



# NATURAL STONE

## 148 JARCO DRIVE FUQUAY-VARINA, NORTH CAROLINA 27526

# FIRE ALARM SYSTEM



NATURAL STONE  
148 JARCO DRIVE  
FUQUAY-VARINA, NC 27526  
FIRE ALARM SYSTEM

J & D SPRINKLER COMPANY  
315 WEST MAIN STREET  
CLAYTON, N. CAROLINA 27520  
919-553-2356



SHOP DRAWINGS  
PREPARED BY:  
JRH FIRE DESIGN & CONSULTING

INSTALLATION BY:  
J & D SPRINKLER CO. INC.  
NO SPECIAL RESTRICTED FIRE ALARM  
LOW VOLTAGE CLASSIFICATION LICENSE  
# SP 141-V-3253  
QUALIFIER: MARC LAKEY

JRH JOB # 21-1214

REVISION: 0 DATE: 04/02/2021

INITIAL RELEASE

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

REVISION: DATE:

### FIRE ALARM SYSTEM SYMBOL GUIDANCE (ADAPTED FROM NFPA 170 2018)

- THE INTENTION OF THIS GUIDANCE IS TO PROVIDE GREATER CLARITY TO FIRE ALARM SYSTEM DESIGN AND SHOP DRAWINGS.
- IT IS REQUESTED THAT FIRE ALARM DEVICES BE SHOWN ON THE CONDUIT SHEET AS CONNECTED TO BEING REPRESENTED ON SHEETS WITH OTHER ELECTRICAL SYSTEMS.
- PLEASE USE THE SYMBOLS SHOWN IN THE CHART IN RELAY TO THE CORRESPONDING SYMBOLS AS SHOWN IN NFPA 170.
- FOR SYMBOLS NOT SHOWN IN CHART BELOW, PLEASE USE THE SYMBOLS SHOWN IN NFPA 170.
- LETTERING HEIGHT SHALL BE AT LEAST 1/8" ON PLANS (SYMBOLS BELOW ARE TO SCALE).
- NEW EQUIPMENT SHALL BE SHOWN USING A SOLID LINE. EXISTING EQUIPMENT SHALL BE SHOWN USING A DASHED LINE. EQUIPMENT TO BE DEMOLISHED SHALL BE NOTED ACCORDINGLY AND SPECIFICALLY.

SYMBOLS	MODELS	DEVICE
	ES-50X	FIRE LITE ADDRESSABLE FIRE ALARM PANEL
	SD365	ADDRESSABLE PHOTO SMOKE DETECTOR
	MMF-300	ADDRESSABLE MONITOR MODULE
	BG-12LX	ADDRESSABLE PULL STATION
	HWF2V-COM	DUAL PATH COMMERCIAL FIRE ALARM COMMUNICATOR
	PZRHK	WEATHERPROOF HORN/STROBE, RED
	BY OTHERS	SPRINKLER WATER FLOW SWITCH
	BY OTHERS	SPRINKLER TAMPERS SWITCH
	TA-40	WINLAND TEMPALERT LOW-TEMPERATURE ALERT

