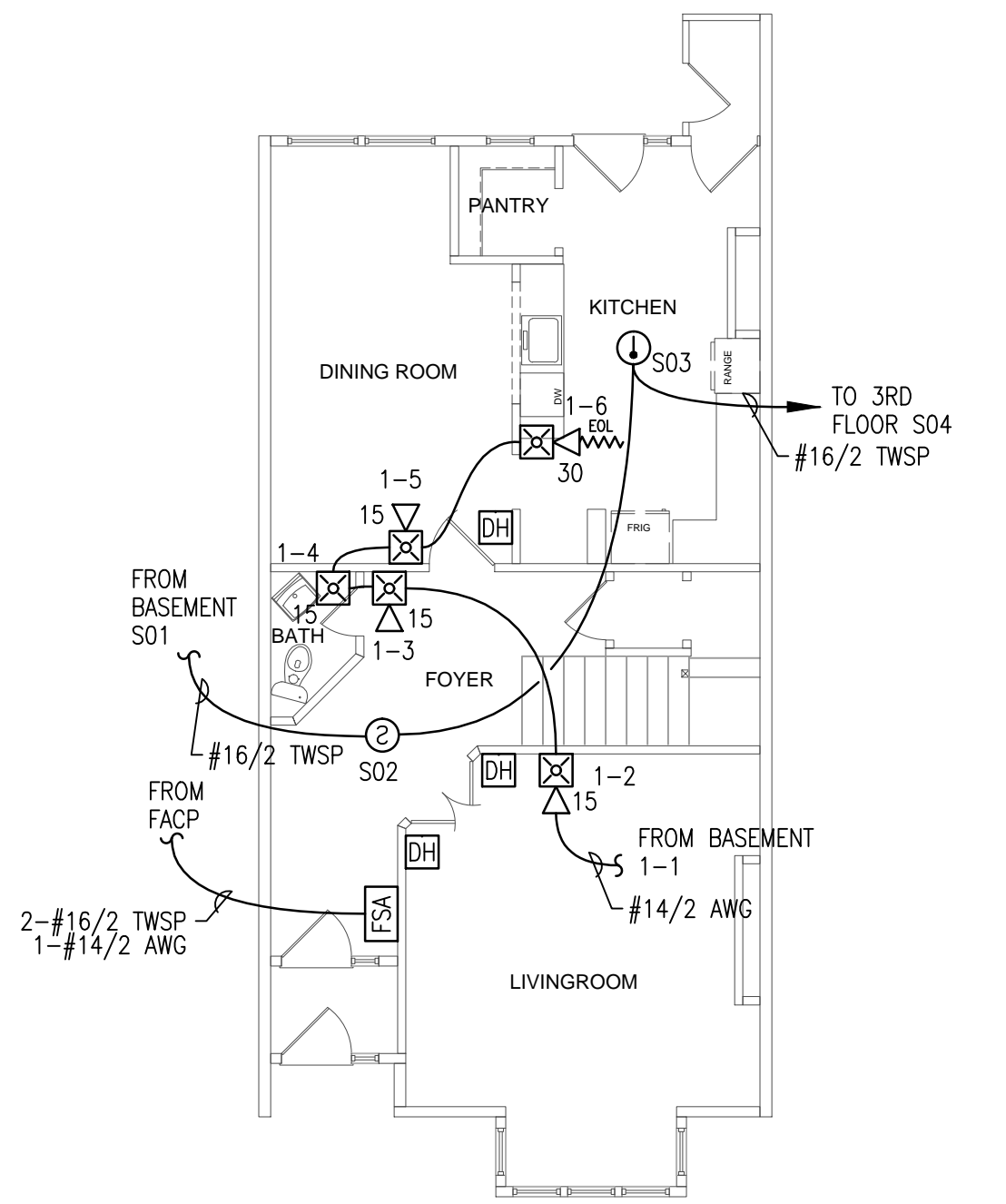
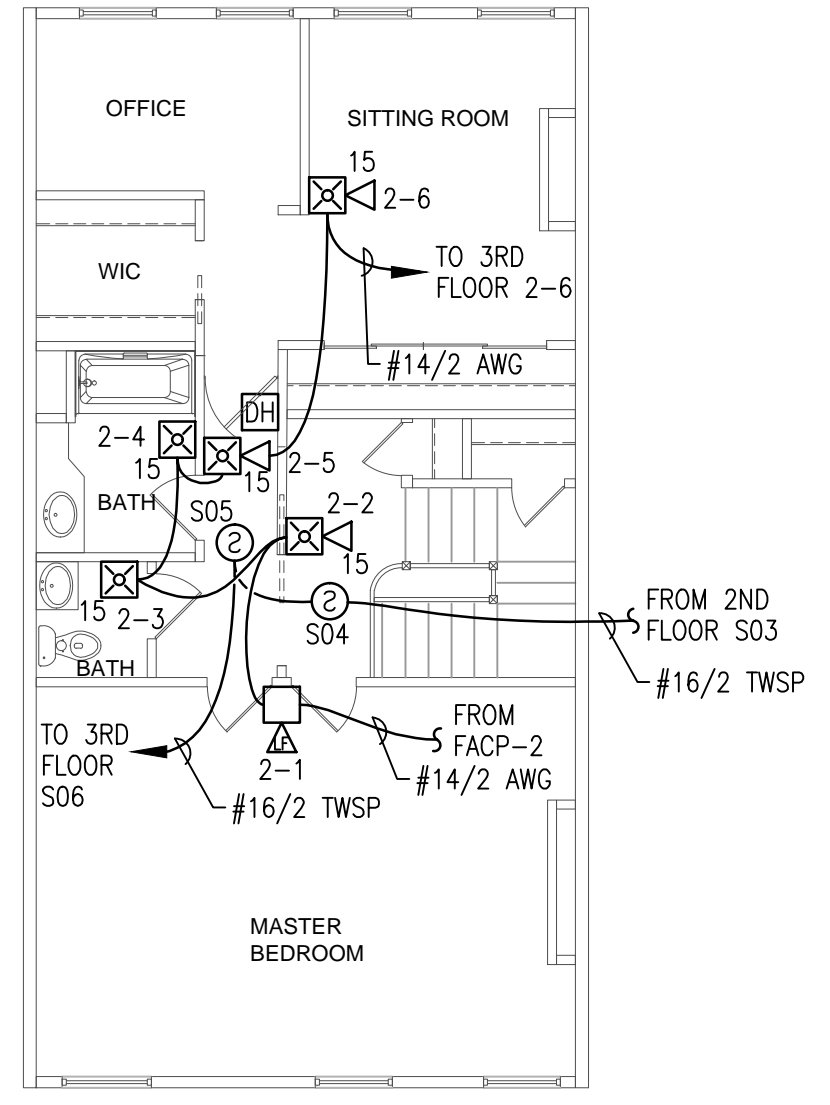


