Division 21 | **Fire Protection**

Section includes various guidelines for fire suppression systems including fire department connections, fire sprinkler systems, clean agent fire-suppression systems, and locking fire department connection plugs for fire department connections (FDC's).

This design guideline is written to the designer of record (DOR). This guideline is written to document UA standards of work, assist the designers in ensuring UA standards are incorporated into the contract documents and provide a resource to facilitate the design process. It is the DOR's responsibility to coordinate the criteria set forth in design guideline and in conjunction with the manufacturer requirements and use the most stringent standard.

This guideline is not intended to include all requirements necessary for the design of fire protection systems but to indicate University preferences where they exist. Input from the DOR is encouraged when new practices, products, or systems are available which may increase the value of the installed fire protection system but may be in conflict with these guidelines. Any such recommendations may be presented to the Campus Development architectural and engineering staff during project design phase.

Section 21 01 00 - Design of Fire Protection Systems

A. Codes and Standards

1. The University of Alabama falls under the jurisdiction of the State of Alabama Division of Construction Management. The codes and standards currently adopted and enforced by the Division of Construction Management as the State Building Code are available at http://dcm.alabama.gov/bldg_code.aspx. Note that the body of codes adopted and enforced include standards used as reference standards within the codes listed.
2. The design, installation, testing, and maintenance of Clean Agent Extinguishing Systems shall be in accordance with the applicable requirements set forth in the latest edition of the following codes, standards, and third party approval agencies:
    a. NFPA 2001: Standard on Clean Agent Fire Extinguishing Systems
    b. NFPA 70: National Electric Code
    c. NFPA 72: National Fire Alarm and Signaling Code
    d. Factory Mutual (FM)
    e. Underwriters Laboratories (UL)
    f. Requirements of the local Authority Having Jurisdiction (AHJ)
3. Where specific/specialized systems and/or installations are not covered by these standards or referenced codes, designer shall reference and specify adherence to industry standard codes and apply best engineering practices applicable to these specific systems or installations. Designer shall identify codes/standards used for design of these specialized systems on the Fire Protection Plans.

B. Professional Engineer

1. The project construction documents shall be prepared and sealed by a professional engineer licensed in the State of Alabama and shall include at a minimum the information noted in part "K. Bid/Construction Plan Requirements" below.
2. Fire protection shop drawings and hydraulic calculations are to be prepared under the direction of a professional engineer licensed in the State of Alabama. The Engineer shall sign and seal each drawing sheet and the cover sheet for the hydraulic calculations. The system layout may be

performed by a NICET Level III under the direction of a licensed engineer. The Nicet Level III who performs the system layout shall also sign and seal each drawing page and the cover sheet(s) for the hydraulic calculations. The Engineer of Record for the project must review and provide a review stamp indicating that the shop drawings are in conformance with his or her design concept and requirements set forth by the Fire Protection drawings.

C. Utility Connections

1. City water pressure/flow testing
    a. The municipal water supply that services Campus buildings fluctuates dramatically on a daily basis. In an effort to ensure that UA fire sprinkler systems have an adequate water supply at all times, the following procedure should be followed.
        1) Prior to design, a flow test shall be conducted for every new sprinkler system and for substantial alterations to existing sprinkler systems that affect any remote design area.
        2) Before the flow test is conducted, designers should contact the UA CA Mechanical Engineer or Building Life Safety Inspector for guidance on the best time to perform the flow test to ensure the flow test is performed during a low pressure point for the municipal water system. The Mechanical Engineer or Building Life Safety Inspector will provide an estimated lowest pressure to the designer based on historical data and the geographical location of the test.
        3) Arrangements should be made with the City of Tuscaloosa to perform the flow test. The only change to the normal procedure with the City would be to request the time frame in which it is likely that the pressure will be at a low point.
        4) If the static pressure on the test hydrant is significantly higher than the estimated lowest pressure provided, additional testing may be necessary.
    b. Flow Test Documentation
        1) The flow test shall be thoroughly documented and shall include the following:
            a) A map showing water mains with sizes and the location and elevation of the test and flow hydrants with relation to the riser reference point.
            b) Flow hydrant outlet size and type
            c) Static pressure, pounds per square inch (psi)
            d) Residual Pressure, psi
            e) Flow, gallon per minute (gpm)
            f) Date
            g) Time
            h) Name of person who conducted the test or supplied the information.
            i) Other sources of water supply, with pressure or elevation
    c. Submittals
        1) The flow test documentation should be submitted to the project Fire Protection Engineer of Record and UA Construction Administration before the sprinkler subcontractor begins hydraulic design of the sprinkler system.
        2) The information will be reviewed and compared against recorded historical data to ensure that the system will be designed to provide protection during the daily fluctuations of the municipal water supply.