- FIRE ALARM GENERAL NOTES**
- THE FOLLOWING ABBREVIATIONS SHALL APPLY TO NOTES AND PLANS:  
FC - PLUMBING CONTRACTOR, EC - ELECTRICAL CONTRACTOR,  
MC - MECHANICAL CONTRACTOR, GC - GENERAL CONTRACTOR,  
FAC - FIRE ALARM SYSTEM CONTRACTOR.
  - THE FIRE ALARM SYSTEM CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, ETC. AS NECESSARY FOR A COMPLETE AND OPERATIONAL FIRE ALARM SYSTEM.
  - THESE DRAWINGS ARE DIAGNOSTIC AND DO NOT SHOW ALL MINOR DETAILS AND EXACT LOCATIONS. THE FAC SHALL ALLOW FOR ADJUSTMENTS TO ACCOMMODATE INTERFERENCES BOTH PLANNED AND UNPLANNED AND SHALL INCLUDE SUCH CONTINGENCIES IN THEIR BIDDING.
  - THE SUCCESSFUL FIRE ALARM BIDDER SHALL PROVIDE CONSTRUCTION DOCUMENTS TO THE AUTHORITY HAVING JURISDICTION FOR APPROVAL, INCLUDING ALARM CONTROLS AND TROUBLE SHOOTING EQUIPMENT, POWER CONNECTIONS, BATTERY CALCULATIONS, VOLTAGE DROP CALCULATIONS, CONDUCTOR TYPES AND SIZES, LOCATIONS OF INITIATING AND NOTIFICATION APPLIANCES, AND MANUFACTURERS, MODEL NUMBERS, AND LISTING INFORMATION FOR ALL EQUIPMENT, DEVICES AND MATERIALS.
  - ALL WORK SHALL BE IN ACCORDANCE WITH NFPA 72 AND APPLICABLE SECTIONS OF NFPA 1 AND 13.
  - CONDUIT, CONDUCTORS, BOXES, AND HANGERS SHALL BE THE SAME AS THOSE SPECIFIED IN THE ELECTRICAL SYSTEM.
  - ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BEAR UL LABEL OR EQUIVALENT WHERE APPLICABLE.
  - THE FIRE ALARM SYSTEM SHALL BE OF THE ADDRESSABLE TYPE WITH EACH INITIATING DEVICE REPROGRAMMED INDIVIDUALLY TO THE FIRE ALARM CONTROL PANEL. ONLY THE MANUFACTURER OR AN AUTHORIZED DISTRIBUTOR WHO STOCKS SPARE COMPONENTS FOR THE ENTIRE SYSTEM SHALL CONDUCT, PROGRAM, OR TEST THE ADDRESSABLE FIRE ALARM SYSTEM. ALL TECHNICIANS PERFORMING SUCH WORK SHALL BE TRAINED INDIVIDUALLY CERTIFIED BY THE MANUFACTURER FOR THE MODEL OF SYSTEM BEING INSTALLED. COPIES OF THEIR CERTIFICATION SHALL BE AVAILABLE UPON REQUEST. THE MANUFACTURER OR AUTHORIZED DISTRIBUTOR SHALL STORE THE COMPLETE PROGRAMMING FOR THE ADDRESSABLE SYSTEM ON A COMPUTER DISK OR OTHER MEDIA AND ARCHIVE APPROPRIATELY. A COPY OF THE PROGRAM SHALL BE MADE AVAILABLE TO THE OWNER WHEN THE SYSTEM IS COMMISSIONED. THE MANUFACTURER OR AUTHORIZED DISTRIBUTOR SHALL MAINTAIN SOFTWARE VERSION RECORDS ON THE SYSTEM INSTALLED AND PROVIDE FREE UPDATES IF THE MANUFACTURER RELEASES A NEW VERSION OF THE SOFTWARE DURING THE WARRANTY PERIOD. PROVIDE A SYSTEM FUNCTION MATRIX THAT GIVES THE FIRE ALARM CONTROL PANEL RESPONSE FOR EACH INITIATING DEVICE.
  - THE SYSTEM SHALL BE NORMAL, ZVOC, NONCODED, AND SUPERVISED (INCLUDING CONTROL CIRCUITS). ALL EQUIPMENT SUPPLIED MUST BE LISTED FOR ITS PARTICULAR USE AND INSTALLED IN ACCORDANCE WITH ANY INSTRUCTIONS APPLICABLE TO ITS LISTING.
  - THE SYSTEM SHALL BE ELECTRICALLY SUPERVISED FOR OPEN OR GROUND FAULT CONDITIONS IN DETECTION, ALARM, AND CONTROL CIRCUITS. THE REMOVAL OF ANY DETECTION DEVICE, ALARM APPLIANCE, PLUG-IN RELAY, SYSTEM MODULE, OR STANDBY BATTERY CONNECTION SHALL ALSO ACTIVATE A TROUBLE SIGNAL. THE FIRE

