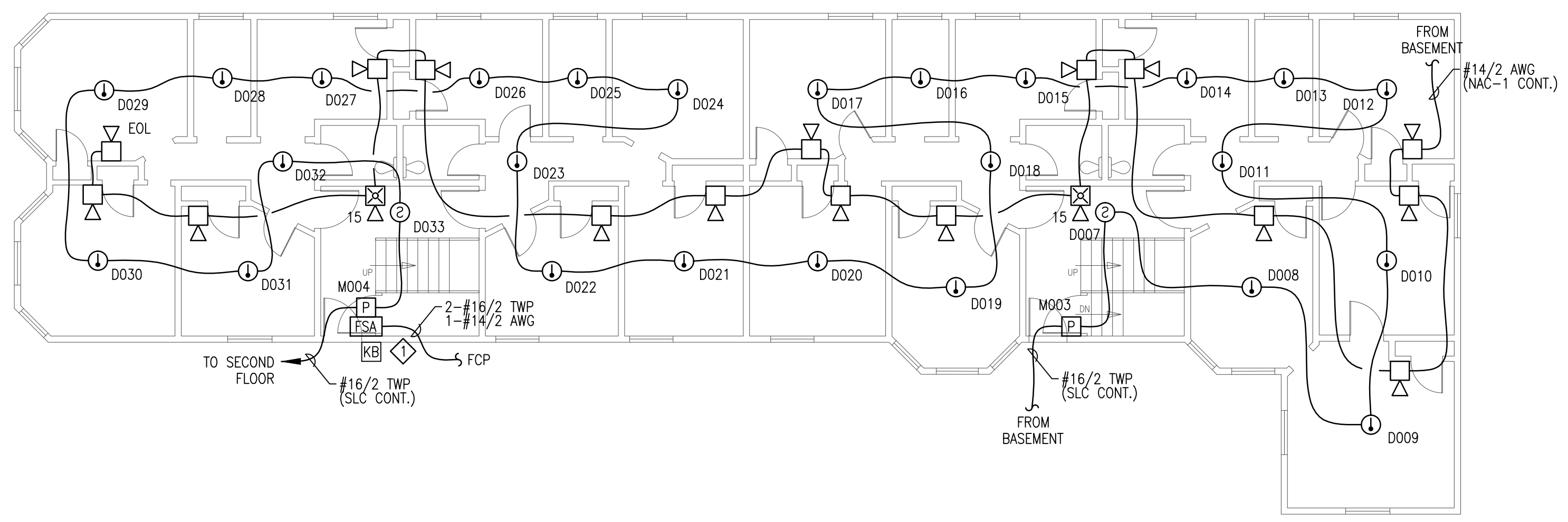


**BASEMENT FIRE ALARM PLAN**  
SCALE: 1/8"=1'-0"



**FIRST FLOOR FIRE ALARM PLAN**  
SCALE: 1/8"=1'-0"

**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.

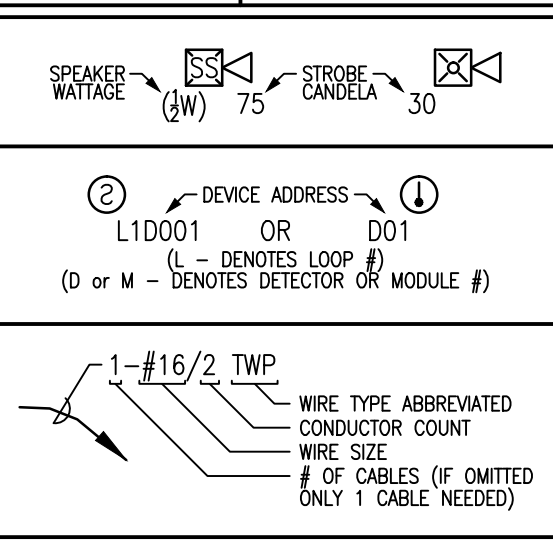
**SHEET NOTES:**

- ANNUNCIATOR TO HAVE A LOCKABLE LEXAN COVER OVER IT.
- FIRE ALARM DOCUMENTS BOX TO BE LOCATED NEXT TO FCP.

