

Existing FPS Battery Calculation 11/24/2015

PROJECT NAME:	1600 CONGRESS STREET		
Required Standby Time:	24 Hours		
Required Alarm Time:	5 Minutes		
AC Branch Current:	3.2 Amps @ 120V		
Regulated Load in Standby			
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
FPS - FCPS2458 MAINBOARD	1	0.08500	0.08500
FPS - FCPS2458 MAINBOARD	1	0.62700	0.62700
FPS SPARE CKT (See Voltage Drop Calculations)	1	0.63300	0.63300
TOTAL STANDBY LOAD = 0.08500			
Regulated Load in Alarm		Current (Amps)	Total Current (Amps)
Device Type	Number of Devices	Current (Amps)	Total Current (Amps)
FPS - FCPS2458 MAINBOARD	1	0.14500	0.14500
FPS (KNOWN EXISTING DEVICES)	1	0.62700	0.62700
FPS SPARE CKT (See Voltage Drop Calculations)	1	0.63300	0.63300
TOTAL ALARM LOAD = 1.40500			
Battery Requirements		Required Standby Time in Hours	1.56000
Standby Load Current (Amps)	0.08500	X	24.00000 =
Alarm Load Current (Amps)	1.40500	X	0.08533 =
Total Ampere Hours (before derating factor)			1.67708
Derating Factor			X
TOTAL AMPERE HOURS REQUIRED = 2.01250			
BATTERIES TO BE PROVIDED (2 - 12V) 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 UPS/IE ACADPHANT.

Point to Point NAC Voltage Drop Calculation

Project Name	1600 CONGRESS STREET
Circuit Number	SPARE CKT.
Nominal System Voltage	20.4 volts
Minimum Device Voltage	16.0 volts
Distance from source to 1st device	50 feet
Wire Gauge for balance of circuit	14
Wire Gauge for balance of circuit	14
Max. Output Current	1.00 amps
Total Circuit Current	0.633 amps
End of Line Voltage	20.02 volts
Circuit is within limits	

Device	Current (Amps)	Distance from source	Voltage at Device	Drop from source	Percent
Device 1	0.079	20	20.12	0.98	0.98%
Device 2	0.066	23	20.13	0.273	1.34%
Device 3	0.066	13	20.09	0.312	1.53%
Device 4	0.066	7	20.08	0.329	1.61%
Device 5	0.079	14	20.05	0.347	1.70%
Device 6	0.066	24	20.03	0.369	1.81%
Device 7	0.079	25			
Device 8	0.066				
Device 9					
Totals			160	0.633	1.86%

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 manufacturer's listed minimum operating voltage (i.e. rated operating voltage 16-33 VDC (24 VDC nominal)).

GENERAL NOTES:

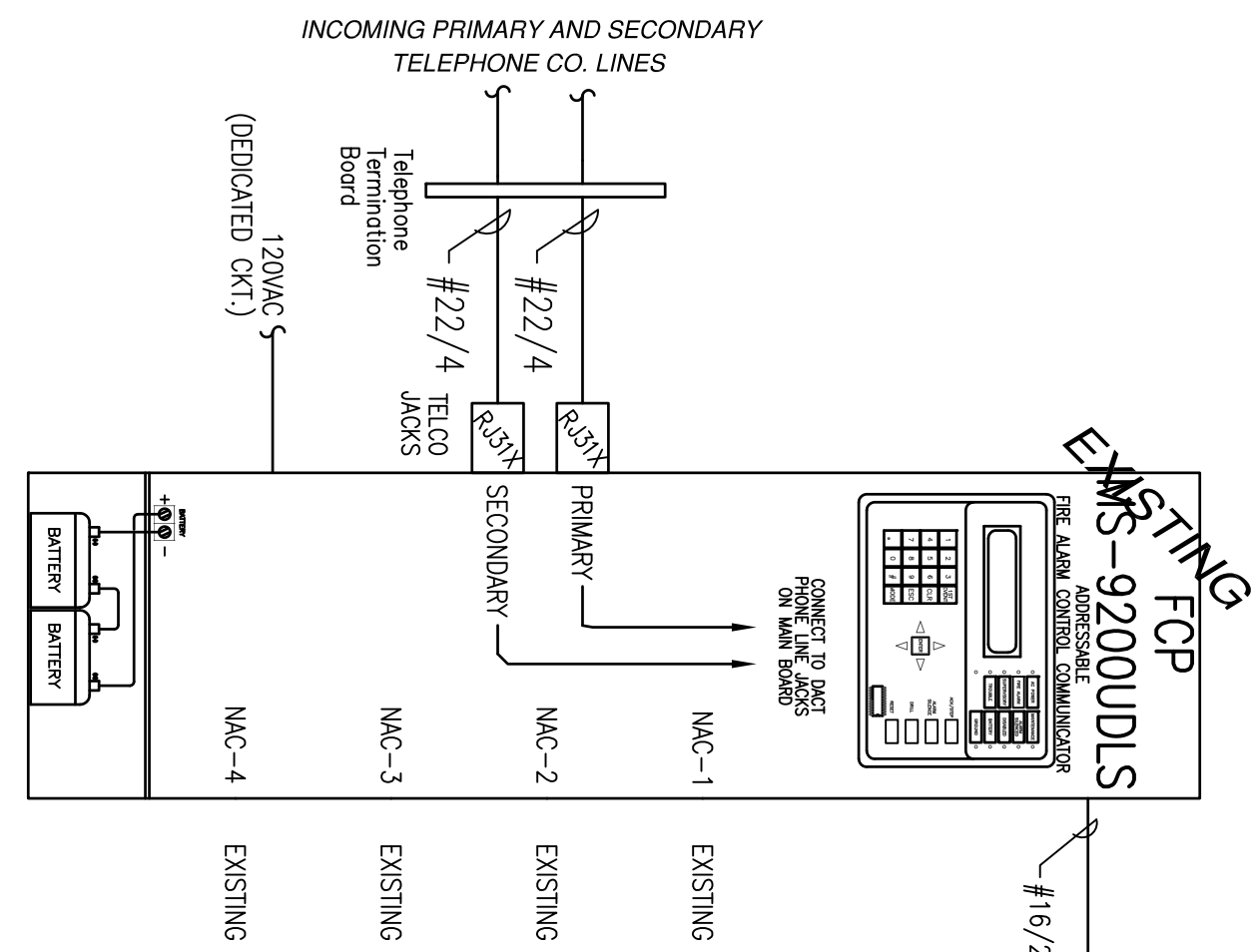
- THESE DRAWINGS ARE DIAGRAMMATIC. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
- INSTALLATION SHALL COMPLY WITH NEC, NFPA 72 AND ALL OTHER APPLICABLE CODES AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- WIRING DEPICTED ON THESE PLANS IS SCHEMATIC - ACTUAL WIRE LOCATIONS MAY DIFFER 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 THE 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

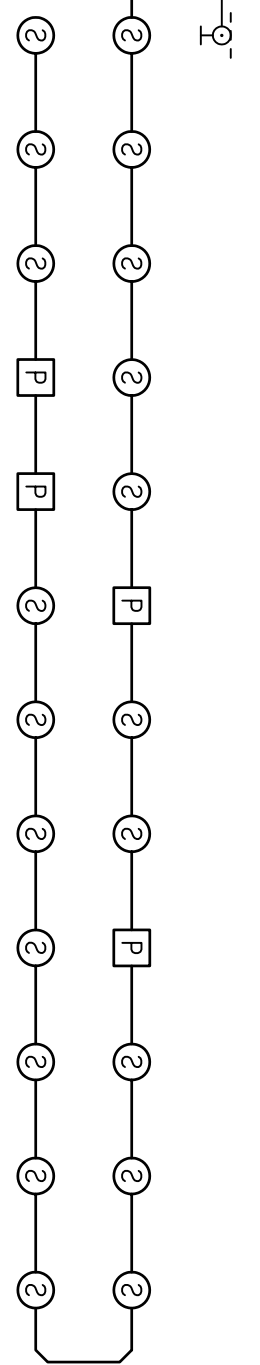
SYMBOL	DESCRIPTION	MOUNTING
☐	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
☐	FIRE ALARM POWER SUPPLY	FIELD VERIFY
☐	FIRE SYSTEM ANNUNCIATOR	WALL-TOP @ 66"
☐	FIRE/SMOKE DAMPER	BY OTHERS
☐	SMOKE DETECTOR	CEILING
☐	DUCT SMOKE DETECTOR	BY OTHERS
①	HEAT DETECTOR	CEILING
☐	ADDRESSABLE CONTROL MODULE	FIELD VERIFY
☐	ADDRESSABLE 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	WALL @ 10'-0"
☐	HORN / STROBE	WALL 80°-96°
☐	SPEAKER / STROBE	WALL 80°-96°
☐	SPEAKER	WALL @ 90°
☐	STROBE	WALL 80°-96°

