

### Existing FCP Battery Calculation

PROJECT NAME: NORTHEAST BANK - PORTLAND BRANCH  
 Required Standby Time: 24 Hours  
 Required Alarm Time: 5 Minutes

Regulated Load in Standby			
Device Type	Number of Devices	Current (amps)	Total Current (amps)
MS-9200UDLS Main Circuit Board	1	0.14500	0.14500
MS-9200UDLS Smoke Detectors	9	0.00030	0.00270
MS-9200UDLS Audible Detectors	2	0.00040	0.00080
MS-9200UDLS Relay Module	7	0.00027	0.00189
BC-121X Pull Stations	14	0.00030	0.00420
<b>TOTAL STANDBY LOAD</b>			<b>0.15529</b>

Regulated Load in ALARM			
Device Type	Number of Devices	Current (amps)	Total Current (amps)
MS-9200UDLS Main Circuit Board	1	0.27500	0.27500
MS-9200UDLS Smoke Detectors	1	0.40000	0.40000
MS-9200UDLS Audible Detectors	1	0.97700	0.97700
MS-9200UDLS Relay Module	1	1.22200	1.22200
<b>TOTAL ALARM LOAD</b>			<b>2.87400</b>

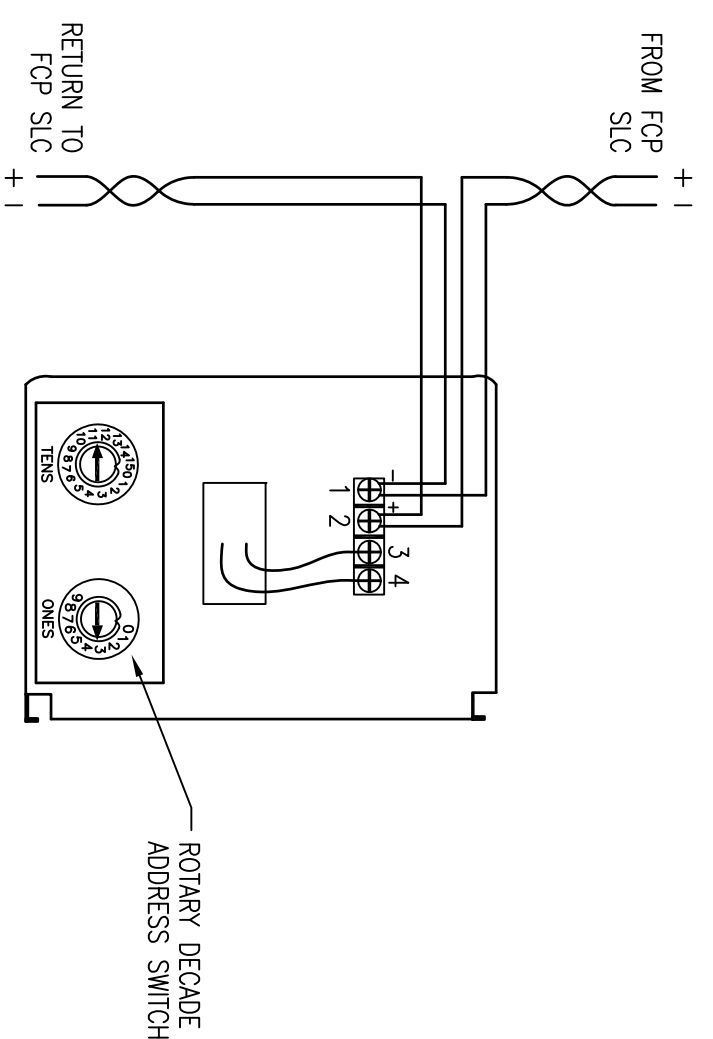
Battery Requirements			
Standby Load	Current (amps)	Required Standby Time in Hours	Required Alarm Time in Hours
Standby Load	0.15529	X	24.00000 = 3.72696
Alarm Load	2.87400	X	0.08333 = 0.23950
<b>Total Amper Hours (before derating factor)</b>			<b>3.96646</b>
<b>Derating Factor</b>			<b>1.2</b>
<b>TOTAL AMPERE HOURS REQUIRED</b>			<b>4.75975</b>

**BATTERIES TO BE PROVIDED (2 - 12V) = 7 AH**

NAC Circuit Voltage Drop Calculation			
Project Name	Circuit Number	NORTHEAST BANK, PORTLAND	EXISTING FCP NAC-1
Nominal System Voltage	20.4	volts	Wire Gauge
Minimum Device Voltage	16	volts	Resistance Per 1000
Distance from source to 1st device	15	feet	6.14
Wire Gauge for balance of circuit			
Max Output Current	1.5	amps	
Total Circuit Current	0.977	amps	