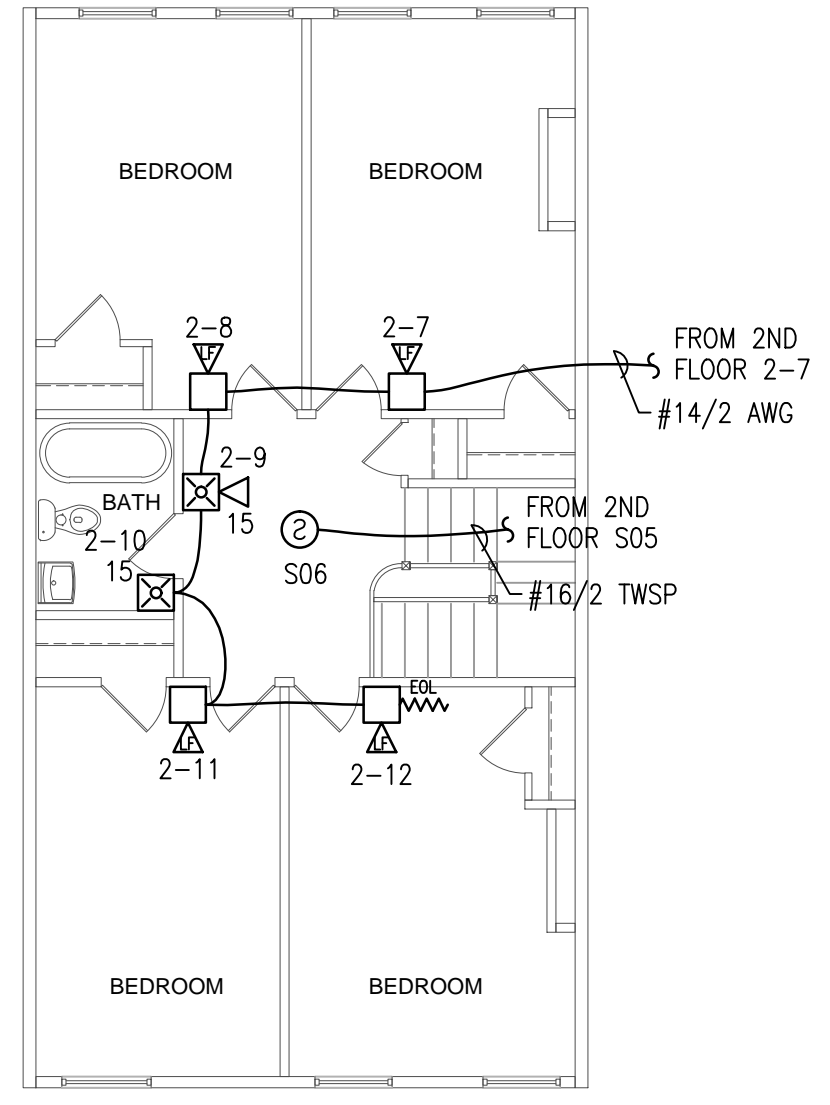
**BASEMENT FIRE ALARM PLAN**  
SCALE: 1/8"=1'-0"



