

FIRE PROTECTION CRITERIA	
OVERALL DESCRIPTION	THE CONSTRUCTION WILL CONSIST OF MULTIPLE NEW 3 AND 4 STORY APARTMENT BUILDINGS. THE BUILDINGS WILL BE LOCATED IN CHARLOTTE, NC. BUILDINGS 1-3 SHALL BE SERVED BY 4" FIRE MAIN AND CARRIAGE SHALL BE SERVED BY 4" FIRE MAIN.
ACCEPTANCE TESTING	ACCEPTANCE TESTING SHALL BE PROVIDED PER NFPA 13, 2013 EDITION, 2018 NFPA AND LOCAL REQUIREMENTS.
OCCUPANCY CLASSIFICATION	BUILDINGS 1 & 3 SHALL BE NFPA 13, BUILDINGS 4, 5, & CARRIAGE HOUSES SHALL NFPA 13R.
PREPARATION OF DOCUMENTS	THE SPRINKLER SYSTEM FOR THE APARTMENT BUILDING WILL BE A WET PIPE SYSTEM, DESIGNED PER NFPA 13, 2013 EDITION FOR LIGHT HAZARD OCCUPANCY FOR BUILDINGS 1 & 3 AND NFPA 13R, 2013 FOR BUILDINGS 4, 5, AND CARRIAGE HOUSES. THE SYSTEM WILL INCLUDE USING LISTED SCHEDULE 40 STEEL MAINS PIPING LOCATED ABOVE THE CEILING, WITH SCHEDULE 40 STEEL OR APPROVED CPVC PIPE BRANCHES TO RECEIVED PENDENT OR SIDEWALL SPRINKLERS COVERING AREAS BELOW THE CEILING. ANY EXPOSED PIPING WILL BE STEEL, SCHEDULE 40. SPRINKLERS WILL BE "DUCK" RESPONSE TYPE. STANDPIPES SHALL BE CLASS 1.
THE BUILDING STANDPIPE SYSTEM WILL BE AN MANUAL, WET, CLASS 1 SYSTEM DESIGNED PER NFPA 13, 2013 EDITION AND THE NORTH CAROLINA BUILDING CODE, 2018 EDITION. THE SYSTEM WILL INCLUDE USING HYDRAULICALLY SIZED, STEEL STANDPIPES, ONE IN EACH STAR TOWER. THE STANDPIPES WILL BE CLASS 1 COMBINATION STANDPIPES PER 2" HOSE VALVES AND FIRE SPRINKLERS AT EACH LEVEL. LOCATE A COMBINATION FIRE RISER/STANDPIPE IN ONE OF THE STAIRWELLS ON BOTH SIDES OF THE BUILDING. STANDPIPE OUTLETS AT THE TOP OF THE RISER WILL PROVIDE 250 GPM AT 100 PSI RESIDUAL. HOSE VALVE CONNECTIONS SHALL BE LOCATED AT THE FLOOR LANDINGS AND NOT AT INTERMEDIATE LANDINGS. FIRST STANDPIPE SHALL PROVIDE 500 GPM. EACH ADDITIONAL STANDPIPE SHALL PROVIDE 250 GPM.	
STANDPIPE HOSE CONNECTIONS SHALL BE AT THE INTERMEDIATE LANDINGS WITHIN THE STAIRWAYS.	
ANY EXTERIOR WET PIPE SPRINKLER PIPES SHALL BE INSULATED TO PREVENT FREEZING.	
APPROVED NFPA CPVC FIRE SPRINKLER PIPE MAYBE USED IN RESIDENTIAL UNITS IN LIEU OF SCHEDULE 40 STEEL.	
PROVIDE FLOOR CONTROL ASSEMBLY AT EACH FLOOR AS FIRE PIPE SERVING THAT FLOOR CONNECTS TO THE FIRE RISER.	
