

FIRE PROTECTION NOTES AND SPECIFICATIONS

GENERAL

- CONTRACTOR SHALL PERFORM ALL WORK AS TO CONFORM TO LOCAL, STATE AND NATIONAL CODES AND THE REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION.
- CONTRACTOR TO EXAMINE THE SITE TO DETERMINE THE EXACT CONDITIONS EFFECTING THE FIRE PROTECTION WORK.
- DRAWINGS INDICATE THE GENERAL SCHEME OF THE INSTALLATION AND ARE DIAGRAMMATIC IN SCOPE. THE ENGINEER RESERVES THE RIGHT TO CHANGE THE LOCATION OF HEADS, VALVES, NOZZLES, APPARATUS, ETC. TO A REASONABLE EXTENT AS THE BUILDING CONDITIONS MAY INDICATE PRIOR TO THEIR INSTALLATION WITHOUT EXTRA COST TO THE OWNER.
- DETAILS OF CONSTRUCTION AND OF WORKMANSHIP WHERE NOT SPECIFICALLY DESCRIBED HEREON OR INDICATED ON THE DRAWINGS SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL. IT IS THE INTENT OF THESE SPECIFICATIONS TO PROVIDE COMPLETE SYSTEMS, LEFT IN GOOD WORKING ORDER, READY FOR OPERATION.
- SCRAP AND DEBRIS, EXCEPT AS OTHERWISE SPECIFIED, SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THIS CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR START-UP OF THE SYSTEM.
- ALL WORK SHALL BE DONE WITH A MINIMUM OF DUST AND DIRT. PROVIDE SUFFICIENT FIREPROOF TAPPLING AND COVER ALL EQUIPMENT IN WORK AREA WITH SAME DURING WORK OPERATIONS.
- CONTRACTOR SHALL FURNISH SHOP DRAWINGS AND EQUIPMENT GITS TO THE ARCHITECT FOR APPROVAL (MINIMUM 5 COPIES).
- COORDINATE CONNECTIONS TO STREET WITH LOCAL UTILITY COMPANIES.
- CONTRACTOR SHALL FILL, SECURE AND PAY FOR ALL NECESSARY APPROVALS, PERMITS AND INSPECTIONS.
- ALL WORK SHALL BE GUARANTEED TO BE FREE FROM DEFECT FOR ONE YEAR AFTER ACCEPTANCE OF WORK.
- ALL WORK SHALL BE IN STRICT CONFORMANCE WITH THE STATE OF NEW JERSEY (UNIFORM FIRE CODE 9-6-83) AND THE STATE OF NEW JERSEY FIRE PROTECTION CODE.
- FIRE PROTECTION SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH THE STATE OF NEW JERSEY FIRE PROTECTION CODE AND APPLICABLE NFPA CODES. CONTRACTOR TO COORDINATE TESTS WITH LOCAL OFFICIALS.
- WHERE DEVICES REQUIRING ACCESS INSPECTIONS TEST VALVES, ETC. WOULD OTHERWISE BE REMOVED OR DAMAGED BY THE TESTING OPERATION, PROVIDE FRAMED ACCESS DOOR. ACCESS DOOR FINISHES SHALL BE COORDINATED WITH ARCHITECT. IN GENERAL, ACCESS DOORS SHALL BE PRIMED, PAINTABLE, STEEL WHEN LOCATED IN INTERNAL CONSTRUCTION. ACCESS DOORS IN TOILET ROOMS (THE WASHCOT) SHALL BE STAINLESS STEEL. ACCESS DOORS IN EXTERIOR WALLS SHALL BE PROVIDED WITH INSULATED DOORS. ACCESS DOORS IN COLUMN ENCLOSURES OR OF RESISTOR WALLS SHALL BE FIRE RATED IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE.

SCOPE OF WORK

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FURNISHING AND INSTALLATION OF ALL EQUIPMENT, MATERIALS AND COMPONENTS REQUIRED FOR A COMPLETE AND OPERATIONALLY FUNCTIONAL SYSTEM. SCOPE OF WORK SHALL INCLUDE, BUT NOT BE LIMITED TO:
 - CUTTING OF PAVEMENT OR CONCRETE SURFACES AS REQUIRED.
 - EXCAVATION.
 - BACKFILLING.
 - RESTORATION OF EXISTING SURFACES, INCLUDING PAVEMENT, CONCRETE, PLUMBING, ETC.
 - FURNISHING AND INSTALLATION OF PRIVATE FIRE SERVICE WATER MAIN, INCLUDING GROSS VALVE AND CONNECTIONS TO EXISTING WATER MAIN IN STREET.
 - FURNISHING AND INSTALLATION OF BACKFLOW PREVENTERS, INCLUDING GAY TOYS, ISOLATION VALVES.
 - CONNECTIONS TO PRIVATE FIRE SERVICE MAIN.
 - FURNISHING AND INSTALLATION OF FIRE ALARM VALVE INCLUDING RETARDING GASKETS, PRESSURE SWITCH AND ASSOCIATED VALVE TRIM.
 - FURNISHING AND INSTALLATION OF FIRE DEPARTMENT CONNECTION AND CHECK VALVE.
 - FURNISHING AND INSTALLATION OF ALL FIRE PROTECTION PIPING, FITTINGS, HANGERS, SUPPORTS, SWAY BRACINGS AND ANTI-SWING DEVICES.
 - FURNISHING AND INSTALLATION OF SPRINKLER HEADS AS SPECIFIED, INCLUDING UPRIGHT, PENDENT, SIDEWALL AND DRY HEADS AS REQUIRED.
 - FURNISHING AND INSTALLATION OF INSPECTOR'S TEST CONNECTIONS.
 - WELDING AS REQUIRED.
 - FURNISHING AND INSTALLATION OF FIRE PROTECTION SYSTEM SIGNS AS SPECIFIED AND REQUIRED.
 - SYSTEM FLUSHING.
 - HYDROSTATIC AND OPERATIONAL TESTING.
 - CUTTING AND PATCHING AS REQUIRED.
 - PERMITS, INSPECTIONS, APPROVALS AND CERTIFICATES, INCLUDING FEES.
 - GUARANTEE.