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



**2ND FLOOR FIRE ALARM PLAN**  
SCALE: 1/8"=1'-0"



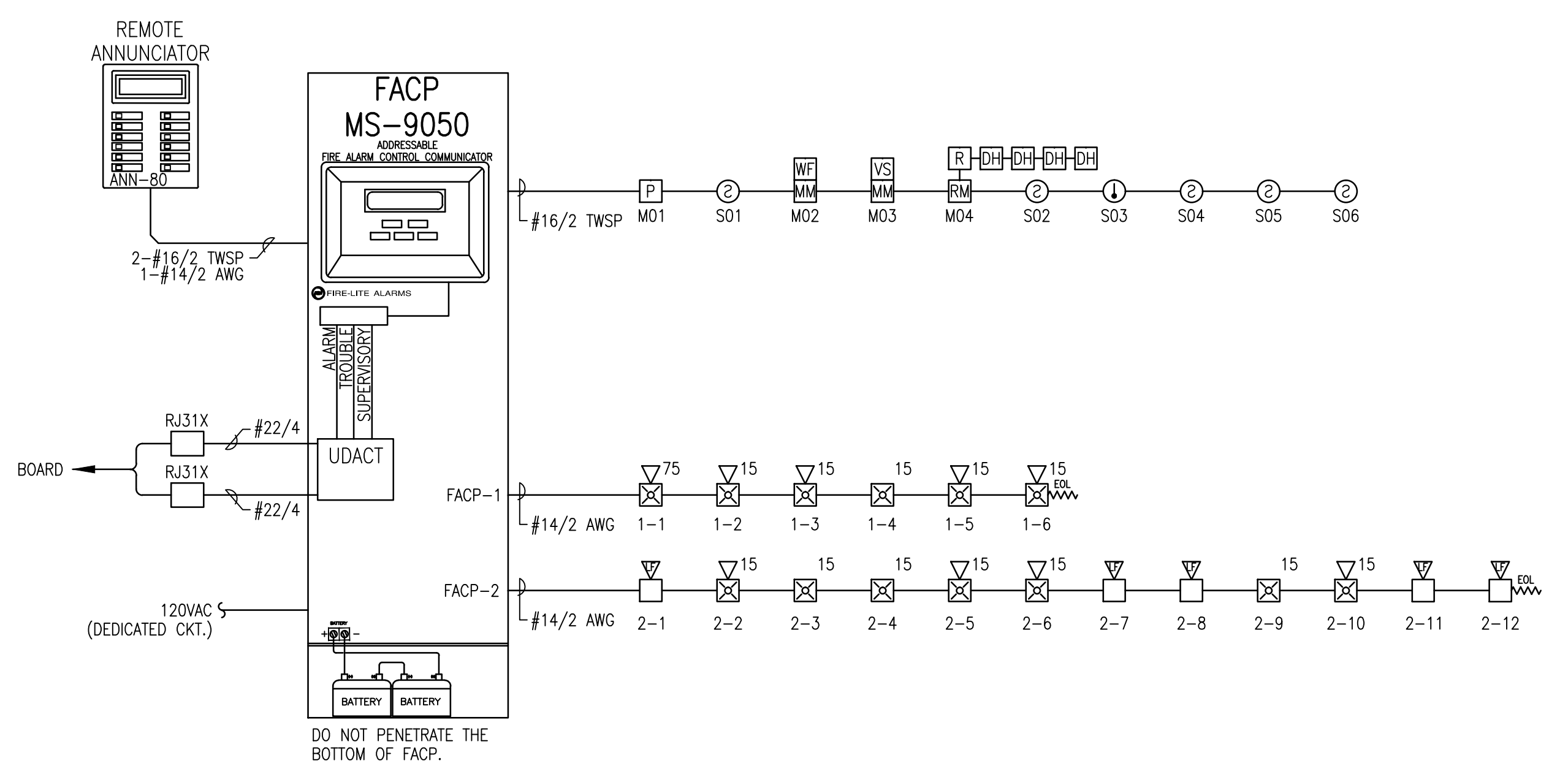
**3RD FLOOR FIRE ALARM PLAN**  
SCALE: 1/8"=1'-0"

