

ISSUE	DATE	DESCRIPTION	APPROVED
00/00/00	00/00/00	SCHEMATIC DESIGN	
00/00/00	00/00/00	DESIGN DEVELOPMENT	X

REVISION	DATE	DESCRIPTION	BY

DATE	DESCRIPTION	BY

DATE	DESCRIPTION	BY

THIS DRAWING AND ASSOCIATED INSTRUMENTS ARE THE PROPERTY OF DWELL DESIGN STUDIO, INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF DWELL DESIGN STUDIO, INC. THE USER OF THIS DRAWING SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES AND AUTHORITIES.

DATE: \_\_\_\_\_

**NOTES & FIRE PROTECTION**

JOB NUMBER: 195603

DRAWN BY: Author CHECKED BY: Checker

**FP0-00**  
NOT FOR CONSTRUCTION

**FIRE PROTECTION CRITERIA**

**ELECTRIC DRIVEN FIRE PUMP AND CONTROLLER:**

THE CONTRACTOR SHALL PROVIDE AND INSTALL A 150 HP, 1000 GPM @ 160 PSI FIRE PUMP PACKAGE SYSTEM, DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 20. THE FIRE PUMP SHALL BE LISTED BY UL AND APPROVED BY FM FOR FIRE PUMP SERVICE.

THE PUMP PACKAGE SHALL DELIVER FLOW AND PRESSURE SATISFYING THE HYDRAULIC CALCULATIONS FOR THE SYSTEM DESIGN. THE PUMP SHALL ALSO DELIVER NOT LESS THAN 150% OF RATED CAPACITY AT A PRESSURE NOT LESS THAN 65% OF RATED PRESSURE.

THE PUMP(S) SHALL BE HORIZONTAL, SPLIT CASE, CLASS 40, CAST IRON, BRONZE FITTED, 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 PAMPHLET NO. 20 AND SHALL BE EQUAL TO A PATTERSON SENTINEL AND SHALL BE MOUNTED ON A FABRICATED STEEL BASE, COMPLETE WITH COUPLING, OSHA APPROVED, COUPLING GUARD, AND DIRECTLY CONNECTED TO THE ENGINE. THE PUMP SHALL BE CLOCKWISE ROTATION AS VIEWED FROM THE DRIVER END.

THE PUMP DISCHARGE FLANGE SHALL BE RATED FOR 125 LBS.

THE PUMP CASING SHALL BE SMOOTH, FREE OF SCALE, LUMPS, CRACKS, SAND HOLES AND DEFECTS OF ANY NATURE WHICH MAY MAKE IT UNFIT FOR THE USE FOR WHICH IT IS INTENDED.

THE BOLTING OF PRESSURE-HOLDING CASTINGS SHALL BE SUCH THAT THE MAXIMUM STRESS ON ANY BOLT WILL NOT EXCEED ONE-FOURTH THE ELASTIC LIMIT OF THE MATERIAL AS COMPUTED BY USING THE STRESS AREA AND ON THE BASIS OF THE WATER PRESSURE EQUIVALENT TO THE SHUTOFF PRESSURE EFFECTIVE OVER THE AREA OUT OF THE CENTER LINE OF THE BOLTS.

THE PUMP BEARINGS SHALL HAVE AN L-10 RATING OF NOT LESS THAN 5000 HOURS BASED ON LOAD RATINGS AND FATIGUE LIFE.

THE SHAFT SHALL BE SEALED WITH A STUFFING BOX AND PACKING WITH EXTERNAL WATER-SEAL PIPING. THE STUFFING BOX GLANDS SHALL EXERT UNIFORM PRESSURE ON THE PACKING.

BEARING HOUSING SUPPORTS AND SUCTION AND DISCHARGE FLANGES SHALL BE INTEGRALLY CAST WITH THE LOWER HALF OF THE CASING. REMOVAL OF THE UPPER HALF OF THE CASING MUST ALLOW THE ROTATING ELEMENT TO BE REMOVED WITHOUT DISCONNECTING THE SUCTION AND DISCHARGE FLANGES.

REPLACEABLE SHAFT SLEEVES SHALL BE FURNISHED AND ARE TO BE OF BRONZE ASTM A148 MATERIAL. THE SHAFT SLEEVES SHALL BE HELD IN POSITION BY THE IMPELLER KEY AND LOCKED IN POSITION BY A SEPARATE THREADED SLEEVE NUT.

WATER SLINGERS OF CORROSION-RESISTANCE MATERIAL SHALL BE PROVIDED TO SEAL THE BEARINGS AT THEIR INNER ENDS.

