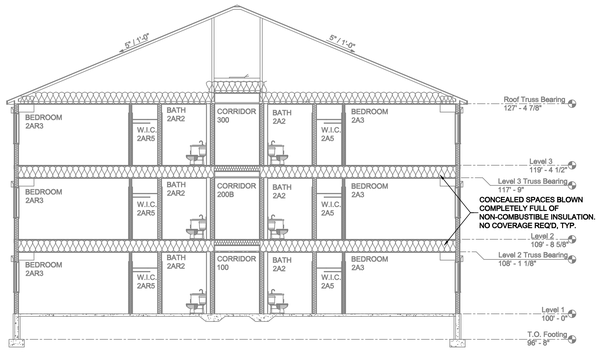
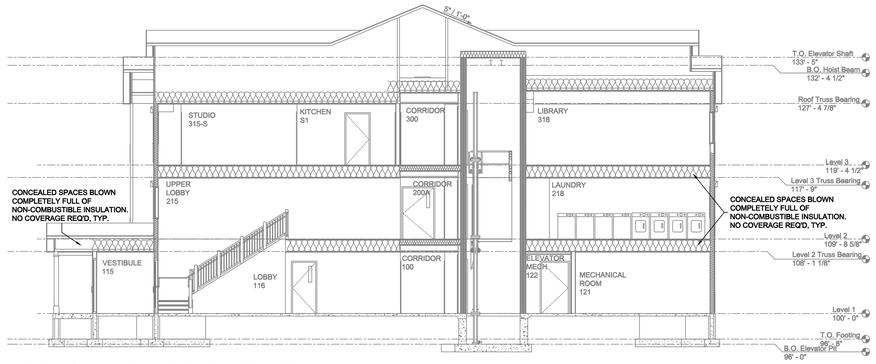


# A BUILDING SECTION
SCALE= 1/8" : 1'-0"



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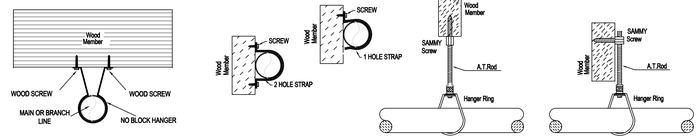
SCALE= 1/8" : 1'-0"



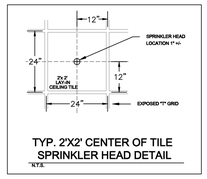
HANGER DETAILS

NFPA 13 STEEL PIPE HANGER SPACING
(EXCEPT LIGHT WALL THRD PIPING)

NOMINAL SIZE inches	MAX SPACING feet
1"	12'-0"
1-1/4"	12'-0"
1-1/2"	15'-0"
2"	15'-0"
2-1/2"	15'-0"
3"	15'-0"
4"& LARGER	15'-0"

NFPA 13 CPVC PIPE HANGER SPACING

NOMINAL SIZE inches	MAX SPACING feet
3/4"	5'-6"
1"	6'-0"
1-1/4"	6'-6"
1-1/2"	7'-0"
2"	8'-0"
2-1/2"	9'-0"
3"	10'-0"



TYP. 2'X2' CENTER OF TILE SPRINKLER HEAD DETAIL
NTS

INSTALLATION DETAIL

GENERAL NOTES

1. MINNESOTA STATE BUILDING CODE (2020)

   1.1. OCCUPANCY:**RESIDENTIAL R-2; APARTMENT**
   1.2. TYPE OF CONSTRUCTION:**V-B (1HR RATED PROTECTED, COMBUSTIBLE CONSTRUCTION)**
   1.3. SPRINKLERED AREAS (APPROXIMATE - SEE ARCHITECTURAL PLANS FOR ACTUAL)
   1ST FLOOR = 15,864 S.F.
   2ND FLOOR = 15,755 S.F.
   3RD FLOOR = 15,755 S.F.
   ATTIC = 15,755 S.F.
   TOTAL = 63,129 S.F.

   1.4. INSTALLATION STANDARDS:
   SPRINKLER SYSTEM DESIGNED AND INSTALLED PER **NFPA-13 (2016)**

2. SPRINKLER PIPE TYPES:
   -WET-
   2.1. 1" BRANCH LINES TO BE **BLAZEMASTER CPVC** PIPING WITH CEMENTED FITTINGS
   2.2. 1¼" THROUGH 1½" MAIN & BRANCH LINES TO BE **BLAZEMASTER CPVC** PIPING WITH CEMENTED FITTINGS
   2.3. 1" THROUGH 1½" BRANCH LINES TO BE THREADED BLK **SCHEDULE 40** WITH THREADED FITTINGS
   -DRY & PRE-ACTION-
   2.4. 1" THROUGH 1½" BRANCH LINES TO BE THREADED BLK **SCHEDULE 40** WITH THREADED FITTINGS
   2.5. 1½" THROUGH 4" MAIN & BRANCH LINES TO BE GROOVED BLK **SCHEDULE 10** WITH GROOVED FITTINGS