SPRINKLER PROTECTION

- SEPARATE PROTECTION FOR FIRE PROTECTION SYSTEMS SHALL BE IN ACCORDANCE WITH NFPA 803-6.4.3.
- PROVIDE ULL LISTED, GROOVED END, FLEXIBLE COUPLINGS IN ALL LINES 3/4" AND LARGER AT THE FOLLOWING LOCATIONS:
 - WITHIN 24" OF THE TOP AND BOTTOM OF ALL RISERS IN EXCESS OF 1'-0".
 - CENTER OF ALL RISERS LONGER THAN 3'-0" BUT LESS THAN 10'.
 - WITHIN 12" ABOVE OR BELOW EACH FLOOR ELEVATION IN MULTI-STORY BUILDINGS.
 - ON ONE SIDE OF EACH CONCRETE OR MASONRY WALL WITHIN 3'-0" OF WALL.
 - AT BUILDING EXPANSION JOINTS.
- PROVIDE ULL LISTED, GROOVED END, FLEXIBLE COUPLINGS IN ALL LINES, REGARDLESS OF SIZE, AS FOLLOWS:
 - WITHIN 2'-0" OF CEILING AT THE TOP OF GROUPS TO HOSE LINKS, RACK SPRINKLERS, MEZZANINES, ETC.
 - WITHIN 2'-0" OF CEILING AT THE TOP OF GROUPS EXCEEDING 6'-0" TO MORE THAN ONE SPRINKLER.
- SEPARATE SEPARATION ASSEMBLIES SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 803, APPENDIX A, PARAGRAPH 4-5.4.3.3. WHERE SPRINKLER PIPING GROSSES A BUILDING, SEPARATE SEPARATION JOINT ABOVE GRADE.
- PROVIDE CLEARANCES AS FOLLOWS FOR PIPING PENETRATING CONCRETE, MASONRY OR STEEL CONSTRUCTION:
 - PENETRATION DIAMETER SHALL BE 2" LARGER THAN NORMAL PIPE SIZE FOR ALL PIPING 3/4" AND LESS IN DIAMETER.
 - PENETRATION DIAMETER SHALL BE 4" LARGER THAN NORMAL PIPE SIZE FOR ALL PIPING 4" AND LARGER.
- ANULAR SPACE BETWEEN PIPING AND SLEEVES SHALL BE FILLED WITH A FLEXIBLE MASTIC.
- PIPING CLEARANCES IN PENETRATIONS THRU NON-WATERPROOFED MASONRY, CONCRETE AND STEEL MAY BE ELIMINATED WHERE FLEXIBLE COUPLINGS ARE LOCATED WITHIN 12" OF EITHER SIDE OF THE PENETRATION.
- FLEXIBLE COUPLINGS SHALL BE VICTALIC® STYLE #5 OR APPROVED EQUAL.
- PROVIDE SWAY BRACING SEPARING RESISTANT FOR FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH NFPA 803-6.4.3.3 AND BSQA 180.0.
- LONGITUDINAL SWAY BRACING SHALL BE PROVIDED FOR ALL FEED AND CROSS MAINS AT SPACINGS NOT EXCEEDING 80'-0".
- LATERAL SWAY BRACING SHALL BE PROVIDED FOR ALL FEED MAINS, CROSS MAINS, BRANCH LINES 1/4" AND LARGER IN BUILDERS AND MECHANICAL ROOMS AND BRANCH LINES 2 1/2" AND LARGER IN ALL OTHER AREAS.
- LATERAL SWAY BRACING SHALL BE SPACED AT INTERVALS NOT EXCEEDING 40'-0".
- LATERAL SWAY BRACING MAY BE OMITTED WHEN LINES ARE SUPPORTED BY HANGERS OF 6" OR LESS IN LENGTH.
- LONGITUDINAL SWAY BRACING MAY BE OMITTED WHEN LINES ARE SECURED DIRECTLY TO FRAMING.
- 1/4" TYPE BEAM CLAMPS, WHERE USED TO ATTACH HANGERS TO THE BUILDING STRUCTURE SHALL BE PROVIDED WITH RESORRANING STRAPS.
- TOPS OF RISERS SHALL BE SECURED AGAINST DRIFTING USING FOUR-WAY SWAY BRACING.
- PROVIDE LATERAL BRACING FOR THE LAST LENGTH OF PIPE AT THE END OF ALL FEED AND CROSS MAINS.
- BEAM CLAMPS WITH OR WITHOUT RESORRANING STRAPS SHALL NOT BE PERMITTED FOR "ANCHORING" SWAY BRACING. USE LIP-UP SCREWS OR THROUGH BOLTS IN HOOD FRAMING, EXPANSION SHIELD IN CONCRETE AND THROUGH BOLTS IN STEEL.
- SWAY BRACING SHALL BE ATTACHED TO PIPING USING ULL LISTED PIPE CLAMPS OR "D" BOLTS.

