FIRE PROTECTION NOTES:

FIRE PROTECTION SUPPLY PIPE: ROUTE THE BUILDING FIRE MAIN TO THE WATER MAIN AND CONNECT TO THE SUPPLY LINE AT THE APPROPRIATE TIME AND LOCATION. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF WATER MAIN PRIOR TO START OF CONSTRUCTION. WORK INCLUDES BUT IS NOT LIMITED TO: INSTALLING A COMPLETE WET SYSTEM DESIGNED THROUGHOUT THE BUILDING . 1. RELATED WORK SPECIFIED ELSEWHERE:

1. WIRING OF FLOW ALARM SWITCHES AND TAMPER SWITCHES AND CONNECTION OF SWITCHES TO BUILDING ALARM SYSTEM ARE SPECIFIED IN ELECTRICAL DOCUMENTS. SPRINKLER DESIGN REQUIREMENTS: (FOR LIGHT HAZARD):
2. THE CONTRACTOR SHALL SUBMIT 4 COMPLETE SETS OF SPRINKLER SHOP DRAWINGS AND HYDRAULIC CALCULATIONS TO THE ARCHITECT FOR REVIEW, PRIOR TO ORDERING MATERIAL AND/OR CUTTING PIPE. CONTRACTOR SHALL NOT CUT ANY PIPING UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND ACCEPTED. THE CONTRACTOR SHALL SHOW IN DASHED LINES THE LOCATION OF ALL DUCTWORK, LIGHTS AND DIFFUSERS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING SPRINKLER PIPING AND HEADS LOCATIONS WITH OTHER TRADES. CONTRACTOR SHALL RELOCATE SPRINKLER PIPING AND HEADS AS NECESSARY IN ORDER TO AVOID CONFLICT WITH DUCTWORK, LIGHTS AND STRUCTURE.
4. PROVIDE AUXILIARY DRAINS AT LOW POINTS IN SYSTEM AND FOR TRAPPED SECTIONS AS REQUIRED BY NFPA-13. LOCATE AUXILIARY DRAINS IN MECHANICAL CLOSETS OR OTHER LOCATIONS OUT OF SIGHT.
5. THE CONTRACTOR SHALL INCLUDE A TEN POUND (10 PSI) BUFFER IN THE HYDRAULIC CALCULATIONS, I.E. THE PRESSURE REQUIRED FOR THE SPRINKLER SYSTEM (INCLUDING HOSE STREAM) SHALL BE A MINIMUM OF 10 PSI LESS THAN THE AVAILABLE PRESSURE AT THE REQUIRED FLOW.
6. THE CONTRACTOR SHALL PERFORM A FLOW TEST PRIOR TO COMMENCING DESIGN AND SHALL PROVIDE TEST INFORMATION TO THE ARCHITECT FOR APPROVAL. SPRINKLER SYSTEM DESIGN SHALL BE BASED UPON THE CONTRACTOR'S FLOW TEST. QUALITY CRITERIA: PERMITS, LICENSES, INSPECTION FEES:

1. OBTAIN AND PAY FOR PERMITS, LICENSES AND INSPECTION FEES AS MAY BE REQUIRED FOR PERFORMANCE AND APPROVAL OF THE WORK PERFORMED UNDER THIS SECTION OF THE SPECIFICATIONS.
2. COMPLY WITH ALL REQUIREMENTS OF NFPA 13D AND THE STATE FIRE MARSHALL AND LOCAL CODES. MATERIALS: MATERIALS SPECIFIED BY MANUFACTURER'S NAME SHALL BE USED UNLESS PRIOR APPROVAL OF A SUBSTITUTE IS GIVEN BY ADDENDA. SUBMITTALS: BEFORE MATERIALS AND EQUIPMENT ARE PURCHASED, SUBMIT FOR ARCHITECT'S APPROVAL, A COMPLETE SCHEDULE OF MATERIALS AND EQUIPMENT TO BE INCORPORATED IN THE WORK. SUBMITTALS SHALL INCLUDE THE FOLLOWING:

1. COMPLETE SHOP DRAWINGS WITH HYDRAULIC CALCULATIONS
2. ALL VALVES
3. SPRINKLER HEADS
4. TAMPER SWITCHES
5. PIPE HANGERS AND SUPPORTS
6. PIPE AND FITTINGS
7. CABINETS GROOVED JOINT COUPLINGS AND FITTINGS SHALL BE SHOWN ON DRAWINGS AND PRODUCT SUBMITTALS, AND BE SPECIFICALLY IDENTIFIED WITH THE APPLICABLE STYLE NUMBER. SPRINKLER HEADS SHALL BE REFERRED TO ON DRAWINGS, SUBMITTALS AND OTHER DOCUMENTATION, BY THE SPRINKLER IDENTIFICATION OR MODEL NUMBER AS SPECIFICALLY PUBLISHED IN THE APPROPRIATE AGENCY LISTING OR APPROVAL. TRADE NAMES OR OTHER ABBREVIATED DESIGNATIONS SHALL NOT BE ALLOWED. TESTING PIPE SYSTEMS: TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE ARCHITECT OR HIS DESIGNATED REPRESENTATIVE. EQUIPMENT, MATERIALS, AND INSTRUMENTS FOR TESTING SHALL BE FURNISHED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER. AUTOMATIC SPRINKLER PIPING: THE AUTOMATIC SPRINKLER SYSTEMS SHALL BE HYDROSTATICALLY TESTED IN THEIR ENTIRETY OR IN ZONES DEFINED BY SHUT-OFF VALVES. THE PIPING SHALL BE TESTED AT A PRESSURE OF 200 PSIG , MEASURED AT THE LOW POINT IN THE SYSTEM OR ZONE, AND SHALL BE PROVED TIGHT AT THIS PRESSURE FOR A PERIOD OF NOT LESS THAN TWO HOURS. LEAKS DETECTED SHALL BE REPAIRED BY TIGHTENING, REWELDING JOINTS, OR REPLACING DAMAGED PIPE OR FITTINGS. CAULKING OF JOINTS WILL NOT BE PERMITTED. DRY PIPE AIR TEST: ALL DRY PIPE PIPING SHALL BE TESTED AT 40 PSIG AND ALLOWED TO STAND FOR 24 HOURS. ALL LEAKS WHICH ALLOW A LOSS OF PRESSURE OVER 1½ PSI SHALL BE REPAIRED. COMPRESSED AIR SYSTEM: ALL PIPING SHALL BE PNEUMATICALLY TESTED AT A PRESSURE OF 150 PSIG FOR A PERIOD OF NOT LESS THAN 2 HOURS. NO LOSS IN PRESSURE WILL BE PERMITTED. LEAKS DETECTED SHALL BE REPAIRED BY TIGHTENING OR REPLACING PIPE AND FITTINGS. CAULKING OF JOINTS WILL NOT BE PERMITTED. OPERATION AND MAINTENANCE INSTRUCTIONS: OPERATING AND MAINTENANCE INSTRUCTIONS, PRINTED AND BOUND IN HARD COVER THREE RING LOOSE LEAF NOTEBOOKS, SHALL BE PROVIDED FOR EACH ITEM OF EQUIPMENT LISTED BELOW; 5 SEPARATE COPIES SHALL BE PROVIDED. EACH NOTEBOOK SHALL BE PROVIDED WITHIN AN IDENTIFYING LABEL UNDER A CLEAR PLASTIC COVER SHIELD ON THE FRONT COVER WHICH SHALL IDENTIFY THE PROJECT, ENGINEER, CONTRACTOR AND DATE.

1. NATIONAL FIRE PROTECTION ASSOCIATION PAMPHLET NO. 25. PHOTO COPIES ARE NOT ACCEPTABLE.
2. COPIES OF ALL APPROVED SUBMITTAL DATA (LISTED ABOVE UNDER SUBMITTALS).
3. AS-BUILT COPIES OF DESIGN DRAWINGS AND HYDRAULIC CALCULATIONS. SEISMIC REQUIREMENTS: PROVIDE SEISMIC PROTECTION FOR THE SPRINKLER SYSTEM. DESIGN AND INSTALL SEISMIC PROTECTION IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13 SECTION TITLED "PROTECTION OF PIPING AGAINST DAMAGE WHERE SUBJECT TO EARTHQUAKES." SEISMIC REQUIREMENTS MAY BE WAIVED BY THE AUTHORITY HAVING JURISDICTION. PROVIDE WRITTEN DOCUMENTATION OF WAIVER. GUARANTEE: ALL EQUIPMENT SHALL BE GUARANTEED AS SPECIFIED UNDER THE GENERAL AND SPECIAL CONDITIONS. GUARANTEE ON ALL EQUIPMENT SHALL START AND COINCIDE WITH THE CONTRACTOR'S GUARANTEE OBLIGATIONS. PIPE AND FITTINGS: PIPE AND FITTINGS LISTED HEREIN SHALL BE FOR THE SERVICES INDICATED. SPRINKLER AND STANDPIPE:

JOINTS: MECHANICAL GROOVED JOINT COUPLINGS SHALL BE LISTED FOR USE IN FIRE PROTECTION SYSTEMS.

1. GROOVED END FITTINGS: FITTINGS SHALL BE DUCTILE IRON (ASTM A536); FORGED STEEL (ASTM A234); OR FABRICATED FROM CARBON STEEL PIPE (ASTM A53); WITH PRE-GROOVED ENDS FOR USE WITH MECHANICAL COUPLINGS OF THE SAME MANUFACTURER.
2. MECHANICAL COUPLINGS: COUPLING HOUSINGS SHALL BE DUCTILE IRON (ASTM A536). BOLTS AND NUTS SHALL BE CARBON STEEL TRACK-TYPE (ASTM A183), MINIMUM TENSILE 110,000 PSI. GASKETS SHALL BE GRADE "E" EPDM, FOR WATER SERVICES FROM -30 TO +230EF. AT JOINTS ALLOWING CONTROLLED MOVEMENT, EXPANSION, CONTRACTION OF DEFLECTION, FLEXIBLE COUPLINGS WITH SHALL BE USED. AT ALL JOINTS NOT REQUIRING FLEXIBILITY, A RIGID COUPLING SHALL BE USED.

a. RIGID TYPE: COUPLING HOUSINGS CAST WITH OFFSETTING, ANGLE-PATTERN BOLT PADS SHALL BE USED TO PROVIDE SYSTEM RIGIDITY AND SUPPORT AND HANGING IN ACCORDANCE WITH NFPA 13D.
b. FLEXIBLE TYPE: USE IN LOCATIONS WHERE VIBRATION ATTENUATION AND STRESS RELIEF ARE REQUIRED.

