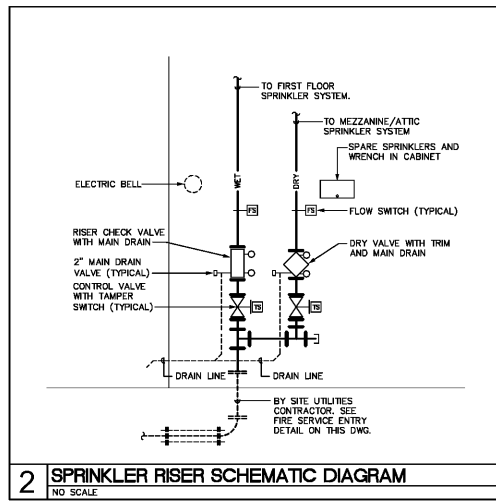
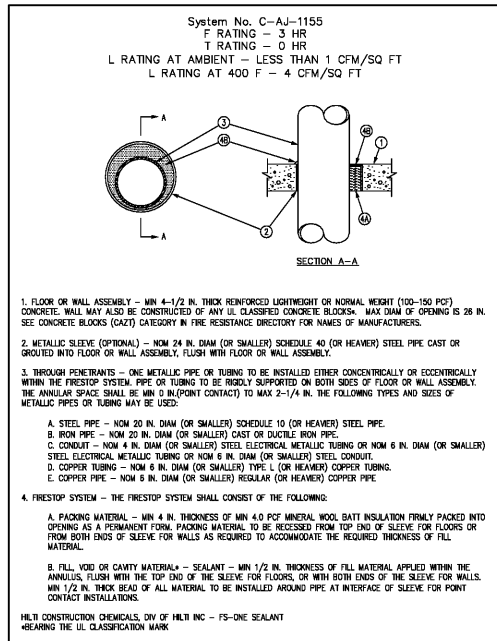


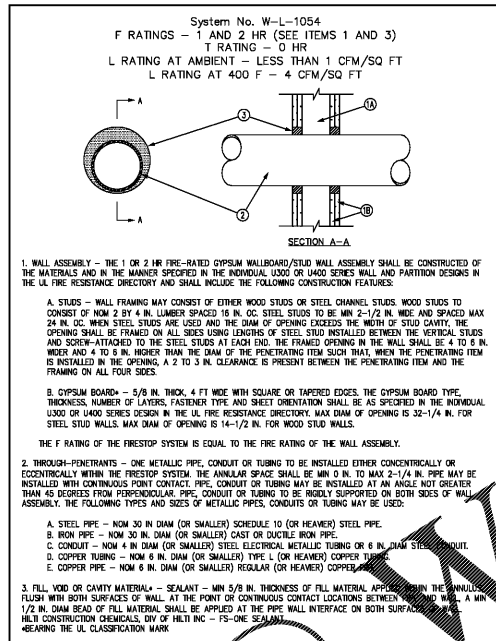
1 TYPICAL RETURN BEND SCHEMATIC
NO SCALE



2 SPRINKLER RISER SCHEMATIC DIAGRAM
NO SCALE



2 U.L. SYSTEM NO C-AJ-1155 DETAIL
NO SCALE



3 U.L. SYSTEM NO W-L-1054 DETAIL
NO SCALE

FIRE PROTECTION DESIGN CRITERIA						
SYMBOL	OCCUPANCY	TYPE	DESIGN DENSITY (GPM/SF)	HYDRAULIC REMOTE AREA (SF)	MAX. COVERAGE PER SPRINKLER (SF)	HOSE STREAMS (INSIDE / OUTSIDE) (GPM) (FT)
LH	LIGHT HAZARD	WET	0.10	1500	200	100 / -
OH-1	ORDINARY HAZARD GROUP 1	WET	0.15	500	150	100 / 150
OH-1	ORDINARY HAZARD GROUP 1	DRY	0.15	500	150	100 / 150

APPLICABLE PUBLICATIONS:
 THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR THE DESIGN OF THE PROJECT'S FIRE PROTECTION SYSTEM:
 NORTH CAROLINA STATE BUILDING CODE - FIRE CODE, 2012 EDITION
 NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS - 2013 EDITION

