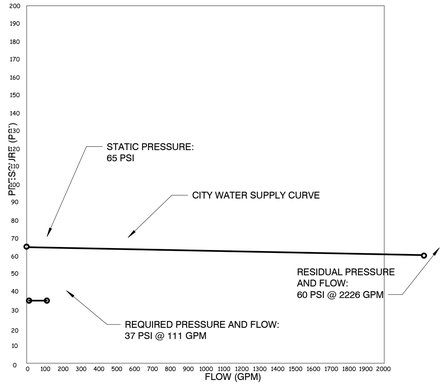
ARCH D

FIRE PROTECTION SPECIFICATIONS

SECTION 15300 - FIRE PROTECTION
PART I GENERAL
1.01 DESCRIPTION OF WORK:
A. EXTENT OF FIRE PROTECTION WORK IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
B. THE SYSTEM SHALL BE WET PIPE SYSTEM
1.02 QUALITY ASSURANCE:
A. CODES AND STANDARDS:
1. NFPA COMPLIANCE: INSTALL FIRE PROTECTION SYSTEM IN ACCORDANCE WITH NFPA 13R 'STANDARDS FOR THE INSTALLATION OF SPRINKLER SYSTEMS IN LOW-RISE RESIDENTIAL OCCUPANCIES'. NFPA 14, 'STANDARDS FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS' AND NFPA 24 'STANDARD FOR OUTSIDE PROTECTION.'
2. UL COMPLIANCE: PROVIDE FIRE PROTECTION PRODUCTS IN ACCORDANCE WITH UL STANDARDS; PROVIDE UL LABEL ON EACH PRODUCT.
3. FIRE DEPARTMENT/MARSHAL COMPLIANCE: INSTALL FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH LOCAL REGULATIONS OF FIRE DEPARTMENT OR FIRE MARSHAL.
4. QUALIFICATIONS: HYDRAULIC CALCULATIONS AND PREPARATION OF SHOP DRAWINGS SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A RESPONSIBLE MANAGING EMPLOYEE WHO HOLDS A NCET LEVEL III CERTIFICATION. INSTALLATION SHALL BE PERFORMED BY A LICENSED SPRINKLER CONTRACTOR.
1.03 SUBMITTALS:
A. PRODUCT DATA: SUBMIT MANUFACTURER`S TECHNICAL PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR FIRE PROTECTION MATERIALS AND PRODUCTS.
B. SHOP DRAWINGS: SUBMIT SCALED LAYOUT DRAWINGS FOR FIRE PROTECTION PIPE AND FITTINGS INCLUDING, BUT NOT LIMITED TO, PIPE AND TUBE SIZES, LOCATIONS, ELEVATIONS, AND SLOPES OF HORIZONTAL RUNS, WALL AND FLOOR PENETRATIONS, AND CONNECTIONS. INDICATE INTERFACE AND SPATIAL RELATIONSHIPS BETWEEN PIPING AND APPROXIMATE EQUIPMENT.
C. APPROVAL DRAWINGS: PREPARE APPROVAL DRAWINGS OF FIRE PROTECTION SYSTEMS INDICATING PIPE SIZES, PIPE LOCATIONS, FITTINGS, SHUTOFFS, EQUIPMENT, ETC. SUBMIT TO AGENCY HAVING JURISDICTION FOR APPROVAL. SUBMIT ONE APPROVED COPY, BEARING STAMP AND/OR SIGNATURE OF AGENCY HAVING JURISDICTION, BEFORE PROCEEDING WITH INSTALLATION.
D. APPROVAL CALCULATIONS: PREPARE HYDRAULIC CALCULATIONS OF FIRE PROTECTION SYSTEM. SUBMIT TO AGENCY HAVING JURISDICTION FOR APPROVAL. SUBMIT TO ARCHITECT, ONE APPROVED COPY, BEARING STAMP AND/OR SIGNATURE OF AGENCY HAVING JURISDICTION, BEFORE PROCEEDING WITH INSTALLATION.
E. RECORD DRAWINGS: AT PROJECT CLOSEOUT, SUBMIT RECORD DRAWINGS OF INSTALLED FIRE PROTECTION PIPING AND PRODUCTS.
PART II PRODUCTS
2.01 MATERIALS AND PRODUCTS:
A. GENERAL: PROVIDE PIPING MATERIALS AND FACTORY-FABRICATED PIPING PRODUCTS OF SIZES, TYPES, PRESSURE RATINGS, TEMPERATURE RATINGS, AND CAPACITIES AS INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE SIZES AND TYPES MATCHING PIPING AND EQUIPMENT CONNECTIONS; PROVIDE FITTINGS OF MATERIALS WHICH MATCH PIPE MATERIALS USED IN FIRE PROTECTION SYSTEM.
