62 GRANT STREET

PORTLAND, MAINE

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/27/2020

#	DATE	DESCRIPTION
1		
2		
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John Mocker, SET
NICET Level IV - Fire Alarm
Technician ID: 137219
Expires: 11/1/2022

PROJECT INFORMATION

1. THIS SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND STANDARDS APPROVED BY THE AUTHORITY HAVING JURISDICTION.

2. ALL DEVICES AND APPLIANCES SHALL BE LOCATED AND MOUNTED SO THAT ACCIDENTAL OPERATION OR FAILURE IS NOT CAUSED BY VIBRATION OR JARRING.

3. EQUIPMENT SHALL BE INSTALLED IN LOCATIONS WHERE CONDITIONS DO NOT EXCEED THE VOLTAGE, TEMPERATURE, AND HUMIDITY LIMITS SPECIFIED IN THE MANUFACTURER'S PUBLISHED INSTRUCTIONS.

4. THE SECONDARY POWER SUPPLY SHALL AUTOMATICALLY PROVIDE POWER TO THE PROTECTED PREMISES SYSTEM WITHIN 10 SECONDS WHENEVER THE PRIMARY POWER SUPPLY FAILS TO PROVIDE THE MINIMUM VOLTAGE REQUIRED FOR PROPER OPERATION.

5. INITIATING DEVICES OF THE MANUAL OR AUTOMATIC TYPE SHALL BE SELECTED AND INSTALLED SO AS TO MINIMIZE NUISANCE AND UNINTENTIONAL ALARMS.

6. ALL FIRE ALARM DEVICES SHALL COMPLY FULLY WITH ALL A.D.A. REQUIREMENTS.

7. REQUIRED SIGNALS SHALL NOT BE LOST, INTERRUPTED, OR DELAYED BY MORE THAN 10 SECONDS AS A RESULT OF THE PRIMARY POWER FAILURE.

INSTALLATION TYPE
■ NEW INSTALL ☐ TENANT IMPROVEMENT

WIRING STYLE
☐ CLASS "A" ■ CLASS "B"

PANEL TYPE
☐ CONVENTIONAL ■ ADDRESSABLE

BLDG OCCUPANCY
GROUP S, B

SPRINKLED
■ NO

AREA - SQUARE FOOT
7286 SF

SCOPE OF WORK
INSTALL A NEW FIRE ALARM SYSTEM

BATTERY CALCULATIONS

Panel ID: 6808 — Model: 6808 Add. Fire Alarm Control Panel — Max NAC Current: 3.0 Amps
Location: FIRST FLOOR — Volts: 24 VDC — Max Panel Current: 6.0 Amps

