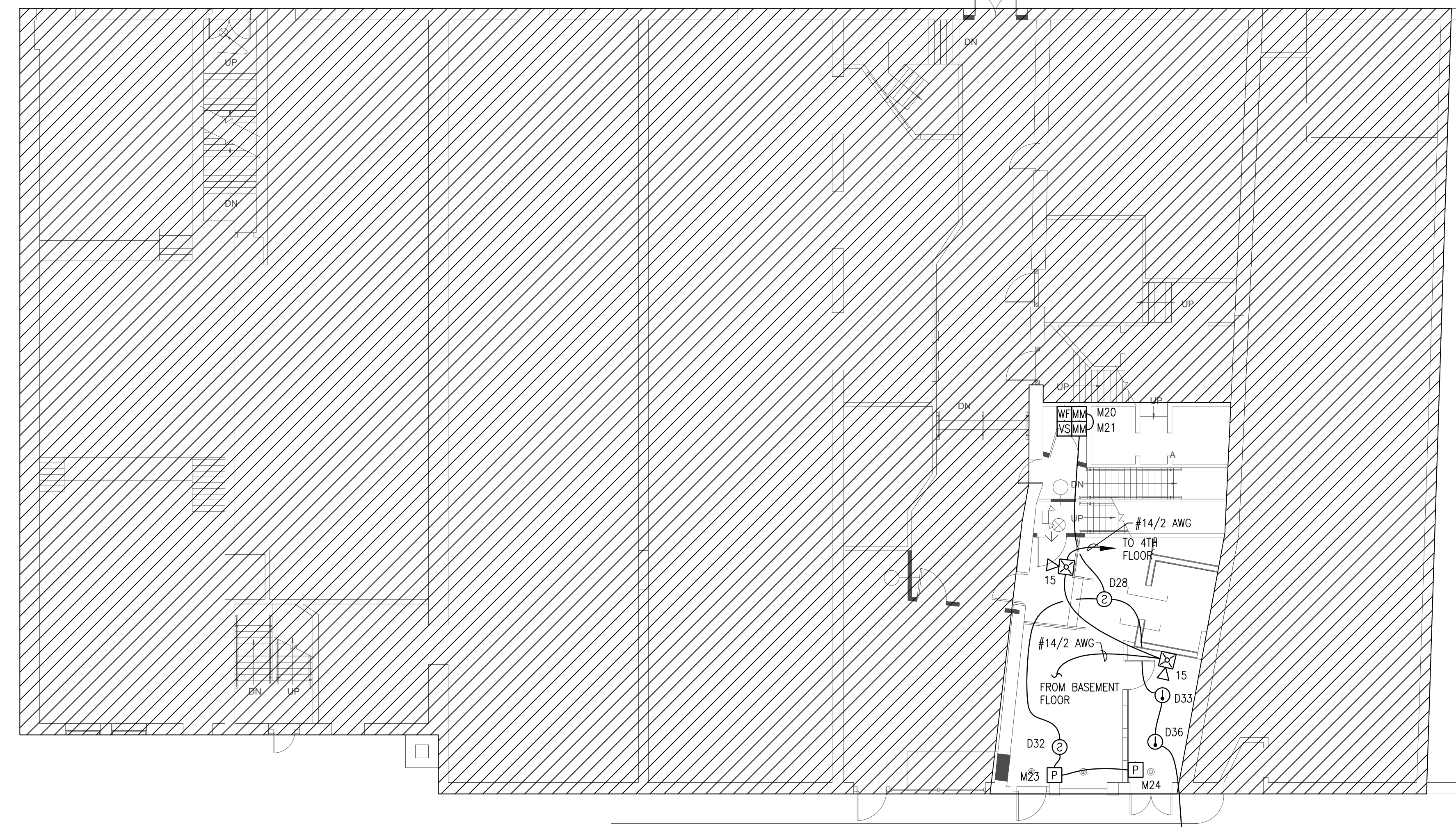




BASEMENT LEVEL
FIRE ALARM PLAN
SCALE: 1/8"=1'-0"



FIRST FLOOR
FIRE ALARM PLAN
SCALE: 1/8"=1'-0"