**FIRE ALARM SYMBOL LEGEND**  
NOTE: ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT

SYMBOL	DESCRIPTION	MOUNTING
FCP	FIRE ALARM CONTROL PANEL	WALL-TOP @ 66"
FPS	FIRE ALARM POWER SUPPLY	FIELD VERIFY
FSA	FIRE SYSTEM ANNUNCIATOR	WALL-TOP @ 66"
C	DUAL PATH COMMUNICATOR	FIELD VERIFY
WR	WIRELESS RECEIVER	FIELD VERIFY
FSD	FIRE/SMOKE DAMPER	BY OTHERS
☉	SMOKE DETECTOR	CEILING
☉	DUCT SMOKE DETECTOR	BY OTHERS
Ⓜ	WIRELESS HEAT DETECTOR	CEILING
CM	ADDRESSABLE CONTROL MODULE	FIELD VERIFY
MM	ADDRESSABLE MONITOR MODULE	FIELD VERIFY
P	MANUAL PULL STATION	WALL @ 48"
R	CONTROL RELAY (MULTI-VOLTAGE)	FIELD VERIFY
RM	ADDRESSABLE RELAY MODULE	FIELD VERIFY
KB	KNOW BOX	FIELD VERIFY
Ⓜ	MAGNETIC DOOR HOLDER	FIELD VERIFY
---	WATER FLOW SWITCH	BY OTHERS
---	VALVE TAMPER SWITCH	BY OTHERS
B	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"

ABBREVIATION	DESCRIPTION
E	EXISTING
G	WITH GUARD
P	PENDENT 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



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

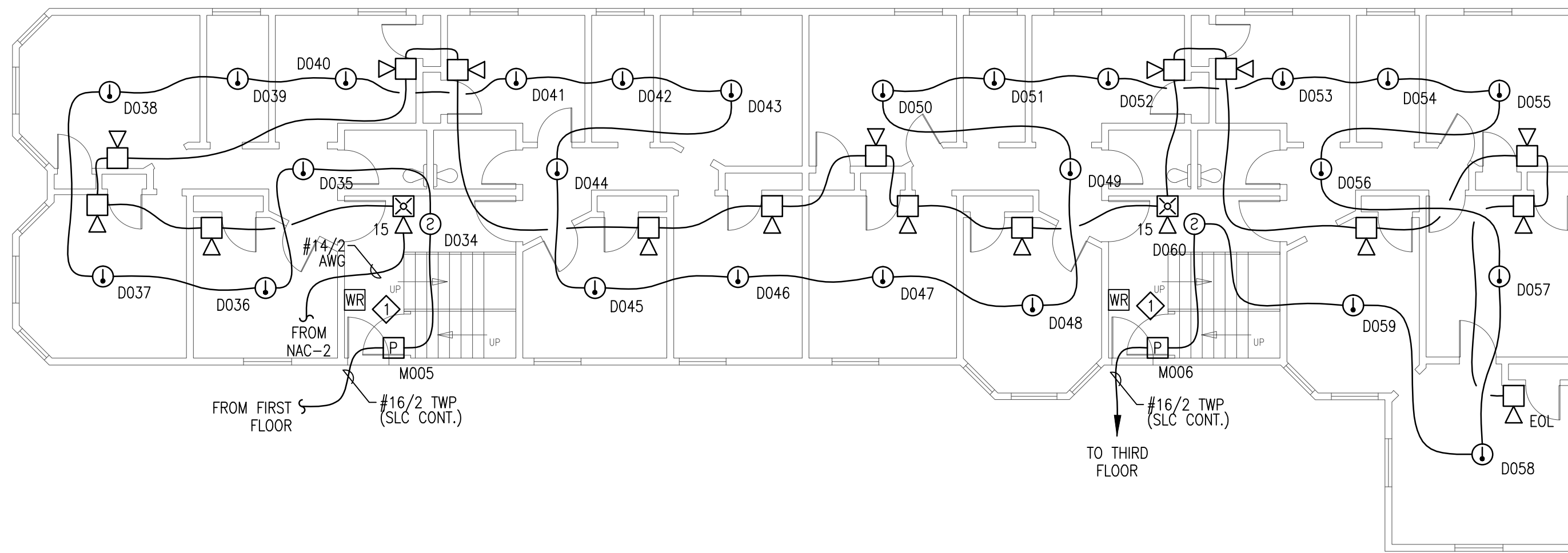
REVISION	DESCRIPTION	DATE
0	ISSUED FOR REVIEW & APPROVAL	11/14/2012
1	REVISED PER FIELD WORK	7/23/2013