SPRINKLER SYSTEMS

- SPRINKLER SYSTEM SHALL BE INSTALLED IN STRICT CONFORMANCE WITH NFPA 803 FOR RETAIL, GARAGE AND RESIDENTIAL, CARE AREAS. SPRINKLER SYSTEM WITHIN RESIDENTIAL UNITS SHALL BE INSTALLED IN STRICT CONFORMANCE WITH NFPA 803.
- ALL SPRINKLER SYSTEM COMPONENTS, INCLUDING HEADS, FITTINGS, PIPING, VALVES, HANGERS, ETC. SHALL BE ULL FACTORY MATERIAL LISTED FOR FIRE PROTECTION SERVICE AND FOR THE SPECIFIC USE.
- ALL SPRINKLER SYSTEM COMPONENTS SHALL BE NEW AND SHALL BE DESIGNED FOR A WORKING PRESSURE OF NOT LESS THAN ITS PSI.
- PROVIDE A 1" INSPECTOR'S TEST CONNECTION FROM THE END OF THE MOST REMOTE BRANCH LINE IN THE HIGHEST STORY. PROVIDE INSPECTOR'S TEST VALVE WITH BRASS PIPE PLUG IN OUTLET. TEST CONNECTION SHALL DISCHARGE TO OUTDOORS VIA A REMOVABLE 1" NIPPLE WITH UNION AND A SMOOTH-EDGE CORROSION RESISTANT TEST OFFICE AND SHALL BE IN ACCORDANCE WITH NFPA 803-6.4.4.
- PROVIDE A 1" INSPECTOR'S TEST CONNECTION FROM THE TOP OF THE MOST REMOTE BRANCH LINE IN THE HIGHEST STORY. PROVIDE INSPECTOR'S TEST VALVE WITH BRASS PIPE PLUG IN OUTLET. TEST CONNECTION SHALL DISCHARGE TO OUTDOORS VIA A REMOVABLE 1" NIPPLE WITH UNION AND A SMOOTH-EDGE CORROSION RESISTANT TEST OFFICE AND SHALL BE IN ACCORDANCE WITH NFPA 803-6.4.4.
- ALL VALVES IN WATER SUPPLIES TO SPRINKLERS SHALL BE OUTSIDE ROADS AND YOKES (5'-0" TYPE, GAT 2" VALVE WITH MINIMUM 150# WORKING PRESSURE). VALVES SHALL BE MARKED "ULFM APPROVED" AND SHALL NOT CLOSE IN LESS THAN 5 SECONDS WHEN OPERATED AT MAXIMUM FLOOR HEADS THROUGH 2" SIZE AND RISK BODY, STOCKHAM FLOOR HEADS IN 1/2" SIZE AND LARGER.
- DRAIN AND TEST VALVES MAY BE BALL OR GLOBE TYPE WITH MINIMUM 150# WORKING PRESSURE.
- CHECK VALVES SHALL BE ULL LISTED IF APPROVED AND SHALL BE INSTALLED HORIZONTALLY OR VERTICALLY IN ACCORDANCE WITH THEIR LISTING.
- ALL VALVES IN WATER SUPPLIES TO SPRINKLERS SHALL BE SUBMITTED FOR "OPEN" TESTORY BY THE FIRE ALARM SYSTEM. PROVIDE TRIP SWITCHES ON ALL VALVES. SWITCHES TO BE ROTTER RODDER MOUNTED. WIRING BETWEEN TRIP SWITCHES AND THE FIRE ALARM SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
- TURNIN AND INSTALL A CHECK VALVE IN THE WATER SUPPLY TO FIRE PROTECTION SYSTEM. CHECK VALVE SHALL BE ULL LISTED AND IN APPROVED AND SHALL BE STOCKHAM FLOOR HEADS.

SPRINKLER HEADS

- SPRINKLER HEADS SHALL BE 1/2" OFFICE, AUTOMATIC TYPE, AND UNLESS OTHERWISE NOTED AND SHALL BE AS MANUFACTURED BY RELIABLE, VIKING OR APPROVED EQUAL. LOCATIONS, TYPE, FINISH AND MODELS SHALL BE AS FOLLOWS:

LOCATION	TYPE	FINISH	VIEW MODEL
EXPOSED NO. CEILING	UPRIGHT	BRONZE	VIEW MODEL "V330"
CONCEALED WALL MOUNTED	CONCEALED	CHROME PLATED	VIEW MODEL "V140"
CONCEALED CEILING MOUNTED	CONCEALED	WHITE	VIEW MODEL "V140"
- ALL SIDEWALL AND PENDENT HEADS SHALL BE FINISHED COMPLETE WITH ADJUSTABLE ESCUTCHEON. ESCUTCHEON FINISH SHALL MATCH HEAD FINISH.
- UNLESS OTHERWISE NOTED, SPRINKLER HEADS SHALL BE "KNOCKOUT" TEMPERATURE RATING. WHEN REQUIRED BY CEILING TEMPERATURES INSTALL HEADS WITH GREATER TEMPERATURE RATINGS AS REQUIRED.
- SPRINKLER HEADS LOCATED LESS THAN 2'-0" ABOVE OR LESS THAN 1'-0" TO THE SIDE OR BELOW A HEATING DUCT SHALL BE "INTERMEDIATE" TEMPERATURE RATING.
- SPRINKLER HEADS LOCATED WITHIN 1'-0" HORIZONTALLY OF DOWNWARD DISCHARGE OFFICER FROM 1'-0" BELOW TO 2'-0" ABOVE OFFICER SHALL BE "INTERMEDIATE" TEMPERATURE RATING.
- SPRINKLER HEADS LOCATED WITHIN 2'-0" RADIALITY OF A HORIZONTAL DISCHARGE OFFICER FROM 1'-0" TO 2'-0" ABOVE OFFICER SHALL BE "INTERMEDIATE" TEMPERATURE RATING.
- SPRINKLER HEADS LOCATED WITHIN 1'-0" RADIALITY OF A HORIZONTAL DISCHARGE INT HEATER FROM 1'-0" BELOW TO 1'-0" ABOVE INT HEATER SHALL BE "HIGH" TEMPERATURE RATING. SPRINKLERS MORE THAN 1'-0" ABOVE THE T-0 RADIAL ZONE SHALL BE "INTERMEDIATE" TEMPERATURE RATING.

