

MIAMI EDUCATIONAL CENTER

NEW FIRE ALARM SYSTEM INSTALLATION

MIAMI GARDENS, FLORIDA

BUILDING CLASSIFICATIONS & CODES

OCCUPANCY GROUP: E - EDUCATIONAL
USE: COMMERCIAL
STORIES: 1 FLOOR
WET SPRINKLER SYSTEM: SPRINKLERED
REQUIREMENTS: CODE REQUIRED SYSTEM PER IFC SECTION 907.2.3
APPLICABLE CODES: FLORIDA FIRE PREVENTION CODE (FFPC) 8TH EDITION
FLORIDA BUILDING CODE (FBC) 8TH EDITION
NFPA 1, 2021 EDITION, "FIRE CODE"
NFPA 101, 2021 EDITION, "LIFE SAFETY CODE"
NFPA 72, 2019 EDITION, "NATIONAL FIRE ALARM CODE"
NFPA 70, 2020 EDITION, "NATIONAL ELECTRICAL CODE"

SYSTEM TYPE & MONITORING

SYSTEM CLASSIFICATION: (NFPA 72, CHAPTER 26), CENTRAL STATION
SYSTEM TYPE: ADDRESSABLE
WIRING CLASSIFICATION: NAC - CLASS B
SLC - CLASS B
COMMUNICATION RISER - CLASS B
NOTIFICATION TYPE: VOICE EVACUATION

SCOPE OF WORK

PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, PROGRAMMING, TESTING, AND COMMISSIONING REQUIRED FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM IN ACCORDANCE WITH APPLICABLE CODES AND AHJ REQUIREMENTS.

THE SCOPE OF WORK SHALL INCLUDE THE FOLLOWING:

- * FIRE ALARM CONTROL PANEL (FACP).
- * THREE NAC BOOSTER POWER SUPPLY INSTALLED AT EACH BUILDING.
- * CELLULAR COMMUNICATOR INSTALLED ADJACENT TO THE FACP.
- * THREE AMPLIFIER INSTALLED FOR VOICE COMMUNICATION INSTALLED AT EACH BUILDING.
- * THREE REMOTE ANNUNCIATORS INSTALLED AT THE FRONT ENTRANCE OF EACH BUILDING.
- * SMOKE DETECTOR INSTALLED ABOVE THE FACP, NAC AND AMP PANELS.
- * SMOKE DETECTION THROUGHOUT THE FACILITY.
- * DUCT SMOKE DETECTION IN HVAC SYSTEM THROUGHOUT THE FACILITY.
- * RELAY MODULES WITH INTERPOSING RELAYS FOR ALL SMOKE DAMPERS AND RTU SHUTDOWN TO CLOSE IN CASE OF SMOKE DETECTION IN HVAC SYSTEM.
- * MANUAL PULL STATIONS INSTALLED WITHIN 5 FEET OF EACH EGRESS DOOR AND STAIRWELL.
- * MONITOR MODULE IN CASE OF LOSS OF CONNECTION OF THE CELLULAR COMMUNICATOR.
- * DUAL MONITOR MODULES FOR ALARM OF THE WATERFLOW AND SUPERVISION FOR TAMPER SWITCHES.
- * MONITOR MODULE FOR SUPERVISION OF BACKFLOW PREVENTER.
- * WALL MOUNTED SPEAKER/STROBES THROUGHOUT THE FACILITY.
- * WALL MOUNTED STROBES THROUGHOUT THE FACILITY WHERE REQUIRED.
- * WALL MOUNTED WEATHERPROOF SPEAKER/STROBES THROUGHOUT THE FACILITY WHERE REQUIRED.
- * ISOLATOR MODULES ON HOMERUNS FOR SLC TO EACH OF THE THREE BUILDINGS.
- * SURGE SUPPRESSORS FOR SLC, POWER, AND P-LINK TRAVELING OUTDOORS BETWEEN BUILDINGS.
- * SURGE SUPPRESSORS FOR THE 120VAC CIRCUITS SERVING THE FACP, NAC's AND AMP's PANEL.

THE SYSTEM IS A CENTRAL STATION SERVICE SYSTEM PER NFPA 72:26.3.6 AND MIAMI-DADE CODE SECTION 14-61(f). MONITORING, SERVICE, AND RUNNER RESPONSE WILL BE PROVIDED UNDER A WRITTEN AGREEMENT WITH A UL-LISTED CENTRAL STATION.

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SYSTEM NOTES

- ALL WIRE TO BE LISTED FIRE WIRE.
- ALL WIRE LOCATED IN PLENUM TO BE PLENUM RATED WIRE.
- STROBE & HORN/STROBE UNITS TO BE MOUNTED AT 80" ABOVE FINISH FLOOR OR 6" BELOW THE CEILING WHATEVER IS LESS.
- INSTALLATION OF ALARM SYSTEM TO BE INSTALLED IN ACCORDANCE TO FBC 8TH EDITION WITH REFERENCES TO NFPA 72-19 & NFPA 70-20.
- END OF LINE RESISTORS TO BE MOUNTED IN FACP BOX OR IN THE BOX FOR THE LAST DEVICE ON CIRCUIT AND LABEL TO (EOL), IF APPLICABLE TO SYSTEM.
- ACTUAL CIRCUIT ZONING AND POINT TO POINT WIRING MAY VARY DUE TO FIELD CONDITIONS.
- ALL DEVICES TO BE ADAAG COMPLIANT.
- THE POWER CIRCUIT(S) FEEDING FIRE ALARM PANEL(S) SHALL HAVE 20 AMP CIRCUIT BREAKER(S). FOR INSTALLATION OVER 100' TO ELECTRIC PANEL, USE #10 (2) THHN W/9 WITH GND IN 3/4" CONDUIT. FOR INSTALLATION LESS THAN OR EQUAL TO 100' TO THE ELECTRIC PANEL, USE (2) #12 THHN WITH GND IN 1/2" CONDUIT.
- THE BRANCH CIRCUIT SUPPLYING THE FIRE ALARM EQUIPMENT SHALL SUPPLY NO OTHER LOADS. THE LOCATION OF THE BRANCH-CIRCUIT OVERCURRENT PROTECTIVE DEVICE SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CONTROL UNIT. THE CIRCUIT DISCONNECTING MEANS SHALL HAVE RED IDENTIFICATION, SHALL BE ACCESSIBLE ONLY TO QUALIFIED PERSONNEL AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT". THE RED IDENTIFICATION SHALL NOT DAMAGE THE OVERCURRENT PROTECTIVE DEVICES OR OBSCURE THE MANUFACTURER'S MARKINGS. THIS BRANCH CIRCUIT SHALL NOT BE SUPPLIED THROUGH GROUND-FAULT CIRCUIT INTERRUPTERS OR ARC-FAULT CIRCUIT INTERRUPTERS. NFPA 70-20 WHERE A CIRCUIT BREAKER IS THE DISCONNECTING MEANS, AN APPROVED BREAKER LOCKING DEVICE SHALL BE INSTALLED. AN OVERCURRENT PROTECTIVE DEVICE SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 70.
- ALL PULL STATIONS TO BE LOCATED WITHIN 5'-0" OF AN EXIT OR ENTRANCE TO AN EXIT ENCLOSURE. MOUNT PULL STATIONS SO INITIATING HANDLE IS 48" MAX AFF.
- ALL PENETRATIONS THROUGH FIRE RATED CONSTRUCTION (I.E. FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND FIRE RATED HORIZONTAL ASSEMBLIES) SHALL BE FIRE STOPPED IN ACCORDANCE WITH APPROVED DRAWINGS. SEE SPECIFICATIONS FOR FURTHER INFORMATION. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED ASSEMBLIES.
- CONTRACTOR TO PROVIDE AND INSTALL ALL WIRING, PANELS, DEVICES, CONDUIT, BOXES, ETC NECESSARY FOR A COMPLETE AND PROPER FUNCTIONAL CODE COMPLIANT INSTALLATION.
- CONTRACTOR TO PROVIDE FIRE ALARM DOCUMENT STORAGE BOX. MOUNT BOX IN LOCAL PROXIMITY TO THE FACP. VERIFY LOCATION W/ ARCHITECT & AHJ.
- ALL WIRING, BOXES, AND RELATED COMPONENTS SHALL BE RECESSED IN THE BUILDING CONSTRUCTION UNLESS OTHERWISE NOTED. ALL FIRE ALARM CIRCUITS SHALL BE IDENTIFIED AT TERMINAL AND JUNCTION LOCATIONS IN A MANNER THAT HELPS PREVENT UNINTENTIONAL SIGNALS ON FIRE ALARM SYSTEM CIRCUITS DURING TESTING AND SERVICING OF OTHER SYSTEMS. ANY SURFACE-MOUNTED CONDUIT OR EQUIPMENT SHALL BE MINIMIZED AND SHALL BE REVIEWED AND APPROVED BY THE ARCHITECT AND OWNER PRIOR TO INSTALLATION. WHERE SURFACE INSTALLATION IS UNAVOIDABLE, WIRING AND DEVICES SHALL BE INSTALLED IN APPROVED MINIMUM 1/2" DIA. CONDUIT, APPROVED WIREMOLD RACEWAY, OR HELD BY BRIDAL RINGS. DO NOT ATTACH MONITORING SYSTEM WIRING TO THE SUPPRESSION SYSTEM, IF PRESENT.