Ckt.#	Circuit Name	Qty	Current Draw Standby	Current Draw Alarm	Wire AWG & Type	Ohms Per 1000 Ft.	Length(ft) One-Way	Actual Ohms	Volts @ EOL	%Drop
6808	6808 CTRL Panel	1	0.170	0.365						
SK	Photo, Photo-T, PhotoR	6	0.002	0.002						
SK	Heat, Heat-HT, ROR		0.000	0.000						
SK	Beam, Beam-T		0.000	0.000						
SK	Duct		0.000	0.000						
SK	Acclimate		0.000	0.000						
SK	FIRE-CO		0.000	0.000						
SK-PHOTO-W	Photo W	0	0.000	0.000						
SK-PHOTO-R-W	Photo-R-W		0.000	0.000						
SK-PHOTO-T-W	Photo-T-W		0.000	0.000						
SK-HEAT-W	Heat-W	0	0.000	0.000						
SK-HEAT-ROR-W	Heat-ROR-W		0.000	0.000						
SK-HEAT-HT-W	Heat-HT-W		0.000	0.000						
SK	Control		0.000	0.000						
SK	Control-6		0.000	0.000						
SK	RelayMon-2		0.000	0.000						
SK	Monitor, Minimon		0.000	0.000						
SK	Monitor-2		0.000	0.000						
SK	Monitor-10		0.000	0.000						
SK	Pull-SA, Pull-DA	4	0.002	0.002						
SK	Relay		0.000	0.000						
SK	Relay-6		0.000	0.000						
SK	Zone		0.000	0.000						
SK	Zone-6		0.000	0.000						
SK	Isolator Module		0.000	0.000						
B224BI	Isolator Base		0.000	0.000						
B200SR	Sounder Base		0.000	0.000						
B200S	Intelligent Sounder Base		0.000	0.000						
B200SR-LF	Low Freq Sounder Base		0.000	0.000						
B200S-LF	Low Freq Sounder Base	23	0.007	0.007						
B224RB	Relay Base		0.000	0.000						
RTS151	Magnetic Remote Test		0.000	0.000						
RTS151KEY	Key Activated Test		0.000	0.000						
RA100Z	Remote LED		0.000	0.000						
6860	LCD Remote Annunc		0.000	0.000						
5824	Serial/Parallel Module		0.000	0.000						
5496	Power Expander		0.000	0.000						
5895XL	Power Expander		0.000	0.000						
5865-4	LED Annunciator (4G)		0.000	0.000						
5865-3	LED Annunciator (3G)		0.000	0.000						
5880	LED Driver Module		0.000	0.000						
5883	Relay Module		0.000	0.000						
SK-NIC	Network Input Card		0.000	0.000						
SK-FML	Muilti-Mode Fiber Card	0	0.000	0.000						
SK-FSL	Single-Mode Fiber Card	0	0.000	0.000						
NAC #1	Notification Appl Circuit	cfg.	0.000	0.150	#14 Solid	3.07	46	0.28	20.37	0.16%
NAC #2	Aux Power Circuit	cfg.	0.007	0.325	#14 Solid	3.07	362	2.22	20.01	1.89%
NAC #3	Aux Power Circuit	cfg.	0.005	0.250	#14 Solid	3.07	297	1.82	20.17	1.14%
NAC #4	Notification Appl Circuit	cfg.	0.000	0.196	#14 Solid	3.07	100	0.61	20.28	0.59%
	Total Standby Current (Amps)		0.192	0.000	Total Alarm Current (Amps)					
	Standby Time In Hours		24	1.296	Alarm Time In Minutes / 60		(5 Mins)			
	Total Standby AH Required		4.601	0.083	Total Alarm AH Required					
	Total Combined AH Required		4.71	0.108						
	Multiply By The Derating Factor		1.20							
	Minimum Battery AmpHours Required		**5.65**							

N/A

Command Shortcuts

Configure Circuits | Print Page

AES CORPORATION — 40 Years of SECURITY INNOVATION

Instructions:
1) Select the AES product from the AES Product field.
2) Enter the # of hours of standby time required. Remember, AES products are listed for 24 hours.
3) All other fields are locked, the calculator will return the battery size automatically in the field colored green.

AES Product	Standby Current (Amps)		QTY		Total Standby Current (Amps)	Alarm/Transmit Current (Amps)		QTY		Total Alarm Current (Amps)
7707P-88-M	0.3000	X	1	=	0.300	1.2000	X	1	=	1.200
			Total System Standby Current (Amps)		0.300			Total System Alarm Current (Amps)		1.200

	## Hour Standby Time ****		Standby Current (Amps)		Required Standby Capacity (Amp-Hours)	Required Alarm Time (Hours)		Alarm/Transmit Current (Amps)		Required Alarm Capacity (Amp-Hours)
	24	X	0.300	=	7.200	1	X	1.2000	=	1.200

	Required Standby Capacity (Amp-Hours)		Required Alarm Capacity (Amp-Hours)		Total Capacity (Amp-Hours)
	7.20	+	1.200	=	8.400

	Total Capacity (Amp-Hours)		Safety Factor		Adjusted Battery Capacity (Amp-Hours)
	8.400	X	120%	=	10

The battery requirements presented are not AES recommendations. For UL listed battery requirements please read the products Installation and Operation Manual.

