. valves and test cocks.
4. Provide with galvanized chains and padlocks. Tamper switches are not required unless specifically required by local AHJ.
5. The unit shall be easily serviced without the need for specialized tools.

2.02 BURIED PIPING

A. Ductile Iron: AWWA C104, C150, and C151, class 350, centrifugally cast, conforming to ANSI A21.50; tar coated outside, cement lined inside.

1. Fittings: ANSI/AWWA C104/A.21.4; ductile iron, mechanical joint, tar coated outside, cement lined inside.



DIVISION 15

SECTION 15301 — FIRE PROTECTION

- B. PVC: AWWA C900, DR-14 and/or DR-18 polyvinyl chloride.
 - 1. Fittings: ANSI/AWWA C104/A.21.4; ductile iron, mechanical joint, tar coated outside, cement lined inside.

2.03 ABOVE GROUND PIPING

- A. Steel Pipe: ASTM A795-Specification for black and hot-dipped zinc coated welded and seamless steel pipe, ASTM A53- Specification for welded and seamless steel pipe, ASME B36.10-Wrought steel pipe, ASTM A135-Specification for electric-resistance-welded steel pipe.
 - 1. Steel Fittings: ASTM A234/A234M, wrought carbon steel and alloy steel; ASME B16.5, steel flanges and fittings; ASME B16.11, forged steel socket welded and threaded.
 - 2. Cast Iron Fittings: ASME B16.1, flanges and flanged fittings; ASME B16.4, threaded fittings.
 - 3. Malleable Iron Fittings: ASME B16.3, threaded fittings.
 - 4. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.
 - 5. Mechanical Formed Fittings: Carbon-steel housing with integral pipe stop and O-ring pocked and O-ring uniformly compressed into permanent mechanical engagement onto pipe.

2.04 PIPE HANGERS AND SUPPORTS

- A. Conform to NFPA 13 requirements.
- B. Hangers for Pipe Sizes 1/2 to 6 inch: Carbon steel, adjustable swivel, split ring.
- C. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- D. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.
- E. Vertical Support: Steel riser clamp.
- F. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

2.05 SPRINKLERS

- A. Suspended Ceiling Areas:
 - 1. Type: Quick response, standard and/or extended coverage, recessed pendent type with matching escutcheon plate.
 - 2. Finish: White, unless noted otherwise. (Corrosion resistant at exterior walkways)
 - 3. Escutcheon Plate Finish: White, unless noted otherwise. (Corrosion resistant at exterior walkways)



DIVISION 15

SECTION 15301 — FIRE PROTECTION

4. Fusible Link: Glass bulb type, 155° temperature rated for areas with maximum ambient ceiling temperature not exceeding 100° F.
- B. Exposed Construction Areas:
1. Type: Quick response, standard coverage, upright and/or pendent type. Provide with head guard where susceptible to mechanical injury.
 2. Finish: Cast brass.
 3. Fusible Link: Glass bulb type, 155° temperature rated for areas with maximum ambient ceiling temperature not exceeding 100° F., 175° for unventilated/unconditioned areas.
- C. Exterior Walkways Areas:
1. Type: Quick response, standard and/or extended coverage, recessed pendent and/or horizontal sidewall type with matching escutcheon plate.
 2. Finish: Corrosion resistant, White Polyester, or Nickel Teflon coated.
 3. Fusible Link: Glass bulb type, 175° temperature rated for areas with maximum ambient ceiling temperature not exceeding 150° F.
- D. Kiln Rooms:
1. Type: Quick response, standard coverage, recessed pendent and/or upright type.
 2. Finish: White or cast brass.
 3. Fusible Link: Glass bulb type, 286° temperature rated for areas with maximum ambient ceiling temperature not exceeding 225° F.
- E. Sidewall Type:
1. Type: Quick response, standard and/or extended coverage, recessed horizontal sidewall type with matching escutcheon plate.
 2. Finish: White, unless noted otherwise. (Corrosion resistant at exterior walkways)
 3. Escutcheon Plate Finish: White, unless noted otherwise. (Corrosion resistant at exterior walkways)
 4. Fusible Link: Glass bulb type, temperature rated for specific area hazard.
- F. Acceptable Manufacturers:
1. Reliable, Viking, Tyco, Globe.