2.02 BASIC IDENTIFICATION:
A. GENERAL: PROVIDE IDENTIFICATION AS FOLLOWS:
1. FIRE PROTECTION PIPING: PLASTIC PIPE MARKERS
2. FIRE PROTECTION VALVES: PLASTIC VALVE TAGS.
2.03 BASIC PIPES AND PIPE FITTINGS:
A. GENERAL: PROVIDE PIPES AND PIPE FITTINGS AS FOLLOWS:
B. BLACK STEEL PIPE: SCHEDULE 40 FOR ABOVE 6' BLACK STEEL PIPE AND SCHEDULE 10 FOR 6' AND SMALLER BLACK STEEL PIPE; MECHANICAL GROOVED PIPE COUPLINGS (VICTAULIC 009N/108 IGS SYSTEM OR EQUAL) AND FITTINGS (FIRELOCK, VICTAULIC IR FITTINGS, OR EQUAL); ROLL-GROOVE AND MECHANICAL LOCKING TYPE.
C. DUCTILE IRON PRESSURE PIPE: AWWA C-106 WITH FITTINGS COMPLYING WITH AWWA C-110 AND RUBBER GASKETS COMPLYING WITH AWWA C-111.
D. BRAIDED, FLEXIBLE SPRINKLER HOSE FITTINGS: DRAINED, FLEXIBLE HOSE FOR CONNECTION TO SPRINKLER HEAD WITH BRACKET IN CEILING AND/OR SIDEWALL.
1. APPROVED MANUFACTURERS: FLEXHEAD AND VICTAULIC [AH2, AH2CC, AB6, OR VS-1]
2.04 BASIC PIPING SPECIALTIES:
A. GENERAL: PROVIDE PIPING SPECIALTIE:
1. PIPE ESCUTCHEONS
2. DIELECTRIC UNIONS
3. DRIP PANS
4. PIPE SLEEVES
5. SLEEVE SEALS
6. FIRE BARRIER PENETRATION SEALS
2.05 BASIC SUPPORTS AND ANCHORS:
A. GENERAL: PROVIDE SUPPORTS AND ANCHORS AS FOLLOWS:
1. ADJUSTABLE STEEL CLEVIS HANGERS, ADJUSTABLE STEEL BAND HANGERS, OR ADJUSTABLE BAND HANGERS, FOR HORIZONTAL-PIPING HANGERS AND SUPPORTS.
2. TWO-BOLT RISER CLAMPS FOR VERTICAL PIPING SUPPORTS.
3. STEEL TURNBUCKLES AND MALLEABLE IRON SOCKETS FOR HANGER-ROD ATTACHMENTS.
4. CONCRETE INSERTS, TOP-BEAM C-CLAMPS, SIDE BEAM OR CHANNEL CLAMPS OR CENTER BEAM CLAMPS FOR BUILDING ATTACHMENTS.
B. ANCHORS:
1. GENERAL: PROVIDE ANCHORAGES FOR TEES, PLUGS, CAPS, BENDS, AND HYDRANTS IN ACCORDANCE WITH NFPA 24.
2. CLAMPS, STRAPS AND WASHERS: STEEL, ANSI/ASTM A-506
3. RODS: STEEL, ANSI/ASTM A-575
4. OD COUPLINGS: MALLEABLE IRON, ANSI/ASTM A-197
5. BOLTS: STEEL, ANSI/ASTM A-307
6. CAST-IRON WASHERS: ANSI/ASTM A-126, CLASS A
7. THRUST BLOCKS: 2500 PSI CONCRETE
2.06 BASIC VALVES:
A. GENERAL: PROVIDE VALVES AS FOLLOWS:
B. INTERIOR VALVES:
1. SECTIONAL: GATE VALVES OR BUTTERFLY VALVES; UL LISTED.
2. CHECK: SWING CHECK VALVES; UL LISTED.
C. EXTERIOR VALVES:
1. GATE VALVES: STANDARD SHUT-OFF VALVES CAST INTO BODY, OUTSIDE-SCREW-AND-YOKE TYPE COMPLYING WITH AWWA C-500. SIZES 2" AND SMALLER SHALL BE BRONZE, 175 PSI WG, RISING STEM, SCREWED BONNET. SIZES 2 1/2" AND LARGER SHALL BE IRON BODY BRONZE MOUNTED, 175 PSI WG, SOLID WEDGE, REPLACEABLE SEAT. (VICTAULIC SERIES 771, OR EQUAL)
2. CHECK VALVES: GRAVITY-OPERATED, REGULAR TYPE, IRON-BODIED, BRONZE FITTED WITH METAL-TO-METAL OR RUBBER FACED CHECKS, COMPLYING WITH ASTM A-12. (VICTAULIC SERIES 717, OR EQUAL)
3. BUTTERFLY VALVES: RUBBER SEATED, EQUIPPED WITH GEAR OR TRAVELLING NUT ACTUATOR TO MINIMIZE WATER HAMMER, COMPLYING WITH AWWA C-50. (VICTAULIC SERIES 705 FIRELOCK, OR EQUAL)