THE PUMP CASING SHALL BE HYDROSTATICALLY STRENGTH TESTED TO A MINIMUM OF 250 PSI, OR NOT LESS THAN TWICE THE MAXIMUM SHUT-OFF PRESSURE.

**DRIVER**

THE FIRE PUMP(S) SHALL BE DRIVEN BY AND SHALL BE EQUAL TO A PATTERSON PUMPS, ELECTRIC ENGINE, UL LABELED AND /OR FM APPROVED, AUTOMATIC OPERATION.

THE ENGINE SHALL BE OF ADEQUATE HORSEPOWER TO BE NON-OVERLOADING THROUGHOUT THE PUMPS MAXIMUM DESIGN REQUIREMENTS.

THE PUMP(S) SHALL HAVE A WYE-DELTA STARTER.

**CONTROLLER**

THE CONTROLLER(S) SHALL BE EQUAL TO ASCO CONTROLLERS, UL/FM APPROVED AUTOMATIC ENGINE CONTROLLER, PRESSURE RECORDER, AND SHALL MEET THE CRITERIA SET FORTH IN THIS SPECIFICATION. THE CONTROLLER SHALL BE DESIGNED IN A MODULAR FASHION SUCH THAT OPTIONAL EQUIPMENT MAY BE EASILY FIELD INSTALLED WITH PLUG-IN DEVICES.

A DATA / EVENT RECORDER WHICH CAN RECORD A HISTORY OF THE LAST 3000 EVENTS / ALARMS SHALL BE PROVIDED. ALL LOCAL VISUAL ALARMS SHALL BE INDICATED BY EASY TO READ LED ALARM LIGHTS. ENGINE FAILURE ALARMS SHALL BE RED, PUMP ROOM TROUBLE ALARMS SHALL BE AMBER, AND "AUTO ON" SHALL BE GREEN.

**JOCKEY PUMP**

PROVIDE CENTRIFUGAL CLOSE-COUPLED VERTICLE INLINE PUMP WITH MECHANICAL SEAL, CAST IRON SUCTION AND DISCHARGE FLANGES WITH STAINLESS STEEL INTERVALS.

PROVIDE JOCKEY PUMP CONTROLLER.

**FACTORY TEST**

ALL EQUIPMENT WILL BE FACTORY TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A., U.L., AND F.M. ADDITIONALLY, THE ENTIRE PACKAGE SYSTEM WILL BE HYDROSTATICALLY TESTED BY THE SYSTEM MANUFACTURER PRIOR TO SHIPMENT.

**FIELD ACCEPTANCE TEST AND START-UP SERVICE**

THE SERVICE OF A FACTORY TRAINED REPRESENTATIVE SHALL BE MADE AVAILABLE ON THE JOBSITE TO CHECK INSTALLATION, FIELD ACCEPTANCE TESTING, START-UP, AND INSTRUCT OPERATING PERSONNEL.

IN ORDER TO ENSURE THE FIRE PUMP UNIT IS PROPERLY COORDINATED AND WILL FUNCTION IN ACCORDANCE WITH THE INTENT OF THESE SPECIFICATIONS, ALL THE EQUIPMENT REQUIRED TO COMPRISE THE FIRE PUMP UNIT WILL BE SUPPLIED BY THE FIRE PUMP MANUFACTURER IN WHOM SHALL BE VESTED UNIT RESPONSIBILITY FOR THE PROPER FUNCTION OF THE COMPLETE FIRE PUMP UNIT, INCLUDING THE FIRE PUMP, MOTOR OR ENGINE, BASE PLATE, CONTROL EQUIPMENT AND OTHER REQUIRED ACCESSORIES (WHEN APPLICABLE PREPACK FIRE PUMP PACKAGE SYSTEMS INCLUDING FIRE PUMP SKID AND/OR HOUSED UNITS).

TO VERIFY COMPLIANCE WITH THIS REQUIREMENT OF THE FIRE PUMP MANUFACTURER WILL BE REQUIRED TO SUBMIT A NOTARIZED CERTIFICATE OF COMPLIANCE CERTIFYING THAT ALL COMPONENTS OF THE FIRE PUMP UNIT WERE IN FACT SUPPLIED BY THE FIRE PUMP MANUFACTURER AND ACKNOWLEDGING ITS RESPONSIBILITY FOR THE PROPER FUNCTION OF THE UNIT.