2.06 FIRE DEPARTMENT CONNECTIONS

- A. Wall Mounted Type:
1. 4 x 2½ x 2½", back outlet, cast brass, two way inlet body.
 2. Double drop clappers, cast brass pin lug swivels, and round wall plate.
 3. Provide with (2) 2 ½" plastic break-away type, caps with nuts and eyelets.
 4. Locate within 50' of fire hydrant, do not obstruct exterior walkways.
 5. Provide signage indicating building served.
- B. Free Standing Type:
1. 4 x 2½ x 2½", 90 angle outlet, cast brass, two way inlet body.
 2. Double drop clappers, cast brass pin lug swivels, and round plate.



DIVISION 15

SECTION 15301 — FIRE PROTECTION

3. Provide with (2) 2 ½" plastic break-away type, caps with nuts and eyelets.
4. Locate within 50' of fire hydrant.
5. Provide signage indicating building served.

PART 3 – EXECUTION

3.01 TESTS, INSPECTIONS, AND OPERATIONS

- A. The CONTRACTOR shall not cover any of their work until all work has been inspected and approved by the Authorities Having Jurisdiction, the DP, and/or PROJECT COORDINATOR.
- B. Upon completion of the installation, the fire protection system shall be flushed at a rate no less than that specified by NFPA-13.
- C. After flushing, hydrostatically test fire protection piping for a period of two (2) hours with a water pressure of 200 pounds per square inch, or 50 pounds per square inch in excess of the normal pressure, when the normal pressure is in excess of 150 psi. Leaking fittings or pipe shall be either made up or replaced. No caulking will be allowed.
- D. Modifications that cannot be isolated from existing systems, such as relocated drops and arm-overs, shall be pressure tested at the maximum anticipated static or flowing pressure applied to the system components and shall not require testing in excess of the system working pressure.
- E. Prior to final acceptance, system shall be functionally tested to verify operation of all valves and supervisory and alarm devices. Coordinate testing with the fire alarm CONTRACTOR and verify receipt of proper notification at building fire alarm control panel.
- F. The CONTRACTOR shall furnish three (3) copies of required close out documents which shall include: as-built drawings, hydraulic calculation summary sheets, engraved hydraulic information placards, O&M manuals, information for ordering replacement parts, copies of NFPA-25, CONTRACTORS material and test certificates, and warranties.

END OF SECTION



DIVISION 15

SECTION 15304 — ELECTRIC FIRE PUMPS

PART 1 – GENERAL

1.01 EXTENT OF SECTION

- A. This section includes the following requirements for most fire pump installations:
 - 1. Equipment Requirements
 - 2. Fire Pumps
 - 3. Fire Pump Motors
 - 4. Fire Pump Accessories
 - 5. Fire Pump Controllers
 - 6. Jockey Pumps
 - 7. Jockey Pump Controllers
- B. The intent of the PCSB STANDARDS is for the DESIGN PROFESSIONAL (DP) to comply with the minimum general project requirements and the specific project specifications shall be generated and provided by the DP.

1.02 INTRODUCTION

- A. If the available water pressure is insufficient to provide the required demand for the fire sprinkler systems, provide fire pump system in accordance with NFPA-20 standards. Electric motor driven centrifugal fire pumps should be utilized due to their reduced maintenance requirements. If the available power supply is not supplied by overhead conductors outside of the protected facility and is deemed reliable by the AHJ, a backup source of power is not required, eliminating the need for a transfer switch and connection to the emergency generator.

1.03 SYSTEM DESCRIPTION

- A. The fire pump system shall consist of a UL listed, FM approved fire pump, driver, controller, and all associated piping, hangers, fittings, valves, and devices required for a complete, functional, code approved, system.