2. Coordination shall be provided between fire protection and Civil designs to ensure that locations, sizes, capacities, and routing is congruous between the site and building construction packages.

D. Design for Future Growth/Spare Capacity

1. Prior to start of design, obtain requirements for future growth from UA project manager. If future growth of the facility is expected, either provide supplemental system capacity at initial installation to support facility expansion or provide the ability to add future system capacity to the infrastructure provided at initial installation. Future installation of additional capacity and/or connection of additional load/systems shall not require any significant demolition of building elements or mechanical systems. Capped distribution piping shall be incorporated into the design to aid the anticipated future growth.
2. If no future growth requirements are provided by UA project management, provide a minimum of 20% spare capacity (based on fixture units) in main piping systems and services.

E. Design Review of Existing Conditions/Capacities

1. In addition to review of existing design drawings, field verify existing conditions. Do not assume that existing record drawings are complete or accurate. If discrepancies between record drawings and existing conditions are found during design surveys and/or during construction, notify the owner/project manager immediately.
2. Field verify condition of existing equipment and existence of any previously designed spare capacity prior to design. Do not assume that existing equipment is identical to equipment originally designed. Do not assume that existing equipment is operating at original design capacity.

F. Design for Maintenance Accessibility

1. Locate equipment requiring maintenance so that it is easily accessible. Avoid installations that require the use of lifts, scaffolding, or other equipment for routine maintenance. Provide access doors to all maintainable equipment located behind walls or above permanent ceilings.

G. Cost Estimating/Project Budget

1. Cost estimating shall be performed as required in the Owner/Designer Agreement.

H. Manufacturers

1. Where listed in these design standards, the engineer shall use the manufacturers listed to select equipment and develop construction specifications.
2. Other manufacturers may be accepted. Provide justification and obtain written approval prior to including alternate manufacturers in design drawings or specifications.
3. Sole source specification of equipment is to be avoided. Any sole source must be accompanied by a sole source justification letter and must be approved by UA.

I. Use of Foreign Materials

1. See UA Form – General Conditions of the Contract, Paragraph 50.
2. All monolithic components (those consisting of a single solid, unbroken piece) such as but not limited to pipe, pipe fittings and structural components composed of carbon steel, cast iron, ductile iron, copper, brass, bronze, stainless steel or aluminum shall be produced in the United States or its territories.
3. All other components used within plumbing systems shall be produced in the United States or its territories unless one of the following conditions apply:
   a. The component in question is not produced at a location within the United States or its territories.

b. Components produced within the United States or its territories are not available at prices competitive with equivalent foreign product.

4. Product data for all components produced outside the United States or its territories to be used in plumbing systems must be submitted a minimum of 10 days prior to bid for approval by responsible design consultant and UA Construction Administration. Submittal information shall include fabrication location and reason for substitution of foreign component (availability, cost). Components that have sub-components of foreign manufacture must also have data submitted for approval and reason for submittal clearly noted. Components provided by approved manufacturers where produced outside the United States or its territories must also follow this submittal procedure.

J. Equipment Provided by Owner

1. Where owner desires to purchase specific equipment due to timing and/or cost considerations, designer shall be responsible for providing documentation necessary for purchasing including specifications, drawings and details (as applicable). Designer shall also provide assistance and technical support during the purchasing process as needed.

2. Design must reflect actual equipment purchased by the owner. Include submittal data of actual equipment purchased as part of contract documents.

3. Design documents shall instruct the contractor to manage all aspects of equipment receipt, including coordination with the supplier, unloading, storage/relocation as needed. Provide equipment protection as necessary.

K. Bid/Construction Document Requirements

1. Prepare the following fire protection plans (as applicable to the project).

2. Fire Protection Schedule Drawings

a. Fire protection schedule plans shall include flow test data, area classification descriptions, fire pump schedule (if applicable), piping requirements, riser diagrams for each system type, and applicable details.

b. If not located on individual drawing sheets, legends identifying drawing symbols/notation shall be provided on the Plumbing schedule plans.