SEQUENCE OF OPERATIONS

	SYSTEM OUTPUTS						FIRE SAFETY CONTROL			
	FACP ANNUNCIATION			NOTIFICATION			FIRE SAFETY CONTROL			
	ACTIVATE COMMON ALARM SIGNAL INDICATOR	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE AUDIBLE TROUBLE SIGNAL	ACTIVATE APPROPRIATE DEVICE LOCATION INDICATOR	ACTIVATE ALL AUDIBLE EVACUATION SIGNALS	ACTIVATE ALL VISIBLE EVACUATION SIGNALS	DISPLAY / PRINT CHANGE OF STATUS	TRANSMIT ALARM SIGNAL TO SUPERVISING STATION
										TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION
										TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION
										WATER FLOW BELL ACTIVATION
										SMOKE DAMPER CLOSE
										SHUT DOWN ROOF TOP UNITS
										REMOTELY DISPLAY ACTIVE STATUS
SYSTEM INPUTS										
	SMOKE DETECTOR	X	X			X	X	X	X	X
	MANUAL PULL STATION	X	X			X	X	X	X	X
	DUCT SMOKE DETECTOR			X	X	X	X	X	X	X
	SPRINKLER WATERFLOW SWITCH	X	X			X	X	X	X	X
	SPRINKLER VALVE SUPERVISORY SWITCH			X	X	X	X	X	X	X
	FACP AC POWER FAILURE			X	X	X	X	X	X	X
	FACP LOW BATTERY			X	X	X	X	X	X	X
	OPEN CIRCUIT			X	X	X	X	X	X	X
	GROUND FAULT			X	X	X	X	X	X	X
	NOTIFICATION APPLIANCE CIRCUIT SHORT			X	X	X	X	X	X	X
	LOSS OF COMMUNICATION PATH (INCLUDING CELLULAR DIALER FAILURE)			X	X	X	X	X	X	X

*DUCT SMOKE DETECTOR ACTIVATION SHALL INITIATE SHUTDOWN OF THE ASSOCIATED RTU ONLY. EACH RTU IS PROVIDED WITH A DEDICATED CONTROL RELAY FOR UNIT-SPECIFIC SHUTDOWN. ACTIVATION OF A DUCT DETECTOR SHALL NOT RESULT IN GLOBAL RTU SHUTDOWN OF OTHER UNITS.

FIRE ALARM DEVICE LEGEND

MANUFACTURER	PART NUMBER	DESCRIPTION	SYMBOL	QTY.
POTTER	AFC-1000V	FIRE ALARM CONTROL PANEL	[FACP]	1
POTTER	LOC-1000	FIRE ALARM ANNUNCIATOR	[ANN]	3
POTTER	PSN-1000	FIRE ALARM NAC PANEL	[NAC#]	3
POTTER	SCA-10070	SINGLE CHANNEL AMPLIFIER 100W	[AMP#]	3
STARLINK	SLE-MAX2-FIRE	CELL COMMUNICATOR	[COMM]	1
SPACE AGE	SSU00468-120VAC	SURGE PROTECTOR (120V)	[SP]	7
DITEK	DTK-2MHL P24BWB	SURGE PROTECTOR (24VDC)	[SP] D	6
POTTER	PAD300-PD	SMOKE DETECTOR WITH STANDARD BASE	[S]	6
POTTER	PAD100-PSDA	MANUAL PULL STATION DOUBLE ACTION	[F]	11
POTTER	PAD100-IM	ISOLATOR MODULE	[IM]	3
POTTER	PAD100-SIM	SINGLE MONITOR MODULE	[M]	2
POTTER	PAD100-DIM	DUAL MONITOR MODULE	[DM]	3
POTTER	PAD100-RM	RELAY MODULE	[RM]	15
POTTER	PAD300-DUCT	DUCT SMOKE DETECTOR	[S] D	12
POTTER	PAD100-DRTS	REMOTE TEST STATION	[RTS]	12
POTTER	PE-ST	STROBE - WALL MOUNT	[XXCD]	32
POTTER	PE-SPST	SPEAKER STROBE - WALL MOUNT	[XXW XXCD]	70
POTTER	SPKSTR-24CLP	WEATHERPROOF SPEAKER STROBE - WALL MOUNT	[WP XXW XXCD]	7
POTTER	PBA2410	WEATHERPROOF BELL - WALL MOUNT	[F] SS WP	1
POTTER	3005013	(5.1k) END OF THE LINE RESISTOR	[5.1k]	23
BY OTHERS	BY OTHERS	WATER FLOW SWITCH	[WF]	3
BY OTHERS	BY OTHERS	TAMPER SWITCH	[VS]	4
BY OTHERS	BY OTHERS	SMOKE DAMPER	[S] D	47
POTTER	MR-101/T	MULTI-VOLTAGE CONTROL RELAY	[R]	3

NOTIFICATION LEGEND

CIRCUIT NUMBER N1-1
DEVICE NUMBER

DEVICE ADDRESS LEGEND

PANEL LOOP NUMBER L1-1
DEVICE ADDRESS

KEYED NOTES:

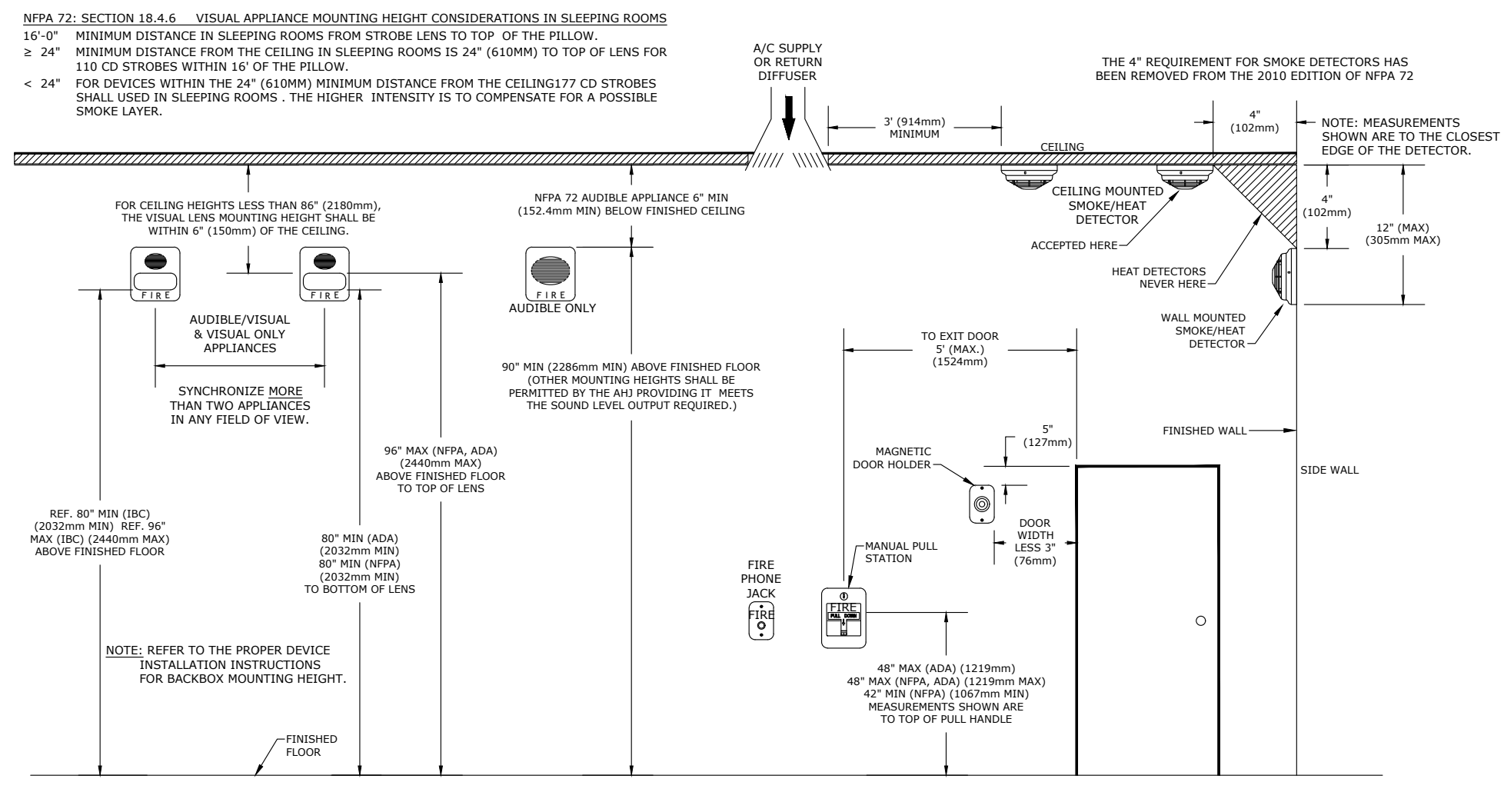
AG = ABOVE GRID
E = EXISTING DEVICE TO REMAIN
RC = REMOVE AND COVER DEVICE
RL = RELOCATED EXISTING DEVICE
RR = REMOVE AND REPLACE
RPL = REMOVE AND RELOCATE