VOLTAGE DROP CALCULATIONS

Circuit Number: N1 (Horn/Storbe)
Nominal System Voltage: 20.4
Minimum Device Voltage: 16
Total Circuit Current: 0.150
Wire Gauge for balance of circuit: 14 (Wire Gauge) — Ohm's Per 1000: 3.07

Device Number	Device Current	Distance from previous device	Voltage At Device	Voltage Drop from source	Percent Drop
START	0.000	0	20.40	0.000	0.00%
N1-01	0.071	21	20.38	0.020	0.10%
N1-02	0.079	25	20.37	0.032	0.16%
END			20.37	0.032	0.16%
Totals	0.150	46	End of Line Voltage		**20.37**

Circuit Number: N2 Sounder Base)
Nominal System Voltage: 20.4
Minimum Device Voltage: 16
Total Circuit Current: 0.325
Wire Gauge for balance of circuit: 14 (Wire Gauge) — Ohm's Per 1000: 3.07

Device Number	Device Current	Distance from previous device	Voltage At Device	Voltage Drop from source	Percent Drop
START	0.000	0	20.40	0.000	0.00%
N2-01	0.025	22	20.36	0.044	0.21%
N2-02	0.025	28	20.30	0.096	0.47%
N2-03	0.025	28	20.26	0.142	0.70%
N2-04	0.025	27	20.22	0.184	0.90%
N2-05	0.025	27	20.18	0.222	1.09%
N2-06	0.025	34	20.14	0.264	1.29%
N2-07	0.025	25	20.11	0.291	1.42%
N2-08	0.025	34	20.08	0.322	1.58%
N2-09	0.025	28	20.06	0.343	1.68%
N2-10	0.025	28	20.04	0.360	1.77%
N2-11	0.025	28	20.03	0.373	1.83%
N2-12	0.025	27	20.02	0.382	1.87%
N2-13	0.025	26	20.01	0.386	1.89%
END			20.01	0.386	1.89%
Totals	0.325	362	End of Line Voltage		**20.01**

Circuit Number: N3 Sounder Base
Nominal System Voltage: 20.4
Minimum Device Voltage: 16
Total Circuit Current: 0.250
Wire Gauge for balance of circuit: 14 (Wire Gauge) — Ohm's Per 1000: 3.07

Device Number	Device Current	Distance from previous device	Voltage At Device	Voltage Drop from source	Percent Drop
START	0.000	0	20.40	0.000	0.00%
N3-01	0.025	21	20.37	0.033	0.16%
N3-02	0.025	34	20.32	0.080	0.39%
N3-03	0.025	27	20.29	0.113	0.55%
N3-04	0.025	26	20.26	0.141	0.69%
N3-05	0.025	28	20.23	0.168	0.82%
N3-06	0.025	27	20.21	0.188	0.92%
N3-07	0.025	26	20.20	0.204	1.00%
N3-08	0.025	25	20.18	0.216	1.06%
N3-09	0.025	32	20.17	0.226	1.11%
N3-10	0.025	50	20.17	0.233	1.14%
END			20.17	0.233	1.14%
Totals	0.250	297	End of Line Voltage		**20.17**

Circuit Number: N4
Nominal System Voltage: 20.4
Minimum Device Voltage: 16
Total Circuit Current: 0.196
Wire Gauge for balance of circuit: 14 (Wire Gauge) — Ohm's Per 1000: 3.07

Device Number	Device Current	Distance from previous device	Voltage At Device	Voltage Drop from source	Percent Drop
START	0.000	0	20.40	0.000	0.00%
N4-01	0.196	100	20.28	0.120	0.59%
END			20.28	0.120	0.59%
Totals	0.196	100	End of Line Voltage		**20.28**

DEVICE LEGEND

QTY	SYMBOL	DESCRIPTION	PART NUMBER
1	FACP	FIRE ALARM CONTROL PANEL	SK-6808
1	CELL	RADIO COMMUNICATOR	AES-7707
6	S	PHOTOELECTRIC SMOKE DETECTOR W/ STANDARD BASE	SK-PHOTO
23	SB	HEAT DETECTOR W/ LOW FREQ. SOUNDER BASE	SK-HEAT B200S-LF
4	F	MANUAL PULL STATION	SK-PULL-SA
1	WP	WALL MOUNTED HORN/STROBE	P2WK
1	KB	KNOX BOX	BY OTHERS
1		CEILING MOUNTED HORN/STROBE	PC2WL
1		WALL MOUNTED HORN/STROBE	P2WL