3. Demolition Plans

a. Include phasing notes on demolition plans where applicable.

b. To maximum extent feasible, remove abandoned branch piping back to risers /mains. Remove abandoned conduit and equipment. Other systems which are presently operating that are to be abandoned, as well as those previously abandoned, should be indicated to be removed

c. Plans shall identify equipment and fixtures to be turned over to owner following demolition. Note on plans that owner has first right of refusal in addition to identified items. Items that are to be turned over to the owner shall be loaded onto owner provided transport vehicle at the jobsite.

d. The A/E must caution the Contractor that all shutdowns of systems serving occupied spaces outside the area of this project shall be absolutely minimized. This will require that, for example, branch piping shall be capped and sealed at the time of partial piping removal to allow use of the remaining piping system until the new piping is installed.

4. Fire Protection Floor Plans

a. Indicate service entrance and backflow preventer location. Coordinate with Site Civil plans.

b. Indicate location of fire department connection (FDC).

c. Indicate building zones and occupancy hazard classifications including chemical storage areas.

d. Indicate routing of fire protection mains and any branch lines routed through particularly tight or congested spaces.

e. Indicate standpipe, zone valves, tamper and flow switch, drain valves, and test locations.

f. Indicate areas of exposed ceiling spaces and any areas with "cloud" ceilings. Ceiling heights may be referenced on architectural plans.

g. Indicate and provide details for any windows or glazed features that are intended to be protected by fire sprinklers.

h. Indicate routing of all exposed piping.

i. Indicate maintenance and code required clearances for equipment on the plan.

j. Indicate intended location of sprinkler heads. Particular attention shall be provided to areas where structure, duct, architectural features, or similar obstructions may affect water spray pattern.

L. Fire Protection Submittal and Shop Drawings

1. Fire sprinkler system submittals, shop drawings, and hydraulic calculations must include all applicable information indicated in the "Plans and Calculations" chapter of the applicable/adopted version of NFPA 13. Shop drawings are referred to as "working plans" in NFPA 13.

M. A/E and Contractor Closeout Documents

1. See UA Front-End Specification 01700 "Project Closeout".

Section 21 05 00 – Common Work Results for Fire Suppression

A. General

1. Automatic wet pipe fire sprinkler systems are preferred. When environmental conditions or space utilization factors exist, alternate fire protection system types should be considered with the collaboration of the UA Mechanical Engineer and UA Building Life Safety Inspector.

2. Buildings should be zoned by floor or by area limitations. Each zone shall have a control valve, flow switch, pressure gauge, and test drain connection. Flow switches shall be connected to the building fire alarm system.

B. Pipe Material – Schedule 40 Steel

C. Pipe Routing

1. Sprinkler piping shall be routed withing the conditioned envelope of the building. Routing of piping through unconditioned spaces is discouraged and should be avoided. If situations arise where this cannot be avoided, consult with the UA Project Manager, UA Mechanical Engineer, and UA Building Life Safety Inspector for other options which may include insulating and heat tracing of the portions of pipe in those areas.

D. High Temperature Areas

1. High temperature sprinkler heads shall be used in all mechanical rooms, electrical generator rooms, attics, and other areas where high ambient temperatures may exist.

E. Heat Tracing

1. Manufacturers: Subject to compliance with requirements below - at consultant's discretion.

2. Apply heat tracing to above-grade wet piping exposed to outdoor conditions and subject to freezing, including and wet piping in unconditioned attics.
3. Heat trace shall be applied under pipe jacket and insulation.
4. Heat trace shall be self-regulating and rated for a minimum of 5W/LF.
5. All trace shall be thermostatically controlled. This may be accomplished via a central distribution panel or individual controllers for separate pipe sections.
6. Heat tracing systems for fire protection piping must be electronically supervised by the building fire alarm system to provide positive confirmation that the heat trace is energized. Additionally, heat trace shall have LED indicating lights connected to the end of the heat tape to allow visual verification of proper operation.

F. Building Expansion

1. At building control joints, flexible connections or expansion loops shall be installed in piping to allow for movement.

G. Piping Identification

1. Pipe labels are to comply with ANSI/ASME A13.1 - 1996 for labeling location/frequency, letter height, color field length and directional arrow requirements.
2. Pipe labels are to be suitable for both indoor and outdoor use.
3. Pipe labels may be cylindrically coiled or flat strap-around markers with heavy duty nylon ties. Substitute stainless steel bands for nylon ties for outdoor duty applications.
4. Pipe labels shall indicate system type such as wet, dry, or clean agent and shall be red with white lettering.

