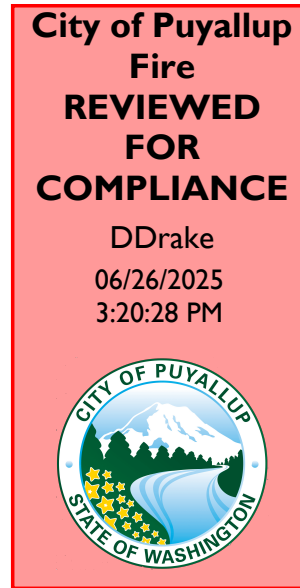
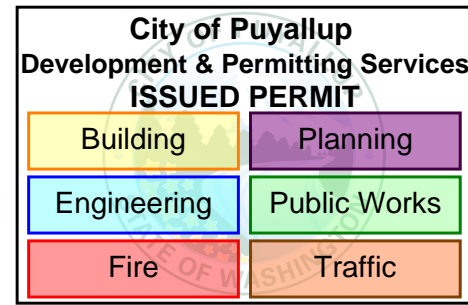
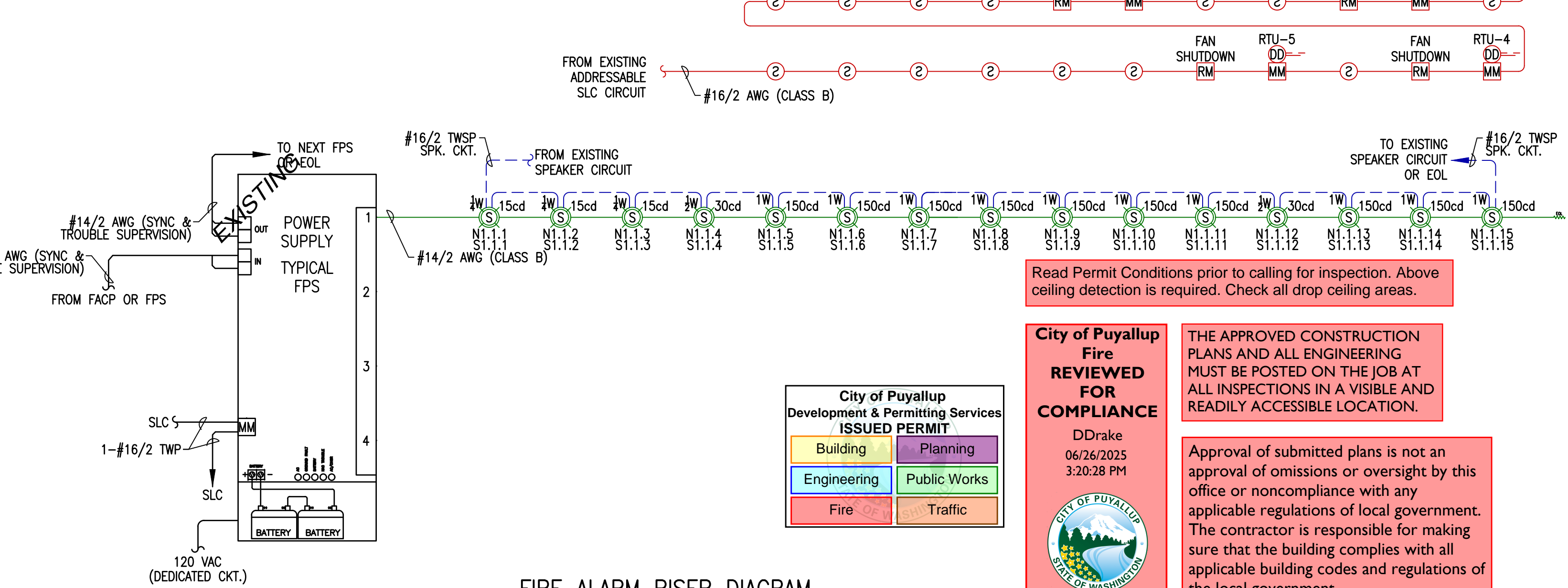