**EQUIPMENT MANUFACTURE EQUALS**

FIRE PUMP - BELL AND GOSSETT, PEERLESS, SPP, TIGERFLOW  
JOCKEY PUMP - GRUNDFOSS, BELL AND GOSSETT, GOULDS  
CONTROLLER - EATON, HUBBEL, AC FIRE PUMP

**FIRE PROTECTION CRITERIA**

**OVERALL DESCRIPTION**

THE CONSTRUCTION WILL CONSIST OF A NEW, 15 STORY MIXED USE BUILDING. THE BUILDING WILL BE LOCATED IN CHARLOTTE, NC.

**ACCEPTANCE TESTING**

ACCEPTANCE TESTING SHALL BE PROVIDED PER NFPA 13 2013 EDITION, NFPA 14 2013 EDITION, NFPA 20 2013 EDITION, 2012 NBC, AND LOCAL REQUIREMENTS.

**OCCUPANCY CLASSIFICATION**

THE 15 STORY MIXED USE BUILDING IS NEW CONSTRUCTION, WITH BUILDING CLASSIFIED AS NFPA 13 FACILITY. THE BUILDING IS LIGHT HAZARD OCCUPANCY. THE MECHANICAL ROOMS, STORAGE ROOMS AND KITCHEN AREAS ARE ORDINARY HAZARD GROUP I AND THE FUTURE RESTAURANT ON LEVEL 14 IS CLASSIFIED AS ORDINARY GROUP II.

**PREPARATION OF DOCUMENTS**

THE SPRINKLER SYSTEM FOR THE BUILDING WILL BE A WET PIPE SYSTEM, DESIGNED PER NFPA 13, 2013 EDITION. THE SYSTEM WILL INCLUDE USING LISTED SCHEDULE 40 STEEL MAINS PIPING LOCATED ABOVE THE CEILING, WITH SCHEDULE 40 STEEL OR APPROVED CPVC PIPE DROPS TO RECESSED PENDENT OR SIDEWALL SPRINKLERS COVERING AREAS BELOW THE CEILING. ANY EXPOSED PIPING WILL BE STEEL, SCHEDULE 40, CPVC PIPING IS ALLOWED ON HOTEL GUESTROOM FLOORS ONLY. SPRINKLERS WILL BE "QUICK RESPONSE" TYPE. STANDPIPES SHALL BE CLASS 1, AUTOMATIC TYPE.

THE STANDPIPE SYSTEM FOR THE MIXED USE BUILDING WILL BE AN AUTOMATIC, WET, CLASS 1 SYSTEM DESIGNED PER NFPA 14, 2013 EDITION AND THE NORTH CAROLINA BUILDING CODE, 2012 EDITION. THE SYSTEM WILL INCLUDE USING HYDRAULICALLY SIZED, STEEL STANDPIPES (SEE FLOOR PLANS FOR REQUIRED LOCATIONS). THE STANDPIPES WILL BE CLASS 1 COMBINATION STANDPIPES/FIRE RISER 2-1/2" HOSE VALVES AND FIRE SPRINKLERS AT EACH LEVEL. LOCATE A COMBINATION FIRE RISER/STANDPIPE IN ONE OF THE STAIRWELLS ON BOTH SIDES OF THE BUILDING. THE STANDPIPE OUTLETS AT THE TOP OF THE RISER WILL PROVIDE 250 GPM AT 100 PSI RESIDUAL. HOSE VALVE CONNECTIONS SHALL BE LOCATED AT THE FLOOR LANDINGS AND NOT AT INTERMEDIATE LANDINGS. FIRST STANDPIPE SHALL PROVIDE 500 GPM, EACH ADDITIONAL STANDPIPE SHALL PROVIDE 250 GPM.

PROVIDE FLOOR CONTROL ASSEMBLY AT EACH FLOOR AS FIRE PIPE SERVING THAT FLOOR CONNECTS TO THE FIRE RISER.

PROVIDE ISOLATION VALVES, CONNECTED/MONITORED BY BUILDING FIRE ALARM SYSTEM, FOR ALL FIRE SUPPLY MAINS PASSING THROUGH BUILDING FIRE WALLS. PROVIDE LINE ITEM IN BID FOR THIS APPLICATION. COORDINATE REQUIREMENTS FOR ADDITIONAL TAMPER SWITCHES WITH EC.

**STRUCTURAL SUPPORT**

STRUCTURAL SUPPORT AND STRUCTURAL OPENINGS FOR THE FIRE PROTECTION SYSTEM INCLUDING LIVE AND DEAD LOADS HAVE BEEN COORDINATED WITH THE STRUCTURAL ENGINEER. STEEL SLEEVES WILL BE SET PRIOR TO CONCRETE PLACEMENT, TO PROVIDE FOR PENETRATIONS OF FIRE PROTECTION PIPING THROUGH THE FLOORS OR ROOF STRUCTURE. ALL PENETRATIONS WILL BE PROPERLY FIRE-CAULKED, AS REQUIRED.