APPLICABLE CODES:

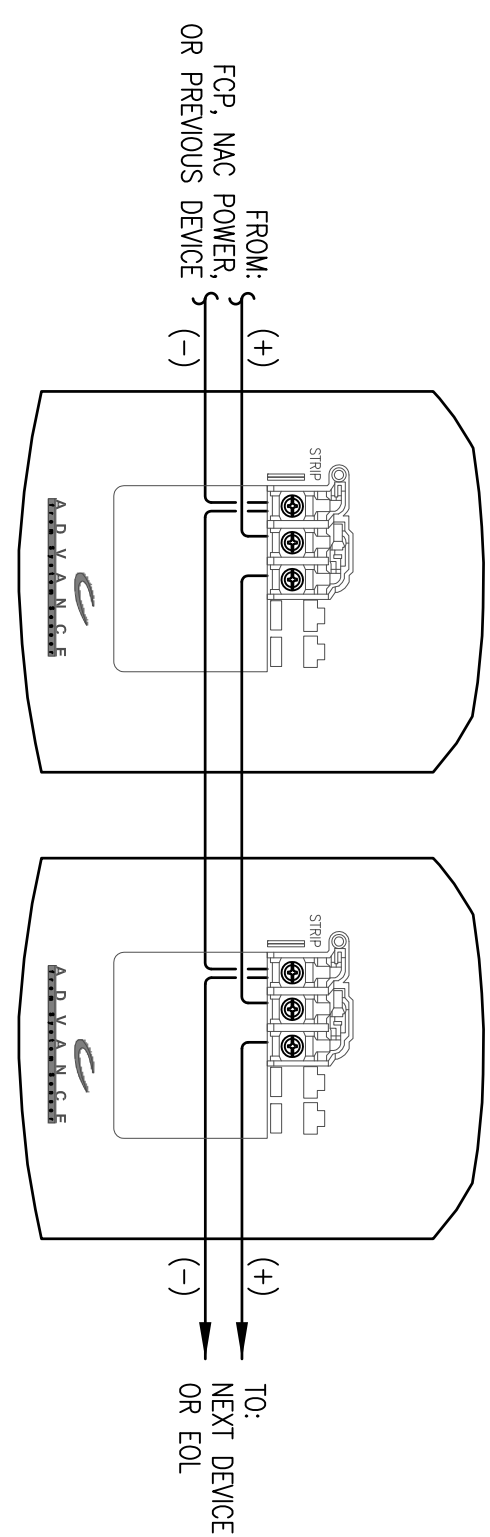
MAINE UNIFORM ENERGY & BUILDING CODE
PORTLAND CITY CODE, CHAPTER 10, FIRE PREVENTION & PROTECTION
NFPA 1, FIRE CODE, & NFPA 101, LIFE SAFETY CODE



(KNOWN EXISTING ADDRESSABLE CKT.)



TYPICAL 2 WIRE STROBE WIRING DETAIL



T.I. OPERATIONS MATRIX	
FIRE ALARM INPUT	FIRE ALARM OUTPUT
FIRE ALARM AC POWER FAIL	ACTIVATE TROUBLE INDICATOR
FIRE ALARM LOW BATTERY	ACTIVATE AUDIBLE TROUBLE INDICATOR
OPEN CIRCUIT	TRANSMIT TROUBLE SIGNAL
GROUND FAULT	RELEASE EGRESS MAGLOCKS/UNLOCK EXITS
NAC SHORT CIRCUIT	RELEASE MAGNETICALLY HELD SMOKE DOORS
LOSS OF AC TO BUILDING	

RESERVED FOR CITY STAMP

REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	11/25/2015

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CALCS, LEGEND, MATRIX, NOTES, RISER DIAGRAM

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