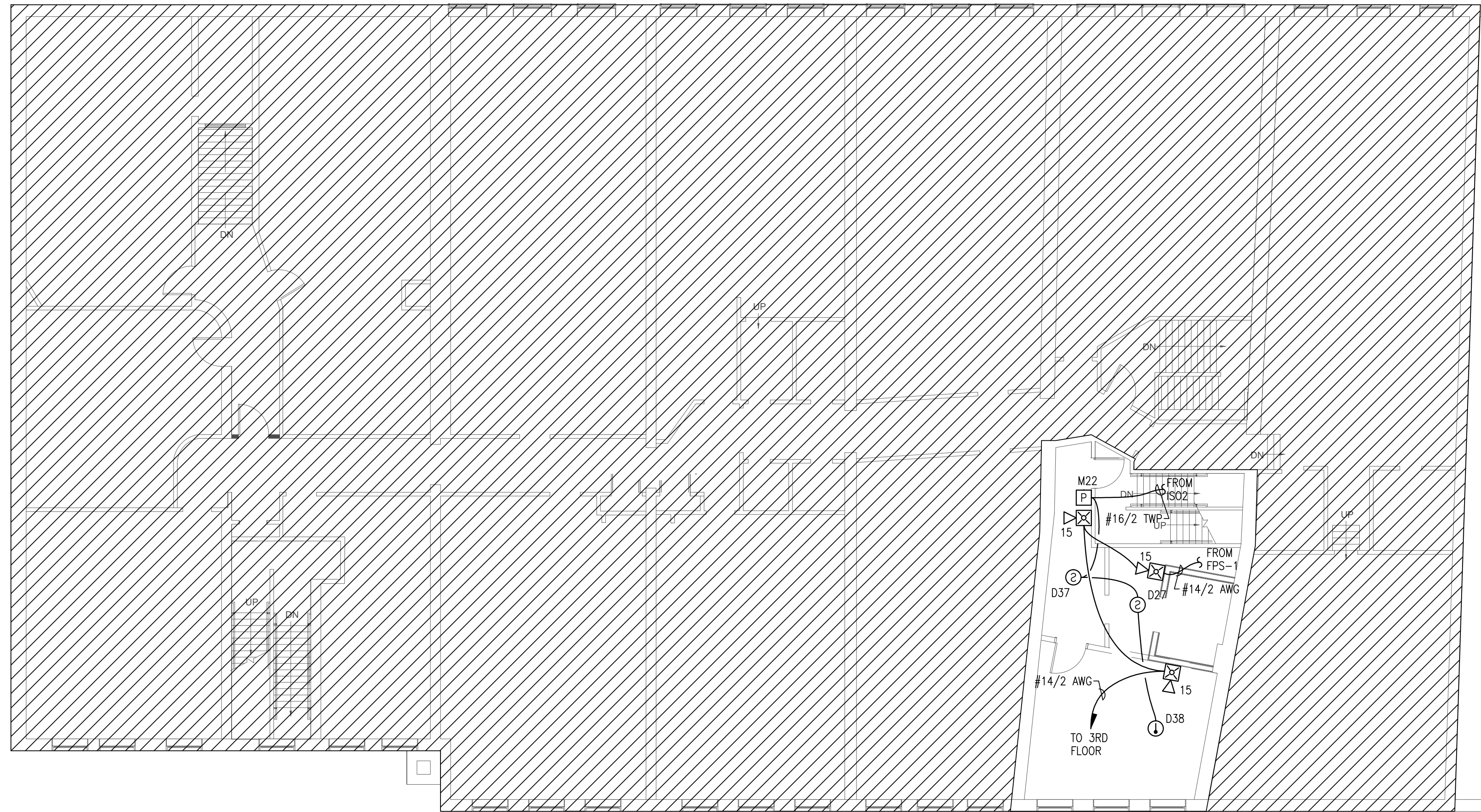
REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	4/10/2017

