

ICELAND SKATING RINK
1430 DEL PASO BLVD.
SACRAMENTO, CA 95815
FIRE ALARM SYSTEM

SCOPE OF WORK

COSCO FIRE PROTECTION SHALL PROVIDE CONSULTATION, DESIGN, INSTALLATION, AND EQUIPMENT PER THE CONTRACTUAL AGREEMENTS OF THE PROJECT NAME AND PROJECT NUMBER IDENTIFIED WITHIN THE TITLE BLOCK; CONSISTING, BUT NOT LIMITED TO THE FOLLOWING:

UPGRADE ALL NOTIFICATION DEVICES WITHIN AREA C AND AREA D ONLY TO COMPLY WITH SYNCHRONIZATION REQUIREMENTS. ALL OTHER DEVICES/EQUIPMENT IS EXISTING AND IS TO REMAIN UNCHANGED. UPDATED VOLTAGE DROP CALCULATIONS ARE BEING PROVIDED FOR THE AFFECTED NAC CIRCUITS ONLY. TESTING SHALL BE ACCORDING TO NFPA 72 2022. INSTALLATION SHALL COMPLY WITH APPLICABLE CODES.

ALL WIRING IS EXISTING AND IS TO BE REUSED AS-IS. THERE WILL BE NO MODIFICATION TO THE FUNCTION OR SEQUENCE OF OPERATIONS OF THE EXISTING SYSTEM.

REACCEPTANCE TESTING
PLEASE NOTE THAT ANY CHANGE IN SOFTWARE WILL REQUIRE REACCEPTANCE TESTING PER 2022 NFPA 72, SECTION 14.4.2.

BUILDING AND PROJECT DATA

OCCUPANCY CLASSIFICATION & USE:	A-4
OCCUPANT LOAD:	>500
CONSTRUCTION TYPE:	I-A
BUILDING AREA:	13,500 SQ. FT.
NUMBER OF STORIES:	1
AUTOMATIC SPRINKLERS:	YES
TYPE OF SYSTEM:	FIRE SPRINKLER MONITORING
SYSTEM DESIGNER:	BYRON GONZALES OFFICE: 916-652-1306
MONITORING STATION:	GENERAL MONITORING SERVICES 17951 LYONS CIRCLE HUNTINGTON BEACH, CA 92647 UL # 57894-1 ULPFA P: 888-467-1119 METHOD OF COMMUNICATION:

APPLICABLE CODES AND STANDARDS

2019 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.
2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.
2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.
2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R.
2022 NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE

SHEET INDEX

SHEET #	DESCRIPTION
FA0.1	FIRE ALARM SYSTEM LEGENDS, NOTES & VICINITY MAP
FA1.0	FLOOR PLAN, DETAILS, RISER DIAGRAM & CALCS

CIRCUITS AND PATHWAYS

REFER TO NFPA 72 2022 SECTION 12.3 PATHWAY CLASS DESIGNATIONS AND SECTION 12.4 PATHWAY SURVIVABILITY FOR FURTHER INFORMATION.

NAC CIRCUITS						IDC CIRCUITS							
CLASS	A	B	C	D	E	X	CLASS	A	B	C	D	E	X
		●							●				
SURVIVABILITY	0	1	2	3	4		SURVIVABILITY	0	1	2	3	4	
		●							●				
SLC CIRCUITS						CONTROL CIRCUITS							
CLASS	A	B	C	D	E	X	CLASS	A	B	C	D	E	X
		●										●	
SURVIVABILITY	0	1	2	3	4		SURVIVABILITY	0	1	2	3	4	
		●							●				