FACP Additional Load Battery Calculation										5/23/2025
PROJECT NAME:					BARNES & NOBLE					
Required Alarm Time:					24 Hours					
Required Alarm Time:					15 Minutes					
System Manufacturer:					Notifier					
AC Branch Current										
AC Branch Current:					2.08	Amps	●	120V		
Maximum NAC Output										
Panel Max:					6.50	Amps				
Circuit Max:					3.00	Amps				
Regulated Load in Standby										
Device Type	Model	Number of Devices	Current (Amps)							Total Current (Amps)
SMOKE DETECTOR	FSP-951-N	35	X	0.000200	=					0.007000
MONITOR MODULE	FM-1	6	X	0.000375	=					0.002250
RELAY MODULE	FRM-1	6	X	0.000230	=					0.001380
TOTAL STANDBY LOAD										0.010630
Regulated Load in ALARM										
Device Type	Model	Number of Devices	Current (Amps)							Total Current (Amps)
SMOKE DETECTOR	FSP-951-N	35	X	0.004500	=					0.157500
MONITOR MODULE	FM-1	6	X	0.005000	=					0.030000
RELAY MODULE	FRM-1	6	X	0.006500	=					0.039000
TOTAL ALARM LOAD										1.424500
Battery Requirements										
Standby Load				Required Standby Time in Hours						
Current (Amps)		0.010630	X	24.00000	=					0.255120
Alarm Load				Required Alarm Time in Hours						
Current (Amps)		1.424500	X	0.250000	=					0.356125
Total Ampere Hours (before derating factor)										0.611245
Derating Factor										X
										1.2
TOTAL AMPERE HOURS REQUIRED										0.733494
BATTERIES TO BE PROVIDED (2 - 12v)										FIELD VERIFY

FPS1 Additional Load Battery Calculation										5/23/2025
PROJECT NAME:					BARNES & NOBLE					
Required Standby Time:					24 Hours					
Required Alarm Time:					15 Minutes					
AC Branch Current										
					AC Branch Current:		2.08		Amps	⊗ 120V
Maximum NAC Output										
					Panel Max:		6.50		Amps	
					Circuit Max:		3.00		Amps	
Regulated Load in Standby										
Device Type		Model		Number of Devices		Current (Amps)				Total Current (Amps)
										0.000000
TOTAL STANDBY LOAD										
Regulated Load in ALARM										
Device Type		Model		Number of Devices		Current (Amps)				Total Current (Amps)
FPS1 Additional Load.1 (See Voltage Drop Calculations)						1.198000		=		1.198000
TOTAL ALARM LOAD										1.198000
Battery Requirements										
Standby Load						Required Standby Time in Hours				
Current (Amps)		0.000000 X				24.00000		=		0.000000
Alarm Load						Required Alarm Time in Hours				
Current (Amps)		1.198000 X				0.250000		=		0.299500
Total Amperes Hours (before derating factor)										0.299500
Derating Factor								X		1.2
TOTAL AMPERE HOURS REQUIRED										= 0.359400
BATTERIES TO BE PROVIDED (2 - 12v)										FIELD VERIFY

