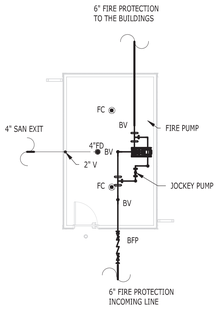
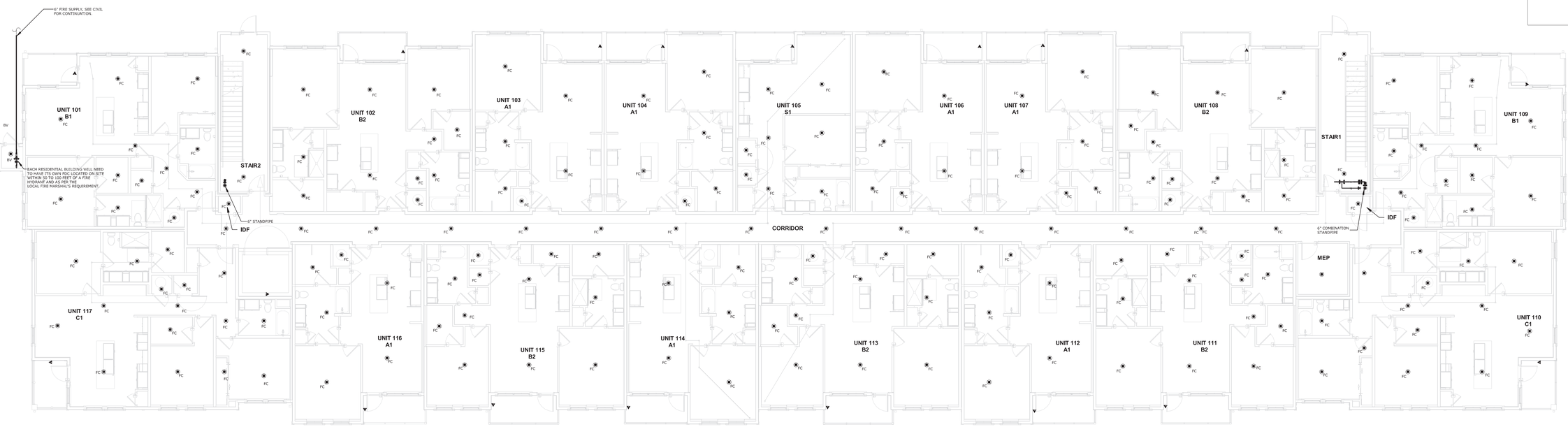


2 FP BUILDING PLAN - GROUND LEVEL
1/8" = 1'-0"



1 FIRE PROTECTION PLAN - GROUND TO FOURTH FLOOR TYPICAL
1/8" = 1'-0"

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Jon D. Shepard
PE 0071536

NOT FOR CONSTRUCTION

△	DATE	SUBMISSION

MILHAUS

MILHAUS

SR-82

7780 LIGHTARD KNOTT LN
FORT MYERS, FL 33905

PROJECT NO:
220035.00

FIRE PROTECTION PLAN - FIRST TO FOURTH FLOOR TYPICAL

SHEET NUMBER:
RFP1.00

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

FAC 61G15 REQUIREMENTS AND SPECIFICATIONS
61G15-32.003 (1)
NATURE AND SCOPE OF WORK:
THE PROJECT DESIGNATED AS MILHAUS SR82 CONSIST OF FIVE (5) FOUR-STORY RESIDENTIAL BUILDINGS AND ONE CLUBHOUSE BUILDING LOCATED AT 7780 LIGHTARD KNOTT LANE, FORT MYERS, FLORIDA 33905. THE PROPOSED BUILDINGS ARE DESCRIBED AS FOLLOWS:

BUILDINGS #1, #2, #3, #4, AND #5: NEW FOUR (4) STORY, SIXTY-EIGHT (68) UNIT APARTMENT BUILDINGS OF TYPE II-B CONSTRUCTION, AND ENCOMPASSING APPROXIMATELY 81,120 SQUARE FEET. THE OCCUPANCY PER FBC SECTION 303 IS RESIDENTIAL GROUP R-2. THE OCCUPANCY PER NFPA 101 IS RESIDENTIAL.

THE OBJECTIVE IS TO PROVIDE A COMPLETE AND FUNCTIONAL FIRE PROTECTION SYSTEM IN ACCORDANCE WITH THE STATUTES OF FLORIDA AND THE FLORIDA BUILDING CODES. THE SYSTEMS SHALL BE HYDRAULICALLY CALCULATED COMBINATION MANUAL WET STANDPIPE AND AUTOMATIC WET SPRINKLER SYSTEMS. THE DESIGN APPROACH EMPLOYED SHALL BE THE AREA DENSITY METHOD. SPRINKLERS USED THROUGHOUT THIS PROJECT SHALL BE RESIDENTIAL WITHIN DWELLING UNITS AND QUICK RESPONSE TYPE ORDINARY TEMPERATURE CHARACTERISTIC (155°F PREFERRED) (EXCEPT WHERE A SPECIFIC HAZARD REQUIRES SPECIAL PROTECTION).

61G15-32.003 (2)
APPLICABLE CODES FOR ACCEPTANCE TESTING:
THE SYSTEM TESTING AND ACCEPTANCE SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE FOLLOWING CODES AS WELL AS THE REQUIREMENTS OF LOCAL ORDINANCES AND THE AUTHORITY HAVING JURISDICTION.
A.NFPA 13 (2016), CHAPTER 10 UNDERGROUND PIPING TESTING AND ACCEPTANCE, COMPLETING AND SIGNING THE CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING.
B.NFPA 13 (2016), CHAPTER 25 SYSTEMS ACCEPTANCE, COMPLETING AND SIGNING THE CONTRACTOR'S MATERIAL AND TESTING CERTIFICATE FOR ABOVEGROUND PIPING.
C.THIS SPECIFICATION "PIPING SYSTEM LEAK TEST"

61G15-32.003 (3)
OCCUPANCY OF BUILDING IS INDICATED IN SECTION "NATURE AND SCOPE OF WORK" WITH DESCRIPTIONS FOR SPECIFIC HAZARDS AS FOLLOWS:
A.CONCEALED COMBUSTIBLE SPACES:
CONCEALED COMBUSTIBLE SPACES SHALL BE PROTECTED IN ACCORDANCE WITH NFPA 13 CHAPTER 8-14.1 "INSTALLATION REQUIREMENTS".

B.ELECTRICAL ROOMS:
SPRINKLERS SHALL NOT BE REQUIRED IN ELECTRICAL EQUIPMENT ROOMS WHERE ALL OF THE FOLLOWING CONDITIONS ARE MET:
1.THE ROOM IS DEDICATED TO ELECTRICAL EQUIPMENT ONLY.
2.ONLY DRY-TYPE ELECTRICAL EQUIPMENT IS USED.
3.EQUIPMENT IS INSTALLED IN A 2-HOUR FIRE-RATED ENCLOSURE INCLUDING PROTECTION FOR PENETRATIONS.
4.NO COMBUSTIBLE STORAGE IS PERMITTED TO BE STORED IN THE ROOM.

C.MECHANICAL ROOMS:
SHALL BE SPRINKLED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13, ORDINARY HAZARD GROUP I OCCUPANCY. THESE ROOMS SHALL NOT BE USED FOR STORAGE PURPOSES.

D.LOBBY, CORRIDORS, STAIRS, AMENITY AREAS, COMMON AREA RESTROOMS, MEDIA, FITNESS, AND OFFICES:
SHALL BE SPRINKLED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13, LIGHT HAZARD.

E.SAFEGUARDING DURING CONSTRUCTION:
SAFEGUARDING FIRE PROTECTION DURING CONSTRUCTION SHALL BE PROVIDED WITH IN ACCORDANCE WITH NFPA 1 UNIFORM FIRE CODE SECTION 16.4.3. AND NFPA CHAPTER NFPA 241 STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION, AND DEMOLITION OPERATIONS.

61G15-32.003 (4)
APPLICABLE CODES:
A.THE FLORIDA BUILDING CODE SEVENTH EDITION (2020)
B.FLORIDA FIRE PREVENTION CODE SEVENTH EDITION (2020)
C.NFPA 1 NATIONAL FIRE CODE (2018)
D.NFPA 13 STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (2016)
E.NFPA 13R STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS IN RESIDENTIAL OCCUPANCIES UP TO AND INCLUDING FOUR STORIES IN HEIGHT (2016)
F.NFPA 14 STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS (2016)
G.NFPA 24 STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES (2016)
H.NFPA 25 STANDARD FOR THE INSPECTION, TESTING, AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS (2017)
I.NFPA 101 LIFE SAFETY CODE (2018)
J.LOCAL FIRE PREVENTION REQUIREMENTS

61G15-32.003 (5)
STRUTURAL SUPPORT AND STRUCTURAL OPENING:
A. PIPING STRUCTURAL SUPPORT SHALL BE IN ACCORDANCE WITH NFPA 13 CH. 9 "HANGING, BRACING, AND RESTRAINT OF SYSTEM PIPING".
B.IT IS NOT ANTICIPATED THAT ANY ENGINEERED STRUCTURAL OPENINGS ARE TO BE REQUIRED TO FACILITATE THE SYSTEM DESCRIBED IN THESE DOCUMENTS. SHOULD THE FINAL SYSTEM LAYOUT DOCUMENTS REQUIRE ANY ENGINEERED OPENINGS THEY SHALL BE COORDINATED THROUGH THE ARCHITECT AT THAT TIME.
C.A COLLATERAL LOAD OF NO LESS THAN 5 PSF HAS BEEN PROVIDED FOR BUT NOT LIMITED TO HVAC, PLUMBING, ELECTRICAL AND FIRE SPRINKLER SYSTEMS HAS BEEN COORDINATED WITH THE STRUCTURAL ENGINEER, REFER TO STRUCTURAL ENGINEER PLANS FOR FURTHER INFORMATION AND INSTRUCTION.

61G15-32.003 (6)
DEVIATIONS FROM THESE DOCUMENTS:
IF THE CONTRACTOR DEVIATES FROM ANY OF THE REQUIREMENTS PROVIDED HEREIN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY FOR RESOLUTION. CHANGES REQUIRED TO THESE DOCUMENTS AS A RESULT OF THE CONTRACTOR DEVIATIONS MAY BE CHARGED TO THE CONTRACTOR AT THE DISCRETION OF THE ENGINEER OF RECORD WITH NO ADDITIONAL EXPENSE TO THE OWNER. THE CONTRACTOR SHALL FULLY COORDINATE THE SYSTEM INSTALLATION WITH ALL OTHER TRADES. THE CONTRACTOR MUST TAKE ALL PROFESSIONAL AND LEGAL RESPONSIBILITY FOR THE DOCUMENTS, WHICH HE PREPARES AND IN NO WAY MAY EXEMPT HIMSELF FROM SUCH FULL RESPONSIBILITY.

61G15-32.003 (7)
SPRINKLER SYSTEM OPERATION:
THE FIRE SPRINKLER HEAD SHALL CONTAIN A GLASS BULB FILLED WITH FLUID THAT EXPANDS WHEN EXPOSED TO HEAT. WHEN THE RATED TEMPERATURE IS REACHED, THE FLUID EXPANDS SUFFICIENTLY TO SHATTER THE GLASS BULB, WHICH THEN ALLOWS THE SPRINKLER TO ACTIVATE AND FLOW WATER. THE FLOW SWITCH ON SYSTEM RISER SENSES THE FLOW OF WATER SENDING A SIGNAL TO THE FIRE ALARM CONTROL PANEL WHICH TRIGGERS THE GENERAL ALARM AND INITIATES THE NOTIFICATION PROCESS.

61G15-32.003 (8)
OWNER'S INTENDED USE AND FIRE SUPPRESSION:
REFER TO INFORMATION INDICATED ABOVE UNDER 61G15-32.003 (1), "NATURE AND SCOPE OF WORK" SECTION.

61G15-32.003 (9)
SPRINKLER SYSTEM ELECTRICAL:
THE FIRE SPRINKLER CONTRACTOR SHALL TAKE A PROACTIVE ROLE IN COORDINATING POWER REQUIREMENTS AND CONNECTION LOCATIONS OF ALL ELECTRICAL COMPONENTS OF THE FIRE SPRINKLER SYSTEM WITH RESPECTIVE TRADES.

61G15-32.004 (1)
WATER BASED FIRE SPRINKLER SYSTEM SHALL BE AN AUTOMATIC WET SPRINKLER SYSTEM AS SPECIFIED HEREIN.

61G15-32.004 (2)
DESIGN INFORMATION:
A.THE POINT OF SERVICE IS THE POINT AT WHICH THE UNDERGROUND PIPING FOR THE SPRINKLER SYSTEM, USING WATER AS THE EXTINGUISHING AGENT, IS USED EXCLUSIVELY FOR THE SPRINKLER SYSTEM, SEE LOCATION INDICATED ON THE FIRE PROTECTION SITE PLAN.

B.REFER TO 61G15-32.003 (4), "APPLICABLE CODES" SECTION ABOVE FOR STANDARDS TO BE APPLIED AND ANALYSIS INDICATED BELOW:

C.REFER TO "NATURE AND SCOPE OF WORK" SECTION ABOVE AND DESIGN APPROACH ANALYSIS BELOW FOR CLASSIFICATIONS OF OCCUPANCY HAZARD.

D.BUILDING DESIGN APPROACH ANALYSIS:

CLASS I MANUAL WET STANDPIPE DESIGN CRITERIA: SHALL BE DESIGNED ACCORDING TO NFPA 14
1.NUMBER OF STANDPIPES: 2
2.SYSTEM COMPONENTS AND HARDWARE:
a)HOSE VALVE SIZE: 21/2" WITH CAP AND CHAIN
3.DESIGN APPROACHES:
a)DESIGN METHOD: HYDRAULIC CALCULATIONS
CLASSIFICATION: CLASS I

FOURTH FLOOR CORRIDOR DESIGN CRITERIA: SHALL BE DESIGNED ACCORDING TO NFPA 13
1.CLASSIFICATION OF OCCUPANCIES AND COMMODITIES: LIGHT HAZARD
2.SYSTEM COMPONENTS AND HARDWARE:
a)TEMPERATURE CLASSIFICATION: ORDINARY
b)SPRINKLER DISCHARGE CHARACTERISTICS: 5.6 K-FACTOR
3.INSTALLATION REQUIREMENTS: STANDARD COVERAGE PENDENT
a)MINIMUM DISTANCE BETWEEN SPRINKLERS = 6'
b) MAXIMUM DISTANCE BETWEEN SPRINKLERS = 15'
c) MAXIMUM PROTECTION AREA = 225 SQUARE FEET
1. DESIGN APPROACHES:
a) DESIGN METHOD: ROOM DESIGN, DENSITY/AREA
b) OCCUPANCY CLASSIFICATION: LIGHT HAZARD
c) MINIMUM DENSITY (GPM/FT^2): 0.10
d) AREA OF SPRINKLER OPERATION (FT²): 930WITH A 34% (570 FT²) REDUCTION FOR 11'-0" CEILING HEIGHT PER NFPA 13 (2016), SECTION 11.2.3.2.1 FOR QUICK RESPONSE SPRINKLERS USED THROUGHOUT BUILDING.
2. HOSE STREAM ALLOWANCE (GPM): 100
MINIMUM WATER SUPPLY DURATION: 30 MINUTES

TYPICAL FOURTH FLOOR RESIDENTIAL DWELLING UNIT DESIGN CRITERIA: SHALL BE DESIGNED ACCORDING TO NFPA 13R
1. CLASSIFICATION OF OCCUPANCIES AND COMMODITIES: RESIDENTIAL DWELLING UNIT
2. SYSTEM COMPONENTS AND HARDWARE:
a) TEMPERATURE CLASSIFICATION: ORDINARY
b) SPRINKLER DISCHARGE CHARACTERISTICS: 4.3 K-FACTOR
3. INSTALLATION REQUIREMENTS: EXTENDED COVERAGE PENDENT AND/OR HORIZONTAL SIDEWALL
a) MINIMUM DISTANCE BETWEEN SPRINKLERS = 8'
b) MAXIMUM DISTANCE BETWEEN SPRINKLERS = 14'
c) MAXIMUM PROTECTION AREA = 14'X14' = 196 SQUARE FEET
4. DESIGN APPROACHES:
a) DESIGN METHOD: ROOM DESIGN, DENSITY/AREA
b) OCCUPANCY CLASSIFICATION: LIGHT HAZARD (RESIDENTIAL)
c) MINIMUM DENSITY (GPM/FT^2): 0.05
d) AREA OF SPRINKLER OPERATION (FT²): UP TO A MAXIMUM OF FOUR SPRINKLERS WITHIN A COMPARTMENT THAT REQUIRES THE GREATEST HYDRAULIC DEMAND.
5. HOSE STREAM ALLOWANCE (GPM): 100
a) MINIMUM WATER SUPPLY DURATION: 30 MINUTES

E. CHARACTERISTIC OF WATER SUPPLY:
A PROPOSED NEW 8" CIRCULATING PRIVATE WATER MAIN SHALL LOOP AROUND THE PROPERTY AS SHOWN ON THE FIRE PROTECTION SITE PLAN AND CONNECT TO THE CIRCULATING COUNTY PUBLIC UTILITY WATER MAIN, ROUTED ALONG IMMOKALEE ROAD SR-82. A PROPOSED 8" FIRE SERVICE SHALL ROUTE ON SITE VIA AN 8" DOUBLE CHECK VALVE DETECTOR ASSEMBLY BACKFLOW DEVICE TO SUPPLY A SITE FIRE PUMP SYSTEM WITH BY-PASS AND PROVIDE COMBINATION MANUAL WET STANDPIPE AND AUTOMATIC WET FIRE SPRINKLER SYSTEMS FOR BUILDING 1, BUILDING 2, BUILDING 3, BUILDING 4, AND BUILDING 5, FIRE HYDRANT ASSEMBLIES AS SHOWN ON THE FIRE PROTECTION SITE PLAN TO BE SUPPLIED BY UTILITY PRESSURE FIRE MAIN ROUTED ON SITE AS SHOWN ON THE FIRE PROTECTION SITE PLAN.