GENERAL NOTES

- INSTALLATION OF THE SYSTEM SHALL NOT BE STARTED UNTIL AHJ APPROVED PLANS ARE ON PROJECT SITE.
- ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH N.E.C. ARTICLE 760, POWER LIMITED FIRE PROTECTIVE SIGNALING CIRCUITS.
- ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER.
- UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE AHJ.
- A STAMPED SET OF APPROVED FIRE ALARM PLANS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION. ANY DEVIATION FROM APPROVED PLANS, INCLUDING THE SUBSTITUTION OF DEVICES, SHALL BE APPROVED BY THE OWNER AND AHJ.
- ALL DEVICES OF THE FIRE ALARM SYSTEM SHALL BE APPROVED AND LISTED BY THE CALIFORNIA STATE FIRE MARSHAL.
- FIRE ALARM DEVICES SHALL BE INSTALLED PER THE STANDARDS OF NFPA 72 AND CEC.
- WIRING SHALL NOT BE LOOPED THROUGH DEVICES; WIRE MUST BE CUT AT EACH DEVICE. CIRCUITS SHALL NEVER BE SPLICED. ALL TERMINATIONS SHALL BE AT PANELS, AT TERMINAL CANS ON TERMINAL STRIPS OR AT DEVICES.
- ALL CONDUCTORS SHALL BE COPPER AND PROPERLY LABELED AT PANELS AND TERMINAL CANS.
- SYSTEM IS POWER LIMITED. ALL CIRCUITS SHALL BE PROTECTED BELOW 7' WITHIN THE STRUCTURE OR IN CONDUIT AS INDICATED ON FLOOR PLAN AND CIRCUIT SCHEDULE.
- UNDERGROUND CONDUITS SHALL HAVE WATER BLOCKING INSULATION.
- EXTERIOR CONDUITS SHALL HAVE WATERTIGHT FITTINGS AND JUNCTION BOXES.
- ALL DEVICES IN THE ALARM SYSTEM SHALL BE COMPATIBLE AND INSTALLED TO MANUFACTURERS SPECIFICATIONS.
- AUDIBILITY OF ALARM FOR PUBLIC MODE SHALL BE AT LEAST 15 dBA (OR 10dBA PRIVATE MODE) ABOVE AMBIENT SOUND THROUGHOUT AREA OF NOTIFICATION AND NO GREATER THAN 110dBA AT THE MINIMUM HEARING DISTANCE. SLEEPING AREAS SHALL BE AT LEAST 15dBA ABOVE AMBIENT SOUND LEVEL OR A SOUND LEVEL OF AT LEAST 75dBA.
- AREAS HAVING MORE THAN 2 STROBES IN THE SAME FIELD OF VIEW SHALL BE SYNCHRONIZED TOGETHER.
- SMOKE DETECTORS AND HEAT DETECTOR LOCATIONS ARE BASED ON SMOOTH CEILING WITH MAXIMUM HEIGHT OF 10 FEET UNLESS OTHERWISE NOTED.
- CEILING MOUNTED STROBES ARE BASED ON MAXIMUM 10 FOOT CEILING HEIGHT AND ARE INSTALLED ACCORDING TO NFPA 72 REQUIREMENTS UNLESS OTHERWISE NOTED.
- WALL-MOUNTED STROBES SHALL HAVE THEIR LENS BOTTOM NOT LESS THAN 80 INCHES AND THEIR LENS TOP NO GREATER THAN 6 INCHES ABOVE FINISHED FLOOR.
- THE OPERABLE PART OF A MANUAL FIRE ALARM BOX SHALL BE NOT LESS THAN 42" AND NOT MORE THAN 48" ABOVE FINISHED FLOOR.
- ELECTRICAL POWER SERVICE SHALL BE ON A DEDICATED CIRCUIT(S). THE CIRCUIT(S) AND CONNECTIONS SHALL BE MECHANICALLY PROTECTED (CIRCUIT BREAKERS SHALL BE LOCKED IN THE ON POSITION WITH AN APPROVED MECHANICAL CLIP.) CIRCUIT DISCONNECTING MEANS SHALL HAVE A RED MARKING, SHALL BE ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL, AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT". THE LOCATION OF THE CIRCUIT DISCONNECTING MEANS SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CONTROL UNIT.
- DUCT DETECTORS SHALL BE FURNISHED AND/OR INSTALLED AS INDICATED ON THE FIRE DEVICE SYMBOL LEGEND AND AS INDICATED ON THE FLOOR PLAN. HVAC/RTU/FSD AND SMOKE CONTROL SHALL BE AS INDICATED IN THE DESIGN MATRIX AND AS NOTED ON THE DESIGN DOCUMENTS. DUCT DETECTORS SHALL BE MONITORED BY COSCO FIRE PROTECTION. DUCT DETECTORS CAN BE ADDRESSABLE AND COMPATIBLE WITH THE FIRE ALARM SYSTEM IF PURCHASED DIRECTLY FROM COSCO FIRE PROTECTION.
- FIRE SMOKE DAMPER POWER SHALL BE 120VAC AND PROVIDED BY THE ELECTRICAL CONTRACTOR.
- FIRE DOOR HOLDERS SHALL BE 120VAC PROVIDED BY ELECTRICAL. INSTALLED BY THE DOOR HARDWARE CONTRACTOR AND CONTROLLED BY FIRE ALARM SYSTEM.
- FIRE ALARM CONDUCTORS USED IN WET OR UNDERGROUND LOCATIONS SHALL BE OF A WATER-BLOCKING TYPE.
- FIRE ALARM SYSTEM "RECORD OF COMPLETION" DOCUMENT SHALL BE PROVIDED TO THE CLIENT ALONG WITH THE OTHER REQUIRED CLOSE-OUT DOCUMENTATION AT THE TIME OF SYSTEM ACCEPTANCE AND APPROVAL PER NFPA 72.
- WHERE A SMOKE DAMPER IS INSTALLED WITHIN A DUCT, A SMOKE DETECTOR SHALL BE INSTALLED IN THE DUCT WITHIN 5 FEET OF THE DAMPER WITH NO AIR OUTLETS OR INLETS BETWEEN THE DETECTOR AND THE DAMPER. THE DETECTOR SHALL BE LISTED FOR THE AIR VELOCITY, TEMPERATURE AND HUMIDITY ANTICIPATED AT THE POINT WHERE IT IS INSTALLED.
- WHERE A SMOKE DAMPER IS INSTALLED ABOVE SMOKE BARRIER DOORS IN A SMOKE BARRIER, A SPOT-TYPE DETECTOR LISTED FOR FOR RELEASING SERVICE SHALL BE INSTALLED ON EITHER SIDE OF THE SMOKE BARRIER DOOR OPENING.
- WHERE A SMOKE DAMPER IS INSTALLED WITHIN AN AIR TRANSFER OPENING IN A WALL, A SPOT-TYPE DETECTOR LISTED FOR RELEASING SERVICE SHALL BE INSTALLED WITHIN 5 FEET HORIZONTALLY OF THE DAMPER.
- WHERE A SMOKE DAMPER IS INSTALLED IN A CORRIDOR WALL OR CEILING, THE DAMPER SHALL BE PERMITTED TO BE CONTROLLED BY A SMOKE DETECTION SYSTEM INSTALLED IN THE CORRIDOR AND/OR AREA BEING SERVED.
- WHERE A TOTAL-COVERAGE SMOKE DETECTOR SYSTEM IS PROVIDED WITHIN AREAS SERVED BY A HEATING, VENTILATION AND AIR-CONDITIONING (HVAC) SYSTEM, SMOKE DAMPERS SHALL BE PERMITTED TO BE CONTROLLED BY THE SMOKE DETECTION SYSTEM.

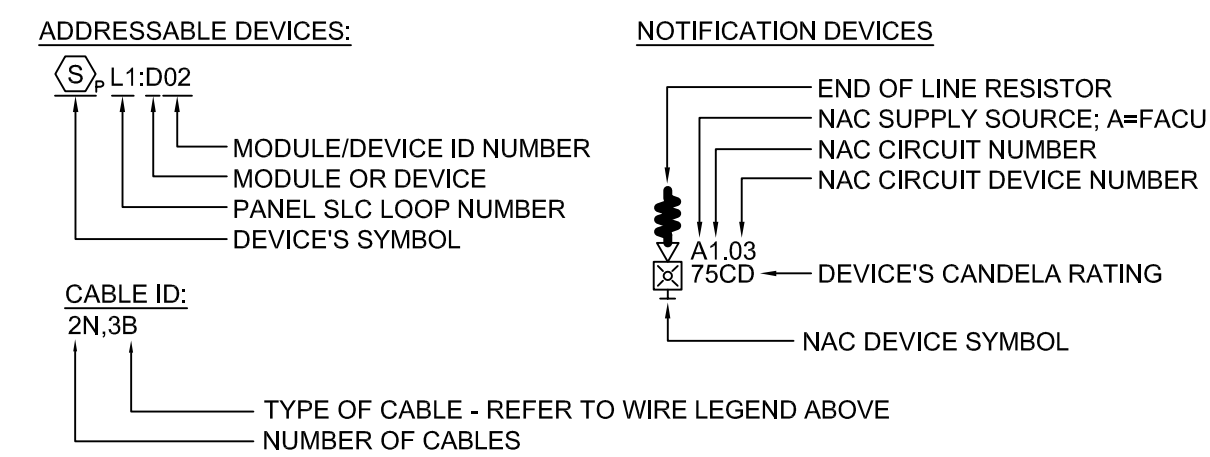
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FA1.0
DETAIL NUMBER
SHEET NUMBER