Point to Point NAC Voltage Drop Calculation										5/23/2025
Date										BARNES & NOBLE
Project Name										FPS1.1
Circuit Number										
Nominal System Voltage			20.4 volts		Wire Resistance					
Minimum Device Voltage			16.0 volts		Gauge		Per 1000			
Distance from source to 1st device			150 feet		14		3.07			
Wire Gauge for balance of circuit					14		3.07			
Max Output Current			3.00 amps		Speaker ID		S1.1			
Total Circuit Current			1.198 amps		NAC ID		N1.1			
Spare Current Capacity			20%							
End of Line Voltage			16.58 volts							
Notification Appliance Manufacturer			System Sensor							
Circuit is within limits										
Speaker	NAC	Device Model #	Device	Voltage	Current	Distance	Previous Voltage	Drop	Percent	
Identifier	Identifier	and Conds	Device	Voltage	Current	Device	Source	Source		
S1.1.1	N1.1.1	SPSQRLED 15	1/4	0.018	150	19.30	1.103	5.41%		
S1.1.2	N1.1.2	SPSQRLED 15	1/4	0.018	15	19.19	1.212	5.94%		
S1.1.3	N1.1.3	SPSQRLED 15	1/4	0.018	16	19.07	1.326	6.50%		
S1.1.4	N1.1.4	SPSQRLED 30	1/2	0.022	39	18.80	1.600	7.84%		
S1.1.5	N1.1.5	SPSQRLED 150	1	0.110	54	18.43	1.972	9.67%		
S1.1.6	N1.1.6	SPSQRLED 150	1	0.110	59	18.06	2.339	11.46%		
S1.1.7	N1.1.7	SPSQRLED 150	1	0.110	55	17.76	2.643	12.96%		
S1.1.8	N1.1.8	SPSQRLED 150	1	0.110	37	17.58	2.823	13.84%		
S1.1.9	N1.1.9	SPSQRLED 150	1	0.110	78	17.25	3.150	15.44%		
S1.1.10	N1.1.10	SPSQRLED 150	1	0.110	56	17.05	3.347	16.40%		
S1.1.11	N1.1.11	SPSQRLED 150	1	0.110	61	16.88	3.520	17.25%		
S1.1.12	N1.1.12	SPSQRLED 30	1/2	0.022	55	16.76	3.638	17.84%		
S1.1.13	N1.1.13	SPSQRLED 150	1	0.110	38	16.68	3.715	18.21%		
S1.1.14	N1.1.14	SPSQRLED 150	1	0.110	50	16.62	3.783	18.54%		
S1.1.15	N1.1.15	SPSQRLED 150	1	0.110	52	16.58	3.818	18.72%		
Totals			11 3/4	1.198	815					
Notes: Wire resistance is doubled in the calculations for two wires (Positive and Negative). The voltage calculated to the last device must not be lower than the manufacturers listed minimum operating voltage (IE: rated operating voltage 16-33 VDC (24 VDC nominal)).										



THE APPROVED CONSTRUCTION PLANS AND ALL ENGINEERING MUST BE POSTED ON THE JOB AT ALL INSPECTIONS IN A VISIBLE AND READILY ACCESSIBLE LOCATION.

Approval of submitted plans is not an approval of omissions or oversight by this office or noncompliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable building codes and regulations of the local government.

