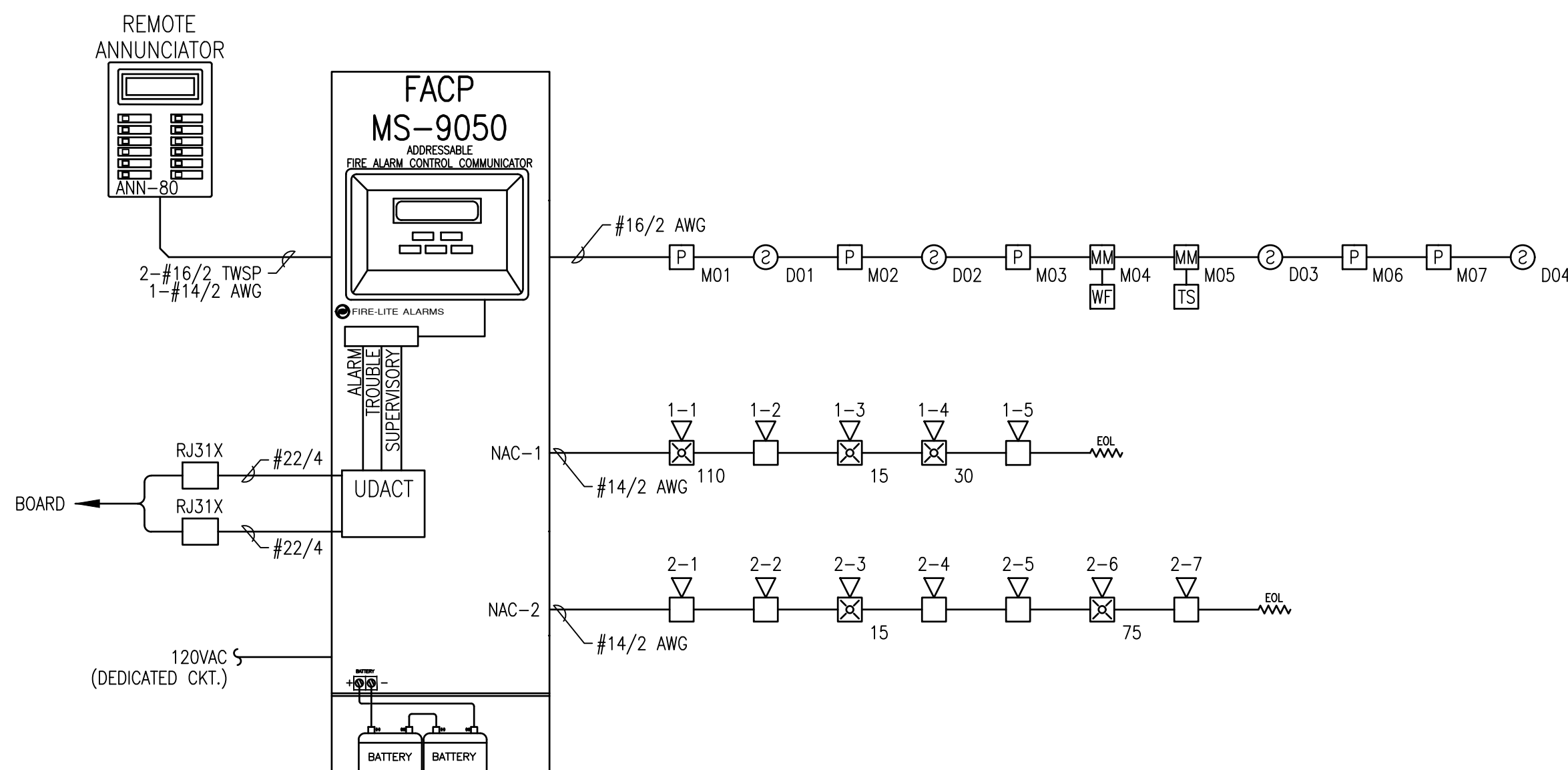


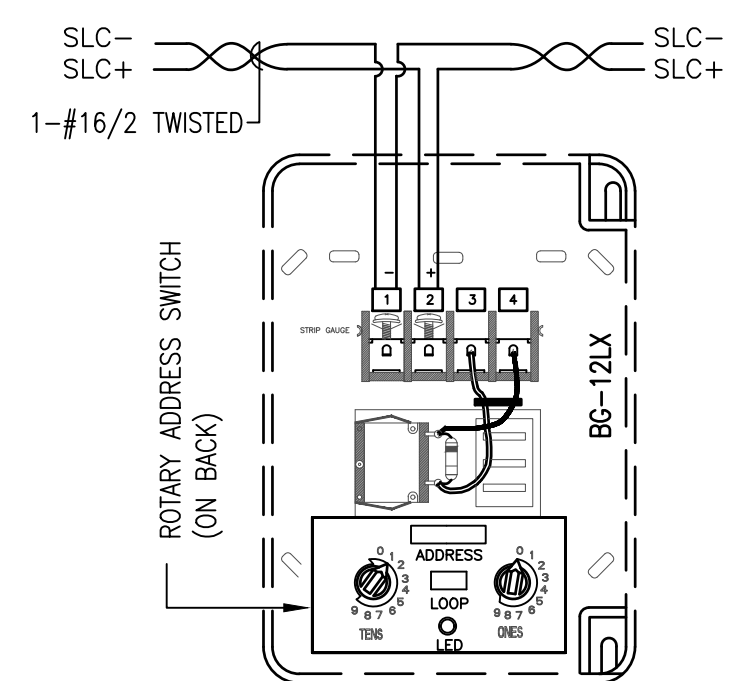
FACP Battery Calculation					7/18/2016	
PROJECT NAME:		Wilmot Street L.L.C.				
Required Standby Time:		24 Hours				
Required Alarm Time:		5 Minutes				
AC Branch Current						
AC Branch Current:		Amps		120V		
Regulated Load in Standby						
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)			
FACP MAINBOARD- MS9050UD	1	X 0.12000	= 0.12000			
SMOKE DETECTOR- SD355	4	X 0.00038	= 0.00120			
MONITOR MODULE- MMF301	7	X 0.00038	= 0.00266			
PULL STATION- BG12LX	5	X 0.00038	= 0.00188			
ANNUNCIATOR- ANN-80	1	X 0.00038	= 0.00038			
TOTAL STANDBY LOAD		0.12612				
Regulated Load in ALARM						
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)			
FACP MAINBOARD- MS9050UD	1	X 0.20000	= 0.20000			
SMOKE DETECTOR- SD355	4	X 0.00650	= 0.02600			
MONITOR MODULE- MMF301	7	X 0.00038	= 0.00266			
PULL STATION- BG12LX	5	X 0.00500	= 0.02500			
ANNUNCIATOR- ANN-80	1	X 0.41000	= 0.41000			
NAC-1 (See Voltage Drop Calculations)		X 0.53600	= 0.00000			
NAC-2 (See Voltage Drop Calculations)		X 0.60000	= 0.00000			
TOTAL ALARM LOAD		0.66366				
Battery Requirements						
Standby Load Current (Amps)	0.12612	X	Required Standby Time in Hours	24.00000	=	3.02676