UNDERGROUND FIRE SERVICE MAIN:
ALL UNDERGROUND FIRE PIPING SHALL BE INSTALLED AND TESTED PER NFPA 13 AND 24 BY A CONTRACTOR (REFERRED TO HEREIN AS "SITE CONTRACTOR") THAT IS LICENSED AND INSURED FOR THE INSTALLATION OF UNDERGROUND FIRE MAINS (CLASS 1, 2, OR 5 LICENSE). IF THE UNDERGROUND FIRE MAIN IS INSTALLED BY A SITE CONTRACTOR THAT IS NOT THE FIRE SPRINKLER SYSTEM CONTRACTOR FOR THIS PROJECT, THAN IT SHALL BE THE RESPONSIBILITY OF THE FIRE SPRINKLER CONTRACTOR TO COORDINATE WITH THE SITE CONTRACTOR FOR THE FINAL LOCATION OF THE FIRE SPRINKLER RISER STUB-UP SERVICING THE BUILDING. THE FIRE SPRINKLER CONTRACTOR SHALL INCLUDE IN HIS BID THE COST RELATED TO THE SITE CONTRACTOR EXTENDING THE UNDERGROUND FIRE MAIN FROM THE POINT SHOWN ON THE CIVIL PLANS TO THE FINAL STUB-UP LOCATION AS COORDINATED BETWEEN THE FIRE SPRINKLER CONTRACTOR AND SITE CONTRACTOR. THE TESTING OF THE UNDERGROUND PIPING SYSTEM TO THE STUB-UP FLANGE (SEE DETAIL ON SHEET FP104) SHALL BE ACCOMPLISHED BY THE SITE CONTRACTOR.

WATER SUPPLY ANALYSIS:
ESTIMATED VOLUME REQUIRED FOR CLASS I MANUAL WET STANDPIPE SYSTEM OPERATION:

MINIMUM FLOW PER HOSE:	250	
REQUIRED NUMBER OF CALCULATED HOSES:	3	
MINIMUM STANDPIPE FIRE FLOW (GPM):	750	

ESTIMATED REQUIRED PRESSURE:

LOSS OF PSI FROM HEIGHT OF HMD HOSE CONNECTION (PSI):	24.7	(54'-0" ELEVATION)
BACKFLOW LOSS (PSI):	15.0	
HYDRAULICALLY MOST REMOTE HOSE REQ. RESIDUAL (PSI):	100.0	
+		
MINIMUM REQUIRED SYSTEM PRESSURE (PSI):	139.7	
RESIDUAL PRESSURE AVAILABLE AT STANDPIPE FIRE FLOW (PSI):	52.2	
-		
MINIMUM FIRE PUMPER TRUCK BOOST PRESSURE (PSI):	87.5	

FOURTH FLOOR CORRIDOR ESTIMATED VOLUME REQUIRED FOR PROPER SYSTEM OPERATION

ESTIMATED MAXIMUM PROTECTION AREA PER SPRINKLER (SQ FT):	225	
ASSUMING A K-FACTOR OF:	5.6	
MINIMUM OPERATING PRESSURE OF HMD SPRINKLER (PSI):	16.1	
REQUIRED NUMBER OF CALCULATED SPRINKLERS:	5 MAX. (PER NFPA 13, SECTION 11.2.3.3.7.)	
MINIMUM SPRINKLER FLOW + 20% (GPM):	135.0	
HOSE STREAM ALLOWANCE (GPM):	100	
ESTIMATED TOTAL FIRE FLOW (GPM):	235.0	

ESTIMATED REQUIRED PRESSURE:

LOSS OF PSI FROM HEIGHT OF HMD (PSI):	21.7	= (50'-0" ELEVATION)
BACKFLOW LOSS (PSI):	15.0	
HMD REQ. RESIDUAL (PSI):	16.1 MIN.	
SAFETY MARGIN:	10%	
REQUIRED MIN. PRESSURE (PSI):	58.1	
PRESSURE AVAILABLE AT ESTIMATED TOTAL FIRE FLOW (PSI):	54.7	
EXCESS UTILITY PRESSURE AVAILABLE FOR SYSTEM PIPING (PSI):	- 3.4	

ESTIMATED VOLUME REQUIRED FOR FOURTH FLOOR DWELLING UNIT SYSTEM OPERATION

ESTIMATED MAXIMUM PROTECTION AREA PER SPRINKLER (SQ FT):	196	
ASSUMING A K-FACTOR OF:	4.3	
MINIMUM OPERATING PRESSURE OF HMD SPRINKLER (PSI):	9.1	
REQUIRED NUMBER OF CALCULATED SPRINKLERS:	4	
MINIMUM SPRINKLER FLOW + 20% (GPM):	47	
HOSE STREAM ALLOWANCE (GPM):	100	
ESTIMATED TOTAL FIRE FLOW (GPM):	147	

ESTIMATED REQUIRED PRESSURE:

LOSS OF PSI FROM HEIGHT OF HMD (PSI):	21.7	= (50'-0" ELEVATION)
BACKFLOW LOSS (PSI):	15	
HMD REQ. RESIDUAL (PSI):	9.1 MIN.	
SAFETY MARGIN:	10%	
REQUIRED MIN. PRESSURE (PSI):	50.4	
PRESSURE AVAILABLE AT ESTIMATED TOTAL FIRE FLOW (PSI):	54.8	
EXCESS UTILITY PRESSURE AVAILABLE FOR SYSTEM PIPING (PSI):	4.4	

F. FIRE HYDRANT FLOW DATA:
SUBMITTED SYSTEM IS BASED ON A TEST PERFORM ON MAY 26, 2022 AT 8:30 AM BY STATION 15A OF THE FORT MYERS FIRE DEPARTMENT, INDICATES A STATIC PRESSURE OF 55-PSI AND A RESIDUAL PRESSURE OF 45-PSI AT A FLOW OF 1,501-GPM. TEST HYDRANT #404082 AT 10631 SR 82 AND FLOW HYDRANT #404064 LOCATED AT 10250 SR 82. A FLOW OF 1,928-GPM IS AVAILABLE AS A RESIDUAL PRESSURE OF 20-PSI. THESE CONDITIONS SHALL BE VERIFIED BY THE FIRE SPRINKLER CONTRACTOR PRIOR TO PROCEEDING WITH THE SHOP DRAWING DESIGN AND INSTALLATION. FLOW TEST SHALL BE PERFORMED PER THE REQUIREMENTS OF NFPA 291, NOTIFY THE ENGINEER IMMEDIATELY IF FLOW AND PRESSURES OBTAINED ARE BELOW THOSE CONTAINED IN THIS PARAGRAPH.

G. REFER TO FIRE SPRINKLER SYSTEM MAIN RISER DETAIL FOR SYSTEM CHECK VALVE(S), ZONE VALVE(S), AND FLOW SWITCH(ES).

H. MICROBIAL INDUCED CORROSION (MIC) PREVENTION:
THE LOCAL AUTHORITY AND REPRESENTATIVES OF THE LOCAL UTILITY DEPARTMENT HAVE NOT INDICATED THAT MICROBIAL INDUCED CORROSION (MIC) IS A PROBLEM ASSOCIATED WITH THE LOCAL WATER SUPPLIES. OWNER SHOULD HAVE PUBLIC WATER SERVICE TO THE SITE TESTED BY A QUALIFIED WATER TREATMENT COMPANY AND / OR LABORATORY FAMILIAR MICROBIAL INDUCED CORROSION (MIC) CAUSING ORGANISMS PRIOR CONNECTING THE BUILDING FIRE SPRINKLER SYSTEM TO THE PUBLIC UTILITY SERVICE. SHOULD ANY EVIDENCE OF MIC BE DISCOVERED THE ENGINEER OF RECORD SHALL BE NOTIFIED IMMEDIATELY AND THE FIRE SPRINKLER CONTRACTOR SHALL PROVIDE MONITORING STATIONS WITH SHUT-OFF VALVES AND CORROSION COUPONS ON THE SYSTEM MAIN RISER DOWNSTREAM OF THE SYSTEM MAIN CHECK VALVE AND DOWNSTREAM OF EACH ZONE (FLOOR) CONTROL STATION AND / OR WHERE REQUIRED BY MONITORING STATION MANUFACTURER. SPRINKLER SYSTEM PIPING SHALL BE MONITORED MONTHLY FOR THE FIRST YEAR FOLLOWING THE CONNECTION OF THE SPRINKLER SYSTEM TO THE LOCAL UTILITY SERVICE. WHERE MONITORING OF THE SYSTEM SHOWS NO SIGNS OF MIC THE OWNER MAY CHOOSE TO ADJUST THE MONITORING SCHEDULE NO MORE THEN EVERY SIX (6) MONTHS. THE OWNER MAY ALSO CHOOSE TO ADJUST THE MONITORING SCHEDULE WHEN WATER SAMPLE TESTING HAS BEEN PERFORMED BY A LABORATORY FAMILIAR WITH MIC DETECTION, TREATMENT AND MONITORING AND THE TESTING LABORATORY PROVIDES WRITTEN DIRECTION BASED ON SAID TESTING.

I.BACKFLOW PREVENTOR AND METERING:
REFER TO BACKFLOW PREVENTOR DETAIL AND SPECIFICATION IN THIS DOCUMENT.

J.FIRE PROTECTION SYSTEM COMPONENTS:
THE SPRINKLER SYSTEM SHALL CONSIST OF, BUT MAY NOT BE LIMITED TO THE FOLLOWING:
1.A NEW SITE BACKFLOW PREVENTION DEVICE OF THE TYPE APPROVED BY THE LOCAL PUBLIC UTILITY (REDUCE PRESSURE ZONE AND DETECTOR ASSEMBLY). THE BACKFLOW PREVENTION DEVICE SHALL NOT BE SMALLER THAN THE PIPING INTO WHICH IT IS INSTALLED AND THE PRESSURE DROP ACROSS THIS DEVICE SHALL NOT EXCEED 15 PSI AT THE DESIGN SPRINKLER FLOW. CONTACT CIVIL ENGINEER FOR FURTHER DETAILS. BACKFLOW PREVENTION DEVICE SHALL BE PROVIDED WITH TWO TAMPER SWITCHES TO BE CONNECTED TO THE BUILDING FACP BY THE FIRE ALARM CONTRACTOR.
2.A NEW CONNECTION TO CITY OF SARASOTA PUBLIC UTILITY WATER MAIN, ASSOCIATED UNDERGROUND PIPING TO CONNECT THE SITE BACKFLOW PREVENTION DEVICE AND BUILDING SYSTEM RISER(S).
3.A NEW FIRE DEPARTMENT CONNECTION PROVIDED ON SITE IN ACCORDANCE WITH NFPA 13.
4.A NEW COMBINATION MANUAL WET CLASS I STANDPIPE AND AUTOMATIC WET SPRINKLER SYSTEM RISER IN ACCORDANCE WITH NFPA 13 INCLUDING PRESSURE GAUGES, TEST AND DRAIN VALVE, CHECK VALVE, WATER FLOW ALARM DEVICE AND CONTROL VALVE(S).
5.INSPECTORS' TEST STATION(S) AND SYSTEM DRAIN(S) AS REQUIRED TO COMPLETE THE SYSTEM.
6.ASSOCIATED MAIN, CROSS MAIN, BRANCH, AND OTHER PIPING AND FITTINGS.
7.NECESSARY FLOW ALARMS AND TAMPER SWITCH(ES) TO MONITOR AND ALARM A FIRE OR OTHER EMERGENCY CONDITION.
8.SYSTEM CONTROL VALVE, CHECK VALVES, RELIEF VALVES, PRESSURE GAGES AND ALL REQUIRED DEVICES FOR FULLY FUNCTIONAL WET PIPE SYSTEM CONFORMING TO NFPA 13 CHAPTER 7.

K.FIRE PUMP:
REFER TO THE FIRE PUMP SPECIFICATIONS INCLUDED IN THESE DOCUMENTS.

L.STORAGE TANK:
NOT REQUIRED FOR THIS PROJECT.

M.OWNER'S CERTIFICATE:
NOT REQUIRED FOR THIS PROJECT.

61G15-32.004 (3)
REFER TO 61G15-32.003 (6), "DEVIATIONS FROM THESE DOCUMENTS" INDICATED AS PART OF THIS DOCUMENT.

FIRE PROTECTION SYSTEMS SPECIFICATION:
PART 1 - GENERAL

1.1RELATED DOCUMENTS

A.DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ARCHITECTURAL DIVISION SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.

B.THIS SECTION IS A DIVISION-22 PLUMBING SECTION, AND IS A PART OF EACH DIVISION-22 SECTION MAKING REFERENCE TO PLUMBING SYSTEM VALVE SPECIFIED HEREIN.

1.2SUMMARY

A.EXTENT OF FIRE PROTECTION WORK IS INDICATED ON DRAWINGS, SCHEDULES, AND BY THE REQUIREMENTS OF THIS SECTION.

B.THE PURPOSE OF THIS PLAN IS TO IMPLEMENT THE REQUIREMENTS OF THE FLORIDA ADMINISTRATIVE CODE (FAC) 61G15-32.003 AND 61G15-32.004.

C.THIS PLAN CONSTITUTES THE "FIRE PROTECTION SYSTEM ENGINEERING DOCUMENT" MANDATED BY F.A.C. 61G15-32.002(5) TO BE SUBMITTED WITH THE GENERAL CONSTRUCTION DOCUMENTS. THIS DOCUMENT CONTAINS PERFORMANCE CRITERIA, WATER SUPPLY ANALYSIS AND OTHER MATERIAL OR REPRESENTATIONS THAT SET FORTH THE OVERALL DESIGN REQUIREMENTS AND DIRECTION FOR THE CONTRACTOR TO PROVIDE LAYOUT/WORKING DRAWINGS FOR SEPARATE PERMIT SUBMISSION FOR PUBLIC OR PRIVATE FIRE PROTECTION SYSTEMS.

D.REFER THE CIVIL ENGINEER SPECIFICATIONS FOR FIRE PROTECTION PIPNG AND APPURTENANCES EXTERIOR TO BUILDING; NOT WORK OF THIS SECTION.

E.REFER TO ARCHITECTURAL SPECIFICATION SECTIONS FOR FIRE EXTINGUISHERS, FIRE EXTINGUISHER CABINETS, AND ACCESSORIES; NOT WORK OF THIS SECTION.

1.3SUBMITTALS

A.SHOP DRAWINGS:
1.THE CONTRACTOR SHALL PREPARE WORKING PLAN DRAWINGS MEETING THE MINIMUM REQUIREMENTS AS STIPULATED IN NFPA 13 FOR WORKING PLANS. THE CONTRACTOR'S WORKING PLANS, INCLUDING HYDRAULIC CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO REVIEW BY THE AGENCIES HAVING JURISDICTION.

2.THE SELECTED FIRE PROTECTION CONTRACTOR (REFERRED TO HEREIN AS THE "CONTRACTOR") SHALL PREPARE AND PROVIDE "FIRE PROTECTION SYSTEM LAYOUT DOCUMENTS" AS MANDATED BY F.A.C. 61G15-32.002(6) (I.E. WORKING DRAWINGS) AND IN ACCORDANCE WITH NFPA-13 REQUIREMENTS. THE LAYOUT/WORKING DRAWINGS SHALL INCLUDE HYDRAULIC CALCULATIONS, CATALOG INFORMATION ON STANDARD PRODUCTS, AND OTHER CONSTRUCTION DATA PREPARED BY THE LICENSED CONTRACTOR THAT PROVIDE DETAILS ON THE LOCATION OF RISERS, CROSS MAINS, BRANCH LINES, SPRINKLER HEADS, SIZING OF PIPE, HANGER LOCATIONS, AND ALSO SHALL SERVE AS A GUIDE FOR FABRICATION AND INSTALLATION OF THE FIRE PROTECTION SYSTEM. THE LAYOUT/WORKING DOCUMENTS SHALL BE BASED UPON THE ENGINEERING DIRECTION PROVIDED HEREIN AND SHALL REQUIRE NO ADDITIONAL ENGINEERING INPUT.

3.IF THE CONTRACTOR DEVIATES FROM ANY OF THE REQUIREMENTS PROVIDED HEREIN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY FOR RESOLUTION. THE CONTRACTOR SHALL FULLY COORDINATE THE SYSTEM INSTALLATION WITH ALL OTHER TRADES. THE CONTRACTOR MUST TAKE ALL PROFESSIONAL AND LEGAL RESPONSIBILITY FOR THE DOCUMENTS, WHICH HE PREPARES AND IN NO WAY MAY EXEMPT HIMSELF FROM SUCH FULL RESPONSIBILITY. THE WORKING DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD FOR REVIEW. THE ENGINEER OF RECORD SHALL SHOP STAMP THE WORKING DRAWINGS INDICATING THE FIRE SYSTEM DESIGN MEETS THE INTENT OF THE ORIGINAL DESIGN. THE CONTRACTOR SHALL SUBMIT THE REVIEWED SHOP DRAWINGS TO THE APPROPRIATE AUTHORITIES HAVING JURISDICTION FOR SEPARATE PERMIT AND TO BE USED BY THE AUTHORITY FOR SUBSEQUENT INSPECTIONS. IF THE LOCAL AUTHORITY HAVING JURISDICTION REQUIRES THE WORKING DRAWINGS TO BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD AND INCLUDE THE ESTIMATED TIME AND COST FOR PRODUCTION OF SAID DOCUMENTS IN HIS CONSTRUCTION BID.