3. DESIGN CRITERIA
   3.1. RESIDENTIAL ROOMS, CORRIDORS, LOBBIES, AND SIMILAR AREAS DESIGNED TO LIGHT HAZARD
   3.2. LAUNDRY ROOM, MECH ROOMS, STORAGE ROOMS, AND SIMILAR AREAS DESIGNED TO ORDINARY HAZARD GROUP 1
   3.3. REMOTE AREA REDUCTIONS HAVE BEEN TAKEN WHERE APPLICABLE PER **NFPA 13 SEC. 11.2.3.2.3**

4. NOTES:
   4.1. ALL MATERIAL TO BE NEW AND MEET U.L. STANDARDS
   4.2. HANGERS TO BE INSTALLED IN ACCORDANCE WITH NFPA 13 (2016) - **SEE PLAN FOR HANGING REQ.**
   4.3. DRY SYSTEM PIPE SLOPE INSTALLATION:
   SPRINKLER MAINS TO BE ¼" PER 10 FEET
   SPRINKLER BRANCH LINES TO BE ½" PER 10 FEET
   4.4. DRY SYSTEM CAPACITY
   4.4.1. 371 GAL

5. SYMBOLS USED ON DRAWINGS:
   - 6-10" — PIPE ELEVATION A.F.F
   - -6" — PIPE ELEVATION BELOW B.O.D
   - OH1 — ROOM HAZARD CLASSIFICATION (ALL ROOMS ARE CONSIDERED LIGHT HAZARD UNLESS NOTED)
   - (F1) — HYDRAULIC CALCULATION JUNCTION POINT
   - 0'-0" — CEILING HEIGHT

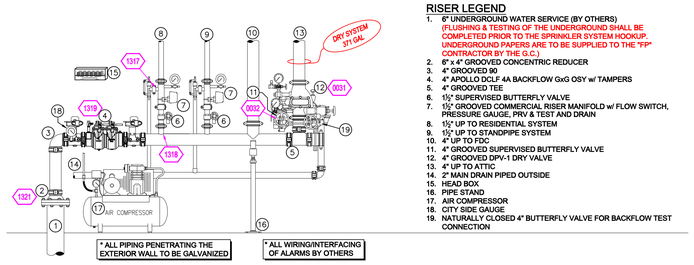
6. SCOPE OF WORK:
   6.1.

PIPE LEGEND

- BLACK STEEL FIRE SPRINKLER PIPING
- CPVC FIRE SPRINKLER PIPING
- FIRE SPRINKLER STANDPIPE PIPING
- FIRE SPRINKLER FDC PIPING