- ALARM SIGNAL SHALL OVERRIDE TROUBLE SIGNALS, BUT THE PRE-ALARM TROUBLE SIGNAL SHALL REAPPEAR WHEN THE PANEL IS RESET.
- PROVIDE EACH SIGNALING LINE CIRCUIT WITH A MINIMUM OF 20 PERCENT SPARE ADDRESSES FOR FUTURE USE.
- THE CONNECTIONS BETWEEN INDIVIDUAL ADDRESSABLE MODULES AND THEIR CONTACT TYPE INITIATING DEVICES MUST BE SUPERVISED.
- THE FIRE ALARM CONTROL PANEL (FACP) POWER SUPPLY MUST HAVE A CONTINUOUS RATING ADEQUATE TO POWER ALL DEVICES AND FUNCTIONS IN FULL ALARM CONTINUOUSLY. BATTERIES MUST MEET THE APPROPRIATE NFPA CAPACITY REQUIREMENTS. THE FACP SHALL INCLUDE AN ALARM SILENCE SWITCH AND SHALL BE EQUIPPED WITH THE SUBSEQUENT ALARM REARMING FEATURE. THE ALARM SILENCE AND RESET FEATURE SHALL NOT REVERSE AIR HANDLING UNITS (SHUTDOWN). A SUPERVISED "HANG SYSTEM SHUTDOWN" SWITCH MUST BE PROVIDED IN THE FACP WITH ITS "NORMAL" POSITION INDICATED.
- ALL CONNECTIONS MADE AT THE FACP MUST BE BY THE MANUFACTURER'S AUTHORIZED FACTORY TRAINED PERSONNEL (NOT THE ELECTRICAL CONTRACTOR).
- PERMANENT WIRE MARKERS SHALL BE USED TO IDENTIFY ALL CONNECTIONS AND TERMINATIONS FOR EACH CIRCUIT. ALL FIRE ALARM JUNCTION BOXES SHALL BE SPRAYED RED AND LABELED "FIRE ALARM". TERMINAL BLOCKS SHALL BE PROVIDED IN ALL JUNCTION BOXES WHERE CONNECTIONS ARE MADE. IDENTIFICATION AT SPLICES SHALL INDICATE WHICH CONDUCTOR LEADS TO THE FACP.
- THE FOLLOWING COLOR SCHEME SHALL BE USED FOR SYSTEM CONDUCTORS:  
17.1. INITIATING CIRCUITS (OTHER THAN SMOKE) - RED & WHITE  
17.2. NOTIFICATION APPLIANCE CIRCUITS - BLUE & BLACK  
17.3. NOTIFICATION APPLIANCE CIRCUITS - BLUE & BLACK  
17.4. AIR HANDLING SHUT-DOWN CIRCUITS - YELLOW  
17.5. DOOR CONTROL CIRCUITS - ORANGE  
17.6. ELEVATOR CIRCUITS - BROWN
- LOW VOLTAGE WIRING SHALL NOT BE INSTALLED IN ANY RACEWAY CONTAINING POWER OR LINE VOLTAGE CONTROL WIRING WITHIN THE FACP. ANY AC CONTROL WIRING SHALL BE PROPERLY SEPARATED FROM OTHER CIRCUITS AND THE ENCLOSURE SHALL BE LABELED TO ALERT SERVICE PERSONNEL TO THE HAZARD.
- DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS AND AS DETAILED. WHENEVER POSSIBLE, DEVICES SHOULD BE CENTERED ON SPACES OR LOCATED ABOVE OTHER OUTLETS. SMOKE DETECTORS SHALL NOT BE LOCATED WITHIN THREE (3) FEET OF AN HVAC SUPPLY OR RETURN. INSTALL WALL MOUNTED SMOKE DETECTORS A MAXIMUM OF TWELVE (12) INCHES FROM CEILING.
- PROVIDE A PERMANENT MARKER ON EACH DEVICE INSTALLED INDICATING THE DEVICE NUMBER AND ADDRESSABLE LOOP NUMBER. PROVIDE THE SAME INFORMATION INSIDE THE BOX FOR EACH DEVICE.
- ALL HVAC EQUIPMENT SHALL SHUTDOWN UPON ACTIVATION OF ANY FIRE ALARM DEVICE.
- WATER FLOW SWITCHES, VALVE TAMPERS SWITCHES AND PRESSURE SWITCHES SHALL BE PROVIDED AND INSTALLED BY THE SPRINKLER CONTRACTOR. CONNECTED TO THE ELECTRICAL CONTRACTOR AND SUPERVISED BY THE FACP.
- TESTING SHALL INCLUDE ALL TESTS REQUIRED FOR THE ELECTRICAL SYSTEMS IN ADDITION TO TESTING AND CERTIFICATION BY THE FIRE ALARM SYSTEM SUPPLIER. PROVIDE INSTRUCTION MANUALS TO OWNER PERSONNEL.
- FACP SHALL VERIFY THAT ALL VISIBLE NOTIFICATION DEVICES ARE

