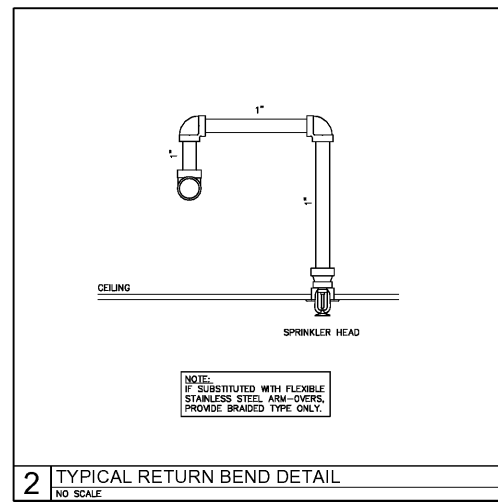
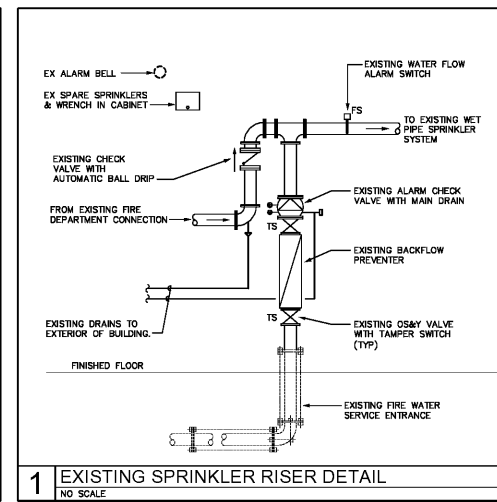


3 TYPICAL FLEXIBLE RETURN BEND SCHEMATIC
NO SCALE

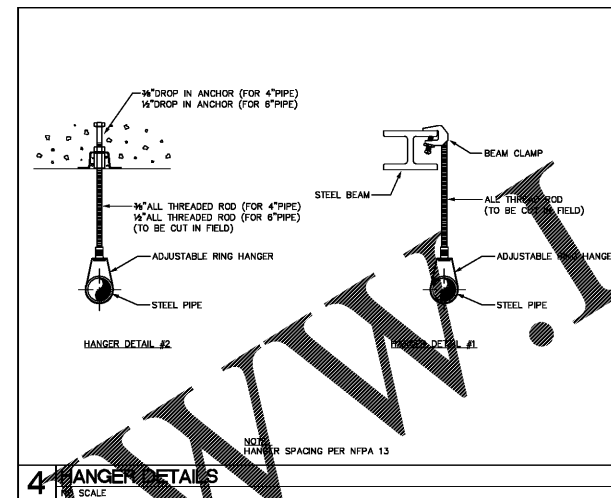


2 TYPICAL RETURN BEND DETAIL
NO SCALE



1 EXISTING SPRINKLER RISER DETAIL
NO SCALE

FIRE PROTECTION LEGEND		
SYMBOL	DESCRIPTION	ABBREVIATIONS
---	FIRE PROTECTION PIPING	ABV ABOVE ABOVE FINISH FLOOR
---	EXISTING FIRE PROTECTION PIPING	BEL BELOW BELOW FINISH FLOOR
TS	OS&Y VALVE WITH TAMPER SWITCH	BF BARRED FREE
CV	CHECK VALVE	BFF BELOW FINISH FLOOR
FS	FLOW SWITCH	BP BACKFLOW PREVENTER
PTD	PIPE TURNING DOWN	CONT CONTINUATION
PTU	PIPE TURNING UP	DI DUCTILE IRON
PC	PIPE CAP	DN DOWN
PG	PRESSURE GAUGE	EC ELECTRICAL CONTRACTOR
AB	ALARM BELL	EMS ENERGY MANAGEMENT SYSTEM
FC	FIRE DEPARTMENT CONNECTION	FDC FIRE DEPARTMENT CONNECTION
WPA	WET PIPE ALARM CHECK VALVE	FEE FINISHED FLOOR ELEVATION
		FHV FIRE HOSE VALVE
		FL FINISH FLOOR
		FR FROM
		FS FLOW SWITCH
		FSEC FOOD SERVICE EQUIPMENT CONTRACTOR
		GC GENERAL CONTRACTOR
		MC MECHANICAL CONTRACTOR
		OS&Y OS&Y VALVE
		PC PLUMBING CONTRACTOR
		PS PRESSURE SWITCH
		PSF POUNDS PER SQUARE INCH
		SF SQUARE FEET
		TS TAMPER SWITCH
		TYP TYPICAL
		UL UNDERGROUND
		OH ORDINARY HAZARD - GROUP 1



4 HANGER DETAILS
NO SCALE

FIRE PROTECTION DESIGN CRITERIA							
SYMBOL	OCCUPANCY	DESIGN DENSITY (GPM/FT ²)	MIN. HOSE STREAM (GPM)	MAX. COVERAGE PER SPRINKLER (SQ. FT.)	HOSE STREAM INSIDE (GPM)	HOSE STREAM OUTSIDE (GPM)	AREAS OF COVERAGE
LIGHT	WET	10	15	225	100	-	ENTIRE FACILITY EXCEPT AS OTHERWISE NOTED.
T-1	ORDINARY HAZARD GROUP 1	WET	1500	130	100	150	MECH. ROOMS, STORAGE ROOMS, ELEC. ROOMS, JANITORS CLOSETS, ETC.