SPRINKLER HEAD LEGEND

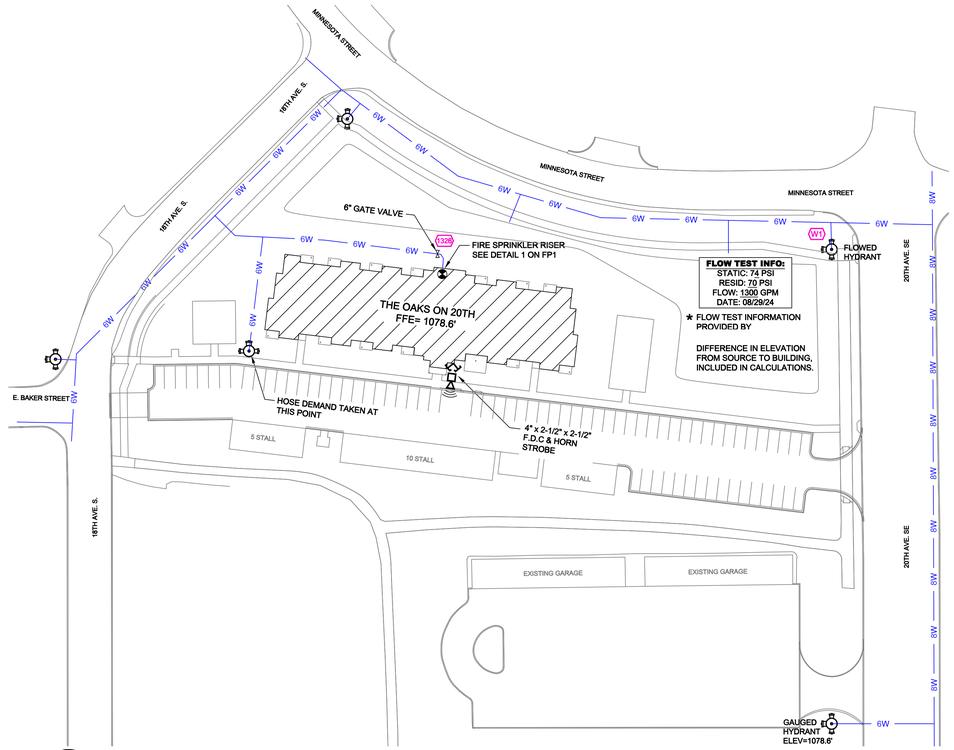
SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#	ESCUTCHEON	MAX SPACING
◉	255	PENDENT	WHITE	155	4.90	1/2"	V2740	VICTAULIC	FL-RES	SEMI-RECESS	18' x 18'
◉	83	PENDENT	WHITE	200	5.60	1/2"	V2708	VICTAULIC	FL-QR	SEMI-RECESS	225 SF (LH) - 130 SF (OH)
◄	42	SIDEWALL	WHITE	200	5.60	1"	V3610	VICTAULIC	FL-QR	401	14' x 14'
◁	33	SIDEWALL	WHITE	200	5.60	1/2"	V2710	VICTAULIC	FL-QRSW	401	196 SF (LH) - 100 SF (OH)
◄	150	SIDEWALL	WHITE	155	4.00	1/2"	VK486	VIKING	FREEDOM	401	16' x 16' U.N.O.
☒	30	SPRIG	BRASS	212	8.00	3/4"	RA5622	RELIABLE	DD80-6	N/A	6' x 66' OR 8' x 70'
◪	42	UPRIGHT / SPRIG	BRASS	212	5.60	1/2"	RA5626	RELIABLE	AH56	N/A	10' x 15'
⊗	31	UPRIGHT / SPRIG	BRASS	200	5.60	1/2"	RA5624	RELIABLE	DD56-6	N/A	6' x 40'
○	22	UPRIGHT / SPRIG	BRASS	212	5.60	1/2"	V2704	VICTAULIC	FL-QR	N/A	8' x 15'
	668	TOTAL									



RISER LEGEND

1. 6" UNDERGROUND WATER SERVICE (BY OTHERS)
   (FLUSHING & TESTING OF THE UNDERGROUND SHALL BE COMPLETED PRIOR TO THE SPRINKLER SYSTEM HOOKUP. UNDERGROUND PAPERS ARE TO BE SUPPLIED TO THE "FP" CONTRACTOR BY THE G.C.)
2. 6" x 4" GROOVED CONCENTRIC REDUCER
3. 4" GROOVED 90
4. 4" APOLLO DCLF 4A BACKFLOW GxG OSY w/ TAMPERS
5. 4" GROOVED TEE
6. 1½" SUPERVISED BUTTERFLY VALVE
7. 1½" GROOVED COMMERCIAL RISER MANIFOLD w/ FLOW SWITCH, PRESSURE GAUGE, PRV & TEST AND DRAIN
8. 1½" UP TO RESIDENTIAL SYSTEM
9. 1½" UP TO STANDPIPE SYSTEM
10. 4" UP TO FDC
11. 4" GROOVED SUPERVISED BUTTERFLY VALVE
12. 4" GROOVED DPV-1 DRY VALVE
13. 4" UP TO ATTIC
14. 2" MAIN DRAIN PIPED OUTSIDE
15. HEAD BOX
16. PIPE STAND
17. AIR COMPRESSOR
18. CITY SIDE GAUGE
19. NATURALLY CLOSED 4" BUTTERFLY VALVE FOR BACKFLOW TEST CONNECTION

# RISER DETAIL
SCALE= 1/2" : 1'-0"



SITE PLAN
SCALE: 1" = 50'-0"

N W E S
2' 4' 6' 8' 10' 12' 14' 16' 18'