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**41 CHESTNUT STREET**  
**PORTLAND, MAINE**  
**BASEMENT & FIRST FLOOR FIRE ALARM PLAN**

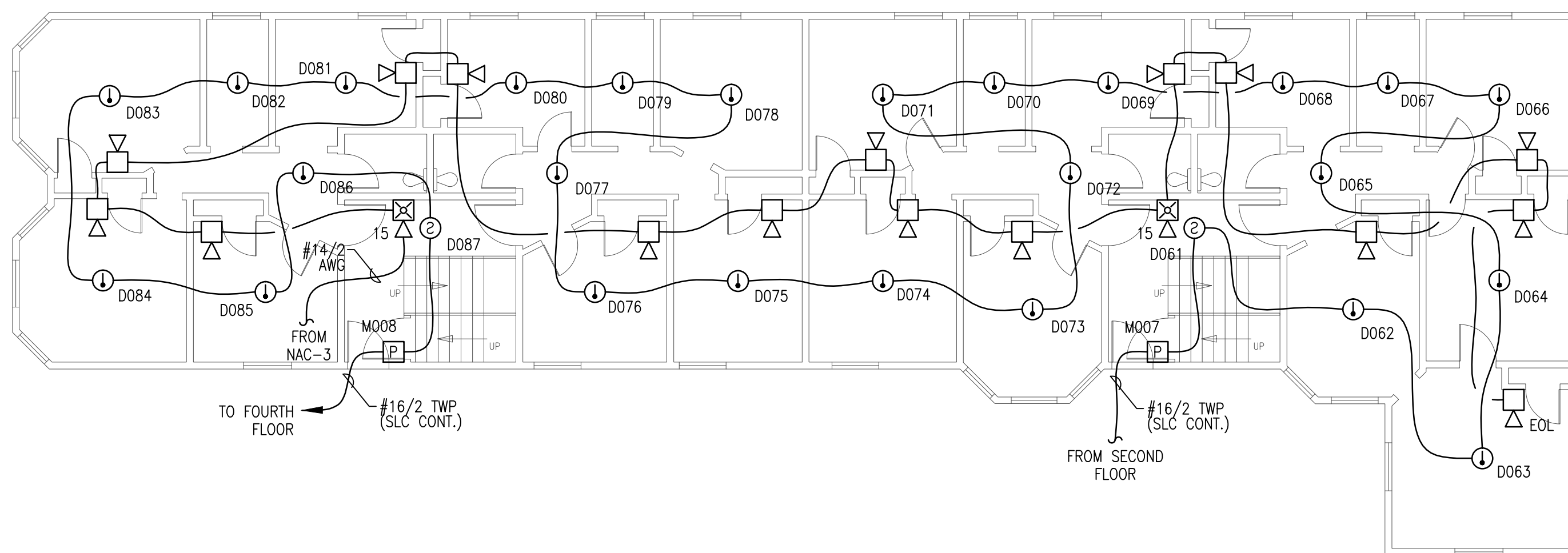
DRAWN	JPB UNICAD JOB #12509
CHECKED	WAYNE B. HAWES NICET N 90496
DATE	11/12/2012
REVISION	1
SCALE	1/8" = 1'-0"

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SECOND FLOOR FIRE ALARM PLAN

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



THIRD FLOOR FIRE ALARM PLAN

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

SHEET NOTES:

- ◇ FIELD VERIFY EXACT MOUNTING LOCATION OF WIRELESS RECEIVER (WR).

### FCP Battery Calculation

7/23/2013

PROJECT NAME: 41 CHESTNUT 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-9600UDLS Main Circuit Board	1	X	0.10300	= 0.10300
DACT-UD2	1	X	0.01700	= 0.01700
ANN-80 Remote Annunciator	1	X	0.01500	= 0.01500
SD355 Smoke Detectors	9	X	0.00030	= 0.00270
H355 Heat Detectors	105	X	0.00030	= 0.03150
BG-12LX Pull Stations	10	X	0.00030	= 0.00300
TOTAL STANDBY LOAD				0.17220