4. INDICATOR POSTS: TELESCOPIC BARREL TYPE FOR USE WITH UNDERGROUND GATE VALVES.
2.07 SPECIAL VALVES:
A. GENERAL: PROVIDE VALVES, UL LISTED, IN ACCORDANCE WITH THE FOLLOWING LISTING. PROVIDE SIZES AND TYPES WHICH MATE AND MATCH PIPING AND EQUIPMENT CONNECTIONS.
B. ALARM CHECK VALVE: PROVIDE CAST-IRON WATER FLOW ALARM CHECK VALVE, 175 PSI WORKING PRESSURE. PROVIDE TRIM FOR BYPASS, DRAIN, ALARM, PRESSURE GAUGES AND FILL LINE.
1. APPROVED MANUFACTURERS: BERMAD, RELIABLE, VICTAULIC, VIKING, AND TYCO
C. HOSE OUTLET VALVES: PROVIDE ANGLE HOSE VALVES, 2-1/2" SIZE WHERE NOT OTHERWISE INDICATED.
D. FIRE DEPARTMENT CONNECTION VALVE: PROVIDE FIRE DEPARTMENT CONNECTION IRON SWING CHECK VALVE, 175 PSI RATED WORKING PRESSURE, OF SIZE AND END TYPE INDICATED.
E. DETECTOR CHECK VALVES: PROVIDE CAST-IRON BODY DETECTOR CHECK VALVE, BRONZE FITTED, WITH TAPPED BOSSES ON EACH SIDE FOR BY-PASS METER, AIR VENT, AND COVER-MOUNTED EYEBOLT.
1. APPROVED MANUFACTURERS: AMES, WATTS, AND WILKINS
F. BACKFLOW PREVENTION VALVES
1. PROVIDE APPROVED DOUBLE VALVE ASSEMBLIES TO SEPARATE AUTOMATIC FIRE SPRINKLER SYSTEM FROM POTABLE WATER SYSTEM.
2.08 HYDRANTS:
A. GENERAL: PROVIDE CAST-IRON SIDEWALK FIRE HYDRANTS WITH THREADED MALE NOZZLE CONFORMING TO 'AMERICAN NATIONAL STANDARD FIRE HOSE CONNECTION SCREW THREADS' UNLESS OTHER HOSE CONNECTION REQUIRED BY LOCAL FIRE AUTHORITIES.
B. PROVIDE DRY-BARREL FIRE HYDRANTS (BASE VALVE TYPE) COMPLYING WITH AWWA C-502 AND AS FOLLOWS:
1. WORKING PRESSURE, L50 PSI UNLESS OTHERWISE INDICATED.
2. VALVE OPENING DIRECTION, CLOCKWISE, INDICATED BY ARROW AND THE WORD 'OPEN' CAST ON DOME.
3. NOZZLES, TWO 2-1/2" HOSE CONNECTIONS AND ONE 4-1/2" PUMPER CONNECTION WITH CAPS AND CHAINS. NOZZLE CAP NUTS TO MATCH OPERATING STEM NUTS. PROVIDE NATIONAL STANDARD HOSE THREADS ON 2-1/2". HOSE THREADS ON 4-1/2" PUMPER CONNECTION SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS: O.D.-4.875", P.D.-4.777', ROOT DIAMETER 4.653', 6 THREADS PER INCH, GAUGE 2C.
2.09 AUTOMATIC SPRINKLERS:
A. GENERAL: PROVIDE AUTOMATIC SPRINKLERS OF TYPE INDICATED ON DRAWINGS, AND IN ACCORDANCE WITH THE FOLLOWING LISTING. PROVIDE FUSIBLE LINKS FOR 165°F (74°C) AND SPRINKLERS WITH NOMINAL 1/2" DISCHARGE ORIFICE UNLESS OTHERWISE INDICATED.
1. UPRIGHT
2. PENDENT
3. FLUSH PENDENT
4. CONCEALED PENDENT
5. HORIZONTAL SIDEWALL
6. FINISH: CHROME PLATE FOR OCCUPIED AREAS, CAST BRASS FOR UNOCCUPIED AREAS.
B. APPPROVED SPRINKLER HEAD MANUFACTURERS: TYCO, VICTAULIC, VIKING, RELIABLE
C. SPRINKLER CABINET AND WRENCH: FURNISH STEEL, BAKED RED ENAMELED, SPRINKLER BOX WITH CAPACITY TO STORE 10 SPRINKLERS AND WRENCH SIZED TO SPRINKLERS.
D. IN AREAS SUBJECT TO PHYSICAL ABUSE SUCH AS GYMNASIUMS AND MECHANICAL ROOMS, PROVIDE STEEL WIRE GUARDS OVER SPRINKLERS.