- SYNCHRONIZED PER NFPA 72.
- VERIFY DECIBEL LEVELS ARE MINIMUM 60 DBA AND MAXIMUM 120 DBA THROUGHOUT THE ZONE. ADJUST DEVICES AS NECESSARY. MAINTAIN MINIMUM 100 DBA IN EQUIPMENT AND MECHANICAL ROOMS.
- DEVICES MUST MEET SURVIVABILITY REQUIREMENTS OF THE NFPA AS APPLICABLE.
- THE ADDRESSABLE ALARM NOTIFICATION APPLIANCES SHALL DISPLAY A SOUND PRESSURE LEVEL OF 15 DECIBELS (DBA) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 DBA ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPABLE SPACE WITHIN THE BUILDING.

FIRE ALARM SEQUENCE OF OPERATION		BUILDING SYSTEM OUTPUTS		
UPON CHANGE IN STATUS OF ANY DEVICE ON THE SYSTEM, THE FIRE ALARM CONTROL PANEL SHALL ACTIVATE ALARMS AND VISIBLE CHANGE INDICATORS AND DISPLAY THE SYSTEM POINT NUMBER, POINT DESCRIPTION, AND MESSAGE ASSOCIATED WITH THE POINT.		FACP ANNUNCIATION	NOTIFICATION	REQUIRED FIRE SAFETY CONTROL
1. ACTIVATE ALARMS AND VISIBLE STATUS CHANGE INDICATORS AND DISPLAY POINT NUMBER, POINT DESCRIPTION, AND MESSAGE ASSOCIATED WITH THE POINT ON THE PANEL.	2. TRANSMIT AN ALARM SIGNAL TO A LISTED CENTRAL STATION.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
3. ACTIVATE THE ADDRESSABLE AND VISIBLE NOTIFICATION APPLIANCES IN THE BUILDING.	4. RELEASE THE DOOR AND SYSTEMS OF ACCESS CONTROLLED EGRESS DOORS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
5. SHUT DOWN AIR HANDLERS.	6. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
7. SHUT DOWN AIR HANDLERS.	8. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
9. SHUT DOWN AIR HANDLERS.	10. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
11. SHUT DOWN AIR HANDLERS.	12. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
13. SHUT DOWN AIR HANDLERS.	14. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
15. SHUT DOWN AIR HANDLERS.	16. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
17. SHUT DOWN AIR HANDLERS.	18. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
19. SHUT DOWN AIR HANDLERS.	20. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
21. SHUT DOWN AIR HANDLERS.	22. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
23. SHUT DOWN AIR HANDLERS.	24. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
25. SHUT DOWN AIR HANDLERS.	26. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
27. SHUT DOWN AIR HANDLERS.	28. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
29. SHUT DOWN AIR HANDLERS.	30. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
31. SHUT DOWN AIR HANDLERS.	32. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
33. SHUT DOWN AIR HANDLERS.	34. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
35. SHUT DOWN AIR HANDLERS.	36. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
37. SHUT DOWN AIR HANDLERS.	38. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
39. SHUT DOWN AIR HANDLERS.	40. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
41. SHUT DOWN AIR HANDLERS.	42. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
43. SHUT DOWN AIR HANDLERS.	44. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
45. SHUT DOWN AIR HANDLERS.	46. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
47. SHUT DOWN AIR HANDLERS.	48. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
49. SHUT DOWN AIR HANDLERS.	50. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