**POINT OF SERVICE**

A 8" FIRE SERVICE WILL BE EXTENDED INTO THE SITE TO SERVE THE SPRINKLER SYSTEM.

**GOVERNING STANDARDS**

SYSTEM DESIGN AND INSTALLATION SHALL COMPLY WITH 2013 EDITION OF NFPA 13 AND THE 2013 EDITION OF NFPA 24 AS WELL AS THE 2012 NORTH CAROLINA BUILDING CODE AND THE LOCAL FIRE PREVENTION CODE.

**DESIGN APPROACH**

THE SYSTEM SHALL BE A HYDRAULICALLY-CALCULATED FULLY-AUTOMATIC, WET SYSTEM INSTALLED THROUGHOUT THE ENTIRE BUILDING. THE SYSTEM SHALL MEET THE DEMAND, PRESSURE AND SPACING REQUIREMENTS OF NFPA 13. A DRY PIPE SYSTEM SHALL BE PROVIDED FOR AREAS SUBJECT TO FREEZING.

PROVIDE A REMOTE INSPECTORS TEST FOR THE SPRINKLER SYSTEM PER MARRIOTT'S MODULE 14.

A TANK MOUNTED AIR COMPRESS SHALL BE PROVIDED FOR THE DRY SPRINKLER SYSTEM.

PER MARRIOTT'S MODULE 14, A FULL FLOW WATER STREAM SHALL REACH THE INSPECTOR'S TEST WITHIN 60 SECONDS FOR A DRY SPRINKLER SYSTEM, REGARDLESS OF THE SYSTEM CAPACITY

**FLOW TEST INFORMATION**

10/30/2018  
TEST BY: EVS SYSTEMS INC.  
TEST ON BALLANTYNE VILLAGE WAY AND BALLANTYNE MARRIOT PARKING LOT  
STATIC: 74 PSI  
RESIDUAL: 68 PSI  
PITOT PRESSURE: 70 PSI  
FLOW: 1404 GPM

**VALVE AND ALARM REQUIREMENTS**

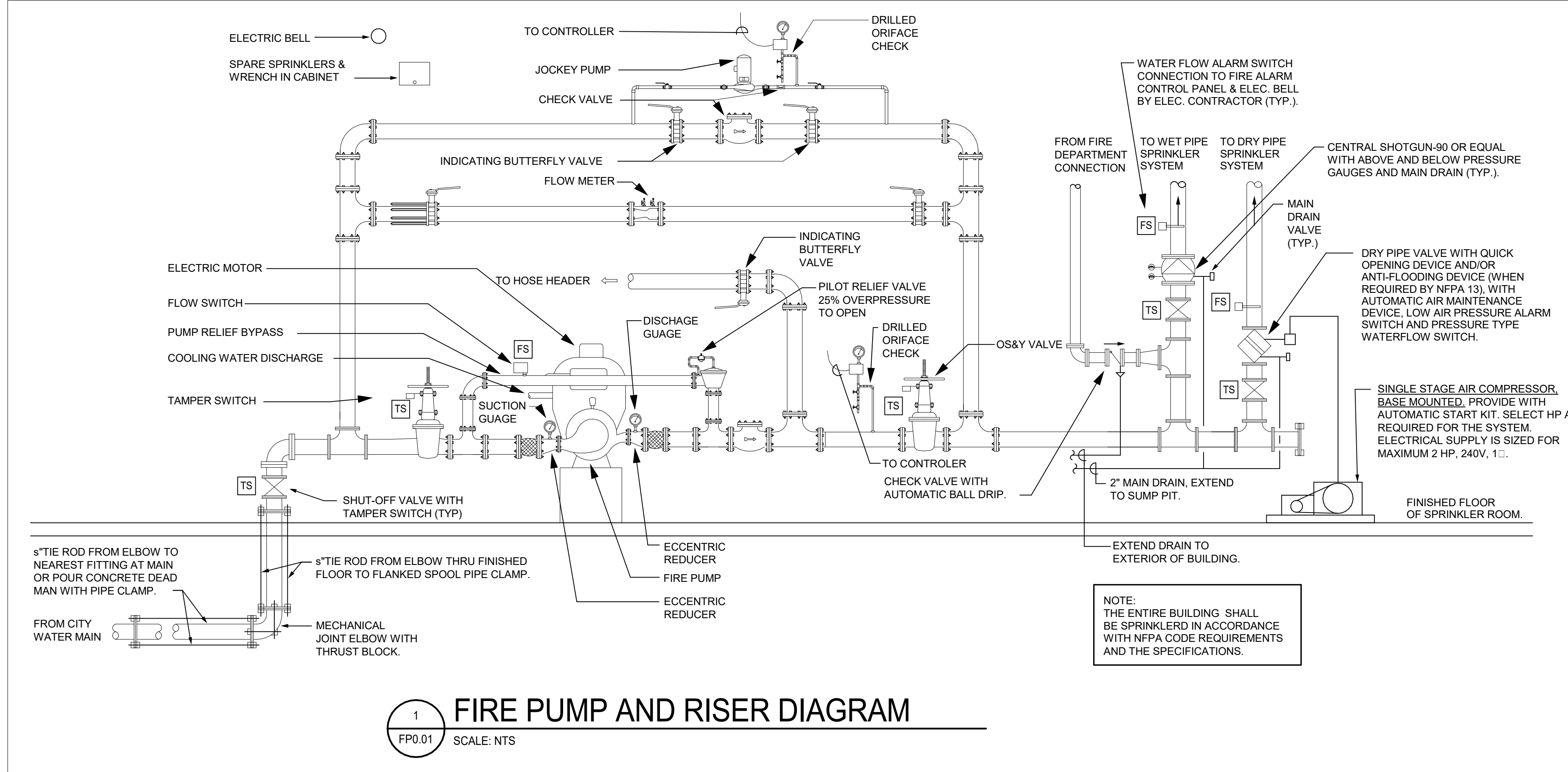
INSTALL FLOW SWITCH IN FIRE RISER AND PUT TAMPER SWITCH ON CONTROL VALVE IN RISER WITH LOCAL AUDIBLE ALARM AND CENTRAL STATION MONITORING.