FIRE ALARM WIRE LEGEND

TAG	DESCRIPTION	TYPE	GAUGE	FPL	FPLR	FPLP	THHN	TFFN
A	ADDRESSABLE SLC LOOP	UTP SOLID	18 AWG	X	X	X		
B	NOTIFICATION DEVICES	2 COND. SOLID	14 AWG	X	X	X		
P	POWER CABLE	2 COND. SOLID	14 AWG	X	X	X	X	X

NOTE:
ALL WIRE/CABLES ARE FOR INDOOR INSTALLATIONS. UNDERGROUND CABLE / WIRE MUST BE LISTED FOR INSTALLATION IN WET CONDITION.

PLENUM CABLE VS NON-PLENUM

FPL - THIS IS GENERAL USE POWER LIMITED FIRE ALARM CABLE. IT CANNOT BE USED IN A PLENUM SPACE OR FOR RISER (CABLING BETWEEN FLOORS). CABLE MUST BE IN CONDUIT.

FPLR - THIS IS POWER LIMITED RISER RATED CABLE THAT CAN BE USED FOR GENERAL PURPOSES OR BETWEEN FLOORS. IT CANNOT BE USED IN A PLENUM SPACE, CABLE MUST BE IN CONDUIT.

FPLP - THIS IA A POWER LIMITED CABLE THAT CAN BE USED IN A PLENUM, RISER OR FOR GENERAL PURPOSE.

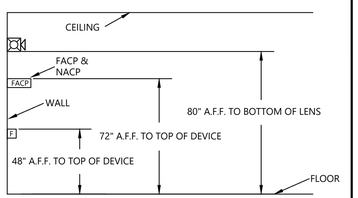
CONDUIT SIZE	MAX CONDUCTOR AREA	CONDUIT SIZE	MAX CONDUCTOR AREA
1/2"	0.12 SQ. INCH*	1-1/4"	0.60 SQ INCH*
3/4"	0.21 SQ INCH*	1-1/2"	0.82 SQ INCH*
1"	0.34 SQ INCH*	2"	1.34 SQ INCH*

* 40% CONDUIT FILL PER N.E.C.

** ALL WIRE/CABLES ARE FOR INDOOR INSTALLATIONS. UNDERGROUND CABLE/WIRE MUST BE LISTED FOR INSTALLATION IN WET CONDITION

ITEMS SUCH AS CAPACITANCE BETWEEN CONDUCTORS AND WIRE GAUGE CAN BE CRUCIAL TO THE CIRCUIT DESIGN OF THIS SYSTEM INSTALLATION. THE INSTALLING CONTRACTOR IS RESPONSIBLE FOR SELECTING AND INSTALLING CABLE MANUFACTURER AND MODEL THAT MEETS OR EXCEEDS THE REQUIREMENTS.

DEVICE MOUNTING HEIGHT



FIRE ALARM PULL STATIONS SHALL BE MOUNTED AT +48" ABOVE FINISHED FLOOR TO TOP OF DEVICE.

FIRE ALARM INDICATING APPLIANCES SHALL BE PLACED 80" ABOVE THE HIGHEST FLOOR LEVEL WITHIN THE SPACE OR 6" BELOW THE CEILING, WHICHEVER IS LOWER (REFER TO A.D.A. GUIDELINES).