RESERVED FOR CITY STAMP

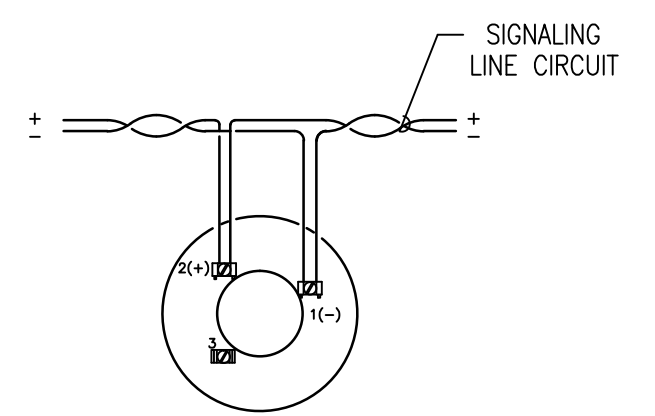
REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	7/13/2017

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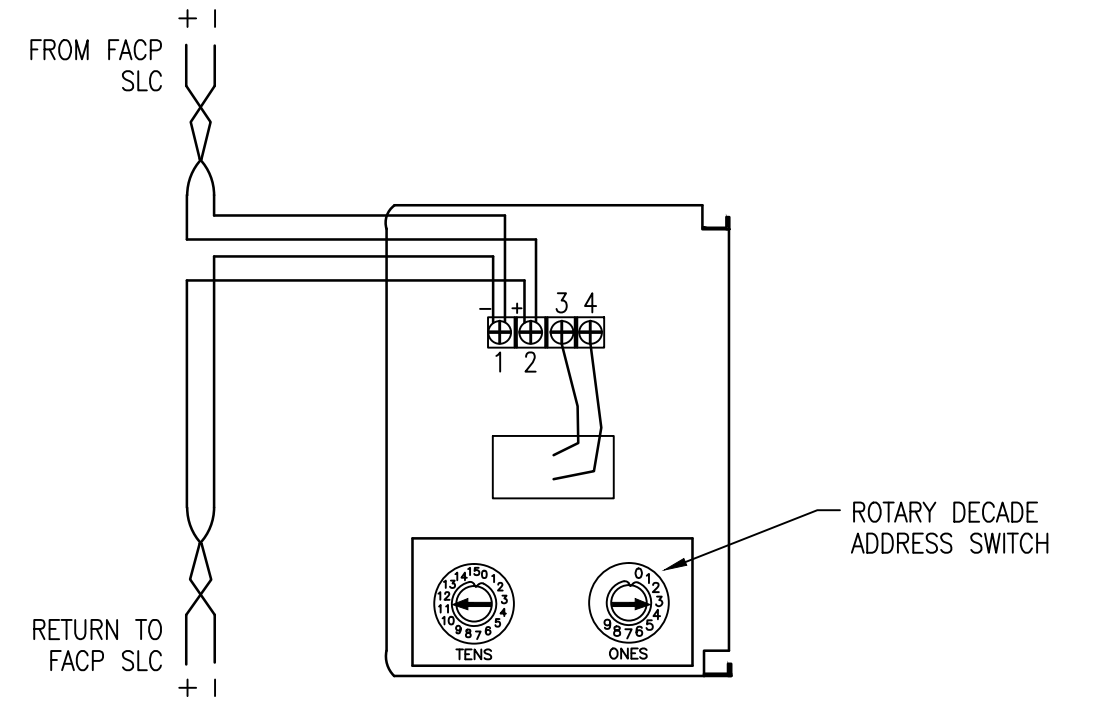
**15 WEST STREET**  
**PORTLAND, ME 04102**  
**FIRE ALARM PLAN**