**MIC RISK EVALUATION**

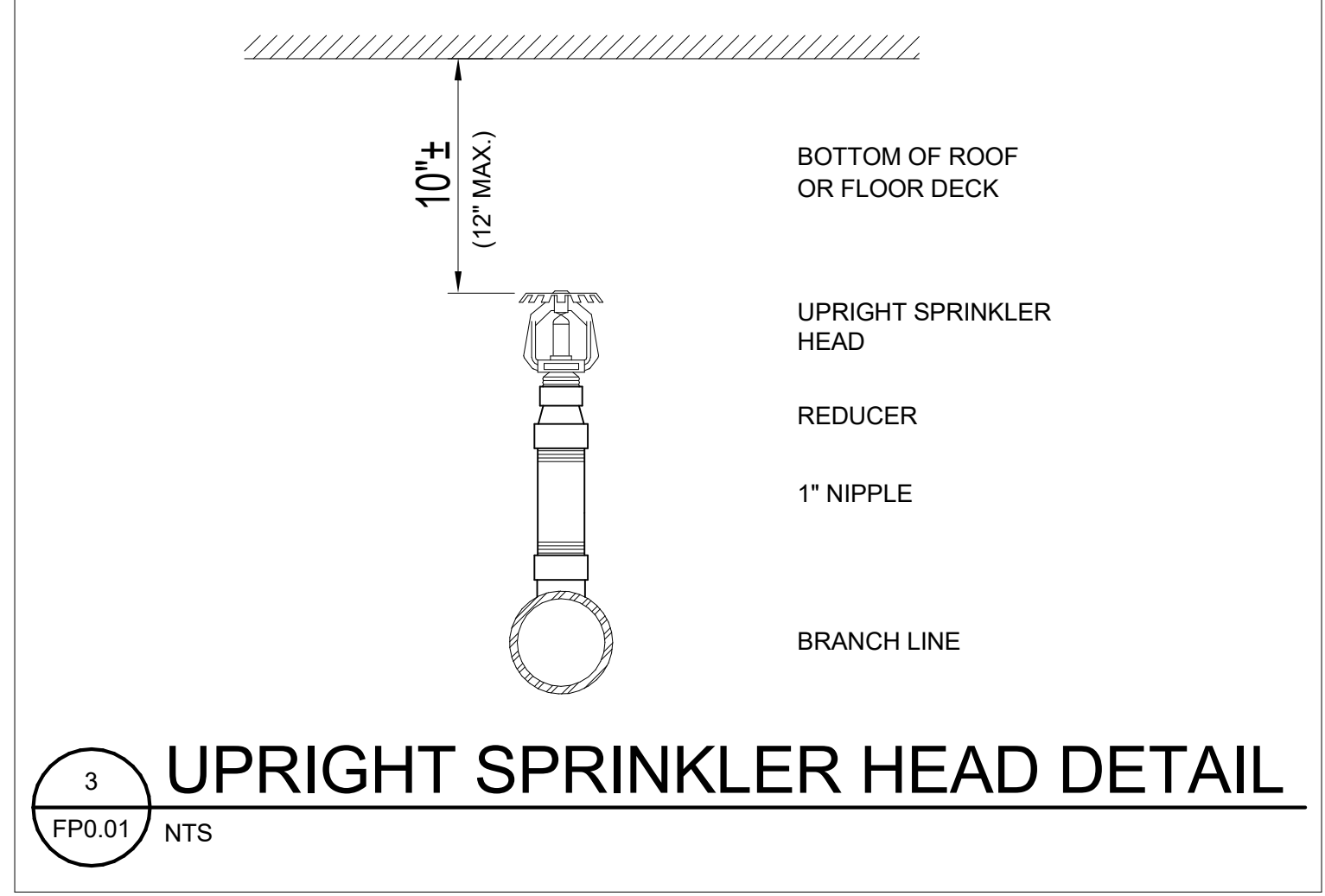
VERIFY THAT THERE IS NO RISK OF MIC WITH LOCAL UTILITY.