Alarm Load Current (Amps)	0.66366	X	Required Alarm Time in Hours	0.08333	=	0.05531
Total Ampere Hours (before derating factor)					=	3.08207
Derating Factor					=	1.2
TOTAL AMPERE HOURS REQUIRED					=	3.69848
BATTERIES TO BE PROVIDED (2 - 12v)					=	7 AH

Point to Point NAC Voltage Drop Calculation					7/18/2016
Project Name		Wilmot Street L.L.C.			
Circuit Number		NAC-1			
Nominal System Voltage	20.4 volts	Wire Gauge	14	Resistance Per 1000	3.07
Minimum Device Voltage	16.0 volts	Wire Gauge	14	Resistance Per 1000	3.07
Distance from source to 1st device	100 feet	Wire Gauge	14	Resistance Per 1000	3.07
Wire Gauge for balance of circuit		Wire Gauge	14	Resistance Per 1000	3.07
Max Output Current	3.00 amps				
Total Circuit Current	0.536 amps				
End of Line Voltage	19.77 volts				
Circuit is within limits					
Device	Distance from previous device	Current	Voltage at device	Drop from source	Percent Drop
Device 1	0.212	100	20.07	0.329	1.61%
Device 2	0.069	100	19.87	0.528	2.59%
Device 3	0.079	25	19.83	0.567	2.78%
Device 4	0.107	40	19.79	0.610	2.99%
Device 5	0.069	40	19.77	0.627	3.08%
Totals	0.536	305			
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)).					