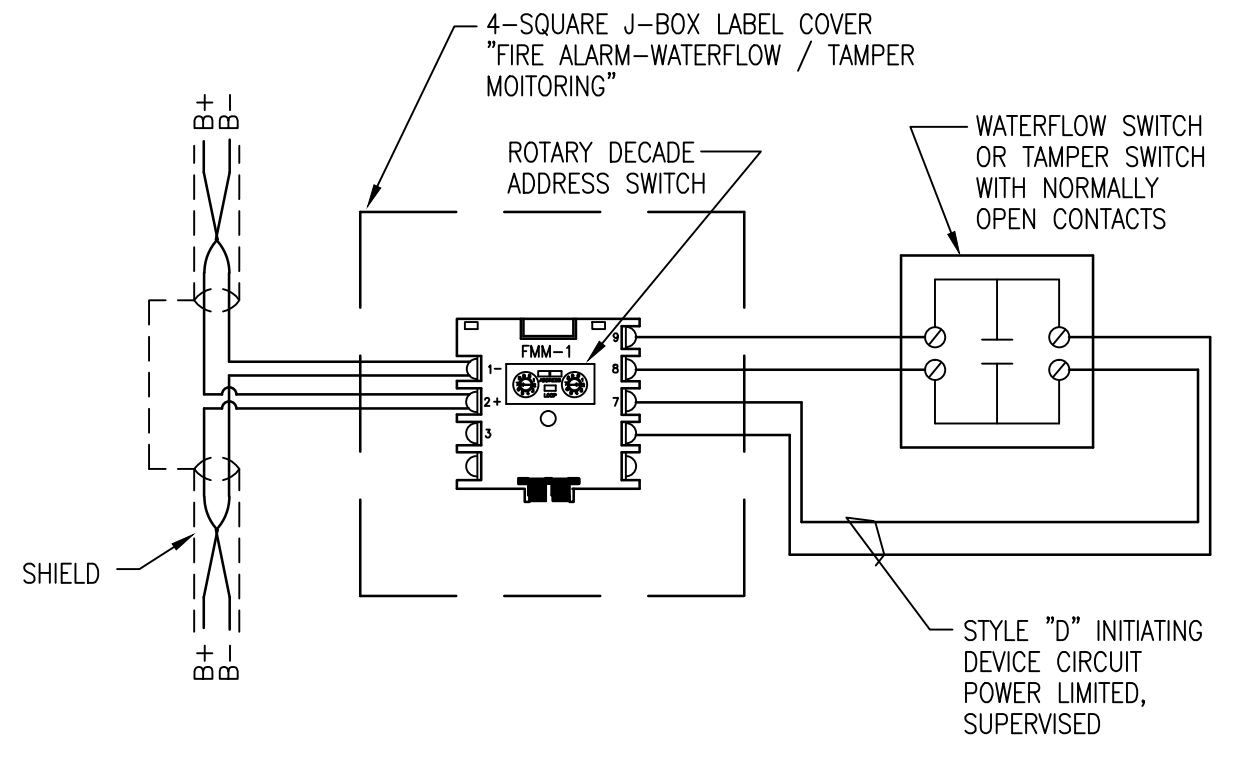
**FIRE ALARM RISER DIAGRAM**  
SCHEMATIC: NO SCALE