4.ALTERNATELY:
THE LICENSED CONTRACTOR MAY REQUEST A CHANGE TO THE "ENGINEER OF RECORD" BY WRITING A CERTIFIED LETTER TO THIS OFFICE REQUESTING A CHANGE TO THE ENGINEER OF HIS CHOICE TO SERVE AS A SUCCESSOR PROFESSIONAL ENGINEER, IN ACCORDANCE WITH F.A.C. 61G15-27.001. IF THE CONTRACTOR DEVIATES FROM ANY OF THE REQUIREMENTS PROVIDED HEREIN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY FOR RESOLUTION. THE SUCCESSOR ENGINEER MUST TAKE ALL PROFESSIONAL AND LEGAL RESPONSIBILITY FOR THE DOCUMENTS, WHICH HE PREPARES AND IN NO WAY MAY EXEMPT HIMSELF FROM SUCH FULL RESPONSIBILITY. NO REVIEW OF THE SUCCESSOR ENGINEER'S DOCUMENTS WILL BE REVIEWED BY THIS OFFICE.

5.WORKING PLAN DRAWINGS SHALL BE TO A SCALE NO LESS THAN THE DRAWING SCALE OF THE ORIGINAL FIRE PROTECTION CONTRACT DOCUMENTS.

B.PRODUCT DATA: INCLUDING BODY MATERIAL, VALVE DESIGN, PRESSURE AND TEMPERATURE CLASSIFICATION, END CONNECTION DETAILS, SEATING MATERIALS, TRIM MATERIAL AND ARRANGEMENT, DIMENSIONS AND REQUIRED CLEARANCES, AND INSTALLATION INSTRUCTIONS.

C.CONTRACT CLOSEOUT INFORMATION:
1.OPERATING AND MAINTENANCE DATA.
2.OWNER INSTRUCTION REPORT.
3.TEST REPORTS:
a.CERTIFICATION THAT TEST AS INDICATED IN THE SECTIONS PART 3 PARAGRAPH "FIELD QUALITY CONTROL" HAVE BEEN SUCCESSFULLY COMPLETED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
4.RECORD DRAWINGS.
5.EXTRA MATERIALS.

1.4QUALITY ASSURANCE

A. SINGLE SOURCE RESPONSIBILITY: WHEN TWO OR MORE ITEMS OF SAME MATERIAL OR EQUIPMENT ARE REQUIRED THEY SHALL BE OF THE SAME MANUFACTURER. PROVIDE PRODUCTS WHICH ARE COMPATIBLE WITHIN SYSTEMS AND OTHER CONNECTED ITEMS.

B. SYSTEM STANDARDS:
1. REFER TO L61G15-32.003 (4), "APPLICABLE CODES" SECTION.

C. DESIGN CRITERIA:
1. USE ONLY NEW MATERIAL, FREE OF DEFECTS, RUST AND SCALE, AND MEETING THE LATEST REVISION OF ASTM SPECIFICATIONS AS LISTED IN THIS SPECIFICATION.
2. CONSTRUCT ALL PIPING SYSTEMS FOR THE HIGHEST PRESSURES AND TEMPERATURES IN THE RESPECTIVE SYSTEM BUT NOT LESS THAN 175 PSIG.
3. WHERE WELD FITTINGS OR MECHANICAL GROOVED FITTINGS ARE USED, USE ONLY LONG RADIUS ELBOWS HAVING A CENTERLINE RADIUS OF 1.5 PIPE DIAMETERS.
4. PROVIDE COMPLETE FIRE PROTECTION SYSTEMS AS INDICATED AND AS REQUIRED BY LOCAL AUTHORITIES.
5. WHERE THERE IS CONFLICT BETWEEN LOCAL AUTHORITY REQUIREMENTS OR OTHER STANDARDS AGENCY REQUIREMENTS AND THESE DRAWINGS AND SPECIFICATIONS, REQUIREMENTS OF STANDARDS AGENCIES OF LOCAL AUTHORITIES SHALL GOVERN.
6. DESIGN AND INSTALL ENTIRE SYSTEM IN ACCORDANCE WITH INDICATED CODES, STANDARDS AND REGULATIONS.
7. CONTRACTOR SHALL HYDRAULICALLY CALCULATE SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13, BASED ON HAZARD(S) ENCOUNTERED.
8. DRAWINGS ARE DIAGRAMMATIC ONLY TO INDICATE ROOM/AREAS OF SPRINKLER PROTECTION AND PIPING CLEARANCES WHEN APPROPRIATE.
9. REROUTING OF PIPE AND ADDITION, DELETION OR RELOCATION OF SPRINKLERS MAY BE NECESSARY.
10. SUBMIT PROPOSED LAYOUT AND FLOW CALCULATIONS FOR LOCAL FIRE AUTHORITY'S APPROVAL PRIOR TO SHOP (WORKING) DRAWINGS SUBMITTAL.
11. COORDINATE SPRINKLER LOCATIONS WITH CEILING LAYOUTS. SPRINKLERS SHALL BE INSTALLED IN THE CENTER OF CEILING TILES.

D. HAZARD CLASS:
1. MAJOR PORTION OF BUILDING IS CLASSIFIED LIGHT HAZARD FOR SPRINKLER PROTECTION.

E. MANUFACTURER'S QUALIFICATIONS:
1. FIRMS REGULARLY ENGAGED IN THE MANUFACTURER OF FIRE PROTECTION PRODUCTS, OF TYPES, MATERIALS, AND SIZES REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.

F. INSTALLER QUALIFICATIONS:
1. FIRM WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH FIRE PROTECTION WORK SIMILAR TO THAT REQUIRED FOR PROJECT.
2. USE WORKMEN SKILLED IN THIS TRADE.

G. DELIVERY, STORAGE, AND HANDLING:
1. PROMPTLY INSPECT SHIPMENTS TO INSURE THAT THE MATERIAL IS UNDAMAGED AND COMPLIES WITH SPECIFICATIONS.
2. COVER PIPE TO PREVENT CORROSION OR DETERIORATION WHILE ALLOWING SUFFICIENT VENTILATION TO AVOID CONDENSATION. DO NOT STORE MATERIALS DIRECTLY ON GRADE. PROTECT PIPE, TUBE, AND FITTING ENDS SO THEY ARE NOT DAMAGED. WHEN END CAPS ARE PROVIDED OR SPECIFIED, TAKE PRECAUTIONS SO THE CAPS REMAIN IN PLACE. PROTECT FITTINGS, FLANGES, AND UNITS BY STORAGE INSIDE OR BY DURABLE, WATERPROOF, AND ABOVE GROUND PACKAGING.
3. OFF-SITE STORAGE AGREEMENTS WILL NOT RELIEVE THE CONTRACTOR FROM USING PROPER STORAGE TECHNIQUES.
4. STORAGE AND PROTECTION METHODS MUST ALLOW INSPECTION TO VERIFY PRODUCTS.

H. WELDER QUALIFICATIONS:
1. WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS FOR ALL BUILDING SERVICE PIPING TO BE IN ACCORDANCE WITH CERTIFIED WELDING PROCEDURES OF THE NATIONAL CERTIFIED PIPE WELDING BUREAU AND SECTION 927.5 OF ASME B31.9 BUILDING SERVICES PIPING OR AWS 10.9 QUALIFICATION OF WELDING PROCEDURES AND WELDERS FOR PIPING AND TUBING. BEFORE ANY METALLIC WELDING IS PERFORMED, CONTRACTOR TO SUBMIT HIS STANDARD WELDING PROCEDURE SPECIFICATION TOGETHER WITH THE PROCEDURE QUALIFICATION RECORD AS REQUIRED BY SECTION 927.6 OF ASME B31.9 BUILDING SERVICES PIPING.

2. THE ARCHITECT OR ENGINEER RESERVES THE RIGHT TO TEST THE WORK OF ANY WELDER EMPLOYED ON THE PROJECT, AT THE OWNER'S EXPENSE. IF THE WORK OF THE WELDER IS FOUND TO BE UNSATISFACTORY, THE WELDER SHALL BE PREVENTED FROM DOING FURTHER WELDING ON THE PROJECT AND ALL DEFECTIVE WELDS REPLACED.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING FIRE SPRINKLER SYSTEM PIPING, SPRINKLERS, FITTINGS, VALVES, COMPONENTS, AND ACCESSORIES WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, AND ARE LIMITED TO, THE FOLLOWING:
1. RELIABLE
2. VIKING CORP.
3. TYCO FIRE
4. GRINNELL CORP.
5. GLOBE FIRE EQUIPMENT CO.
6. STAR SPRINKLER CORP.

2.2 FIRE PROTECTION PIPING

A. BLACK STEEL PIPE: WELDED AND SEAMLESS, TYPE F, GRADE A, ASTM A53; BLACK WELDED AND SEAMLESS STEEL PIPE FOR FIRE PROTECTION USE, TYPE F, ASTM A795; ELECTRIC RESISTANCE WELDED STEEL PIPE, GRADE A, ASTM A135.

B. FITTINGS: 2" AND UNDER - CAST IRON THREADED FITTINGS, CLASS 125 OR 250, ASTM A126/ANSI B16.4. MALLEABLE IRON THREADED FITTINGS, CLASS 150 OR 300, ASTM A197/ANSI B16.3. STANDARD WEIGHT SEAMLESS CARBON STEEL WELD FITTINGS, ASTM A234 GRADE, ANSI B16.9. MECHANICAL GROOVED FITTINGS WITH EPDM GASKETS, ASTM A536 DUCTILE IRON, ASTM A47 MALLEABLE IRON OR ASTM A53 FABRICATED STEEL.

C. WELDING MATERIALS: COMPLY WITH SECTION II, PART C, ASME BOILER AND PRESSURE VESSEL CODE FOR WELDING MATERIALS.

D. FINISH: HOT DIPPED ZINC COATED (GALVANIZED) FINISH ON PIPING AND FITTINGS SHALL BE USED IN DRY SPRINKLER OR COMBINED PIPE SYSTEMS, PRE-ACTION SYSTEMS, PIPING EXPOSED TO WEATHER AND PIPING EXPOSED TO CORROSIVE ENVIRONMENTS WHERE INDICATED. THREAD OR CUT GROOVE HOT DIPPED ZINC COATED PIPE ENDS FOR FITTING CONNECTIONS. INDOOR DRY STANDPIPE SYSTEMS SUPPLIED BY A FIRE DEPT. CONNECTION ONLY MAY BE BLACK STEEL PIPING AND FITTINGS.

E. CPVC PIPE AND FITTINGS: PIPE SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM F442 MATERIAL DESIGNATION CPVC 4120-06 IN STANDARD DIMENSION RATIO (SDR) 13.5. ADDITIONALLY, THE PIPE MUST BE MARKED WITH THE PRESSURE RATINGS: "320 PSI @ 73°F, 175 PSI @ 150°F, AND 100 PSI @ 180°F. FITTINGS SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM F437 (SCHEDULE 80 THREADED), ASTM F435 (SCHEDULE 40 SOCKET) OR ASTM F439 (SCHEDULE 80 SOCKET). BOTH PIPE AND FITTINGS SHALL BE LISTED BY UNDERWRITERS LABORATORIES FOR USE IN AUTOMATIC FIRE SPRINKLER SYSTEMS AND SHALL BEAR THE LOGO OF THE LISTING AGENCY. BOTH PIPES AND FITTINGS SHALL BE CERTIFIED BY NSF INTERNATIONAL FOR USE WITH POTABLE WATER. ANCILLARY PRODUCTS (INCLUDING, BUT NOT LIMITED TO FIRE STOPS, THREAD SEALANTS, LEAK DETECTORS, ETC.) COMING INTO CONTACT WITH PIPE AND FITTINGS MUST BE CHEMICALLY COMPATIBLE WITH CPVC PIPE AND FITTINGS.

F.SOLVENT WELDING: ALL SOCKET TYPE JOINTS SHALL BE ASSEMBLED WITH SOLVENT CEMENTS THAT MEET OR EXCEED THE REQUIREMENTS OF ASTM F493. SAFE HANDLING OF SOLVENT CEMENTS SHALL BE IN ACCORDANCE WITH ASTM F402. SOLVENT CEMENT SHALL BE CERTIFIED BY NSF INTERNATIONAL FOR USE WITH POTABLE WATER, AND APPROVED BY THE MANUFACTURERS. THE DOLVENT CEMENTS SHALL BE APPROVED FOR USE WITH RESPECTIVE CPVC PIPE AND FITTINGS.

This set has been digitally signed and sealed by Jon D. Shepard, PE on January 5, 2023 using a Digital Signature. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies.

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01-05-2023
Jon D. Shepard
PE 0071536

NOT FOR CONSTRUCTION

△	DATE	SUBMISSION

MILHAUS

MILHAUS

SR-82

7780 LIGHTARD KNOTT LN
FORT MYERS, FL 33905

PROJECT NO:
220035.00

FIRE PROTECTION SCHEDULES AND DETAILS

SHEET NUMBER:
RFP2.00

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

G. COPPER PIPE: TYPE L COPPER WATER TUBE, H (DRAWN) TEMPER, ASTM B88; WITH CAST COPPER PRESSURE FITTINGS, ANSI B16.18; WROUGHT COPPER PRESSURE FITTINGS, ANSI B16.22; COPPER PHOSPHOROUS BRAZING ALLOY, AWS A5.8 BCUP. MECHANICALLY FORMED BRAZED TEE CONNECTIONS MAY BE USED IN LIEU OF SPECIFIED TEE FITTINGS FOR BRANCH TAKEOFFS UP TO ONE-HALF (1/2) THE DIAMETER OF THE MAIN.

2.3 UNIONS AND FLANGES

A.2" AND SMALLER STEEL: ASTM A197/ANSI B16.3 MALLEABLE IRON UNIONS WITH BRASS SEATS. USE BLACK MALLEABLE IRON ON BLACK STEEL PIPING AND GALVANIZED MALLEABLE IRON ON GALVANIZED STEEL PIPING.

B.2" AND SMALLER COPPER: ANSI B16.18 CAST BRONZE UNION COUPLING OR ANSI B15.24 CLASS 150 CAST BRONZE FLANGES.

C.2½" AND LARGER STEEL: ASTM A181 OR A105, CLASS 150, GRADE 1 HOT FORGED STEEL FLANGES OF THREADED, WELDING NECK, OR SLIP-ON PATTERN ON BLACK STEEL AND THREADED ONLY ON GALVANIZED STEEL. ANSI B16.1 OR ANSI B16.5, CLASS 150 CAST IRON THREADED FLANGES. USE RAISED FACE FLANGES ANSI B16.5 FOR MATING WITH OTHER RAISED FACE FLANGES OR EQUIPMENT WITH FLAT RING OR FULL FACE GASKETS. USE ANSI B16.1 FLAT FACE FLANGES WITH FULL FACE GASKETS FOR MATING WITH OTHER FLAT FACE FLANGES ON EQUIPMENT.

D.2½" AND LARGER COPPER: ANSI B16.24, CLASS 150 CAST BRONZE FLANGES WITH RAISED FACE.

2.4 MECHANICAL GROOVED PIPE CONNECTIONS
A.MECHANICAL GROOVED PIPE COUPLINGS AND FITTINGS, ASTM F1476, AS MANUFACTURED BY VICTAULIC, ANVIL OR STAR FITTINGS MAY BE USED WITH STEEL PIPE. MECHANICAL GROOVED COMPONENTS AND ASSEMBLIES TO BE RATED FOR MINIMUM 175 PSI WORKING PRESSURE UNLESS NOTED OTHERWISE.

B.ALL MECHANICAL GROOVED PIPE MATERIAL INCLUDING GASKETS, COUPLINGS, FITTINGS AND FLANGE ADAPTERS TO BE FROM THE SAME MANUFACTURER.

C.COUPLINGS AND FITTINGS TO BE MALLEABLE IRON, ASTM A47, OR DUCTILE IRON A536 WITH PAINTED FINISH. FITTINGS USED ON GALVANIZED STEEL PIPE TO HAVE GALVANIZED FINISH, ASTM A153.

D.GASKETS TO BE EPDM, ASTM D2000. GASKETS FOR DRY SYSTEMS TO BE FLUSH SEAL DESIGN. HEAT TREATED CARBON STEEL OVAL NECK TRACK BOLTS AND NUTS, ASTM A-183, WITH ZINC ELECTROPLATED FINISH.

E.FLANGE ADAPTERS TO BE DUCTILE IRON, ASTM A536; EXCEPT AT LUG TYPE BUTTERFLY VALVES WHERE STANDARD THREADED FLANGES SHALL BE USED.

2.5 SPRINKLER HEADS
A.MANUFACTURER: SPRINKLER HEAD MODEL NUMBERS ESTABLISH TYPE AND STYLE OF HEAD. PRODUCTS OF THE FOLLOWING MANUFACTURERS DETERMINED TO BE EQUAL BY THE ARCHITECT/ENGINEER WILL BE ACCEPTED: CENTRAL SPRINKLER CORPORATION, TYCO, RELIABLE, STAR SPRINKLER, VICTAULIC AND VIKING.