STRUCTURAL SUPPORT	STRUCTURAL SUPPORT AND STRUCTURAL OPENINGS FOR THE FIRE PROTECTION SYSTEM INCLUDING LIVE AND DEAD LOADS HAVE BEEN COORDINATED WITH THE STRUCTURAL ENGINEER. STEEL VALVES AND FIRE SPRINKLERS AT EACH LEVEL, PLACEMENT TO PROVIDE FOR PENETRATIONS OF FIRE PROTECTION PIPING THROUGH THE FLOORS OR ROOF STRUCTURE. ALL PENETRATIONS WILL BE PROPERLY FIRE-CALCULATED, AS REQUIRED.
POINT OF SERVICE	A 4" FIRE SERVICE WILL BE EXTENDED INTO THE SITE TO SERVE THE SPRINKLER SYSTEM.
GOVERNING STANDARDS	SYSTEM DESIGN AND INSTALLATION SHALL COMPLY WITH 2013 EDITION OF NFPA 13, 2013 EDITION OF NFPA 13R, 2013 EDITION OF NFPA 14 AND THE 2013 EDITION OF NFPA 24 AS WELL AS THE 2018 NORTH CAROLINA BUILDING CODE AND THE LOCAL FIRE PREVENTION CODE.
OCCUPANCY CLASSIFICATIONS	BUILDINGS 1 & 3 ARE NFPA 13 AND BUILDINGS 4, 5, & CARRIAGE HOUSES ARE CLASSIFIED AS RESIDENTIAL, NFPA 13R.
DESIGN APPROACH	THE SYSTEM SHALL BE A HYDRAULICALLY-CALCULATED FULLY-AUTOMATIC WET PIPE SYSTEM INSTALLED THROUGHOUT THE ENTIRE BUILDING. THE SYSTEM SHALL MEET THE DEMAND, PRESSURE AND SPACING REQUIREMENTS OF NFPA 13, ANY PIPING NOT IN A CONDITIONED SPACE SHALL BE INSULATED TO PREVENT FREEZING.
PROVIDE A 4" RPZ VALVE ASSEMBLY WITHIN THE RISER ROOM FOR EACH BUILDING.	
FLOW TEST INFORMATION	FLOW TEST INFORMATION - HYDRANT NO. 157325 STATIC - 82 PSI RESIDUAL - 78 PSI DISCHARGE - 178 GPM FLOW AT 20 PSI - 584 GPM TEST PERFORMED 01/29/2020 LOCATION: 15732 JW CLAY BV
VALVING AND ALARM REQUIREMENTS	INSTALL FLOW SWITCH IN FIRE RISER AND PUT TAMPER SWITCH ON CONTROL VALVE IN RISER WITH LOCAL AUDIBLE ALARM AND CENTRAL STATION MONITORING.
MIC RISK EVALUATION	VERIFY THAT THERE IS NO RISK OF MIC WITH LOCAL UTILITY.
BACKFLOW PREVENTION DETAILS	4" RPZ ASSEMBLY BACKFLOW PREVENTER MEETING LOCAL REQUIREMENTS SHALL BE INSTALLED. MAXIMUM PRESSURE DROP ACROSS BACKFLOW PREVENTER TO BE 10 PSI. THERE SHALL BE NO TAPS, PIPING BRANCHES, UNIMPROVED BYPASS PIPING, HYDRANTS, FIRE DEPT. CONNECTION POINTS, OR OTHER WATER USING APERTURES CONNECTED TO THE SUPPLY LINE BETWEEN ANY WATER METER AND ITS CMU-REQUIRED BACKFLOW PREVENTER.