3. FLANGE ADAPTER: FLAT FACE, FOR DIRECT CONNECTION TO ANSI CLASS 125 OR 150 FLANGED COMPONENTS UNDERGROUND PIPE:

1. STANDARD WEIGHT DUCTILE IRON PIPE WITH MECHANICAL "BOLTED TYPE" JOINTS.
2. PROVIDE TIE RODS AND THRUST BLOCKS AT EACH CHANGE OF DIRECTION OF THE UNDERGROUND FIRE SERVICE PIPING. INSTALL TIE RODS AND THRUST BLOCKS IN ACCORDANCE WITH NFPA-24 REQUIREMENTS. FIRE DEPARTMENT VALVES: VALVES:

1. VALVES OF THE SAME TYPE SHALL HAVE THE NAME OR TRADEMARK OF THE MANUFACTURERS AND THE WORKING PRESSURE STAMPED OR CAST ON THE VALVE BODY.
2. ALL VALVES INSTALLED IN HORIZONTAL LINES SHALL BE INSTALLED WITH THE STEMS HORIZONTAL OR ABOVE. VALVE HANDWHEELS SHALL BE ORIENTED, WHEN INSTALLED, TO PROVIDE MAXIMUM ACCESSIBILITY FOR OPERATION.
3. ALL VALVES REQUIRING PACKING SHALL BE DESIGNED AND CONSTRUCTED SUCH THAT THEY CAN BE REPACKED UNDER PRESSURE.
4. VALVE HANDWHEELS SHALL BE MALLEABLE IRON.
5. FIRE DEPARTMENT VALVES: FIRE DEPARTMENT ANGLE VALVES SHALL BE 2½" SIZE PRESSURE REDUCING TYPE COMPLETE WITH CAP AND CHAIN. VALVES SHALL HAVE POLISHED BRASS FINISH AND SHALL BE ELKHART UP-25, POTTER-ROEMER 4085 OR EQUIVALENT BY NIBCO OR SIERRA. SPRINKLER HEADS: SPRINKLER HEADS SHALL BE GLASS-BULB TYPE. BODY SHALL BE DIE CAST BRASS, WITH HEX-SHAPED WRENCH BOSS CAST INTO THE BODY TO FACILITATE INSTALLATION AND REDUCE THE RISK OF DAMAGE DURING INSTALLATION. SPRINKLER HEAD TYPES SHALL BE COORDINATED WITH THE ARCHITECT. UPRIGHT SPRINKLER HEADS SHALL BE ½ INCH SPRAY TYPE WITH BRONZE FINISH. SPRINKLERS SHALL BE VIKING, CENTRAL SPRINKLER, RELIABLE, GRINNELL OR AUTOMATIC SPRINKLER. PENDENT SPRINKLER HEADS UNLESS OTHERWISE INDICATED PENDENT SPRINKLER HEADS SHALL BE QUICK RESPONSE ½ INCH SPRAY TYPE WITH CHROME PLATED FINISH AND WHITE ESCUTCHEON PLATE. SPRINKLERS SHALL BE VIKING, CENTRAL SPRINKLER, RELIABLE, GRINNELL OR AUTOMATIC SPRINKLER. SIDEWALL SPRINKLER HEADS SHALL BE QUICK RESPONSE ½ SPRAY TYPE WITH CHROME PLATED FINISH AND WHITE ESCUTCHEON. SPRINKLERS SHALL BE VIKING, CENTRAL SPRINKLER, RELIABLE, GRINNELL OR AUTOMATIC SPRINKLER. CONCEALED PENDENT SPRINKLER HEADS SHALL BE ½ INCH SPRAY TYPE WITH CHROME PLATED FINISH AND WHITE ESCUTCHEON AND CEILING PLAT. SPRINKLERS SHALL BE VIKING, CENTRAL SPRINKLER, RELIABLE, GRINNELL OR AUTOMATIC SPRINKLER. HANGERS: SUPPORTS FOR VERTICAL LINES PASSING THROUGH FLOOR SHALL BE RISER CLAMP TYPE, FEE & MASON FIG. NO. 241, CARPENTER AND PATTERSON NO. 126 OR EQUIVALENT BY B-LINE, ANVIL OR ERICO. GENERAL: UNLESS SPECIFICALLY STATED OTHERWISE, THE FIRE PROTECTION SYSTEM SHALL CONFORM TO ALL OTHER SECTIONS OF THIS SPECIFICATION WHICH APPLY TO PIPE INSTALLATION, ACCESSORIES AND CONTROLS. ALL THREADED HOSE OUTLETS SHALL COMPLY WITH THE LOCAL FIRE DEPARTMENT REQUIREMENTS. ALL SHOP DRAWINGS SUBMITTED ON ITEMS REQUIRING UNDERWRITERS' LISTING SHALL BEAR EVIDENCE OF UNDERWRITERS' APPROVAL. ALL EXPOSED FIRE SYSTEM PIPING INCLUDING VALVE ROOM PIPING SHALL BE CLEANED OF RUST, GREASE AND SCALED AND SHALL BE PROVIDED WITH A FIELD APPLIED PRIME COAT AND TWO COATS OF AN OIL BASED ENAMEL PAINT. COLOR SHALL BE RED OR AS DIRECTED BY ARCHITECT. THE CONTRACTOR SHALL PERFORM ALL TESTS OF FIRE PROTECTION SYSTEMS AS REQUIRED BY GOVERNING CODES AND LOCAL AUTHORITIES AT NO ADDITIONAL COST TO THE OWNER. TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE OWNERS REPRESENTATIVE. INSTALLATION: COORDINATE SPRINKLER INSTALLATION WITH BUILDING STRUCTURE AND OTHER TRADES. ROUTE [DRY PIPE] [ALARM] VALVE DRAINS TO [OUTSIDE BUILDING] [FLOOR DRAIN] AND TERMINATE 9" AFG. VERIFY LOCATIONS OF LIGHTS AND DIFFUSERS PRIOR TO INSTALLING SPRINKLER HEADS AND PIPING. SPRINKLER HEADS SHALL BE INSTALLED ON CENTERLINE WITH LIGHTS, DIFFUSERS AND DOORS, IN LIVING UNITS. CEILING THE SPRINKLER HEADS SHALL BE INSTALLED IN THE CENTER OF 2' X 2' TILES AND IN THE CENTER OF THE ½ TILE IN 2' X 4' TILES. CONTRACTOR SHALL PURGE AIR FROM ALL WET PIPE SPRINKLER SYSTEM PIPING PRIOR TO FINAL SYSTEM COMPLETION. INSTALL A SPARE SPRINKLER CABINET NEAR THE SPRINKLER RISER. PROVIDE NUMBER OF SPARE SPRINKLERS AS REQUIRED BY NFPA-13D, WITH AT LEAST ONE SPARE FOR EACH TYPE OF HEAD INSTALLED.

FIRE PROTECTION LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
F 0.00	FIRE GENERAL NOTES AND SPECIFICATIONS.	NTS
F 0.01	FIRE CODE CHECKING AND CALCULATIONS.	NTS
F 1.01	FIRE SYMBOLS, SCHEDULE AND HYDRAULIC INFO.	NTS
F 2.01	MAIN FLOOR - FIRE SPRINKLER LAYOUT.	3/8"=1'-0"
F 2.02	SITE PLAN - FIRE SERVICE LINE	3/8"=1'-0"
F 3.01	FIRE EQUIPMENT DATA SHEETS.	NTS
F 4.01	FIRE GENERAL DETAILS.	NTS
F 5.01	HYDRANT FLOW	NTS

CLIENT:

ADDRESS:

NOTES:

1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
THREE DUPLEX PHASED DEV.

TITLE:
FIRE GENERAL NOTES AND SPECIFICATIONS

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO.
F 0.00

REV.

NOTES FOR NFPA 13D SPRINKLER SYSTEMS

ONE & TWO FAMILY RESIDENTIAL FIRE SPRINKLER SYSTEMS

1. Scope of work: Design and installation of an automatic fire sprinkler system for a single or two-family dwelling.
2. One set of approved sprinkler plans with hydraulic calculations shall be retained at the job site at all times.
3. The system shall be designed and installed in accordance with 2016 NFPA 13D and amendments as adopted by the local jurisdiction.
4. All valves shall have permanently affixed signs that indicate their function.
5. The water flow switch shall be connected to the service panel on an uninterruptible house circuit.
6. Bells/alarms shall be sized and located to be clearly audible in all rooms over background noise with all intervening doors closed. At least one bell/alarm shall be located near the address side or front side of the structure and shall be listed for exterior use. At least on bell/alarm shall be located inside the structure and may be placed in the attic in audibility of 15 dB above ambient, but not less than 70 dB, is achieved throughout the residence.
7. Underground mains and lead-in connections shall be flushed before connection is make to sprinkler piping.
8. Water meter shall be installed prior to final.
9. Both rough and final inspections are required prior to occupancy being granted.
10. Systems shall be tested at a minimum of street pressure in accordance with NFPA 13D.
11. Exposed exterior riser valves shall be painted OSHA safety red. FIre sprinkler or supply pipe exposed or susceptible to wet conditions shall be painted (any color) or otherwise coated to inhibit corrosion. Stainless steel assemblies and piping may be left unpainted provided that any hose connections, valves, or other components operated by the fire department are painted red.
12. All sprinkler piping shall remain uncovered until inspected by City of San Diego.
13. Ceiling configurations shall be in a final condition (pain, lights, etc.) at final inspection.
14. Fire Sprinkler heads shall not be installed at rough inspection. Only plugs shall be used.
15. Escutcheons shall be installed prior to final inspection. A spot check on fire sprinkler type may occur at final inspections.