51. SHUT DOWN AIR HANDLERS.	52. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
53. SHUT DOWN AIR HANDLERS.	54. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
55. SHUT DOWN AIR HANDLERS.	56. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
57. SHUT DOWN AIR HANDLERS.	58. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
59. SHUT DOWN AIR HANDLERS.	60. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
61. SHUT DOWN AIR HANDLERS.	62. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
63. SHUT DOWN AIR HANDLERS.	64. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
65. SHUT DOWN AIR HANDLERS.	66. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
67. SHUT DOWN AIR HANDLERS.	68. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
69. SHUT DOWN AIR HANDLERS.	70. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
71. SHUT DOWN AIR HANDLERS.	72. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
73. SHUT DOWN AIR HANDLERS.	74. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
75. SHUT DOWN AIR HANDLERS.	76. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
77. SHUT DOWN AIR HANDLERS.	78. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
79. SHUT DOWN AIR HANDLERS.	80. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
81. SHUT DOWN AIR HANDLERS.	82. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
83. SHUT DOWN AIR HANDLERS.	84. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
85. SHUT DOWN AIR HANDLERS.	86. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
87. SHUT DOWN AIR HANDLERS.	88. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
89. SHUT DOWN AIR HANDLERS.	90. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
91. SHUT DOWN AIR HANDLERS.	92. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
93. SHUT DOWN AIR HANDLERS.	94. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
95. SHUT DOWN AIR HANDLERS.	96. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
97. SHUT DOWN AIR HANDLERS.	98. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL
99. SHUT DOWN AIR HANDLERS.	100. SHUT DOWN AIR HANDLERS.	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL	ACTIVATE GENERAL ALARM SIGNAL

**FA-1.1 FIRE ALARM SYSTEM MATRIX**  
NOT TO SCALE

NAC CIRCUIT VOLTAGE DROP CALCULATIONS											
Device	Number	Current	System				Wire				Chm's per Group
			20.4	15%	16 AWG	4.89	Drop	Percent	Drop	Percent	
<b>FACP M1</b>											
			20.4	15%	16 AWG	4.89	Drop	Percent	Drop	Percent	
			0.248	15	End of Line Voltage	20.36	0.036	0.18%	0.000	0.00%	
<b>Totals</b>											
			0.248	15	End of Line Voltage	20.36	0.036	0.18%	0.000	0.00%	
<b>METHOD Point to Point</b>											
			Current	Distance	Voltage Drop	End of Line Voltage	Percentage of Drop				
			NAC1	0.248	15	0.04	20.36	0.18%	0.000	0.00%	
			NAC2	0.000	0	0.00	20.40	0.00%	0.000	0.00%	
<b>METHOD End of Line</b>											
			Current	Distance	Voltage Drop	End of Line Voltage	Percentage of Drop				
			NAC1	0.248	15	0.04	20.36	0.18%	0.000	0.00%	
			NAC2	0.000	0	0.00	20.40	0.00%	0.000	0.00%	
<b>METHOD Centering</b>											
			Current	Distance	Voltage Drop	End of Line Voltage	Percentage of Drop				
			NAC1	0.248	15	0.02	20.36	0.09%	0.000	0.00%	
			NAC2	0.000	0	0.00	20.40	0.00%	0.000	0.00%	