FIRE PROTECTION CRITERIA	
WORKING PLANS, DESIGN, AND INSTALLATION	A SEPARATE TAMPERED CONTROL VALVE AND FLOW SWITCH SHALL BE REQUIRED FOR EACH FLOOR WHEN SPRINKLER MONITORING OR A FIRE ALARM SYSTEM IS REQUIRED. TAMPERED CONTROL VALVES SHALL BE ZONED SEPARATELY FOR EACH BUILDING FLOOR. FIRE DEPARTMENT CONNECTIONS SHALL BE AT LEAST 1" 1/2" CONNECTION TYPE SHALL BE COORDINATED WITH THE LOCAL FIRE DEPARTMENT.
LOCAL WATER FLOW ALARMS SHALL BE PROVIDED ON ALL SPRINKLER SYSTEMS. AN ELECTRIC BELL SHALL BE MOUNTED ON THE EXTERIOR OF THE STRUCTURE ABOVE THE FFC.	
CALCULATIONS SHALL MAINTAIN A 10% PRESSURE SAFETY MARGIN FROM WATER PRESSURE TESTS	
FIRE PROTECTION CONTRACTOR TO SUBMIT ELECTRONIC WORKING DRAWINGS TO ENGINEER FOR REVIEW. ALL SUBMITTALS SHALL BEAR A DATED REVIEW CERTIFICATION AND SIGNATURE OF A MINIMUM NCET LEVEL II CET. SUBMITTAL DATA TO INCLUDE BUT NOT LIMITED TO HYDRAULIC CALCULATION DATA, CEILING HEIGHTS, BULB CEILING, BEAM SIZES AND SOFT DROPT, DIMENSIONING OF HEADS, CLEARLY IDENTIFIED CALCULATED AREAS, INSPECTOR'S TEST, RISER LOCATION, DETAIL, AND HANGER TYPE AND LOCATION.	
MATERIALS	UNDERGROUND PIPE AND FITTINGS - CLASS 90 DUCTILE IRON CONFORMING TO ANSIAWWA C110A21.10 AND ANSIAWWA C111A21.11 OR CLASS 315 PVC PIPE FOR SIZES 6" AND SMALLER CONFORMING TO ASTM 2241.
ABOVE-GROUND PIPING AND FITTINGS WITHIN RISER ROOM	BLACK STEEL CONFORMING TO ASTM SPECIFICATIONS FOR BLACK AND HOT DIPPED ZINC COATED (GALVANIZED) WELDED AND SEAMLESS STEEL PIPE FOR ORDINARY USES, ANSI/ASTM A53. FITTINGS SHALL BE WELDED, SCHEDULE 40, OR GROOVED MECHANICAL JOINT.
ABOVE-GROUND PIPING AND FITTINGS OUTSIDE RISER ROOM	PIPING SHALL BE RIGID CPVC, TYPE IV GRADE I, WITH A CELL CLASSIFICATION OF 23447 AS DEFINED IN ASTM D1741. THE COMPOUND AND FINISHED PRODUCT SHALL BE ORANGE IN COLOR, AND SHALL BE APPROVED BY NSF FOR USE WITH POTABLE WATER. FITTINGS USED SHALL BE UL LISTED CPVC FITTINGS AND SHALL MEET OR EXCEED REQUIREMENTS OF ASTM F487, ASTM F488, SOLVENT CEMENTS SHALL MEET OR EXCEED REQUIREMENTS OF ASTM F88 AND ASTM F483.
FOR PORTE COCHERE, PROVIDE SCH 40 PIPING FOR PIPING SMALLER THAN 2" AND SCH 10 FOR PIPING 2" AND LARGER.	
PIPE HANGERS	CONFORM TO NFPA 13, 10 AND 12 STANDARDS FOR SPACING, NUMBER, SIZE, AND TYPE. SHALL BE GENERALLY SUPPORTED BY CLAMPS AND RODS SECURED TO OVERHEAD CONSTRUCTION.
VALVES	OS&Y TYPE, ORON BODY BRONZE MOUNTED, DOUBLE DISC WITH PARALLEL SEATS OR BUTTERFLY, LUD TYPE, DUCTILE IRON BODY, STAINLESS STEEL STEM, ALUMINUM BRONZE DISC, PHENOLIC RING AND BUNA N SEAT. VALVES SHALL BE FMUL LISTED AND APPROVED FOR FIRE PROTECTION SERVICE.
ACCEPTANCE TEST AND MAINTENANCE	SYSTEMS SHALL PASS A HYDROSTATIC PRESSURE TEST PERFORMED FOR THE UNDERGROUND AND ABOVE-GROUND PIPING SYSTEM IN ACCORDANCE WITH NFPA 13.
ALL TESTS SHALL BE WITNESSED BY THE LOCAL AUI OR ENGINEER OF RECORD. ALL FIRE PENETRATIONS SHALL BE FILLED WITH APPROVED MATERIAL AND NAIL PLATES SHALL BE IN PLACE AT TIME OF TEST. WHERE METAL STUDS ARE USED, PIPING SHALL BE PROTECTED WITH EITHER A SLEEVE OR GROMMET.	
ALL RISERS SHALL HAVE A HYDRAULIC DATA NAMEPLATE IN ACCORDANCE WITH NFPA 13. SPARE SPRINKLER HEADS SHALL BE LOCATED IN A SPARE HEAD CABINET WITH SPRINKLER HEAD WRENCH. LABELS FOR INSPECTOR'S TEST, AUXILIARY CONTROL VALVES, ETC. SHALL BE IN PLACE. DWELLING UNIT IDENTIFICATION AND/OR BUILDING DIAGRAM SHALL BE IN PLACE AT EACH RISER.	
CPVC PIPING	THE FACTORY ISSUED CERTIFICATION CARD MUST BE CARRIED BY PIPE FITTER DURING INSTALLATION AND IS TO BE MADE AVAILABLE TO FIRE CODE OFFICIAL UPON REQUEST.
SEISMIC RESTRAINTS	SPECIFY SEISMIC RESTRAINTS FOR SPRINKLER PIPING IN SEISMIC AREAS REQUIRED BY 2018 IBC 1613.1. SPECIFY FLEXIBLE COUPLINGS AT FLEXURE JOINTS PER NFPA 13 9.3.2.1. PROVIDE SUFFICIENT INFORMATION ON DESIGN DRAWINGS SHOWING TYPICAL SEISMIC BRACING DETAILS, LOCATION OF 4-WAY BRACING, LONGITUDINAL AND LATTITUDINAL BRACING, AND END OF THE LINE RESTRAINING BRACING.