1
DRAWING / DELTA
REVISION NUMBER

CIRCUIT & WIRE LEGEND

ID	TYPE OF CKT	CIRCUIT DESCRIPTION	MINIMUM SIZE AND TYPE OF WIRE	AMOUNT
L	SLC	SIGNALING LINE CIRCUIT INDOOR	16/2 SOLID FPL	
N	NAC	NOTIFICATION APPLIANCE CIRCUIT INDOOR	16/2 SOLID FPL	
S	AUD	SPEAKER AUDIO CIRCUIT INDOOR	16/2 STRANDED SHIELDED FPLR	
D	DAL	DIGITAL AUDIO LOOP, INDOOR	16/2 TWISTED PAIR UNSHIELDED FPLP	
A	ANN	REMOTE ANNUNCIATOR INDOOR (CLASS B)	18/4 SOLID UNSHIELDED FPLR	
P	PWR	AUX POWER LOOP, INDOOR	16/2 SOLID FPLR	
C	CON	CONVENTIONAL DEVICE CIRCUIT INDOOR	16/2 SOLID FPLR	
U	UDG	CONVENTIONAL DEVICE CIRCUIT OUTDOOR	16/2 SOLID WATER BLOCKING TYPE	
R	RTS	REMOTE TEST STATION (FOR DUCT SMOKE DETECTOR)	18/4 SOLID FPLR	
T	TRIP	NOTIFICATION TRIP CIRCUIT	16/2 SOLID FPLR	

DEVICE ID LEGEND, WIRE TAG LEGEND



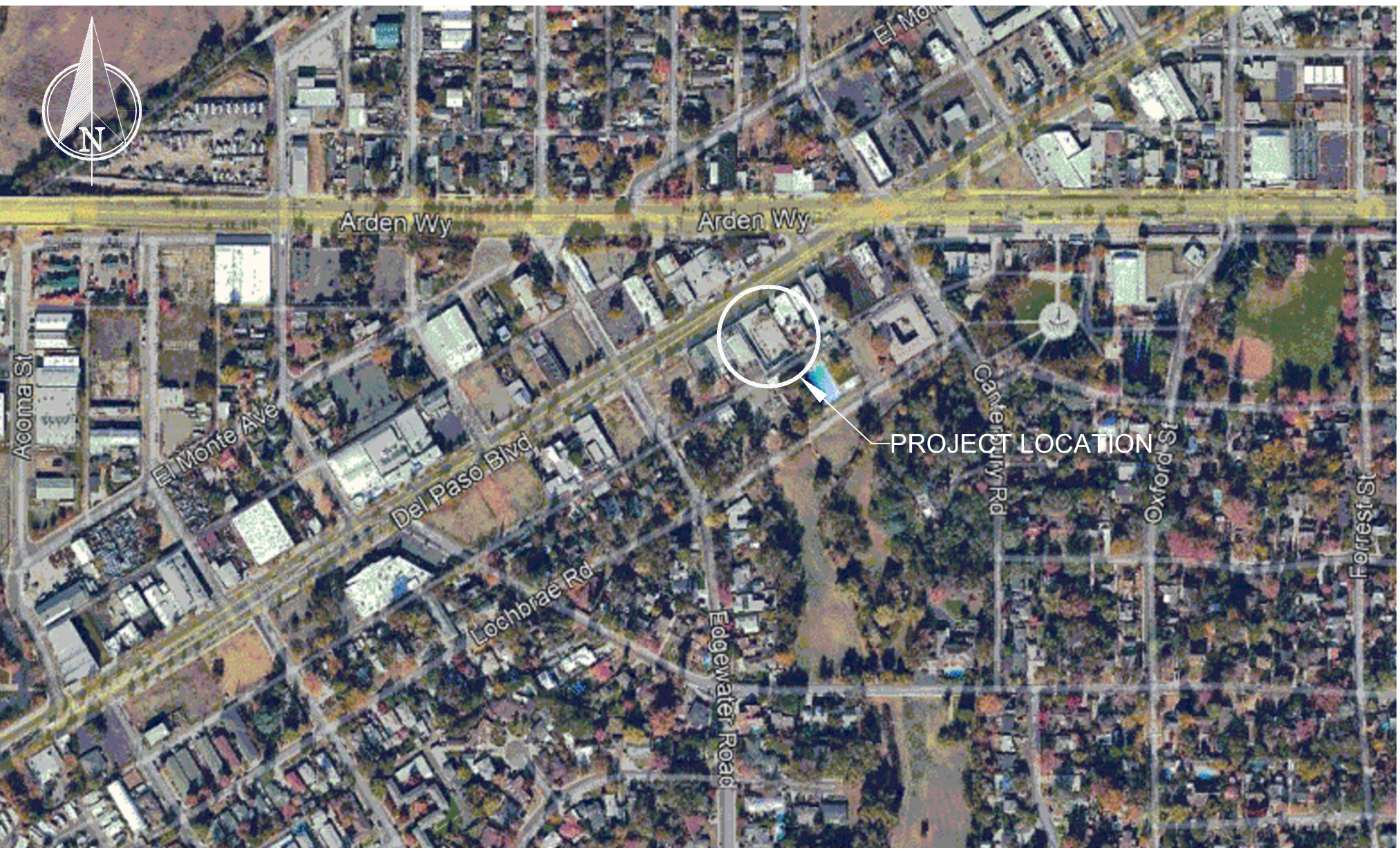
SEQUENCE OF OPERATIONS MATRIX

		SYSTEM OUTPUTS									
		A	B	C	D	E	F	G	H	I	J
SYSTEM INPUTS											
1	AREA / EQUIPMENT SMOKE DETECTOR	✓	✓								
2	MANUAL PULL STATION	✓	✓								
3	WATERFLOW PRESSURE SWITCH			✓	✓						
4	AIR SUPERVISORY PRESSURE SWITCH			✓	✓						
5	VALVE TAMPER SWITCH							✓			
6	FIRE ALARM SYSTEM / POWER SUPPLY / AMPLIFIER AC POWER FAILURE					✓	✓			✓	
7	FIRE ALARM SYSTEM / POWER SUPPLY / AMPLIFIER LOW BATTERY					✓	✓			✓	
8	OPEN CIRCUIT					✓	✓			✓	
9	GROUND FAULT									✓	