**FA-1.1 F1 VOLTAGE DROP CALCULATIONS**  
NOT TO SCALE

FIRE-LITE ES-50X ADDRESSABLE FIRE ALARM CONTROL PANEL										
SECONDARY POWER SOURCE REQUIREMENTS										
DEVICE TYPE	Qty	SECONDARY NON-ALARM CURRENT (AMPS)		SECONDARY ALARM CURRENT (AMPS)		TOTAL				
		CURRENT DRAW	TOTAL	QTY	CURRENT DRAW					
<b>SYSTEM</b>										
Main Circuit Board	1	X	0.141000	=	0.141	1	X	0.257000	=	0.257
IPOTS-COM Communicator	1	X	0.041000	=	0.041	1	X	0.040000	=	0.04
<b>ADDRESSABLE DEVICES</b>										
BG-12LX	1	X	0.0013	=	0.0013					
SD365	1	X	0.0003	=	0.0003					
MMF-300	6	X	0.002	=	0.0120					
CURRENT DRAW FROM TB11										
<b>5. NOTIFICATION APPLIANCES</b>										
NAC 1						1	X	0.248	=	0.25
NAC 2						1	X	0	=	0
<b>TOTAL STANDBY LOAD</b>										
0.2										
<b>TOTAL ALARM LOAD</b>										
0.5										
<b>CALCULATION IN TOTALS</b>										
REQUIRED STANDBY TIME IN HOURS										
24										
STANDBY LOAD CURRENT	0.2			X	24	=	4.8			
REQUIRED ALARM TIME IN MINUTES										
5										
ALARM LOAD CURRENT	0.5			X	0.084	=	0.042			
<b>TOTAL CURRENT LOAD</b>										
4.842										
MULTIPLY BY THE DERATING FACTOR										
1.2										
<b>TOTAL AMPERE HOURS REQUIRED</b>										
5.81										
RECOMMENDED BATTERIES:										
7AH BATT NEEDED										

**FA-1.1 MAIN FACP BATTERY CALCULATIONS**  
NOT TO SCALE

SHEET NO.	DESCRIPTION
FA-0.1	COVER SHEET, NOTES, MATRIX, SHEET LEGEND, WIRE LEGEND, & SYSTEMS CALCULATIONS
FA-1.1	FIRST FLOOR FIRE ALARM PLAN, FIRE ALARM MATRIX & INSTALLATION REQUIREMENTS

WIRE LEGEND	
SHEET NO.	DESCRIPTION
SLC	16-2 TWISTED PAIR UNSHIELDED
NAC	(2) #16 AWG SOLID THHN/THWN, BLUE (+), BLACK (-)