THE TEST AND DRAIN VALVE MUST HAVE AN ORIFICE K-FACTOR NOT GREATER THAN THE SPRINKLER'S K-FACTOR, WHICH IS IN THIS CASE EQUALS TO 4.90.

SPRINKLER HEAD SCHEDULE (8x3 SPRINKLER HEAD)

SYMBOL	UPRIGHT	PENDANT	RECESSED (CORRISION RESISTANT)	DRY HORIZONTAL SIDEWALL	DRY PENDANT	EXTENDED COVERAGE SIDEWALL	CONCEALED PENDANT	CONCEALED DRY PENDANT	SIDEWALL	EXTENDED COVERAGE	EXIST SP HD TO BE REMOVED/RELOCATED	QUICK RESPONSE	GENERAL LOCATION OF SPRINKLER HEADS (REFER TO DRAWINGS FOR ACTUAL LOCATIONS)	NOTE: ALL FINISHES ARE SUBJECT TO APPROVAL BY ARCHITECT. TYPE/FINISH	MANUFACTURER MODEL No. & STYLE
							X						ALL FINISHED AREAS WITH HUNG CEILINGS UNLESS OTHERWISE NOTED	CONCEALED SPRINKLER, ORDINARY TEMP, FINISH SPECIFIED BY ARCHITECT	senju sprinkler Model RC-RES 4.9 K-factor

Table A.5.2.2(a) SDR 13.5 IPS Pipe (CPVC)

Nominal Pipe Size		Avg. Outside Diam.		Avg. Inside Diam.	
(in.)	(mm)	(in.)	(mm)	(in.)	(mm)
3/4	20	1.05	26.70	0.87	22.10
1	25	1.32	33.50	1.10	27.90
1-1/4	32	1.66	42.20	1.39	35.30
1-1/2	40	1.90	48.30	1.60	40.60
2	50	2.38	60.50	2.00	50.80
2-1/2	65	2.88	73.20	2.42	61.50
3	80	3.50	88.90	295.00	74.90

612.3.6.1 Additional Requirements for Pendent Sprinklers. Pendent sprinklers located within 3 feet (914) mm) of the center of a ceiling fan, surface-mounted ceiling luminaire, or similar object shall be considered to be obstructed, and additional sprinklers shall be provided.

612.3.8 Backflow Protection. *A backflow preventer shall not be required to separate a sprinkler system from the water distribution system provided that:*
(1) The system complies with NFPA 13D or Section R313, and
(2) Piping material are suitable for potable water in accordance with the California Plumbing Code, and
(3) The system does not contain antifreeze or have a fire department connection.

612.4 Sprinkler Piping System. Sprinkler piping systems shall be installed in accordance with Section 612.4.1 through Section 612.4.5.

612.3.6.2 Additional Requirements for Sidewall Sprinklers. Sidewall sprinklers located within 5 feet (1524 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire, or similar object shall be considered to be obstructed and additional sprinklers shall be provided.

612.4.1 General. Sprinkler piping shall be installed in accordance with the requirements for water distribution piping. Sprinkler piping shall comply with the material requirements for cold water distribution piping. For multi-purpose piping systems, the sprinkler piping shall connect to and be part of the cold water distribution piping system.

612.4.2 Nonmetallic Piping and Tubing. Nonmetallic pipe and tubing, such as CPVC, PEX-AL-PEX, PE-RT and PEX, shall be certified for residential sprinkler installations and shall have a pressure rating of not less than 130 psi (896 kPa) at 120°F (49°C).

612.4.5 Drain. A ½ inch (15 mm) drain for the sprinkler system shall be provided on the system side of the water distribution shutoff valve.

612.3.2 Sprinkler Installation. Sprinklers shall be listed residential sprinklers and shall be installed in accordance with the sprinkler manufacturer's installation instructions.

612.3.3 Temperature Rating and Separation from Heat Sources. Sprinklers shall have a temperature rating of not less than 135°F (57°C) and not more than 170°F (77°C). Sprinklers shall be separated from heat sources in accordance with the sprinkler manufacturer's installation instructions.

Exception: Sprinklers located close to a heat source in accordance with Section 612.3.3.1 shall be intermediate temperature sprinklers.

612.3.3.1 Intermediate Temperature Sprinklers. Sprinklers shall have an intermediate temperature rating of not less than 175°F (79°C) and not more than 225°F(107°C) where installed in the fol lowing locations:

(1) Directly under skylights, where the sprinkler is exposed to direct sunlight.

(2) In attics and concealed spaces located directly beneath a roof.

(3) Within the distance to a heat source in accordance with Table 612.3.3.1.

612.3.5 Coverage Area Limit. The area of coverage of a single sprinkler shall be based on the sprinkler listing and the sprinkler manufacturer's installation instructions. The area of coverage of a single sprinkler shall not exceed 400 square feet (37.16 m^2).

NFPA13-D: 10.4.1
For specially listed piping products, friction loss for pipe and fittings shall be permitted to be calculated based on the manufacturer's data.
10.4.2 Minimum Pipe Size.
10.4.2.1
The minimum size of steel pipe shall be 1 in. (25 mm).
10.4.2.2
The minimum size of pipe other than steel pipe shall be 3⁄4 in. (20 mm) unless smaller sizes are permitted by 10.4.2.3.

NFPA 13-D: 7.2.6*
Where a pressure-reducing or pressure-regulating valve is installed on a stand-alone system, a test connection with a K-factor at least as large as the smallest sprinkler Kfactor on the system shall be installed downstream of the device.

NFPA 13-D: 7.4.4*
Sprinkler piping shall be supported in a manner that prevents the movement of piping upon sprinkler operation.

NFPA 13-D: 7.4.5*
Where sprinkler piping is exposed to the sprinkler protected area, it shall be supported with metal hangers or hangers made of the same material as the structure.

NFPA 13-D: 7.5.4
Quick-response sprinklers shall be permitted to be used in mechanical closets.

NFPA 13-D: 7.5.6 Temperature Ratings.
7.5.6.1
Sprinklers installed where maximum ambient ceiling temperatures do not exceed 100°F (38°C) shall be ordinary temperature–rated or intermediate–temperature rated sprinklers throughout unless modified by the requirements of 7.5.6.3.

NFPA 13-D: 7.5.6.2
Sprinklers installed where maximum ambient ceiling temperatures are between 101°F and 150°F (38°C and 65°C) shall be intermediate temperature–rated sprinklers unless modified by 7.5.6.3.

NFPA 13-D: 8.1.1.2
The sprinklers shall maintain the minimum listed spacing, but no less than 8 ft (2.4 m), measured in the plan view from one sprinkler to another, as shown in Figure 8.1.1.1.

NFPA 13-D: 8.1.4 Operating Pressure.
The minimum operating pressure of any sprinkler shall be the higher of the minimum operating pressure specified by the listing or 7 psi (0.5 bar).

NFPA 13-D: 10.1.1* Sprinklers That Are Listed with Specific Discharge Criteria.
The system shall provide at least the flow required to produce a minimum discharge density of 0.05 gpm/ft2 (2.0 mm/min) or the sprinkler listing, whichever is greater, to the design sprinklers.

NFPA 13-D: 7.2.4*
Where water flow alarms are provided, test connections shall be installed at locations that allow flow testing of water supplies, connections, and alarm mechanisms.

NFPA 13-D: 7.2.5
The test connections, where provided, shall contain a K-factor equal to or smaller than the smallest sprinkler K-factor installed in the system.

Project: 3777 Florida

Pt SYSTEM PRESSURE CALCULATION SHEET

Pt = Psup - PLws - PLm - PLd - Ple - Psp

Pt: *Pressure used for sizing the system in Table 612.5.3.2(4) thourgh Table 612.5.3.2(9)*
Psup: *Pressure available from the water supply source (flowing pressure)*
PLws: *Pressure loss in the water service pipe*
PLm: *Pressure loss through the water meter*
PLd: *Pressure loss from devided other than the water meter*
Ple: *Pressure loss associated with changes in elevation*
Psp: *Maximum pressure required by a sprinkler*

System Type	**Standalone**	
Service Pipe Size=	1	in.
Main Fire Pipe Size=	2	in.
Pipe Length	70	ft.
Elevation=	46	ft.
Sprinkler:		
Density=	0.05	gpm/sq.ft.
Coverage=	200	sq.ft.
Active Sprinkler=	2	No.
Sprinklers Flow	20	gpm
Additional System Flow	0	gpm
Total Flow=	**20**	**gpm**
Psup =	**73.84**	**PSI**
PLws	**13.8**	**PSI**
PLm=	**0**	**PSI**
PLd=	**3**	**PSI**
PLe=	**19.78**	**PSI**
Psp=	**7**	**PSI**

Total Pressure Drop =	43.58	PSI
Pt (Available Pressure) =	30.26	PSI
Allowable CPVC Length	257	FT.
Actual Pipe Length	70	FT.
Pass		

CLIENT:

ADDRESS:

NOTES:

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3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
THREE DUPLEX PHASED DEV.

TITLE:
FIRE CODE CHECKING AND CALCULATIONS.

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO.
F 0 . 0 1

REV.