B.FUSIBLE LINK OR GLASS BULB TYPE, CAST BRASS OR BRONZE CONSTRUCTION. PROVIDE HEADS WITH NOMINAL 1/2" DISCHARGE ORIFICE EXCEPT WHERE GREATER THAN NORMAL DENSITY REQUIRES LARGE ORIFICE.

C.SELECT FUSIBLE LINK OR GLASS BULB TEMPERATURE RATING TO NOT EXCEED MAXIMUM AMBIENT TEMPERATURE RATING ALLOWED UNDER NORMAL CONDITIONS AT INSTALLED LOCATION. PROVIDE ORDINARY TEMPERATURE (155 DEGREE) FUSIBLE LINK OR GLASS BULB TYPE EXCEPT AT SKYLIGHTS, SEALED DISPLAY WINDOWS, UNVENTILATED ATTICS AND ROOF SPACES, OVER COOKING EQUIPMENT, ADJACENT TO DIFFUSERS, UNIT HEATERS, UNINSULATED HEATING PIPES OR DUCTS, MECHANICAL ROOMS, STORAGE ROOMS, OR WHERE OTHERWISE INDICATED.

D.PROVIDE QUANTITY OF SPARE HEADS AS NOTED BELOW AND 1 WRENCH FOR EACH TYPE OF HEAD AND EACH TEMPERATURE RANGE INSTALLED. PROVIDE 6 SPARE HEADS PER 300 OR LESS INSTALLED HEADS, 12 PER 1000 OR LESS AND 24 FOR MORE THAN 1000. PROVIDE STEEL CABINET FOR STORAGE OF HEADS AND WRENCHES.

2.6 FLOW SWITCHES
A.VANE TYPE WATERFLOW SWITCH WITH METAL ENCLOSURE, ADJUSTABLE PNEUMATIC RETARD AND ELECTRICAL CHARACTERISTICS COMPATIBLE WITH ALARM SYSTEM.

2.7 LOCAL ALARM BELL
A. WEATHERPROOF ELECTRIC ALARM BELL WITH RED PAINTED METAL HOUSING, MOUNTING BASE AND GONG; SOLENOID OPERATOR; WEATHERPROOFING O-RING SEAL AND ELECTRICAL CHARACTERISTICS COMPATIBLE WITH ALARM SYSTEM.

2.8 PRESSURE GAUGES
A.MANUFACTURER: AMETEK/U. S. GAUGE DIVISION, ASHCROFT, MARSH, TAYLOR, H. O. TRERICE, WEISS, WEKSLER.

B.CAST ALUMINUM, STAINLESS STEEL OR BRASS CASE OF NOT LESS THAN 3.5 INCHES IN DIAMETER, DOUBLE STRENGTH GLASS WINDOW, BLACK LETTERING ON A WHITE BACKGROUND, PHOSPHOR BRONZE BOURDON TUBE WITH BRONZE BUSHINGS, RECALIBRATION FROM THE FRONT OF THE DIAL, 99% ACCURACY OVER THE MIDDLE HALF OF THE SCALE, 98.5% ACCURACY OVER THE REMAINDER OF THE SCALE. INCLUDE BRONZE 3-WAY GLOBE VALVE WITH PLUGGED OUTLET FOR FIRE INSPECTOR'S TEST GAUGE.

2.9 VALVES
A.MANUFACTURERS: KENNEDY, MILWAUKEE, NIBCO, STOCKHAM, VICTAULIC, VIKING, AND WATTS.
1.BALL VALVES:
a.2" AND SMALLER: BRONZE, 2-PIECE, THREADED OR SWEAT ENDS, STANDARD PORT, BLOWOUT PROOF STEM, CHROME PLATED BALL, GLASS REINFORCED SEATS, UL APPROVED @ 250 PSI. WATTS NO. B-6000 UL.

2. GATE VALVES:
a.2" AND SMALLER: OUTSIDE SCREW AND YOKE GATE VALVES, 175 PSIG, BRONZE BODY, BRONZE MOUNTED, SCREWED BONNET, RISING STEM, SOLID WEDGE, WITH NORMALLY OPEN TAMPER SWITCH WITH DOUBLE WIRE LEADS.

b.2-1/2" AND LARGER: OUTSIDE SCREW AND YOKE GATE VALVES, 175 PSIG, CAST IRON BODY, BRONZE MOUNTED, BOLTED BONNET, RISING STEM, SOLID WEDGE, WITH NORMALLY OPEN TAMPER SWITCH WITH DOUBLE WIRE LEADS.

3.BUTTERFLY VALVES:
a.2" AND SMALLER: BRONZE BODY BUTTERFLY VALVE, 175 PSIG, GEARED OPERATOR, VISIBLE POSITION INDICATOR, NORMALLY OPEN TAMPER SWITCH WITH DOUBLE WIRE LEADS, BUNA OR VITON SEAT, STAINLESS STEEL DISC AND STEM.

b.2" AND LARGER: CAST OR DUCTILE IRON BODY BUTTERFLY VALVE, LUG STYLE OR GROOVED, 175 PSIG, GEARED OPERATOR, VISIBLE POSITION INDICATOR, NORMALLY OPEN TAMPER SWITCH WITH DOUBLE WIRE LEADS, EPDM RESILIENT SEAT, EPDM SEALS, NICKEL PLATED DUCTILE IRON DISC. VALVE ASSEMBLY TO BE BUBBLE TIGHT TO 175 PSIG WITH NO DOWNSTREAM FLANGE/PIPE ATTACHED. USE CAP SCREWS FOR REMOVAL OF DOWNSTREAM PIPING WHILE USING THE VALVE FOR SYSTEM SHUTOFF.

4.SUPERVISORY/TAMPER SWITCHES:
a.FOR O S & Y VALVE OR BUTTERFLY VALVE INSTALLATIONS, UL/FM LISTED/APPROVED, TO MONITOR POSITION OF VALVE, TAMPER RESISTANT COVER SCREWS, SINGLE OR DOUBLE SPDT SWITCH CONTACTS, CORROSION RESISTANT, FOR INDOOR OR OUTDOOR USE, NEMA 4 & 6P ENCLOSURES.

5.CHECK VALVES:
a.3" AND SMALLER: BRONZE BODY, THREADED END, Y-PATTERN, REGRINDABLE BRONZE SEAT, RENEWABLE BRONZE DISC, 175 PSIG, SUITABLE FOR INSTALLATION IN A HORIZONTAL OR VERTICAL LINE WITH FLOW UPWARD.

b.2-1/2" AND LARGER: CAST OR DUCTILE IRON BODY, FLANGED OR GROOVED ENDS, BRONZE TRIM, BOLTED CAP, RENEWABLE BRONZE SEAT AND DISC, 175 PSIG, SUITABLE FOR INSTALLATION IN A HORIZONTAL OR VERTICAL LINE WITH FLOW UPWARD.

c.PROVIDE 1/2" AUTOMATIC DRIP DRAIN ON INLET OF FIRE DEPT. CONNECTION CHECK VALVE.

6.SPRING LOADED CHECK VALVES:
a.2" AND SMALLER: BRONZE BODY, THREADED ENDS, BRONZE TRIM, STAINLESS STEEL SPRING, STAINLESS STEEL CENTER GUIDE PIN, 175 PSIG, TEFLON SEAT UNLESS ONLY BRONZE AVAILABLE.

b.2-1/2" AND LARGER: CAST OR DUCTILE IRON BODY, WAFER OR GLOBE TYPE, BRONZE TRIM, BRONZE OR EPDM SEAT, STAINLESS STEEL SPRING, STAINLESS STEEL STEM IF STEM IS REQUIRED, 175 PSIG.

7.DRAIN VALVES:
a. 3/4" MIN. TWO OR THREE PIECE BRONZE BODY BALL VALVE; THREADED ENDS, CHROME PLATED BRONZE BALL; GLASS FILLED TEFLON SEAT; TEFLON PACKING AND THREADED PACKING NUT; BLOWOUT-PROOF STEM; 400 PSIG WOG, WITH HOSE THREAD OUTLET AND CAP.

8.REDUCE PRESSURE DETECTOR ASSEMBLIES:
a.MANUFACTURERS: BEECO, CLA-VAL, CONBRACO, FEBCO, WATTS, AND WILKINSON.

b.ASSE 1047, AWWA C551-92 AND APPROVED BY THE FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH AT THE UNIVERSITY OF SOUTHERN CALIFORNIA. DOUBLE CHECK BACKFLOW PREVENTER WITH 2 INDEPENDENT SPRING LOADED CHECK VALVES, A DIFFERENTIAL PRESSURE RELIEF VALVE LOCATED BETWEEN AND BELOW THE TWO CHECK VALVES, 2 ISOLATION BALL OR GATE VALVES WITH NORMALLY OPEN TAMPER SWITCH WITH DOUBLE WIRE LEADS, 4 VALVED TEST PORTS. SIZE FOR MAXIMUM PRESSURE DROP OF 15 PSIG AT 600 GPM. CONSTRUCTED OF BRONZE OR EPOXY COATED CAST IRON OR STAINLESS STEEL BODY WITH BRONZE AND PLASTIC INTERNAL PARTS, STAINLESS STEEL SPRINGS, SILICONE RUBBER VALVE DISCS, BRONZE SEATS, RATED FOR 175 PSIG.

2.10 SPECIALTY VALVES
1.ALARM CHECK VALVES:
a.CAST OR DUCTILE IRON BODY, FLANGED OR GROOVED ENDS, 175 PSIG, BRONZE GROOVED SEAT WITH O-RING SEAL, SINGLE HITCH PIN AND LATCH DESIGN. PROVIDE TRIM FOR BYPASS, DRAIN, ELECTRIC SPRINKLER ALARM SWITCH, PRESSURE GAGES, PRECISION RETARDING CHAMBER, DRIP CUP ASSEMBLY PIPED TO FLOOR OR HUB DRAIN, FILL LINE ATTACHMENT WITH STRAINER.

2.11 FIRE DEPARTMENT CONNECTION
A.MANUFACTURER: BADGER-POWHATAN, CROKER, ELKHART BRASS, J.W. MOON, POTTER-ROEMER, AND W.D. ALLEN

1.EXPOSED:
a.POLISHED CAST BRASS (CHROME PLATED) EXPOSED FIRE DEPARTMENT INLET, TWO-WAY (THREE-WAY) INLET BODY, SWING CLAPPERS, PIN-LUG SWIVELS AND PLUGS WITH CHAINS, 2-1/2" NATIONAL STANDARD FEMALE HOSE THREAD INLETS, 6"(4") OUTLET, CAST BRASS (CHROME PLATED) LETTERED IDENTIFICATION BACKPLATE.
b.HARD COATED ALUMINUM (CHROME PLATED) EXPOSED FIRE DEPARTMENT INLET, STORZ INLET BODY, SWING CLAPPER, PIN-LUG SWIVEL AND PLUG WITH CHAIN, 5" NATIONAL STANDARD FEMALE HOSE THREAD INLET, 6"(4") OUTLET, CAST BRASS (CHROME PLATED) LETTERED IDENTIFICATION BACKPLATE.

2.FLUSH:
a.POLISHED CAST BRASS(CHROME PLATED) OR DUCTILE IRON FLUSH FIRE DEPARTMENT INLET, TWO-WAY (THREE-WAY, FOUR-WAY, SIX-WAY)INLET BODY, SWING CLAPPERS, PIN-LUG SWIVELS AND CAPS WITH CHAINS, 2-1/2" NATIONAL STANDARD FEMALE HOSE THREAD INLETS, 6"(4") OUTLET, CAST BRASS (CHROME PLATED)LETTERED IDENTIFICATION BACKPLATE.

PART 3 - EXECUTION

3.1 GENERAL
A. INSTALL PIPE AND FITTINGS IN ACCORDANCE WITH REFERENCE STANDARDS, MANUFACTURERS RECOMMENDATIONS AND RECOGNIZED INDUSTRY PRACTICES.

3.2 PREPARATION
A.CUT PIPE ENDS SQUARE. REAM ENDS OF PIPING TO REMOVE BURRS. CLEAN SCALE AND DIRT FROM INTERIOR AND EXTERIOR OF EACH SECTION OF PIPE AND FITTING PRIOR TO ASSEMBLY.

3.3 ERECTION
A.INSTALL ALL PIPING PARALLEL TO BUILDING WALLS AND CEILINGS AND AT HEIGHTS WHICH DO NOT OBSTRUCT ANY PORTION OF A WINDOW, DOORWAY, STAIRWAY, OR PASSAGEWAY. WHERE INTERFERENCES DEVELOP IN THE FIELD, OFFSET OR REROUTE PIPING AS REQUIRED TO CLEAR SUCH INTERFERENCES. COORDINATE LOCATIONS OF FIRE PROTECTION PIPING WITH PIPING, DUCTWORK, CONDUIT AND EQUIPMENT OF OTHER TRADES TO ALLOW SUFFICIENT CLEARANCES. IN ALL CASES, CONSULT DRAWINGS FOR EXACT LOCATION OF PIPE SPACES, CEILING HEIGHTS, CEILING GRID LAYOUT, LIGHT FIXTURES AND GRILLES BEFORE INSTALLING PIPING.

B.WHERE COPPER OR STEEL PIPING IS EMBEDDED IN MASONRY OR CONCRETE, PROVIDE PROTECTIVE SLEEVE COVERING OF ELASTOMERIC PIPE INSULATION.

C.PROVIDE 3/32" MIN. THICKNESS STEEL NAILING PLATES BEHIND OR ON EITHER SIDE OF PIPING WHERE THE POSSIBILITY OF PENETRATION FROM NAILS OR DRYWALL SCREWS EXISTS.

D.MAINTAIN PIPING IN CLEAN CONDITION INTERNALLY DURING CONSTRUCTION.

E.PROVIDE CLEARANCE FOR ACCESS TO VALVES AND PIPING SPECIALTIES.

F.PROVIDE ANCHORS, EXPANSION JOINTS, SWING JOINTS AND/OR EXPANSION LOOPS SO THAT PIPING MAY EXPAND AND CONTRACT WITHOUT DAMAGE TO ITSELF, EQUIPMENT, OR BUILDING.

G. INSTALL PIPING SO THAT SYSTEM CAN BE DRAINED. WHERE POSSIBLE, SLOPE TO MAIN DRAIN VALVE. SLOPE DRY PIPE AND PRE-ACTION SYSTEMS SUBJECT TO FREEZING AT MINIMUM 1/4"/10' ON MAINS AND 1/2"/10' ON BRANCHES. WHERE PIPING NOT SUSCEPTIBLE TO FREEZING CANNOT BE FULLY DRAINED, INSTALL NIPPLE AND CAP FOR DRAINAGE OF LESS THAN 5 GALLONS OR BALL VALVE WITH HOSE THREAD OUTLET AND CAP FOR DRAINAGE OVER 5 GALLONS. PIPE MAIN DRAIN VALVE TO GRADE OR TO AIR GAP SEWER RECEPTOR.

H.MITERED ELLS, NOTCHED TEES, AND ORANGE PEEL REDUCERS ARE NOT ACCEPTABLE. ON THREADED PIPING, BUSHINGS ARE NOT ACCEPTABLE.

I.DO NOT ROUTE PIPING WITHIN EXTERIOR WALLS.

J.DO NOT ROUTE PIPING THROUGH TRANSFORMER VAULTS OR ABOVE TRANSFORMERS, PANELBOARDS, OR SWITCHBOARDS, INCLUDING THE REQUIRED SERVICE SPACE FOR THIS EQUIPMENT, UNLESS THE PIPING IS SERVING THIS EQUIPMENT.
THIS REQUIREMENT IS BASED ON NFPA 70, 384-4 AND 450-47.

K. INSTALL ALL VALVES AND PIPING SPECIALTIES, INCLUDING ITEMS FURNISHED BY OTHERS, AS SPECIFIED AND/OR DETAILED. PROVIDE ACCESS TO VALVES AND SPECIALTIES FOR MAINTENANCE. MAKE CONNECTIONS TO ALL EQUIPMENT, FIXTURES AND SYSTEMS INSTALLED BY OTHERS WHERE SAME REQUIRES THE PIPING SERVICES INDICATED IN THIS SECTION.

3.4 COPPER PIPE JOINTS
A.REMOVE ALL SLIVERS AND BURRS REMAINING FROM THE CUTTING OPERATION BY REAMING AND FILING BOTH PIPE SURFACES. CLEAN FITTING AND TUBE WITH METAL BRUSH, EMERY CLOTH OR SANDPAPER. REMOVE RESIDUE FROM THE CLEANING OPERATION AND ASSEMBLE JOINT TO SOCKET STOP. APPLY FLAME TO FITTING UNTIL BRAZING ALLOY MELTS WHEN PLACED AT JOINT. WIPE EXCESS ALLOY FROM JOINT.

3.5 WELDED PIPE JOINTS
A.MAKE ALL WELDED JOINTS BY FUSION WELDING IN ACCORDANCE WITH ASME CODES, ANSI B31, AND STATE CODES WHERE APPLICABLE. "WELDOLETS" AND "THREADOLETS" MAY BE USED FOR BRANCH TAKEOFFS UP TO ONE-HALF (1/2) THE DIAMETER OF THE MAIN.

3.6 THREADED PIPE JOINTS
A. USE A THREAD LUBRICANT OR TEFLON TAPE WHEN MAKING JOINTS; NO HARD SETTING PIPE THREAD CEMENT OR CAULKING WILL BE ALLOWED.