1.04 REFERENCES

- A. UL Publications
 - 1. ANSI/UL 508, Standard for Safety industrial Control Equipment.
 - 2. ANSI/UL 1008, Standard for Safety Automatic Transfer Switches.
- B. National Fire Protection Association:
 - 1. NFPA 13, Installation of Sprinkler Systems.
 - 2. NFPA 14, Installation of Standpipe and Hose Systems.
 - 3. NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection.
 - 4. NFPA 24, Installation of Private Fire Service Mains and Their Appurtenances.
 - 5. NFPA 72, National Fire Alarm and Signaling Code.



DIVISION 15

SECTION 15304 — ELECTRIC FIRE PUMPS

1.05 QUALITY ASSURANCE

- A. Materials, sprinkler devices, pipe, fittings, valves, and hangers used in the system installation shall be on the approved or acceptable list of the current issue of Inspected Fire Protection Equipment and Materials, as published by Underwriters Laboratories, Inc., and shall be NFPA approved, as well as acceptable to the underwriters and the PROJECT COORDINATOR.
- B. Qualifications for Welding and 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. All of the CONTRACTOR'S forces are to display, at all times when on PCSB property, a current Florida Public Schools security photo I.D. badge.
- D. A copy of the manufacturer's certified pump test characteristic curve shall be provided and made available for comparison of the results of the field acceptance test.
- E. Maintain two copies of each document on site. Approved shop drawings, material submittals, and permit drawings, as-built drawings, test certificates, and MSDS sheets.

1.06 EQUIPMENT REQUIREMENTS

- A. Fire pumps, where required, must be located in a dedicated, 1-hour rated room with a door to the building exterior. Lighting, emergency lighting, heat, and ventilation is required. The pump room or pump house shall be provided with a floor drain that will discharge to a frost-free location.
- B. Rooms containing fire pumps shall be free from storage, equipment, and penetrations not essential to the operation of the pump and related components.
- C. Where the suction supply is of sufficient pressure to be of material value without the pump, the pump shall be installed with a bypass.
- D. Identification signs shall be provided for all control, drain, and test valves. Signs shall be a minimum of 20 gauge sheet metal, pickled and treated, with baked on enamel white lettering and border on red background.
- E. All exposed sprinkler system piping shall be cleaned, primed, and painted red for identification purposes.
- F. A listed outside screw and yoke (OS&Y) gate valve shall be installed in the suction pipe. No valve other than a listed OS&Y valve shall be installed in the suction pipe within 50 ft. of the pump suction flange.
- G. All control valves shall be equipped with a supervisory switch which will activate a trouble signal at the fire alarm panel if the valve is closed.



DIVISION 15

SECTION 15304 — ELECTRIC FIRE PUMPS

- H. All control, isolation, drain, and test valves shall be conveniently accessible from floor level without use of a ladder, all valve operating mechanisms (handles, levers, wheels, etc.) shall be located no higher than 80" above finished floor.
- I. The pressure rating of the discharge components shall be adequate for the maximum total discharge head with the pump operating at shutoff and rated speed but shall not be less than the rating of the fire protection system.
- J. A fire pump installation shall be arranged to allow the test of the pump at its rated conditions as well as the suction supply at the maximum flow available from the fire pump.
- K. A test header shall be installed on an exterior wall or in another location outside the pump room that allows for water discharge during testing.

PART 2 – PRODUCTS

2.01 HORIZONTAL FIRE PUMP

- A. The fire pump shall be centrifugal fire pump listed by Underwriters Laboratories and/or approved by Factory Mutual (UL/FM). The unit shall meet all the requirements of the National Fire Protection Association's Pamphlet No. 20 (NFPA20) and shall be hydrostatically tested to a minimum of 250 PSI, or not less than 1.5 times the maximum shut-off pressure.
- B. Fire pumps shall be dedicated to and listed for fire protection service.
- C. Pumps shall furnish not less than 150 percent of rated capacity at not less than 65 percent of total rated head.
- D. The shutoff head shall not exceed 140 percent of rated head for any type pump.
- E. The net pump shutoff (churn) pressure plus the maximum static suction pressure, adjusted for elevation, shall not exceed the pressure for which the system components are rated.