OUTPUTS

INPUTS

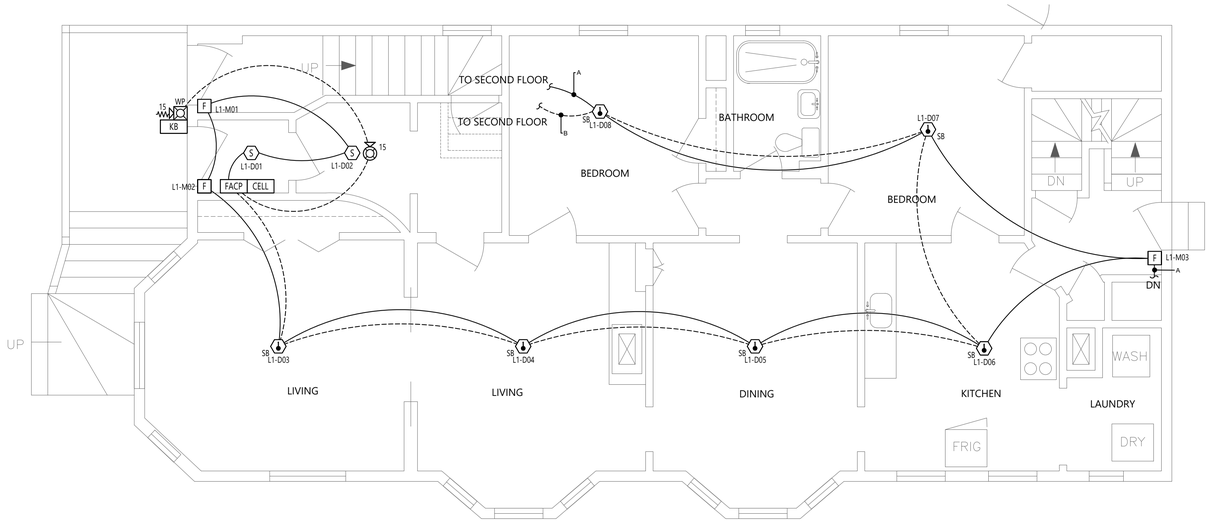
SEQUENCE OF OPERATION

ILLUMINATE LED ON DETECTOR	ACTIVATE SOUNDER BASES IN THE UNIT	SEND SUPERVISORY SIGNAL TO CENTRAL STATION MONITORING	SEND TROUBLE SIGNAL TO CENTRAL STATION MONITORING	SEND ALARM SIGNAL TO CENTRAL STATION MONITORING	INDICATE DEVICE AND LOCATION AT FACP	SOUND LOCAL PIEZO AT FACP	OPERATE ALL AREA AUDIO/VISUAL SIGNALS	
●				●	●	●	●	SMOKE DETECTOR IN ALARM
				●	●	●	●	MANUAL PULL STATION
	●	●			●	●		HEAT DETECTOR IN ALARM
						●		TROUBLE
						●		BATTERY FAULT
						●		GROUND FAULT
						●		OPEN CIRCUIT
						●		LOSS OF PRIMARY POWER
						●		LOSS OF COMMUNICATION

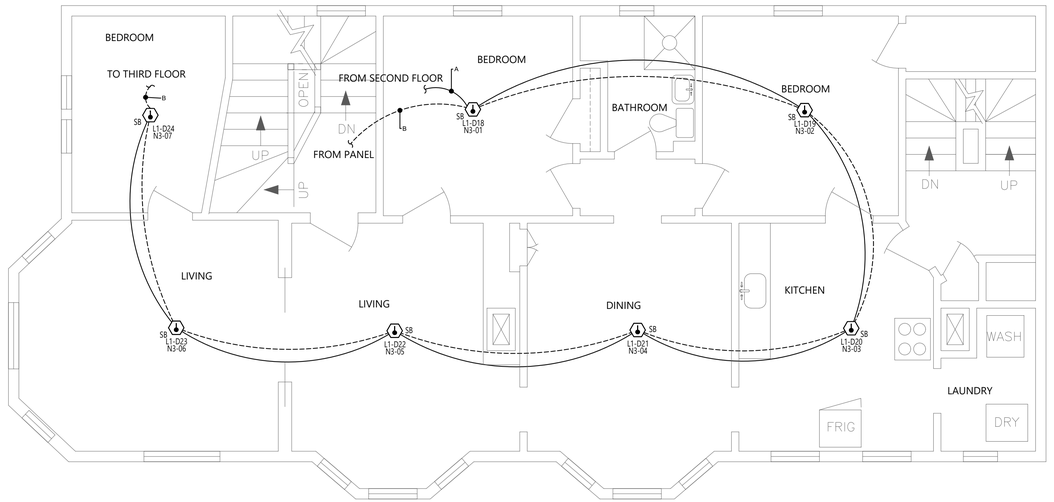
GUNNINGHAM SECURITY SYSTEMS
10PRINCES POINT ROAD
YARMOUTH, MAINE 04096
207-846-6080