GENERAL NOTES

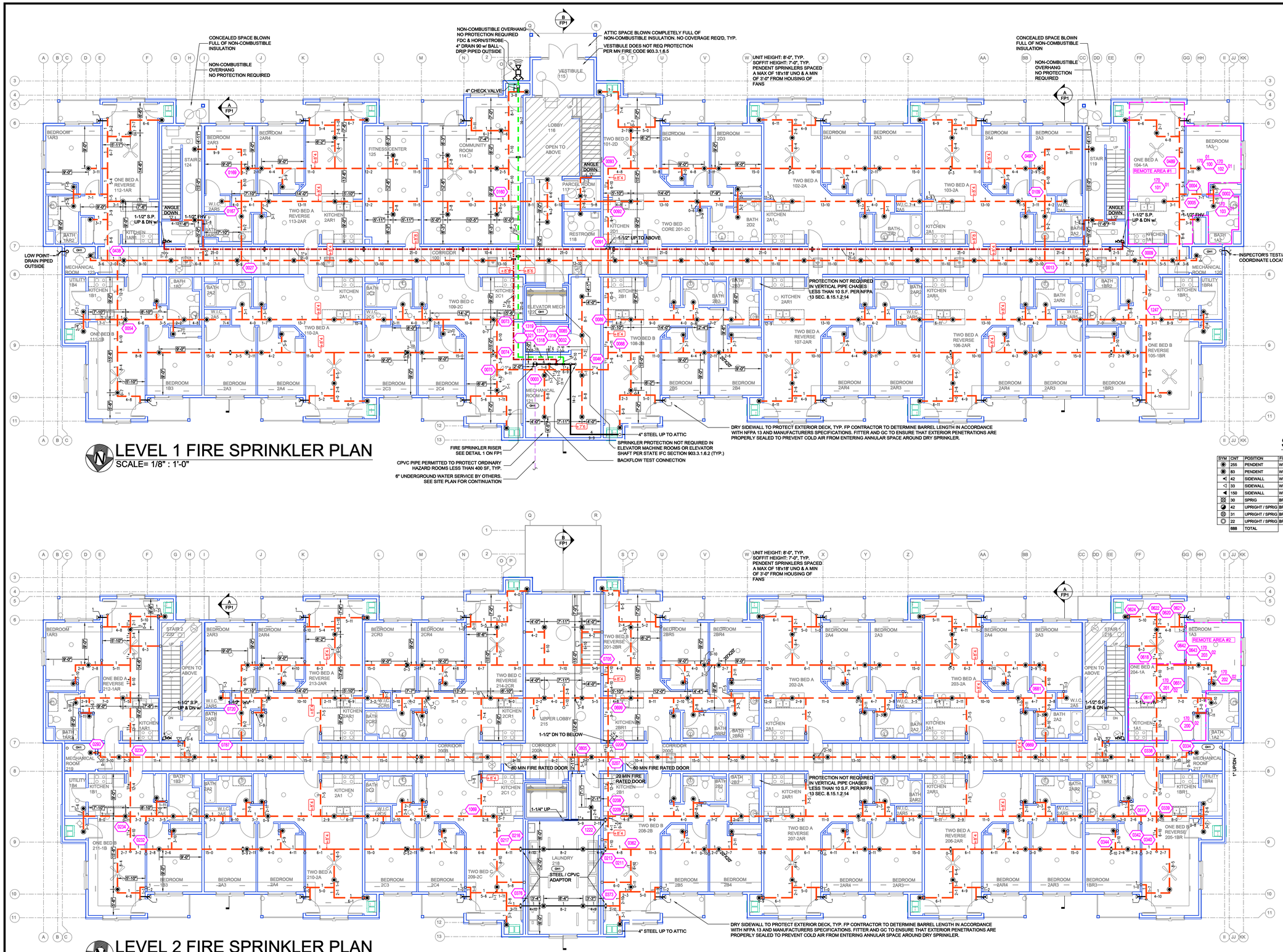
1. SYSTEM INSTALLED PER NFPA-13 (2016 EDITION) AND STATE FIRE MARSHAL
2. ALL EQUIPEMENT FOR THIS SYSTEM SHALL BE U.L. LISTED
3. MINIMUM PIPE SIZE SHALL BE 1" NOMINAL PIPE
4. ALL SCH-10 & LIGHTWALL PIPING HAS WELDED OUTLETS & GROOVED SHORT RADIUS FITTINGS ALL WELDING PER NFPA-13(3-6.2)
5. NO INSTALLATION OR FABRICATION TO BEGIN WITHOUT APPROVED SHOP DRAWINGS
6. ALL PIPE LOCATIONS ARE TO BE FIELD MEASURED PRIOR TO FABRICATON AND INSTALLTION BY SPRINKLER CONTRACTOR
7. ALL DIMENSIONS SHOWN ARE CENTER TO CENTER
8. HIGH TEMPERATURE HEADS ARE TO BE FIELD LOCATED WHERE REQUIRED
9. PROVIDE ON SPARE HEAD CABINET w/6 HEADS & 1 HEAD WRENCH
10. HANGERS ARE TO BE U.L. LISTED AND F.M. APPROVED
11. ELECTRICAL WIRING, ALARM, DETECTION AND SUPERVISORY BY OWNER
12. OWNER'S RESPONSIBILITY TO PROVIDE ADEQUATE HEATING TO PREVENT WET SYSTEM PIPING FROM FREEZING.