3.7 MECHANICAL GROOVED PIPE CONNECTIONS
A. USE PIPE FACTORY GROOVED IN ACCORDANCE WITH THE COUPLING MANUFACTURER'S SPECIFICATIONS OR FIELD GROOVED PIPE IN ACCORDANCE WITH THE SAME SPECIFICATIONS USING SPECIALLY DESIGNED TOOLS AVAILABLE FOR THE APPLICATION. LUBRICATE PIPE AND COUPLING GASKET, ALIGN PIPE, AND SECURE JOINT IN ACCORDANCE WITH THE COUPLING MANUFACTURER'S SPECIFICATIONS.

3.8 MECHANICALLY FORMED TEE FITTINGS
A.FORM MECHANICALLY EXTRACTED COLLARS IN A CONTINUOUS OPERATION, CONSISTING OF DRILLING A PILOT HOLE AND DRAWING OUT THE TUBE SURFACE TO FORM A COLLAR HAVING A HEIGHT OF NOT LESS THAN THREE TIMES THE THICKNESS OF THE TUBE WALL. USE AN ADJUSTABLE COLLARING DEVICE. NOTCH AND DIMPLE THE BRANCH TUBE. BRAZE THE JOINT WITH NEUTRAL FLAME OXY-ACETYLENE TORCH, APPLYING HEAT PROPERLY SO THAT PIPE AND TEE DO NOT DISTORT; REMOVE DISTORTED CONNECTIONS.

3.9 UNIONS AND FLANGES
A.INSTALL A UNION, FLANGE OR GROOVED COUPLING COMBINATION AT EACH CONNECTION TO EACH PIECE OF EQUIPMENT AND AT OTHER ITEMS WHICH MAY REQUIRE REMOVAL FOR MAINTENANCE, REPAIR, OR REPLACEMENT. WHERE A VALVE IS LOCATED AT A PIECE OF EQUIPMENT, LOCATE THE FLANGE OR UNION OR GROOVED COUPLING COMBINATION CONNECTIONS ON THE EQUIPMENT SIDE OF THE VALVE. CONCEALED UNIONS, FLANGES OR COUPLINGS ARE NOT ACCEPTABLE.

3.10 PIPING SYSTEM LEAK TESTS
A.CONDUCT PRESSURE TEST WITH TEST MEDIUM OF WATER. IF LEAKS ARE FOUND, REPAIR THE AREA WITH NEW MATERIALS AND REPEAT THE TEST; CAULKING WILL NOT BE ACCEPTABLE.

B.TEST PIPING IN SECTIONS OR ENTIRE SYSTEM AS REQUIRED BY SEQUENCE OF CONSTRUCTION. DO NOT CONCEAL PIPE UNTIL IT HAS BEEN SUCCESSFULLY TESTED. IF REQUIRED FOR THE ADDITIONAL PRESSURE LOAD UNDER TEST, PROVIDE TEMPORARY RESTRAINTS AT FITTINGS OR EXPANSION JOINTS. ENTIRE TEST MUST BE WITNESSED BY THE DIVISION'S REPRESENTATIVE.

C.USE CLEAN WATER AND REMOVE AIR FROM THE PIPING BEING TESTED WHERE POSSIBLE. MEASURE AND RECORD TEST PRESSURE AT THE HIGH POINT IN THE SYSTEM.

D.TEST SYSTEM AT 200 PSI FOR 2 HOURS SHOWING NO LEAKAGE. WHERE SYSTEM DESIGN IS IN EXCESS OF 150 PSIG, TEST AT A PRESSURE 50 PSIG ABOVE SYSTEM DESIGN PRESSURE.

E.ALL PRESSURE TESTS ARE TO BE DOCUMENTED ON NFPA CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FORMS.

3.11 INSTALLATION
A.INSTALL FIRE PROTECTION SYSTEM COMPONENTS IN ACCORDANCE WITH NFPA RULINGS, LISTINGS AND MANUFACTURERS RECOMMENDATIONS. LOCATE WHERE ACCESSIBLE FOR SERVICING AND REPLACEMENT.

B.SPRINKLER HEADS: LOCATE SPRINKLER HEADS AS INDICATED ON FIRE PROTECTION PLAN AND REFLECTED CEILING PLAN MAINTAINING MINIMUM CLEARANCES FROM OBSTRUCTIONS, CEILINGS AND WALLS. INSTALL SPRINKLER HEADS LEVEL IN LOCATIONS NOT SUBJECT TO SPRAY PATTERN INTERFERENCE. PROVIDE FIRE SPRINKLER HEAD INSTALLATIONS BELOW DUCTWORK, SOFFITS, ETC.

C.SWITCHES: LOCATE FLOW AND PRESSURE SWITCHES WHERE INDICATED AND WHERE REQUIRED TO OBTAIN SPECIFIED ZONING TO ISOLATE FLOORS AND MAJOR AREAS OF FLOORS. PROVIDE VALVED TEST CONNECTION FOR FLOW SWITCH ADJACENT TO FLOW SWITCH. PIPE TO FLOOR DRAIN. TEST FLOW SWITCH TO VERIFY PROPER OPERATION.

D.GAUGES: PROVIDE A VALVED PRESSURE GAUGE IN MAIN FIRE PROTECTION RISER, AT THE TOP OF EACH PIPING RISER, AT INLET AND OUTLET OF PUMP AND ELSEWHERE AS INDICATED.

E.VALVES: PROPERLY ALIGN PIPING BEFORE INSTALLATION OF VALVES. DO NOT SUPPORT WEIGHT OF PIPING SYSTEM ON VALVE ENDS. MOUNT VALVES IN LOCATIONS WHICH ALLOW ACCESS FOR OPERATION, SERVICING AND REPLACEMENT. INSTALL ALL VALVES WITH THE STEM IN THE UPRIGHT OR HORIZONTAL POSITION. VALVES INSTALLED WITH THE STEMS DOWN WILL NOT BE ACCEPTED. PROVIDE A RISER SHUTOFF VALVE AND A CAPPED HOSE THREAD DRAIN VALVE AT THE BOTTOM OF EACH RISER. PROVIDE CAPPED HOSE THREAD DRAIN VALVES TO ALLOW DRAINING OF EACH PORTION OF PIPING.

F.SPECIALTY VALVES: INSTALL IN VERTICAL POSITION FIRE PROTECTION RISER. INSTALL TRIM RECOMMENDED BY MANUFACTURER INCLUDING DRAIN AND TEST VALVES. PIPE DRAINS TO HUB OR FLOOR DRAINS. TEST AND ADJUST OPERATION OF VALVES, ALARMS, PRESSURE MAINTENANCE DEVICES, EMERGENCY PULL BOXES AND DELUGE/PREACTION CONTROLS.
G. HOSE OUTLET VALVES: INSTALL AT EACH STANDPIPE OUTLET AND ELSEWHERE WHERE INDICATED APPROXIMATELY 4' ABOVE FLOOR.

H.FIRE DEPARTMENT AND FIRE PUMP TEST CONNECTIONS: MOUNT ON WALL WHERE INDICATED. SUPPORT FROM STRUCTURE INDEPENDENT OF PIPING. LOCATE BETWEEN 2' TO 3' ABOVE GRADE. FILL WALL PENETRATION WITH INSULATION AND CAULK EXTERIOR AND INTERIOR FACE OF WALL OPENING WEATHER-TIGHT.

3.12. FIELD QUALITY CONTROL
A.THE SYSTEM TESTING AND ACCEPTANCE SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE FOLLOWING CODES AS WELL AS THE REQUIREMENTS OF LOCAL ORDINANCES AND THE AUTHORITY HAVING JURISDICTION.
1.NFPA 13 CHAPTER. 10 UNDERGROUND PIPING TESTING AND ACCEPTANCE, COMPLETING AND SIGNING THE CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING.
2.NFPA 13 CHAPTER. 25 SYSTEMS ACCEPTANCE, COMPLETING AND SIGNING THE CONTRACTOR'S MATERIAL AND TESTING CERTIFICATE FOR ABOVEGROUND PIPING.

B.SPRINKLER PIPING FLUSHING: PRIOR TO CONNECTING SPRINKLER RISERS FOR FLUSHING, FLUSH WATER FEED MAINS, LEAD-IN CONNECTIONS AND CONTROL PORTIONS OF SPRINKLER PIPING. AFTER FIRE SPRINKLER PIPING INSTALLATION HAS BEEN COMPLETED AND BEFORE PIPING IS PLACES IN SERVICE, FLUSH ENTIRE SPRINKLER SYSTEM, AS REQUIRED TO REMOVE FOREIGN SUBSTANCES, UNDER PRESSURE AS SPECIFIED IN NFPA 13. CONTINUE FLUSHING UNTIL WATER IS CLEAR, AND CHECK TO ENSURE THAT DEBRIS HAS NOT CLOGGED SPRINKLERS.

C.HYDROSTATIC TESTING: AFTER FLUSHING SYSTEM, TEST FIRE SPRINKLER PIPING HYDROSTATICALLY, FOR PERIOD OF 2 HOURS, AT NOT LESS THAN 200 PSI OR AT 50 PSI IN EXCESS OF MAXIMUM STATIC PRESSURE WHEN MAXIMUM STATIC PRESSURE IS IN EXCESS OF 150 PSI. CHECK SYSTEM FOR LEAKAGE OF JOINTS. MEASURE HYDROSTATIC PRESSURE AT LOW POINT OF EACH SYSTEM OR ZONE BEING TESTED.

D.REPAIR OR REPLACE PIPING SYSTEM AS REQUIRED TO ELIMINATE LEAKAGE IN ACCORDANCE WITH ANSI/NFPA STANDARDS FOR "LITTLE OR NO LEAKAGE", AND RETEST AS SPECIFIED TO DEMONSTRATE COMPLIANCE.

3.1. ADJUSTING AND CLEANING:
A.CLEANING AND INSPECTING: CLEAN AND INSPECT FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH REQUIREMENTS OF DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS".

3.1. EXTRA STOCK:
A.HEADS: FOR EACH STYLE AND TEMPERATURE RANGE REQUIRED, FURNISH ADDITIONAL SPRINKLER HEADS, AMOUNTING TO ONE UNIT FOR EVERY 100 INSTALLED UNITS, BUT NOT LESS THAN 5 UNITS OF EACH.

B.WRENCHES: FURNISH 2 SPANNER WRENCHES FOR EACH TYPE AND SIZE OF VALVE CONNECTION AND FIRE HOSE COUPLING.

C.OBTAIN RECEIPT FROM OWNER THAT EXTRA STOCK HAS BEEN RECEIVED.

END OF SECTION

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FIRE PUMP SYSTEM SCHEDULE

EQUIPMENT	DESIGN BASIS	PUMP TYPE	GPM	PRESSURE BOOST	MOTOR HP
FIRE PUMP	SPRINKLER SYSTEM	VERTICAL IN-LINE	1501	55 PSI	75
JOCKEY PUMP	PRESSURE MAINTENANCE	VERTICAL MULTISTAGE	15	65 PSI	1 1/2

FIRE PUMP GENERAL REQUIREMENTS:
1. PROVIDE A UL LISTED, FM APPROVED FIRE PUMP SYSTEM MEETING THE PERFORMANCE SCHEDULED ABOVE. THE FIRE PUMP SYSTEM SHALL CONSIST OF A FIRE PUMP WITH CONTROLLER, JOCKEY PUMP WITH JOCKEY PUMP CONTROLLER, AND ALL ACCESSORIES LISTED BELOW AND SHOWN ON THE FIRE PUMP DETAIL OR FIRE PROTECTION PLANS.
2. THE COMPLETED FIRE PUMP SYSTEM SHALL BE IN ACCORDANCE WITH NFPA-20, LATEST EDITION, NFPA 13, AND LOCAL CODE REQUIREMENTS.
3. FIRE PUMP, CONTROLLER, ALL VALVES ASSOCIATED WITH THE FIRE PUMP SYSTEM, AND ALL ACCESSORIES REQUIRED TO BE MONITORED BY NFPA 20 OR NFPA 13 SHALL BE CONNECTED TO THE NEAREST BUILDING FIRE ALARM CONTROL PANEL FOR SUPERVISION AND ALARM.
4. THE CONTRACTOR MAY PROVIDE A SKID MOUNTED PUMPING SYSTEM OR BUILD THEIR OWN FIRE PUMP SYSTEM. ALL CONTROL WIRING BETWEEN COMPONENTS MUST BE PROVIDED BY THE CONTRACTOR WHERE THE CONTRACTOR HAS CHOSEN TO BUILD THEIR OWN SYSTEM.
5. IF THE CONTRACTOR MUST PROVIDE A SEPARATE 1/4" PER FOOT SCALE DRAWING OF THE FIRE PUMP ROOM TO THE ARCHITECT AND ENGINEER PRIOR TO ORDERING EQUIPMENT. THIS DRAWING MUST SHOW ALL EQUIPMENT THAT WILL BE LOCATED IN THE ROOM, REGARDLESS OF TRADE (I.E. DOMESTIC BOOSTER PUMPS, BACKFLOW PREVENTORS, ETC), ALONG WITH REQUIRED SERVICE CLEARANCES. THE PURPOSE OF THIS DRAWING IS TO ENSURE THAT ALL COMPONENTS WILL FIT WITHIN THE ROOM PROVIDED BEFORE EQUIPMENT IS ON SITE. THE FIRE PUMP PACKAGE WILL NOT BE APPROVED UNTIL THIS DRAWING HAS BEEN APPROVED BY THE MEP DESIGN TEAM AND THE ARCHITECT.
6. FIRE PUMP SHALL BE TESTED ON SITE WITH THE AHJ PRESENT DURING THE TEST IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 20 FOR A "FIELD ACCEPTANCE TEST". RESULTS OF THIS TEST SHALL BE AVAILABLE TO THE ENGINEER ON REQUEST AND SHALL BE MADE PART OF THE O&M MANUAL PROVIDED TO THE OWNER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND ARCHTIECT WITHIN 24 HOURS IF THE RESULTS OF THE "FIELD ACCEPTANCE TEST" DO NOT CORRESPOND TO THE VALUES USED FOR THE HYDRAULIC CALCULATIONS USED IN THE SPRINKLER CONTRACTOR SHOP DRAWING SUBMITTAL.
7. FIRE PUMPS AND JOCKEY PUMPS SHALL HAVE A NOMINAL MOTOR RPM VALUE OF 3600 RPM OR LESS.

PROVIDE THE FOLLOWING ACCESSORIES:
1. SUCTION OS&Y GATE VALVE – MONITORED BY FIRE ALARM SYSTEM
2. DISCHARGE BUTTERFLY VALVE – MONITORED BY FIRE ALARM SYSTEM
3. SILENT CHECK VALVE
4. SUCTION & DISCHARGE PRESSURE GAUGES – 3.5" GAUGES WITH ¼" GAUGE VALVE
5. VENTURI FLOW METER
6. AIR RELIEF VALVE
7. SENSING LINE
8. TEST HEADER ON EXTERIOR WALL
9. JOCKEY PUMP
10. FITTINGS SHALL BE ANSI.
12. JOCKEY PUMP CONTROLLER ALL FACTORY WIRED WITH THE FOLLOWING:
    A. HAND – OFF – AUTOMATIC SWITCH
    B. INTEGRAL OVERCURRENT PROTECTION
13. FIRE PUMP CONTROLLER ALL FACTORY WIRED WITH THE FOLLOWING:
    A. SOLID STATE REDUCED VOLTAGE STARTER SET AT 50% OF LOCK ROTOR AMPERES
    B. INTEGRAL DISCONNECT.
    C. INTEGRAL OVERCURRENT PROTECTION.
    D. VALIDATE COMPATIBILITY WITH PUMP MOTOR PRIOR TO INSTALLATION.
14. SEE ELECTRICAL DRAWINGS FOR VOLTAGE AND PHASE REQUIREMENTS FOR ALL COMPONENTS.
15. HYDROSTATICALLY TEST AT FACTORY AT 200 PSI AND PROVIDE A FIELD ACCEPTANCE TEST.
16. WARRANTY: 18 MONTHS FROM DATE OF SHIPMENT OR 12 MONTHS FROM STARTUP (WHICHEVER IS LONGER).
15. SEE FIRE PUMP DETAIL FOR ADDITIONAL INFO.

FORT MYERS FIRE DEPARTMENT
HYDRANT FLOW TEST DATA SHEET

REQUESTED BY	SINA EBRAHIMI
FIRM REQUESTING CONTACT NUMBER	KIMLEY HORN
PROJECT NAME	SR82 MULTI FAMILY
PROJECT ADDRESS	7780 LIGHTARD KNOTT LN
REASON FOR FLOW TEST	HYDRAULIC CALCS
ADDRESS : FLOW HYDRANT #	10250 SR 82, # 404064
ADDRESS : S&R HYDRANT #	10631 SR 82, # 404082
DURATION OF FLOW	6 MINUTES
MAIN SIZE	20"
DATE AND TIME OF TEST	5/26/2022 8:30AM
COEFFICIENT	0.90
BUTT DIAMETER	2.50
BUTTS FLOWED	2
STATIC #	55
S&R : RESIDUAL 1	45
S&R : RESIDUAL 2	33
FLOW : PITOT 1 CAP	38
FLOW : PITOT 2 CAPS	20
FLOW : PITOT 2 for calcs only	20
FLOW : PITOT 3 third hydrant if needed	
FLOW : PITOT 3 third hydrant if needed	
FLOW : PITOT 3 for calcs only	
FLOW AT PITOT READING	1501
FLOW AT 20 PSI	1928
REQUEST RECEIVED BY	KAREN SNYDER
DATE RECEIVED	5/23/2022
TEST PERFORMED BY	
COMMENTS	STATION 15A

If a third hydrant is opened provide data in fields identified with PITOT 3. Include location on map provided.