FIRE ALARM SYSTEM PLAN
62 GRANT STREET
PORTLAND, MAINE

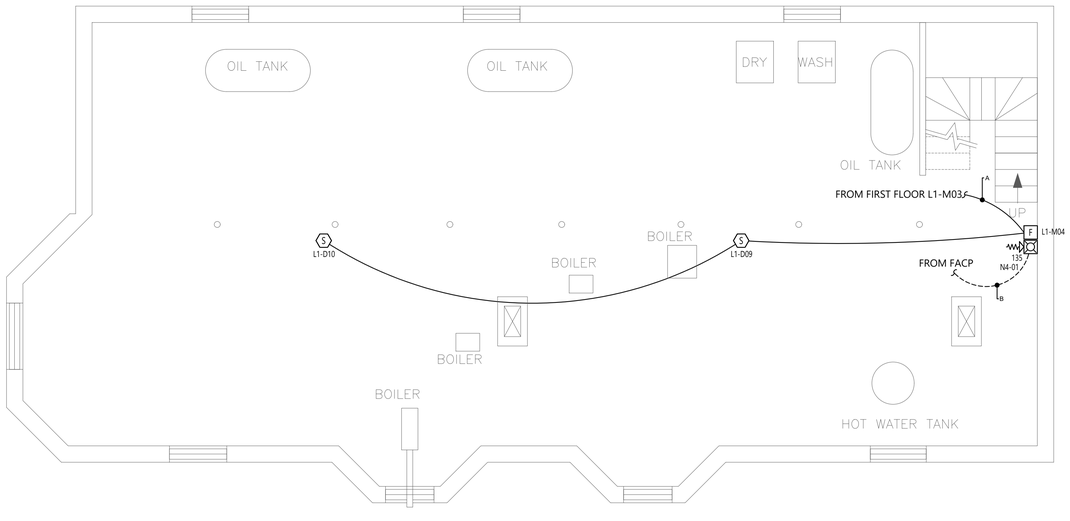
SCALE: AS NOTED
DATE: 1/20/2020
DRAWN: JM
SHEET: 1 OF 3



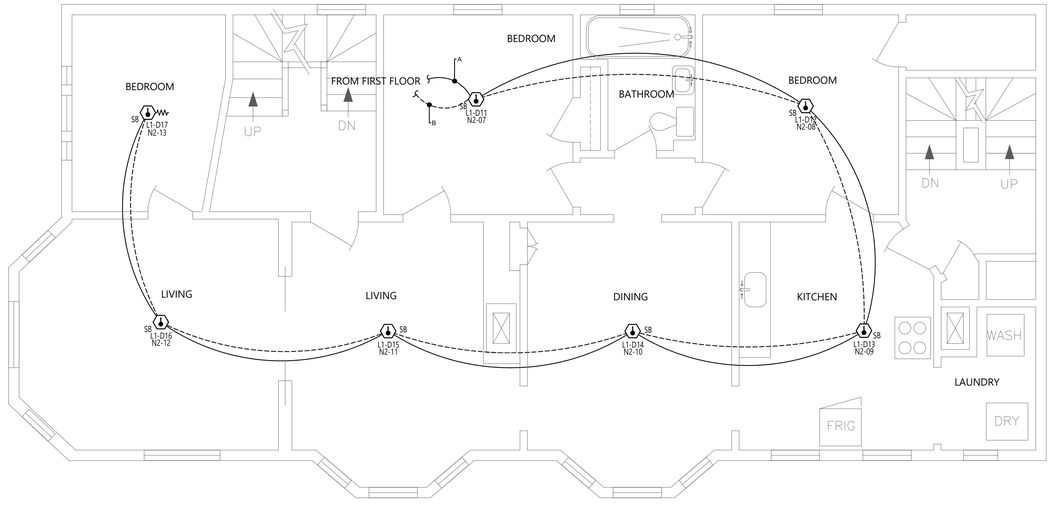
FIRST FLOOR
FIRST ALARM FLOOR PLAN
SCALE: 1/4" = 1'-0"



THIRD FLOOR
FIRST ALARM FLOOR PLAN
SCALE: 1/4" = 1'-0"