**BACKFLOW PREVENTION REQUIREMENTS**

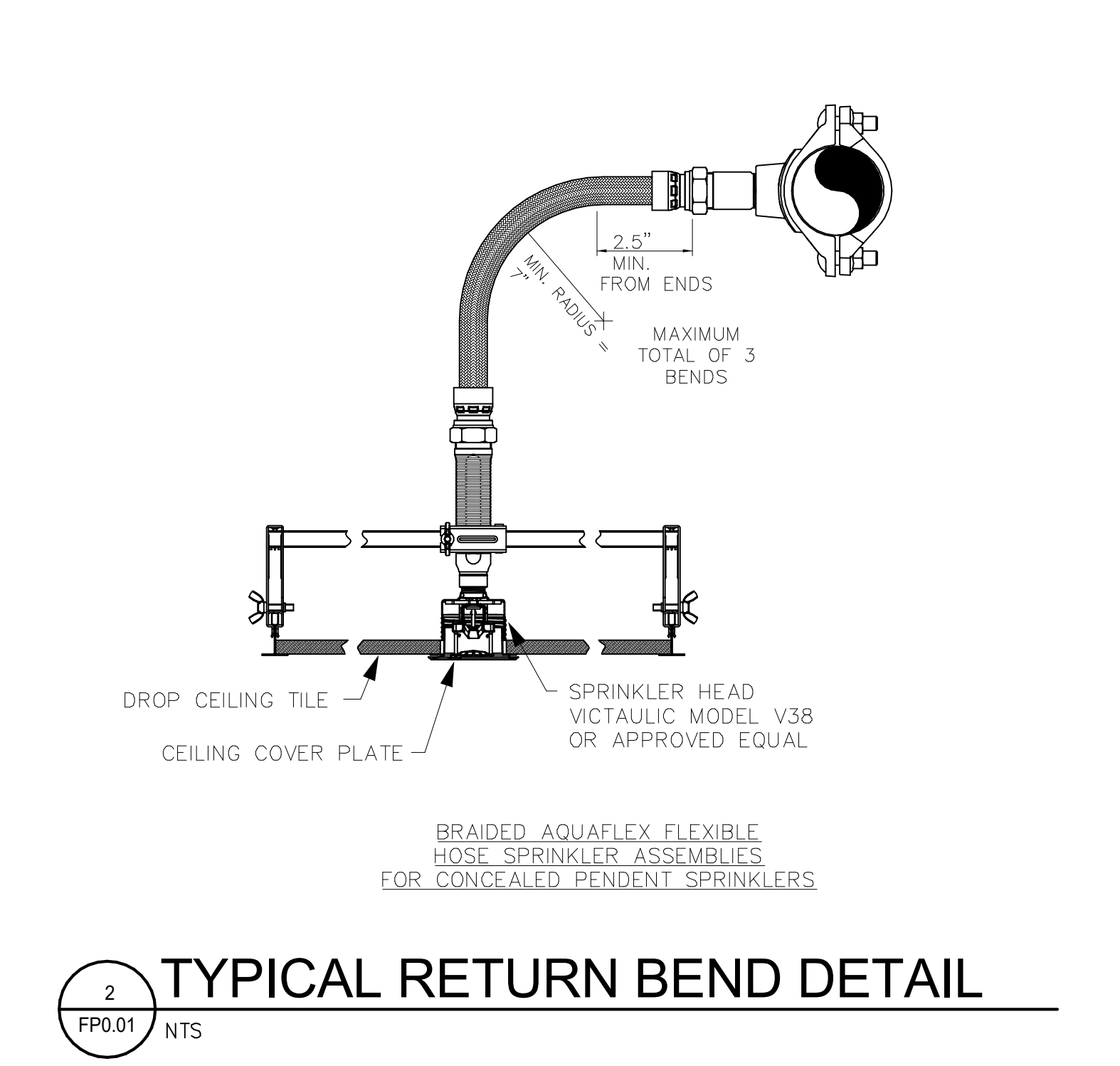
8" RPZ ASSEMBLY BACKFLOW PREVENTER MEETING LOCAL REQUIREMENTS SHALL BE INSTALLED. MAXIMUM PRESSURE DROP ACROSS BACKFLOW PREVENTER TO BE 10 PSI. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNAPPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER-USING APPURTENANCES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS CMUD-REQUIRED BACKFLOW PREVENTER.