NAC Circuit Voltage Drop Calculation			
Project Name	Circuit Number	NORTHEAST BANK, PORTLAND	EXISTING FCP NAC-2
Nominal System Voltage	20.4	volts	Wire Gauge
Minimum Device Voltage	16	volts	Resistance Per 1000
Distance from source to 1st device	15	feet	6.14
Wire Gauge for balance of circuit			
Max Output Current	1.5	amps	
Total Circuit Current	1.222	amps	

### MANUAL PULL STATION WIRING DETAIL



### 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.

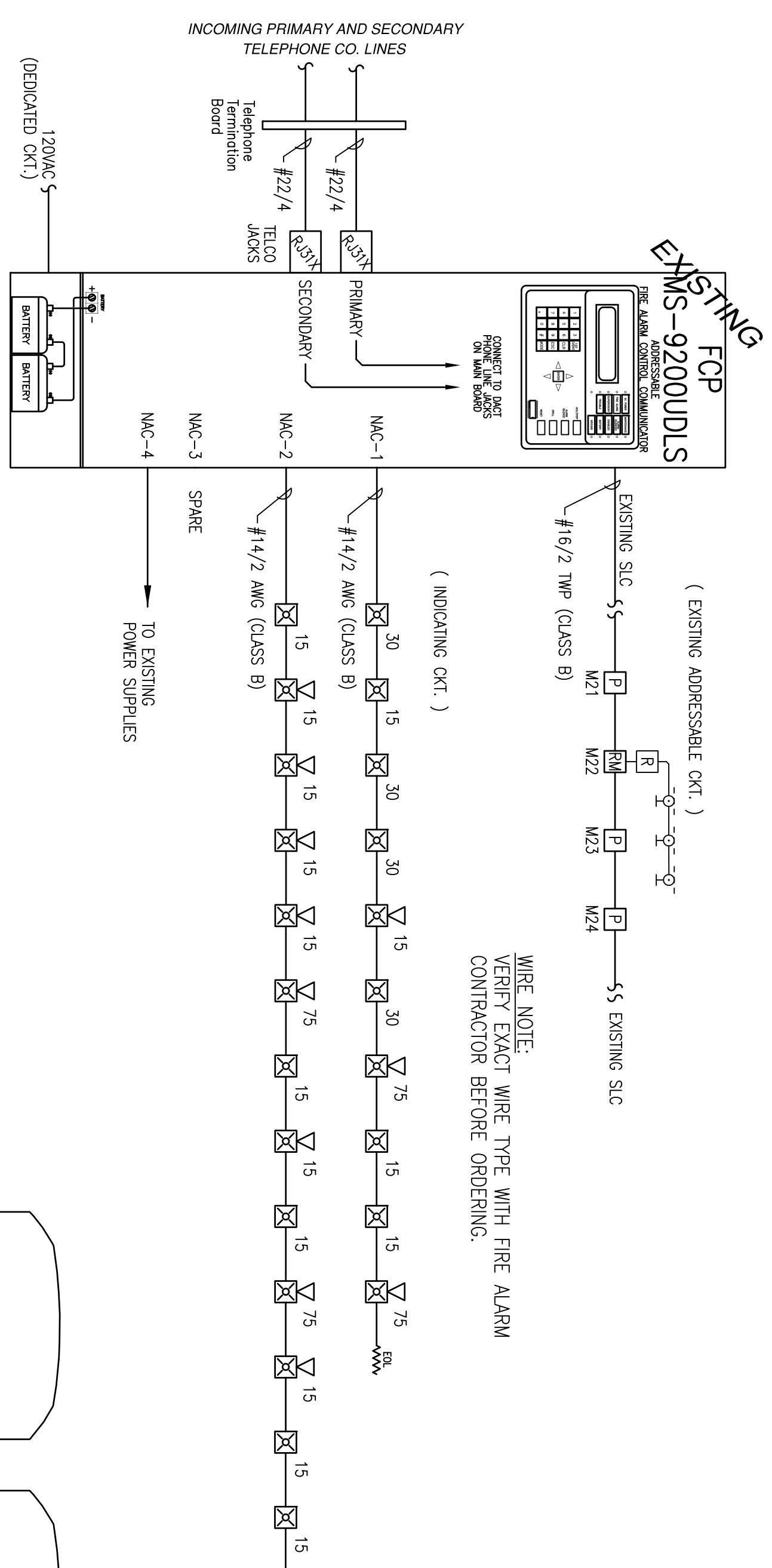
### FIRE ALARM SYMBOL LEGEND

SYMBOL	DESCRIPTION	MOUNTING
EGP	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
FPS	FIRE ALARM POWER SUPPLY	FIELD VERIFY
FSA	FIRE SYSTEM ANNUNCIATOR	WALL-TOP @ 66"
FSD	FIRE/SMOKE DAMPER	BY OTHERS
SD	SMOKE DETECTOR	CEILING
SD-	DUCT SMOKE DETECTOR	BY OTHERS
H	HEAT DETECTOR	CEILING
AM	ADDRESSABLE CONTROL MODULE	FIELD VERIFY
AM	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
PI	MANUAL PULL STATION	WALL @ 48"
RI	CONTROL RELAY (MULTI-VOLTAGE)	FIELD VERIFY
RM	ADDRESSABLE RELAY MODULE	FIELD VERIFY
MD	MAGNETIC DOOR HOLDER	FIELD VERIFY
WS	WATER FLOW SWITCH	BY OTHERS
VS	VALVE TAMPER SWITCH	BY OTHERS
B	BELL	BY OTHERS
CS	CEILING MOUNT STROBE	FIELD VERIFY
CH	CEILING MOUNT HORN / STROBE	FIELD VERIFY
CM	CEILING MOUNT SPEAKER / STROBE	FELD VERIFY
H	HORN	WALL @ 10'-0"
HS	HORN / STROBE	WALL 90°-96°
SS	SPEAKER / STROBE	WALL 90°-96°
SP	SPEAKER	WALL @ 90°
ST	STROBE	WALL 90°-96°