NOTES:
 1. COORDINATE PIPE ROUTING WITH DUCT ROUTING, EQUIPMENT LOCATIONS, ELECTRICAL INSTALLATIONS, AND BUILDING STRUCTURAL MEMBERS. AVOID PENETRATING ANY MAIN STRUCTURAL BEAM. NOTIFY ARCHITECT OF ANY CONFLICTS.
 2. SPRINKLERS SHALL BE CENTERED IN CEILING TILES IN AREAS WITH LAY-IN TILES AND VISUALLY ALIGNED IN AREAS WITH SMOOTH CEILINGS. SEE REFLECTED CEILING PLAN FOR PREFERRED LOCATION OF HEADS.
 3. PROVIDE CONCEALED TYPE SPRINKLER HEADS FOR AREAS WITH LAY-IN CEILINGS AND GYPOBOARD CEILINGS. PROVIDE UPRIGHT SPRINKLER HEADS FOR EXPOSED AREAS. COORDINATE COLOR OF CONCEALED SPRINKLER HEAD COVER-PLATE WITH ARCHITECT.

GROOVED PIPING SYSTEM NOTES

GROOVED PIPING SYSTEM

- GROOVED MECHANICAL PIPE COUPLINGS, FITTINGS, VALVES AND OTHER GROOVED COMPONENTS MAY BE USED AS AN OPTION TO WELDING, THREADING OR FLANGED METHODS. ALL GROOVED COMPONENTS SHALL BE OF ONE MANUFACTURER, AND SHALL BE UL LISTED AND/OR FM GLOBAL APPROVED. GROOVED END PRODUCT MANUFACTURER TO BE ISO-9001 CERTIFIED. GROOVED COUPLINGS SHALL MEET THE REQUIREMENTS OF NFPA-13, BASIS OF DESIGN - VICTAULIC COMPANY OF AMERICA.

PIPE/GROOVED (STANDARD/LIGHTWALL)

- CARBON STEEL, A-53B/A-108B - ROLL OR CUT GROOVED-ENDS AS APPROPRIATE TO PIPE MATERIAL, WALL THICKNESS, PRESSURES, SIZE AND METHOD OF JOINING. PIPE ENDS TO BE GROOVED IN ACCORDANCE WITH VICTAULIC CURRENT LISTED STANDARDS CONFORMING TO ANS/AWWA C-606.

MECHANICAL COUPLINGS FOR JOINING CARBON STEEL PIPE

- MECHANICAL COUPLINGS: MANUFACTURED IN TWO SEGMENTS OF CAST DUCTILE IRON, CONFORMING TO ASTM A-536, GRADE 65-45-12. GASKETS SHALL BE PRESSURE-RESPONSIVE SYNTHETIC RUBBER, GRADE TO SUIT THE INTENDED SERVICE, CONFORMING TO ASTM D-2000. MECHANICAL COUPLING BOLTS SHALL BE ZINC PLATED (ASTM B-633) HEAT TREATED CARBON STEEL TRACK HEAD CONFORMING TO PHYSICAL PROPERTIES OF ASTM A-448, MINIMUM TENSILE STRENGTH 110,000 PSI (758450 KPA) AS PROVIDED STANDARD.
- RIGID TYPE, "INSTALLATION READY" COUPLINGS, SHALL BE DESIGNED FOR DIRECT "STAR" INSTALLATION ONTO GROOVED PIPE WITHOUT PRIOR DISASSEMBLY OF THE COUPLING. HOUSINGS SHALL BE CAST WITH OFFSETTING, ANGLE-PATTERN BOLT PADS.
- RIGID TYPE, STANDARD COUPLINGS, SHALL BE CAST WITH OFFSETTING, ANGLE-PATTERN BOLT PADS TO PROVIDE SYSTEM RIGIDITY AND SUPPORT AND HANGING IN ACCORDANCE WITH NFPA 13.
- FLEXIBLE TYPE COUPLINGS: USE IN SEISMIC AREAS WHERE REQUIRED BY NFPA 13.
- MECHANICAL COUPLING GASKETS: PRESSURE-RESPONSIVE, SYNTHETIC RUBBER LISTED FOR USE WITH THE HOUSINGS.