Regulated Load in ALARM				
Device Type	Number of Devices	Current (Amps)		Total Current (Amps)
MS-9600UDLS Main Circuit Board	1	X	0.25300	= 0.25300
DACT-UD2	1	X	0.02900	= 0.02900
ANN-80 Remote Annunciator	1	X	0.04000	= 0.04000
Max. Alarm Draw - SLC-1 Addressable Devices	1	X	0.40000	= 0.40000
NAC-1	1	X	1.95300	= 1.95300
NAC-2	1	X	1.26200	= 1.26200
NAC-3	1	X	1.26200	= 1.26200
NAC-4	1	X	1.26200	= 1.26200
TOTAL ALARM LOAD				6.46100

Battery Requirements				
Standby Load		Required Standby Time in Hours		
Current (Amps)	0.17220	X	24.00000 = 4.13280	
Alarm Load		Required Alarm Time in Hours		
Current (Amps)	6.46100	X	0.08333 = 0.53842	
Total Ampere Hours (before derating factor)				4.67122
Derating Factor				X
				1.2
TOTAL AMPERE HOURS REQUIRED				= 5.60546

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

#### NAC Circuit Voltage Drop Calculation

7/23/2013

Project Name: 41 CHESTNUT STREET  
 Circuit Number: NAC-1

Nominal System Voltage	20.4 volts	Wire Gauge	14	Resistance Per 1000	6.14
Minimum Device Voltage	16 volts		14		6.14
Distance from source to 1st device	6		14		6.14

Wire Gauge for balance of circuit: 14

Max Output Current	2.2 amps
Total Circuit Current	1.953 amps

**Circuit is within limits**

Device	Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.176		20.33	0.07	0%
Device 2	0.218	62	19.65	0.75	4%
Device 3	0.079	16	19.50	0.90	4%
Device 4	0.218	2	19.48	0.92	5%
Device 5	0.069	28	19.26	1.14	6%
Device 6	0.069	4	19.23	1.17	6%
Device 7	0.069	15	19.13	1.27	6%
Device 8	0.069	24	18.98	1.42	7%
Device 9	0.069	22	18.84	1.56	8%
Device 10	0.069	4	18.82	1.58	8%
Device 11	0.079	12	18.76	1.64	8%
Device 12	0.069	13	18.70	1.70	8%
Device 13	0.069	11	18.65	1.75	9%
Device 14	0.069	6	18.62	1.78	9%
Device 15	0.069	11	18.59	1.81	9%
Device 16	0.069	11	18.55	1.85	9%
Device 17	0.069	26	18.49	1.91	9%
Device 18	0.069	4	18.48	1.92	9%
Device 19	0.079	11	18.46	1.94	10%
Device 20	0.069	17	18.44	1.96	10%
Device 21	0.069	11	18.43	1.97	10%
Device 22	0.069	4	18.43	1.97	10%
Totals	1.953	320			

#### NAC Circuit Voltage Drop Calculation

7/23/2013

Project Name: 41 CHESTNUT STREET  
 Circuit Number: NAC-2

Nominal System Voltage	20.4 volts	Wire Gauge	14	Resistance Per 1000	6.14
Minimum Device Voltage	16 volts		14		6.14
Distance from source to 1st device	31		14		6.14

Wire Gauge for balance of circuit: 14

Max Output Current	1.8 amps
Total Circuit Current	1.262 amps

**Circuit is within limits**

Device	Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.079		20.16	0.24	1%
Device 2	0.069	17	20.04	0.36	2%
Device 3	0.069	11	19.96	0.44	2%
Device 4	0.069	4	19.94	0.46	2%
Device 5	0.069	30	19.76	0.64	3%
Device 6	0.069	4	19.73	0.67	3%
Device 7	0.069	26	19.60	0.80	4%
Device 8	0.069	11	19.55	0.85	4%
Device 9	0.069	11	19.50	0.90	4%
Device 10	0.069	6	19.48	0.92	5%
Device 11	0.069	11	19.44	0.96	5%
Device 12	0.079	13	19.40	1.00	5%
Device 13	0.069	12	19.37	1.03	5%
Device 14	0.069	4	19.36	1.04	5%
Device 15	0.069	22	19.32	1.08	5%
Device 16	0.069	16	19.30	1.10	5%
Device 17	0.069	4	19.30	1.10	5%
Device 18	0.069	15	19.29	1.11	5%
Totals	1.262	248			