****HYDRANT FLOW TESTS ARE ONLY VALID FOR 6 MONTHS FROM THE DATE OF TEST****

Questions can be directed to the Fire Prevention Bureau at 239-321-7350.

Quest Design Group, Inc.
1859 Northgate Blvd.
Sarasota, Fl 34234
941.351.9996
www.questdg.com
QDG ENGINEERING CONNECTIONS
Cert. of Authorization# CA31201
Mechanical Electrical Plumbing Fire Protection

Baker Barrios
ORLANDO
189 S. ORANGE AVE., SUITE 1700
ORLANDO, FLORIDA 32801
407 926 3000
INFO@BAKERBARRIOS.COM
BAKERBARRIOS.COM
AA0002981 | LC26000427

JON DANIEL SHEPARD
LICENSE No. 71536
STATE OF FLORIDA
PROFESSIONAL ENGINEER
01-05-2023
Jon D. Shepard
PE 0071536

NOT FOR CONSTRUCTION

△	DATE	SUBMISSION

MILHAUS

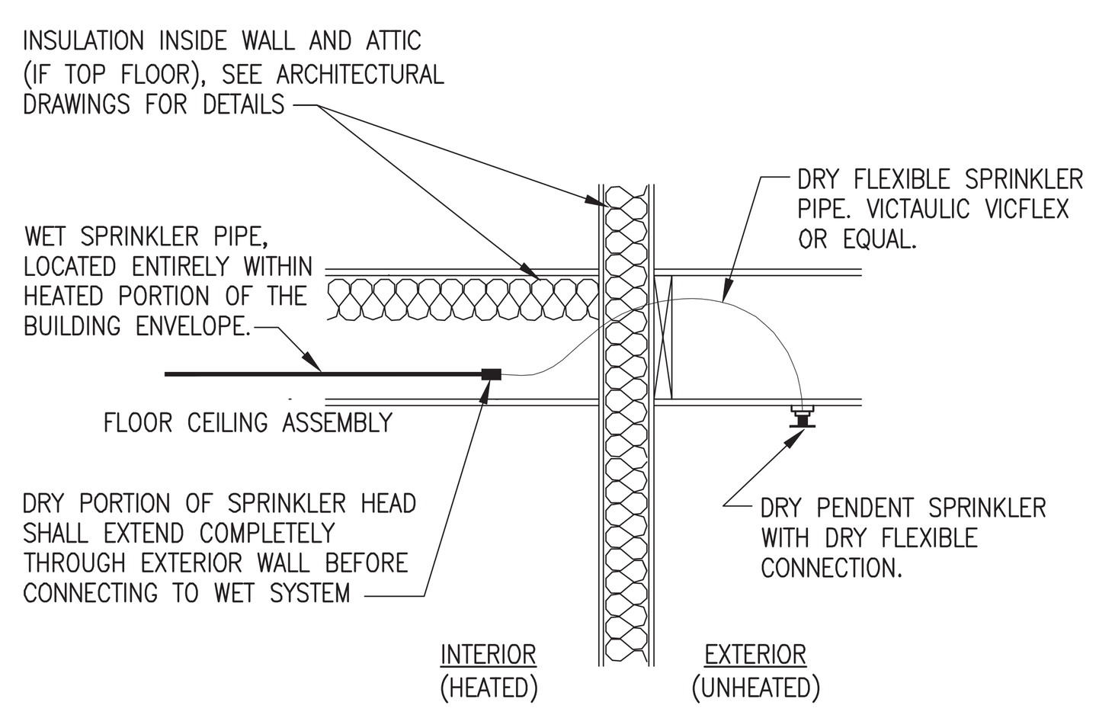
SR-82

7780 LIGHTARD KNOTT LN
FORT MYERS, FL 33905

PROJECT NO:
220035.00

FIRE PROTECTION SCHEDULES AND DETAILS

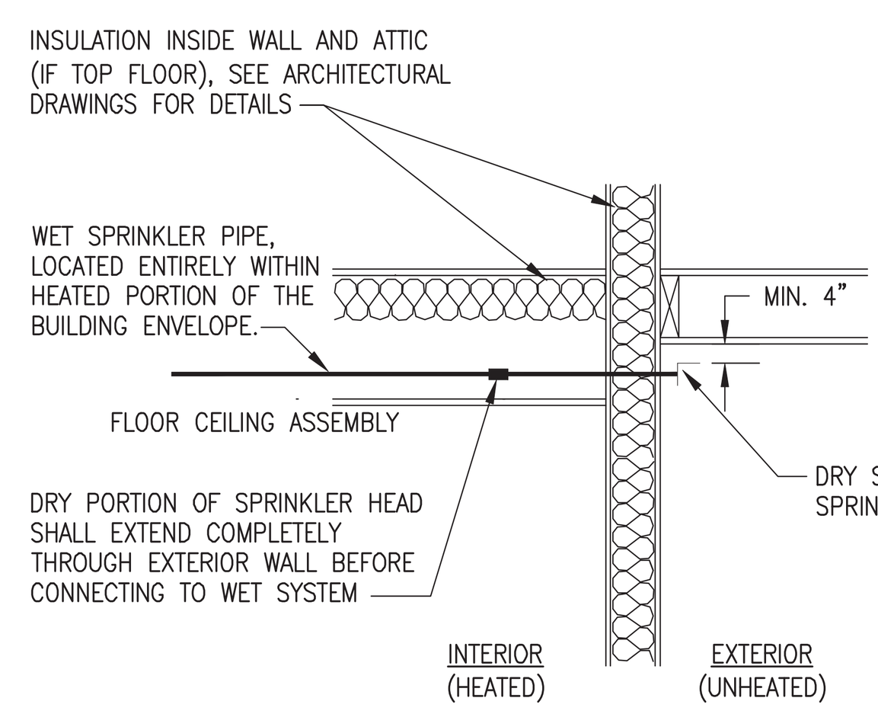
SHEET NUMBER:
RFP2.01



INSULATION INSIDE WALL AND ATTIC (IF TOP FLOOR), SEE ARCHITECTURAL DRAWINGS FOR DETAILS
DRY FLEXIBLE SPRINKLER PIPE. VICTAULIC VICFLEX OR EQUAL.
WET SPRINKLER PIPE, LOCATED ENTIRELY WITHIN HEATED PORTION OF THE BUILDING ENVELOPE.
FLOOR CEILING ASSEMBLY
DRY PORTION OF SPRINKLER HEAD SHALL EXTEND COMPLETELY THROUGH EXTERIOR WALL BEFORE CONNECTING TO WET SYSTEM
DRY PENDENT SPRINKLER WITH DRY FLEXIBLE CONNECTION.
INTERIOR (HEATED)
EXTERIOR (UNHEATED)

NOTES:
1. FOLLOW ALL MANUFACTURER'S INSTRUCTIONS REGARDING INSTALLATION AND INSULATION OF DRY SPRINKLER HEAD AND ASSOCIATED PIPING.
2. INSULATION ABOVE WET SPRINKLER PIPE IS NOT REQUIRED WHERE A HEATED BUILDING AREA IS LOCATED ON THE FLOOR ABOVE.

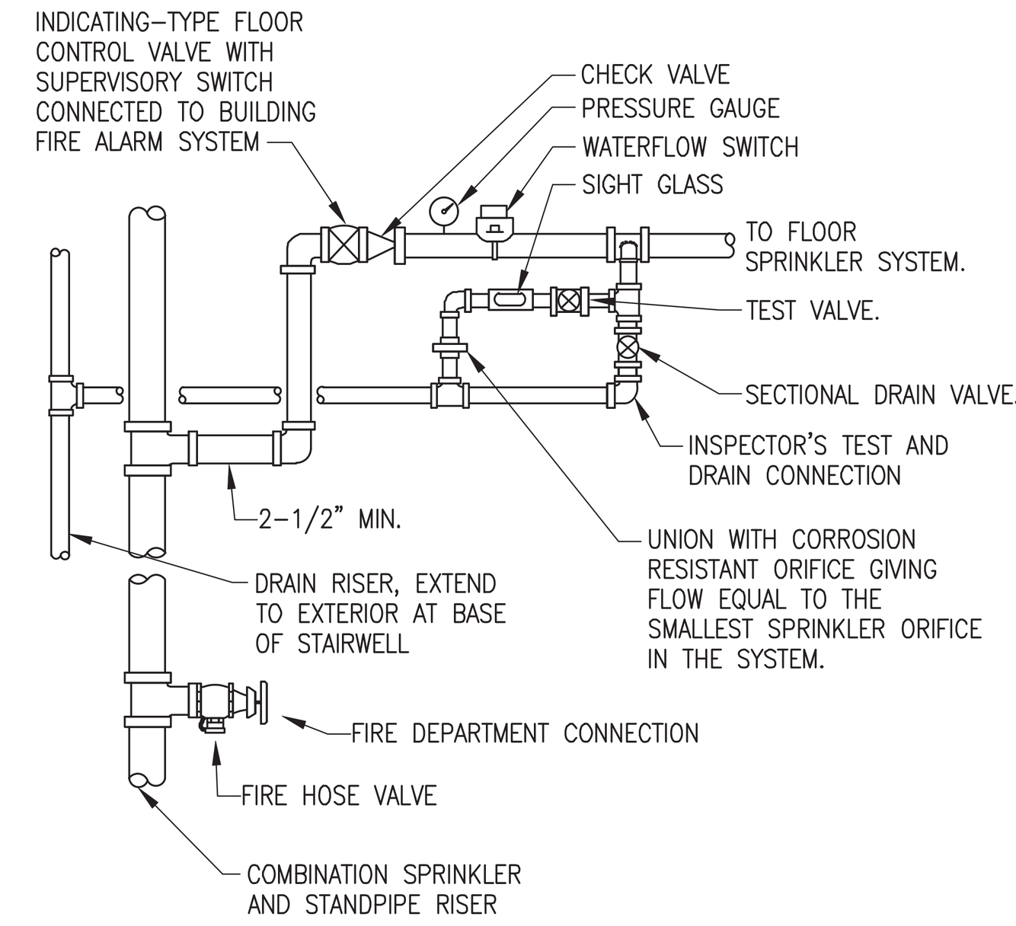
1 EXTERIOR OVERHANG SPRINKLER DETAIL
NO SCALE



INSULATION INSIDE WALL AND ATTIC (IF TOP FLOOR), SEE ARCHITECTURAL DRAWINGS FOR DETAILS
MIN. 4"
WET SPRINKLER PIPE, LOCATED ENTIRELY WITHIN HEATED PORTION OF THE BUILDING ENVELOPE.
FLOOR CEILING ASSEMBLY
DRY SIDEWALL SPRINKLER
DRY PORTION OF SPRINKLER HEAD SHALL EXTEND COMPLETELY THROUGH EXTERIOR WALL BEFORE CONNECTING TO WET SYSTEM
INTERIOR (HEATED)
EXTERIOR (UNHEATED)

NOTES:
1. FOLLOW ALL MANUFACTURER'S INSTRUCTIONS REGARDING INSTALLATION AND INSULATION OF DRY SPRINKLER HEAD AND ASSOCIATED PIPING.
2. INSULATION ABOVE WET SPRINKLER PIPE IS NOT REQUIRED WHERE A HEATED BUILDING AREA IS LOCATED ON THE FLOOR ABOVE.

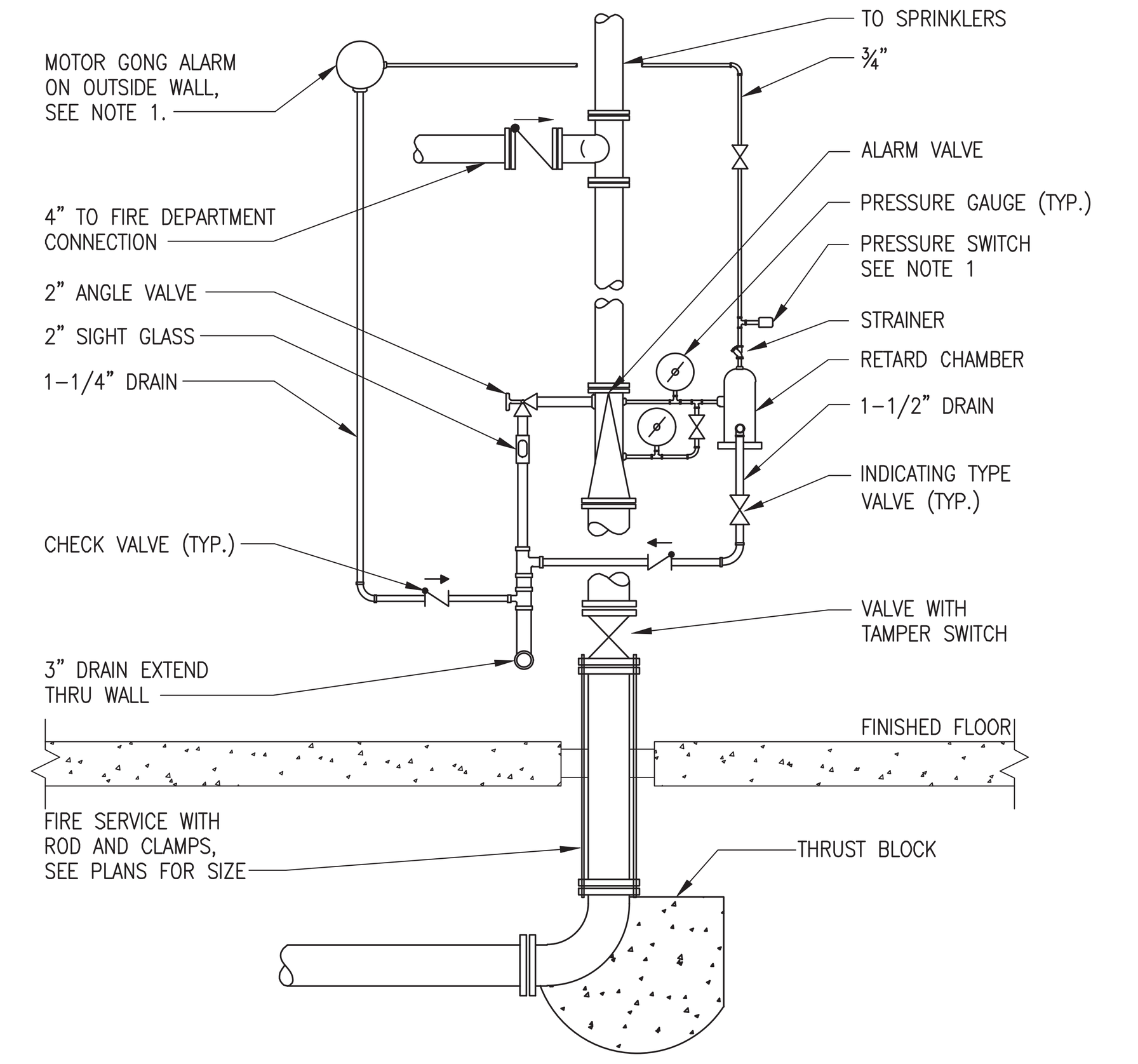
2 EXTERIOR OVERHANG SPRINKLER DETAIL
NO SCALE



INDICATING-TYPE FLOOR CONTROL VALVE WITH SUPERVISORY SWITCH CONNECTED TO BUILDING FIRE ALARM SYSTEM
CHECK VALVE
PRESSURE GAUGE
WATERFLOW SWITCH
SIGHT GLASS
TO FLOOR SPRINKLER SYSTEM.
TEST VALVE.
SECTIONAL DRAIN VALVE.
INSPECTOR'S TEST AND DRAIN CONNECTION
2-1/2" MIN.
UNION WITH CORROSION RESISTANT ORIFICE GIVING FLOW EQUAL TO THE SMALLEST SPRINKLER ORIFICE IN THE SYSTEM.
DRAIN RISER, EXTEND TO EXTERIOR AT BASE OF STAIRWELL
FIRE DEPARTMENT CONNECTION
FIRE HOSE VALVE
COMBINATION SPRINKLER AND STANDPIPE RISER

ALL VALVES AND PIPING TYPICAL FOR ALL FLOORS. PROVIDE CANE DETECTION BELOW ALL PROTRUDING FIRE PROTECTION PIPING AND EQUIPMENT PER ANSI REQUIREMENTS. CANE DETECTION SHALL BE MINIMUM OF 27" ABOVE THE FINISHED FLOOR.