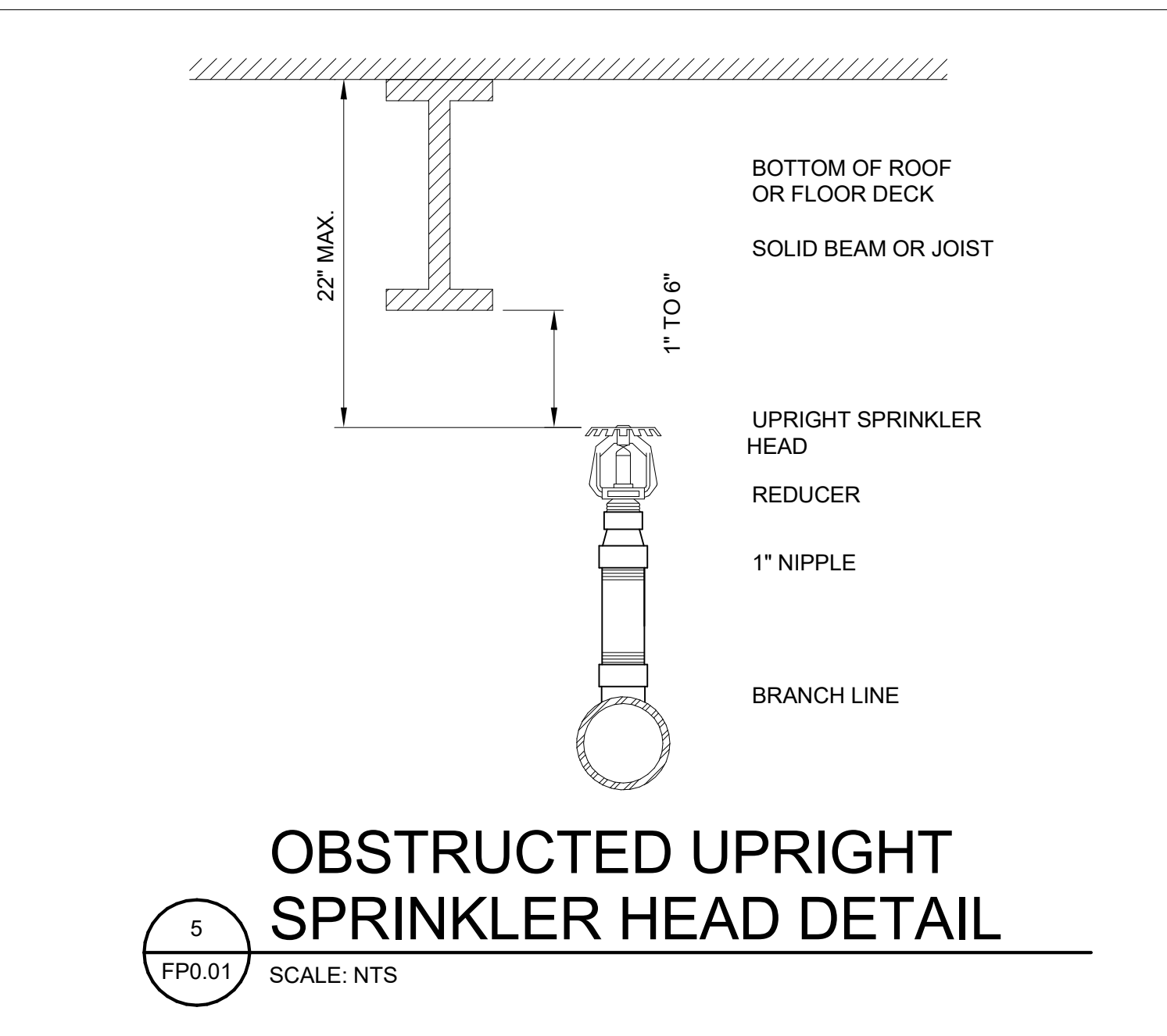
**1 FIRE PUMP AND RISER DIAGRAM**  
FP0.01 SCALE: NTS