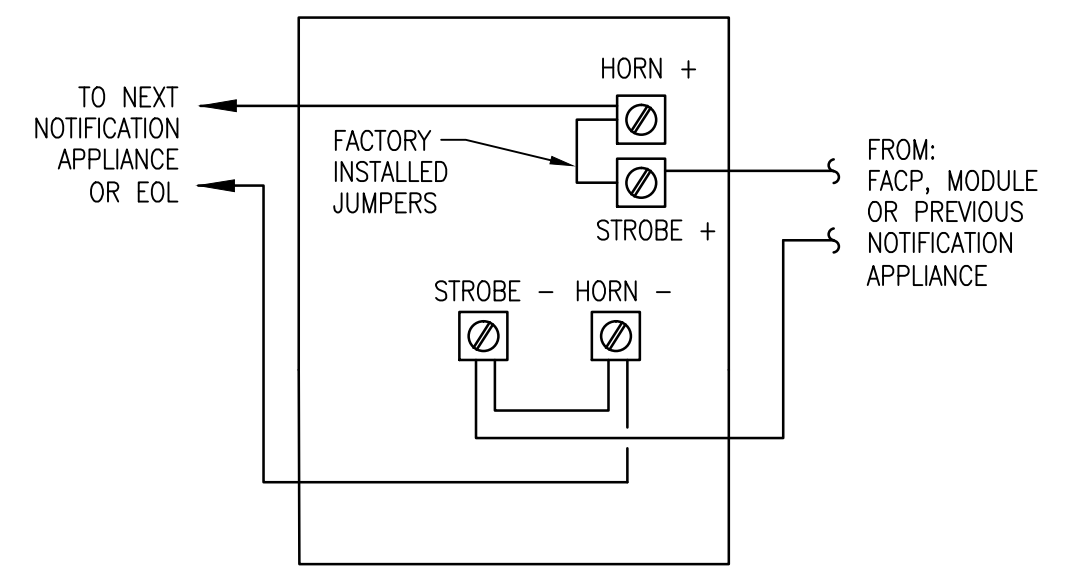
**ADDRESSABLE DETECTOR WIRING DETAIL**  
SCHEMATIC: NO SCALE