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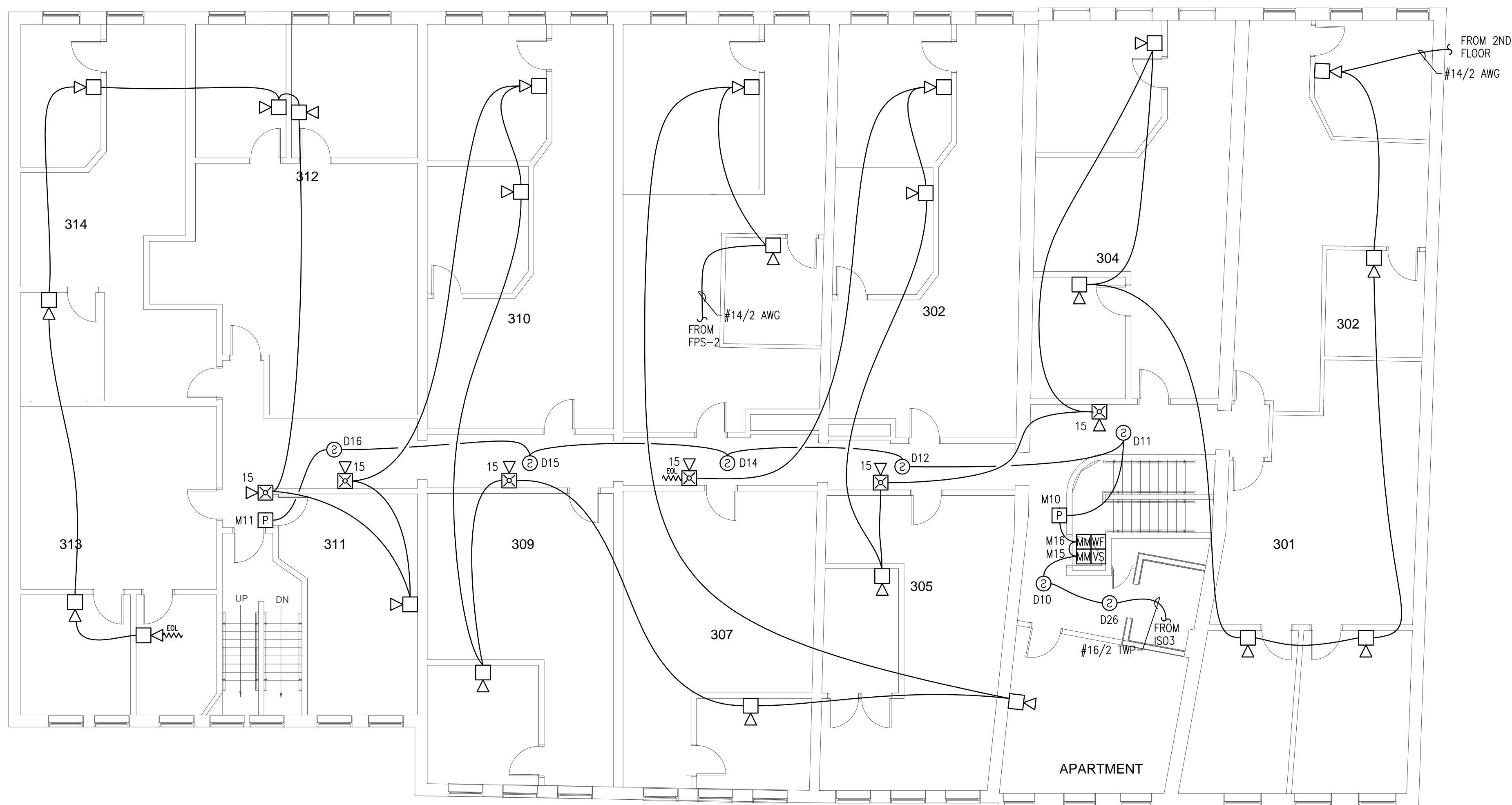
10 EXCHANGE STREET
10 EXCHANGES STREET
PORTLAND, MAINE
BASEMENT & FIRST FLOOR FIRE ALARM PLAN

DRAWN	CWS UNICAD JOB #17214
CHECKED	BRADY B. HAWS NICET III 138751
DATE	4/10/2017
REVISION	0
SCALE	1/8"=1'-0"





SECOND FLOOR
FIRE ALARM PLAN
SCALE: 1/8"=1'-0"



THIRD LEVEL
FIRE ALARM PLAN
SCALE: 1/8"=1'-0"

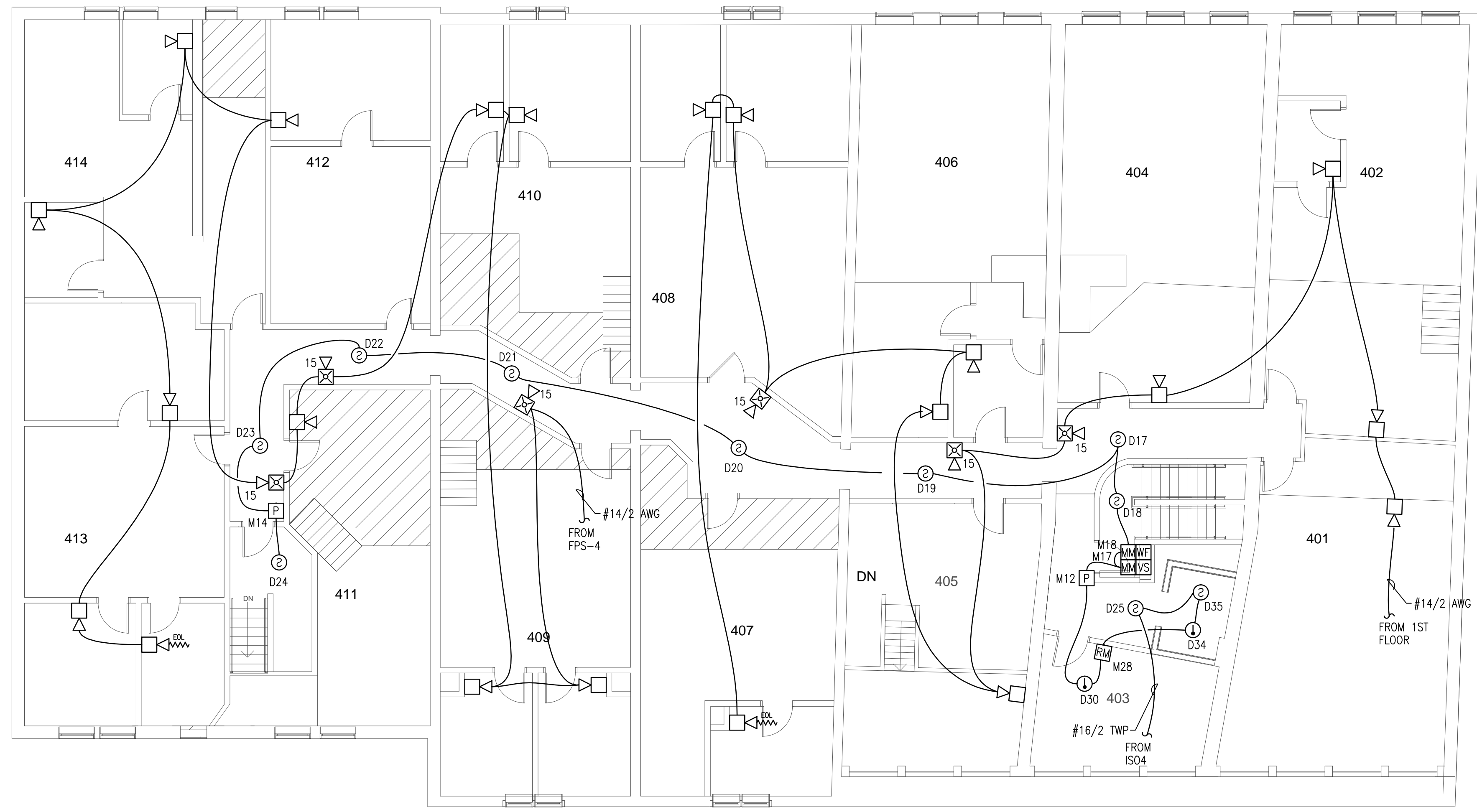
REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	4/10/2017