VOICE LEGEND

CIRCUIT NUMBER
DEVICE NUMBER S1-1

FIRE ALARM DEVICE MOUNTING HEIGHTS

(PER NFPA 72) NO SCALE



REVISION		DATE
DESCRIPTION		
#		

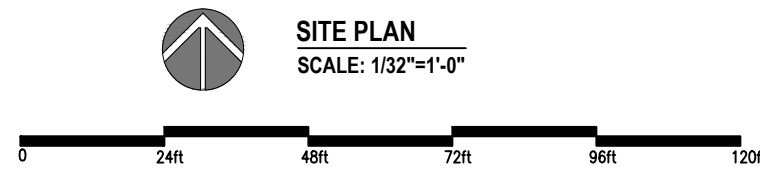
Date: ---	Scale: NTS	Project: ---
Designed by: ---	Drawn by: ---	Approved By: ---

CONTRACTOR NAME: XXXX
CONTRACTOR NO: XXXXXXXXXXXXXXXX
QUALIFIER NAME: XXXXXXXXXXXXXXXX
ADDRESS: XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXX

FIRE ALARM DESIGN CO.
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FIRE ALARM COVER PAGE

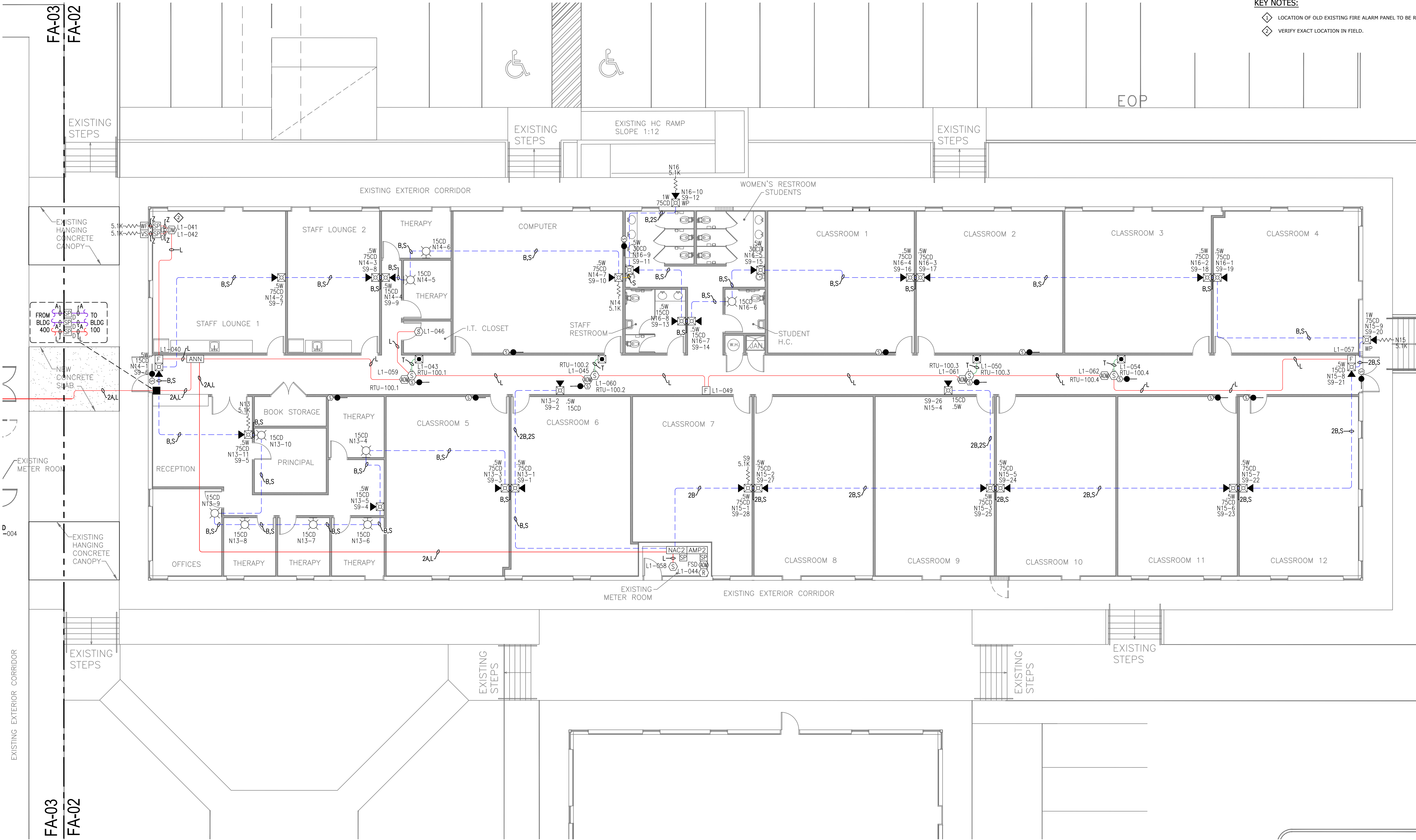


GENERAL NOTES:

- ALL CEILING-MOUNTED NOTIFICATION APPLIANCES SHALL BE INSTALLED AT A MAX HEIGHT OF 30FT A.F.F. DEVICES ABOVE 30FT, SHALL BE PENDANT-MOUNTED.
- CONDUIT ROUTING IS INTENDED TO BE FOLLOWED AS CONDUIT PATH, INTERFERENCES.

KEY NOTES:

- LOCATION OF OLD EXISTING FIRE ALARM PANEL TO BE REPLACED.
- VERIFY EXACT LOCATION IN FIELD.



REVISION		DATE
#	DESCRIPTION	

Date:	Scale:	Project:
	1/8"=1'-0"	
Designed by:	Drawn by:	Approved By:

CONTRACTOR NAME:	XXXXXXXXXX
CONTRACTOR NO:	XXXXXXXXXX
QUALIFIER NAME:	XXXXXXXXXX
ADDRESS:	XXXXXXXXXX
	XXXXXXXXXX
	XXXXXXXXXX

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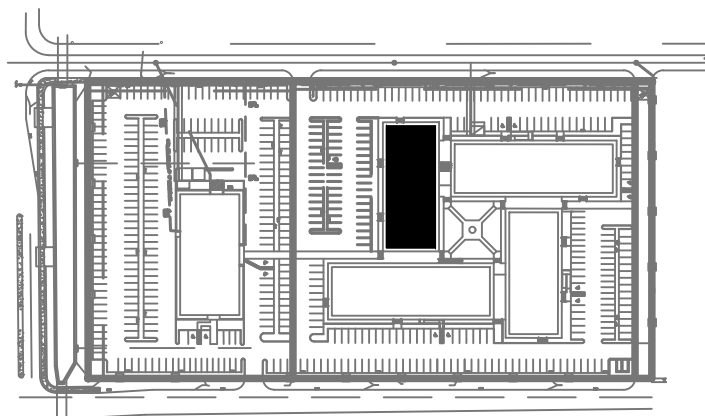


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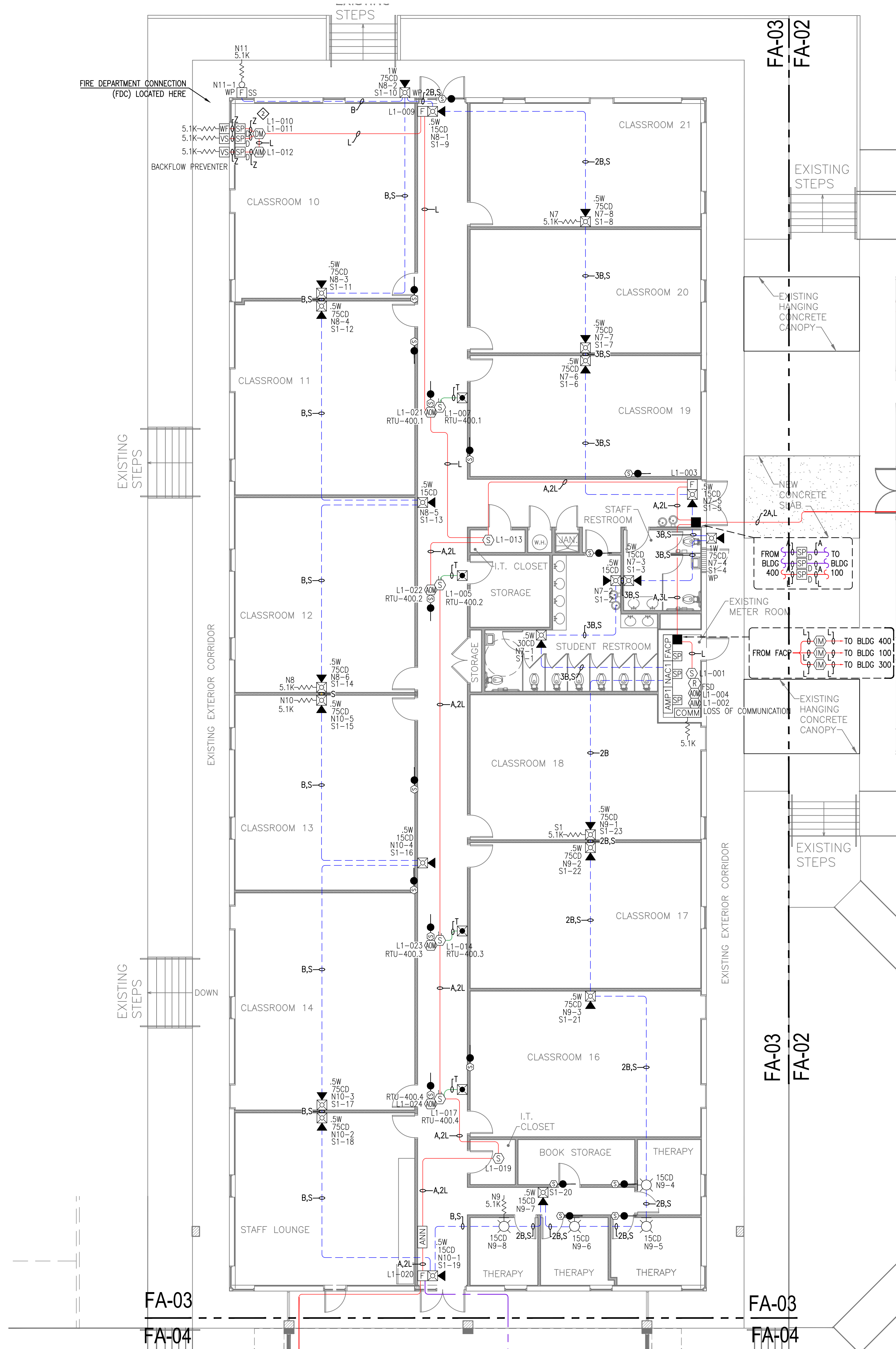
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MIAMI GARDENS, FLORIDA