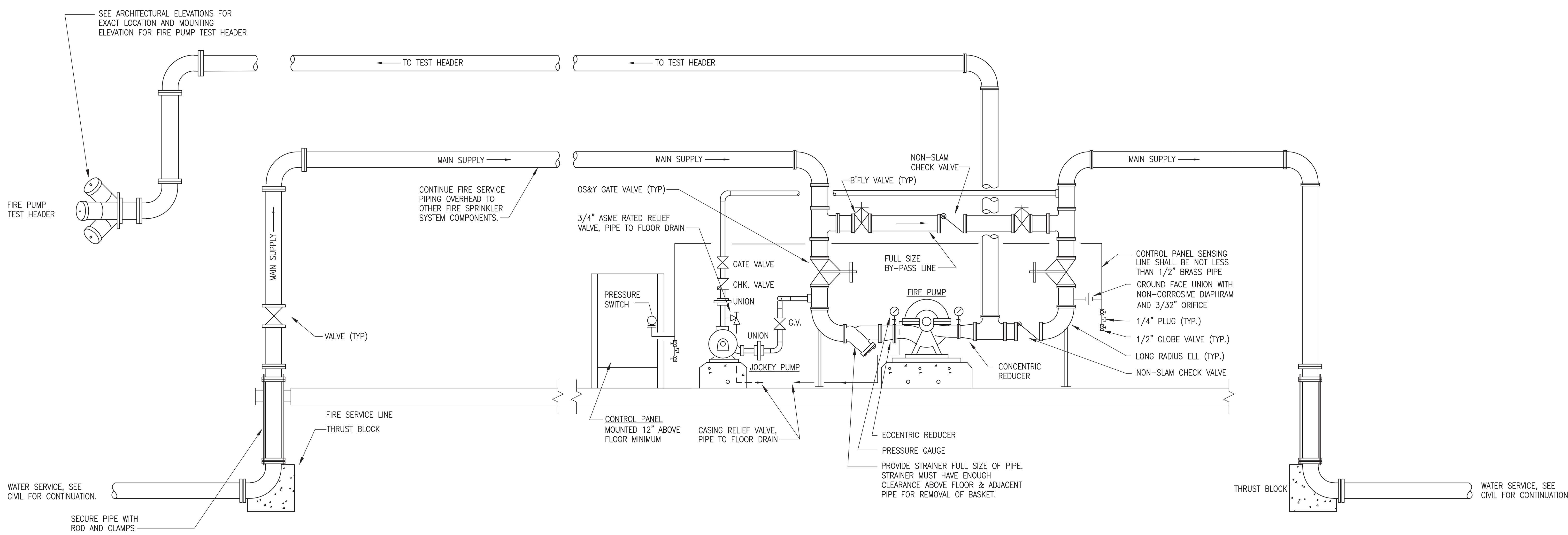
3 COMBINATION STANDPIPE
NO SCALE



MOTOR GONG ALARM ON OUTSIDE WALL, SEE NOTE 1.
TO SPRINKLERS
¾"
ALARM VALVE
4" TO FIRE DEPARTMENT CONNECTION
PRESSURE GAUGE (TYP.)
PRESSURE SWITCH SEE NOTE 1
2" ANGLE VALVE
2" SIGHT GLASS
1-1/4" DRAIN
STRAINER
RETARD CHAMBER
1-1/2" DRAIN
INDICATING TYPE VALVE (TYP.)
CHECK VALVE (TYP.)
VALVE WITH TAMPER SWITCH
3" DRAIN EXTEND THRU WALL
FINISHED FLOOR
FIRE SERVICE WITH ROD AND CLAMPS, SEE PLANS FOR SIZE
THRUST BLOCK

NOTES:
1. PRESSURE SWITCH IS FOR CONNECTION TO FIRE ALARM SYSTEM OR REMOTE ALARM. THE MOTOR GONG (INCLUDING DRAIN PIPE FROM GONG AND PIPE ABOVE PRESSURE SWITCH) IS NOT REQUIRED (UNLESS REQUIRED BY AHJ) WHEN SPRINKLER SYSTEM IS BEING MONITORED BY THE BUILDINGS FIRE ALARM SYSTEM.
2. ALL INDICATING VALVES SHALL BE SUPERVISED BY A TAMPER SWITCH CONNECTED TO THE FIRE ALARM SYSTEM AND BY LOCKING OPEN. PROVIDE TAMPER SWITCH AT EVERY FLOOR CONTROL VALVE AS INDICATED BY LOCAL JURISDICTION HAVING AUTHORITY. COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO PRICING. NO CHANGE ORDER WILL BE ALLOWED AFTER BID FOR CONNECTION TO FIRE SYSTEM.

4 FIRE SPRINKLER RISER DETAIL
NO SCALE



SEE ARCHITECTURAL ELEVATIONS FOR EXACT LOCATION AND MOUNTING ELEVATION FOR FIRE PUMP TEST HEADER
TO TEST HEADER
TO TEST HEADER
FIRE PUMP TEST HEADER
MAIN SUPPLY
MAIN SUPPLY
MAIN SUPPLY
MAIN SUPPLY
NON-SLAM CHECK VALVE
CONTINUE FIRE SERVICE PIPING OVERHEAD TO OTHER FIRE SPRINKLER SYSTEM COMPONENTS.
OS&Y GATE VALVE (TYP)
8"FLY VALVE (TYP)
3/4" ASME RATED RELIEF VALVE, PIPE TO FLOOR DRAIN
GATE VALVE
CHK. VALVE
UNION
G.V.
UNION
FULL SIZE BY-PASS LINE
FIRE PUMP
PRESSURE SWITCH
JOCKEY PUMP
VALVE (TYP)
CONTROL PANEL SENSING LINE SHALL BE NOT LESS THAN 1/2" BRASS PIPE
GROUND FACE UNION WITH NON-CORROSIVE DIAPHRAM AND 3/32" ORIFICE
1/4" PLUG (TYP.)
1/2" GLOBE VALVE (TYP.)
LONG RADIUS ELL (TYP.)
NON-SLAM CHECK VALVE
CONCENTRIC REDUCER
FIRE SERVICE LINE
THRUST BLOCK
CONTROL PANEL MOUNTED 12" ABOVE FLOOR MINIMUM
CASING RELIEF VALVE, PIPE TO FLOOR DRAIN
ECCENTRIC REDUCER
PRESSURE GAUGE
PROVIDE STRAINER FULL SIZE OF PIPE. STRAINER MUST HAVE ENOUGH CLEARANCE ABOVE FLOOR & ADJACENT PIPE FOR REMOVAL OF BASKET.
WATER SERVICE, SEE CIVIL FOR CONTINUATION.
SECURE PIPE WITH ROD AND CLAMPS
THRUST BLOCK
WATER SERVICE, SEE CIVIL FOR CONTINUATION.

5 FIRE PUMP – GARAGE BAY – DETAIL
NO SCALE

NOTE:
1. SEE ARCHITECTURAL ELEVATIONS FOR ACTUAL MOUNTING HEIGHTS AND LOCATIONS FOR FIRE DEPARTMENT CONNECTION.
2. FIRE PUMP DIAGRAM PROVIDED FOR GENERAL PIPING AND EQUIPMENT REQUIREMENTS ONLY. SPECIFIC FIRE PUMP PACKAGES MAY DIFFER IN LAY-OUT, ORIENTATION, AND PUMP TYPE. HOWEVER, THE REQUIREMENTS OF THIS DIAGRAM MUST STILL BE MET.
3. FLOW SWITCH IS FOR CONNECTION TO FIRE ALARM SYSTEM OR REMOTE ALARM.
4. ALL INDICATING VALVES SHALL BE SUPERVISED BY A TAMPER SWITCH CONNECTED TO THE FIRE ALARM SYSTEM AND BY LOCKING OPEN. PROVIDE TAMPER SWITCH AT EVERY CONTROL VALVE AS INDICATED BY LOCAL JURISDICTION HAVING AUTHORITY. COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO PRICING. NO CHANGE ORDER WILL BE ALLOWED AFTER BID FOR CONNECTION TO FIRE SYSTEM.

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Mechanical Electrical Plumbing Fire Protection

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JON DANIEL SHEPARD LICENSE No. 71536 STATE OF FLORIDA PROFESSIONAL ENGINEER
01-05-2023
Jon D. Shepard
PE 0071536

NOT FOR CONSTRUCTION

△	DATE	SUBMISSION

TO THE BEST OF THE ARCHITECT'S OR ENGINEER'S KNOWLEDGE AND ABILITY, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.

MILHAUS

SR-82

7780 LIGHTARD KNOTT LN
FORT MYERS, FL 33905

PROJECT NO:
220035.00

FIRE PROTECTION SCHEDULES AND DETAILS

SHEET NUMBER:
RFP2.02

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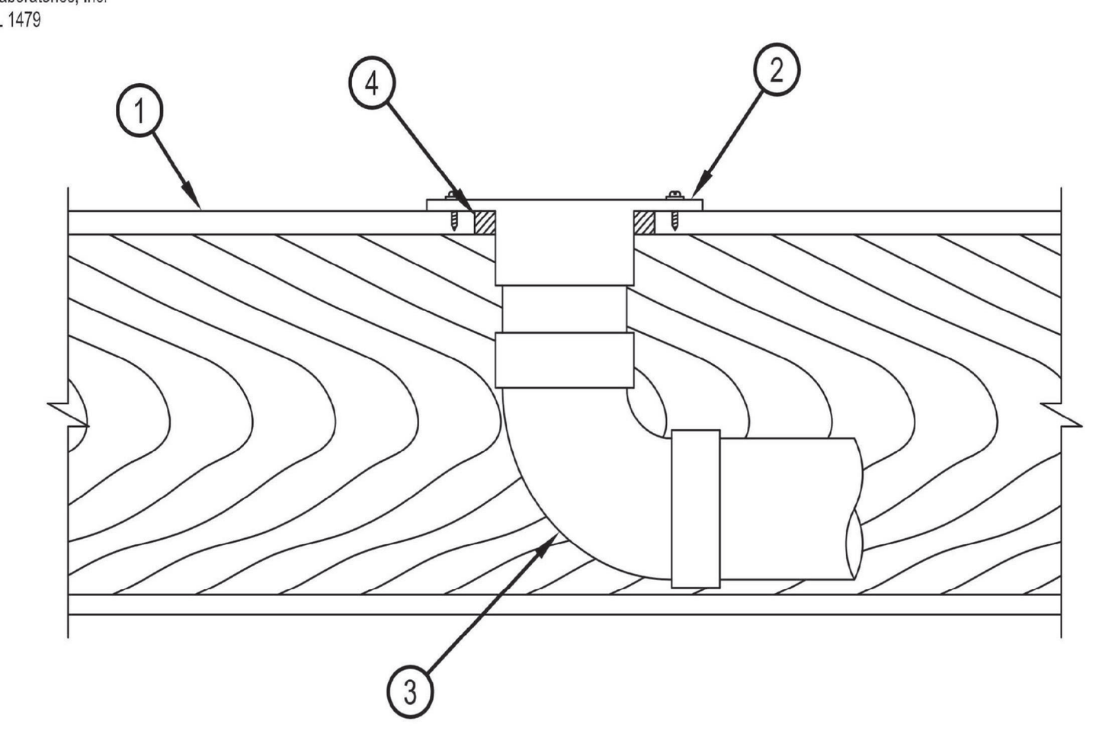
System No. F-C-2203

FC 2203

Classified by Underwriters Laboratories, Inc. to UL 1479

F Rating — 1 Hr
T Rating — 1 Hr



1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
   - A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 5 in. (127 mm).
   - B. Wood Joist* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   - C. Gypsum Board* — Nom 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide as specified in the individual Floor-Ceiling Design.
2. Closet Flange — Acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) closet stub sized to accommodate drain pipe. Closet flange installed over drain piping within floor opening with flange secured to plywood floor with steel screws. Diam of circular opening through flooring (Item 1A) to be max 1/2 in. (13 mm) larger than outside diam of closet flange.
3. Drain Piping — Nom 4 in. (102 mm) diam (on smaller) Schedule 40 acrylonitrile butadiene styrene (ABS) or polyvinyl chloride (PVC) drain pipe and 90 degree elbow for use in vented (drain, waste or vent) piping systems. Pipe installed concentrically within firestop system.
4. Fill, Void or Cavity Materials*—Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within the annulus, flush with the bottom surface of floor.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
5. Water Closet — (Not Shown)—Floor mounted vitreous china water closet.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 15, 2015

System No. F-C-2189

FC 2189

2. Drain Piping — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core PVC or ABS pipe and drain fittings cemented together and provided with PVC or ABS bathtub waste/overflow fitting.
3. Firestop System — The firestop system shall consist of the following:
   - A. Fill, Void or Cavity Material* — Wrap Strip — Nom 3/16 in. (5 mm) thick by 1 in. (25 mm) wide intumescent wrap strip. One wrap strip is continuously wrapped around the outer circumference of the drain pipe within joist cavity and held in place with pieces of tape. Wrap strip slid into annular space of cut-out in gypsum board such that the bottom surface of the wrap strip is flush with the bottom surface of the gypsum board.
     HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E W25/1" Wrap Strip
   - A1. Fill, Void or Cavity Material* — Wrap Strip — (As an alternate to the wrap strip in Item 3A on nom 1-1/2" and 2" (38 and 51 mm) diam pipes only) - Nom 3/16 in. (5 mm) thick by 1-1/2 or 2 in. (38 or 51 mm) wide intumescent wrap strip. One layer of intumescent wrap strip is tightly wrapped around the pipe with ends butted and held in place with integrated tape. Wrap strip slid into annular space of cut-out in gypsum board such that the bottom surface of the wrap strip is flush with the bottom surface of the gypsum board.
     HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-S-1.5" US, CP648-S-2" US
   - B. Fill, Void or Cavity Material* — Caulk — Min 1/2 in. (13 mm) diam bead of Sealant to be applied around the perimeter of the gypsum board at its interface with the wood floor. Additional 1/2 in. (13 mm) diam bead to be applied to the bottom of the wrap strip at its interface with the drain pipe.
     HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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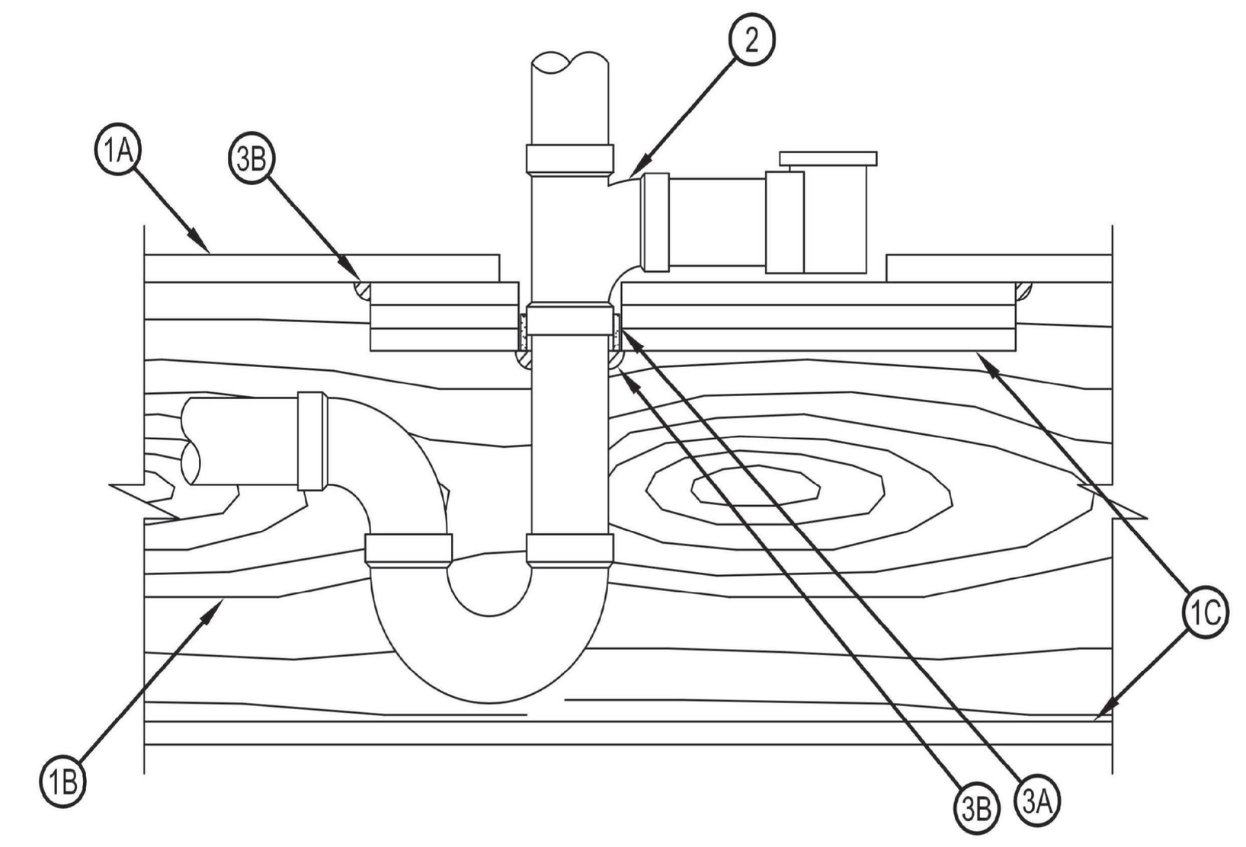
Page: 2 of 2

System No. F-C-2189

FC 2189

Classified by Underwriters Laboratories, Inc. to UL 1479

F Rating - 1 Hr
T Rating - 1 Hr



1. Floor-Ceiling Assembly — The fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction details of the floor-ceiling assembly are summarized below:
   - A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Rectangular cutout in flooring to accommodate the bathtub drain piping (Item 2) to be max 8 by 12 in. (203 by 305 mm).
   - B. Wood Joists — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   - C. Gypsum Board* — Nom 4 ft (122 cm) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to joists as specified in the individual Floor-Ceiling Design. Three pieces of gypsum board, each min 4 in. longer and wider than the cutout in the flooring, screw attached to bottom of flooring concentric with cutout. In addition, min 1/2 in. (13 mm) diam by 2 in. (51 mm) high wavy bead of FS-One Sealant to be applied to the top perimeter of each piece of gypsum board prior to its installation. Diam of opening hole-sawed through both layers of the gypsum board patch to be 1/2 in. (13 mm) larger than outside diam of bathtub drain piping (Item 2).