- SPRINKLERS LOCATED FROM 1'-0" TO 2'-0" IN FRONT OF A HORIZONTAL DISCHARGE INT HEATER AND WITHIN A 90° SHARED ZONE FORMED BY A 30° DEGREE ANGLE INTERSECTING EACH SIDE OF THE HEATER FROM 2'-0" BELOW TO 1'-0" ABOVE THE INT HEATER SHALL BE "INTERMEDIATE" TEMPERATURE RATING.
- POSITION OF UPRIGHT, PENDENT AND SIDEWALL HEADS WITH RESPECT TO CONSTRUCTION AND CONTENTS SHALL BE IN ACCORDANCE WITH NFPA 803-4.3.
- COORDINATE SPRINKLER HEAD LOCATIONS WITH ELECTRICAL AND HVAC WORK.
- SPRINKLER HEADS SHALL NOT BE FIELD PAINTED.

SPRINKLER PIPING & FITTINGS

- PIPING FOR SPRINKLER SYSTEMS SHALL BE WELDED OR SEAMLESS STEEL PIPE IN ACCORDANCE WITH ASHME/ASME OR ASTM/ASME AND DESIGNED FOR A WORKING PRESSURE OF ITS PSI.
- SPRINKLER PIPING AND FITTINGS CONSISTING OF COLORADO POLY/VINYL CHLORIDE (CPVC) SHALL BE ACCEPTABLE WHEN INSTALLED IN ACCORDANCE WITH A SECTION 5.0 AND WITH EDITIONS OF THE ASHME STANDARDS SPECIFIED IN TABLE 6.3.6.1 THAT APPLY TO FIRE PROTECTION SYSTEM INTO THE PRIVATE FIRE SERVICE MAIN AND LEAD-IN PIPING.
- STEEL PIPE SHALL BE MINIMUM SCHEDULE 40 WALL THICKNESS FOR PRESSURES UP TO 300# WHEN JOINED BY WELDING OR ROLLED GROOVE CONNECTION.
- STEEL PIPE JOINED BY THREADED FITTINGS OR CUT GROOVE CONNECTIONS FOR PRESSURE UP TO 300# SHALL BE MINIMUM SCHEDULE 40 WALL THICKNESS IN PIPE SIZES 8" AND LARGER AND SCHEDULE 40 FOR PIPE SIZES SMALLER THAN 8".
- FITTINGS FOR FIRE PROTECTION PIPING SHALL BE CAST IRON OR MALLEABLE IRON, THREADED OR FLANGED FITTINGS OR STEEL, FLANGED OR WELDED FITTINGS, IN ACCORDANCE WITH ANSI STANDARDS AS FOLLOWS:

FITTING	STANDARD
CAST IRON - THREADED	ANSI B16.1
CAST IRON - FLANGED	ANSI B16.3
MALLEABLE IRON - THREADED	ANSI B16.1
STEEL - FLANGED	ANSI B16.3
STEEL - WELDED	ANSI B16.3
- IN ADDITION TO THE ABOVE, VICTALIC® GUY, STYLE 11T AND FULL FLOW FITTINGS SHALL BE PERMITTED.
- ALL THREADED PIPE SHALL BE REAMED SMOOTH BEFORE BEING INSTALLED. PIPE SHALL NOT BE SPILT, BENT, FLATTENED NOR OTHERWISE INJURED EITHER BEFORE OR DURING THE INSTALLATION.
- ALL THREADED FITTINGS AND PIPE SHALL BE THREADED IN ACCORDANCE WITH ANSI/BSQA 180.0. CARE SHOULD BE TAKEN TO INSURE THAT THE THREADED CONNECTION DOES NOT EXTEND INTO THE FITTING SUFFICIENTLY TO REDUCE THE WATERWAY.
- APPLY JOINT COMPOUND OR TAPE TO ALL PIPE THREADS PRIOR TO MAKING UP THREADED JOINTS.
- WHERE MECHANICALLY GROOVED FITTINGS OR JOINTS ARE EMPLOYED EITHER ROLL GROOVED OR CUT GROOVED, THE OVERALL ASSEMBLY OF THE FITTING GASKET, GASKETS, ETC. SHALL BE A LISTED LONGITUDINAL GROOVED SHALL BE MADE BY USING EQUIPMENT AND PROCEDURES AS PROVIDED BY THE MANUFACTURER AND SHALL BE DIMENSIONALLY CONSISTENT WITH THE FITTING.
- WHERE DRY SYSTEM SPRINKLER PIPING CANNOT BE PROVIDED TO MAIN SYSTEM DRAIN, PROVIDE AUXILIARY DRAIN VALVES TO ALLOW COMPLETE DRAINING OF SYSTEM.
- UNLESS OTHERWISE INDICATED, ALL PIPING SHALL BE CONCEALED IN SPOFFERED CEILINGS, WALLS AND PARTS. PIPING IN THE SPRINKLER VALVE ROOM SHALL BE INSTALLED EXPOSED. EXPOSED INSTALLATIONS ARE ALSO PERMITTED IN ATTICS, MECHANICAL ROOMS AND SPACES WITHOUT FINISHED CEILINGS.