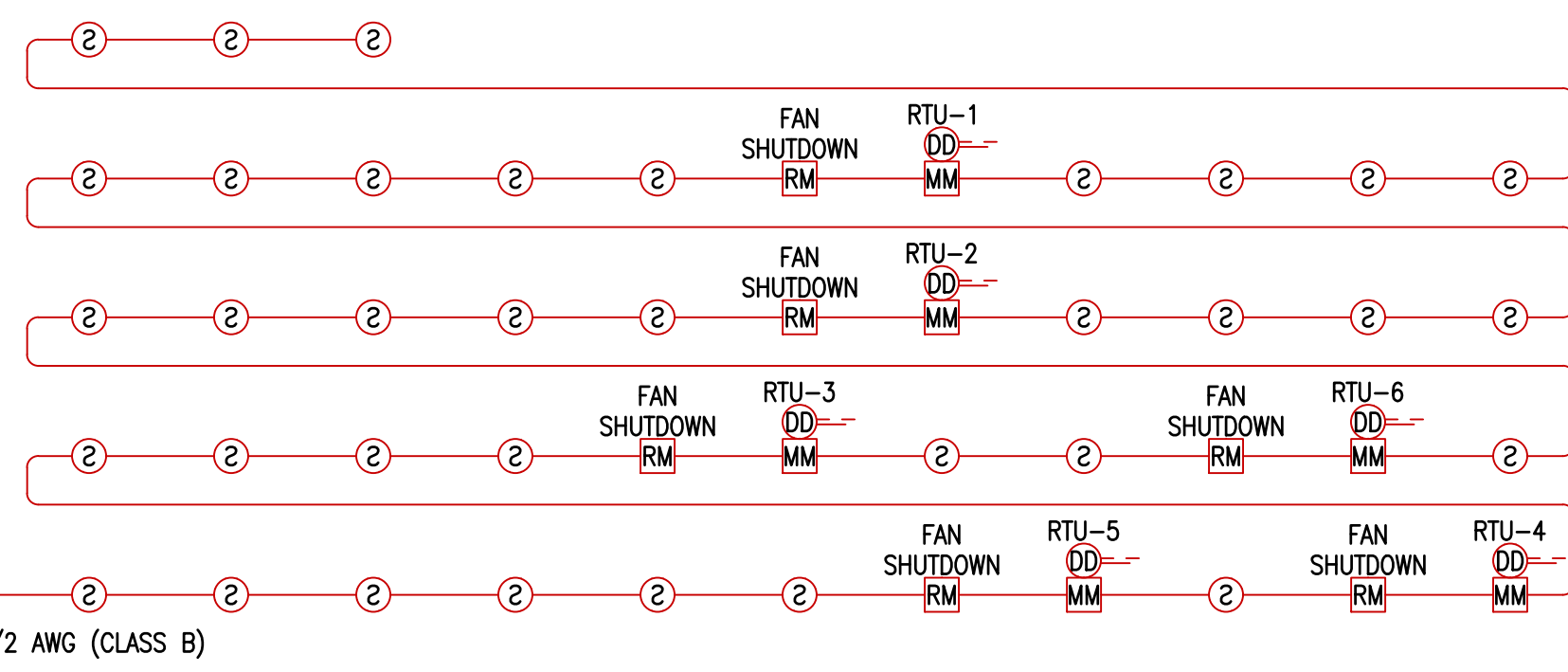
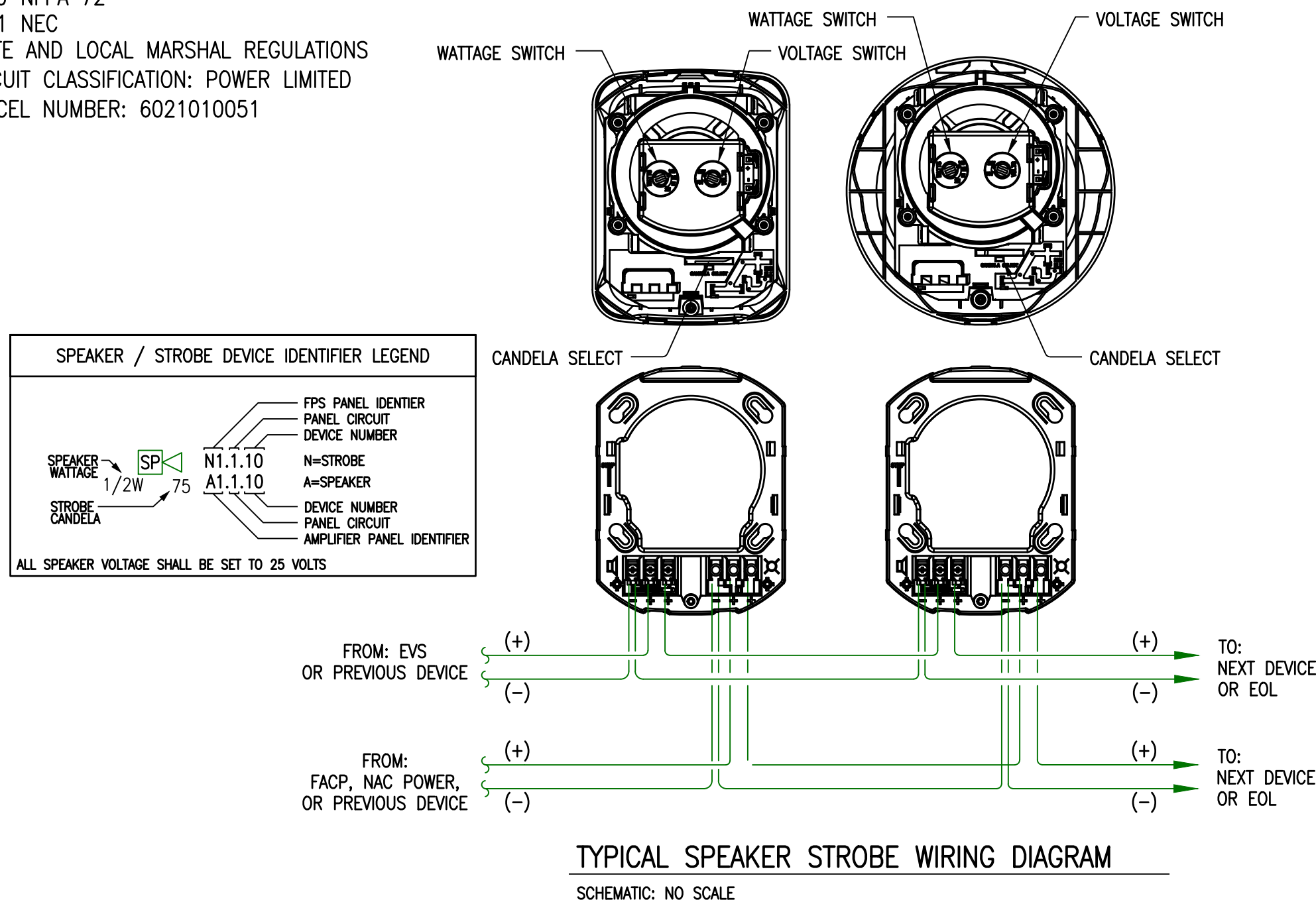
OPERATIONS MATRIX

