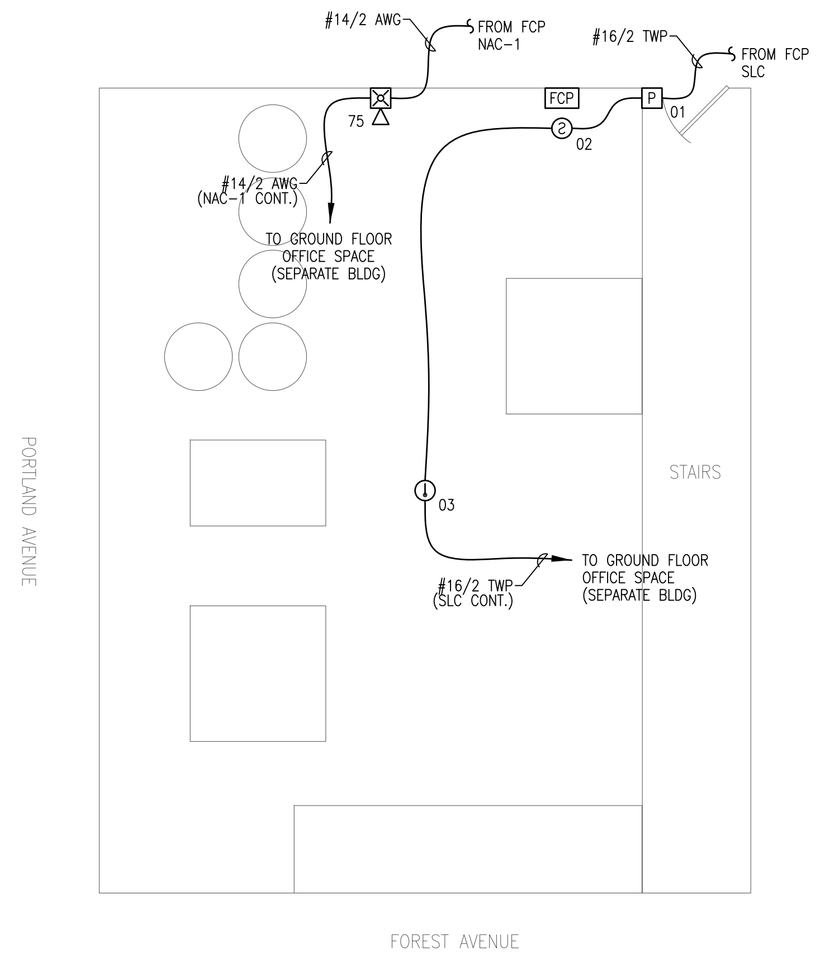

BASEMENT FIRE ALARM PLAN

SCALE: 1/4"=1'-0" 0 2' 4' 8'

RESERVED FOR CITY STAMP

REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	11/17/2014

CUNNINGHAM
Security Systems
10 Princes Point Road, Yarmouth, Maine 04096
Office: 207.846.3350 • Fax: 207.846.6080

120 PORTLAND STREET
PORTLAND, MAINE 04101

BASEMENT FIRE ALARM PLAN & CALCULATIONS

FCP Battery Calculation

11/17/2014

PROJECT NAME: 102 PORTLAND STREET
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-9050UD Main Circuit Board	1	X	0.12000	=	0.12000
ANN-80 Remote Annunciator	1	X	0.01500	=	0.01500
SD355 Smoke Detectors	8	X	0.00030	=	0.00240
H355 Heat Detectors	29	X	0.00030	=	0.00870
BG-12LX Pull Stations	5	X	0.00023	=	0.00115
TOTAL STANDBY LOAD					0.14725

Regulated Load in ALARM

Device Type	Number of Devices		Current (Amps)		Total Current (Amps)
MS-9050UD Main Circuit Board	1	X	0.20000	=	0.20000
ANN-80 Remote Annunciator	1	X	0.04000	=	0.04000
Max Alarm Draw - All Addressable Devices	1	X	0.40000	=	0.40000
NAC-1 (See voltage drop calcs for device quantity)	1	X	0.84300	=	0.84300
NAC-2	1	X	0.63800	=	0.63800
TOTAL ALARM LOAD					2.12100

Battery Requirements

Standby Load			Required Standby Time in Hours		
Current (Amps)	0.14725	X	24.00000	=	3.53400
Alarm Load			Required Alarm Time in Hours		
Current (Amps)	2.12100	X	0.08333	=	0.17675
Total Ampere Hours (before derating factor)					3.71075
Derating Factor				X	1.2
TOTAL AMPERE HOURS REQUIRED				=	4.45290
BATTERIES TO BE PROVIDED (2 - 12v)					7 AH

NAC Circuit Voltage Drop Calculation

11/13/2014

Project Name: 102 PORTLAND STREET
Circuit Number: NAC-1

			Wire Gauge	Resistance Per 1000
Nominal System Voltage	20.4	volts		
Minimum Device Voltage	16	volts		
Distance from source to 1st device	10		14	6.14
Wire Gauge for balance of circuit			14	6.14
Max Output Current	1.5	amps		
Total Circuit Current	0.843	amps		

Circuit is within limits

	Device Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.176		20.35	0.05	0%
Device 2	0.176	30	20.23	0.17	1%
Device 3	0.066	30	20.13	0.27	1%
Device 4	0.107	35	20.04	0.36	2%
Device 5	0.066	30	19.99	0.41	2%
Device 6	0.066	15	19.96	0.44	2%
Device 7	0.107	15	19.94	0.46	2%
Device 8	0.079	35	19.93	0.47	2%
Totals	0.843	200			

NAC Circuit Voltage Drop Calculation

11/13/2014

Project Name: 102 PORTLAND STREET
Circuit Number: NAC-2

			Wire Gauge	Resistance Per 1000
Nominal System Voltage	20.4	volts		
Minimum Device Voltage	16	volts		
Distance from source to 1st device	50		14	6.14
Wire Gauge for balance of circuit			14	6.14
Max Output Current	1.0	amps		
Total Circuit Current	0.638	amps		

Circuit is within limits

	Device Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.017		20.20	0.20	1%
Device 2	0.079	15	20.15	0.25	1%
Device 3	0.107	25	20.06	0.34	2%
Device 4	0.017	10	20.04	0.36	2%
Device 5	0.079	40	19.93	0.47	2%
Device 6	0.017	15	19.90	0.50	2%
Device 7	0.079	40	19.82	0.58	3%
Device 8	0.017	15	19.80	0.60	3%
Device 9	0.017	25	19.77	0.63	3%
Device 10	0.079	20	19.74	0.66	3%
Device 11	0.079	25	19.72	0.68	3%
Device 12	0.017	25	19.71	0.69	3%
Device 13	0.017	15	19.71	0.69	3%
Device 14	0.017	25	19.71	0.69	3%
Totals	0.638	345			

DRAWN	JPB UNICAD JOB #14726
CHECKED	WAYNE B. HAWS NICET IV 90496
DATE	11/17/2014
REVISION	0
SCALE	1/4"=1'-0"

FA-2