GENERAL NOTES

1. SYSTEM DESIGN AND INSTALLATION SHALL COMPLY NFDA 13D 2016 AND LOCAL APPLICABLE CODES.
2. SYSTEM DESIGN BASIS: HYDRAULICALLY MOST DEMANDING 2 SPRINKLERS.
3. WATER SUPPLY:
   HYDRANT FLOW TEST: 150 GPM

   SYSTEM DEMAND:
   REQUIRED PRESSURE: 33.64 PSI
   TOTAL FLOW REQUIRED: 45.26 GPM
   SAFETY MARGIN UNDER
4. ALL PIPE SHALL BE U.D.N. UNDERGROUND - IPS POLLY PIPE RISER - CPVC OVERHEAD - CPVC
5. MANUFACTURERS OF RESIDENTIAL SPRINKLERS PUBLISH INFORMATION REGARDING THE SPACING OF THEIR SPRINKLERS WITH RESPECT TO HEAT PROUCING DEVICES (FIRE PLACES, RANGES, OVES, HEATING, VENTS, WATER HEATERS, FURNACES, ETC.) WHETHER OR NOT ALL HEAT PRODUCING DEVICES ARE SHOWN ON THE PLAN PROPER MINIMUM DISTANCES MUST BE MAINTAINED.
6. THE MINIMUM DISTANCE BETWEEN ANY 2 RESIDENTIAL SPRINKLERS ON THIS PRODUCT IS HYDRAULICALLY LIMITED TO 12 FEET. SPRIRNKLERS SHALL NT EXCEED 6 FEET FROM ANY WALL.
8. THE INIMUM DISTANCE A SPRINKLER CAN BE LOCATED FROM A WALL IS 4 INCHES.
9. PENDANT SPRINKLERS SHALL E A MINIMUM OF 36 FEET WAY FROM THE CENTER OF ANY OBSTRUCTIONS SUCH AS CEILING FANS AND LIGHT FIXTURES UNLESS THE REQUIREMENTS OF NFPA 13.3 8.2. ARE MET.
10. INSTALLATION OF ALL RESIDENTIAL SPRINKLERS SHALL BE IN STRICT COMPLIANCE WITH THE MANUFACTURERS INSTALLATION GUIDE.
11. PRIOR TO DRILLINGJOISTS, CONTACT STRUCTURAL ENGINEER FOR RECOMMENDED DRILLING GUIDELINES.

HANGER SPACING

PIPE MATERIAL	3/4"	1"	1-1/4"	1-1/2"	2"	2 1/2"	3"
COPPER	8	8	10	10	12	12	12
CPVC	5.5	6	6.5	7	8	9	10
SCHEDULE 40 &10 STEEL	•	12	12	15	15	15	15
THREADABLE THINWALL	•	12	12	12	12	12	12

HANGER NOTES

1. ALL LIGHTING SHOWN ARE THE MAXIMUM RECOMMENDED DISTANCE BETWEEN HANGERS EXPRESSED.
2. PROVIDE A HANGER ITHIN 6 INCHES OF ALL DROPS TO SPRINKLER HEADS WHEN USING CPVC PIPE.
3. + STEEL PIPE IS NOT ALLOWED IN SIZES LESS THAN 1 INCH.

HYDRAULIC INFORMATION

Remote Area	4th Floor: Living and Bedroom
Occupancy Classification	Light Hazard
Density (gpm/ft2)	0.05
Total Hose Stream (GPM)	0
Total Heads Flowing	2
K-Factor	4.9
Total Water Required (GPM)	20.0
System Pressure P required (PSI)	30.25

Sprinkler Legend

Symbol	Spacing - Pressure - Flow	Manufacturer	SIN	Model	K	Type	Size	Finish	Temp.	QTY.
	8 FT. - 175 PSI -	Senju	SS8464	RC-RES	4.9	Pendent	1/2"	White	162 F	8x3

SYMBOLS AND ABBREVIATIONS

DESCRIPTION	SYMBOL
NOTE: SPRINKLER SYMBOLS AND ABBREVIATIONS INDICATED IS FOR CONVENIENCE ONLY AND ITEMS INDICATED ARE NOT NECESSARILY WITHIN THE SCOPE OF THE WORK.	
NODE NO	x
FIRE SPRINKLER	
FIRE STANDPIPE PIPING	SD
SPRINKLER PIPING (SP.)	SP
SPK DRAIN PIPING	D
OS & Y VALVE W/ LOCK AND CHAIN	
WATER FLOW SWITCH	
CAPPED OUTLET	
GATE VALVE (G.V.)	
LOCKSHIELD VALVE (GLOBE VALVE)	
CHECK VALVE (C.V.)	
PRESSURE REGULATING VALVE	
STRAINER	
SHOCK ABSORBER	
PRESSURE GAUGE	
UNION CONNECTION	
DOUBLE CHECK DETECTOR ASSEMBLY	DCDA
HOSE VALVE	HV
HOSE RACK	HR
SPRINKLER RIG ASSEMBLY	SR
ROOF MANIFOLD	RM

ABBREVIATIONS	
A.B.D.	AUTOMATIC BALL DRIP
A.D.	ACCESS DOOR
CLG.	CEILING
C.V.	CHECK VALVE
D.C.D.A.	DOUBLE CHECK DETECTOR ASSEMBLY
DN.	DOWN
ELEV.	ELEVATION
F.H.C.	FIRE HOSE CABINET
F.H.	FIRE HYDRANT
F.H.R.	FIRE HOSE RACK
FL.	FLOOR
G.V.	GATE VALVE
H.C.	HUNG CEILING
N.I.C.	NOT IN CONTRACT
O.S.&Y.	OUTSIDE SCREW & YOKE
P.O.	PLUGGED OUTLET
T.S.	TAMPER SWITCH
WFS	WATER FLOW SWITCH
TS	TAMPER SWITCH
SPK	SPRINKLER

FIRE PROTECTION MATERIAL SCHEDULE

SYSTEM	PIPE									FITTINGS						JOINTS			
NOTES: 1. FOR REQUIRED PRESSURE RATINGS SEE RISER DIAGRAM. 2. ALL MATERIALS SELECTED ON THIS SCHEDULE MUST BE APPROVED BY THE LOCAL AUTHORITIES. 3. TO BE USED DOWNSTREAM OF SPRINKLER FLOOR CONTROL VALVE. 4. TO BE USED ON RISERS AND MAINS.	REQUIRED	DUCTILE IRON	EXTRA HEAVY CAST IRON	CPVC SDR 13.5	STEEL SCHED 30	STEEL SCHED 40	STEEL SCHED 80	BLACK	GALVANIZED	CEMENT LINED	MALLEABLE IRON	CLASS D	LINED	BLACK	GALVANIZED	VICTAULIC	DUCTILE IRON	THREADED	MECH.JOINT-FLANGED	VICTAULIC	● CAULKED
BURIED BUILDING FIRE SERVICE		●	●							●		●	●				●				
SPRINKLER (SEE NOTE 3)				●							●					●	●	●	●	●	
SPRINKLER (SEE NOTE 4)				●							●					●	●	●	●	●	
SPRINKLER DRAIN PIPE				●		●			●						●			●			
FIRE STANDPIPE						●		●			●					●	●	●	●	●	

CLIENT:

ADDRESS:

NOTES:

1. ALL DIMENSIONS HEREIN ARE IN IMPERIAL UNITS UNLESS STATED OTHERWISE.
2. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL RELEVANT DESIGNER, ENGINEER OR SPECIALIST DRAWINGS AND SPECIFICATIONS.
3. THE CONTRACTOR MUST CHECK ALL DIMENSION AT SITE BEFORE COMMENCING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY TEMPORARY SUPPORT TO THE BUILDING AND ANY ADJACENT STRUCTURES.

REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
THREE DUPLEX PHASED DEV.

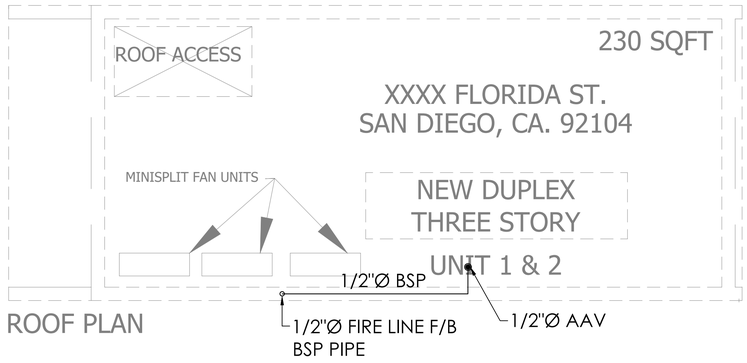
TITLE:
FIRE SYMBOLS, SCHEDULE AND HYDRAULIC INFO.

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

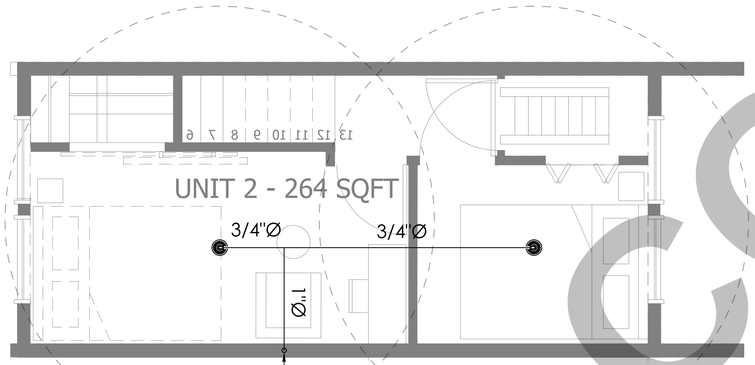
DRAWING NO.
F1.01

REV.

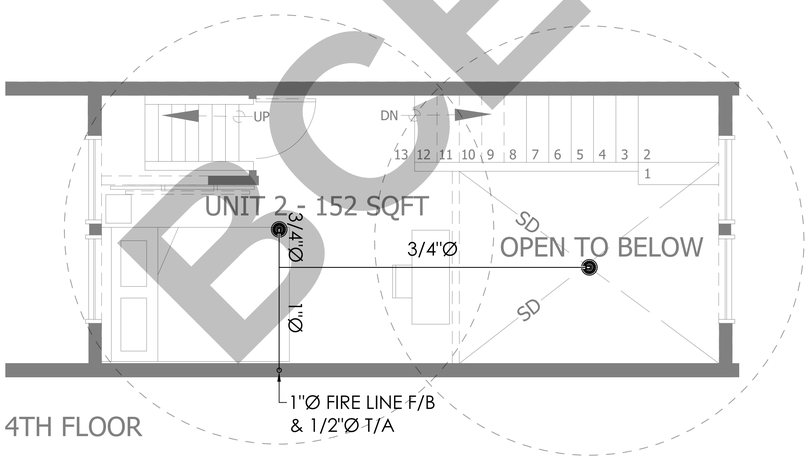
ALL FIRE PIPES WITHIN THE BUILDINGS ARE CPVC.