NO	REVISIONS	DATE	APPROVAL STAMPS

Drawing Title: FIRE PROTECTION PLAN

THE OAKS ON 20TH BUILDING 3
109 20TH AVE
ST. JOSEPH, MN

Contract No. C25-99
Drawing Date: 04/27/26
Scale: 1/8" = 1'-0"
Drawn By: JF
Approval By: STATE FIRE MARSHAL DIV.
SHEET NO. FP 1 of 3



LEVEL 1 FIRE SPRINKLER PLAN

SCALE= 1/8" : 1'-0"

LEVEL 2 FIRE SPRINKLER PLAN

SCALE= 1/8" : 1'-0"

Design Area #: 01	HAZARD: LH
Zone: 1	System Type: WET
Location: ONE BED A 104-1A	
Flowing Outlets: 4	
Density: 0.10	Remote Area: 602
Flow: 309 gpm	@ 60.7 psi
Calculation Safety: 13 psi	
Includes 100 gpm Hose allowance	

FOUR MOST DEMANDING RESIDENTIAL SPRINKLERS CALCULATED PER NFPA 13 11.3.1.1.

138 GPM OF DOMESTIC DEMAND ADDED TO SPRINKLER DEMAND PER MNSFC 903.3.5.2

Design Area #: 02	HAZARD: LH
Zone: 1	System Type: WET
Location: ONE BED A 204-1A	
Flowing Outlets: 4	
Density: 0.10	Remote Area: 408
Flow: 309 gpm	@ 52.6 psi
Calculation Safety: 21.2 psi	
Includes 100 gpm Hose allowance	

FOUR MOST DEMANDING RESIDENTIAL SPRINKLERS CALCULATED PER NFPA 13 11.3.1.1.

138 GPM OF DOMESTIC DEMAND ADDED TO SPRINKLER DEMAND PER MNSFC 903.3.5.2

PIPE LEGEND

- BLACK STEEL FIRE SPRINKLER PIPING
- CPVC FIRE SPRINKLER PIPING
- FIRE SPRINKLER STANDPIPE PIPING
- FIRE SPRINKLER FDC PIPING

SPRINKLER HEAD LEGEND

SYM	CNT	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#	ESCUTCHEON	MAX SPACING
◉	255	PENDENT	WHITE	155	4.90	1/2"	V2740	VICTAULIC	FL-RES	SEMI-RECESS	18' x 18'
◉	83	PENDENT	WHITE	200	5.60	1/2"	V2708	VICTAULIC	FL-QR	SEMI-RECESS	225 SF (LH) - 130 SF (OH)
◀	42	SIDEWALL	WHITE	200	5.60	1"	V3610	VICTAULIC	FL-QR	401	14' x 14'
◁	33	SIDEWALL	WHITE	200	5.60	1/2"	V2710	VICTAULIC	FL-QRSW	401	196 SF (LH) - 100 SF (OH)
◀	150	SIDEWALL	WHITE	155	4.00	1/2"	VK486	VIKING	FREEDOM	401	16' x 16' U.N.O.
⊠	30	SPRIG	BRASS	212	8.00	3/4"	RA5622	RELIABLE	DO80-6	N/A	8' x 66' OR 5' x 70'
◪	42	UPRIGHT / SPRIG	BRASS	212	5.60	1/2"	RA5626	RELIABLE	AH56	N/A	10' x 15'
⊗	31	UPRIGHT / SPRIG	BRASS	200	5.60	1/2"	RA5624	RELIABLE	DO56-6	N/A	8' x 40'
◎	22	UPRIGHT / SPRIG	BRASS	212	5.60	1/2"	V2704	VICTAULIC	FL-QR	N/A	8' x 15'
	888	TOTAL									