Hilti Firestop Systems

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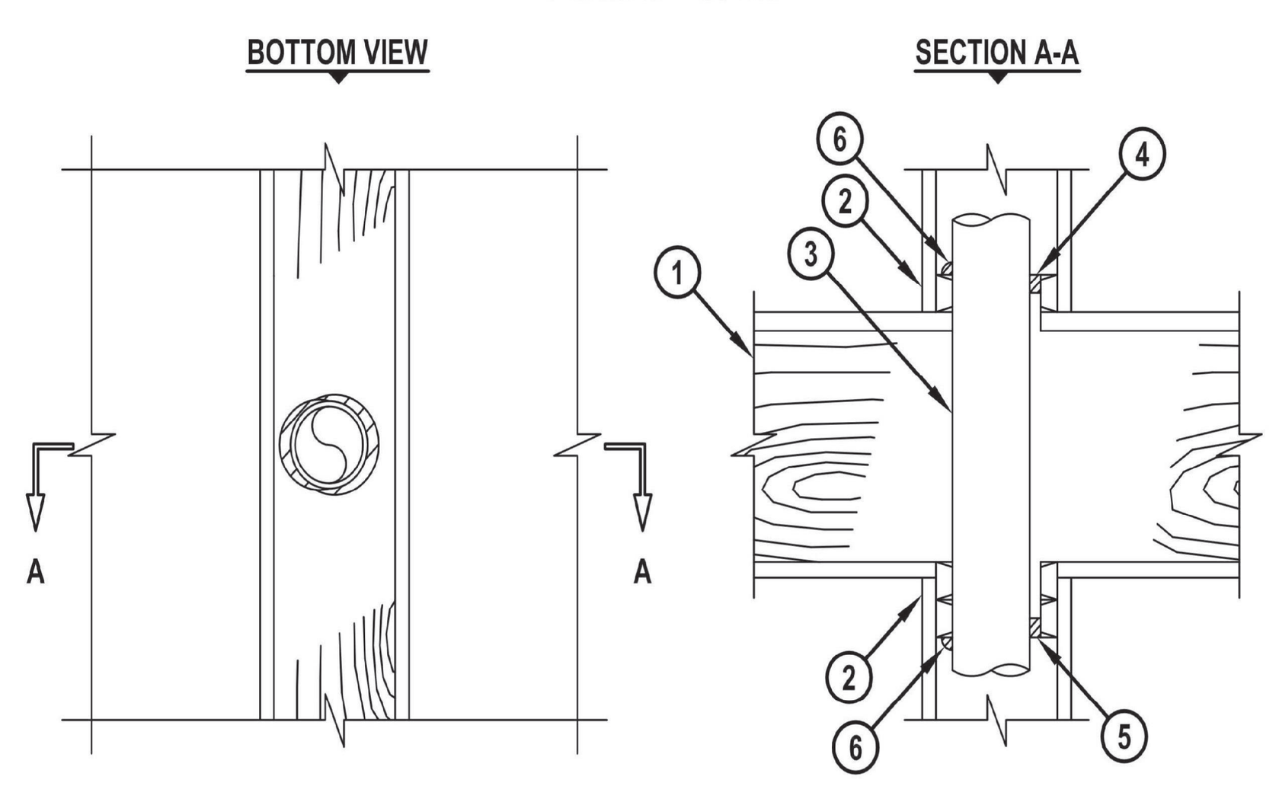
Page: 1 of 2

UL SYSTEM NO. F-C-2389

PLASTIC PIPE THROUGH WOOD FLOOR/CEILING ASSEMBLY

F-RATING = 1-HR.
T-RATING = 3/4-HR.

FC2389a.011209



1. WOOD FLOOR/CEILING ASSEMBLY (UL CLASSIFIED L500 SERIES) (1-HR. FIRE-RATING).
2. GYPSUM WALL ASSEMBLY TO INCLUDE THE FOLLOWING CONSTRUCTION FEATURES :
   - A. WOOD PLATES AND STUDS TO CONSIST OF NOMINAL 2" x 6" (FOR PENETRATING ITEMS NOMINAL 3" AND SMALLER) OR 2" x 4" (FOR PENETRATING ITEMS NOMINAL 2" AND SMALLER) LUMBER (SPACED MAXIMUM 16" OC).
   - B. MINIMUM 1/2" THICK RATED OR NON-RATED GYPSUM WALLBOARD.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   - A. MAXIMUM 3" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
   - B. MAXIMUM 3" NOMINAL DIAMETER CPVC PLASTIC PIPE (CLOSED PIPING SYSTEM ONLY).
4. MINIMUM 3/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT FLUSH WITH TOP SURFACE OF FLOOR OR TOP SURFACE OF SOLE PLATE.
5. MINIMUM 3/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT FLUSH WITH BOTTOM SURFACE OF LOWER TOP PLATE.
6. MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 4".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 5/8".
3. CLOSED OR VENTED PIPING SYSTEM (PVC = SCHEDULE 40; CPVC = SDR 13.5).

Hilti Firestop Systems	HILTI, Inc. Tulsa, Oklahoma USA (800) 879-8000	Sheet: 1 of 1	Drawing No. FC 2389a
		Scale: 1/8" = 1"	
		Date: Jan. 12, 2009	

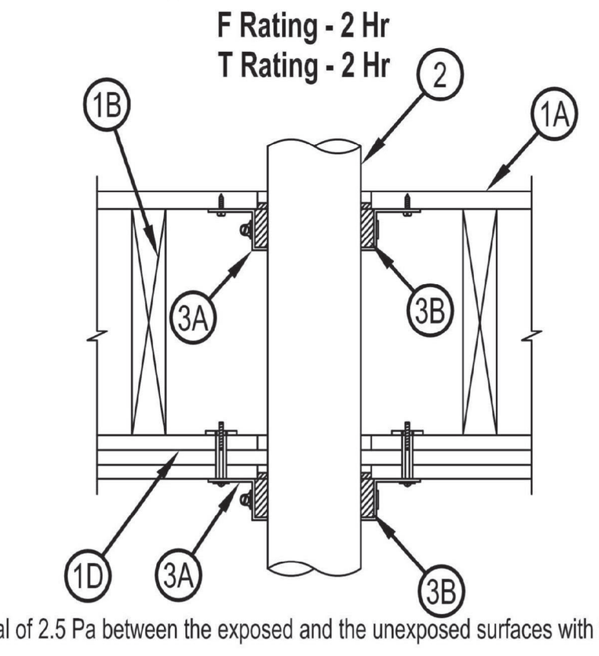
Saving Lives through Innovation and Education

System No. F-C-2029

FC 2029

Classified by Underwriters Laboratories, Inc. to UL 1479

F Rating - 2 Hr
T Rating - 2 Hr



System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. Floor-Ceiling Assembly — The fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L 500 Series Floor-Ceiling Design in the UL Fire Resistance Directory, as summarized below:
   - A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design.
   - B. Wood Joists — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.
   - C. Furring Channels — (Not Shown) — (As required) Resilient galvanized steel furring installed in accordance with the manner specified in the individual L500 Series Designs in the Fire Resistance Directory.
   - D. Gypsum Board* — Thickness, type, number of layers and fasteners shall be as specified in the individual Floor-Ceiling Design.
2. Through-Penetrants — One nonmetallic pipe, conduit or tubing to be installed within the firestop system. Diam of openings hole-sawed through flooring system and through two layers gypsum wallboard ceiling to be 0 to 1/2 in. (13 mm) larger than the outside diam of through-penetrant. Pipe or conduit to be rigidly supported on both sides of the floor-ceiling assembly. The following types and sizes of nonmetallic pipes may be used:
   - A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid-core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
   - B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
3. Firestop System — The details of the firestop system shall be as follows:
   - A. Steel Collar — Collar fabricated from coils of precut min 0.017 in. (0.43 mm) thick (No. 28 MSG) galv steel available from the sealant manufacturer. Collar shall be nom 1-3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchors tabs on 2 in. (51 mm) centers for securement to floor and ceiling surfaces. The anchor tabs shall be bent 90 degree outward for securement to the floor and ceiling surfaces. The opposite side incorporates retainer tabs, 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, prebent toward the pipe surface. Collar shall be wrapped around pipe maintaining a 1 in. (25 mm) distance between pipe and collar, and overlapping min 1 in. (25 mm) at seam. Collar secure to subfloor with wood screws and washers at every other tab. Collar secured to gypsum board ceiling using 3/16 in. (5 mm) diam steel toggle bolts in conjunction with 1-1/4 in. (32 mm) diam steel fender washers at every other tab. After sealant is installed (Item 3B), the collars shall be compressed around the pipe using a 1/2 in. (13 mm) wide by 0.028 in. (0.7 mm) thick stainless steel band clamp fastened at the collar mid-height.
   - B. Fill, Void or Cavity Material* — Sealant — Fill material to be installed to completely fill the collar and provide a min 1/4 in. (6 mm) thickness in the annular spaces at the floor and ceiling.
     HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

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MILHAUS

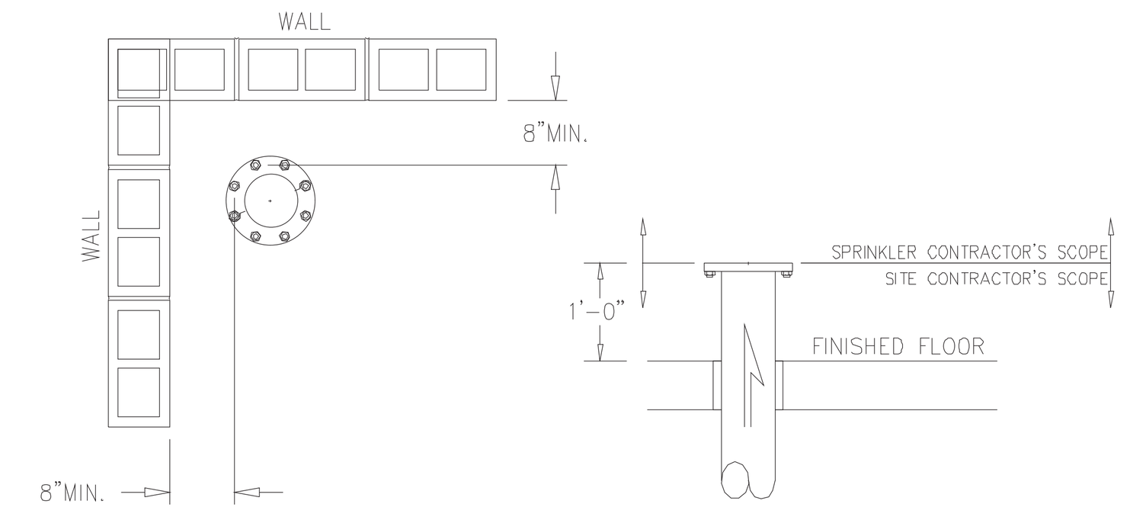
SR-82

7780 LIGHTARD KNOTT LN
FORT MYERS, FL 33905

PROJECT NO:
220035.00

FIRE PROTECTION SCHEDULES AND DETAILS

SHEET NUMBER:
FP2.03



INCOMING FIRE PROTECTION SUPPLY DETAIL

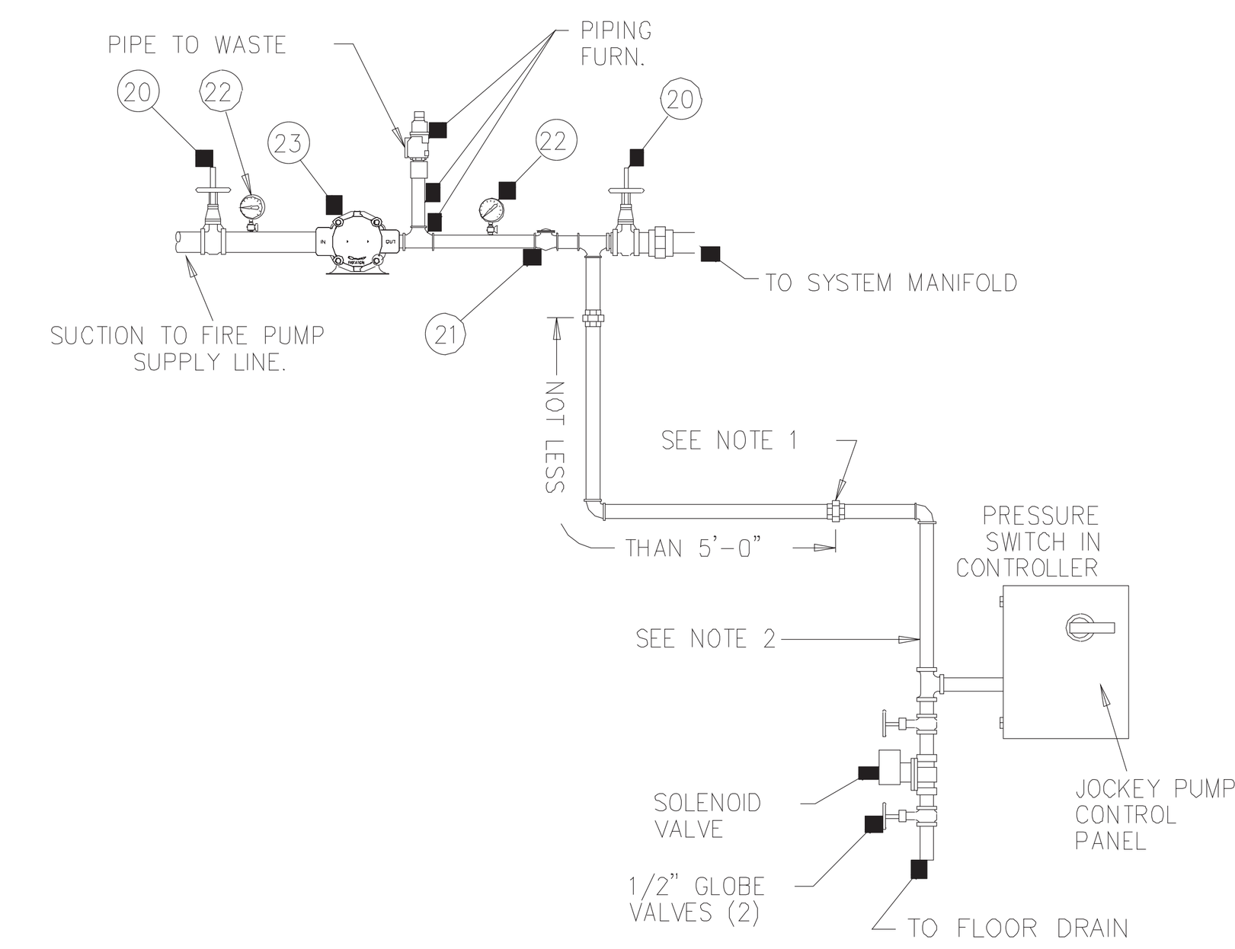
SCALE: NONE

NOTE:
ALL FIRE PROTECTION PIPING STUB-UPS, WHETHER INSIDE OR OUTSIDE A BUILDING AND INCLUDING PUMP ROOMS SHALL BE INSTALLED UTILIZING THE "2-HOLE METHOD" ON ALL FLANGES. THE FLANGE SHALL BE INSTALLED LEVEL TO FLOOR WITH THE BOLT HOLES ALIGNED SO THAT FITTINGS, VALVES AND EQUIPMENT ARE IN A SQUARE ALIGNMENT WITH ADJACENT WALLS AND FLOOR.

FIRE PROTECTION LEGEND

ABV.	DESCRIPTION	SYMBOL	ABV.	DESCRIPTION
AFF	ABOVE FINISH FLOOR			FIRE SPRINKLER BRANCH LINE
AP	ACCESS PANEL			EXISTING FIRE SPRINKLER BRANCH LINE
CPVC	CHLORINATED POLYVINYL CHLORIDE			FIRE SPRINKLER MAIN LINE
DN	DOWN			FIRE SPRINKLER LINE WITH PIPE HANGER
EXIST	EXISTING		CW	DOMESTIC COLD WATER LINE
°F	DEGREE FAHRENHEIT			EXISTING PUBLIC WATER MAIN
GPH	GALLONS PER HOUR			UNDER GROUND FIRE WATER MAIN LINE
GPM	GALLONS PER MINUTE	#		HYDRAULIC CALCULATION NODE POINT
KW	KILOWATT			MAIN SYSTEM RISER (PLAN VIEW)
LBS	POUNDS			NEW CONNECTION TO EXISTING
NC	NORMALLY CLOSED			O. S. & Y GATE VALVE WITH TAMPER SWITCH
NO	NORMALLY OPEN			SWING CHECK VALVE
OD	OUTSIDE DIAMETER			TEST AND DRAIN WITH GAUGE
PRV	PRESSURE REDUCING VALVE			PIPE RISE OR DROP
PSI	POUNDS PER SQUARE INCH			PIPE RISE OR DROP (ELBOW)
PVC	POLYVINYL CHLORIDE PIPE			BRANCH – BOTTOM CONNECTION
SF	SQUARE FEET			BRANCH – TOP CONNECTION
U.G.	UNDER GROUND			
VEL	VELOCITY			
NIC	NOT IN CONTRACT			

NOTE: ALL SYMBOLS AND ABBREVIATIONS DO NOT NECESSARILY APPLY TO THIS PROJECT



JOCKEY PUMP CONTROLLER PIPING SCHEMATIC

SCALE: NONE

FIRE PUMP SCHEMATIC KEYED NOTES:

1. 1" GLOBE VALVE
2. 1" CHECK VALVE
3. 300 PSI GAUGE TYPICAL (5)
4. JOCKEY PUMP SEE SPECIFICATION

*NOTE: ALL ASSOCIATE FITTINGS AND DEVICES TO BE 250 PSI RATED FOR FIRE PUMP AND STANDPIPE UNLESS NOTES OTHERWISE.

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MILHAUS

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PROJECT NO:
220035.00

FIRE PROTECTION SCHEDULES AND DETAILS

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SHEET NUMBER:
RFP2.04