HANGERS & SUPPORTS

- HANGERS AND INSTALLATION METHODS SHALL BE IN ACCORDANCE WITH NFPA 803-6.4 AND NFPA 803-6.4.3.
- HANGERS SHALL BE FABRICATED OF FERROUS MATERIALS. COMPONENTS OF HANGER SYSTEMS ATTACHING DIRECTLY TO THE PIPE OR TO THE BUILDING STRUCTURE SHALL BE LISTED.
- HANGER ASSEMBLIES SHALL BE RATED FOR THE WEIGHT OF WATER FILLED PIPING PLUS 250# APPLIED AT THE POINT OF HANGER ATTACHMENT.
- WHERE TRAP-UP HANGERS ARE EMPLOYED TO SPAN BELOW DUCTS OR BETWEEN JOISTS OR RIRLINS, ETC., STEEL ANGLES SHALL BE USED IN ACCORDANCE WITH NFPA 803-6.4.4.
- HANGER THREADED RODS SHALL BE THE SAME SIZE AS THAT APPROVED FOR THE ASSEMBLY BUT NOT LESS THAN 3/8" FOR LINES 10" AND INCLUDING 4", 1/2" FOR 3", 4" AND 8" LINES AND 5/8" FOR 10", 12" LINES.
- MAXIMUM DISTANCE BETWEEN HANGERS FOR HEAVY WALL PIPES SHALL NOT EXCEED 12" FOR LINES SMALLER THAN 1 1/2" AND 8" FOR LINES 1 1/2" AND LARGER.
- MAXIMUM DISTANCE BETWEEN HANGERS FOR THREADED, LIGHT WEIGHT STEEL PIPE SHALL NOT EXCEED 12" FOR LINES 3" AND SMALLER.
- PROVIDE A MINIMUM OF ONE HANGER FOR EACH LENGTH OF BRANCH LINE PIPING.
- HANGERS SHALL NOT BE LOCATED WITHIN 3" OF THE CENTERLINE OF AN UPRIGHT SPRINKLER.
- THE MAXIMUM UNSUPPORTED LENGTH AT THE END OF A BRANCH LINE SHALL BE 30" FOR UPRIGHT HEADS AND 12" FOR PENDENT HEADS.
- HANGERS AT THE END OF BRANCH LINES SERVING PENDENT HEADS SHALL BE OF THE TYPE HANGERS RESIST UPWARD MOVEMENT OF PIPING SUCH AS JOUSTABLE CLIP TYPE, ETC.
- THE LENGTH OF AN UNSUPPORTED ARMORER TO A SPRINKLER SHALL NOT EXCEED 24" FOR STEEL PIPE OR 12" FOR COPPER PIPE.
- HANG SHALL BE SUPPORTED BY AT LEAST ONE HANGER BETWEEN EACH OF THE BRANCH LINES.
- FIRE PROTECTION PIPING SHALL NOT BE SUPPORTED FROM EXISTING OR THE PIPING OF OTHER TRADES.
- THE CONTRACTOR MAY COORDINATE WITH CONTRACTORS OF OTHER TRADES TO USE COMMON MEANS OF SUPPORT. SUBMIT FOR APPROVAL ALL PROPOSED DESIGN DATA RELATING TO THE SUPPORT AS WELL AS VERIFICATION OF THE RESPONSIBILITY FOR THE SUPPORT.
- SUPPORT HANGERS FROM APPROVED CONCRETE INERTS WHERE SLABS ARE AVAILABLE.
- WHERE PIPING IS REQUIRED TO BE HUNG FROM OTHER THAN CONCRETE SLABS, SUCH AS PRECAST OR METAL DECKING, SUBMIT PROPOSED METHOD OF SUPPORT TO THE STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.

WELDING

- WELDING METHODS FOR FIRE PROTECTION PIPING SHALL BE IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) STANDARD D10.1, LEVEL A-3.
- WELDING INSIDE NEW BUILDINGS UNDER CONSTRUCTION SHALL BE PERMITTED ONLY WHEN THE STRUCTURE AND CONTENTS ARE NON-COMBUSTIBLE AND WHEN PROCEDURES COMPLY WITH NFPA 803.
- WELDING IS PERMITTED AT THE CONTRACTOR'S SHOP OR IN DESIGNATED AREAS ON SITE.
- WELDING IS NOT PERMITTED WITHIN EXISTING BUILDINGS.
- ALL WELDED FITTINGS, EXCEPT PIPE BENT JOINTS, SHALL BE ULL LISTED.
- WELDING SHALL NOT BE PERMITTED IF THERE IS IMPROVEMENT OF RAIN, SNOW, SLEET OR HIGH WINDS ON THE WELD AREA.
- LIMITATIONS ON WELDING PROCEDURES LISTED IN NFPA 803-2.5.2.2 AND APPENDIX "A" SHALL APPLY.
- WELDING SHALL BE PERFORMED ONLY BY WELDERS QUALIFIED IN ACCORDANCE WITH AWS D10.1. WELDED WELDING PROCEDURES AND QUALITY ASSURANCE PROCEDURES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS D10.1 AND SHALL BE MAINTAINED ON SITE. AVAILABLE TO THE AUTHORITY HAVING JURISDICTION.
- EACH WELD SHALL BE IMPRINTED ON THE PIPE, ADJACENT TO THE WELD WITH THE WELDERS IDENTIFICATION STAMP.
- MAINTAIN JOUSTABLE WELDING RECORDS IN ACCORDANCE WITH NFPA 803-2.5.2.4 AVAILABLE FOR INSPECTION BY AUTHORITIES HAVING JURISDICTION.