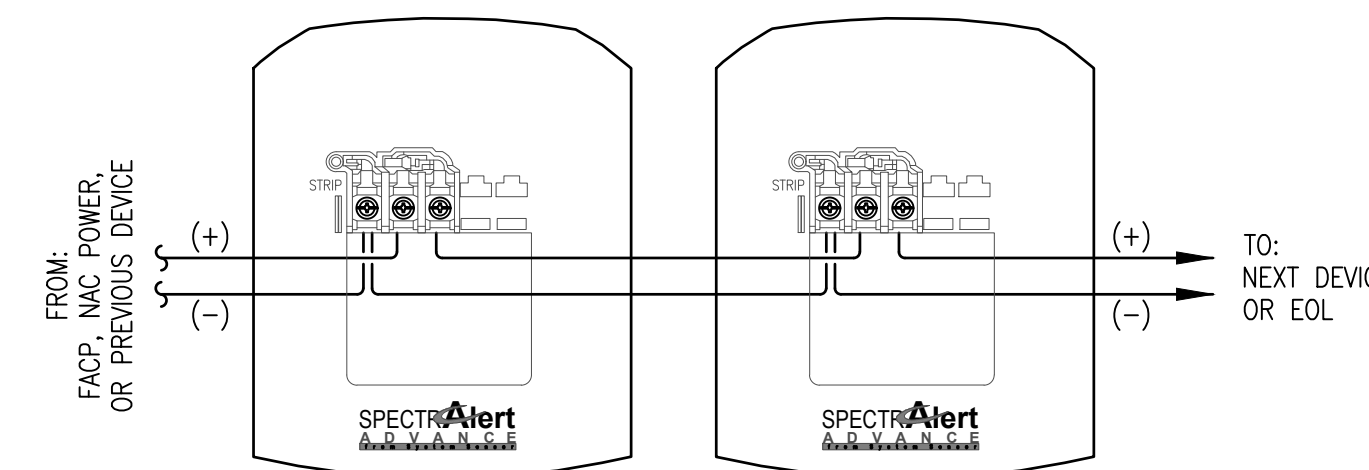
Point to Point NAC Voltage Drop Calculation					7/18/2016
Project Name		Wilmot Street L.L.C.			
Circuit Number		NAC-2			
Nominal System Voltage	20.4 volts	Wire Gauge	14	Resistance Per 1000	3.07
Minimum Device Voltage	16.0 volts	Wire Gauge	14	Resistance Per 1000	3.07
Distance from source to 1st device	100 feet	Wire Gauge	14	Resistance Per 1000	3.07
Wire Gauge for balance of circuit		Wire Gauge	14	Resistance Per 1000	3.07
Max Output Current	3.00 amps				
Total Circuit Current	0.600 amps				
End of Line Voltage	19.55 volts				
Circuit is within limits					
Device	Distance from previous device	Current	Voltage at device	Drop from source	Percent Drop
Device 1	0.069	100	20.03	0.368	1.81%
Device 2	0.069	25	19.95	0.450	2.21%
Device 3	0.079	25	19.88	0.521	2.55%
Device 4	0.069	25	19.82	0.580	2.84%
Device 5	0.069	100	19.63	0.772	3.79%
Device 6	0.176	45	19.56	0.840	4.12%
Device 7	0.069	35	19.55	0.855	4.19%
Totals	0.600	355			
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)).					