2.10 WALL TYPE SIAMESE CONNECTIONS:
A. GENERAL: PROVIDE WALL TYPE CAST BRASS SIAMESE CONNECTIONS AND ESCUTCHEON PLATE ASSEMBLY, WITH 2, 2-1/2' FIRE DEPARTMENT INLETS WITH FEMALE HOSE CONNECTIONS, AMERICAN NATIONAL FIRE HOSE CONNECTION SCREW THREAD, EQUIPPED WITH INDIVIDUAL DROP CLAPPER VALVES, EQUIPPED WITH PLUGS AND CHAINS, CONSTRUCTION FEATURES AS INDICATED, AND CONSTRUCTED WITH THE FOLLOWING ADDITIONAL CONSTRUCTION FEATURES:
1. FINISH: POLISHED BRASS
2. INLET PIPE: 4" PIPE.
3. CAST LETTERING: "AUTO. SPKR."
4. ESCUTCHEON: 12" DIAMETER OR 7" X 14" RECTANGLE
5. SIAMESE CONNECTION: FLUSH, STACKED INLETS; FLUSH, ADJACENT INLETS; Y-TYPE, INLETS STRAIGHT, PROJECTING CONFIGURATION; OR Y-TYPE, INLETS 45°, PROJECTING CONFIGURATION.
PART III EXECUTION
3.01 INSPECTION:
A. GENERAL: EXAMINE AREAS AND CONDITIONS UNDER WHICH FIRE PROTECTION MATERIALS AND PRODUCTS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.
3.02 INSTALLATION OF BASIC IDENTIFICATION:
A. GENERAL: INSTALL MECHANICAL IDENTIFICATION SUCH THAT ALL FIRE PROTECTION PIPING AND EQUIPMENT CAN BE IDENTIFIED.
B. INSTALL FIRE PROTECTION SIGNS ON PIPING IN ACCORDANCE WITH NFPA 13 AND NFPA 14 REQUIREMENTS.
3.03 INSTALLATION OF OUTSIDE PIPING:
A. GENERAL: INSTALL EXTERIOR FIRE WATER SYSTEM IN COMPLIANCE WITH APPLICABLE PROVISIONS OF NFPA 24 AND AS HEREIN SPECIFIED. ARRANGE AND PAY FOR TAPS AND SERVICE BY LOCAL WATER UTILITY. FOR SLIP-JOINT PIPE, PROVIDE 3000 PSI CONCRETE THRUST BLOCKS AGAINST UNDISTURBED SOIL.
B. DUCTILE-IRON PIPE: INSTALL IN ACCORDANCE WITH RECOMMENDED PROCEDURES OF THE CAST-IRON PIPE RESEARCH ASSOCIATION.
C. HYDRANTS: INSTALL IN ACCORDANCE WITH AWWA M-17.
D. CONTROL VALVES: INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
E. JOINT ADAPTERS: MAKE JOINTS BETWEEN CAST-IRON PIPE AND OTHER TYPES OF PIPE WITH STANDARD MANUFACTURED CAST-IRON ADAPTERS AND FITTINGS.
F. INTERIOR INSPECTION: INSPECT CONDUIT TO DETERMINE WHETHER LINE DISPLACEMENT OR OTHER DAMAGE HAS OCCURRED.
1. IF THE INSPECTION INDICATES POOR ALIGNMENT, DEBRIS, DISPLACED PIPE, INFILTRATION, OR OTHER DEFECTS, CORRECT SUCH DEFECTS TO SATISFACTION OF ARCHITECT/ENGINEER.
G. CLEANING CONDUIT: CLEAR INTERIOR OF CONDUIT OF DIRT AND OTHER SUPERFLUOUS MATERIALS AS WORK PROGRESSES. MAINTAIN SWAB OR DRAG IN LINE AND PULL PAST EACH JOINT AS IT IS COMPLETED. PLACE PLUGS IN END OF UNCOMPLETED CONDUIT AT END OF DAY OR WHENEVER WORK STOPS. FLUSH LINES TO REMOVE COLLECTED DEBRIS BEFORE CONNECTING TO OTHER FIRE PROTECTION SYSTEMS. FLUSH CONDUIT AT RATES OF FLOW RECOMMENDED BY NFPA 24 UNLESS HIGHER RATES REQUIRED BY LOCAL AUTHORITIES.
3.04 INSTALLATION OF PIPES AND PIPE FITTINGS:
A. GENERAL: INSTALL PIPES AND PIPE FITTINGS IN ACCORDANCE WITH DRAWING AND REQUIREMENT OF AUTHORITY HAVING JURISDICTION. NOTE THAT ALL WORK INCLUDING UNDERGROUND LINES MUST BE INSTALLED BY A LICENSED SPRINKLER CONTRACTOR.
B. COMPLY WITH REQUIREMENTS OF NFPA 13 AND NFPA 14 FOR INSTALLATION OF FIRE PROTECTION PIPING MATERIALS. INSTALL PIPING PRODUCTS WHERE INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING SYSTEMS COMPLY WITH REQUIREMENTS AND SERVE INTENDED PURPOSES.
C. COORDINATE WITH OTHER WORK, INCLUDING PLUMBING PIPING, AS NECESSARY, TO INTERFACE COMPONENTS OF FIRE PROTECTION PIPING PROPERLY WITH OTHER WORK.
D. INSTALL DRAIN PIPING AT LOW POINTS OF PIPING SYSTEMS. PROVIDE DRY DRUM DRIPS WHERE INDICATED.
E. INSTALL SECTIONAL VALVES IN INLET PIPING, AT BOTTOM OF EACH RISER, AND IN LOOPS.
F. INSTALL FIRE DEPARTMENT CONNECTION VALVES IN PIPING WHERE FIRE DEPARTMENT CONNECTIONS ARE INDICATED.
G. INSTALL WATER FLOW INDICATORS WHERE INDICATED.
H. MOUNT SUPERVISORY SWITCHES ON EACH SECTIONAL VALVE.
I. INSTALL PRESSURE GAGES AT TOP OF EACH STANDPIPE.
J. INSTALL MANUAL SHUTOFF AT EACH AUDIBLE ALARM STATION.
K. INSTALL INSPECTORS TEST CONNECTIONS WHERE INDICATED, OR AT MOST REMOTE POINT FROM RISER.
3.05 INSTALLATION OF VALVES:
A. INSTALL VALVES IN PER MANUFACTURES WRITTEN RECOMMENDATIONS.
B. DETECTOR CHECK VALVES: INSTALL IN HORIZONTAL POSITION AS INDICATED, ORIENTED FOR PROPER FLOW DIRECTION. INSTALL BY-PASS METER WITH GLOBE VALVE AND CHECK VALVE, IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DIRECTIONS.
C. INSTALL BACKFLOW PREVENTION VALVE TO SEPARATE SPRINKLER SYSTEM FROM POTABLE WATER SYSTEM.
3.06 INSTALLATION OF FIRE PROTECTION SPECIALTIES:
A. GENERAL: INSTALL FIRE PROTECTION SPECIALTIES AS INDICATED, AND IN ACCORDANCE WITH NFPA 13 AND 14. FURNISH WIRING REQUIREMENTS TO ELECTRICAL INSTALLER FOR ELECTRICAL WIRING OF SUPERVISORY SWITCHES.
3.07 FIELD QUALITY CONTROL:
A. 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 PLACED IN SERVICE, FLUSH ENTIRE SPRINKLER SYSTEM, AS REQUIRED TO REMOVE FOREIGN SUBSTANCES, UNDER PRESSURE AS SPECIFIED IN NFPA 13 AND NFPA 13R. CONTINUE FLUSHING UNTIL WATER IS CLEAR, AND CHECK TO ENSURE THAT DEBRIS HAS NOT CLOGGED SPRINKLERS.
B. PERFORM HYDROSTATIC TESTING OF COMPLETED OUTSIDE LINES IN ACCORDANCE WITH NFPA 24 UNLESS MORE STRINGENT TEST REQUIRED BY LOCAL AUTHORITIES HAVING JURISDICTION.
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 NFPA STANDARDS FOR 'LITTLE OR NO LEAKAGE' AND RETEST AS SPECIFIED TO DEMONSTRATE COMPLIANCE.
3.08 ADJUSTING AND CLEANING:
A. CLEANING AND INSPECTING: CLEAN AND INSPECT FIRE PROTECTION SYSTEMS TO BE WIP-DOWN CLEAN AND FREE FROM LEAKS AND DEFECTS. INSPECT PIPE HANGERS TO INSURE SECURE STRUCTURAL CONNECTION AND THE HANGER IS TIGHT AND CARRYING THE WEIGHT OF THE PIPE.
3.09 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.