FIRE ALARM
FLOORPLAN - BUILDING 100

FA-02



KEYPLAN
SCALE: NTC



GENERAL NOTES:

- ALL CEILING-MOUNTED NOTIFICATION APPLIANCES SHALL BE INSTALLED AT A MAX HEIGHT OF 30FT A.F.F. DEVICES ABOVE 30FT, SHALL BE PENDANT-MOUNTED.
- CONDUIT ROUTING IS INTENDED TO BE FOLLOWED AS CONDUIT PATH. CONDUIT INSTALLER SHALL IDENTIFY AND RESOLVE ANY FIELD INTERFERENCES.

KEY NOTES:

- LOCATION OF OLD EXISTING FIRE ALARM PANEL TO BE REPLACED.
- VERIFY EXACT LOCATION IN FIELD.

FLOORPLAN - BUILDING 400
SCALE: 1/8"=1'-0"

REVISION	
#	DESCRIPTION

REVISION	
#	DESCRIPTION

Date:	----
Scale:	1/8"=1'-0"
Project:	----
Designed by:	----
Drawn by:	----
Approved By:	----

CONTRACTOR NAME: XXXX
CONTRACTOR NO: XXXXXXXXXXXXXXXX
QUALIFIER NAME: XXXXXXXXXXXXXXXX
ADDRESS: XXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX

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DESIGN CO.

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MIAMI GARDENS, FLORIDA

FIRE ALARM
FLOORPLAN - BUILDING 400

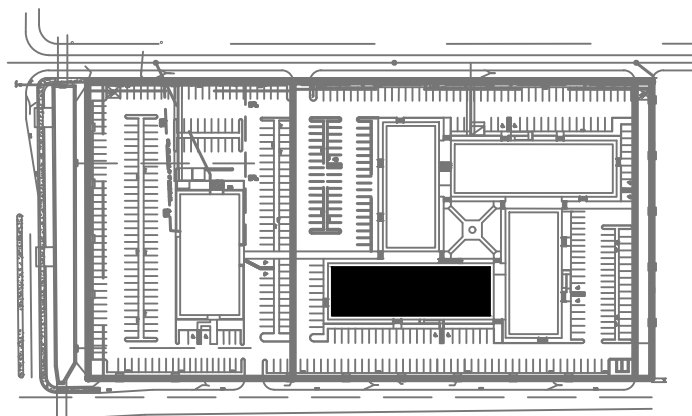
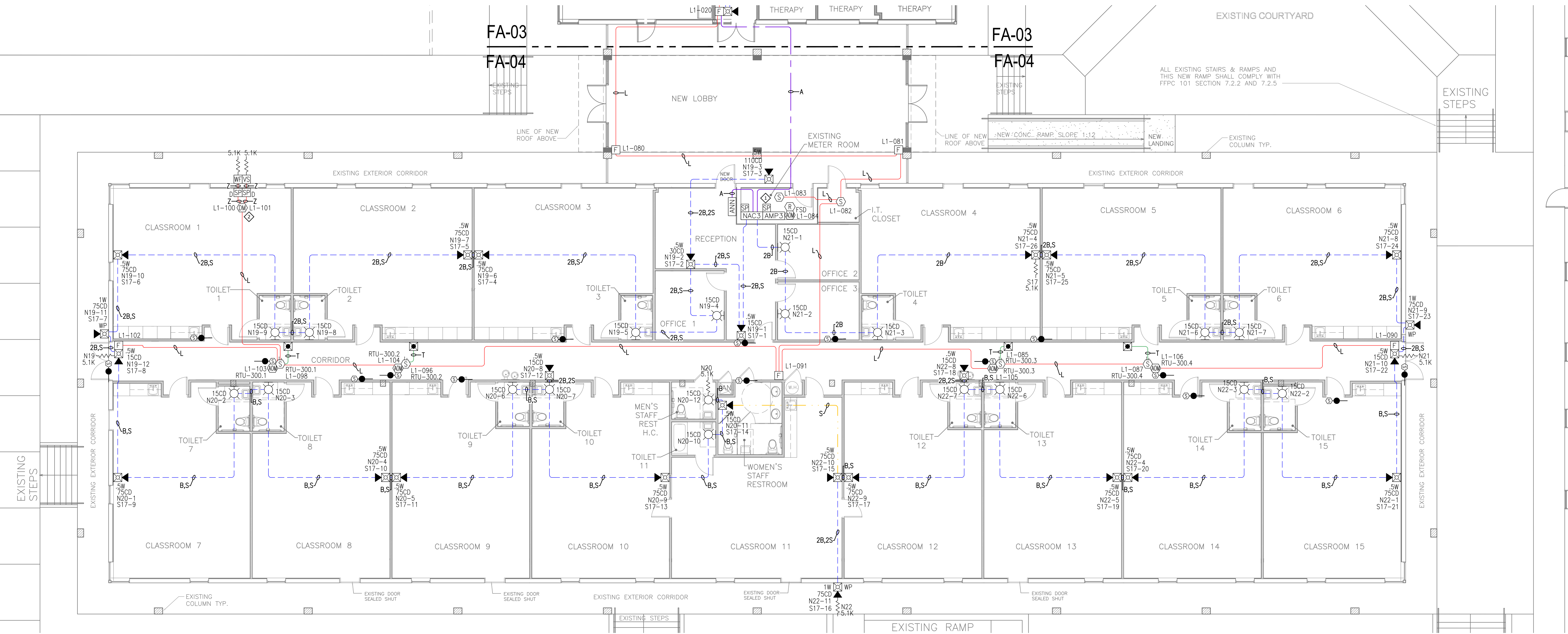
FA-03

GENERAL NOTES:

- 1. ALL CEILING-MOUNTED NOTIFICATION APPLIANCES SHALL BE INSTALLED AT A MAX HEIGHT OF 30FT A.F.F. DEVICES ABOVE 30FT, SHALL BE PENDANT-MOUNTED.
- 2. CONDUIT ROUTING IS INTENDED TO BE FOLLOWED AS CONDUIT PATH, CONDUIT INSTALLER SHALL IDENTIFY AND RESOLVE ANY FIELD INTERFERENCES.

KEY NOTES:

- ◇ LOCATION OF OLD EXISTING FIRE ALARM PANEL TO BE REPLACED.
- ◇ VERIFY EXACT LOCATION IN FIELD.



KEYPLAN
SCALE: NTC



FLOORPLAN - BUILDING 300
SCALE: 1/8"=1'-0"

0 6ft 12ft 18ft 24ft 30ft

REVISION	DATE

REVISION	DESCRIPTION

Date:	Scale:	Project:
	1/8"=1'-0"	
Designed by:	Drawn by:	Approved By:

CONTRACTOR NAME:	XXXXXXXXXXXX
CONTRACTOR NO:	XXXXXXXXXXXX
QUALIFIER NAME:	XXXXXXXXXXXX
ADDRESS:	XXXXXXXXXXXX
	XXXXXXXXXXXX

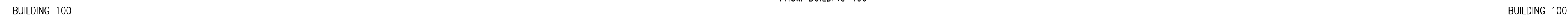
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FIRE ALARM
FLOORPLAN - BUILDING 300

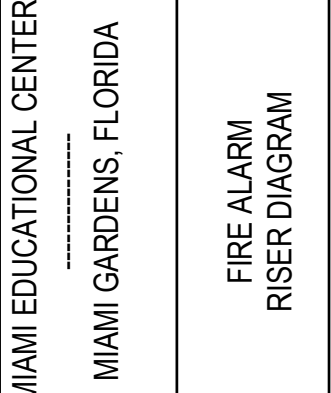
FA-04



1. PROVIDE DEDICATED 120 VAC, 20A CIRCUIT FOR FIRE ALARM CONTROL PANEL. CIRCUIT DISCONNECT SHALL BE RED, LABELED "FIRE ALARM CIRCUIT", LOCKABLE, AND MECHANICALLY SECURED TO PREVENT TAMPERING. IDENTIFY CIRCUIT NUMBER AND DISCONNECT LOCATION AT THE PANEL. COORDINATE PANEL MOUNTING LOCATION WITH OWNER AND ELECTRICAL CONTRACTOR PRIOR TO INSTALLATION.
2. RISER IS A SCHEMATIC REPRESENTATION OF THE SYSTEM ARCHITECTURE IN A BUILDING CROSS-SECTION. IT IS NOT INTENDED TO SHOW ACTUAL WIRE ROUTING OR PENETRATIONS. REFER TO FLOOR PLANS FOR CIRCUIT ROUTING.