WET PIPE SYSTEM: NOT APPLICABLE

APPLICABLE PUBLICATIONS:

THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR THE DESIGN OF THE FIRE PROTECTION SYSTEM ON THIS PROJECT:

- NORTH CAROLINA STATE BUILDING CODE - FIRE CODE, 2012 EDITION
- NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS - 2013 EDITION
- NFPA 24 - STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES - 2013 EDITION

NOTES:

- FIRE PROTECTION WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE ABOVE PUBLICATIONS AS WELL AS WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- SPRINKLER HEADS SHALL BE SPACED IN ACCORDANCE WITH NFPA 13 AND THE MANUFACTURERS APPROVAL LISTING.
- COORDINATE PIPE ROUTING WITH DUCT ROUTING, EQUIPMENT LOCATIONS, ELECTRICAL INSTALLATIONS, AND BUILDING STRUCTURAL MEMBERS. AVOID PENETRATING ANY MAJOR STRUCTURAL BEAM. NOTIFY ARCHITECT OF ANY CONFLICTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HIS OWN FIRE PROTECTION SYSTEM DESIGN AND SHOP DRAWINGS. CONTRACTOR SHALL MEET ALL REQUIREMENTS OF THE DATA LISTED ON THIS SHEET AND THE REQUIREMENTS OF THE CONTRACT SPECIFICATIONS.
- SPRINKLERS SHALL BE CENTERED IN AREAS WITH LAY-IN TILES AND VISUALLY ALIGNED IN AREAS WITH SMOOTH CEILINGS. SEE REFLECTED CEILING PLAN FOR PREFERRED LOCATION OF HEADS.
- PROVIDE CHROME-PLATED SEMI-RECESSED TYPE SPRINKLER HEADS FOR AREAS WITH LAY-IN CEILINGS AND GYPOBOARD CEILINGS. PROVIDE UPRIGHT SPRINKLER HEADS FOR EXPOSED AREAS.
- DURING DESIGN CALCULATIONS, AN ALLOWANCE SHALL BE MADE FOR A 250 GPM HOSE STREAM.

FLOW TEST DATA						
DATE	LOCATION	FLOW TEST PERFORMED BY	PRESSURE		FLOW AT 20 PSI (GPM)	FLOW AT 100 PSI (GPM)
			STATIC (PSI)	RESIDUAL (PSI)		
11/15/2017	PRESSURE HYDRANT @ MOORE BLDG AND FLOW HYDRANT @ GRAHAM BLDG, CULLOWHEE, NC	WESTERN CAROLINA UNIVERSITY, MAINTENANCE DEPT DUSTIN MELTON	82	40	880	1,086

FLOW TEST NOTES:

- THE FLOW TEST USED FOR THE WORKING PLAN DESIGN SHOULD BE PERFORMED AS INDICATED IN NFPA 13 WHICH USES TWO HYDRANTS, A PRESSURE HYDRANT AND A FLOW HYDRANT. THE TWO HYDRANTS SHALL BE AS CLOSE TO THE POINT OF CONNECTION AS POSSIBLE. A COPY OF THE FLOW TEST AND TEST HYDRANT LOCATIONS SHALL BE SUBMITTED WITH THE SHOP DRAWING PACKAGE.

SPRINKLER SCHEDULE AND LEGEND							
SYMBOL	TYPE	SPRINKLER DESCRIPTION	K	TEMP.	THREAD	FINISH	CANOPY
⊙	PENDANT	PENDANT SPRINKLER, QUICK RESPONSE, SEMI-RECESSED	5.6	155°	1/2"	CH	Z-PC
⊙	UPRIGHT	UPRIGHT SPRINKLER, QUICK RESPONSE	5.6	155°	1/2"	BR	N/A