H. Sprinkler Heads

1. In general, intermediate temperature heads should be used. Regular temperature heads may be used in certain residential type applications. Coordinate with the UA Mechanical Engineer and UA Building Life Safety Inspector.

I. Spare heads

1. Provide spare heads and head cabinets as required by the applicable version of NFPA 13.

J. Fire Alarm System

1. All zone water flow devices, valve tamper switches, air pressure for dry pipe or preaction systems, and fire protection heat trace systems shall be supervised by the building fire alarm system.

K. Drainage

1. All portions of the sprinkler system shall be provided with drain points. Any section of the systems that is trapped, shall be provided with a drain.
2. Main drain shall be 2” diameter minimum.
3. Drains shall be directed to the exterior or floor sink unless trapped volume is less than 5 gallons. For less than 5 gallons of water, a low point drain with valve, 1” nipple, and plug is acceptable.
4. Drains shall be directed to a floor sink of sufficient capacity to accept the flow.

L. Provisions for Testing and Inspection

1. Underground Piping
   a. Lead-In Visual inspection/Hydrostatic test

1) The lead-In shall be visually inspected by the UA Inspector before being covered or the slab is poured. See Fire Main Underground Inspection checklist for details.

2) If the lead-In is not a listed one-piece factory tested riser, the contractor shall complete a hydrostatic test before the slab is poured. The hydrostatic test of the leadin shall be witnessed by the UA Inspector and documented by the contractor on the *Contractor's Material and Test Certificate for Underground Piping*.

3) The lead-in shall be tested at 200 psi or 50 psi in excess of normal system pressure, whichever is greater, and shall maintain that pressure at ±5 psi for 2 hours.

b. Fire Main Underground Piping Visual Inspection/Hydrostatic Test

1) Visual inspection - All underground piping, joints, restraints, thrust blocks, etc. shall be visually inspected by the UA Inspector before the trench is backfilled. All underground pipe connections from the water supply to the lead-in shall be completed before calling for this inspection. After the visual inspection is passed, the trench can be backfilled, provided the installing contractor takes responsibility for locating and correcting leakage. If the contractor wishes to complete the hydrostatic test in conjunction with the visual inspection, it is permissible and required to backfill the trench between joints, so long as all joints and thrust blocks remain exposed for the visual inspection. See Fire Main Underground Inspection checklist for details.

c. Fire Main Underground Piping Hydrostatic Test and Flushing

1) Hydrostatic test - The trench shall be backfilled between joints to prevent movement of pipe before the hydrostatic test is conducted. All fittings, restraints, and thrust blocks shall be exposed if a visual inspection has not been completed by the UA Inspector prior to the hydrostatic test. Where required for safety measures, the trench is permitted to be completely backfilled after the visual inspection and before the hydrostatic test, provided the installing contractor takes the responsibility for locating and correcting leakage.

a) All piping and attached appurtenances(including FDC) subjected to system working pressure shall be hydrostatically tested at 200 psi or 50 psi in excess of normal system pressure, whichever is greater, and shall maintain that pressure at ± 5 psi for 2 hours.

2) Flushing of underground piping - Underground piping, from the water supply to the system riser, and the lead in connection to the system riser shall be completely flushed before the connection is made to aboveground sprinkler system piping. Flushing should be witnessed by the UA Inspector. The contractor should be prepared to complete the required flush procedure at the conclusion of the hydrostatic test. Flushing procedures are detailed on the Contractor's Material and Test Certificate for Underground Piping (NFPA 24).

3) After the visual inspection, hydrostatic test, and required flushing is completed, the contractor shall produce the Contractor's Material and Test Certificate for Underground Piping. The certificate shall be completely filled out and signed by the installing contractor and general contractor before it will be signed or accepted by the UA Inspector. A copy of the certificate shall be provided to the sprinkler installer. The installer shall not stack the sprinkler riser until he has a copy of the signed certificate and is sure that the underground flush has been completed.

2. Aboveground Piping

a. Fire Sprinkler Overhead Inspection/ Hydrostatic Test

1) All overhead piping and joints must be uncovered and exposed. All hangers must be uncovered and exposed. See Sprinkler Overhead Inspection checklist for details.