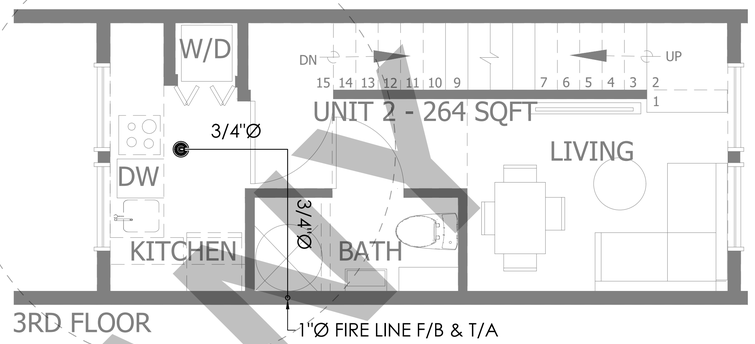
ROOF PLAN



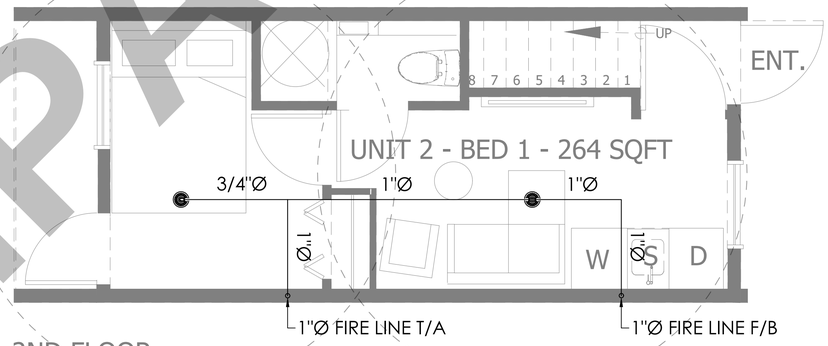
4TH FLOOR, PHASE 2&3, 3BED OPTION



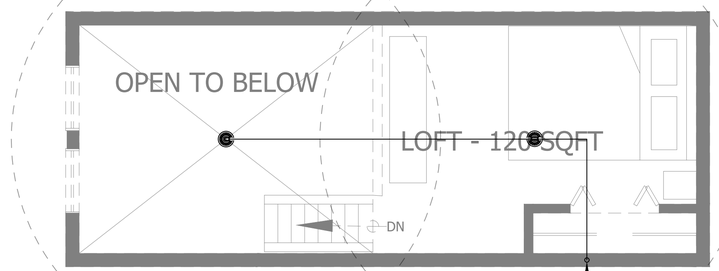
4TH FLOOR



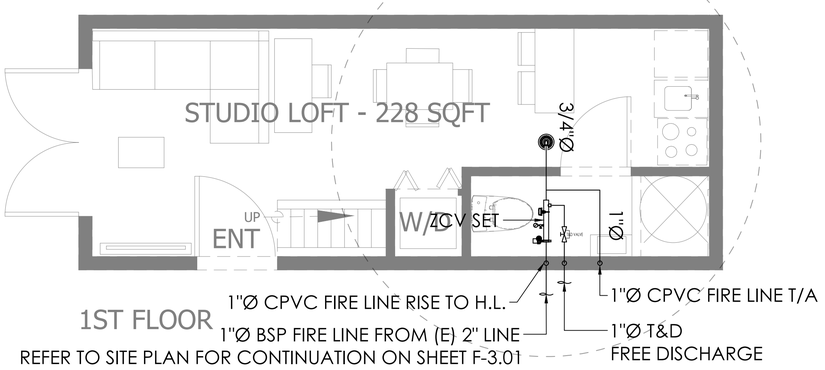
3RD FLOOR



2ND FLOOR



LOFT 1ST FLOOR



1ST FLOOR

REFER TO SITE PLAN FOR CONTINUATION ON SHEET F-3.01

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF THE DESIGNER AND THE SAME MAY NOT BE DUPLICATED, USED OR DISCLOSED WITHOUT CONSENT OF THE DESIGNER.

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

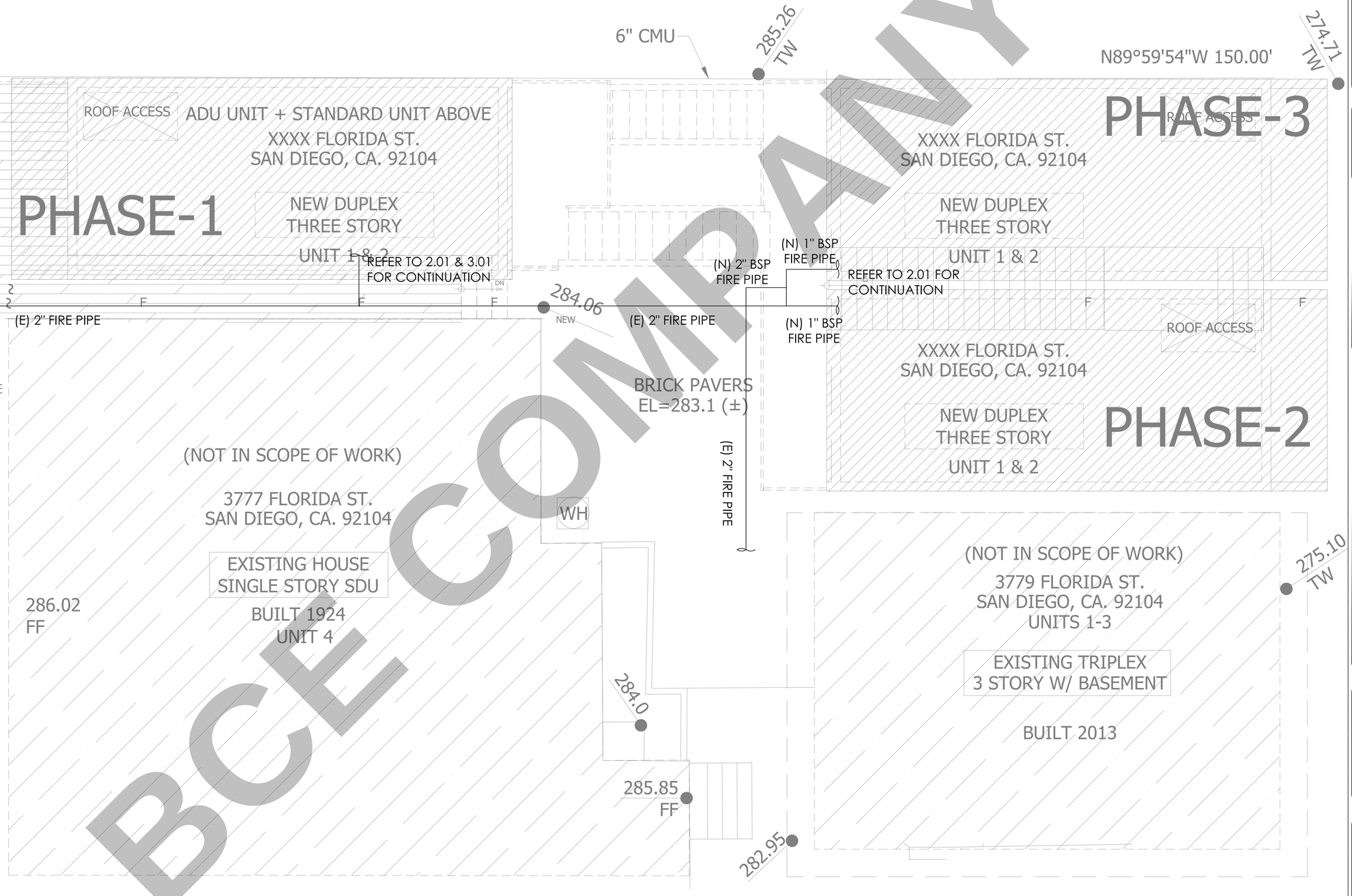
PROJECT:
THREE DUPLEX PHASED DEV.

TITLE:
MAIN FLOOR
FIRE SPRINKLER LAYOUT.

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
F 2 . 0 1

REV.



CLIENT:

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REV. NO.	DESCRIPTION	DATE	BY

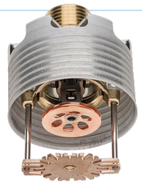
PROJECT:
THREE DUPLEX PHASED DEV.

TITLE:
SITE PLAN - FIRE SERVICE LINE.

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		3/8"=1'-0"

DRAWING NO.
F 2 . 0 2

REV.



Senju Sprinkler

Model RC-RES

K-Factor: 4.9 • SIN: SS8464

Residential Lead Free
Flat Concealed Sprinkler, Pendent

c UL us LISTED EU | NSF/ANSI/CAN 61 & 372

GENERAL DESCRIPTION

The Model RC-RES Residential Flat Concealed Sprinklers are automatic sprinklers of the compressed fusible solder type. They are decorative and fast responding. The Cover Plate Assembly hides the Deflector, Heat Responsive Element etc., which is concealed above the ceiling. The cover plate has a flat profile, and its diameter is extremely small (2-5/8 inch, 68mm). The push-on and/or thread-on, thread-off design of the concealed cover plate assembly allows for easy installation of the cover plate. Therefore, the Model RC-RES should be your first choice when aesthetics is the major consideration for ultimate appeal and unbeatable performance is desired. The Model RC-RES is designed for residential occupancies and is perfect for use in homes, hotels and other living quarters.

The Model RC-RES is to be used in wet pipe residential sprinkler systems for One- and Two- Family Dwellings and Manufactured Homes per NFPA 13D; wet pipe residential sprinkler systems for Residential Occupancies up to and Including Four Stories in Height per NFPA 13R; or, wet pipe sprinkler systems for the residential portions of any occupancies per NFPA 13.

The Model RC-RES has a 4.9 (70.6 LPM/bar$^{1/2}$) K-factor that meets the required residential flow rates with minimal residual pressure, which allows for smaller pipe sizes and water supply requirements. For extended installation flexibility, the Model RC-RES provides 1/2 inch (12.8mm) vertical adjustment. This adjustment in installation decreases the need for precise cutting of the pipe that drops to the sprinkler and allows for a perfect fit with a range of pipe lengths.