GENERAL NOTES

1. SYSTEM INSTALLED PER NFPA-13 (2016 EDITION) AND STATE FIRE MARSHAL
2. ALL EQUIPEMENT FOR THIS SYSTEM SHALL BE U.L. LISTED
3. MINIMUM PIPE SIZE SHALL BE 1" NOMINAL PIPE
4. ALL SCH-10 & LIGHTWALL PIPING HAS WELDED OUTLETS & GROOVED SHORT RADIUS FITTINGS ALL WELDING PER NFPA-13(3-6.2)
5. NO INSTALLATION OR FABRICATION TO BEGIN WITHOUT APPROVED SHOP DRAWINGS
6. ALL PIPE LOCATIONS ARE TO BE FIELD MEASURED PRIOR TO FABRICATION AND INSTALLTION BY SPRINKLER CONTRACTOR
7. ALL DIMENSIONS SHOWN ARE CENTER TO CENTER
8. HIGH TEMPERATURE HEADS ARE TO BE FIELD LOCATED WHERE REQUIRED
9. PROVIDE ON SPARE HEAD CABINET w/6 HEADS & 1 HEAD WRENCH
10. HANGERS ARE TO BE U.L. LISTED AND F.M. APPROVED
11. ELECTRICAL WIRING, ALARM, DETECTION AND SUPERVISORY BY OWNER
12. OWNER'S RESPONSIBILITY TO PROVIDE ADEQUATE HEATING TO PREVENT WET SYSTEM PIPING FROM FREEZING.

NO	REVISIONS	DATE	APPROVAL STAMPS

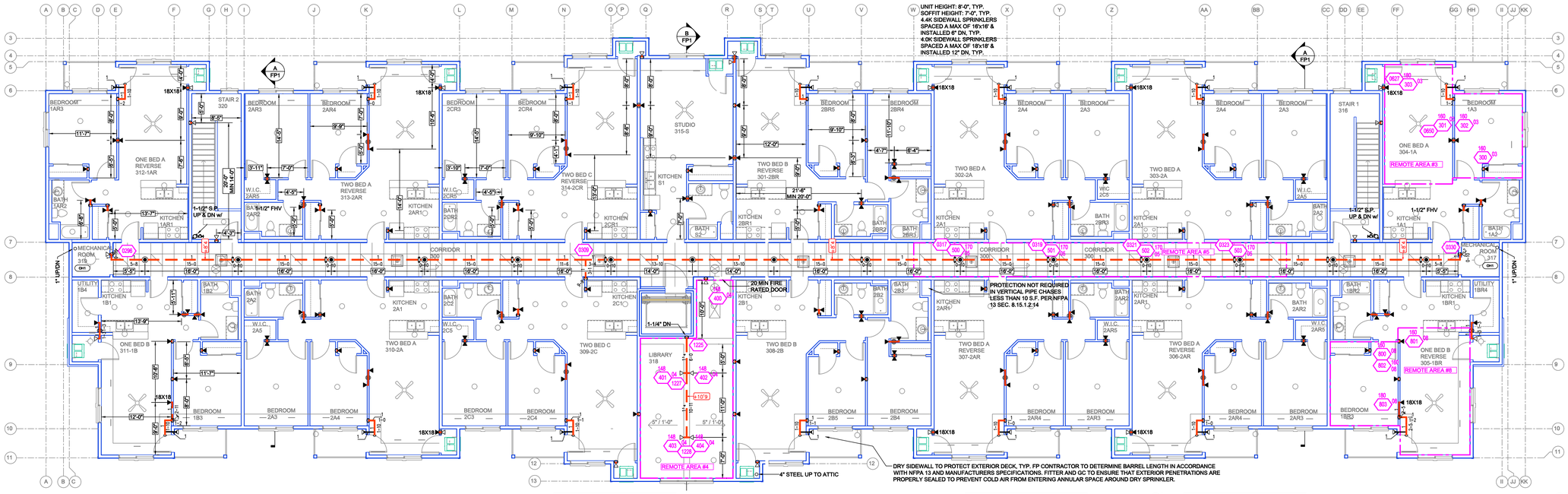
Drawing Title: FIRE PROTECTION PLAN

THE OAKS ON 20TH BUILDING 3

109 20TH AVE
ST. JOSEPH, MN

Contract No. C25-99

Drawing Date:	04/27/26
Scale:	1/8" = 1'-0"
Drawn By:	JF
Approval By:	STATE FIRE MARSHAL DIV.
SHEET NO.	FP 2 of 3



LEVEL 3 FIRE SPRINKLER PLAN

SCALE= 1/8" : 1'-0"

Design Area #: 04 HAZARD: LH
Zone: 1 System Type: WET
Location: LIBRARY
Flowing Outlets: 4
Density: 0.1 Remote Area: 444
Flow: 321 gpm @ 53.2 psi
Calculation Safety: 20.5psi
Includes 100 gpm Hose allowance

CALCULATED TO ROOM DESIGN METHOD PER NFPA 13 SEC. 11.2.3.3.5(1)

115 GPM OF DOMESTIC DEMAND ADDED TO SPRINKLER DEMAND PER MNSFC 903.3.5.2

Design Area #: 05 HAZARD: LH
Zone: 1 System Type: WET
Location: CORRIDOR 300
Flowing Outlets: 4
Density: 0.10 Remote Area: 371
Flow: 307 gpm @ 60.8 psi
Calculation Safety: 13 psi
Includes 100 gpm Hose allowance

FOUR MOST DEMANDING RESIDENTIAL SPRINKLERS CALCULATED PER NFPA 13 11.3.1.1.