2.02 FIRE PUMP MOTOR

- A. All motors shall comply with NEMA MG-1, *Motors and Generators*, shall be marked as complying with NEMA Design B standards, shall be specifically listed for fire pump service, shall be rated for continuous duty, and shall have a maximum service factor of 1.15.



DIVISION 15

SECTION 15304 — ELECTRIC FIRE PUMPS

2.03 FIRE PUMP ACCESSORIES

- A. The following list of accessories shall be provided:
 - 1. Air Release Valve
 - 2. Concentric Increaser
 - 3. 3/4" Casing Relief Valve
 - 4. Discharge Gage
 - 5. Suction Gage
 - 6. Test Header
 - 7. Angle Hose Valves

2.04 TRANSFER SWITCH FIRE PUMP CONTROLLER

- A. The transfer switch fire pump controller shall be designed and built strictly in accordance with the latest requirements of the National Fire Protection Association's Pamphlet No. 20.
- B. The controller shall be a factory assembled and tested transfer switch fire pump controller listed and approved for fire pump service by Underwriters laboratories and Factory Mutual Research.
- C. Controllers shall be located as close as is practical to the motors they control and shall be within sight of the motors and shall be located or protected so that they will not be damaged by water escaping from pumps or pump connections.
- D. Where the pump room is not constantly attended, audible or visible signals shall be connected to the building fire alarm and provided at a point of constant attendance, these fire pump alarms and signals shall indicate Pump or Motor Running, Loss of Phase, Phase Reversal, and Controller Connected to Alternate Source.
- E. The pressure switch shall be plumbed to the outside of the enclosure using 1200 PSI working pressure hydraulic hose and brass fittings. It shall be mounted in the door opening on a removable bracket.

2.05 JOCKEY PUMP

- A. The pressure maintenance pump shall be sized to replenish the fire protection system pressure due to allowable leakage and normal drops in pressure.
- B. The pump shall be capable of delivering 1% of main fire pumps rated capacity at 110% of the rated pressure.
- C. The isolation valves serving the pressure maintenance pump are not required to be supervised.



DIVISION 15

SECTION 15304 — ELECTRIC FIRE PUMPS

2.06 JOCKEY PUMP CONTROLLER

- A. The jockey pump controller shall be built in accordance with UL-508 and shall be listed by Underwriters Laboratories Inc.
- B. The controller shall consist of a disconnect switch, fuse block, magnetic motor starter, and a MANUAL, OFF, AUTOMATIC selector switch.
- C. A 300 PSI brass bourdon tube pressure switch with independent low turn-on and high turn-off adjustments shall be provided to control the pump.
- D. The pressure switch shall be plumbed to the outside of the enclosure using a brass bulkhead fitting.
- E. The controller shall be provided in a NEMA 2 enclosure with a drip lip.
- F. Line fuses shall be provided for all 3 phases.

2.07 TESTS, INSPECTIONS, AND OPERATIONS:

- A. The CONTRACTOR shall furnish five (5) bound copies of complete instructions, including catalog cuts, diagrams, drawings, and other descriptive data covering the operation and maintenance of the systems installed, and necessary information for ordering replacement parts.
- B. After completing, test suction and discharge piping for a period of at least two (2) hours with a water pressure of 200 pounds per square inch, or 50 pounds per square inch in excess of the normal pressure, when the normal pressure is in excess of 150 psi. Also perform any other tests required by the local authorities. Leaking fittings or pipe shall be either made up or replaced. No caulking will be allowed.
- C. The pump manufacturer, the engine manufacturer (when supplied), the controller manufacturer, and the transfer switch manufacturer (when supplied) or their factory-authorized representatives shall be present for the field acceptance test.
- D. Calibrated test equipment shall be provided to determine net pump pressures, rate of flow through the pump, volts and amperes for electric motor-driven pumps, and speed.
- E. The fire pump shall perform at minimum, rated, and peak loads without objectionable overheating of any component.