Designed by:	Date:
Drawn by:	Scale: NTS
Approved By:	Project:

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FA-05

ONE-LINE RISER DIAGRAM

FIRE ALARM WIRE CODE CHART								
LABEL	DESCRIPTION	TYPE	AWG	FPL	FPLR	FPLP	THHN	TFFN
AC	120VAC POWER WIRING (BY OTHERS)	3 COND. SOLID	12				X	
A	P-LINK RS-485 COMMUNICATION	2 COND. SOLID	18	X	X	X		
	P-LINK 24VDC POWER	2 COND. SOLID	18	X	X	X		
B	NOTIFICATION APPLIANCE (HORN/STROBE)	2 COND. SOLID	16	X	X	X	X	X
C	DACT / TELEPHONE COMMUNICATION	2 COND. SOLID	22-24	X	X	X		
CR	EMERGENCY CONTROL FUNCTION	2 COND. SOLID	18	X	X	X		
D	DOOR HOLDER	2 COND. SOLID	14	X	X	X	X	X
L	SIGNALING LINE CIRCUIT (SLC)	2 COND. SOLID, UNSHIELDED	18	X	X	X		
P	24VDC POWER	2 COND. SOLID	16	X	X	X		
R	RELAY	2 COND. SOLID	18	X	X	X		
S	NOTIFICATION APPLIANCE (SPEAKER)	2 COND. SOLID, UNSHIELDED	16	X	X	X		
T	REMOTE LIGHT/TEST	3 COND. SOLID	18	X	X	X		
V	SYNC & TROUBLE SUPERVISION	2 COND. SOLID	18	X	X	X		
Z	INITIATING DEVICE CIRCUIT (IDC)	2 COND. SOLID, UNSHIELDED	18	X	X	X		

NAC-1 PART BATTERY CALCULATIONS							
FOR: 0 MIAMI GARDENS, FL							
HOURS OF SUPERVISION:				24	HOURS		
MINUTES OF ALARM:				15	MINUTES		
PANEL: PSN-1000							
QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current	
1	PSN-1000	FIRE ALARM NAC PANEL	0.06000	0.20000	0.060000	0.200000	
TOTAL:					0.060000	0.200000	
NOTIFICATION DEVICES:							
TOTAL	PART NUMBER	DESCRIPTION	CD	DEVICE SUPERVISORY CURRENT	DEVICE ALARM CURRENT	TOTAL SUPERVISORY CURRENT	TOTAL ALARM CURRENT
1	PBA2410	WALL MOUNTED BELL WP, RED	BELL	0.000000	0.17000	0.00000	0.17000
8	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	15CD	0.000000	0.01700	0.00000	0.13600
1	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	30CD	0.000000	0.02200	0.00000	0.02200
12	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	75CD	0.000000	0.05300	0.00000	0.63600
4	PE-ST	WALL MOUNTED STROBE ONLY, RED, FIRE	15CD	0.000000	0.01700	0.00000	0.06800
2	SPKSTR-24CLP	WALL MOUNTED SPEAKER STROBE WP, RED, FIRE	75CD	0.000000	0.16700	0.00000	0.33400
						0.00000	1.36600
SUPERVISORY:							
PANEL:				0.06000	AMPS		
PERIPHERAL:				0.00000	AMPS		
SUB-TOTAL:				0.06000	AMPS		
X HOURS OF SUPERVISORY:				24.00000	HOURS		
SUB-TOTAL:				1.44000	AMP HOURS		
ALARM:							
PANEL:				0.20000	AMPS		
PERIPHERAL:				1.36600	AMPS		
SUB-TOTAL:				1.56600	AMPS		
X MINUTES OF ALARM:				0.25000	HOURS		
SUB-TOTAL:				0.39150	AMP HOURS		
TOTALS:							
TOTAL SUPERVISORY:				1.44000	AMP HOURS		
TOTAL ALARM:				0.39150	AMP HOURS		
TOTAL:				1.83150	AMP HOURS		
SAFETY FACTOR(25%)				0.45787	AMP HOURS		
Batteries Needed - 1 Set of:				2.28937	AMP HOURS		
Batteries Supplied - 1 Set of:				7	AMP HOURS		

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)				16	Resistance:			12 AWG	2.01
MAXIMUM CIRCUIT CURRENT (A)				3				14 AWG	3.19
Current shown in calculations is RMS current at 16 volts.								16 AWG	5.08
Circuit Number:		N7							
Panel:		PSN-1000		Input Voltage = 20.4					
Notification Circuit			Wire	Current	Total Distance	Wire Size	Resistance	Voltage	From Baseline
Device Number	Part Number	Candela	Distance (in Feet)	(in Amps)	(in feet)	(AWG)	(Ohms)	Drop	Voltage
N7-01	PE-SPST	30CD	32.86	0.0220	33	16	0.3339	0.1335	20.2665
N7-02	PE-SPST	15CD	27.29	0.0170	60	16	0.2773	0.1062	20.1603
N7-03	PE-SPST	15CD	11.74	0.0170	72	16	0.1193	0.0457	20.1146
N7-04	SPKSTR-24CLP	75CD	26.78	0.1670	99	16	0.2721	0.0634	20.0512
N7-05	PE-SPST	15CD	18.43	0.0170	117	16	0.1872	0.0717	19.9795
N7-06	PE-SPST	75CD	42.26	0.0530	159	16	0.4294	0.1490	19.8305
N7-07	PE-SPST	75CD	11.74	0.0530	171	16	0.1193	0.0414	19.7891
N7-08	PE-SPST	75CD	26.91	0.0530	198	16	0.2734	0.0949	19.6942
ELR			0	0.0010	198	16	0.0000	0.0000	19.6942
Totals:			198	0.400			2.0118	0.7058	19.6942
Total Devices:			9						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS										
MINIMUM UL RATED VOLTAGE (V)		16		Resistance:		12 AWG		2.01		
MAXIMUM CIRCUIT CURRENT (A)		3				14 AWG		3.19		
Current shown in calculations is RMS current at 16 volts.						16 AWG		5.08		
Circuit Number:		N8		Input Voltage =						20.4
Panel:		PSN-1000								
Notification Circuit Device Number	Part Number	Candela	Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage	
N8-01	PE-SPST	15CD	150	0.0170	150	16	1.5240	0.5502	19.8498	
N8-02	SPKSTR-24CLP	75CD	16.23	0.1670	166	16	0.1649	0.0320	19.8178	
N8-03	PE-SPST	75CD	48.06	0.0530	214	16	0.4883	0.1504	19.6675	
N8-04	PE-SPST	75CD	11.74	0.0530	226	16	0.1193	0.0367	19.6307	
N8-05	PE-SPST	15CD	49.89	0.0170	276	16	0.5069	0.1744	19.4563	
N8-06	PE-SPST	75CD	48.35	0.0530	324	16	0.4912	0.1513	19.3050	
ELR			0	0.0010	324	16	0.0000	0.0000	19.3050	
Totals:			324	0.361			3.2946	1.0950	19.3050	
Total Devices:			7							

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS										
MINIMUM UL RATED VOLTAGE (V)			16	Resistance:			12 AWG	2.01		
MAXIMUM CIRCUIT CURRENT (A)			3				14 AWG	3.19		
Current shown in calculations is RMS current at 16 volts.							16 AWG	5.08		
Circuit Number:			N11							
Panel:			PSN-1000		Input Voltage =			20.4		
Notification Circuit			Wire	Current	Total Distance	Wire Size	Resistance	Voltage	From Baseline	
Device Number		Part Number	Candela	(in Feet)	(in Amps)	(in feet)	(AWG)	(Ohms)	Drop	Voltage
N11-01		PBA2410	BELL	200	0.1700	200	16	2.0320	0.3475	20.0525
ELR				0	0.0010	200	16	0.0000	0.0000	20.0525