**MANUAL PULL STATION WIRING DETAIL**  
SCHEMATIC: NO SCALE



**WATERFLOW / TAMPER WIRING DETAIL**  
SCHEMATIC: NO SCALE



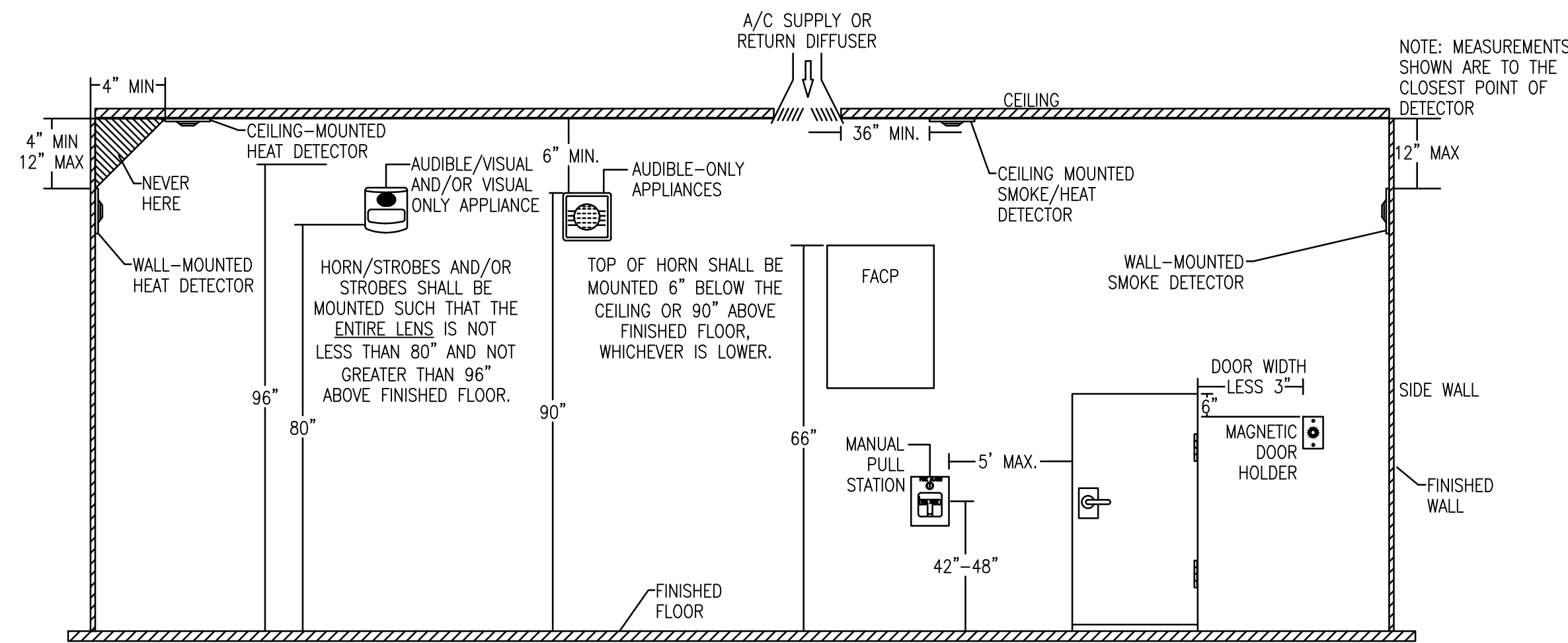
**TYPICAL HORN/STROBE WIRING DETAIL**  
SCHEMATIC: NO SCALE

shop drawings created by  
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**UNICAD** Inc.  
Fire Alarm Design & Drafting Services

DRAWN	CWS UNICAD JOB #17470
CHECKED	BRADY B. HAWES NCET III 138751
DATE	7/13/2017
REVISION	0
SCALE	1/8"=1'-0"

**FA-1**



**FIRE ALARM DEVICE MOUNTING HEIGHTS**

SCALE: NOT TO SCALE

FIRE ALARM SYMBOL LEGEND		
SYMBOL	DESCRIPTION	MOUNTING
FACP	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
FSA	FIRE SYSTEM ANNUCIATOR	WALL-TOP @ 66"
②	SMOKE DETECTOR	CEILING
①	HEAT DETECTOR	CEILING
MM	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
P	MANUAL PULL STATION	WALL @ 48"
R	CONTROL RELAY (MULTI-VOLTAGE)	FIELD VERIFY
RM	ADDRESSABLE RELAY MODULE	FIELD VERIFY
DH	DOOR HOLDER	FIELD VERIFY
WF	WATER FLOW SWITCH	BY OTHERS
VS	VALVE SUPERVISORY SWITCH	BY OTHERS
☐	LOW FREQUENCY SOUNDER	WALL @ 10'-0"
☒	HORN / STROBE	WALL 80"-96"
☒	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 ADDRESSABLE FIRE ALARM SYSTEM WITH OCCUPANT NOTIFICATION THROUGHOUT.
- 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.

**APPLICABLE CODES**

MAINE UNIFORM ENERGY & BUILDING CODE  
 PORTLAND CITY CODE, CHAPTER 10, FIRE PREVENTION & PROTECTION  
 NFPA 1, FIRE CODE & NFPA 101, LIFE SAFETY CODE