END OF SECTION



DIVISION 15

SECTION 15371 — KITCHEN HOOD FIRE SUPPRESSION

PART 1 – GENERAL

1.01 EXTENT OF SECTION

- A. This section includes the following basic requirements for kitchen hood fire suppression systems:
 - 1. Equipment Requirements
 - 2. Tests, Inspections, and Operations
- B. The intent of the PCSB STANDARDS is for the DESIGN PROFESSIONAL (DP) to comply with the minimum general project requirements and the specific project specifications shall be generated and provided by the DP.

1.02 INTRODUCTION

- A. All Class I kitchen exhaust hoods shall be protected with an automatic, wet chemical, fire suppression system. The agent shall react with hot grease to form a blanket of foam that seals the hazard depriving the fire of oxygen. The system shall be of the full flooding type to allow the cooking equipment to be moved and changed without having to alter the fire suppression system piping.

1.03 SYSTEM DESCRIPTION

- A. The kitchen exhaust hoods shall contain a factory engineered and pre-piped, UL Listed, Wet Chemical suppression system. The system shall have the fire suppression capabilities to protect the ducts, plenums, filter areas, and cooking equipment.
- B. Upon activation the system shall:
 - 1. Activate exhaust fans.
 - 2. Activate the discharge head to release agent.
 - 3. Shut-off electrical and gas supplies to cooking equipment under the hood.
 - 4. Shut-off supply fans.
 - 5. Allow exhaust fans to continue to run.
 - 6. Activate building fire alarm system.

1.04 REFERENCES

- A. American Society for Testing and Materials:
 - 1. ASTM A53-96 – Specifications for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded, and Seamless.
- B. Underwriters Laboratories:
 - 1. UL 300 – Standard for Fire Extinguishing Systems for Protection of Restaurant Cooking Areas.



DIVISION 15

SECTION 15371 — KITCHEN HOOD FIRE SUPPRESSION

- C. National Fire Protection Association:
 - 1. NFPA 17A – Standard on Wet Chemical Extinguishing Systems
 - 2. NFPA 70 – National Electrical Code
 - 3. NFPA 72 – National Fire Alarm Code
 - 4. NFPA 96 – Standard for Vapor Removal from Cooking Equipment

1.05 EQUIPMENT REQUIREMENTS

- A. The exhaust hood shall contain a factory engineered and pre-piped fire suppression system. The system piping shall be installed in the hood at the time of construction above the hood or within the supply plenum, and shall be concealed from view. No exposed piping is acceptable, with the exception of appliance drops. The system shall be capable of automatic detection and actuation and/or remote actuation.
- B. The agent tank(s), valves, and release mechanisms are to be mounted in a cabinet at the end of the hood. Remotely mounted cabinets are not acceptable.
- C. Fixed temperature fusible link type detection devices are to be installed in the exhaust plenum above each piece of cooking equipment. Pneumatic tubing is not acceptable.
- D. A remote manual pull station shall be provided; located within the path of egress, 42” to 48” above the finished floor, and within 20’ of the release mechanism.
- E. The automatic gas shut-off valve shall be of the mechanical type and be capable of manual reset to assure gas pilots are reactivated before renewal of gas flow. Electric solenoid gas shut off valves are not acceptable.
- F. Double-pole, double throw microswitches are to be utilized to shut-down supply fans, close dampers, shut off power to electric cooking equipment, and/or activate building fire alarm system. Provide with one additional spare microswitch for future use.
- G. All connections to microswitches shall be made in a separate junction box outside of tank cabinet. Junction box shall be located such that connections to provided microswitch pigtails can be made without splices.

1.06 QUALITY ASSURANCE

- A. All fire protection equipment and devices shall be UL listed for the service intended.
- B. The manufacturer shall meet ISO 9001 requirements for the design, production, and distribution of the commercial kitchen fire suppression systems.
- C. All of the contractor’s forces are to display, at all times when on PCSB property, a current Florida Public Schools security photo I.D. badge.