SYMBOL LEGEND & MATERIAL LIST

SYMBOL	QTY	MANUFACTURER	MODEL #	DESCRIPTION	CSFM #	ROUGH IN
[FACU]	1	FIREWARDEN	NFW-50X	FIRE ALARM CONTROL UNIT	7165-0028:0505	BACK BOX SUPPLIED WITH UNIT
	2	---	12V.7AH	SEALED LEAD-ACID BATTERY	---	INSIDE FACP ENCLOSURE
(S) ₁	1	NOTIFIER	FSP-951	ADDRESSABLE SMOKE DETECTOR	7272-0028:0503	B300-6
	1	SYSTEM SENSOR	B300-6	6" FLANGED DETECTOR BASE, IVORY	7300-1653:0109	4-SQ WITH 3" MUD RING
[F]	1	NOTIFIER	NBG-12LX	ADDRESSABLE PULL STATION DUAL ACTION	7150-0028:0199	SINGLE GANG
(AD) ₂	2	NOTIFIER	FDM-1	ADDRESSABLE DUAL INPUT MONITOR MODULE	7300-0028:0219	SINGLE GANG
[MF]	1	F.B.O.	F.B.O.	WATERFLOW SWITCH	---	---
[PS]	1	F.B.O.	F.B.O.	PRESSURE SUPERVISORY SWITCH	---	---
[VS]	1	F.B.O.	F.B.O.	VALVE TAMPER SWITCH	---	---
XX	5	SYSTEM SENSOR	P2RL	HORN STROBE, WALL MOUNT, RED	7135-1653:0503	4-SQ X 2.125" DEEP
XX	4	SYSTEM SENSOR	SRL	STROBE, WALL MOUNT, RED	7125-1653:0504	4-SQ X 2.125" DEEP
XX	1	SYSTEM SENSOR	P2RK	HORN STROBE, WALL, RED, WEATHERPROOF	7125-1653:0188	4-SQ X 2.125" DEEP
[DOC]	1	SPACE AGE ELECTRONICS	ACE-11	FIRE ALARM DOCUMENT BOX	7300-0553:0110	MOUNT NEXT TO FACU
[SS] ₁₂₀	1	DITEK	DTK-120HW	SURGE PROTECTOR	4945-2105:0102	4-SQ X 2.125" DEEP
-W-	8	---	---	END OF LINE RESISTOR, PROVIDED W/ DEVICE	---	---

VICINITY MAP



Authority Having Jurisdiction Approval:



COSCO
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FIRE PROTECTION AND LIFE SAFETY SPECIALISTS
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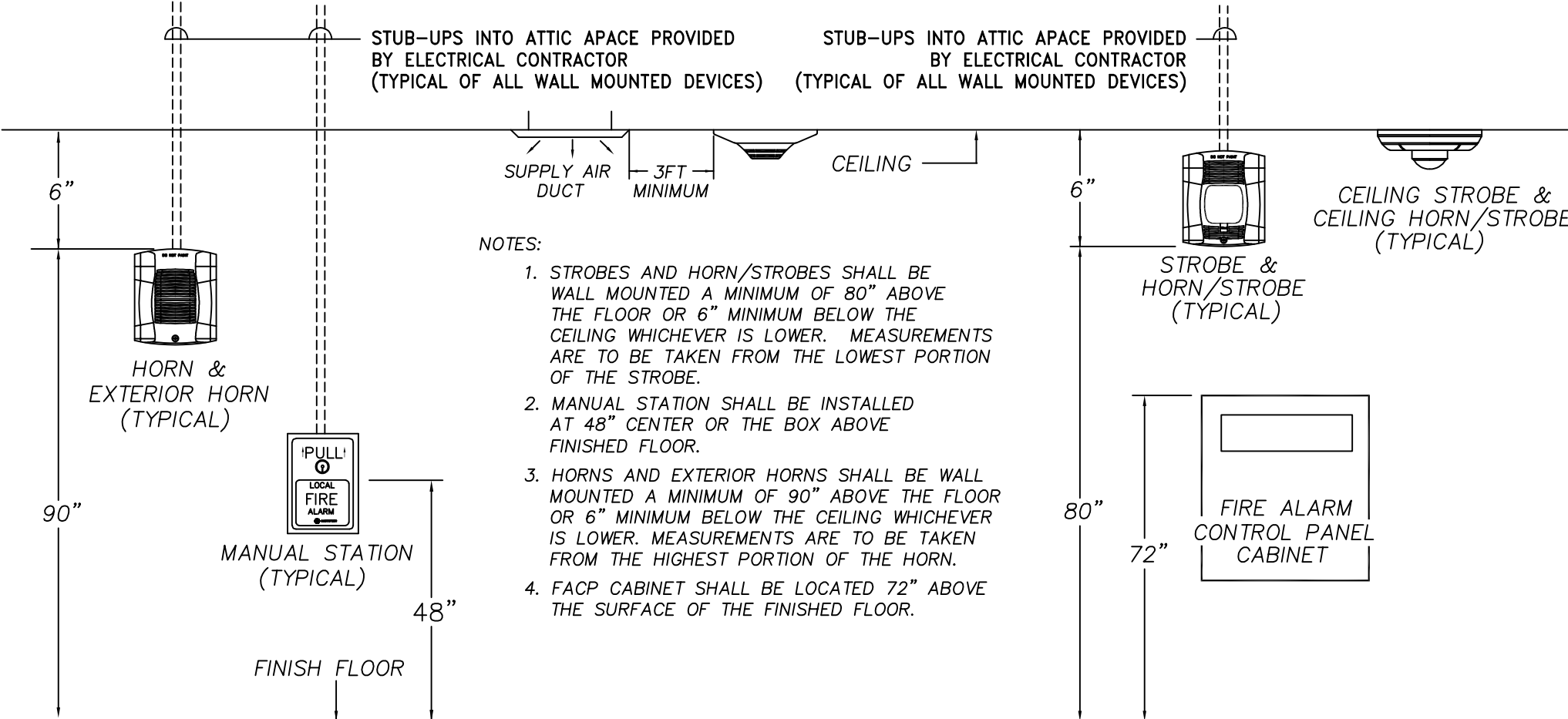
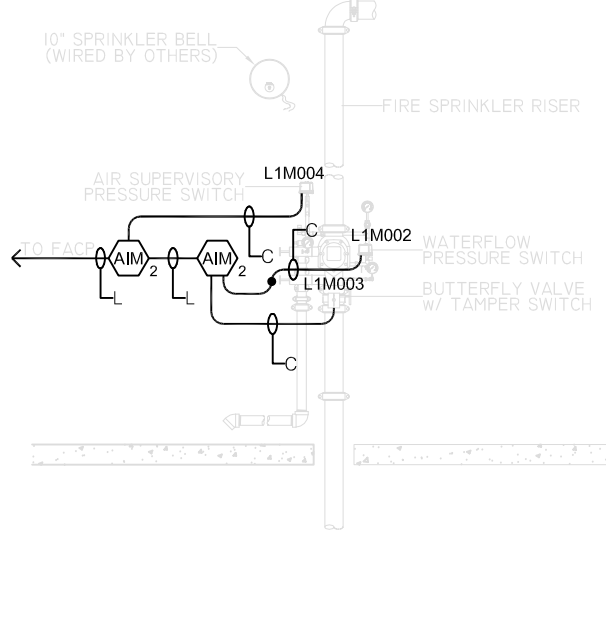
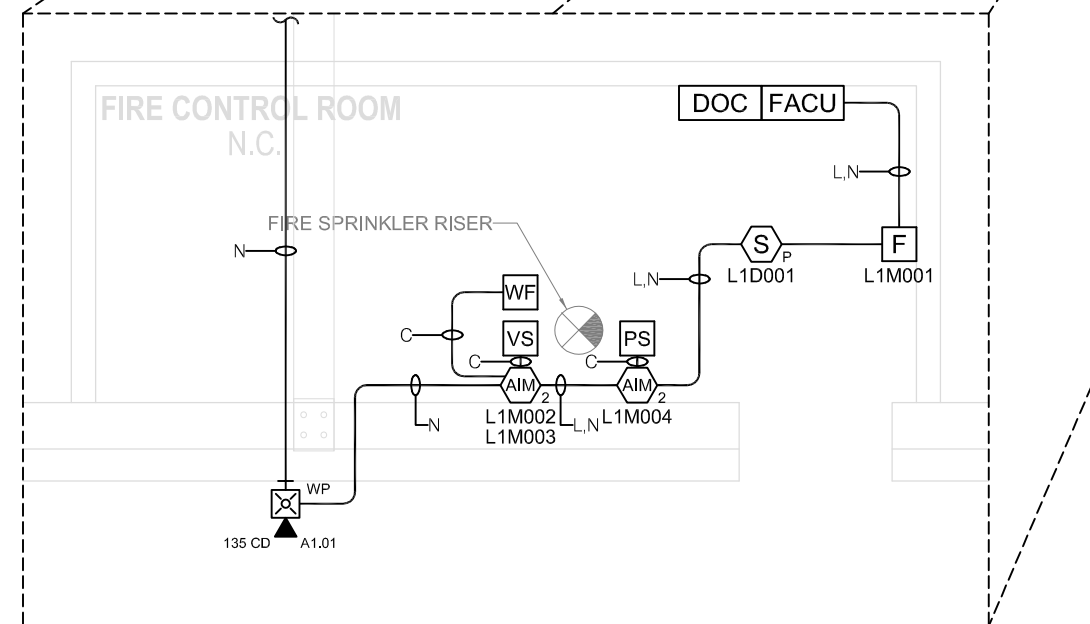
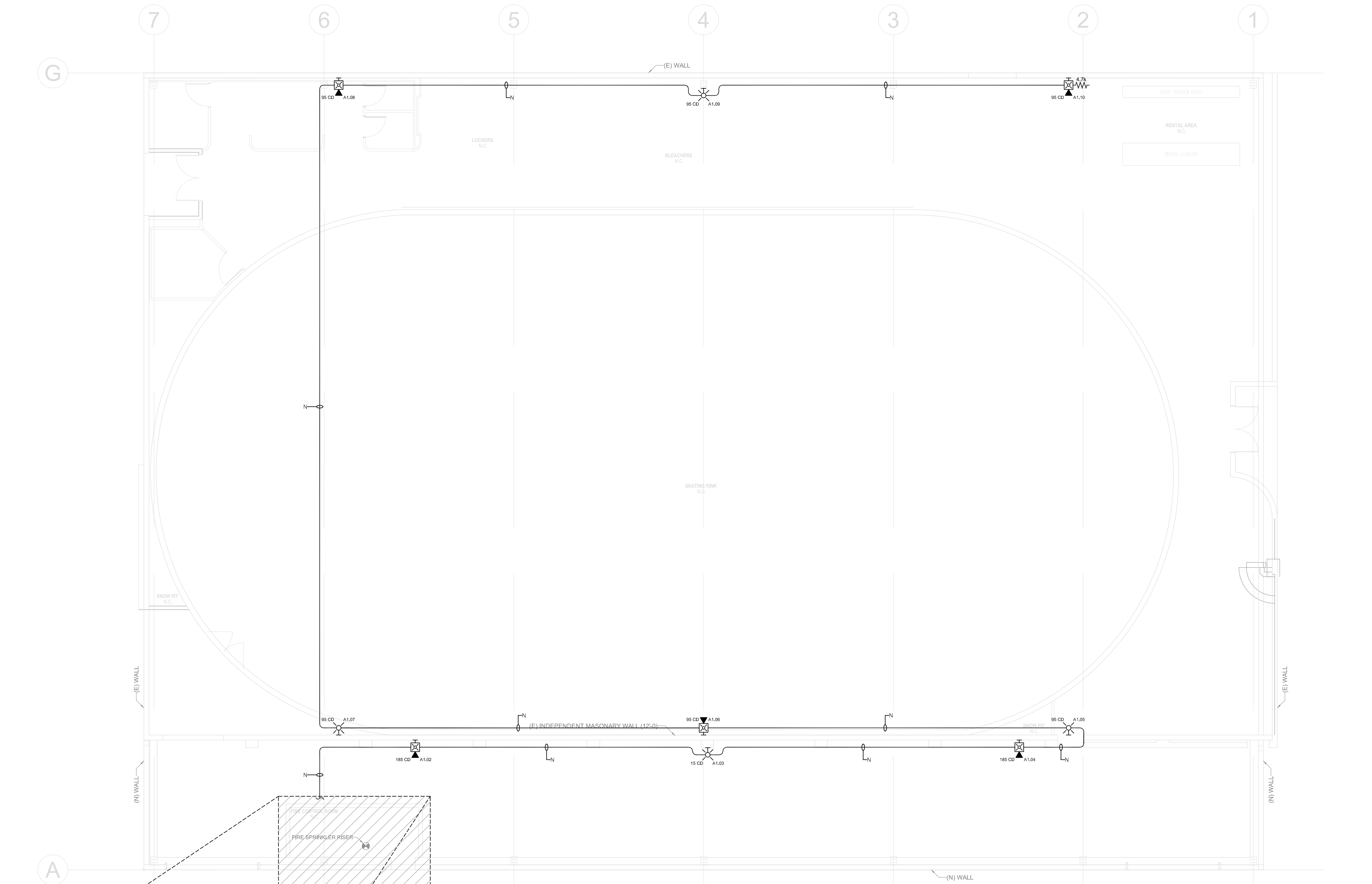
PROJECT: ICELAND SKATING RINK
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CONTRACTOR: ROEBBELEN CONTRACTING, INC.
1241 HAWKS FLIGHT COURT
EL DORADO HILLS, CA 95762
SHEET TITLE: FIRE ALARM SYSTEM LEGENDS, NOTES & VICINITY MAP