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10 EXCHANGE STREET
10 EXCHANGES STREET
PORTLAND, MAINE
SECOND & THIRD FLOOR FIRE ALARM PLAN

DRAWN	CWS UNICAD JOB #17214
CHECKED	BRADY B. HAWES NICET III 138751
DATE	4/10/2017
REVISION	0
SCALE	1/8"=1'-0"





FOURTH LEVEL FIRE ALARM PLAN
 SCALE: 1/8"=1'-0"

FACP Additional Load Calc		4/11/2017	
PROJECT NAME: 10 EXCHANGE STREET			
Required Standby Time: 24 Hours			
Required Alarm Time: 5 Minutes			
AC Branch Current: _____ Amps @ 120V			
Regulated Load in Standby			
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
SMOKE DETECTOR	23	0.00030	0.00690
HEAT DETECTOR	5	0.00030	0.00150
MONITOR MODULE	14	0.00040	0.00560
RELAY MODULE	5	0.00270	0.01350
FULL	7	0.00030	0.00210
TOTAL STANDBY LOAD			0.02960
Regulated Load in ALARM			
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
SMOKE DETECTOR	23	0.00650	0.14950
HEAT DETECTOR	5	0.00650	0.03250
MONITOR MODULE	14	0.00500	0.07000
RELAY MODULE	5	0.00650	0.03250
FULL	7	0.00030	0.00210
FACP-4 (Trigger Current)	1	0.00200	0.00200
TOTAL ALARM LOAD			0.28860
Battery Requirements			
Standby Load Current (Amps)	0.02960	Required Standby Time in Hours	24.00000 = 0.71040
Alarm Load Current (Amps)	0.28860	Required Alarm Time in Hours	1.2 = 0.34632
Total Ampere Hours (before derating factor)			
Derating Factor			
ADDITIONAL AMPERE HOURS REQUIRED			
FIELD VERIFY			

NOTE: THE ABOVE BATTERY CALCULATION IS A COMBINED TOTAL OF THE ADDITIONAL LOADS THAT WILL BE ADDED FROM THE SCOPE OF THIS PROJECT. FIELD VERIFY THE SIZE OF THE EXISTING BATTERIES AND UPSIZE ACCORDINGLY.

FPS Battery Calculation		4/11/2017	
PROJECT NAME: 10 EXCHANGE STREET			
Required Standby Time: 24 Hours			
Required Alarm Time: 5 Minutes			
AC Branch Current: _____ Amps @ 120V			
Regulated Load in Standby			
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
FPS MAINBOARD	1	0.06500	0.06500
TOTAL STANDBY LOAD			0.06500
Regulated Load in ALARM			
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
FPS MAINBOARD	1	0.14500	0.14500
FPS-1 (See Voltage Drop Calculations)	1	0.62700	0.62700
FPS-2 (See Voltage Drop Calculations)	1	0.47500	0.47500
FPS-3 (See Voltage Drop Calculations)	1	0.67200	0.67200
FPS-4 (See Voltage Drop Calculations)	1	0.42400	0.42400
TOTAL ALARM LOAD			2.34300
Battery Requirements			
Standby Load Current (Amps)	0.06500	Required Standby Time in Hours	24.00000 = 1.56000
Alarm Load Current (Amps)	2.34300	Required Alarm Time in Hours	1.2 = 2.81160
Total Ampere Hours (before derating factor)			
Derating Factor			
TOTAL AMPERE HOURS REQUIRED			
BATTERIES TO BE PROVIDED (2 - 12v)			