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)				16	Resistance:		12 AWG	2.01	
MAXIMUM CIRCUIT CURRENT (A)				3			14 AWG	3.19	
Current shown in calculations is RMS current at 16 volts.							16 AWG	5.08	
Circuit Number: N9									
Panel: PSN-1000				Input Voltage =		20.4			
Notification Circuit			Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
Device Number	Part Number	Candela							
N9-01	PE-SPST	75CD	42.61	0.0530	43	16	0.4329	0.1061	20.2939
N9-02	PE-SPST	75CD	11.74	0.0530	54	16	0.1193	0.0229	20.2710
N9-03	PE-SPST	75CD	29.91	0.0530	84	16	0.3039	0.0583	20.2127
N9-04	PE-ST	15CD	42.31	0.0170	127	16	0.4299	0.0980	20.1147
N9-05	PE-ST	15CD	15.55	0.0170	142	16	0.1580	0.0360	20.0787
N9-06	PE-ST	15CD	19.64	0.0170	162	16	0.1995	0.0455	20.0332
N9-07	PE-SPST	15CD	18.27	0.0170	180	16	0.1856	0.0423	19.9908
N9-08	PE-ST	15CD	17.96	0.0170	198	16	0.1825	0.0416	19.9492
ELR			0	0.0010	198	16	0.0000	0.0000	19.9492
Totals:			198	0.245			2.0116	0.4508	19.9492
Total Devices:			9						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)				16	Resistance:		12 AWG	2.01	
MAXIMUM CIRCUIT CURRENT (A)				3			14 AWG	3.19	
Current shown in calculations is RMS current at 16 volts.							16 AWG	5.08	
Circuit Number: N10									
Panel: PSN-1000						Input Voltage =		20.4	
Notification Circuit			Wire	Current	Total Distance	Wire Size	Resistance	Voltage	From Baseline
Device Number	Part Number	Candela	Distance (in Feet)	(in Amps)	(in feet)	(AWG)	(Ohms)	Drop	Voltage
N10-01	PE-SPST	15CD	130	0.0170	130	16	1.3208	0.2562	20.1438
N10-02	PE-SPST	75CD	46	0.0530	176	16	0.4674	0.0659	20.0779
N10-03	PE-SPST	75CD	11.74	0.0530	188	16	0.1193	0.0168	20.0610
N10-04	PE-SPST	15CD	55.95	0.0170	244	16	0.5685	0.1006	19.9604
N10-05	PE-SPST	75CD	45.37	0.0530	289	16	0.4610	0.0650	19.8954
ELR			0	0.0010	289	16	0.0000	0.0000	19.8954
Totals:			289	0.194			2.9368	0.5046	19.8954
Total Devices:			6						

AMPLIFIER-1 BATTERY CALCULATIONS							
FOR: MIAMI GARDENS, FL							
HOURS OF SUPERVISION:				24	HOURS		
MINUTES OF ALARM:				15	MINUTES		
AMPLIFIER-1							
QTY	PART NUMBER	DESCRIPTION		Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
1	SCA-10070	SINGLE CHANNEL AMPLIFIER 100W		0.06	0.766	0.060000	0.766000
TOTAL:							
SPEAKERS COUNTS							
TOTAL	PART NUMBER	DESCRIPTION		DEVICE SUPERVISORY CURRENT	DEVICE ALARM CURRENT	TOTAL SUPERVISORY CURRENT	TOTAL ALARM CURRENT
21	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE		QUANTITIES FOR REFERENCE ONLY. CALCULATIONS BASED ON WORST CASE SCENARIO			
2	SPKSTR-24CLP	WALL MOUNTED SPEAKER STROBE WP, RED, FIRE					
TOTAL:							
SUPERVISORY:							
PANEL:				0.060000	AMPS		
X HOURS OF SUPERVISORY:				24.0000	HOURS		
SUB-TOTAL:				1.440000	AMP HOURS		
ALARM:							
PANEL:				0.766000	AMPS		
X MINUTES OF ALARM:				0.25000	HOURS		
SUB-TOTAL:				0.191500	AMP HOURS		
TOTALS:							
TOTAL SUPERVISORY:				1.440000	AMP HOURS		
TOTAL ALARM:				0.191500	AMP HOURS		
TOTAL:				1.631500	AMP HOURS		
TOTAL PLUS SAFETY FACTOR(25%)				2.03937	AMP HOURS		
Batteries Supplied - 1 Set of:				7.00000	AMP HOURS		

NAC-2 PART BATTERY CALCULATIONS															
FOR: MIAMI GARDENS, FL															
HOURS OF SUPERVISION:					24		HOURS								
MINUTES OF ALARM:					15		MINUTES								
PANEL: PSN-1000															
QTY		PART NUMBER		DESCRIPTION		Device Supervisory Current		Device Alarm Current		Total Supervisory Current		Total Alarm Current			
1		PSN-1000		FIRE ALARM NAC PANEL		0.06000		0.20000		0.06000		0.20000			
TOTAL:						0.06000		0.20000		0.06000		0.20000			
NOTIFICATION DEVICES:															
TOTAL		PART NUMBER		DESCRIPTION		CD		DEVICE SUPERVISORY CURRENT		DEVICE ALARM CURRENT		TOTAL SUPERVISORY CURRENT		TOTAL ALARM CURRENT	
8		PE-SPST		WALL MOUNTED SPEAKER STROBE, RED, FIRE		15CD		0.000000		0.01700		0.00000		0.13600	
2		PE-SPST		WALL MOUNTED SPEAKER STROBE, RED, FIRE		30CD		0.000000		0.02200		0.00000		0.04400	
16		PE-SPST		WALL MOUNTED SPEAKER STROBE, RED, FIRE		75CD		0.000000		0.05300		0.00000		0.84800	
9		PE-ST		WALL MOUNTED STROBE ONLY, RED, FIRE		15CD		0.000000		0.01700		0.00000		0.15300	
2		SPKSTR-24CLP		WALL MOUNTED SPEAKER STROBE WP, RED, FIRE		75CD		0.000000		0.16700		0.00000		0.33400	
				INSERT PID				0.000000		0.00000		0.00000		0.00000	
				SUPERVISORY:								0.00000		1.51500	
				PANEL:				0.06000		AMPS					
				PERIPHERAL:				0.00000		AMPS					
				SUB-TOTAL:				0.06000		AMPS					
				X HOURS OF SUPERVISORY:				24.00000		HOURS					
				SUB-TOTAL:				1.44000		AMP HOURS					
				ALARM:											
				PANEL:				0.20000		AMPS					
				PERIPHERAL:				1.51500		AMPS					
				SUB-TOTAL:				1.71500		AMPS					
				X MINUTES OF ALARM:				0.25000		HOURS					
				SUB-TOTAL:				0.42875		AMP HOURS					
				TOTALS:											
				TOTAL SUPERVISORY:				1.44000		AMP HOURS					
				TOTAL ALARM:				0.42875		AMP HOURS					
				TOTAL:				1.86875		AMP HOURS					
				SAFETY FACTOR(25%)				0.46719		AMP HOURS					
				Batteries Needed - 1 Set of:				2.33594		AMP HOURS					
				Batteries Supplied - 1 Set of:				7		AMP HOURS					