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REVISION	DATE	BY
INITIAL RELEASE	05/30/24	BG

FIRE ALARM SYSTEM

DRAWN BY: B.GONZALES
CHECK BY: B.M.
APPROVED BY: E.D.
DATE: 05 / 30 / 24
SCALE: AS NOTED
JOB NO: 23RD2373
SHEET: FA0.1

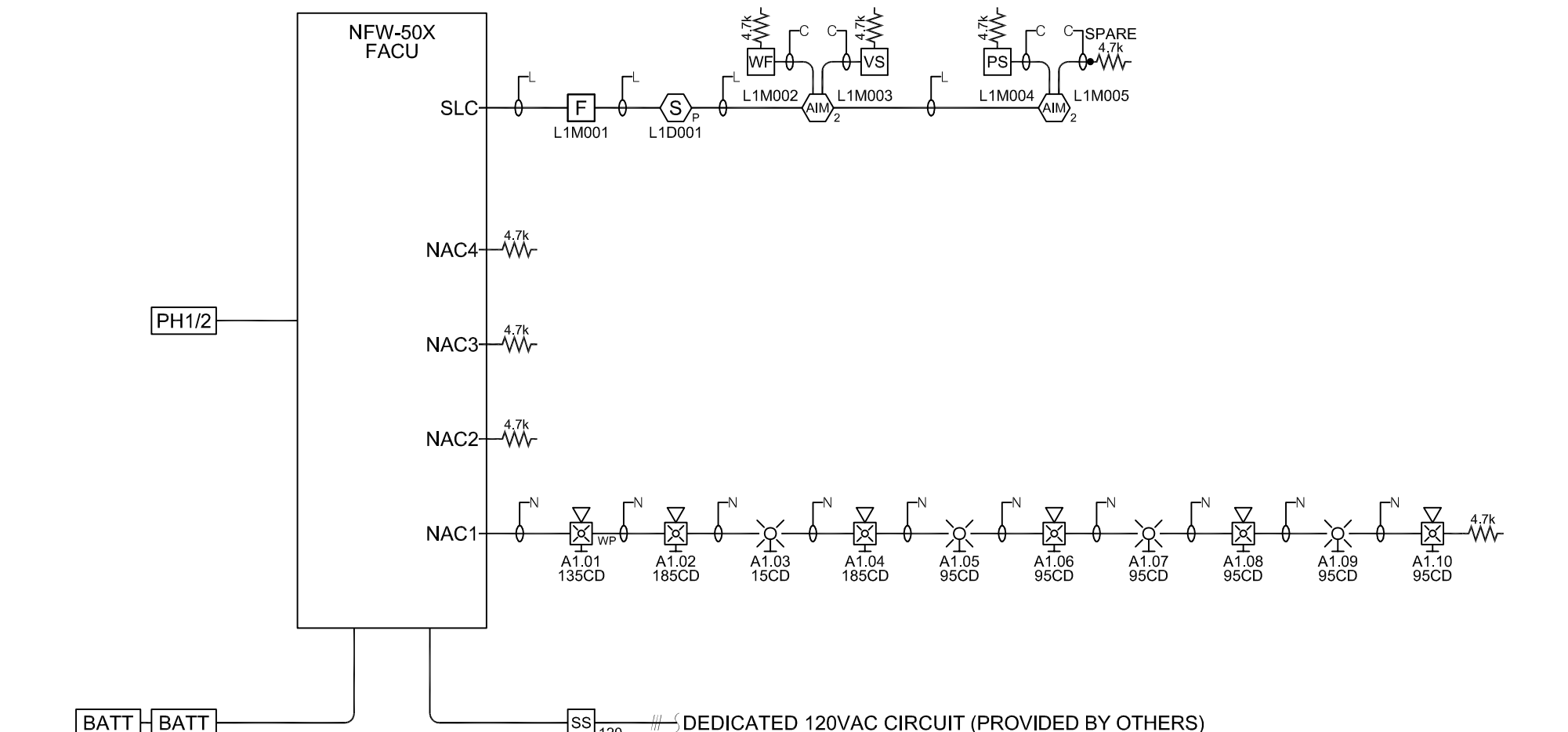
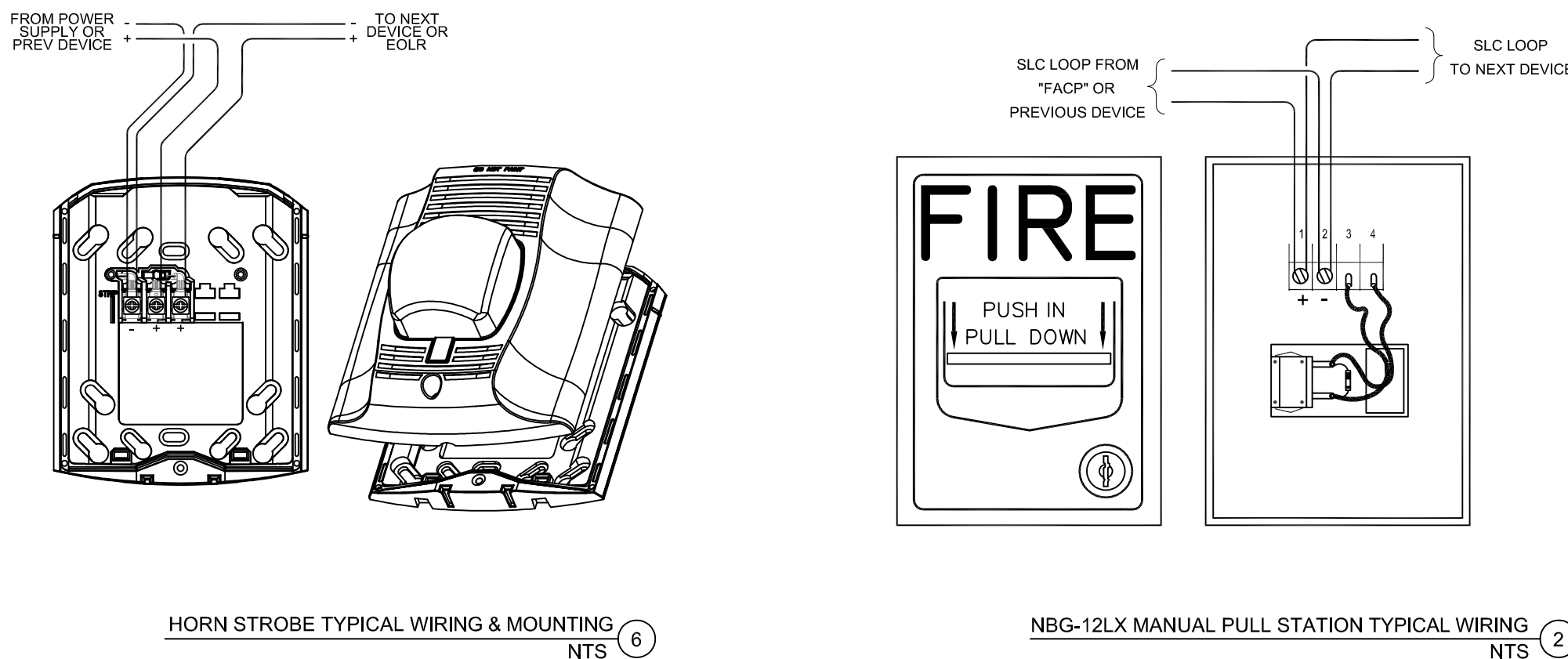
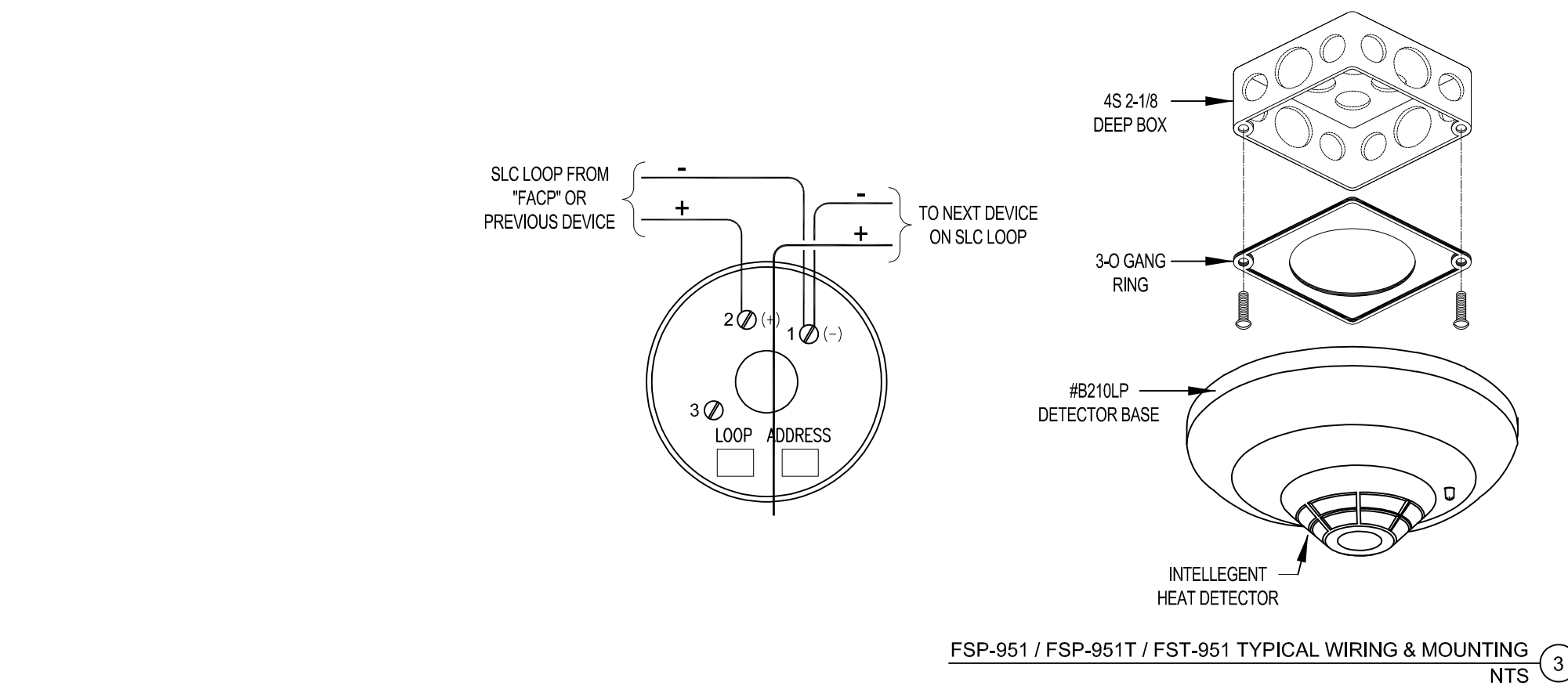
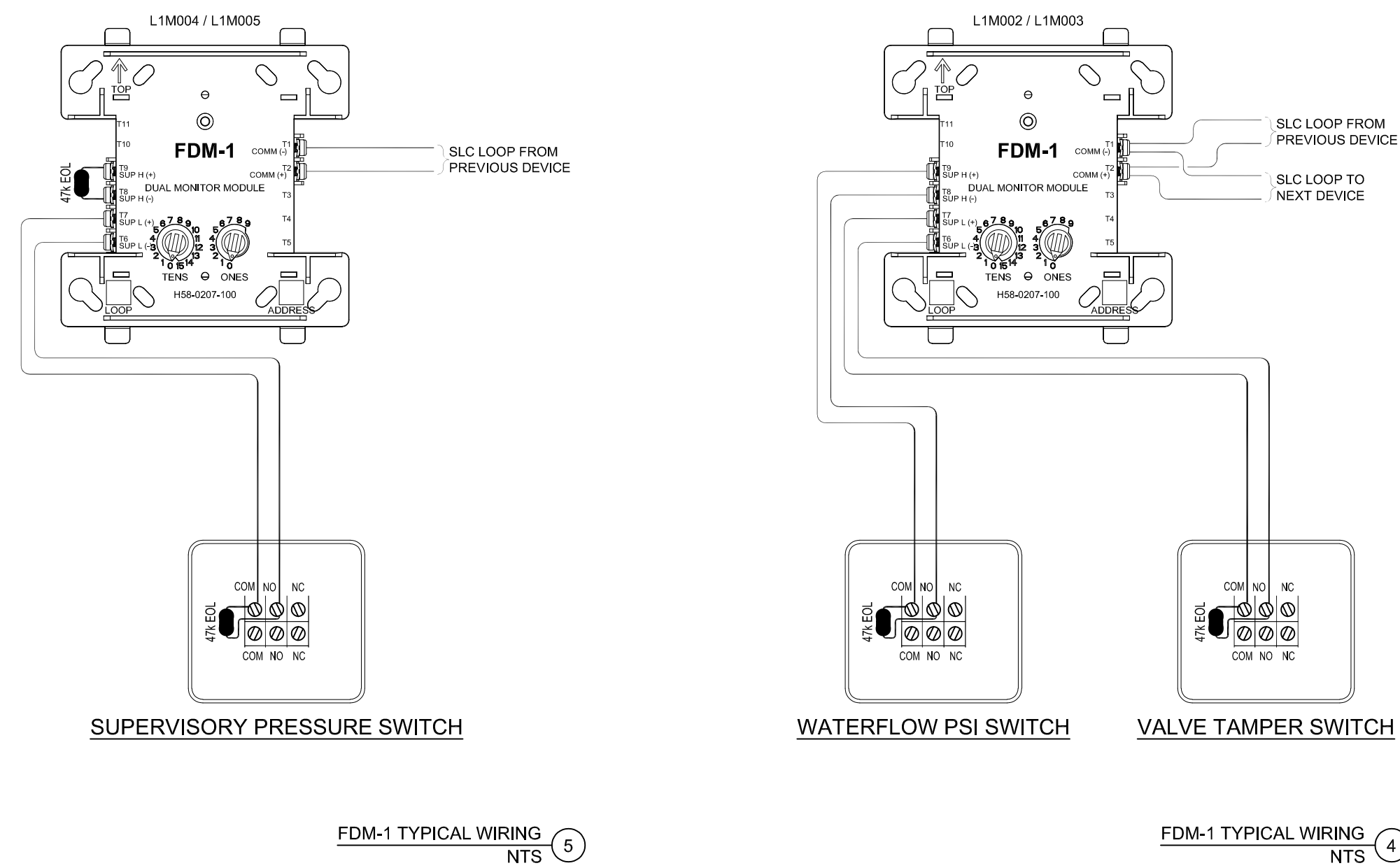