INSTALL SPRINKLERS IN ACCORDANCE WITH NFPA 13, THEIR LISTING AND MANUFACTURER'S RECOMMENDATIONS

FIRE PROTECTION MATERIALS	
MATERIALS:	
1. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.	
2. ABOVE GRADE PIPING: BLACK STEEL PIPING (ASTM A53, ASTM A135, OR ASTM A785) SHALL BE LISTED FOR FIRE SPRINKLER PIPING USE AND INCLUDE TM 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.	
3. FITTINGS: UL-LISTED, STANDARD WEIGHT SUITABLE FOR PRESSURE UP TO 175 PSIG, CAST IRON MEETING ASTM A128 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 COUPLINGS SHALL BE UL-LISTED AND SHALL BE DUCTILE IRON MEETING ASTM A536, UTILIZING AN EPDM GASKET. PLAIN-END FITTINGS AND COUPLINGS, OR WELDED-SEAM 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.	
4. USE HOT-DIPPED GALVANIZED PIPING AND FITTINGS FOR WATER MOTOR ALARM PIPING, BALL DRIP DISCHARGES AND TEST / DRAIN PIPING SUBJECT TO ALTERNATE WETTING AND DRYING.	
5. PIPE HANGERS: UL-LISTED SMIWEL 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.	
6. VALVES: OS&Y TYPE, IRON BODY BRONZE MOUNTED, DOUBLE DISC WITH PARALLEL SEATS, OR BUTTERFLY, LUG 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.	
7. ESCUTCHEON PLATES: PROVIDE CHROME PLATED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH FINISHED WALLS, FLOORS, OR CEILING, PROVIDE PRIME COAT PAINTED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH WALLS, CEILINGS, ETC. IN UNFINISHED EXPOSED AREAS.	
TESTING AND FLUSHING:	
1. 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 NOTES	
GENERAL REQUIREMENTS:	
1. THE EXISTING BUILDING IS PARTIALLY PROTECTED BY AN AUTOMATIC, HYDRAULICALLY DESIGNED SPRINKLER SYSTEM. PROVIDE DESIGN MATERIALS AND LABOR NEEDED TO MODIFY THE EXISTING SYSTEM TO CONFORM TO THE NEW SPACE LAYOUT. DELIVER A MODIFIED SYSTEM THAT MEETS THE INSTALLATION REQUIREMENTS OF THE LATEST EDITION NFPA 13.	
2. IF NEW SPRINKLERS MUST BE ADDED, PROVIDE SPRINKLERS OF THE SAME CHARACTERISTICS (TYPE, ORIFICE SIZE, K FACTOR, FINISH, ETC.) AS THE EXISTING SPRINKLERS.	
3. SPRINKLER CONTRACTOR SHALL SECURE A COMPLETE SET OF CONSTRUCTION DOCUMENTS (DRAWINGS AND SPECIFICATIONS) AND COORDINATE THE LOCATION OF EXISTING AND NEW SPRINKLERS WITH THE WORK OF OTHER TRADES, RELOCATE AND ADD SPRINKLERS AS NEEDED TO PROVIDE ADEQUATE COVERAGE UNDER THE INSTALLATION REQUIREMENTS OF THE LATEST EDITION OF NFPA 13.	
4. THE INTENT OF THESE PLANS IS TO PROVIDE INFORMATION TO THE REVIEWING AUTHORITIES THAT THE BUILDING WILL BE PROTECTED BY A SPRINKLER SYSTEM FOR PERMIT APPROVAL. SPRINKLER (HEAD) LAYOUT INCLUDED WITH THIS SET OF PLANS IS PROVIDED FOR COORDINATION WITH RESPECT TO LIGHTS, CEILING GRID, MECHANICAL DIFFUSERS, ETC. THE SPRINKLER CONTRACTOR SHALL PROVIDE A COMPLETE SET OF SHOP DRAWINGS TO ENGINEER FOR REVIEW IF MORE THAN 20 HEADS HAVE BEEN ADDED TO THE AREA OF WORK INDICATED ON DRAWINGS.	
5. WHERE MODIFICATION OF THE SYSTEM INCLUDES THE ADDITION OF 20 OR MORE SPRINKLERS, PROVIDE HYDRAULIC CALCULATIONS TO DEMONSTRATE THE PRESSURE AND FLOW REQUIREMENTS ARE SATISFIED AND IN COMPLIANCE WITH NFPA 13. CALCULATIONS SHALL MEET ALL THE REQUIREMENTS OF NFPA 13.	
6. IN ALL CASES, EVEN IF CALCULATIONS ARE NOT REQUIRED, PROVIDE A COMPLETE SET OF SHOP DRAWINGS, USING THE FLOOR PLANS OBTAINED FROM THE ARCHITECT, SHOWING THE COMPLETE SPRINKLER SYSTEM LAYOUT. INDICATE ON THE PLANS THE HAZARD ASSUMED FOR THE SPACE(S) AND CLEARLY INDICATE THE TYPE OF SPRINKLER PROVIDED IN EACH AREA.	

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CULLOWHEE, NC

SHEET ISSUE		
NO.	DATE	DESCRIPTION
1	03/07/18	ISSUED FOR BID

PRINCIPAL IN CHARGE: LR
PROJECT ARCHITECT: APR
DRAWN BY:
SHEET TITLE: FIRE PROTECTION LEGEND AND NOTES

SHEET NO: PROJ. NO: 017384
AGENCY REVIEW ID: 17-1742-01A
FP001