GROOVED END FITTINGS

- FITTINGS SHALL BE CAST OF DUCTILE IRON CONFORMING TO ASTM A-536, GRADE 65-45-12, FORGED STEEL CONFORMING TO ASTM A-234, GRADE WPB 0.375" WALL OR FABRICATED FROM STD. WT. CONFORMING TO FITTING TO ASTM A-53, TYPE F, E OR S.

BRANCH OUTLETS

- BOLTED BRANCH OUTLET: BRANCH REDUCTIONS ON 2" THROUGH 8" HEADER PIPING. BOLTED BRANCH OUTLETS SHALL BE MANUFACTURED FROM DUCTILE IRON CONFORMING TO ASTM A-536, GRADE 65-45-12, WITH SYNTHETIC RUBBER GASKET, AND HEAT TREATED CARBON STEEL ZINC PLATED BOLTS AND NUTS CONFORMING TO PHYSICAL PROPERTIES OF ASTM A-183.
- STRAPELLED OUTLET: 1/2" OR 3/4" NPT OUTLET ON 4" AND LARGER HEADER SIZES LISTED FOR 300 PSI.

GROOVED END VALVES

- BUTTERFLY VALVES: UL/FM GLOBAL APPROVED, 300 PSI, GROOVED ENDS, PHENYLENE SULFIDE (PPS) COATED DUCTILE IRON BODY (ASTM A-536, GRADE 65-45-12), DUCTILE IRON DISC, SYNTHETIC RUBBER ENCAPSULATED SUITED FOR INTENDED SERVICE, WITH INTEGRALLY CAST STEM, COMPLETED WITH WEATHERPROOF ACTUATOR AND PRE-WIRED SUPERVISORY SWITCHES.
- CHECK VALVES: UL/FM GLOBAL APPROVED.

ASSEMBLY

- PIPE ENDS SHALL BE CLEAN AND FREE FROM INDENTATIONS, PROJECTIONS AND ROLL MARKS IN THE AREA FROM PIPE END TO GROOVE.
- THE GASKET STYLE AND ELASTOMERIC MATERIAL (GRADE) SHALL BE VERIFIED AS SUITABLE FOR THE INTENDED SERVICE AS SPECIFIED.
- ALL GROOVED COMPONENTS (COUPLINGS, FITTINGS, VALVES, GASKETS, AND SPECIALTIES) SHALL BE OF ONE MANUFACTURER.
- GROOVED COUPLING MANUFACTURER'S FACTORY TRAINED FIELD REPRESENTATIVE SHALL PROVIDE ON-SITE TRAINING FOR CONTRACTOR'S FIELD PERSONNEL IN THE PROPER USE OF GROOVING TOOLS, APPLICATION OF GROOVED, AND INSTALLATION OF GROOVED PIPING PRODUCTS.

FLEXIBLE STAINLESS STEEL SPRINKLER FITTING SYSTEM

- IN LIEU OF RIGID PIPE OFFSETS OR RETURN BENDS FOR SPRINKLER DROPS, THE VICTAULIC AQUALEX STAINLESS STEEL SPRINKLER FITTING SYSTEM MAY BE USED TO LOCATE SPRINKLERS AS REQUIRED BY FINAL FINISHED CEILING TILES AND WALLS.
- THE DROP SYSTEM SHALL CONSIST OF A BRAIDED OR UNBRAIDED (CORRUGATED) TYPE 304 STAINLESS STEEL FLEXIBLE TUBE, A ZINC PLATED STEEL 1" NPT MALE THREADED NIPPLE FOR CONNECTION TO BRANCHLINE PIPING, AND A ZINC PLATED STEEL REDUCER WITH A 1/2" OR 3/4" NPT FEMALE THREAD FOR CONNECTION TO THE SPRINKLER HEAD. UNION JOINTS SHALL BE PROVIDED FOR EASE OF INSTALLATION.
- THE FLEXIBLE DROP SHALL ATTACH TO THE CEILING GRID USING A ONE-PIECE OPEN GATE BRACKET. (THE BRACKET SHALL ALLOW FOR SPRINKLER INSTALLATION BEFORE OR AFTER THE BRACKET IS SECURED TO THE SPRINKLER GRID.)
- THE BRAIDED DROP SYSTEM IS FM APPROVED FOR SPRINKLER SERVICES TO 200 PSI (1380 KPA) AND CAN BE INSTALLED WITHOUT THE USE OF TOOLS, AND THE CORRUGATED SYSTEM IS UL LISTED FOR SPRINKLER SERVICES TO 175 PSI (1207 KPA).