Point to Point NAC Voltage Drop Calculation		4/11/2017			
Project Name: 10 EXCHANGE STREET					
Circuit Number: FPS-1					
Nominal System Voltage	20.4 volts	Wire Gauge	14		
Minimum Device Voltage	16.0 volts	Resistance Per 1000	3.07		
Distance from source to 1st device	25 feet				
Wire Gauge for balance of circuit			14		
Max Output Current	3.00 amps				
Total Circuit Current	0.627 amps				
End of Line Voltage	19.59 volts				
Circuit is within limits					
Device	Distance	Voltage at Device	Drop from source	Percent Drop	
Device 1	0.079	25	20.30	0.096	0.47%
Device 2	0.079	35	20.19	0.214	1.05%
Device 3	0.079	25	20.11	0.286	1.40%
Device 4	0.017	30	20.04	0.358	1.75%
Device 5	0.017	30	19.97	0.427	2.09%
Device 6	0.017	35	19.90	0.503	2.47%
Device 7	0.017	20	19.86	0.545	2.67%
Device 8	0.017	30	19.80	0.604	2.96%
Device 9	0.017	20	19.76	0.641	3.14%
Device 10	0.079	30	19.71	0.694	3.40%
Device 11	0.079	25	19.67	0.727	3.56%
Device 12	0.017	30	19.65	0.751	3.68%
Device 13	0.017	50	19.61	0.785	3.85%
Device 14	0.017	20	19.60	0.797	3.91%
Device 15	0.079	35	19.59	0.814	3.99%
Totals		0.627	440		
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 manufactures listed minimum operating voltage (IE: rated operating voltage 16-33 VDC (24 VDC nominal)).					

Point to Point NAC Voltage Drop Calculation		4/11/2017			
Project Name: 10 EXCHANGE STREET					
Circuit Number: FPS-2					
Nominal System Voltage	20.4 volts	Wire Gauge	14		
Minimum Device Voltage	16.0 volts	Resistance Per 1000	3.07		
Distance from source to 1st device	95 feet				
Wire Gauge for balance of circuit			14		
Max Output Current	3.00 amps				
Total Circuit Current	0.475 amps				
End of Line Voltage	19.52 volts				
Circuit is within limits					
Device	Distance	Voltage at Device	Drop from source	Percent Drop	
Device 1	0.017	95	20.12	0.277	1.36%
Device 2	0.017	25	20.05	0.347	1.70%
Device 3	0.017	25	19.98	0.415	2.03%
Device 4	0.017	15	19.95	0.454	2.23%
Device 5	0.079	30	19.87	0.529	2.59%
Device 6	0.017	20	19.83	0.569	2.79%
Device 7	0.017	45	19.74	0.655	3.21%
Device 8	0.017	20	19.71	0.691	3.39%
Device 9	0.079	40	19.64	0.759	3.72%
Device 10	0.017	35	19.60	0.802	3.93%
Device 11	0.079	25	19.57	0.830	4.07%
Device 12	0.017	10	19.56	0.836	4.10%
Device 13	0.017	35	19.55	0.854	4.19%
Device 14	0.017	20	19.54	0.863	4.23%
Device 15	0.017	25	19.53	0.870	4.27%
Device 16	0.017	15	19.53	0.874	4.28%
Device 17	0.017	25	19.52	0.876	4.30%
Totals		0.475	505		
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 manufactures listed minimum operating voltage (IE: rated operating voltage 16-33 VDC (24 VDC nominal)).					

Point to Point NAC Voltage Drop Calculation		4/11/2017			
Project Name: 10 EXCHANGE STREET					
Circuit Number: FPS-3					
Nominal System Voltage	20.4 volts	Wire Gauge	14		
Minimum Device Voltage	16.0 volts	Resistance Per 1000	3.07		
Distance from source to 1st device	80 feet				
Wire Gauge for balance of circuit			14		
Max Output Current	3.00 amps				
Total Circuit Current	0.672 amps				
End of Line Voltage	19.00 volts				
Circuit is within limits					
Device	Distance	Voltage at Device	Drop from source	Percent Drop	
Device 1	0.107	80	20.07	0.330	1.62%
Device 2	0.079	30	19.97	0.434	2.13%
Device 3	0.079	100	19.67	0.733	3.59%
Device 4	0.017	35	19.58	0.820	4.02%
Device 5	0.017	45	19.47	0.928	4.55%
Device 6	0.017	30	19.40	0.996	4.88%
Device 7	0.017	60	19.27	1.128	5.53%
Device 8	0.079	20	19.23	1.169	5.73%
Device 9	0.079	60	19.13	1.265	6.20%
Device 10	0.017	25	19.11	1.293	6.34%
Device 11	0.017	30	19.08	1.323	6.49%
Device 12	0.017	50	19.03	1.368	6.71%
Device 13	0.079	15	19.02	1.380	6.77%
Device 14	0.017	30	19.01	1.390	6.81%
Device 15	0.017	35	19.00	1.397	6.85%
Device 16	0.017	70	19.00	1.404	6.88%
Totals		0.672	715		
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 manufactures listed minimum operating voltage (IE: rated operating voltage 16-33 VDC (24 VDC nominal)).					