The heat sensitivity and water distribution design of Model RC-RES allows for an increased chance of residents to escape or evacuate in case of a fire. However, residential fire sprinkler systems are not a substitute for fire safety awareness or fire safety construction required by building codes.

"Lead Free" is defined in the Reduction of Lead in Drinking Water Act (S.3874) endorsed by AWWA's Water Utility Council, and California Assembly Bill #1953 as having less than or equal to a weighted average of 0.25% lead in wetted surface of pipes, plumbing fittings and fixtures.

WARNINGS

The Model RC-RES must be installed and maintained in accordance with the rules stated herein as well as in compliance with the applicable standards of the National Fire Protection Association regulations and the standards of any other authorities having jurisdiction.

In the event of this condition, consult the authorities having jurisdiction for guidance and approval. Failure to do so may impair the integrity of these devices.

It is the responsibility of the installing contractor to provide a copy of this document to the owner or their representative, and in turn, it is the obligation of the owner to provide a copy of this document to a succeeding owner. The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any related questions.

TECHNICAL DATA

- **Approvals:**
  - cULus Listed
  - UL-EU Listed (162°F (72°C) only)
  - NSF/ANSI/CAN 61, NSF/ANSI 372
- **Sprinkler Identification Number (SIN):** SS8464
- **Maximum Working Pressure:** 175psi (12.1bar)
- **Discharge Coefficient (Nominal K-Factor):**
  - K = 4.9 GPM/psi$^{1/2}$ (70.6 LPM/bar$^{1/2}$)
- **Temperature Rating:**
  - 162°F (72°C) Sprinkler with 140°F (60°C) Cover Plate
  - 205°F (96°C) Sprinkler with 162°F (72°C) Cover Plate
- **Color Code (Sprinkler)**
  - 162°F (72°C): Uncolored
  - 205°F (96°C): White
- **Color Code (Cover Plate)**
  - 140°F (60°C): No Mark
  - 162°F (72°C): White-Colored Mark
- **Vertical Adjustment:** 1/2 inch (12.8 mm)
- **Cover Plate Finishes:**
  - **Standard Finishes:** White, Ivory, Beige, Brown, Black, Nickel, Wood Grain
  - **Custom Finishes:** Custom color and custom pattern cover plates are available on special order. Contact a Senju Sprinkler representative with any custom orders. Please see chart on Page 8 for more detail.
- **Physical Characteristics:** Ref. Figures 1 and 1.1

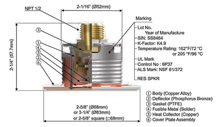


Figure 1: Model RC-RES K = 4.9

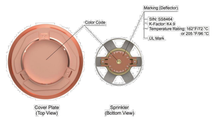


Figure 1.1: Marking (Color Code)

OPERATION

In case of fire, the solder component that holds together the Cover Plate and the Retainer melts. Then the Cover Plate is released at once. As a result, the Deflector drops down to the intended position. Two Heat Collectors are exposed to fire, and when sufficient heat from the fire is reached, internal components of the sprinkler fall apart. This leads to the water flow to be distributed on the affected fire area. (Ref. Figure 2)

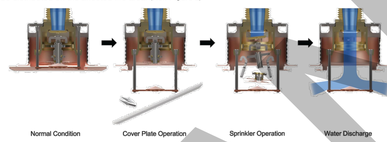


Figure 2: Operation Process (For illustrative purposes only)

DESIGN CRITERIA

The herein stated rules for use and installation of Model RC-RES are provided by the manufacturer and must be strictly implemented for safe and full results.

Notes

Residential Fire Sprinkler Systems should only be designed and installed by individuals who are completely familiar with automatic sprinkler system design, installation procedures, and techniques.

Several criteria may apply to the installation and usage of each sprinkler. Consequently, it is recommended that the sprinkler system designer review and develop a working understanding of the complete list of criteria prior to initiating the design of the sprinkler system.

Questions concerning sprinkler installation and usage criteria, which are not covered by the following instructions, should be submitted to your contracted company. Include sketches and technical details, as appropriate.

In some instances, the requirements of this document may concern specifications which are more stringent, and which take precedence over those specified in NFPA 13, 13D, 13R, or by the authority having jurisdiction.

The Model RC-RES must not be used in applications where the air pressure above the ceiling is greater than that below. Inspect all sprinklers after installation to ensure that both the gap between the cover plate, ceiling and the ℄ slots in the cup are open and free from any air flow impediment.

The spray from the sprinkler is distributed radially outward and downward from the sprinkler deflector. Consequently, the sprinklers must be located such that there will be no blind spaces shielded from spray by partitions, room dividers, overhangs or other parts of the dwelling structure.

The number of sprinklers within each compartment (as defined by NFPA 13D, 13R, or 13) must be kept as few as possible while observing all guidelines relating to obstructions and spacing.

Use only the Cover Plate provided for the Model RC-RES. The sprinkler must be secured in place by firmly fastening the sprinkler system piping to the structure. If the sprinkler is not properly secured in position, reaction forces resulting from sprinkler operation could alter its orientation and its water distribution pattern.

Obstruction to Water Distribution

Locations of sprinklers must follow the obstruction rules of NFPA 13, 13D and 13R for Residential Sprinklers.

General Service Conditions

The Model RC-RES must only be utilized in WET PIPE sprinkler systems.

Heat Source Criteria

Refer to NFPA 13D, 13R or 13 for the requirements relating to the prevention of possible activation of the Heat Responsive Element of Model RC-RES, due to the exposure of a heat source other than an actual fire.

Available Sprinkler Temperature Ratings			
Sprinkler Temperature Classification	**Sprinkler Nominal Temperature Rating**	**Maximum Ambient Ceiling Temperature**	**Temperature Rating of the Cover Plate Assembly**
Ordinary	162°F (72°C)	100°F (38°C)	140°F (60°C)
Intermediate	205°F (96°C)	150°F (66°C)	162°F (72°C)

Precautionary Warnings for Corrosive Environments

Model RC-RES sprinklers should not be installed where they may be subjected to a corrosive environment including the following:

1. Chlorine ion and Chloride environment
Stress corrosion cracking may be caused by exposure to environments with Chlorine ion and Chloride. Exposure to this environment may result in sprinklers operating under Non-Fire conditions or Not Operating when exposed to an actual fire.

2. Sprinkler system piping with Copper
Sprinkler systems should be constructed in compliance with the applicable standards and the requirements for copper piping when copper piping is used in the sprinkler system. (Reference standards NFPA 13, ASTM B813, B828, and CDA (Copper Development Association) – Solder Joint)

All residual flux must be removed from the interior and exterior of the copper piping by thoroughly flushing before installation of the Sprinkler Heads. Otherwise, residues of flux may cause corrosion and/or leakage in the sprinkler system.

Hydraulic Design Criteria

The minimum required sprinkler flow rates for systems designed to NFPA 13D or 13R are given in Table A as a function of temperature rating and the maximum allowable coverage area. The sprinkler flow rate is the minimum required discharge from the most hydraulically demanding sprinkler from each of the total number of "design sprinklers" as specified in NFPA 13D or 13R.

For systems designed to NFPA 13, the number of designed sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in Table A for NFPA 13D and 13R as a function of temperature rating and maximum allowable coverage area.
- A minimum discharge of 0.1GPM/sq.ft. [4.07LPM/sq.m] over the "design area" comprised of the four most hydraulically demanding sprinklers for the actual coverage area being protected by the four sprinklers.

Table A. NFPA 13D & 13R Wet Pipe Hydraulic Design Criteria for Model SS8464

For systems with ceiling types smooth flat horizontal, or beamed, or sloped, in accordance with NFPA 13D, 13R or 13 as applicable.

Maximum Coverage Area[a] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	Ordinary Temperature Rating 162°F (72°C)		Intermediate Temperature Rating 205°F (96°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow[b] GPM (LPM)	Pressure[b] PSI (bar)	Flow[b] GPM (LPM)	Pressure[b] PSI (bar)			
12 x 12 (3.7 x 3.7)	12 (3.7)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)	Smooth Ceilings 3/8 to 7/8 inches.		
14 x 14 (4.3 x 4.3)	14 (4.3)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)	Beamed Ceilings per NFPA 13D, 13R or 13.		
16 x 16 (4.9 x 4.9)	16 (4.9)	13 (49.2)	7.0 (0.48)	13 (49.2)	7.0 (0.48)	Installed in beam 3/8 to 7/8 inches below bottom of beam.	Concealed	8 (2.4)
18 x 18 (5.5 x 5.5)	18 (5.5)	17 (64.4)	12.0 (0.83)	17 (64.4)	12.0 (0.83)			
20 x 20 (6.1 x 6.1)	20 (6.1)	21 (79.5)	18.4 (1.27)	21 (79.5)	18.4 (1.27)			

a. For coverage area dimensions less than the above mentioned, it needs to use the minimum required flow for the Next Higher Coverage Area listed.

b. Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-Factor. Refer to Hydraulic Design Criteria Section for details.

Sprinkler Spacing Criteria

The minimum spacing between sprinklers is 8 feet (2.4m). The maximum spacing between sprinklers cannot go beyond the coverage area calculated by using the specific hydraulic factors. (Ref. Table A)

INSTALLATION

The Model RC-RES must be installed in accordance with the following instructions:

NOTES

Do not use any sprinklers which have been subjected to potential mechanical damage. Do not use any sprinklers which show deformation or cracking in either the Sprinkler or the Protective Cap.

Prior to installation, sprinklers should be maintained in the original cartons and packaging until used to minimize the potential for damage to the sprinklers that could cause improper operation or non-operation.

The Protective Cap must remain on the sprinkler during installation. After the installation is completed, the Protective Cap must be removed to place the sprinkler in service.

Use a torque of 7 to 14 ft·lbs (9.5 to 19.0 N·m) to achieve a 1/2 inch NPT sprinkler joint. If you exceed the recommended maximum torque, this could result in damage to the sprinkler inlet, which may lead to leakage from the sprinkler.