SPRINKLER LEGEND

SYM	DESCRIPTION	SPRAY	TYPE	TEMP.	ORIFICE	K	MODEL #	FINISH
▷	SIDEWALL	15'	QUICK RESPONSE	165°	1/2"	4.2	V2738	BRASS
●	PENDENT	16' X 16'	QUICK RESPONSE	155°	1/2"	4.9	V2740	SEMI-RECESSED WHITE
○	UPRIGHT	15' X 15'	STANDARD	212°	1/2"	5.6	V2703	BRASS
▶	DRY SIDEWALL	15'	STANDARD	165°	1"	5.6	V3609	BRASS



NOTE: FLOW TEST INFORMATION HAS BEEN REQUESTED. IT WLL BE PLACED ON DRAWINGS AND HYDRAULIC CALCULATIONS PERFORMED ONCE THE FLOW TEST INFORMATION HAS BEEN OBTAINED.

PRELIMINARY SPRINKLER CALCULATION

Flow test Data		
Static Pressure:	65	
Residual Pressure:	60	
Flow (GPM) :	2226	
Date taken:	??/??/2019	
Time:	MORNING	
Test taken by:	CITY OF WINTERHAVEN, FL	
Elevation of Hydrant:	0	
GPM Demand of BLDG.		
Most remote area or highest demand (Room Name)	BEDROOM	
Design Density (NFPA 13 or supplied by Insurance Co.)	0.05	
Design Area (Square footage)	196	
Overage Factor (1.20 typ.)	1.327	
Remote area GPM demand(Density x Area x Overage)	13.0046	
Standpipe GPM demand (If required)(500 gpm for the first, 250 after)	0	
Hose GPM demand (100 Light, 250 ordinary, 500 extra hazard)	100	
Total GPM (Remote Area + Standpipe + Hose)	113.0046	
Available Pressure		
Density	0.05	
Max Sprinkler Head coverage (As per NPFA 13 table 4-2.2)	260	
Square footage spacing x Density = GPM sprinkler head (Q)	13	
K-Factor of Sprinkler head (K)	4.9	
Equation: Pressure required at head=(Q / K)2	7	
Elevation difference from test hydrant to base of riser x .433	2	0.866
Elevation difference from base of riser to remote area x .433	32	13.856
Backflow Preventer pressure drop	5	
Safety Factor (5 psi min.) (SF)	5	
Fixed Pressure drop =	32	
Estimated Friction Drop Thru Fire Line		
Length of run from test hydrant to riser (HR)	1540	
Pipe C Factor (Ductile Iron C-100)	100	
Nominal Pipe Inside Diameter (8", 6", 4")	6	
Friction loss in pipe (psi/ft) (Based on Hazen William Equation)(HW1)	0.00092	
HR x 1.30 x HW1 =	2	
Length of run from riser to last sprinkler head (estimated.) (RS)		
Base of Riser to farthest sprinkler	210	
Pipe C Factor (Black Steel C-120)	120	
Nominal Pipe Inside Diameter (6", 4")	4	
Friction loss in pipe (psi/ft) (Based on Hazen William Equation)(HW2)	0.00473	
RS x 1.30 x HW2 =	1	
Estimated Required Flow Data for Building		
Required GPM	113.0046	
Required psi	35	