#### NAC Circuit Voltage Drop Calculation

7/23/2013

Project Name: 41 CHESTNUT STREET  
 Circuit Number: NAC-3

Nominal System Voltage	20.4 volts	Wire Gauge	14	Resistance Per 1000	6.14
Minimum Device Voltage	16 volts		14		6.14
Distance from source to 1st device	41		14		6.14

Wire Gauge for balance of circuit: 14

Max Output Current	2.0 amps
Total Circuit Current	1.262 amps

**Circuit is within limits**

Device	Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.079		20.08	0.32	2%
Device 2	0.069	17	19.98	0.44	2%
Device 3	0.069	11	19.88	0.52	3%
Device 4	0.069	4	19.86	0.54	3%
Device 5	0.069	30	19.68	0.72	4%
Device 6	0.069	4	19.66	0.74	4%
Device 7	0.069	26	19.52	0.88	4%
Device 8	0.069	11	19.47	0.93	5%
Device 9	0.069	11	19.42	0.98	5%
Device 10	0.069	6	19.40	1.00	5%
Device 11	0.069	11	19.36	1.04	5%
Device 12	0.079	13	19.32	1.08	5%
Device 13	0.069	12	19.29	1.11	5%
Device 14	0.069	4	19.28	1.12	5%
Device 15	0.069	22	19.25	1.15	6%
Device 16	0.069	16	19.23	1.17	6%
Device 17	0.069	4	19.22	1.18	6%
Device 18	0.069	15	19.22	1.18	6%
Totals	1.262	258			

#### NAC Circuit Voltage Drop Calculation

7/23/2013

Project Name: 41 CHESTNUT STREET  
 Circuit Number: NAC-4

Nominal System Voltage	20.4 volts	Wire Gauge	14	Resistance Per 1000	6.14
Minimum Device Voltage	16 volts		14		6.14
Distance from source to 1st device	51		14		6.14

Wire Gauge for balance of circuit: 14

Max Output Current	2.0 amps
Total Circuit Current	1.262 amps

**Circuit is within limits**

Device	Current	Distance previous device	Voltage at Device	Drop from source	Percent Drop
Device 1	0.079		20.00	0.40	2%
Device 2	0.069	17	19.88	0.52	3%
Device 3	0.069	11	19.81	0.59	3%
Device 4	0.069	4	19.78	0.62	3%
Device 5	0.069	30	19.60	0.80	4%
Device 6	0.069	4	19.58	0.82	4%
Device 7	0.069	26	19.44	0.96	5%
Device 8	0.069	11	19.39	1.01	5%
Device 9	0.069	11	19.35	1.05	5%
Device 10	0.069	6	19.32	1.08	5%
Device 11	0.069	11	19.28	1.12	5%
Device 12	0.079	13	19.24	1.16	6%
Device 13	0.069	12	19.21	1.19	6%
Device 14	0.069	4	19.21	1.19	6%
Device 15	0.069	22	19.17	1.23	6%
Device 16	0.069	16	19.15	1.25	6%
Device 17	0.069	4	19.14	1.26	6%
Device 18	0.069	15	19.14	1.26	6%
Totals	1.262	268			

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0	11/14/2012	ISSUED FOR REVIEW & APPROVAL
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**41 CHESTNUT STREET**  
**PORTLAND, MAINE**