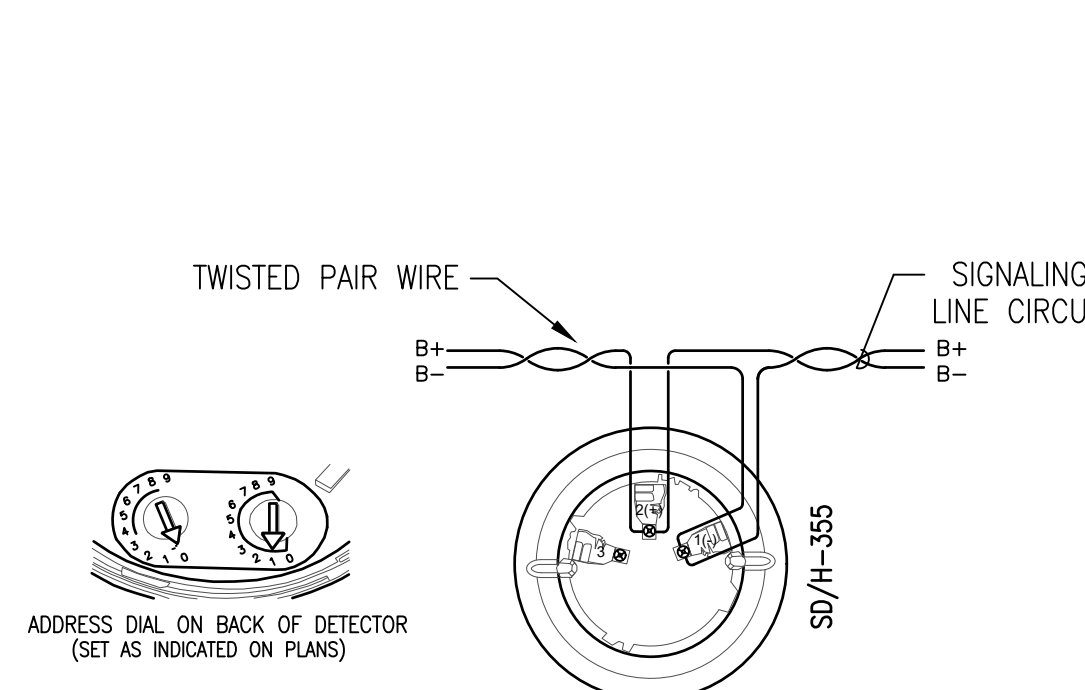
FIRE ALARM RISER DIAGRAM
SCHEMATIC: NO SCALE



MANUAL PULL STATION WIRING DETAIL
SCHEMATIC: NO SCALE



TYPICAL 2 WIRE HORN/STROBE WIRING DETAIL
SCHEMATIC: NO SCALE



ADDRESSABLE SMOKE DETECTOR WIRING DETAIL
SCHEMATIC: NO SCALE

GENERAL NOTES:

- 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.
- 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 907.15 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 SYMBOL LEGEND		
NOTE: ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT		
SYMBOL	DESCRIPTION	MOUNTING
[FACP]	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
[ESA]	FIRE SYSTEM ANNUNCIATOR	WALL-TOP @ 66"
[SD]	SMOKE DETECTOR	CEILING
[MM]	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
[P]	MANUAL PULL STATION	WALL @ 48"
[WF]	WATER FLOW SWITCH	BY OTHERS
[VS]	VALVE SUPERVISORY SWITCH	BY OTHERS
[H]	HORN	WALL @ 10'-0"

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

SYMBOL	DESCRIPTION
[S]	STROBE CANDELA
[W]	WIRE TYPE ABBREVIATED CONDUCTOR COUNT
[L]	WIRE SIZE
[M]	# OF CABLES (IF OMITTED ONLY 1 CABLE NEEDED)

APPLICABLE CODES:

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

FIRE ALARM INPUT	OPERATIONS MATRIX							
	FIRE ALARM OUTPUT	ACTIVATE ALARM INDICATOR	ACTIVATE AUDIBLE ALARM	ACTIVATE SUPERVISORY INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE AUDIBLE TROUBLE INDICATOR	ACTIVATE AUDIBLE TROUBLE SIGNAL	ACTIVATE NOTIFICATION APPLIANCES
SMOKE 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	●	●	●	●	●	●	●	●

50 WILMOT STREET, L.L.C.
477 CONGRESS STREET
PORTLAND, MAINE
FIRE ALARM RISER, CALCS & DETAILS

DRAWN	CLJ UNICAD JOB #16496
CHECKED	BRADY B. HAWES NICET III 138751
DATE	7/15/2016
REVISION	0
SCALE	1/8"=1'-0"



FA-1



REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	7/18/2016