Use only NR-H model wrench socket for installation of RC-RES sprinklers. Use of any other wrench or socket is prohibited and may cause damage to the sprinkler.

In case of insufficient adjustment in Cover Plate installation, do not try to overly tighten, screw the sprinkler too loosely or make any modification to the cover plate assembly. Readjust the sprinkler fitting for a better fit.

Do not rotate the Cap Removal Tool for RC to the left with force when placing the two hook arms into place. The installed sprinkler may become loosened, which may cause water leakage.

Installation Steps

Step 1: The installation requirements for the sprinkler are as follows: to be installed only in the pendent position with the waterway perpendicular to the ceiling. Install the sprinkler fitting so that the distance from the face of the fitting to the mounting surface will be nominally 2 inches (50.8mm) as shown in Figure 3.

Step 2: With pipe thread sealant applied to the threads, hand tighten the sprinkler into the sprinkler fitting. Then tighten it with the Socket NR-H or Ratchet (3/8" drive) & Socket NR-H Combination (Ref. Figure 4). The teeth of the Socket must fit perfectly with the grooves on the Sprinkler for proper installation (Ref. Figure 4).

Step 3: If desired, the Protective Cap may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Protective Cap. Before the installation of the ceiling, the sprinkler installation can be started with a 2-3/8 inch (60mm) diameter clearance hole (Ref. Figure 3). Use the "Vertical Adjustment" indicator on the Protective Cap to check for proper installation height (Ref. Figure 3).

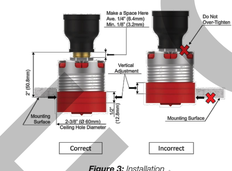


Figure 3: Installation

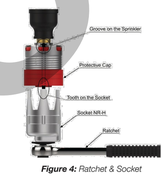


Figure 4: Ratchet & Socket

Step 4: Use the Cap Removal Tool for RC to remove the Protective Cap (Ref. Figure 5), and then push or screw a Cover Plate Assembly on the Cup of the Sprinkler by hand until its flange just has contact with the ceiling (Ref. Figure 6 and Figure 7). Stop tightening the Cover Plate Assembly once the flange has contact with the ceiling. If the ceiling has been lifted from its normal position in the process of tightening the Cover Plate Assembly, readjust the cover plate assembly as necessary. If the flange of the Cover Plate Assembly cannot contact the ceiling sufficiently, readjust the sprinkler fitting as necessary. When properly installed, there is a nominal 1/16 inch (1.6mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 6.

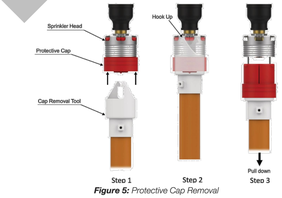


Figure 5: Protective Cap Removal

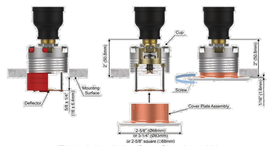


Figure 6: Installation (Cover Plate Assembly)

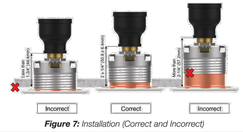


Figure 7: Installation (Correct and Incorrect)

CARE & MAINTENANCE

The following instructions must be implemented for the maintenance and service of the Model RC-RES.

Notes

Wet pipe sprinkler systems must be maintained at a minimum temperature of 40°F / 4°C to prevent freezing and bursting of the pipe and/or sprinklers.

Automatic sprinklers are not to be tested with a heat source. Operation of the heat responsive element can result.

Absence of a Cover Plate Assembly may delay the response time of the sprinkler in case of a fire.

Install the cover plate assembly properly, as shown in Figure 6. Improper installation of the cover plate assembly may cause improper operation or non-operation.

If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does not seal off any of the air gap.

Factory painted Cover Plates must not be repainted. They should be replaced, if necessary, by factory painted cover plates. Non-factory applied paint may adversely delay or prevent sprinkler operation in case of a fire.

Do not pull the Cover Plate. Separation may result.

In preparation for maintenance of the fire protection system, permission to close the main control valve must be obtained from the proper authorities, and all affected parties by this action, and must be informed before the maintenance session can commence.

Do NOT enclose any sprinklers within drapes, curtains, or valances.

Do NOT hang anything from the sprinklers.

Do NOT clean the sprinklers with soap and/or water, detergents, ammonia, cleaning fluids, or other chemicals. Remove dust, lint, cobwebs, cocoons, insects, and larvae by gently brushing with a feather duster or gently vacuuming with a soft bristle (i.e., dusting) brush attachment.

Exercise suitable safety precautions in the use and storage of highly flammable materials. The rapid rate of fire development and spread of these materials can reduce the ability of the sprinkler system to aid in the control of a fire involving such hazards.

Leaking or corroded sprinklers must be replaced.

Automatic Sprinklers must be kept in a cool and dry place.

Automatic sprinklers must never be physically altered, such as painted, plated, or coated, once shipped from the factory. If the sprinklers have been in any way modified, they must be replaced.

Great caution must be applied to prevent damage to the sprinklers at all stages - before, during, and after installation. Damaged units because of dropping, hitting, over-tightening, or wrench slippage, must be replaced.

The Model RC-RES must only be replaced with pendent sprinklers which are listed for residential fire protection service and which have the same nominal K-Factor, the same coverage area, and the same or lower flow ratings (as indicated under Table A "Hydraulic Design Criteria").

When remodeling, such as by adding false beams or light fixtures or changing the location of compartment walls, first verify that the new construction will not violate the installation requirements of the applicable standards of NFPA. Alter the new construction and/or the sprinkler system to suit the requirements of this document and the applicable NFPA regulations.

The owner is responsible for the maintenance of the sprinkler system, including inspection and testing of its compliance with this document, as well as the standards of the National Fire Protection Association (e.g., NFPA 25), and the regulations of any other authorities having jurisdiction. The owner should direct any questions regarding the above rules and regulations to the installing contractors or the sprinkler manufacturer. It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with NFPA 25.

LIMITED WARRANTY

For details of warranty, refer to Sales Contract.

ORDER PROCEDURE

When placing an order, please contact a local distributor with the following information (Model Name, Temperature Rating and Finish).

Sprinkler

- Model: RC-RES
  SIN: SS8464, Residential Flat Concealed Sprinkler, Pendent, K4.9, Temperature: 162°F (72°C) or 205°F (96°C)

Cover Plate Assembly

- 2-5/8 inch (ø68mm) or 3-1/4 inch (ø83mm) or 2-5/8 inch square (□68mm), Order separately from Sprinkler
  Please refer to the chart below for available sizes, temperature, and finishes.

	Standard Finishes								Custom Finishes	
	White	Ivory	Beige	Brown	Black	Nickel	Copper	Wood Grain	Custom Color	Custom Pattern
2-5/8" Round, 140°F	⊘	⊘	-	-	-	-	-	-	⊘	⊘
3-1/4" Round, 140°F	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘	⊘
2-5/8" Square, 140°F	⊘	-	-	-	-	-	-	-	⊘	⊘
2-5/8" Round, 162°F	⊘	-	-	-	-	-	-	-	⊘	⊘
3-1/4" Round, 162°F	⊘	⊘	⊘	⊘	⊘	-	-	⊘	⊘	⊘
2-5/8" Square, 162°F	⊘	-	-	-	-	-	-	-	⊘	⊘

Tools & Accessories

- Socket NR-H
  for use with a 3/8" drive ratchet (not included)
- Socket NR-H Plastic
  for use with a 1/2" drive ratchet (not included)
- Cap Removal Tool for RC
- Cover Plate Installation Tool

CLIENT:

ADDRESS:

NOTES:

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REV. NO.	DESCRIPTION	DATE	BY

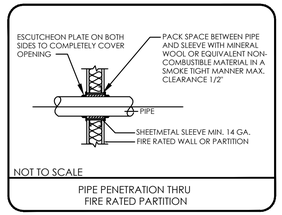
PROJECT:
THREE DUPLEX PHASED DEV.

TITLE:
FIRE EQUIPMENT DATA SHEETS.

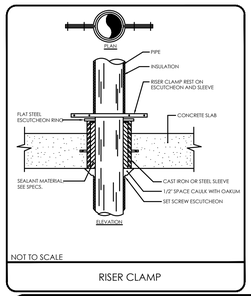
PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO.
F 3 . 0 1

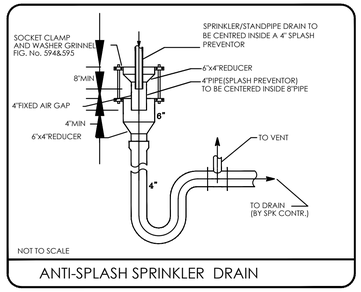
REV.