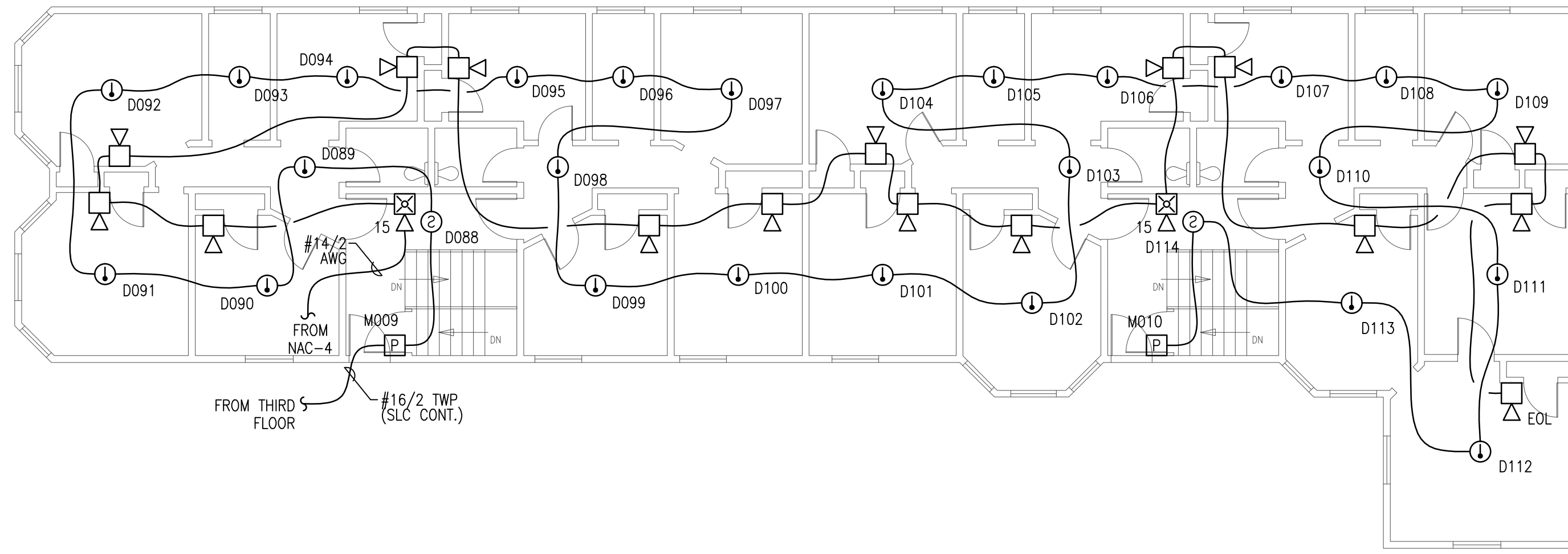
**SECOND & THIRD FLOOR FIRE ALARM PLAN**

DRAWN	JPB UNICAD JOB #12509
CHECKED	WAYNE B. HAWES NICET N 90496
DATE	11/12/2012
REVISION	1
SCALE	1/8" = 1'-0"

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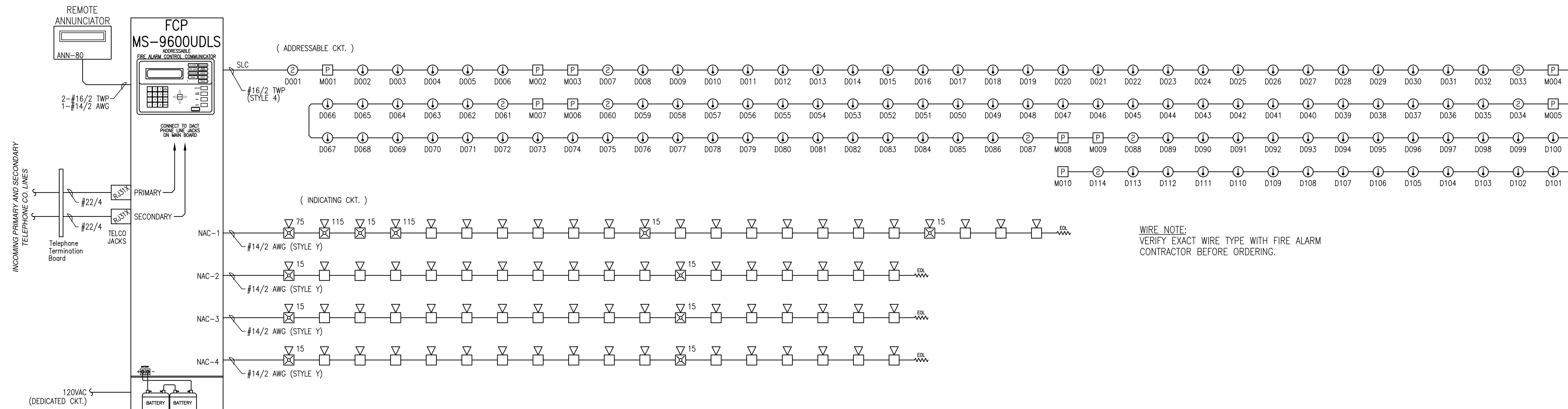
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FOURTH FLOOR FIRE ALARM PLAN

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



FIRE ALARM RISER DIAGRAM

SCHEMATIC: NO SCALE

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41 CHESTNUT STREET  
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 FOURTH FLOOR FIRE ALARM PLAN

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