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)		16		Resistance:		12 AWG		2.01	
MAXIMUM CIRCUIT CURRENT (A)		3				14 AWG		3.19	
						16 AWG		5.08	
Current shown in calculations is RMS current at 16 volts.									
Circuit Number:		N13							
Panel:		PSN-1000				Input Voltage =		20.4	
Notification Circuit Device Number	Part Number	Candela	Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
N13-01	PE-SPST	75CD	48.94	0.0530	49	16	0.4972	0.1472	20.2528
N13-02	PE-SPST	15CD	34.42	0.0170	83	16	0.3497	0.0976	20.1553
N13-03	PE-SPST	75CD	36.16	0.0530	120	16	0.3674	0.0893	20.0660
N13-04	PE-ST	15CD	38.39	0.0170	158	16	0.3900	0.1088	19.9572
N13-05	PE-SPST	15CD	20.18	0.0170	178	16	0.2050	0.0572	19.9000
N13-06	PE-ST	15CD	13.38	0.0170	191	16	0.1359	0.0379	19.8620
N13-07	PE-ST	15CD	19.31	0.0170	211	16	0.1962	0.0547	19.8073
N13-08	PE-ST	15CD	21.71	0.0170	232	16	0.2206	0.0615	19.7457
N13-09	PE-ST	15CD	14.77	0.0170	247	16	0.1501	0.0419	19.7039
N13-10	PE-ST	15CD	29.04	0.0170	276	16	0.2950	0.0823	19.6216
N13-11	PE-SPST	75CD	11.83	0.0530	288	16	0.1202	0.0292	19.5924
ELR			0	0.0010	288	16	0.0000	0.0000	19.5924
Totals:			288	0.296			2.9274	0.8076	19.5924
Total Devices:			12						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)		16		Resistance:		12 AWG		2.01	
MAXIMUM CIRCUIT CURRENT (A)		3				14 AWG		3.19	
						16 AWG		5.08	
Current shown in calculations is RMS current at 16 volts.									
Circuit Number:		N14							
Panel:		PSN-1000				Input Voltage =		20.4	
Notification Circuit Device Number	Part Number	Candela	Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
N14-01	PE-SPST	15CD	160	0.0170	160	16	1.6256	0.3706	20.0294
N14-02	PE-SPST	75CD	46.29	0.0530	206	16	0.4703	0.0823	19.9471
N14-03	PE-SPST	75CD	26.09	0.0530	232	16	0.2651	0.0464	19.9007
N14-04	PE-SPST	15CD	11.76	0.0170	244	16	0.1195	0.0252	19.8755
N14-05	PE-ST	15CD	14.15	0.0170	258	16	0.1438	0.0303	19.8451
N14-06	PE-ST	15CD	17.58	0.0170	276	16	0.1786	0.0377	19.8074
N14-07	PE-SPST	75CD	45.65	0.0530	322	16	0.4638	0.0812	19.7263
ELR			0	0.0010	322	16	0.0000	0.0000	19.7263
Totals:			322	0.228			3.2666	0.6737	19.7263
Total Devices:			8						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIOIBLE VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)		16		Resistance:		12 AWG		2.01	
MAXIMUM CIRCUIT CURRENT (A)		3				14 AWG		3.19	
						16 AWG		5.08	
Current shown in calculations is RMS current at 16 volts.									
Circuit Number:		N15							
Panel:		PSN-1000				Input Voltage =		20.4	
Notification Circuit	Part Number	Candela	Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
N15-01	PE-SPST	75CD	32.15	0.0530	32	16	0.3266	0.1699	20.2301
N15-02	PE-SPST	75CD	11.74	0.0530	44	16	0.1193	0.0557	20.1744
N15-03	PE-SPST	75CD	49.74	0.0530	94	16	0.5054	0.2360	19.9384
N15-04	PE-SPST	15CD	33.92	0.0170	128	16	0.3446	0.1733	19.7651
N15-05	PE-SPST	75CD	35.66	0.0530	163	16	0.3623	0.1692	19.5959
N15-06	PE-SPST	75CD	49.86	0.0530	213	16	0.5066	0.2366	19.3593
N15-07	PE-SPST	75CD	11.74	0.0530	225	16	0.1193	0.0557	19.3036
N15-08	PE-SPST	15CD	49.28	0.0170	274	16	0.5007	0.2518	19.0518
N15-09	SPKSTR-24CLP	75CD	17.24	0.1670	291	16	0.1752	0.0618	18.9899
ELR			0	0.0010	291	16	0.0000	0.0000	18.9899
Totals:			291	0.520			2.9599	1.4101	18.9899
Total Devices:			10						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)		16			Resistance:		12 AWG	2.01	
MAXIMUM CIRCUIT CURRENT (A)		3					14 AWG	3.19	
							16 AWG	5.08	
Current shown in calculations is RMS current at 16 volts.									
Circuit Number:		N16							
Panel:		PSN-1000				Input Voltage =		20.4	
Notification Circuit Device Number	Part Number	Candela	Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
N16-01	PE-SPST	75CD	185	0.0530	185	16	1.8796	0.8928	19.5072
N16-02	PE-SPST	75CD	11.74	0.0530	197	16	0.1193	0.0503	19.4569
N16-03	PE-SPST	75CD	59.12	0.0530	256	16	0.6007	0.2535	19.2034
N16-04	PE-SPST	75CD	11.74	0.0530	268	16	0.1193	0.0503	19.1530
N16-05	PE-SPST	30CD	36.9	0.0220	305	16	0.3749	0.1698	18.9832
N16-06	PE-ST	15CD	20.8	0.0170	325	16	0.2113	0.0968	18.8864
N16-07	PE-SPST	15CD	19.77	0.0170	345	16	0.2009	0.0920	18.7944
N16-08	PE-SPST	15CD	11.74	0.0170	357	16	0.1193	0.0546	18.7398
N16-09	PE-SPST	30CD	27.68	0.0220	384	16	0.2812	0.1274	18.6124
N16-10	SPKSTR-24CLP	75CD	29.43	0.1670	414	16	0.2990	0.0921	18.5203
ELR			0	0.0010	414	16	0.0000	0.0000	18.5203
Totals:			414	0.475			4.2054	1.8797	18.5203
Total Devices:			11						

FOR:

MIAMI GARDENS, FL

AMPLIFIER-2 BATTERY CALCULATIONS

HOURS OF SUPERVISION:

24

HOURS

MINUTES OF ALARM:

15

MINUTES

AMPLIFIER-2

QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
1	SCA-10070	SINGLE CHANNEL AMPLIFIER 100W	0.06	0.766	0.060000	0.766000
TOTAL:						

SPEAKERS COUNTS

TOTAL	PART NUMBER	DESCRIPTION	DEVICE SUPERVISORY CURRENT	DEVICE ALARM CURRENT	TOTAL SUPERVISORY CURRENT	TOTAL ALARM CURRENT
26	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	QUANTITIES FOR REFERENCE ONLY. CALCULATIONS BASED ON WORST CASE SCENARIO			
2	SPKSTR-24CLP	WALL MOUNTED SPEAKER STROBE WP, RED, FIRE				
TOTAL:						

SUPERVISORY:

PANEL:

X HOURS OF SUPERVISORY:

SUB-TOTAL:

0.060000

24.0000

1.440000

AMPS

HOURS

AMP HOURS

ALARM:

PANEL:

X MINUTES OF ALARM:

SUB-TOTAL:

0.766000

0.2500

0.191500

AMPS

HOURS

AMP HOURS

TOTALS:

TOTAL SUPERVISORY:

TOTAL ALARM:

TOTAL:

1.440000

0.191500

1.631500

AMP HOURS

AMP HOURS

AMP HOURS

TOTAL PLUS SAFETY FACTOR(25%)

Batteries Supplied - 1 Set of:

2.03937

7.00000

AMP HOURS

AMP HOURS

dB LOSS CALCULATION FOR SPEAKER CIRCUITS									
SYSTEM VOLTAGE (V)		70.7				12 AWG		2.01	
WIRED USED		16 AWG				Resistance:		3.19	
RESISTANCE (ohm/ft)		5.08				16 AWG		5.08	
MAXIMUM dB LOSS PERMITTED		3				18 AWG		8.08	
CIRCUIT TAG	DISTANCE			TOTAL WATTS	Voltage @ end	Watt @ end	Maximun dB Loss	Max Ckt Lenght	
	(FT)	5W	1W	(W)	(V)	(W)	(dB)	(ft)	
S9	900.15	26	2	15	68.81	14.21	-0.24	13531	
S10	0	0	0	0	0.00	0.00	0.00	0	
S11	0	0	0	0	0.00	0.00	0.00	0	
S12	0	0	0	0	0.00	0.00	0.00	0	
S13	0	0	0	0	0.00	0.00	0.00	0	
S14	0	0	0	0	0.00	0.00	0.00	0	
S15	0	0	0	0	0.00	0.00	0.00	0	
S16	0	0	0	0	0.00	0.00	0.00	0	

[illegible]

Designed by:	Date:
Drawn by:	Scale: NTS
Approved By:	Project:

CONTRACTOR NAME: XXXXXXXXXXXXXXXXXX
CONTRACTOR NO: XXXXXXXXXXXXXXXXXX
QUALIFIER NAME: XXXXXXXXXXXXXXXXXX
ADDRESS: XXXXXXXXXXXXXXXXXX

 **FIRE ALARM**
DESIGN CO.

FIRE ALARM DESIGN CO.
PO BOX 3394
BURLINGTON, VT 05408
(802)734-8742

MIAMI EDUCATIONAL CENTER

MIAMI GARDENS, FLORIDA

FIRE ALARM

CALCULATIONS - BUILDING 100 NAC-2 AND AMP-2

FA-08

NAC-3 PART BATTERY CALCULATIONS							
FOR: MIAMI GARDENS, FL		HOURS OF SUPERVISION: MINUTES OF ALARM:		24 15	HOURS MINUTES		
PANEL: PSN-1000							
QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current	
1	PSN-1000	FIRE ALARM NAC PANEL	0.06000	0.20000	0.06000	0.20000	
TOTAL:			0.060000	0.200000	0.060000	0.200000	
NOTIFICATION DEVICES:							
TOTAL	PART NUMBER	DESCRIPTION	CD	DEVICE SUPERVISORY CURRENT	DEVICE ALARM CURRENT	TOTAL SUPERVISORY CURRENT	TOTAL ALARM CURRENT
1	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	110CD	0.000000	0.07900	0.00000	0.07900
6	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	15CD	0.000000	0.01700	0.00000	0.10200
1	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	30CD	0.000000	0.02200	0.00000	0.02200
15	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	75CD	0.000000	0.05300	0.00000	0.73600
19	PE-ST	WALL MOUNTED STROBE ONLY, RED, FIRE	15CD	0.000000	0.01700	0.00000	0.32300
3	SPKSTR-24CLP	WALL MOUNTED SPEAKER STROBE WP, RED, FIRE	75CD	0.000000	0.16700	0.00000	0.50100
						0.00000	1.82200
SUPERVISORY:							
PANEL:				0.06000	AMPS		
PERIPHERAL:				0.00000	AMPS		
SUB-TOTAL:				0.06000	AMPS		
X HOURS OF SUPERVISORY:				24.00000	HOURS		
SUB-TOTAL:				1.44000	AMP HOURS		
ALARM:							
PANEL:				0.20000	AMPS		
PERIPHERAL:				1.82200	AMPS		
SUB-TOTAL:				2.02200	AMPS		
X MINUTES OF ALARM:				0.25000	HOURS		
SUB-TOTAL:				0.50550	AMP HOURS		
TOTALS:							
TOTAL SUPERVISORY:				1.44000	AMP HOURS		
TOTAL ALARM:				0.50550	AMP HOURS		
TOTAL:				1.94550	AMP HOURS		
SAFETY FACTOR(25%)				0.48638	AMP HOURS		
Batteries Needed - 1 Set of:				2.43187	AMP HOURS		
Batteries Supplied - 1 Set of:				7	AMP HOURS		