FIRE ALARM INPUT	DISPLAY DESCRIPTIVE TEXT AT FACP AND/OR ANNUNCIATOR	ACTIVE ALARM INDICATOR AT FACP	ACTIVE AUDIBLE ALARM AT FACP	ACTIVE SUPERVISORY INDICATOR AT FACP	ACTIVE AUDIBLE SUPERVISORY SIGNAL AT FACP	ACTIVE TROUBLE INDICATOR AT FACP	ACTIVE AUDIBLE TROUBLE INDICATOR AT FACP	TRANSMIT WATERFLOW SIGNAL	TRANSMIT ALARM SIGNAL	TRANSMIT SUPERVISORY SIGNAL	TRANSMIT TROUBLE SIGNAL	ACTIVE NOTIFICATION APPLIANCES	SHUTDOWN AIR HANDLER UNITS
SMOKE DETECTORS	●	●	●	●	●	●	●	●	●	●	●	●	●
PULL STATIONS	●	●	●	●	●	●	●	●	●	●	●	●	●
WATERFLOW SWITCHES	●	●	●	●	●	●	●	●	●	●	●	●	●
VALVE SUPERVISORY SWITCHES	●	●	●	●	●	●	●	●	●	●	●	●	●
DUCT DETECTORS	●	●	●	●	●	●	●	●	●	●	●	●	●
FIRE ALARM AC POWER FAIL	●	●	●	●	●	●	●	●	●	●	●	●	●
FIRE ALARM LOW BATTERY	●	●	●	●	●	●	●	●	●	●	●	●	●
OPEN CIRCUIT	●	●	●	●	●	●	●	●	●	●	●	●	●
GROUND FAULT	●	●	●	●	●	●	●	●	●	●	●	●	●
NAC SHORT CIRCUIT	●	●	●	●	●	●	●	●	●	●	●	●	●
LOSS OF AC TO BUILDING	●	●	●	●	●	●	●	●	●	●	●	●	●

NOTE: NO NEW INITIATING DEVICES ARE BEING INSTALLED AS PART OF THIS SCOPE OF WORK. EXISTING INPUT/OUTPUT OPERATIONS SHALL REMAIN. NOTIFICATION APPLIANCES ARE BEING REMOVED AND RELOCATED AND SHALL MAINTAIN EXISTING OUTPUT MAPPING.

CODE ANALYSIS

- BUILDING INFORMATION:
- OCCUPANCY CLASSIFICATION(S): B/M
 - OCCUPANCY LOAD(S): 163 OCC
 - SPRINKLERS: YES
 - CONSTRUCTION TYPE: IIB
 - BUILDING HEIGHT: 1 STORY
 - PROJECT SQUARE FOOTAGE: ~20,790 S.F.
 - APPLICABLE CODES:
 - 2021 INTERNATIONAL FIRE CODE
 - 2019 NFPA 72
 - 2021 NEC
 - STATE AND LOCAL MARSHAL REGULATIONS
 - CIRCUIT CLASSIFICATION: POWER LIMITED
 - PARCEL NUMBER: 6021010051