FLUSHING AND TESTING

- FLUSHING OF INSIDE SPRINKLERS SHALL NOT BE PERFORMED PRIOR TO INDEPENDENT FLUSHING OF THE PRIVATE FIRE SERVICE MAIN AND LEAD-IN PIPING.
- WHERE AN EXISTING PRIVATE FIRE SERVICE MAIN SUPPLIES NEW OR MODIFIED SPRINKLER SYSTEM, FLUSH MAIN VIA THE FIRE DEPARTMENT CONNECTION PRIOR TO FLUSHING THE SPRINKLER SYSTEM. REMOVE ALARM VALVE, CHECK VALVE AND SENSE CLAPPERS AND INSTALL INDICATING TEST BLANKS AS REQUIRED FOR FLUSHING. REMOVE TEST BLANKS AND REINSTALL CLAPPERS UPON COMPLETION OF FLUSHING.
- SPRINKLER RISERS, FEED MAINS, CROSS MAINS AND BRANCH CIRCUITS SHALL BE HYDRAULICALLY FLUSHED (IN THAT ORDER) IN THE DIRECTION OF NORMAL FLOW.
- WHERE SIZE REDUCTIONS IN CROSS MAINS PROHIBIT OBTAINING SUFFICIENT FLOW FOR SCOURING OF LARGER PIPE SIZES, OPEN CROSS MAIN AND FLUSH FROM THE END OF LARGER SIZE PIPING.
- INSTALL TEMPORARY HOSES TO PERMIT REMOVAL OF FLUSHING WATER TO A LOCATION WHICH WILL NOT RESULT IN PROPERTY DAMAGE.
- WHERE INSPECTION OF PIPING REVEALS SCALE OR OTHER MATERIALS NOT REMOVABLE BY HYDRAULIC FLUSHING OR WHERE WATER PRESSURES ARE INADEQUATE FOR HYDRAULIC FLUSHING, PIPING SHALL BE FLUSHED BY THE HYDRO-PNEUMATIC METHOD. CONTRACTOR SHALL TAKE APPROPRIATE PRECAUTIONS TO PREVENT FLUSHING OF THE SPRINKLER SYSTEM INTO THE PRIVATE FIRE SERVICE MAIN.
- WHERE FLUSHING REVEALS THAT A LINE SECTION IS SEVERELY OBSTRUCTED WITH PACKED MATERIALS, OPEN PIPING AND CLEAN BY SCOURING OR OTHER POSITIVE MEANS.
- WATER SHOULD BE ADMITTED TO DRY SPRINKLER SYSTEM SEVERAL DAYS BEFORE FLUSHING TO SYSTEM SCALE, ETC. PRECAUTIONS SHOULD BE TAKEN TO PREVENT FREEZING.
- ALL NEW NET AND DRY SPRINKLER SYSTEMS OR MODIFIED PORTIONS OF EXISTING SYSTEMS SHALL BE HYDROSTATICALLY TESTED AT NOT LESS THAN 200# OR MAXIMUM WORKING PRESSURE PLUS 50# WHICHEVER IS GREATER. TEST DURATION SHALL BE 2 HOURS. PROVIDE TEST GAUGES AS REQUIRED.
- NO VISIBLE LEAKAGE SHALL BE PERMITTED DURING HYDROSTATIC TEST PERIOD OTHER THAN "MINOR" LEAKAGE WHICH DOES NOT RESULT IN DROPPING.
- ALL HYDROSTATIC TESTS SHALL BE WITNESSED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- ADDITIVES AND CORROSIVE CHEMICALS, SODIUM SILICATE, OR DERIVATIVES OF SODIUM SILICATE, BORIC OR OTHER CHEMICALS SHALL NOT BE USED FOR TESTING SYSTEMS OR SEALING LEAKS.
- WHERE TEST BLANKS ARE UTILIZED TO SEAL PIPE OPENINGS, THEY SHALL BE OF THE SELF-INDICATING TYPE WITH A PAINTED RED LOG PROVIDING BEYOND THE FLANGE.
- DRY PIPE VALVE CLAPPERS SHALL BE REMOVED OR LIFTED FROM ITS SEAT DURING ALL TESTS INVOLVING PRESSURES OVER 50#.
- DRY SPRINKLER SYSTEMS SHALL BE SUBJECTED TO A PNEUMATIC TEST AT 40 PSI OVER 24 HOUR PERIOD. LEAKAGE SHALL NOT EXCEED 1/2 PSI OVER THE 24 HOUR PERIOD. PROVIDE TEST GAUGES AS REQUIRED.
- DRY SPRINKLER SYSTEMS SHALL BE OPERATIONALLY TESTED BY THE INSPECTOR'S TEST CONNECTION AND MEASURING THE TEST TIME.
- MAIN DRAIN SHALL BE TESTED BY FULLY OPENING THE MAIN DRAIN VALVE AND FLOWING WATER UNTIL SYSTEM PRESSURE STABILIZES, RECORD NORMAL PRESSURE AND FLOWING PRESSURE. PROVIDE TEST GAUGES AS REQUIRED.
- CONTRACTOR SHALL COMPLETE LONGITUDINALS MATERIAL AND TEST CERTIFICATE FOR ABOVE GROUND PIPING IN ACCORDANCE WITH NFPA 803 AND SUBMIT TO AUTHORITY HAVING JURISDICTION.
- ALL FLUSHING AND TESTING OPERATIONS SHALL BE IN ACCORDANCE WITH NFPA 803 AND NFPA 803.