FACP Battery Calculation		7/13/2017
PROJECT NAME:	15 WEST STREET	
Required Standby Time:	24 Hours	
Required Alarm Time:	5 Minutes	
<b>AC Branch Current</b>		
AC Branch Current:	Amps	120V
<b>Regulated Load in Standby</b>		
Device Type	Number of Devices	Current (Amps)
FACP MAINBOARD	1	0.12000
SMOKE DETECTOR	5	0.00030
HEAT DETECTOR	1	0.00030
MONITOR MODULE	2	0.00040
RELAY MODULES	1	0.00027
PULL STATION	1	0.00023
ANNUNCIATOR	1	0.01500
TOTAL STANDBY LOAD		0.13810
<b>Regulated Load in ALARM</b>		
Device Type	Number of Devices	Current (Amps)
FACP MAINBOARD	1	0.20000
MAX ADDRESSABLE ALARM DRAW	5	0.40000
ANNUNCIATOR	1	0.04000
FACP-1 (See Voltage Drop Calculations)	1	0.40000
FACP-2 (See Voltage Drop Calculations)	1	1.03500
TOTAL ALARM LOAD		3.67500
<b>Battery Requirements</b>		
Standby Load	Required Standby Time in Hours	
Current (Amps)	0.13810 X 24.00000	= 3.31440
Alarm Load	Required Alarm Time in Hours	
Current (Amps)	3.67500 X 0.08333	= 0.30625
Total Ampere Hours (before derating factor)		3.62065
Derating Factor	X 1.2	
TOTAL AMPERE HOURS REQUIRED		= 4.34478
BATTERIES TO BE PROVIDED (2 - 12v)		7 AH

Point to Point NAC Voltage Drop Calculation		7/13/2017
Project Name	15 WEST STREET	
Circuit Number	FACP-1	
Nominal System Voltage	20.4 volts	Wire Resistance
Minimum Device Voltage	16.0 volts	Gauge Per 1000
Distance from source to 1st device	25 feet	14 3.07
Wire Gauge for balance of circuit		14 3.07
Max Output Current	3.00 amps	
Total Circuit Current	0.400 amps	
End of Line Voltage	20.23 volts	
<b>Circuit is within limits</b>		
Device	Distance previous device	Voltage at Device
Device 1	0.121	25
Device 2	0.054	30
Device 3	0.054	20
Device 4	0.043	10
Device 5	0.054	15
Device 6	0.074	20
Totals	0.400	120
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		7/13/2017
Project Name	15 WEST STREET	
Circuit Number	FACP-2	
Nominal System Voltage	20.4 volts	Wire Resistance
Minimum Device Voltage	16.0 volts	Gauge Per 1000
Distance from source to 1st device	50 feet	14 3.07
Wire Gauge for balance of circuit		14 3.07
Max Output Current	3.00 amps	
Total Circuit Current	1.035 amps	
End of Line Voltage	19.40 volts	
<b>Circuit is within limits</b>		
Device	Distance previous device	Voltage at Device
Device 1	0.138	50
Device 2	0.054	20
Device 3	0.043	15
Device 4	0.043	15
Device 5	0.054	15
Device 6	0.054	20
Device 7	0.138	30
Device 8	0.138	15
Device 9	0.054	15
Device 10	0.043	15
Device 11	0.138	15
Device 12	0.138	15
Totals	1.035	240
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)).		

OPERATIONS MATRIX	FIRE ALARM OUTPUT							
	FIRE ALARM OUTPUT	ACTIVATE ALARM INDICATOR	ACTIVATE AUDIBLE ALARM	ACTIVATE SUPERVISORY INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE TROUBLE INDICATOR	ACTIVATE AUDIBLE TROUBLE INDICATOR	TRANSMIT ALARM SIGNAL
FIRE ALARM INPUT								
SMOKE DETECTORS	●	●						●
HEAT DETECTORS	●	●						●
PULL STATIONS	●	●						●
WATERFLOW SWITCHES		●						●
VALVE TAMPER SWITCHES			●					●
FIRE ALARM AC POWER FAIL				●	●			●
FIRE ALARM LOW BATTERY				●	●			●
OPEN CIRCUIT				●	●			●
GROUND FAULT				●	●			●
NAC SHORT CIRCUIT				●	●			●
LOSS OF AC TO BUILDING				●	●			●

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**15 WEST STREET**  
**PORTLAND, ME 04102**  
**NOTES, DETAILS & CALCULATIONS**

DRAWN	CWS UNICAD JOB #17470
CHECKED	BRADY B. HAWES NCET III 138751
DATE	7/13/2017
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SCALE	1/8"=1'-0"