138 GPM OF DOMESTIC DEMAND ADDED TO SPRINKLER DEMAND PER MNSFC 903.3.5.2

CALC PLACARD

Design Area #: 06 HAZARD: LH
Zone: 2 System Type: DRY
Location: ATTIC PEAK
Flowing Outlets: 7
Density: 0.10 Remote Area: 2512
Flow: 581 gpm @ 67.8 psi
Calculation Safety: 5.3 psi
Includes 100 gpm Hose allowance

7 DD AND 2 AH SPRINKLERS CALCULATED PER MANUFACTURER'S CUT SHEET

138 GPM OF DOMESTIC DEMAND ADDED TO SPRINKLER DEMAND PER MNSFC 903.3.5.2

CALC PLACARD

Design Area #: 03 HAZARD: LH
Zone: 1 System Type: WET
Location: ONE BED A 304-1A
Flowing Outlets: 4
Density: 0.10 Remote Area: 412
Flow: 308 gpm @ 62.4 psi
Calculation Safety: 10.2psi
Includes 100 gpm Hose allowance

FOUR MOST DEMANDING RESIDENTIAL SPRINKLERS CALCULATED PER NFPA 13 11.3.1.1.

138 GPM OF DOMESTIC DEMAND ADDED TO SPRINKLER DEMAND PER MNSFC 903.3.5.2

CALC PLACARD

Design Area #: 08 HAZARD: LH
Zone: 1 System Type: WET
Location: ONE BED B REVERSE 305-1BR
Flowing Outlets: 4
Density: 0.10 Remote Area: 435
Flow: 318 gpm @ 64.9 psi
Calculation Safety: 8.8 psi
Includes 100 gpm Hose allowance

FOUR MOST DEMANDING RESIDENTIAL SPRINKLERS CALCULATED PER NFPA 13 11.3.1.1.

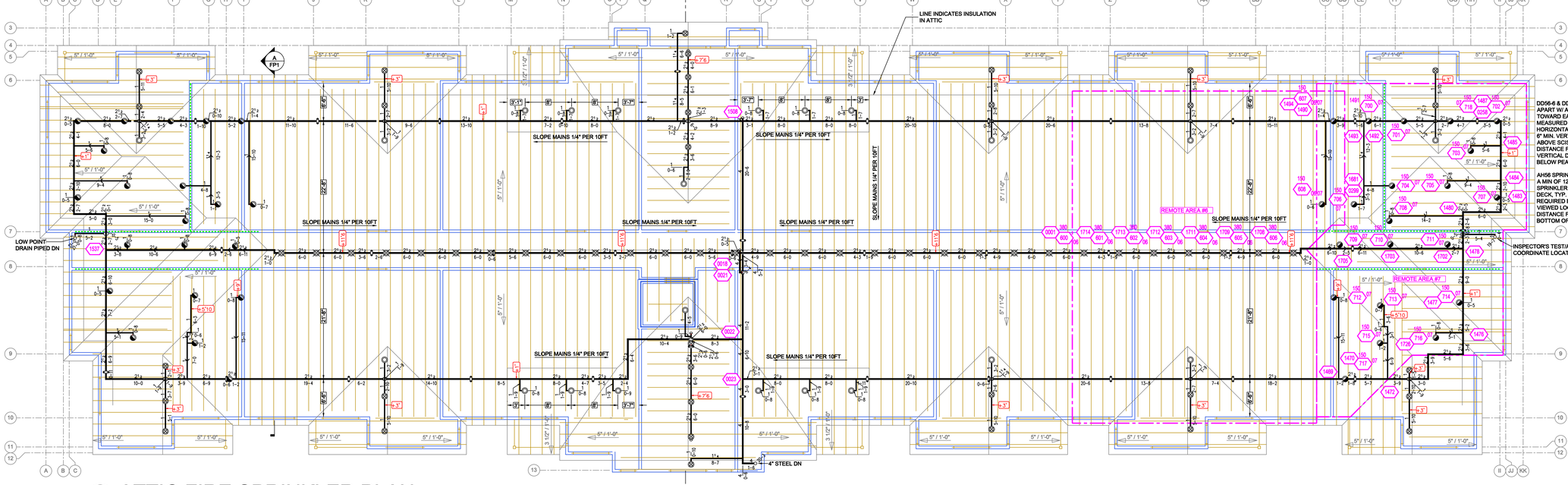
138 GPM OF DOMESTIC DEMAND ADDED TO SPRINKLER DEMAND PER MNSFC 903.3.5.2

PIPE LEGEND

- BLACK STEEL FIRE SPRINKLER PIPING
- CPVC FIRE SPRINKLER PIPING
- FIRE SPRINKLER STAND/PIPE PIPING
- FIRE SPRINKLER FDC PIPING