DIVISION 15

SECTION 15371 — KITCHEN HOOD FIRE SUPPRESSION

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 TESTS, INSPECTIONS, AND OPERATIONS

- A. All exhaust ductwork shall be smoke tested, any visible signs of leakage shall be corrected prior to final acceptance testing. Light tests are not acceptable.
- B. Prior to final acceptance, system shall be functionally tested to verify proper operation of all valves, dampers, fan shut down, and alarm devices. Coordinate testing with fire alarm contractor and verify receipt of proper notification at building fire alarm control panel.
- C. The contractor shall perform all system performance tests required by the Authorities Having Jurisdiction in the presence of the Engineer of Record, and/or PROJECT COORDINATOR.
- D. The contractor shall furnish three (3) copies of required close out documents which shall include: as-built drawings, O&M manuals, information for ordering replacement parts, test certificates, and warranties.

END OF SECTION



DIVISION 15

SECTION 15390 — FIRE STOPPING

PART 1 – GENERAL

1.01 EXTENT OF SECTION

- A. This Section specifies the basic requirements for fire stopping installation and includes requirements common to more than one section of Division 15. It expands and supplements the requirements specified in sections of Division 1. It outlines the basic requirements for the complete Division 15 installation.
- B. The intent of the PCSB STANDARDS is for the DESIGN PROFESSIONAL (DP) to comply with the minimum general project requirements and the specific project specifications shall be generated and provided by the DP.

1.02 INSTALLATIONS

- A. Firestop materials shall be installed in accordance with this specification, the Building Code, and the firestop manufacturer's installation instructions. Where this specification conflicts with other specified requirements, the more restrictive requirement shall govern

1.03 STANDARDS

- A. ASTM Standards:
 - 1. E 119 Test Method for Fire Tests of Building Construction and Materials.
 - 2. E 814 Standard Test Method for fire Tests of Through-Penetration Fire Stops.
 - 3. E 2174 Standard Practice for On-Site Inspection of Installed Fire Stops.
- B. Underwriter's Laboratories Standards:
 - 1. UL 1479 Fire Tests of Through-Penetration Fire Stops.
- C. International Firestop Council:
 - 1. Ref. 1 Recommended IFC Guidelines for Evaluating Firestop Engineering Judgments.

1.04 DEFINITIONS

- A. Penetration Fire Stop System: A specific assemblage of fire-assembled materials, or a factory-made device, which has been tested to a standard test method and, when installed properly on penetrating piping material, proven capable of maintaining the fire resistance rating fire-rated barrier penetrated.
- B. F Rating: The time period that the penetration firestop system, including the penetrating item, limits the spread of fire through the penetration when tested in accordance with ASTM E 814.
- C. T Rating: The time period that the penetration fire stop system, including the penetrating item, limits the maximum temperature through the penetration on the non-fire side, when tested in accordance with ASTM E 814.



DIVISION 15

SECTION 15390 — FIRE STOPPING

1.05 COMBUSTIBLE PIPING INSTALLATIONS

- A. Combustible piping installations shall be protected in accordance with the appropriate fire resistance rating requirements in the building code that list the acceptable area, height, and type of construction for use in specific occupancies to assure compliance and integrity of the fire resistance rating prescribed.
- B. When penetrating a fire-resistance-rated wall, partition, floor, floor-ceiling assembly, roof-ceiling assembly, or shaft enclosure, the fire resistance rating of the assembly shall be restored to its original rating with a material or product tested to standard ASTM E 814 or UL 1479 and at an independent agency acceptable to the DP and the AHJ.
- C. Penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 119 or ASTM E 814, with a minimum positive pressure differential of 0.01 inch of water. Systems shall have an F rating of at least one hour but not less than the required fire resistance rating of the floor being penetrated. Floor penetrations contained within the cavity of a wall at the location of the floor penetration do not require a T rating. No T rating shall be required for floor penetrations by piping that is not in direct contact with combustible material.
- D. When piping penetrates a rated assembly, combustible piping shall not connect to non-combustible piping unless it can be demonstrated that the transition complies with the requirements of section 6c.
- E. Insulation and Coverings: Insulation and coverings on or in the penetrating item shall not be permitted unless the specific insulating or covering material has been tested as part of the penetrating firestop system.
- F. Sleeves: Where sleeves are used, the sleeves should be securely fastened to the fire-resistance-rated assembly. The (inside) annular space between the sleeve and the penetrating item and the (outside) annular space between the sleeve and fire-resistance-rated assembly shall be firestopped in accordance with the requirements for a sleeve penetrating item.