- NOTES:
- STROBES AND HORN/STROBES SHALL BE WALL MOUNTED A MINIMUM OF 80" ABOVE THE FLOOR OR 6" MINIMUM BELOW THE CEILING WHICHEVER IS LOWER. MEASUREMENTS ARE TO BE TAKEN FROM THE LOWEST PORTION OF THE STROBE.
 - MANUAL STATION SHALL BE INSTALLED AT 48" CENTER OF THE BOX ABOVE FINISHED FLOOR.
 - HORN AND EXTERIOR HORNS SHALL BE WALL MOUNTED A MINIMUM OF 90" ABOVE THE FLOOR OR 6" MINIMUM BELOW THE CEILING WHICHEVER IS LOWER. MEASUREMENTS ARE TO BE TAKEN FROM THE HIGHEST PORTION OF THE HORN.
 - FACP CABINET SHALL BE LOCATED 72" ABOVE THE SURFACE OF THE FINISHED FLOOR.

POWER SUPPLY EXTERNAL LOAD					FIRE WARDEN NW-50X (FACU)				
EQUIPMENT MODEL	TOTAL DEVICES	DEVICE CURRENT	TOTAL CURRENT	NAC A QTY.	NAC A AMPS	NAC B QTY.	NAC B AMPS	NAC C QTY.	NAC C AMPS
P2RL 95cd STROBE (WALL MOUNTED)	3	0.121	0.363	3	0.363	0	0.000	0	0.000
P2RL 185cd STROBE (WALL MOUNTED)	2	0.222	0.444	2	0.444	0	0.000	0	0.000
SRL 15cd STROBE (WALL MOUNTED)	1	0.043	0.043	1	0.043	0	0.000	0	0.000
SRL 95cd STROBE (WALL MOUNTED)	3	0.121	0.363	3	0.363	0	0.000	0	0.000
P2RK 135cd HORN/STROBE (WALL MOUNTED)	1	0.228	0.228	1	0.228	0	0.000	0	0.000
	10		1.441 A						
VOLTAGE DROP CALCULATIONS									
DISTANCE (FEET)					400 FT	0 FT	1050 FT	850 FT	
WIRE SIZE (AWG)					16 AWG	16 AWG	16 AWG	16 AWG	
WIRE RESISTANCE (OHMS/1000 FT)					4.1	4.1	4.1	4.1	
TOTAL RESISTANCE (OHMS)					3.28	0	8.61	6.97	
TOTAL CURRENT (mA)					1,441 A	0.000 A	0.000 A	0.000 A	
VOLTAGE DROP (VOLTS)					4.728 V	0 V	0 V	0 V	
% VOLTAGE DROP					23.17%	0%	0%	0%	
OPERATING VOLTAGE (OPERATING VOLTAGE OF DEVICE IS 16 - 33 VDC)					15.67 V	20.4 V	20.4 V	20.4 V	
VOLTAGE DROP FORMULAS:					PER NFPA 72, 2022 18.3.2				
					TOTAL RESISTANCE = (2 x DISTANCE x WIRE RESISTANCE) / 1000				
					VOLTAGE DROP = TOTAL CURRENT x TOTAL RESISTANCE				
					% VOLTAGE DROP = (VOLTS DROPPED / 20.4VDC x 100)				

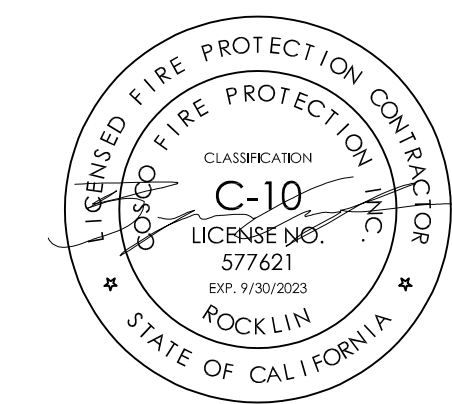
POWER SUPPLY BATTERY SIZE CALCULATION			
STANDBY TIME: 24 HRS.	SUPV. CURRENT	ALARM CURRENT	
ALARM TIME 5 MIN. = 0.083 HRS.			
TOTAL EXTERNAL LOAD (mA)	0	1,441 A	
5499: 9 AMP REMOTE POWER SUPPLY	0.075 A	0.205 A	
TOTAL EXTERNAL LOAD (AMPS)	0.075 A	1.646 A	
CURRENT UNDER ALARM CONDITIONS			
TOTAL CURRENT = ALARM CURRENT + SUPERVISORY CURRENT			= 1.721 AMPS
BATTERIES REQUIRED FOR 24 HRS. IN SUPERVISION 5 MIN. IN ALARM			
AH = (STANDBY TIME x SUPERVISORY CURRENT) + (ALARM TIME x ALARM CURRENT)			= 1.937167 AH
(2) 7.0 AH BATTERIES TO BE PROVIDED			

CALCULATIONS
NTS



RISER DIAGRAM
NTS

Authority Having Jurisdiction Approval:



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