BASEMENT
FIRST ALARM FLOOR PLAN
SCALE: 1/4" = 1'-0"



SECOND FLOOR
FIRST ALARM FLOOR PLAN
SCALE: 1/4" = 1'-0"

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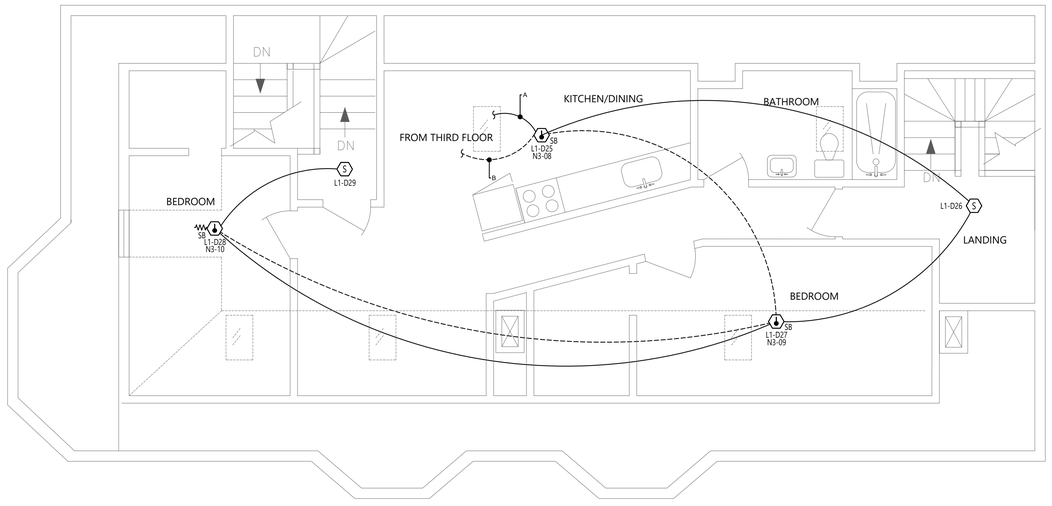
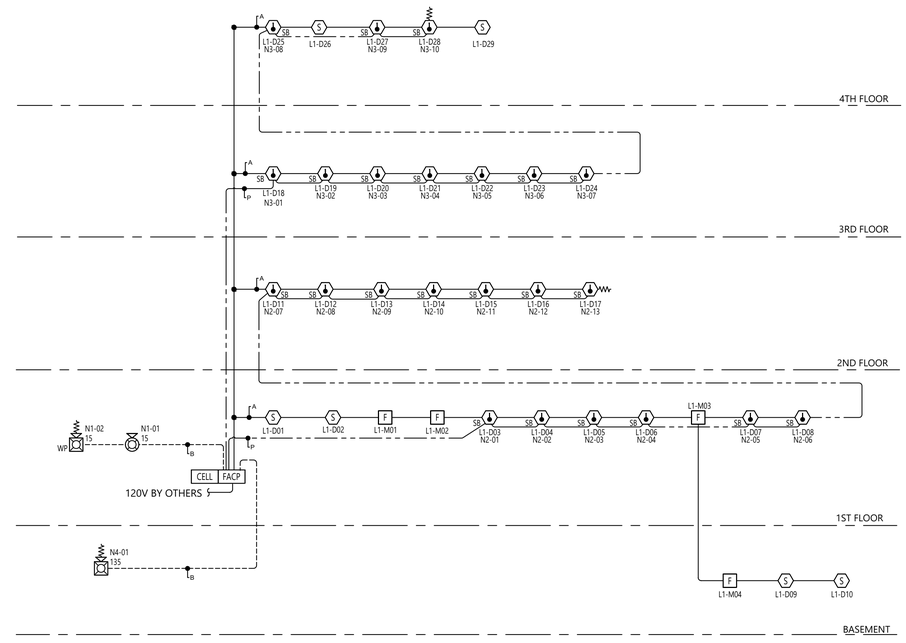


FOURTH FLOOR
FIRE ALARM FLOOR PLAN
SCALE: 1/4" = 1'-0"



FIRE ALARM RISER DIAGRAM
SCALE: NTS

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