FLOW TEST DATA

DATE	LOCATION	PRESSURE		FLOW (GPM)
		STATIC (PSI)	RESIDUAL (PSI)	
10/23/2019	804 NORTH SANDHILLS BLVD.	93	63	807

FLOW TEST NOTES:
 1. REFER TO GIVE SITE UTILITY PLANS FOR EXACT LOCATION OF FIRE HYDRANTS.
 2. SINGLE HYDRANT TEST NOT NFPA COMPLIANT.
 3. NEAREST ELEVATED TANK: WASHINGTON STREET
 4. TANK ELEVATION: 501.8' (151.8)
 5. HYDRANT/TEST ELEVATION: 300'

FIRE PROTECTION LEGEND

SYMBOL	ABBREV.	DESCRIPTION
---	F	FIRE MAIN ABOVE GRADE
---	F	FIRE MAIN BELOW GRADE
⊥	FDC	FLUSH MOUNTED FIRE DEPT. CONNECTION
⊥	FDC	FREE STANDING FIRE DEPT. CONNECTION
⊥	EB	ELECTRIC BELL
⊥	TS	TAMPER SWITCH
⊥	FS	FLOW SWITCH

FIRE PROTECTION NOTES

GENERAL REQUIREMENTS:

- THE INTENT OF THESE PLANS IS TO PROVIDE INFORMATION TO THE REVIEWING AUTHORITIES THAT THE BUILDING WILL BE PROTECTED BY A SPRINKLER SYSTEM. SPRINKLER (HEAD) LAYOUT INCLUDED WITH THIS SET OF PLANS IS PROVIDED FOR COORDINATION AND AS A REFERENCE ONLY, AND SHALL NOT BE CONSIDERED AN ACTUAL DESIGN OR CONSTRUCTION DOCUMENT.
- WHERE DISCREPANCIES OCCUR BETWEEN THE DRAWINGS AND THE BOOK SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY. CONTACT THE ENGINEER OF RECORD FOR CLARIFICATION.
- PROVIDE DESIGN, FABRICATION AND INSTALLATION OF A HYDRAULICALLY CALCULATED AUTOMATIC SPRINKLER SYSTEM INCLUDING ALL SERVICES, MATERIALS, LABOR AND EQUIPMENT REQUIRED FOR A COMPLETE WORKING SPRINKLER SYSTEM IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE LATEST EDITION OF NFPA 13, THE OWNER'S INSURANCE UNDERWRITERS AND THE LOCAL AUTHORITIES.
- OBTAIN A CURRENT FLOW TEST, LESS THAN 1 YEAR OLD, PRIOR TO STARTING THE DESIGN OF THE SPRINKLER SYSTEM. THE FLOW TEST CONTRACTOR SHALL USE THE STATIC PRESSURE, RESIDUAL PRESSURE, FLOW RATE, HORIZONTAL AND VERTICAL DISTANCE OF THE FLOW TEST, AND SHALL NOT BE CONSIDERED AN ACTUAL DESIGN OR CONSTRUCTION DOCUMENT. THE TESTING COMPANY'S PHONE NUMBER, THE DATE AND THE TEST WAS PERFORMED.
- OBTAIN A COMPLETE AND CURRENT SET OF PROJECT CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS. COORDINATE SPRINKLER DRAWINGS WITH ALL TRADES DRAWINGS TO STARTING CONSTRUCTION. COORDINATE THE LOCATION OF SPRINKLERS AND SPRINKLER PIPING WITH THE WORK OF OTHER TRADES.
- DESIGN AND HYDRAULICALLY CALCULATE A SPRINKLER SYSTEM UTILIZING THE INFORMATION PROVIDED HEREIN AND CURRENT FLOW TEST DATA. MEET ALL NFPA 13 REQUIREMENTS WHETHER USED HEREIN OR NOT. THE DRAWINGS AND DOCUMENTS SHALL BE COORDINATED WITH THE HYDRAULIC CALCULATIONS AND THE CITY COMMISSION MINIMUM. INDICATE ON DRAWINGS ALL UNDERGROUND PIPING FITTINGS WITH NEW EXISTING.
- THE CONTRACTOR SHALL EMPLOY A DESIGNER ON STAFF WITH A CURRENT N.C.E.T. LEVEL IV LICENSE TO PREPARE THE WORKING PLANS AND HYDRAULIC CALCULATIONS IN ACCORDANCE WITH N.C.E.T. CHAPTER 22 "PLANS AND CALCULATIONS". THE N.C.E.T. DESIGNER'S QUALIFICATION AND CREDENTIAL NUMBER SHALL APPEAR ON THE WORKING DRAWINGS AND HYDRAULIC CALCULATIONS.
- FOR PROJECTS LOCATED OUTSIDE NORTH CAROLINA AND SOUTH CAROLINA, FIRE SPRINKLER SHOP DRAWINGS SHALL BE REVIEWED AND SEALED (SIGNED) BY A REGISTERED FIRE PROTECTION ENGINEER IN THE STATE WHERE THE BUILDING PERMIT IS TO BE OBTAINED PRIOR TO SUBMITTING SHOP DRAWINGS TO THE OFFICE FOR REVIEW.
- SUBMIT WORKING PLANS, HYDRAULIC CALCULATIONS AND MATERIALS DATA TO THE ARCHITECT / ENGINEER FOR REVIEW AND OBTAIN APPROVAL BEFORE STARTING THE INSTALLATION OF THE SPRINKLER SYSTEM.
- AT THE COMPLETION OF THE PROJECT, PROVIDE TWO SETS OF RECORD DRAWINGS TO THE OWNER, CLEARLY SHOWING ANY CHANGES AND/OR MODIFICATIONS, ADDITIONS OR DELETIONS TO AND FROM THE CONSTRUCTION DOCUMENTS. THESE SETS SHALL BE REVIEWED BY THE ARCHITECT / ENGINEER BEFORE BEING TURNING OVER TO THE OWNER.