Point to Point NAC Voltage Drop Calculation		4/11/2017			
Project Name: 10 EXCHANGE STREET					
Circuit Number: FPS-4					
Nominal System Voltage	20.4 volts	Wire Gauge	14		
Minimum Device Voltage	16.0 volts	Resistance Per 1000	3.07		
Distance from source to 1st device	125 feet				
Wire Gauge for balance of circuit			14		
Max Output Current	3.00 amps				
Total Circuit Current	0.424 amps				
End of Line Voltage	19.63 volts				
Circuit is within limits					
Device	Distance	Voltage at Device	Drop from source	Percent Drop	
Device 1	0.079	125	20.07	0.325	1.60%
Device 2	0.017	40	19.99	0.410	2.01%
Device 3	0.017	20	19.95	0.450	2.21%
Device 4	0.017	70	19.82	0.584	2.86%
Device 5	0.079	10	19.80	0.602	2.95%
Device 6	0.017	45	19.74	0.662	3.24%
Device 7	0.079	15	19.72	0.680	3.33%
Device 8	0.017	15	19.71	0.691	3.39%
Device 9	0.017	50	19.68	0.722	3.54%
Device 10	0.017	25	19.66	0.735	3.60%
Device 11	0.017	35	19.65	0.750	3.68%
Device 12	0.017	35	19.64	0.761	3.73%
Device 13	0.017	30	19.63	0.767	3.76%
Device 14	0.017	15	19.63	0.769	3.77%
Totals		0.424	530		
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 manufactures listed minimum operating voltage (IE: rated operating voltage 16-33 VDC (24 VDC nominal)).					

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10 EXCHANGE STREET
 10 EXCHANGES STREET
 PORTLAND, MAINE
 FOURTH FLOOR FIRE ALARM PLAN & CALCULATIONS

DRAWN	CWS UNICAD JOB #17214
CHECKED	BRADY B. HAWS NICET III 138751
DATE	4/10/2017
REVISION	0
SCALE	1/8"=1'-0"



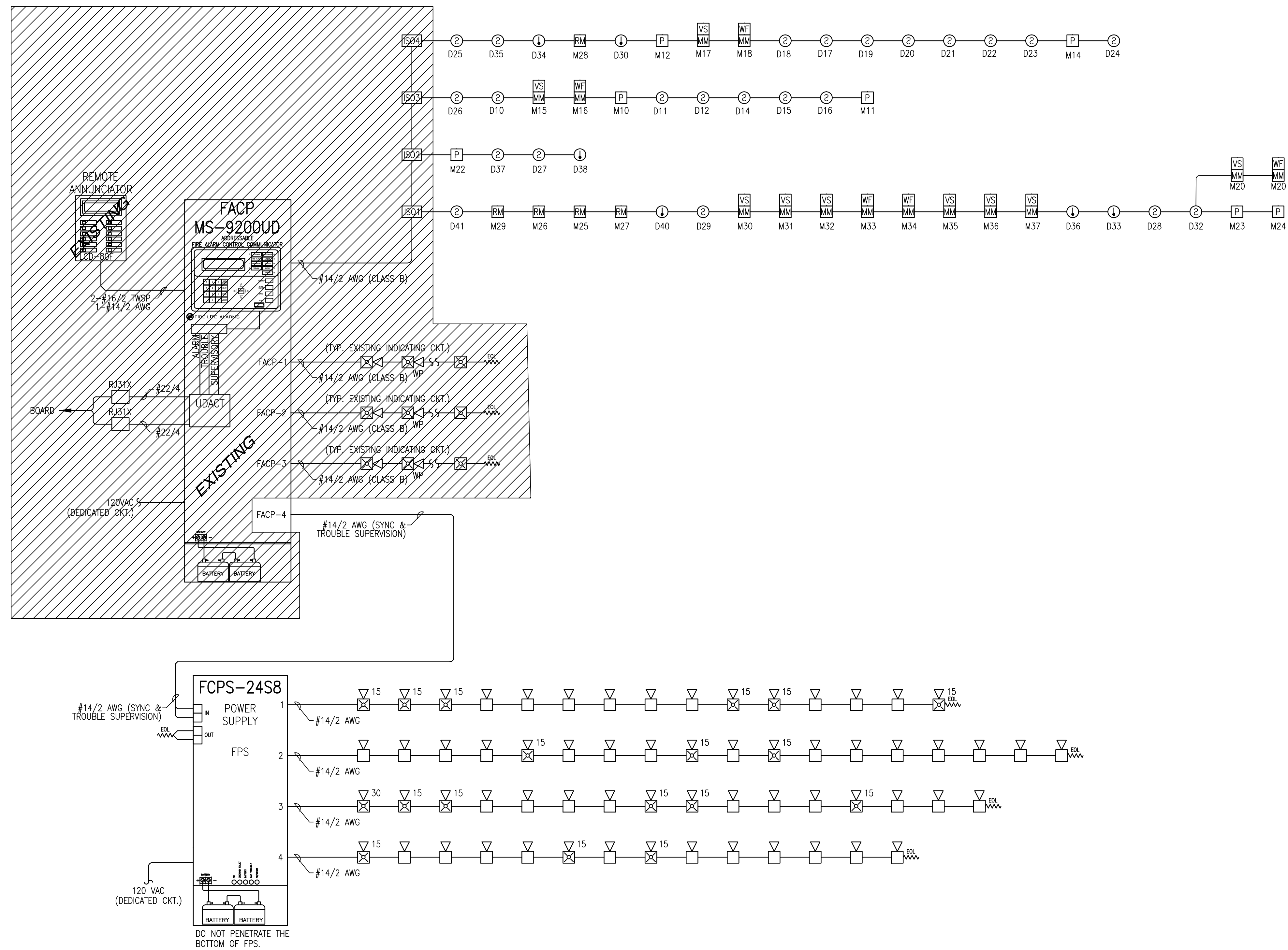
OPERATIONS MATRIX EXISTING		FIRE ALARM OUTPUT																
FIRE ALARM INPUT		ACTIVATE ALARM INDICATOR	ACTIVATE AUDIBLE ALARM	ACTIVATE SUPERVISORY INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE TROUBLE INDICATOR	ACTIVATE AUDIBLE TROUBLE INDICATOR	TRANSMIT ALARM SIGNAL	TRANSMIT SUPERVISORY SIGNAL	TRANSMIT TROUBLE SIGNAL	ACTIVATE ALTERNATE ELEVATOR RECALL	ACTIVATE ELEVATOR SHUNT	ACTIVATE FIREMAN'S HAT	ACTIVATE NOTIFICATION APPLIANCES	RELEASE EGRESS MAGLOCKS/UNLOCK EXITS	RELEASE MAGNETICALLY HELD SMOKE DOORS	CLOSE SMOKE/FIRE DAMPERS IN RATED WALLS	SHUTDOWN AIR HANDLERS IN EXCESS OF 2000 CFM
SMOKE DETECTORS (SPOT OR BEAM)		●	●															
HEAT DETECTORS		●	●															
DUCT DETECTORS			●	●														
PULL STATIONS		●	●															
PRIMARY RECALL FLR, ELEV LOBBY SMOKE DET		●	●															
ALTERNATE RECALL FLR, ELEV LOBBY SMOKE DET		●	●															
TOP OF ELEV SHAFT SMOKE DET		●	●															
ELEVATOR EQUIPMENT ROOM SMOKE DET		●	●															
ELEVATOR EQUIPMENT ROOM HEAT DET		●	●															
TOP OF ELEV SHAFT HEAT DET		●	●															
WATERFLOW SWITCHES		●	●															
VALVE SUPERVISORY SWITCHES		●	●															
KITCHEN HOOD		●	●															
FIRE ALARM AC POWER FAIL					●	●												
FIRE ALARM LOW BATTERY					●	●												
OPEN CIRCUIT					●	●												
GROUND FAULT					●	●												
NAC SHORT CIRCUIT					●	●												
LOSS OF AC TO BUILDING					●	●												