SHOPS

- PROVIDE A SIGN AT SPRINKLER AND/OR STANDPIPE VALVE ROOM DOOR INDICATING SPRINKLER CONTROL VALVES AND/OR STANDPIPE CONTROL VALVES AS APPROPRIATE IN ACCORDANCE WITH BSQA 180.0. LETTERS SHALL BE OF A CONSPICUOUS COLOR AND BE AT LEAST 4" HIGH.
- WHEN CONTROL VALVES FOR A COVERED STANDPIPE/SPRINKLER SYSTEM ARE LOCATED IN A SEPARATE ROOM, PROVIDE A DOOR SIGN INDICATING "STANDPIPE CONTROL VALVES". OTHERWISE PROVIDE A 2' X 6" CHAIN HANG SIGN AT CONTROL VALVE ROTTER RODDER HEADS & GAYS OR APPROVED EQUAL.
- SEE FIRE DEPARTMENT CONNECTIONS FOR ESCUTCHEON REQUIREMENTS.
- PROVIDE A FRAMED NAMEPLATE ADJACENT TO VALVE HEADS FOR HYDRAULICALLY DESIGNED SYSTEMS. NAMEPLATE SHALL BE IN ACCORDANCE WITH NFPA 803-6.5.
- ALL VALVES SHALL BE TAGGED IN ACCORDANCE WITH NFPA 803-2.6 AND BSQA 180.0.6.

SHOP DRAWINGS

- CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION OF SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION OR FABRICATION OF MATERIALS, EQUIPMENT, ETC.
- SHOP DRAWINGS FOR HYDRAULICALLY DESIGNED SYSTEMS SHALL BE PREPARED IN ACCORDANCE WITH NFPA 803, CHAPTER 6. AS A MINIMUM, SHOP DRAWINGS SHALL INCLUDE:
 - HAZARD CLASSIFICATION.
 - SPRINKLER SYSTEM WATER REQUIREMENTS, INCLUDING INSIDE ROSE AND OUTSIDE HYDROSTATIC ALLOWANCES.
 - WATER SUPPLY CHARACTERISTICS.
 - SPRINKLER PLAN WITH HYDRAULIC REFERENCE POINTS, PIPING SIZES AND LENGTHS, ETC.
 - DESCRIPTION OF SPRINKLERS USED.
 - ELEVATION INFORMATION.
 - HYDRAULIC CALCULATIONS.
 - SUMMARY SHEET.
 - VALVE AND EQUIPMENT GUT SHEETS.
 - PIPING SPECIFICATION.
- THE FOLLOWING SYSTEMS SHALL BE HYDRAULICALLY DESIGNED:
 - SYSTEMS HAVING STANDPIPES IN BUILDINGS WHICH ARE NOT COMPLETELY SPRINKLED.
 - SYSTEMS WITH OPEN SPRINKLERS OR DELUGE SYSTEMS.
 - SYSTEMS WITH CONJUNCT SPRINKLER AND ROSE STREAM OR HYDRANT ALLOWANCES.
 - SPRINKLER SYSTEMS UTILIZING OTHER THAN 1/2" OFFICE SPRINKLERS.
 - SYSTEMS HAVING UNUSUAL PIPING REQUIREMENTS.