SPRINKLER HEAD LEGEND

SYM	CNT.	POSITION	FINISH	TEMP	K	NPT	SIN	MFG.	MODEL#	ESCUTCHEON	MAX SPACING
◉	255	PENDENT	WHITE	155	4.90	1/2"	V2740	VICTAULIC	FL-RES	SEMI-RECESS	18' x 18'
◉	83	PENDENT	WHITE	200	5.60	1/2"	V2708	VICTAULIC	FL-QR	SEMI-RECESS	225 SF (LH) - 130 SF (OH)
●|	42	SIDEWALL	WHITE	200	5.60	1"	V3610	VICTAULIC	FL-QR	401	14' x 14'
◁	33	SIDEWALL	WHITE	200	5.60	1/2"	V2710	VICTAULIC	FL-QRSW	401	196 SF (LH) - 100 SF (OH)
◀	150	SIDEWALL	WHITE	155	4.00	1/2"	VK486	VIKING	FREEDOM	401	16' x 16' U.N.O.
⊠	30	SPRIG	BRASS	212	8.00	3/4"	RA5622	RELIABLE	DO80-6	N/A	8' x 66' OR 5' x 70'
◪	42	UPRIGHT / SPRIG	BRASS	212	5.60	1/2"	RA5626	RELIABLE	AH56	N/A	10' x 15'
⊗	31	UPRIGHT / SPRIG	BRASS	200	5.60	1/2"	RA5624	RELIABLE	DO56-6	N/A	8' x 40'
○	22	UPRIGHT / SPRIG	BRASS	212	5.60	1/2"	V2704	VICTAULIC	FL-QR	N/A	8' x 15'
	888	TOTAL									



Design Area #: 07 HAZARD: LH
Zone: 2 System Type: DRY
Location: ATTIC WEST HIP
Flowing Outlets: 21
Density: 0.10 Remote Area: 1574
Flow: 585 gpm @ 60 psi
Calculation Safety: 12.9psi
Includes 100 gpm Hose allowance

UP TO 1950 SF CALCULATION PER MANUFACTURER'S CUT SHEET

138 GPM OF DOMESTIC DEMAND ADDED TO SPRINKLER DEMAND PER MNSFC 903.3.5.2

ATTIC FIRE SPRINKLER PLAN

SCALE= 1/8" : 1'-0"

GENERAL NOTES

1. SYSTEM INSTALLED PER NFPA-13 (2016 EDITION) AND STATE FIRE MARSHAL
2. ALL EQUIPEMENT FOR THIS SYSTEM SHALL BE U.L. LISTED
3. MINIMUM PIPE SIZE SHALL BE 1" NOMINAL PIPE
4. ALL SCH-10 & LIGHTWALL PIPING HAS WELDED OUTLETS & GROOVED SHORT RADIUS FITTINGS ALL WELDING PER NFPA-13(3.6.2)
5. NO INSTALLATION OR FABRICATION TO BEGIN WITHOUT APPROVED SHOP DRAWINGS
6. ALL PIPE LOCATIONS ARE TO BE FIELD MEASURED PRIOR TO FABRICATON AND INSTALLTION BY SPRINKLER CONTRACTOR
7. ALL DIMENSIONS SHOWN ARE CENTER TO CENTER
8. HIGH TEMPERATURE HEADS ARE TO BE FIELD LOCATED WHERE REQUIRED
9. PROVIDE ON SPARE HEAD CABINET w/6 HEADS & 1 HEAD WRENCH
10. HANGERS ARE TO BE U.L. LISTED AND F.M. APPROVED
11. ELECTRICAL WIRING, ALARM, DETECTION AND SUPERVISORY BY OWNER
12. OWNER'S RESPONSIBILITY TO PROVIDE ADEQUATE HEATING TO PREVENT WET SYSTEM PIPING FROM FREEZING.

NO	REVISIONS	DATE	APPROVAL STAMPS

Drawing Title: FIRE PROTECTION PLAN

THE OAKS ON 20TH BUILDING 3

109 20TH AVE

ST. JOSEPH, MN

Contract No. C25-99

Drawing Date: 04/27/26

Scale: 1/8" = 1'-0"

Drawn By: JF

Approval By: STATE FIRE MARSHAL DIV.

SHEET NO. FP 3 of 3