FIRE ALARM SYMBOL LEGEND		
NOTE: ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT		
SYMBOL	DESCRIPTION	MOUNTING
[FPS]	FIRE ALARM POWER SUPPLY	FIELD VERIFY
[FSA]	FIRE SYSTEM ANNIUNCIATOR	WALL-TOP @ 66"
[ISO]	ISOLATION MODULE	FIELD VERIFY
[S]	SMOKE DETECTOR	CEILING
[H]	HEAT DETECTOR	CEILING
[MM]	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
[P]	MANUAL PULL STATION	WALL @ 48"
[RM]	ADDRESSABLE RELAY MODULE	FIELD VERIFY
[WF]	WATER FLOW SWITCH	BY OTHERS
[VS]	VALVE SUPERVISORY SWITCH	BY OTHERS
[M]	MINI HORN	WALL @ 10'-0"
[S]	HORN / STROBE	WALL 80"-96"

ABBREVIATION	DESCRIPTION
E	EXISTING
G	WITH GUARD
P	PENDANT MOUNT
R	RESIDENTIAL (110V)
S	SOUNDER BASE
WP	WEATHER PROOF
EOL	END OF LINE RESISTOR
EOLR	END OF LINE RELAY
AWG	AMERICAN WIRE GAUGE
TWP	TWISTED PAIR
TWSP	TWISTED SHIELDED PAIR
FPLP	FIRE POWER LIMITED PLENUM
FPLR	FIRE POWER LIMITED RISER
NAC	NOTIFICATION APPLIANCE CIRCUIT
SLC	SIGNALING LINE CIRCUIT

GENERAL NOTES:

- SCOPE OF WORK: THIS PROJECT SHALL INCLUDE THE INSTALLATION OF A NEW POWER SUPPLY, OCCUPANT NOTIFICATION AND INITIATING DEVICES TO AN EXISTING FIRE ALARM SYSTEM IN AN EXISTING BUILDING.
- THESE DRAWINGS ARE DIAGRAMMATIC. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
- INSTALLATION SHALL COMPLY WITH NEC, NFPA 72 AND ALL OTHER APPLICABLE CODES AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- WIRING DEPICTED ON THESE PLANS IS SCHEMATIC - ACTUAL WIRE LOCATIONS MAY DIFFER FROM THESE PLANS. WIRING SHALL BE PERFORMED AS ACTUAL BUILDING CONSTRUCTION CONDITIONS ALLOW AND TO MINIMIZE PENETRATIONS THROUGH AREA SEPARATION WALLS AND FIRE WALLS. THE USE OF A RACEWAY IS PERMITTED AS LONG AS NO 110V OR HIGHER VOLTAGE CABLES ARE IN THE SAME RACEWAY.
- FIRE RATINGS SHALL BE MAINTAINED FOR ALL PENETRATIONS THROUGH FIRE-RATED CONSTRUCTION.
- POWER FOR ALL FIRE ALARM PANELS AND FIRE ALARM POWER SUPPLIES MUST BE PROVIDED BY A DEDICATED AC BRANCH CIRCUIT. THE LOCATION OF THE BRANCH CIRCUIT BREAKER SHALL BE PERMANENTLY IDENTIFIED AT THE CONTROL UNIT AND SHALL HAVE A RED MARKING IN ACCORDANCE WITH NFPA 72.
- POWER-LIMITED AND NONPOWER-LIMITED CIRCUIT WIRING MUST REMAIN SEPARATED IN CABINET. ALL POWER-LIMITED CIRCUIT WIRING MUST REMAIN AT LEAST 0.25" AWAY FROM ANY NONPOWER-LIMITED CIRCUIT WIRING. FURTHERMORE, ALL POWER-LIMITED AND NONPOWER-LIMITED CIRCUIT WIRING MUST ENTER AND EXIT THE CABINET THROUGH DIFFERENT KNOCK OUTS AND/OR SEPARATE CONDUITS.
- WHEN UTILIZING CLASS "A" CIRCUITS, SEPARATE OUTGOING AND RETURN CONDUCTORS OF CLASS "A" CIRCUITS BY A MINIMUM OF 12" WHERE RUN VERTICALLY AND 48" WHERE RUN HORIZONTALLY.
- WHEN UTILIZING SHIELDED CABLE TIE SHIELDS THROUGH AND INSULATE AT EACH JUNCTION BOX. INSULATE AND TAPE BACK AT END.
- ALL FIRE ALARM CABLING SHALL BE ACCEPTABLE TO THE FIRE ALARM EQUIPMENT MANUFACTURER FOR THE INTENDED PURPOSE.
- SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER CONSTRUCTION CLEAN-UP IS COMPLETED AND FINAL.
- LOCATE SMOKE DETECTORS A MINIMUM OF THREE (3) FEET FROM MECHANICAL DIFFUSERS. WALL-MOUNTED SMOKE DETECTORS SHALL BE LOCATED A MINIMUM OF 4" AND A MAXIMUM OF 12" FROM CEILING. CEILING-MOUNTED SMOKE DETECTORS SHALL BE MOUNTED ON CEILINGS AND NOT ON THE BOTTOMS OF BEAMS OR JOISTS.
- PROVIDE SYNCHRONIZATION OF ALL VISUAL NOTIFICATION APPLIANCE CIRCUITS. PROVIDE ALL REQUIRED SYNC MODULES. PROVIDE A MULTI-SYNC MODE SLAVE CONNECTION BETWEEN ALL SYNC MODULES.
- VERIFY ALL FIELD SELECTABLE AUDIBILITY SETTINGS OF NOTIFICATION APPLIANCES WITH FIRE ALARM CONTRACTOR.
- UPON COMPLETION OF THE FIRE ALARM SYSTEM INSTALLATION AND PROGRAMMING, THE INSTALLING CONTRACTOR SHALL PERFORM FINAL TESTING OF THE ENTIRE SYSTEM, PER ALL APPLICABLE CODES, AND SHALL COORDINATE AND PERFORM A FINAL FIRE ALARM SYSTEM INSPECTION.
- PROVIDE OFF-SITE MONITORING AS REQUIRED BY THE INTERNATIONAL FIRE CODE, SECTION 907.6.5 AND THE LOCAL AUTHORITY HAVING JURISDICTION.
- INSTALLING CONTRACTOR SHALL, PHYSICALLY, LABEL ALL INITIATING DEVICES AND NOTIFICATION APPLIANCE CIRCUIT END OF LINE (WHEN WIRING CLASS "B"). THESE LABELS SHALL BE IN PLACE PRIOR TO START-UP AND TESTING.



FIRE ALARM RISER DIAGRAM
SCHEMATIC: NO SCALE

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10 EXCHANGE STREET
 10 EXCHANGES STREET
 PORTLAND, MAINE
 NOTES & FIRE ALARM RISER DIAGRAM

DRAWN	CWS UNICAD JOB #17214
CHECKED	BRADY B. HAWS NICET III 138751
DATE	4/10/2017
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SCALE	1/8"=1'-0"