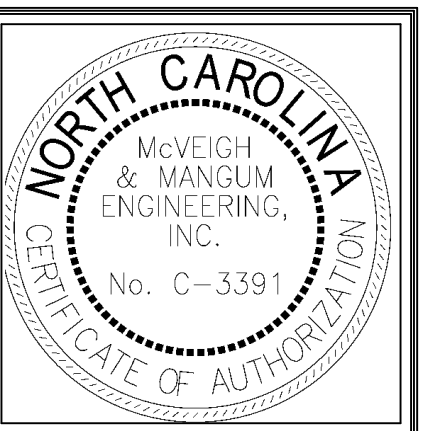
CLINE DESIGN

125 N. Harrington St.
Raleigh, NC 27603
919/833-6413
919/836-1280 FAX
ClineDesignAssoc.com

MCVEIGH & MANGUM ENGINEERING, INC.

916 W. 5th Street, Charlotte, North Carolina 28202
Ph: (704) 547-9035 Fax: (704) 547-6036
email: mcm@mcveighmangum.com
C-3391
Eng. of Record: Larry P. McWilliams
License No.: 040327

CRESENT COMMUNITIES
UNIVERSITY PLACE
8906 JW CLAY BLVD, CHARLOTTE, NC



PROJECT:	2019006
DATE:	03.26.2020
REVISIONS:	DATE

DRAWN BY: Author
CHECKED BY: Checker

NOTES & LEGENDS - FIRE PROTECTION

FP0.01