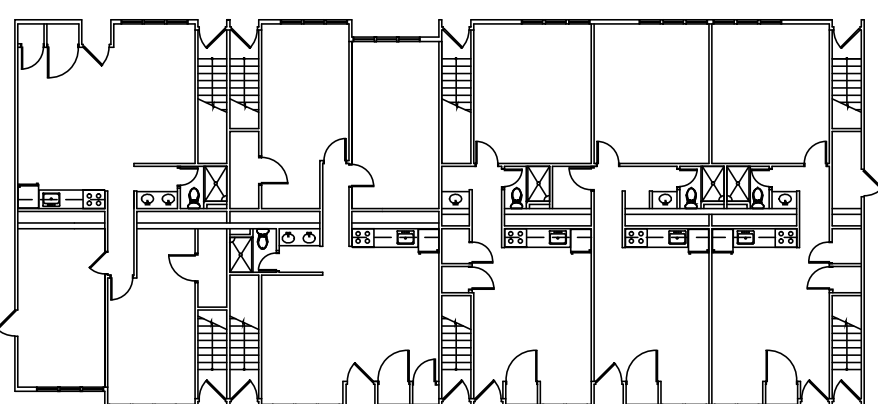
FIRE PROTECTION SYMBOLS

- PIPING
- PIPING ABOVE GRADE (EXPOSED OR CONCEALED)
 - PIPING BELOW GRADE
 - PIPE TURNING DOWN
 - PIPE TURNING UP
 - LOW VOLTAGE ELEC. CONTROL
 - COMPRESSED AIR
 - LINE VOLTAGE ELECTRICAL
 - FIRE ALARM (LOW VOLTAGE ELEC.)
 - FIRE DETECTION (MECHANICAL OR LOW VOLTAGE ELECTRICAL)
- TEE
- 45° ELBOW
 - 45° ELBOW
 - CROSS
 - RISER NIPPLE
 - UNIFLUE 1/2" CAP (FLUSHING OR DRAIN CONNECTION)
 - FLANGED CONNECTION
- VALVES
- OS 1/2" GATE VALVE
 - GATE VALVE (NORMALLY OPEN)
 - GATE VALVE (NORMALLY CLOSED)
 - CHECK VALVE
 - BALL VALVE
 - GAUGE PETCOCK
 - AUXILIARY DRAIN CONNECTION
- ALARM VALVES
- NET ALARM VALVE
- DRY VALVE
- DOUBLE CHECK VALVE ASSEMBLY
- SPRINKLER HEADS/NOZZLES (SEE SPECS. FOR TEMP. RATINGS)
- PENDANT SPRINKLER HEAD
 - UPRIGHT SPRINKLER HEAD
 - PENDANT 1/2" UPRIGHT FOR PROTECTION ABOVE 4' BELOW CLG.
 - DRY PENDANT SPRINKLER HEAD (LENGTH AS REQ'D)
 - SIDEWALL SPRINKLER HEAD
 - DRY SIDEWALL SPRINKLER HEAD
- BACKFLOW PREVENTERS (ULFM APPROVED)
- DOUBLE CHECK VALVE ASSEMBLY
- FIRE DEPARTMENT CONNECTIONS
- HALL MTD. SHAMOSE CONNECTION W/SCUTHEON
 - CAP 4 CHAINS (SURFACE MTD. OR FLUSH-SEE SPEC)
 - RED LIGHT 1/2" FIRE DEPT. CONNECTION (WEATHERPROOF)
- ALARM DEVICES
- WATER MOTOR GONG
 - PRESSURE SWITCH
 - FLOK SWITCH
 - TAMPER SWITCH
- MISCELLANEOUS
- UTILITY WATER METER
 - PRESSURE GAUGE (0-300#)
 - FILL GUP OR DRAIN GUP
 - AIR COMPRESSOR W/PRESSURE RELIEF VALVE FOR DRY PIPE VALVE
 - FIRE PROTECTION RISER TAG FOR LINES CONTINUED ON FLOOR ABOVE AND/OR BELOW (SEE DESCRIPTION)
 - FIRE PROTECTION RISER TAG FOR LINES CONTINUED ON OTHER DRAWINGS (SEE DESCRIPTION)
- ABBREVIATIONS
- | ABBREVIATION | DESCRIPTION | ABBREVIATION | DESCRIPTION |
|--------------|-------------------------|--------------|-----------------|
| AFF | ABOVE FINISHED FLOOR | T | TEE |
| CLG | CEILING | VF | VERIFY IN FIELD |
| CU | COPPER | VLV | VALVE |
| CUFT | CUBIC FEET | W | WITH |
| CV | CUBIC VOLUME | WIR | WATER |
| DN | DOWN | | |
| EL | ELBOW | | |
| ELEC | ELECTRIC | | |
| ELEV | ELEVATION | | |
| FPS | FEET PER SECOND | | |
| FT | FEET | | |
| GAL | GALLONS | | |
| GPH | GALLONS PER HOUR | | |
| GPM | GALLONS PER MINUTE | | |
| HD | HEAD | | |
| HP | HORSEPOWER | | |
| ID | INSIDE DIAMETER | | |
| IN | INCHES | | |
| INT | INTERNATIONAL PIPE SIZE | | |
| LF | LINEAR FEET | | |
| MTD. | MOUNTED | | |
| NIS | NOT TO SCALE | | |
| OD | OUTSIDE DIAMETER | | |
| OSAY | OUTSIDE STEM & YOKES | | |
| PIV | POST INDICATOR VALVE | | |
| PSI | POUNDS PER SQUARE INCH | | |
| RN | RISER NIPPLE | | |

Revisions

Date	Issue	Description
06-03-15	1	ISSUED FOR CONSTRUCTION
11-16-15	2	REVISED PER NJDOA ELECTRONIC STAMP

Key Plan



Consultants

LINWOOD ENGINEERING ASSOCIATES, P.A.

CONSULTING MECHANICAL & ELECTRICAL ENGINEERS

LEA

955 Lincoln Ave.
Glen Rock, New Jersey
07452
t: 201.857.3998
f: 201.857.3984
www.linwoodengineering.com

2801 Dupont Drive-Suite 150
Irvine, California
92612
t: 714.424.0001
f: 714.424.0004

Project

INTERIOR RENOVATIONS
AT THE
BUTTERNUT - M RESIDENCE

RAMAPO COLLEGE
OF NEW JERSEY
505 Ramapo Valley Road
Mahwah, New Jersey 07430-1680

Client

RAMAPO COLLEGE
OF NEW JERSEY
505 Ramapo Valley Road
Mahwah, New Jersey 07430-1680

SNS Architects & Engineers, PC

1 PARAGON DRIVE, MONTVALE, NEW JERSEY 07645
tel: 201.573.1767 fax: 201.573.0808 www.sns-arch-eng.com

Fay W. Logan, AIA

John M. Lignos, AIA

Lorin J. Sonenshine, AIA

Steven Napolitano, PE

Michael T. Davina, P.E.
NJ #48654
CT #0025779

Robert J. Hatch, P.E.
AR #13868
CA #E16118
CT #15318
FL #69560
MA #48516
NJ #35419
NY #019975
PA #036014-E

Cert./Lic. No.

Date 04-23-15 Scale AS NOTED

Drawn By PSC/edd Checked By MD

Dwg. Title

FIRE PROTECTION NOTES & SYMBOLS

Work Order No.

Dwg. No.

4698M

FP001