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)				16	Resistance:			12 AWG	2.01
MAXIMUM CIRCUIT CURRENT (A)				3				14 AWG	3.19
								16 AWG	5.08
Current shown in calculations is RMS current at 16 volts.									
Circuit Number:		N19							
Panel:		PSN-1000			Input Voltage =			20.4	
Notification Circuit			Wire	Current	Total Distance	Wire Size	Resistance	Voltage	From Baseline
Device Number	Part Number	Candela	Distance (in Feet)	(in Amps)	(in feet)	(AWG)	(Ohms)	Drop	Voltage
N19-01	PE-SPST	15CD	31.57	0.0170	32	16	0.3208	0.1700	20.2300
N19-02	PE-SPST	30CD	29.52	0.0220	61	16	0.2999	0.1524	20.0776
N19-03	PE-SPST	110CD	36.18	0.0790	97	16	0.3676	0.1658	19.9119
N19-04	PE-ST	15CD	38.37	0.0170	136	16	0.3898	0.2000	19.7119
N19-05	PE-ST	15CD	28.03	0.0170	164	16	0.2848	0.1461	19.5658
N19-06	PE-SPST	75CD	49.43	0.0530	213	16	0.5022	0.2396	19.3262
N19-07	PE-SPST	75CD	11.74	0.0530	225	16	0.1193	0.0569	19.2693
N19-08	PE-ST	15CD	48.32	0.0170	273	16	0.4909	0.2518	19.0175
N19-09	PE-ST	15CD	15.5	0.0170	289	16	0.1575	0.0808	18.9367
N19-10	PE-SPST	75CD	49.48	0.0530	338	16	0.5027	0.2398	18.6969
N19-11	SPKSTR-24CLP	75CD	24.78	0.1670	363	16	0.2518	0.0914	18.6055
N19-12	PE-SPST	15CD	15.45	0.0170	378	16	0.1570	0.0805	18.5250
ELR			0	0.0010	378	16	0.0000	0.0000	18.5250
Totals:			378	0.530			3.8442	1.8750	18.5250
Total Devices:			13						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)			16	Resistance:			12 AWG	2.01	
MAXIMUM CIRCUIT CURRENT (A)			3				14 AWG	3.19	
							16 AWG	5.08	
Current shown in calculations is RMS current at 16 volts.									
Circuit Number: N20									
Panel: PSN-1000			Input Voltage =						20.4
Notification Circuit Device Number	Part Number	Candela	Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
N20-01	PE-SPST	75CD	230	0.0530	230	16	2.3368	0.8155	19.5845
N20-02	PE-ST	15CD	43.95	0.0170	274	16	0.4465	0.1482	19.4362
N20-03	PE-ST	15CD	16.15	0.0170	290	16	0.1641	0.0545	19.3817
N20-04	PE-SPST	75CD	43.38	0.0530	333	16	0.4407	0.1305	19.2513
N20-05	PE-SPST	75CD	11.74	0.0530	345	16	0.1193	0.0353	19.2160
N20-06	PE-ST	15CD	44.56	0.0170	390	16	0.4527	0.1503	19.0657
N20-07	PE-ST	15CD	15.9	0.0170	406	16	0.1615	0.0536	19.0120
N20-08	PE-SPST	15CD	11.74	0.0170	417	16	0.1193	0.0396	18.9724
N20-09	PE-SPST	75CD	44.88	0.0530	462	16	0.4560	0.1350	18.8375
N20-10	PE-ST	15CD	25.67	0.0170	488	16	0.2608	0.0866	18.7509
N20-11	PE-SPST	15CD	15.08	0.0170	503	16	0.1532	0.0509	18.7000
N20-12	PE-ST	15CD	11.27	0.0170	514	16	0.1145	0.0380	18.6620
ELR			0	0.0010	514	16	0.0000	0.0000	18.6620
Totals:			514	0.349			5.2255	1.7380	18.6620
Total Devices:			13						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)			16	Resistance:			12 AWG	2.01	
MAXIMUM CIRCUIT CURRENT (A)			3				14 AWG	3.19	
							16 AWG	5.08	
Current shown in calculations is RMS current at 16 volts.									
Circuit Number:		N21							
Panel:		PSN-1000							
							Input Voltage =	20.4	
Notification Circuit	Part Number	Candela	Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
Device Number									
N21-01	PE-ST	15CD	19.21	0.0170	19	16	0.1952	0.0837	20.3163
N21-02	PE-ST	15CD	20.66	0.0170	40	16	0.2099	0.0865	20.2298
N21-03	PE-ST	15CD	30.15	0.0170	70	16	0.3063	0.1262	20.1036
N21-04	PE-SPST	75CD	48.27	0.0530	118	16	0.4904	0.1844	19.9192
N21-05	PE-SPST	75CD	11.74	0.0530	130	16	0.1193	0.0448	19.8743
N21-06	PE-ST	15CD	49.64	0.0170	180	16	0.5043	0.2078	19.6665
N21-07	PE-ST	15CD	15.5	0.0170	195	16	0.1575	0.0649	19.6017
N21-08	PE-SPST	75CD	48.15	0.0530	243	16	0.4892	0.1839	19.4177
N21-09	SPKSTR-24CLP	75CD	23.35	0.1670	267	16	0.2372	0.0622	19.3556
N21-10	PE-SPST	15CD	17.05	0.0170	284	16	0.1732	0.0714	19.2842
ELR			0	0.0010	284	16	0.0000	0.0000	19.2842
Totals:			284	0.429			2.8826	1.1158	19.2842
Total Devices:			11						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS									
MINIMUM UL RATED VOLTAGE (V)			16		Resistance:			12 AWG	2.01
MAXIMUM CIRCUIT CURRENT (A)			3					14 AWG	3.19
								16 AWG	5.08
Current shown in calculations is RMS current at 16 volts.									
Circuit Number:		N22							
Panel:		PSN-1000							
								Input Voltage =	20.4
Notification Circuit Device Number	Part Number	Candela	Wire Distance (in Feet)	Current (in Amps)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
N22-01	PE-SPST	75CD	210	0.0530	210	16	2.1336	1.1052	19.2948
N22-02	PE-ST	15CD	42.29	0.0170	252	16	0.4297	0.2153	19.0795
N22-03	PE-ST	15CD	16.76	0.0170	269	16	0.1703	0.0853	18.9942
N22-04	PE-SPST	75CD	44.57	0.0530	314	16	0.4528	0.2106	18.7837
N22-05	PE-SPST	75CD	11.74	0.0530	325	16	0.1193	0.0555	18.7282
N22-06	PE-ST	15CD	43.38	0.0170	369	16	0.4407	0.2208	18.5074
N22-07	PE-ST	15CD	15.73	0.0170	384	16	0.1598	0.0801	18.4273
N22-08	PE-SPST	15CD	11.74	0.0170	396	16	0.1193	0.0598	18.3676
N22-09	PE-SPST	75CD	44.88	0.0530	441	16	0.4560	0.2120	18.1555
N22-10	PE-SPST	75CD	11.74	0.0530	453	16	0.1193	0.0555	18.1001
N22-11	SPKSTR-24CLP	75CD	27.55	0.1670	480	16	0.2799	0.0982	18.0018
ELR			0	0.0010	480	16	0.0000	0.0000	18.0018
Totals:			480	0.518			4.8807	2.3982	18.0018
Total Devices:			12						

FOR:

MIAMI GARDENS, FL

AMPLIFIER-3 BATTERY CALCULATIONS

HOURS OF SUPERVISION:24HOURS

MINUTES OF ALARM:15MINUTES

AMPLIFIER-3

QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
1	SCA-10070	SINGLE CHANNEL AMPLIFIER 100W	0.06	0.766	0.060000	0.766000

TOTAL:

SPEAKERS COUNTS

TOTAL	PART NUMBER	DESCRIPTION	DEVICE SUPERVISORY CURRENT	DEVICE ALARM CURRENT	TOTAL SUPERVISORY CURRENT	TOTAL ALARM CURRENT
23	PE-SPST	WALL MOUNTED SPEAKER STROBE, RED, FIRE	QUANTITIES FOR REFERENCE ONLY. CALCULATIONS BASED ON WORST CASE SCENARIO			
3	SPKSTR-24CLP	WALL MOUNTED SPEAKER STROBE WP, RED, FIRE				

TOTAL:

SUPERVISORY:			
PANEL:		0.060000	AMPS
X HOURS OF SUPERVISORY:		24.0000	HOURS
SUB-TOTAL:		1.440000	AMP HOURS
ALARM:			
PANEL:		0.766000	AMPS
X MINUTES OF ALARM:		0.25000	HOURS
SUB-TOTAL:		0.191500	AMP HOURS
TOTALS:			
TOTAL SUPERVISORY:		1.440000	AMP HOURS
TOTAL ALARM:		0.191500	AMP HOURS
TOTAL:		1.631500	AMP HOURS
TOTAL PLUS SAFETY FACTOR(25%)			
Batteries Supplied - 1 Set of:		2.03937	AMP HOURS
		7.00000	AMP HOURS