FIRE PROTECTION GENERAL NOTES:

1. THE SPRINKLER HEADS SHOWN ARE GENERAL IN NUMBER AND LOCATION. THE EXACT NUMBERS AND LOCATIONS SHALL BE DETERMINED BY THE SUCCESSFUL SPRINKLER INSTALLER AND SHALL BE SHOWN ON HIS SHOP DRAWINGS. THE SPRINKLER SYSTEM SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND NFPA 13R & 24.
2. PROVIDE A HYDRAULICALLY DESIGNED FULL COVERAGE SPRINKLER SYSTEM
3. PROVIDE DRY PENDANT TYPE HEADS IN AREAS THAT ARE SUBJECT TO FREEZING FOR FREEZE PROTECTION.
4. THE SPRINKLER CONTRACTOR SHALL COORDINATE LOCATIONS OF SPRINKLER HEADS AND ASSOCIATED PIPING WITH ALL OTHER TRADES.
5. ALL SPRINKLER HEADS LOCATED IN 2'x2' TILES SHALL BE CENTERED.
6. SPRINKLER SYSTEM SHALL BE RESIDENTIAL HAZARD (13R).
7. CONTRACTOR SHALL VERIFY LOCATION AND INSTALLATION REQUIREMENTS OF BACKFLOW PREVENTOR WITH THE LOCAL AUTHORITY HAVING JURISDICTION, AND LOCAL WATER UTILITY BEFORE CONSTRUCTION OR SITE EXCAVATION HAS BEGUN.
8. SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR FULL REPLACEMENT COST OF SURFACES DAMAGED BY DRAINAGE FROM THE SPRINKLER SYSTEM.
9. THE CONTRACTOR MUST PROVIDE A CERTIFIED CALCULATION DEMONSTRATING THE CHARACTERISTICS OF THE PROPOSED SYSTEM AND SHOWING PIPE SIZE AND SYSTEM FLOW.
10. THE MINIMUM PIPE SIZE FOR THE UNDERGROUND SPRINKLER MAIN IS 6", CONTRACTOR TO VERIFY WITH A CERTIFIED CALCULATION. THE MINIMUM BURY DEPTH FOR THE FIRE MAIN IS 36" BELOW FINISHED GRADE.
11. PROVIDE A 'PUMPER' HYDRANT WITHIN 100' OF THE FIRE DEPARTMENT CONNECTION AS REQUIRED BY THE AHJ. (SEE CIVIL PLANS FOR HYDRANT LOCATIONS.)
12. THE NEW SPRINKLER SYSTEM IS AN NFPA 13R WET PIPE SYSTEM.
13. ALL FIRE PROTECTION PIPING STARTING FROM POINT OF SERVICE ON MUST BE INSTALLED BY A LICENSED FIRE PROTECTION CONTRACTOR. SEE THE SITE UTILITY DRAWING FOR UNDERGROUND PIPING AND VALVES REQUIRED.
14. ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE LOCAL CODES, RULES AND ORDINANCES.
15. THE VELOCITY OF WATER FOR SPRINKLER PIPING SHALL NOT EXCEED 21 FPS (FEET PER SECOND).
16. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR CONNECTIONS TO ALL UTILITY LINES AND PAY ALL FEES AND COSTS FOR CONNECTIONS TO THOSE SERVICES.
17. INSTALL HEAT TRACE WRAPPING TO ALL EXPOSED PIPE.

MBI

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SEAL

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PROJECT INFORMATION

PROJECT:

WESTWOOD AT WINTER HAVEN APARTMENTS

PROJECT ADDRESS:

Avenue G
Winter Haven, FL 98801
HUD# 067-35554

PROJECT NO.: 180888

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED: 03-25-19
DESIGNED BY: JEJ
DRAWN BY: JEJ
REVIEWED BY: JCB

SHEET TITLE:

FIRE PROTECTION LEGENDS, SPECIFICATIONS, AND NOTES

SHEET NO.:

FP001

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