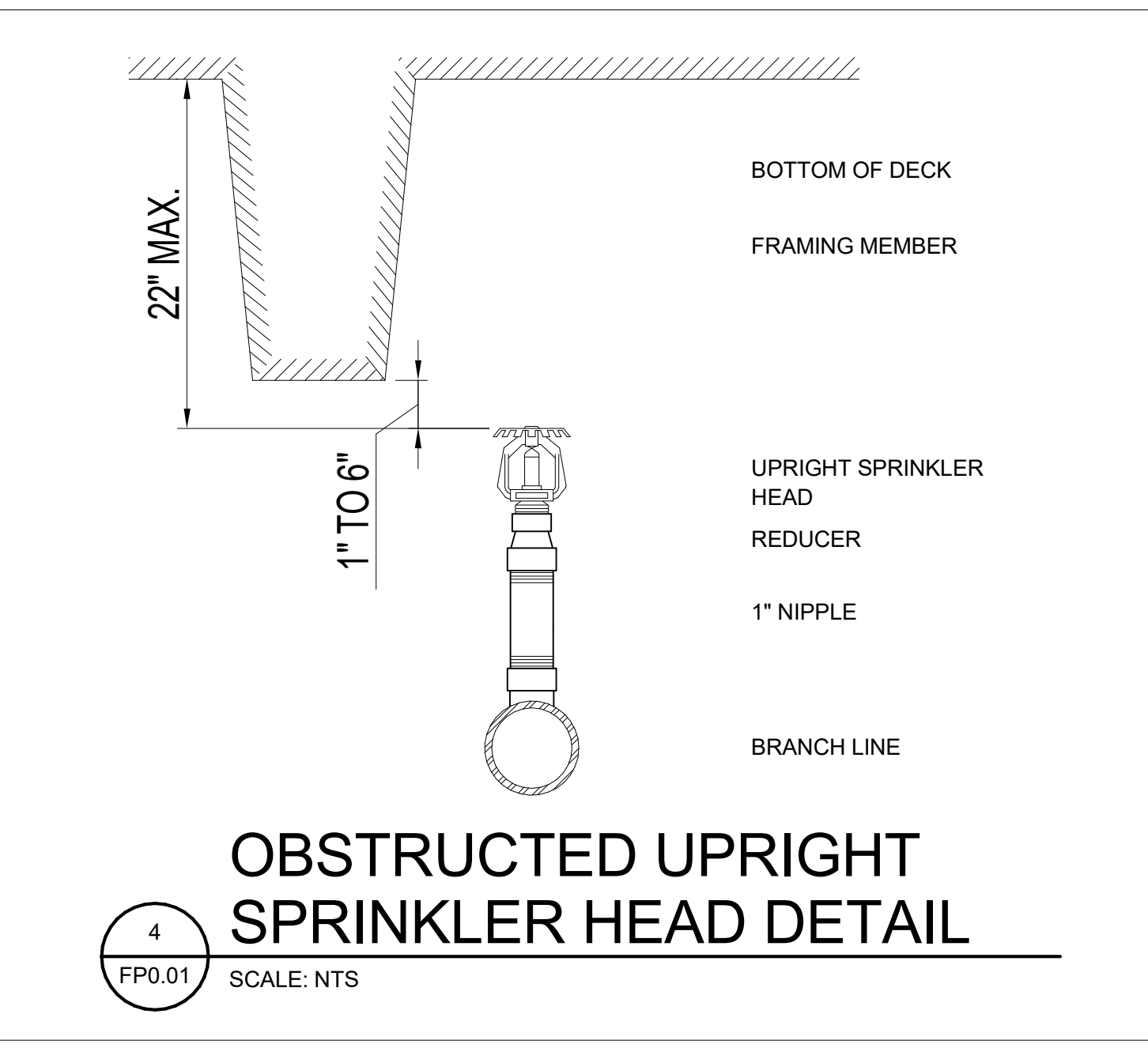
**3 UPRIGHT SPRINKLER HEAD DETAIL**  
FP0.01 NTS



**2 TYPICAL RETURN BEND DETAIL**  
FP0.01 NTS



**5 OBSTRUCTED UPRIGHT SPRINKLER HEAD DETAIL**  
FP0.01 SCALE: NTS



**4 OBSTRUCTED UPRIGHT SPRINKLER HEAD DETAIL**  
FP0.01 SCALE: NTS