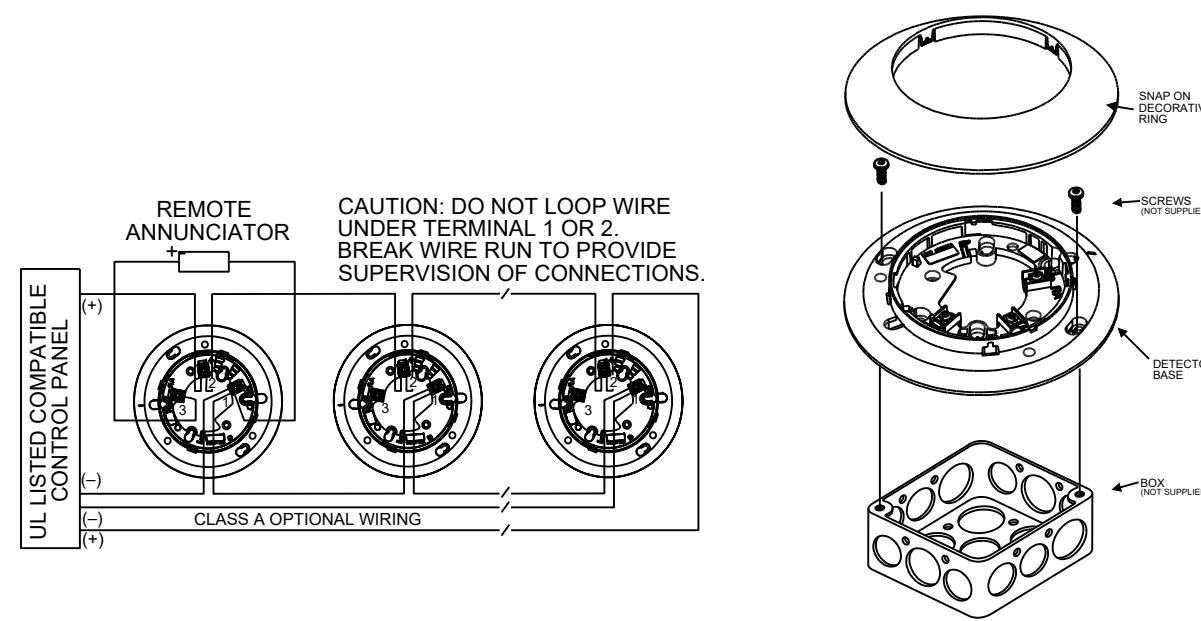
CONSTRUCTION CLASSIFICATION (TABLE 601)- TYPE 2B

BUILDING ELEMENT	FIRE RATING
STRUCTURAL	0-HR
BEARING WALLS	0-HR
EXTERIOR	0-HR
INTERIOR	0-HR
NONBEARING WALLS AND PARTITIONS EXTERIOR	N/A
NONBEARING WALLS AND PARTITIONS INTERIOR	0-HR
FLOOR CONSTRUCTION	0-HR
INCLUDING SUPPORTING BEAMS AND JOISTS	0-HR
ROOF CONSTRUCTION	0-HR
INCLUDING SUPPORTING BEAMS AND JOISTS	0-HR