INSTALLATION REQUIREMENTS:

- PROVIDE ALL NECESSARY OFFSETS, RISES OR DROPS IN THE PIPING AND AUXILIARY DRAINS AS REQUIRED BY ALL APPLICABLE CODES WHETHER OR NOT SHOWN ON THE PLANS.
- CONNECT ALL SPRINKLER ALARM, TAMPER AND DETECTION SYSTEMS TO THE BUILDING GENERAL FIRE ALARM SYSTEM, COORDINATE LOCATIONS AND REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
- PROVIDE CUTTING AND PATCHING OF EXISTING FLOORS, WALLS AND CEILINGS, AS REQUIRED FOR THE INSTALLATION OF FIRE PROTECTION SYSTEM. COORDINATE WITH THE GENERAL CONTRACTOR AND ALL OTHER TRADES.
- CONCEALED FIRE PROTECTION SYSTEM ABOVE CEILINGS.
- PAINT ALL EXPOSED FIRE PROTECTION SYSTEM PIPING (IN CLOSETS, STAIRWELLS, MECHANICAL ROOMS, ETC.), COLOR TO BE SELECTED BY THE ARCHITECT.
- SPRINKLER LOCATIONS ARE TO BE IN THE CENTER OF THE CEILING TILE USING THE REFLECTIVE CEILING PLANS AND AS COORDINATED WITH THE CEILING CONTRACTOR.
- WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE AMOUNT OF TIME SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

MATERIALS:

- ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
- UNDERGROUND PIPE AND FITTINGS CLASS 80 DUCTILE IRON CONFORMING TO ANS/AWWA C10/A21.10 AND ANS/AWWA C11/A21.11 OR CLASS 315 PVC PIPE FOR SIZES 6" AND SMALLER CONFORMING TO ASTM-2241.
- ABOVE GRADE PIPING: BLACK STEEL PIPING (ASTM A53, ASTM A133, OR ASTM A795) SHALL BE LISTED FOR FIRE SPRINKLER PIPING USE AND INCLUDE FM APPROVED MIC INHIBITING COATING. PIPING 2" AND SMALLER SHALL BE SCHEDULE 40 BLACK STEEL PIPE WELDED OR ROLL GROOVED FOR MECHANICAL FITTINGS. PIPING 2 1/2" AND LARGER SHALL BE SCHEDULE 10 BLACK STEEL PIPE THREADED, WELDED, OR ROLL GROOVED FOR MECHANICAL FITTINGS.
- THREADED FITTINGS: UL-LISTED, STANDARD WEIGHT SUITABLE FOR PRESSURE UP TO 175 PSIG, CAST IRON MEETING ASTM A126 OR MALLEABLE IRON MEETING ASTM A197. THREADED CAST IRON FITTINGS SHALL MEET ANSI B16.4; FLANGED CAST IRON FITTINGS SHALL MEET ANSI B16.1. THREADED MALLEABLE IRON FITTINGS SHALL MEET ANSI B16.3.
- GROOVED FITTINGS AND COVERINGS: UL-LISTED, DUCTILE IRON MEETING ASTM A536, UTILIZING AN EPDM GASKET. PLAN-END FITTINGS AND COUPLINGS, OR WELDED-SEGMENTED FITTINGS SHALL NOT BE USED. CHANGES IN PIPE DIAMETER SHALL BE MADE USING TAPERED REDUCING FITTINGS. BUSHINGS OR GROOVED-END REDUCING COUPLINGS SHALL NOT BE USED UNLESS STANDARD REDUCING FITTINGS ARE NOT REGULARLY AVAILABLE.
- USE HOT-DIPPED GALVANIZED PIPING AND FITTINGS FOR COMPRESSED AIR PIPING, WATER MOTOR ALARM PIPING, BALL DRIP DISCHARGES AND TEST / DRAIN PIPING SUBJECT TO ALTERNATE WETTING AND DRYING.
- PIPE HANGERS: UL-LISTED SWIVEL LOOP TYPE WITH PRE-GALVANIZED CARBON STEEL BAND, HANGER RODS SIZED PER NFPA 13. UL-LISTED STEEL OR MALLEABLE IRON BEAM CLAMPS, UL-LISTED ANCHORS. POWER DRIVEN ANCHORS SHALL NOT BE USED.
- VALVES: OS&Y TYPE, IRON BODY BRONZE MOUNTED, DOUBLE DISC WITH PARALLEL SEATS, OR BUTTERFLY, UL LIST TYPE, DUCTILE IRON BODY, STAINLESS STEEL STEM, ALUMINUM BRONZE DISC, PHENOLIC RING AND BUNA N SEAT. VALVES SHALL BE FM/UL LISTED AND APPROVED FOR FIRE PROTECTION SERVICE.
- ESCUTCHEON PLATES: PROVIDE CHROME PLATED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH FINISHED WALLS, FLOORS OR CEILING. PROVIDE PRIME COAT PAINED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH WALLS, CEILINGS, ETC. IN UNFINISHED EXPOSED AREAS.

TESTING AND FLUSHING

- OVERHEAD SPRINKLER PIPING: TESTED FOR A PERIOD OF TWO HOURS AT A HYDROSTATIC PRESSURE OF 200 LBS. AND ALL PIPING, VALVES, HEADS, ETC. SHALL BE WATERTIGHT.

FIRE PROTECTION DRAWING INDEX

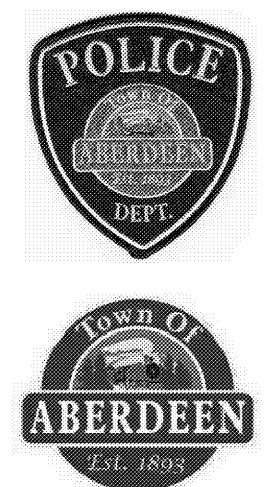
SHT. NO.	SHEET NAME	SCALE
FP-1	LEGEND, NOTES AND SPECIFICATIONS - FIRE PROTECTION	NO SCALE
FP-2	SPRINKLER SYSTEM FLOOR PLAN - FIRE PROTECTION	1/8"=1'-0"
FP-3	SPRINKLER SYSTEM MEZZANINE PLAN - FIRE PROTECTION	1/8"=1'-0"



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RENOVATION AND
ADDITION FOR
**ABERDEEN
POLICE
DEPARTMENT**



LEGEND NOTES AND
SPECIFICATIONS
FIRE PROTECTION

DATE: 10/25/2019
PROJECT NO: 18062

REVISIONS
NO. DATE DESCRIPTION:

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SHEET NUMBER
FP001
1 OF 3
OPTIMA # 192828

Order Plans