

Existing FPS Battery Calculation		7/25/2016	
PROJECT NAME: 585 CONGRESS STREET			
Required Standby Time:	24 Hours		
Required Alarm Time:	3 Minutes		
Regulated Load in Standby			
Device Type	Number of Devices	Current (Amps)	
EXISTING FPS MAINBOARD	X	0.00000	
TOTAL STANDBY LOAD = 0.00000			
Regulated Load in ALARM			
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
EXISTING FPS MAINBOARD	X	0.00000	0.00000
EX FPS SPARE CKT.1 (See Voltage Drop Calc)	1	1.04300	1.04300
EX FPS SPARE CKT.2 (See Voltage Drop Calc)	X	0.85300	0.85300
TOTAL ALARM LOAD = 1.92600			
Battery Requirements			
Standby Load Current (Amps)	0.00000	Required Standby Time in Hours	0.00000
Total Ampere Hours (before derating factor)	1.92600	Required Alarm Time in Hours	0.16050
Derating Factor	X		0.08333
TOTAL AMPERE HOURS REQUIRED = 0.19260			
BATTERIES TO BE PROVIDED (2 - 12V)			
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.			

Point to Point NAC Voltage Drop Calculation		7/25/2016		
Project Name: 585 CONGRESS STREET				
Circuit Number: FPS SPARE CKT.1				
Nominal System Voltage: 20.4 volts				
Minimum Device Voltage: 16.0 volts				
Distance from source to 1st device: 150 feet				
Wire Gauge for balance of circuit: 14				
Max Output Current: 1.50 amps				
Total Circuit Current: 1.043 amps				
End of Line Voltage: 18.96 volts				
Circuit is within limits				
Device	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.079	19.44	0.961	4.71%
Device 2	0.176	19.20	1.055	5.17%
Device 3	0.176	19.00	1.200	5.88%
Device 4	0.068	19.09	1.308	6.41%
Device 5	0.068	19.05	1.349	6.61%
Device 6	0.212	18.99	1.410	6.91%
Device 7	0.202	18.96	1.436	7.04%
Device 8	0.202	18.96	1.436	7.04%
Totals	1.043	18.96	1.436	7.04%
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 (i.e. rated operating voltage 16-33 VDC (24 VDC nominal)).				

Point to Point NAC Voltage Drop Calculation		7/25/2016		
Project Name: 585 CONGRESS STREET				
Circuit Number: FPS SPARE CKT.2				
Nominal System Voltage: 20.4 volts				
Minimum Device Voltage: 16.0 volts				
Distance from source to 1st device: 150 feet				
Wire Gauge for balance of circuit: 14				
Max Output Current: 1.50 amps				
Total Circuit Current: 0.883 amps				
End of Line Voltage: 19.01 volts				
Circuit is within limits				
Device	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.107	19.59	0.813	3.99%
Device 2	0.079	19.49	0.909	4.45%
Device 3	0.176	19.30	1.101	5.40%
Device 4	0.107	19.19	1.210	5.93%
Device 5	0.202	19.07	1.334	6.54%
Device 6	0.212	19.01	1.389	6.81%
Totals	0.883	19.01	1.389	6.81%
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 (i.e. rated operating voltage 16-33 VDC (24 VDC nominal)).				

- 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		
SYMBOL	DESCRIPTION	MOUNTING
	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
	FIRE ALARM POWER SUPPLY	FIELD VERIFY
	FIRE SYSTEM ANNIUNCIATOR	WALL-TOP @ 66"
	CARBON MONOXIDE DETECTOR	FIELD VERIFY
	SMOKE DETECTOR	CEILING
	DUCT SMOKE DETECTOR	BY OTHERS
	HEAT DETECTOR	CEILING
	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
	ADDRESSABLE MINI MONITOR MODULE	FIELD VERIFY
	MANUAL PULL STATION	WALL @ 48"
	CONTROL RELAY (MULTI-VOLTAGE)	FIELD VERIFY
	ADDRESSABLE RELAY MODULE	FIELD VERIFY
	MAGNETIC DOOR HOLDER	FIELD VERIFY
	WATER FLOW SWITCH	BY OTHERS
	VALVE TAMPER SWITCH	BY OTHERS
	BELL	BY OTHERS
	CEILING MOUNT STROBE	FIELD VERIFY
	CEILING MOUNT HORN / STROBE	FIELD VERIFY
	CEILING MOUNT SPEAKER / STROBE	FIELD VERIFY
	HORN, LOW FREQUENCY	WALL @ 10'-0"
	HORN / STROBE	WALL 80"-96"
	SPEAKER / STROBE	WALL 80"-96"
	SPEAKER	WALL @ 90"
	STROBE	WALL 80"-96"
	KNOCK BOX	FIELD VERIFY
ABBREVIATION	DESCRIPTION	
E	EXISTING	
G	WITH GUARD	
P	PENETRATION	
R	RESIDENTIAL (110V)	
S	SENDER BASE	
WP	WEATHER PROOF	
EOL	END OF LINE RELAY	
AWG	AMERICAN WIRE GAUGE	
TWSP	TWISTED SHIELDED PAIR	
FPSP	FIRE POWER LIMITED BLENUM	
FPLR	FIRE POWER LIMITED RISER	

REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	7/26/2016

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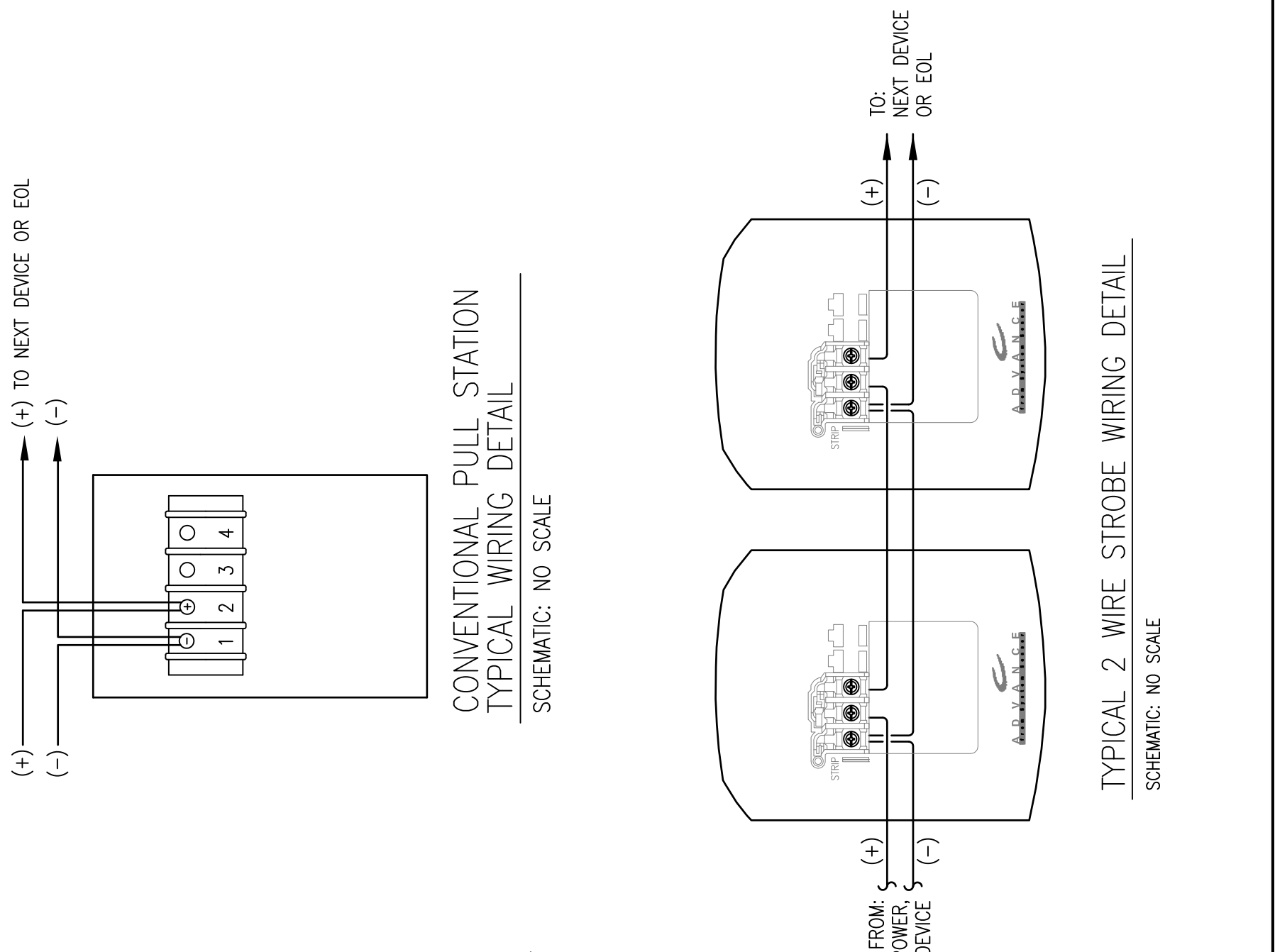
**585 CONGRESS STREET CONDOMINIUM**  
585 CONGRESS STREET  
PORTLAND, MAINE 04101  
CALCS, DETAILS, LEGEND, MATRIX, NOTES, RISER

DRAWN	JPB UNICAD JOB #16517
CHECKED	WAYNE B. HAWES NICET II 90496
DATE	7/26/2016
REVISION	0
SCALE	AS NOTED

**UNICAD**  
Fire Alarm Design & Drafting Services  
www.unicad.net

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

SCOPE OF WORK OPERATIONS MATRIX	
FIRE ALARM INPUT	●
PULL STATIONS	●
FIRE ALARM AC POWER FAIL	●
FIRE ALARM LOW BATTERY	●
OPEN CIRCUIT	●
GROUND FAULT	●
NAC SHORT CIRCUIT	●
LOSS OF AC TO BUILDING	●
FIRE ALARM OUTPUT	●
ACTIVATE ALARM INDICATOR	●
ACTIVATE AUDIBLE ALARM	●
ACTIVATE TROUBLE INDICATOR	●
ACTIVATE AUDIBLE TROUBLE INDICATOR	●
TRANSMIT TROUBLE SIGNAL	●
TRANSMIT ALARM SIGNAL	●



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