1.06 NON-COMBUSTIBLE PIPING INSTALLATIONS

- A. Non-combustible piping installations shall be protected in accordance with the appropriate fire resistance rating requirements in the building code that list the acceptable area, height, and type of construction for use in specific occupancies to assure compliance and integrity of the fire resistance rating prescribed.
- B. When penetrating a fire-resistance-rated wall, partition, floor, floor-ceiling assembly, roof-ceiling assembly, or shaft enclosure, the fire resistance rating of the assembly shall be restored to its original rating with a material or product tested to ASTM E 119 or ASTM E 814 and at an independent testing agency acceptable to the DP and the AHJ.
- C. Exceptions:



DIVISION 15

SECTION 15390 — FIRE STOPPING

1. Concrete, mortar, or grout may be used to fill the annular spaces around cast iron, copper, or steel piping that penetrates concrete or masonry fire-resistant-rated assemblies. The nominal diameter of the penetrating item should not exceed six inches and the opening size should not exceed 114 in². The thickness of concrete, mortar, or grout should be the full thickness of the assembly or the thickness necessary to provide a fire resistance rating of the assembly penetrated.
 2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste for the time period equivalent to the fire-resistance rating of the assembly when tested to ASTM E 119 or ASTM E 184.
- D. Penetrations shall be protected by an approved penetration fire stop system installed as tested in accordance with ASTM E 119 or ASTM E 814, with a minimum positive pressure differential of 0.01 inch of water. Systems shall have an F rating of at least one hour but not less than required fire-resistance rating of the floor being penetrated. Floor penetrations contained within the cavity of a wall at the location of the floor penetration do not require a T rating. No T rating shall be required for floor penetrations by piping that is not in direct contact with combustible material.
- E. When piping penetrates a rated assembly, combustible piping shall not connect to non-combustible piping unless it can be demonstrated that the transition complies with Section 7d.
- F. Unshielded couplings shall not be used to connect non-combustible piping unless it can be demonstrated that the fire-resistive integrity of the penetration is maintained.
- G. Sleeves: Where sleeves are used, the sleeves should be securely fastened to the fire-resistance-rated assembly. The (inside) annular space between the sleeve and the penetrating item and the (outside) annular space between the sleeve and the fire-resistance-rated assembly shall be firestopped in accordance with the requirements for a sleeve-penetrating item.
- H. Insulation and Coverings: Insulation and coverings on or in the penetrating item shall not be permitted unless the specific insulating or covering material has been tested as part of the penetrating firestop system.

1.07 REQUIRED INSPECTION

- A. General: Prior to being concealed, piping penetrations shall be inspected by the AHJ to verify compliance with the fire-resistance rating prescribed in the Building Code.
- B. Inspection shall include a thorough examination of sufficient representative installations, including destructive inspection, to provide verification of satisfactory compliance of this specification, the appropriate manufacturers' installation standards applied by the installer, construction documents, specifications, and applicable manufacturers' product information.
- C. The AHJ shall determine the type, size, and quantity of penetrations to be inspected.



DIVISION 15

SECTION 15390 — FIRE STOPPING

- D. The AHJ shall compare the field installations with the documentation supplied by the installer to determine the following:
1. The required F rating (1, 2, 3, or 4 hour) and T ratings (0, 1, 2, 3, or 4 hour) of the fire stop penetration firestop systems are suitable for the assembly being penetrated.
 2. The penetrating fire stop systems are appropriate for the penetrating items documented through testing of the systems conducted by an independent testing agency.
 3. The penetrating firestop system is installed as tested.

END OF SECTION