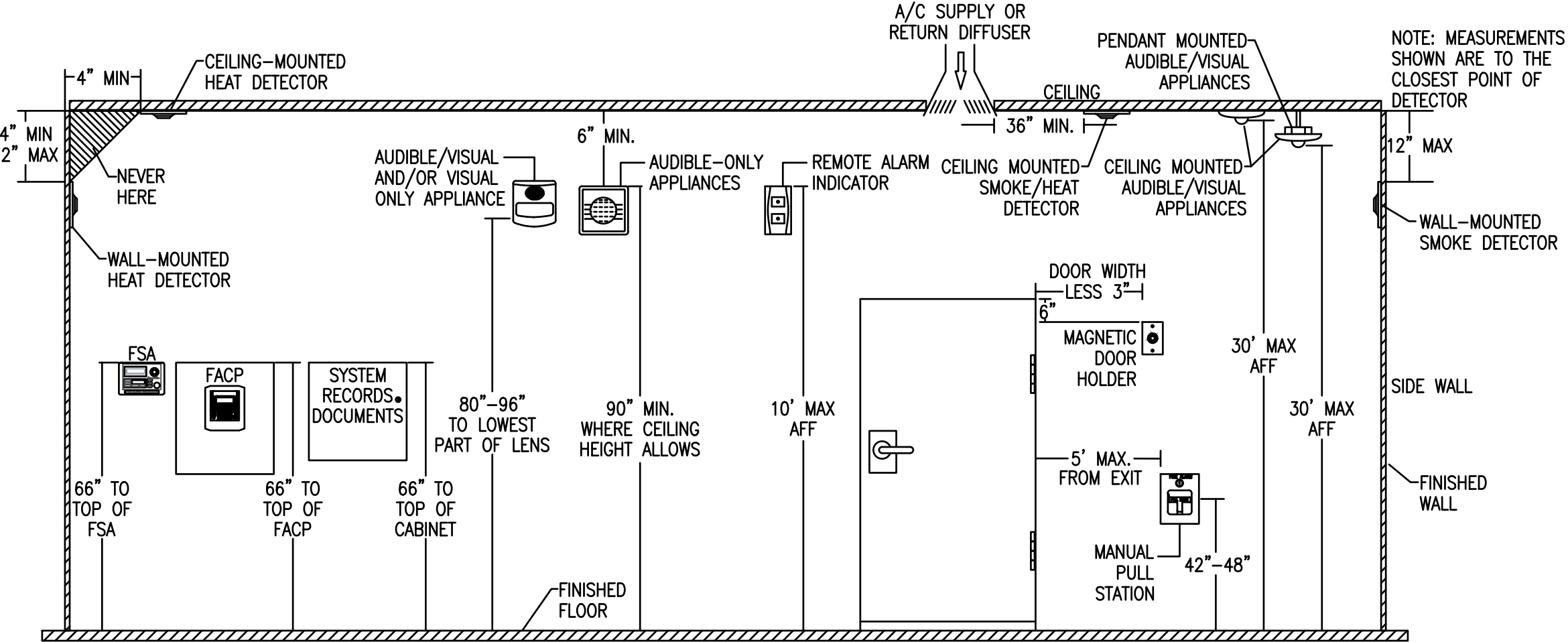
SOUTH HILLS MALL KEY PLAN

SCHEMATIC: NOT TO SCALE



6" DETECTOR BASE WIRING DETAIL

SCHEMATIC: NO SCALE



FIRE ALARM DEVICE MOUNTING HEIGHTS

SCALE: NOT TO SCALE

FIRE ALARM SYMBOL LEGEND

NOTE: ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT

QTY	SYMBOL	DESCRIPTION	MANUF. & PART #	MOUNTING	MOUNT IN
E	FACP	FIRE ALARM CONTROL PANEL	EXISTING	WALL – TOP @ 66"	EXISTING TO REMAIN
E	FPS1	FIRE ALARM POWER SUPPLY	EXISTING	WALL – TOP @ 66"	EXISTING TO REMAIN
E	FPS1	FIRE ALARM POWER SUPPLY	EXISTING	WALL – TOP @ 66"	EXISTING TO REMAIN
6	MM	ADDRESSABLE MONITOR MODULE	NOTIFIER – FM-1	FIELD VERIFY	4 SQ. DEEP, MOUNTED FLUSH
6	RM	ADDRESSABLE RELAY MODULE	NOTIFIER – FM-1	FIELD VERIFY	4 SQ. DEEP, MOUNTED FLUSH
6	DD	DUCT DETECTOR (EXISTING)	EXISTING	INDICATED DUCT	MONITOR CONTACTS, PROVIDE SHUTDOWN
35	2	SMOKE DETECTOR (NEW)	NOTIFIER – FSP-951-IV	CEILING	4 SQ. DEEP W/ SINGLE GANG MUD RING, MOUNTED FLUSH
15	S	CEILING MOUNT SPEAKER / STROBE	SYSTEM SENSOR – SPSQRCLED	CEILING	4 SQ. DEEP, MOUNTED FLUSH

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	<div>② DEVICE ADDRESS – [F] 113001 OR NOT (L – DENOTES LOOP #) (S or M – DENOTES SENSOR OF MODULE #) 1-#16/2 TWP WIRE TYPE ABBREVIATED CONDUCTOR COUNT WIRE SIZE # OF CABLES (IF OMITTED ONLY 1 CABLE NEEDED)</div>
E	EXISTING	AWG	AMERICAN WIRE GAUGE	
G	WITH GUARD	TWP	TWISTED PAIR	
P	PENDENT MOUNT	TWSP	TWISTED SHIELDED PAIR	
R	REMOVE AND RELOCATE	FPLP	FIRE POWER LIMITED PLENUM	
S	SOUNDER BASE	FPLR	FIRE POWER LIMITED RISER	
WP	WEATHERPROOF			
EOL	END OF LINE RESISTOR			
EOLR	END OF LINE RELAY			