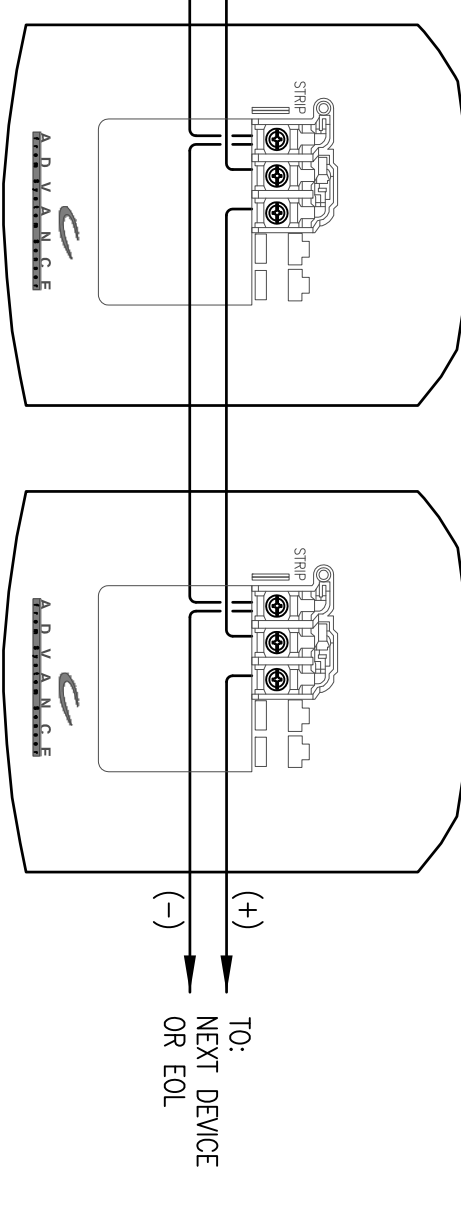
### APPLICABLE CODES:

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

### FIRE ALARM RISER DIAGRAM



### TYPICAL 2 WIRE STROBE WIRING DETAIL



### T.1. OPERATIONS MATRIX

DESCRIPTION	FIRE ALARM INPUT	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	TRANSMIT SUPERVISORY SIGNAL	TRANSMIT TROUBLE SIGNAL	RELEASE EGRESS MAGLOCKS/UNLOCK EXITS	RELEASE MAGNETICALLY HELD SMOKE DOORS
FIRE ALARM INPUT	●	●	●	●	●	●	●	●	●	●	●	●	●
EXISTING SMOKE DETECTORS	●	●	●	●	●	●	●	●	●	●	●	●	●
PULL STATIONS	●	●	●	●	●	●	●	●	●	●	●	●	●
EXISTING WATERFLOW SWITCHES	●	●	●	●	●	●	●	●	●	●	●	●	●
EXISTING VALVE TAMPER SWITCHES	●	●	●	●	●	●	●	●	●	●	●	●	●
FIRE ALARM AC POWER FAIL	●	●	●	●	●	●	●	●	●	●	●	●	●
FIRE ALARM LOW BATTERY	●	●	●	●	●	●	●	●	●	●	●	●	●
OPEN CIRCUIT	●	●	●	●	●	●	●	●	●	●	●	●	●
GROUND FAULT	●	●	●	●	●	●	●	●	●	●	●	●	●
NAC SHORT CIRCUIT	●	●	●	●	●	●	●	●	●	●	●	●	●
LOSS OF AC TO BUILDING	●	●	●	●	●	●	●	●	●	●	●	●	●

**NORTHEAST BANK - PORTLAND BRANCH**  
**27 PEARL STREET**  
**PORTLAND, MAINE 04101**  
**CALCS, DETAILS, LEGEND, MATRIX, NOTES**

**CUNNINGHAM**  
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REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	3/17/2015

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REVISION: 0

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DATE: 3/17/2015

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