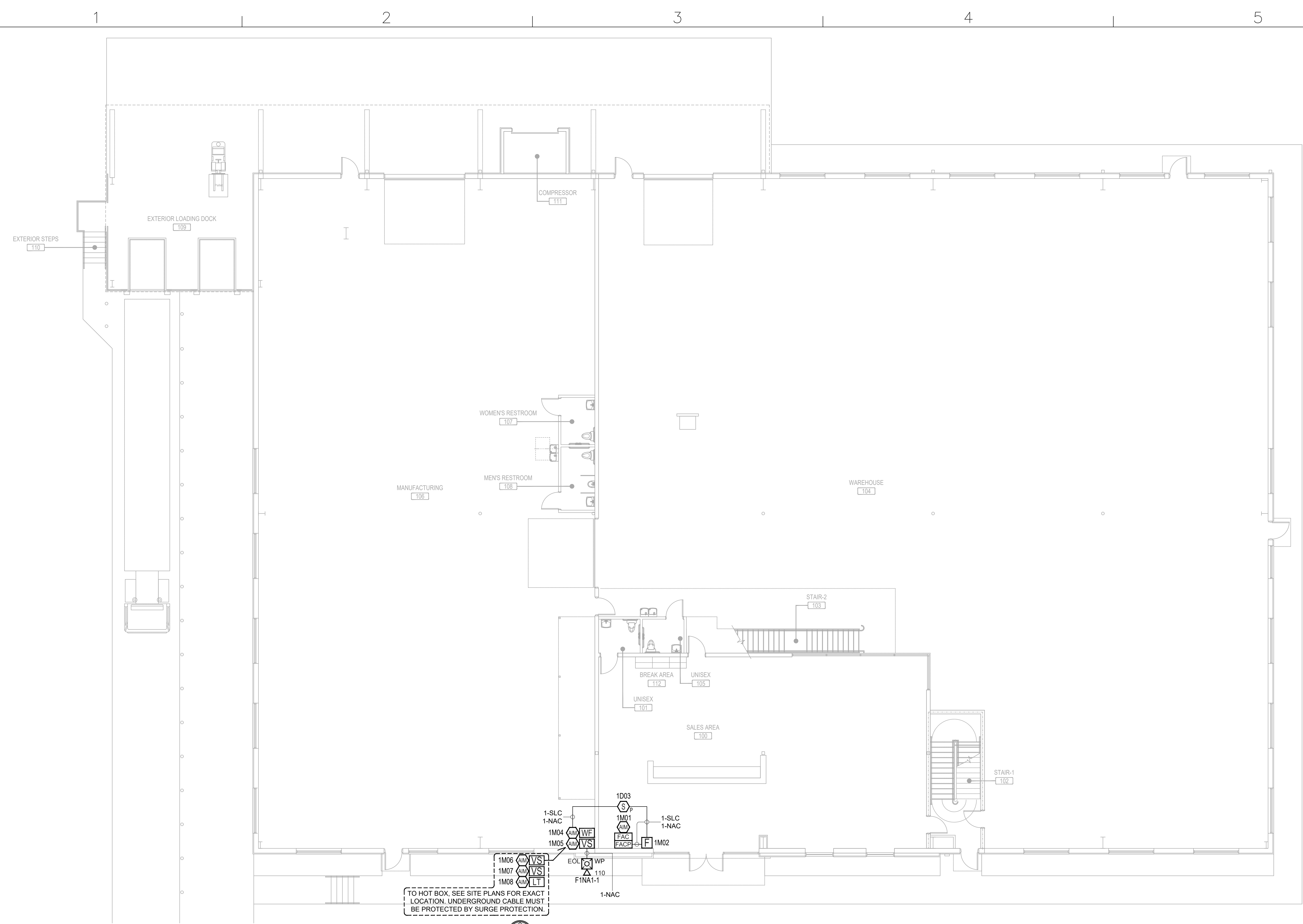
**NORTH CAROLINA ELECTRICAL LICENSE**  
JRH FIRE DESIGN & CONSULTING, LLC  
2315 HIGHTSTONE ROAD, CARY, NC 27519  
LICENSE # SP FA14 30040  
SPECIAL RESTRICTED FIRE ALARM LOW VOLTAGE CLASSIFICATION LICENSE  
EXPIRATION DATE: 05/04/2021  
QUALIFIER NAME: JODY RAY LAYTON