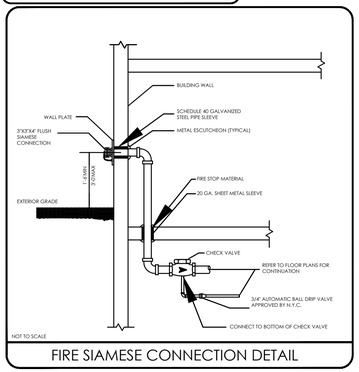
PIPE PENETRATION THRU FIRE RATED PARTITION



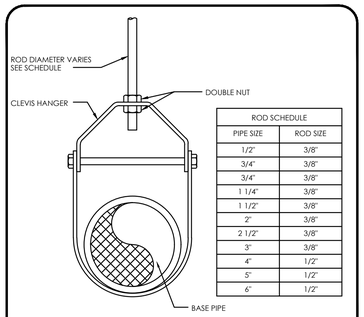
RISER CLAMP



ANTI-SPLASH SPRINKLER DRAIN

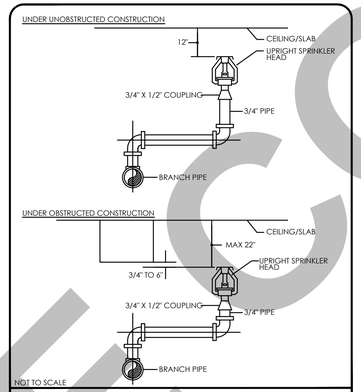


FIRE SIAMESE CONNECTION DETAIL

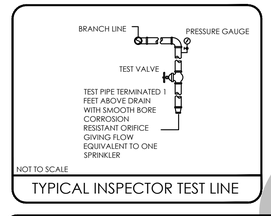


ROD SCHEDULE	
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
3/4"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"

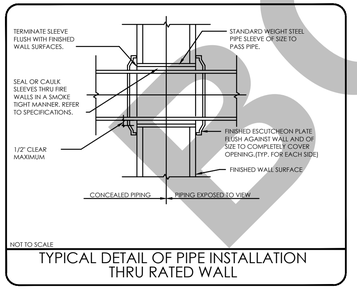
HANGER DETAIL



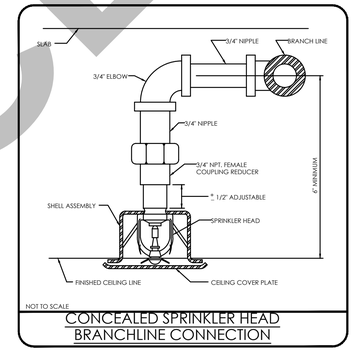
SPRINKLER HEAD DETAIL (UPRIGHT)



TYPICAL INSPECTOR TEST LINE



TYPICAL DETAIL OF PIPE INSTALLATION THRU RATED WALL



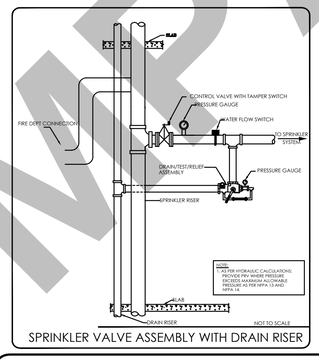
CONCEALED SPRINKLER HEAD BRANCHLINE CONNECTION

CPVC PIPING NOTES

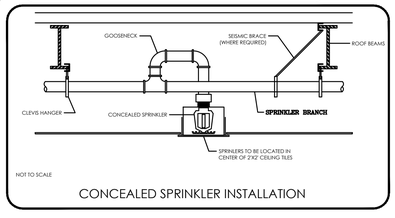
1. SYSTEM DESIGN AND INSTALLATION TO MEET THE REQUIREMENTS OF NFPA 13D (2019 ED.) AND CITY OF VCFD FIRE DEPARTMENT
2. THIS SYSTEM HAS BEEN HYDRAULICALLY CALCULATED TO PROVIDE 13 GPM @ TWO (2) REMOTE SPRINKLERS UTILIZING 16x6 COVERAGE OF THE TYCO CONC PENDENT (LFII) FIRE SPRINKLER OR (1) SPRNK AT 20 GPM USING 20X20 COVERAGE PER SPRINKLER
3. OBTAIN STRUCTURAL ENGINEERS APPROVAL BEFORE DRILLING ANY BEAMS.
4. ALL DIMENSIONS ARE +/- AND ARE A GUIDE FOR INSTALLATION ONLY.
5. CEILING HEIGHTS VARY AND ARE NOTED ON PLAN.
6. ALL PIPING SIZES IS 3/4" CPVC. SEE PLAN FOR ANY SIZING VARIATIONS.
   PROTECTION AGAINST FREEZING OF ALL PIPES, SPRINKLERS, AND VALVES IS THE RESPONSIBILITY OF THE OWNERS.
7. CPVC MAY BE RUN IN JOIST SPACES BETWEEN GYP. BOARD AND FLOOR PLY WITHOUT ADDED PROTECTION.
8. CPVC RUN IN UNSPRINKLERED AREAS SHALL BE COVERED OVER WITH COMMON INSULATION.
9. BRANCH LINES SHALL BE BRACED AT A DISTANCE OF SIX INCHES OR LESS FROM THE TEE OR ELBOW DROP TO THE SPRINKLER HEAD.
10. HANGER SPACING FOR 3/4" CPVC PIPE IS 6'-0" ON CENTER.
11. THE PIPE HANGER MUST HAVE A LOAD BEARING SURFACE AT LEAST 1/2 INCH WIDE OR PROVIDE SUPPORT IN TWO PLACES, SUCH AS A WRAP AROUND U-HANGER.
12. THE SYSTEM IS TO MEET THE REQUIREMENTS OF NFPA 13D AND CRC

SPACING REQUIREMENTS OF SPRINKLERS IN HEAT ZONES

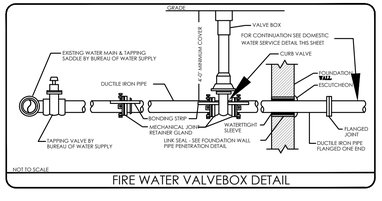
MINIMUM DISTANCE	OBJECT
0-6	WATER HEATER
1-0	UNINSULATED PIPE
1-6	OVEN AND STOVE
2-0	CEILING DIFFUSER
5-0	FIREPLACE FRONT
3-0	FIREPLACE SIDES
1-6	UNINSULATED HEATING DUCT
1-6	WATER HEATER OR FURNACE FLUE
3-0	CEILING FAN



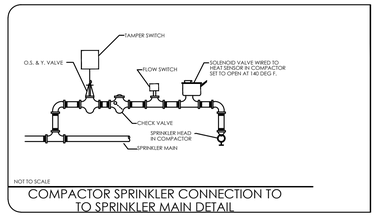
SPRINKLER VALVE ASSEMBLY WITH DRAIN RISER



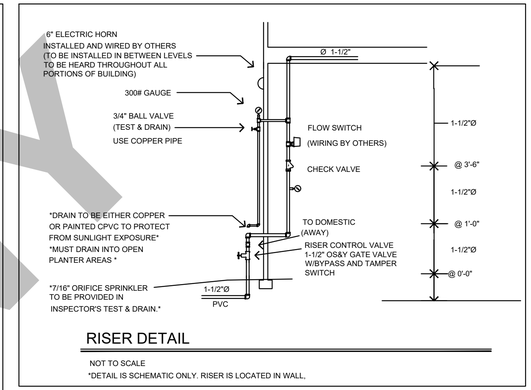
CONCEALED SPRINKLER INSTALLATION



FIRE WATER VALVEBOX DETAIL



COMPACTOR SPRINKLER CONNECTION TO TO SPRINKLER MAIN DETAIL



RISER DETAIL

NOT TO SCALE
*DETAIL IS SCHEMATIC ONLY. RISER IS LOCATED IN WALL.

CLIENT:

ADDRESS:

CONFIDENTIALITY STATEMENT:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
THREE DUPLEX PHASED DEV.

TITLE:
FIRE GENERAL DETAILS.

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO.
F 4 . 0 1

REV.

City of San Diego
Development Services
Attention: **Hydrant Flow Request**
1222 First Ave., MS-401
San Diego, CA 92101
(619) 446-5000

Hydrant Flow Request

FORM
DS-160
OCTOBER 2016

Fill out the information below completely for all sprinkler system flow requests, including NFPA 13, 13D and 13R systems. E-mail form to: DSDHydrantFlow@sandiego.gov, or mail request to the above address.

Please print or type legibly.

Company Requesting Hydrant Flow:
Owner

Telephone No: Fax No: E-mail Address:

Project Number for the Building Permits:
3777 Florida St.

Location of Hydrants:

Cross Street: Flroida Street City: San Diego State: CA ZIP Code: 92104

FOR CITY USE ONLY

Facility Sequence Number: (FSN): 530172

Static: 84.35 PSI Elevation: 280 FEET

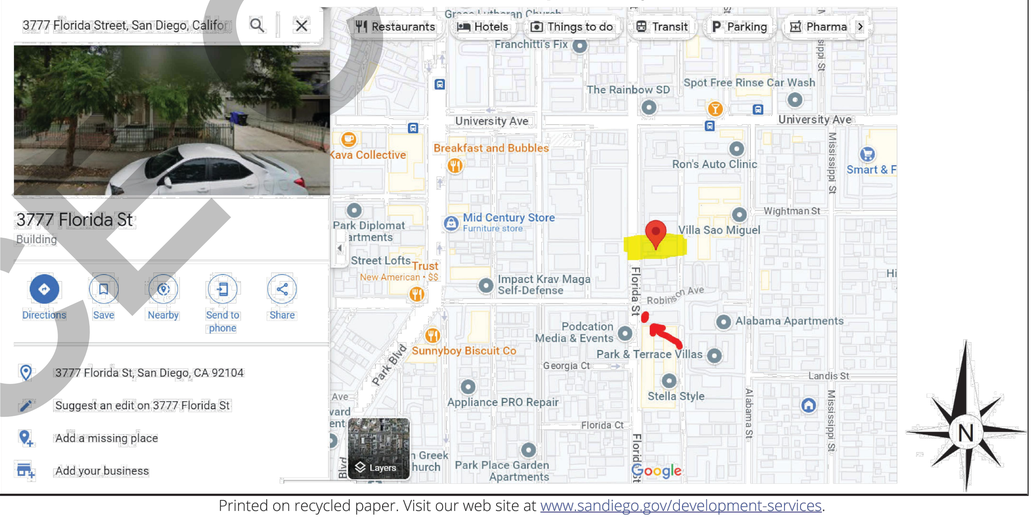
Pitot: --------- PSI Residual: 73.84 PSI

Date: 5/16/2023 Flow: 1403 GPM

Researched in database by: Anthony Larkins

The information provided above is based upon a water model. It is the contractor's responsibility to confirm the available static pressure at the system point of connection. If a discrepancy is noticed at that time, notify DSDHydrantFlow@sandiego.gov as soon as possible.

Please draw an accurate map for fire hydrant data



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ADDRESS:

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REV. NO.	DESCRIPTION	DATE	BY

PROJECT:
THREE DUPLEX PHASED DEV.

TITLE:
HYDRANT FLOW

PROJ. NO.	PROJ. ENGR.	SCALE @ 24X36:
		NTS

DRAWING NO.
F 5 . 0 1

REV.