2) Hydrostatic testing should be conducted concurrently with the overhead inspection in most cases. Generally, overhead inspections and hydrostatic tests are completed floor by floor. In cases of very large buildings, it may become necessary to test each floor in sections. A plan should be developed to ensure that the entirety of the system is tested as required by NFPA 13.

a) Overhead piping will be visually inspected for leaks. The test will be at 200 psi or 50 psi in excess of system operating pressure, whichever is greater. The piping shall hold the pressure for two hours with no pressure drop.

b) Upon completion of the hydrostatic test, the overhead piping shall be drained in the presence of the UA Inspector.

3) Standpipe systems shall be visually inspected and hydrostatically tested as complete systems, rather than on a floor or sectional basis.

4) After the overhead inspections and hydrostatic tests are completed for a floor or section of a floor, the contractor shall produce the Contractor's Material and Test Certificate for Aboveground Piping. The certificate shall be completely filled out and signed by the installing contractor and general contractor before it will be signed or accepted by the UA Inspector.

3. Fire Pumps

a. Fire Pump Visual Inspection, Hydrostatic Testing, and Certification testing

1) Suction piping shall be flushed in accordance with 2013 NFPA 20, Chapter 14.

2) Suction and discharge piping shall be hydrostatically tested to the same standards as aboveground piping.

a) The contractor shall produce a Contractor's Material and Test Certificate for Aboveground Piping for the pump piping.

3) A visual inspection of the fire pump and related components and the fire pump room shall be conducted before the Field Acceptance Test is completed.

4) Field Acceptance Testing shall be conducted in the presence of the pump, engine, controller, ATS manufacturer(s) or their factory authorized representative. The UA Inspector shall be present for the acceptance testing and presented with a copy of the completed test report.

4. Sprinkler System Final Acceptance Testing and Inspection

a. A final fire protection system final inspection shall be conducted prior to the CO when all components of the fire protection system and fire alarm system are fully operational and ready to be placed into service. See Sprinkler System Final Inspection checklist for details.

Section 21 11 19 – Fire Department Connections (FDC) & Locking FDC Plugs

A. General

1. FDC locations shall be located for unobstructed access and coordinated with UA and the City of Tuscaloosa Fire Department .
2. FDC's located remotely from the building will be shown on the site utility plan and installed by the site contractor to within 5' of the building. The fire protection contractor is responsible for connecting the remote FDC piping to the FDC lead in. The fire protection contractor is responsible for verifying that the FDC piping is flushed from the FDC location to the point of connection to there riser before the FDC piping is connected to the riser.

3. FDC check valves must be installed in a location accessible for annual inspections and testing.
4. FDC's shall be located within code required distance to fire hydrant(s).
5. FDC's shall be required to be equipped with locking Knox Brand FDC plugs as required by the City of Tuscaloosa which provides fire department response to the University of Alabama campus.

B. Product

1. Acceptable product shall be Knox Brand Model 3110 or 3111 2.5" FDC plug in bright stainless steel finish.

C. Execution

1. The FDC plugs shall be installed as soon as the FDC is in place to prevent entry of debris into the system. The project Field Coordinator shall be contacted to make arrangements for the installation of the plugs.

Section 21 13 16 Dry-Pipe Sprinkler Systems

A. General

1. Dry pipe system shall only be installed where the area being protected cannot be maintained above 40F, per NFPA 13, or protected by dry barrel sprinklers.
2. In areas subject to freezing that cannot be protected by dry type sprinklers on a wet system, a dry pipe system shall be installed. Antifreeze loops are not permitted.
3. Dry pipe system piping shall be sloped minimum of ¼" per 10' on mains and ½" per 10' on branches.
4. Compressors
    a. Where dry pipe sprinkler systems are used, dual air compressors shall be installed.
    b. Compressors shall be non-riser mounted tank type listed for fire protection use and sized to refill the dry pipe system within 30 minutes per NFPA.
    c. Utilize the compressor manufacturer's listed air maintenance device and supervisory air pressure switch to maintain and monitor the dry pipe system air pressure.
    d. Air compressors shall be located in non-sensitive areas such that nearby occupants are not disturbed by noise and vibration caused by a compressor.
5. Utilize full length dry pendent sprinklers connected directly to the dry system branch line tee fittings in areas with suspended ceilings. Do not install dry pendents on drops.
6. All dry valves requiring manual reset must be externally resettable.
7. Install permanent, typed, local labels at devices showing "HIGH AIR" setting, "LOW AIR" setting, "COMPRESSOR ON" setting, "COMPRESSOR OFF" setting, and "TRIP PRESSURE" setting.
8. Where the dry system is large capacity (>200 gallons), the design engineer should consider the option of providing a nitrogen generation system. Coordinate with the UA Mechanical Engineer and UA Building Life Safety Inspector.
    a. The Nitrogen Generation System shall provide a minimum of 98% Nitrogen purity to the FPS utilizing Pressure Swing Adsorption (PSA) separation technology.
    b. Each Nitrogen Generation System provided must be FM 1035 Approved & UL 508A - Industrial Control Panel Listed.

c. The Nitrogen Generation System shall be sized to maintain NFPA 25 acceptable leak rate (3 PSI loss over 2 Hours).

d. The system shall be provided with an air compressor package capable of filling the largest zone of the fire suppression system to pressure within 30 minutes per NFPA 13 requirements.

9. Pipe

a. Dry pipe sprinkler piping shall be galvanized steel inside and out.

b. When nitrogen system is used, pipe may be Schedule 40 steel unless installation location requires additional external corrosion protection.

Section 21 13 19 Preaction Sprinkler Systems

A. General

1. Preaction sprinkler systems may be utilized in spaces which contain sensitive or high value equipment such as an MRI room, or in rooms/spaces that contain art, artifacts, archived documents, or other unique or high value items.
2. Preaction systems shall supplied in a self-contained fully integrated cabinet listed and approved as an assembled unit. The system shall be double interlock with electric and pneumatic release and contain all electrical, hydraulic, and pneumatic components required for a fully functioning preaction system.
3. The fire protection contractor who installs the preaction system will be responsible for providing and installing the preaction associated releasing detectors that are compatible with the releasing panel provided in the preaction cabinet. In most cases, the preaction detector locations should be shown on the electrical auxiliary drawings and the electrical contractor will be responsible for providing pathways from the device locations back to the preaction cabinet location.
4. Preaction releasing panels will be monitored by the building fire alarm panel.
5. Preaction system shop drawings should include a sheet that indicates the detection device locations, circuit diagrams, wire types, releasing panel details, connections to building fire alarm system, sequence of operations, etc.

B. Products

1. Viking TotalPac3
2. Victaulic Fire-Pac Series 745

Section 21 22 00 – Clean Agent Fire Extinguishing Systems

A. General

1. Clean-Agent Fire-Suppression Systems may be utilized in areas where critical electronic assets must be protected such as server rooms and data centers, or other spaces that contain high value equipment as approved by UA.
2. System requirements shall include Clean-Agent Fire-Suppression with addressable control panel. System shall also include outputs for connection to the building's fire alarm system. All Clean-Agent Fire-Suppression Systems shall be fully compliant with NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems.

B. Products

1. Materials and equipment shall be of a single manufacturer. Any alternates must be approved by The University of Alabama Mechanical Engineer and/or the UA Building Life Safety Inspector.
2. 3M Novec 1230 is UA's preferred clean agent fire extinguishment chemical.
3. Acceptable manufacturers shall include: Ansul, Fike, or Kidde.

Section 21 30 00 – Fire Pumps

A. General

1. When required by inadequate water supply, fire pumps shall be provided and designed in accordance with NFPA 20.
2. Fire pumps shall be located in a minimum of a 1 hour rated exterior accessible room. In the event that a fire pump is installed in a building that is not fully sprinklered, the room rating must increased to 2 hours.
3. In cases where a vertical in-line fire pump is used, a lifting trolley must be included in the design of the building. This should be shown on the architectural, structural, and fire protection plans.
4. Main fire pump and jockey pump shall be accessible from all sides and shall not block access to each other.
5. Conduit and piping shall not block access to the pumps including routing across walkway floors.
6. Fire pump room shall be provided with sloped floor to floor receptor(s) with 4" drain. Other drain receptors may be provided near pumps to receive drain line discharge.

- End –

Change Log – 21 00 00

Description of Change	Sheet or Drawing	Date
Created new section	210000	03/2023
Added restriction for pipe routing through unconditioned spaces	210500.C	09/2023
Added LED indicator for heat trace	210500.E.6	09/2023