DRAWING TITLE:  
COVER SHEET, NOTES, MATRIX,  
SHEET LEGEND, WIRE LEGEND, &  
SYSTEMS CALCULATIONS

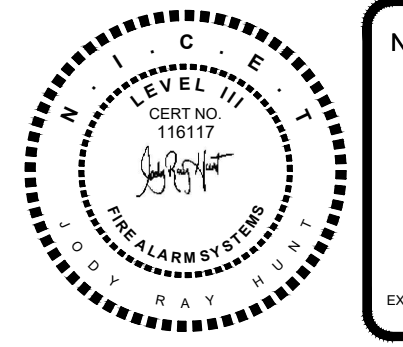
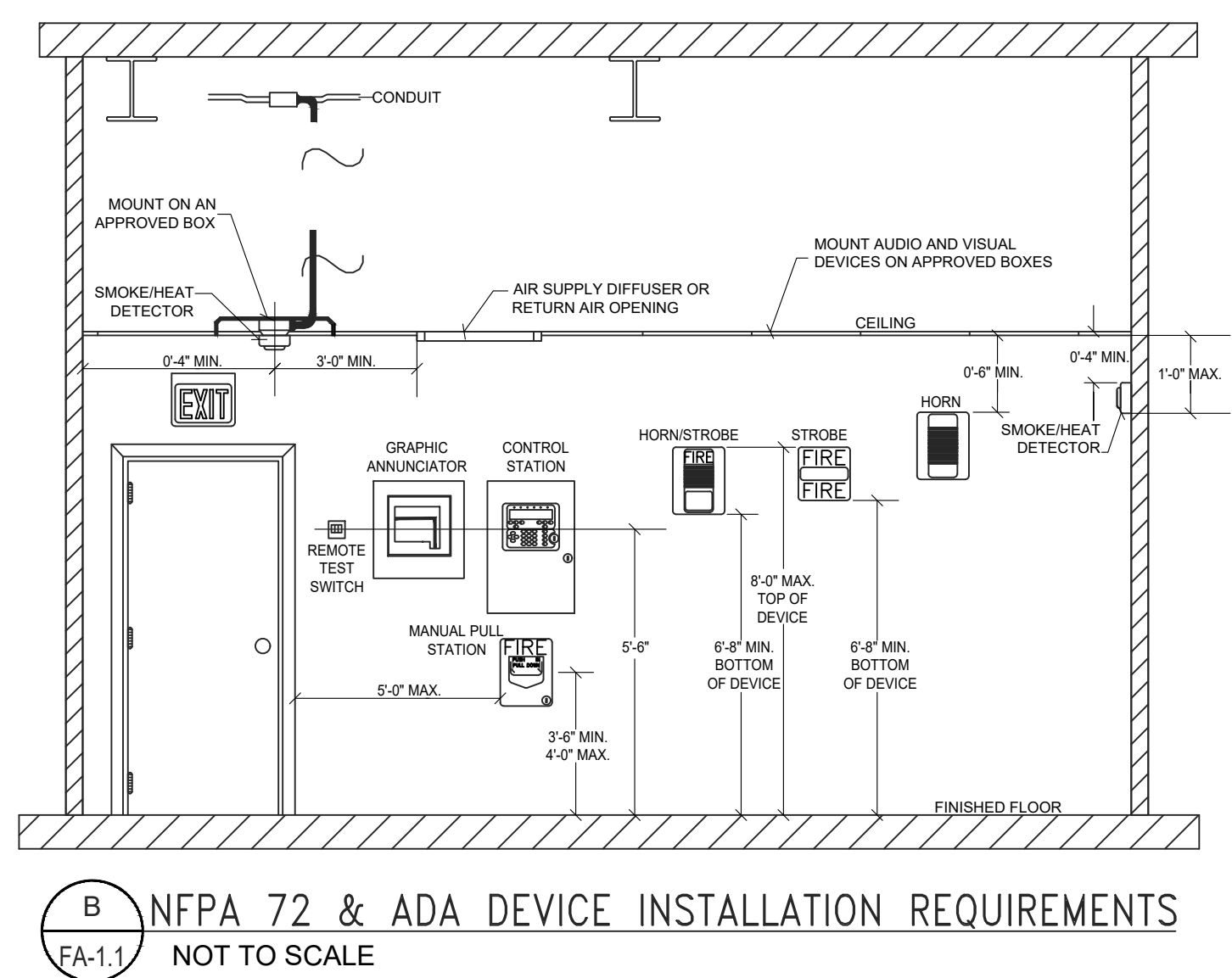
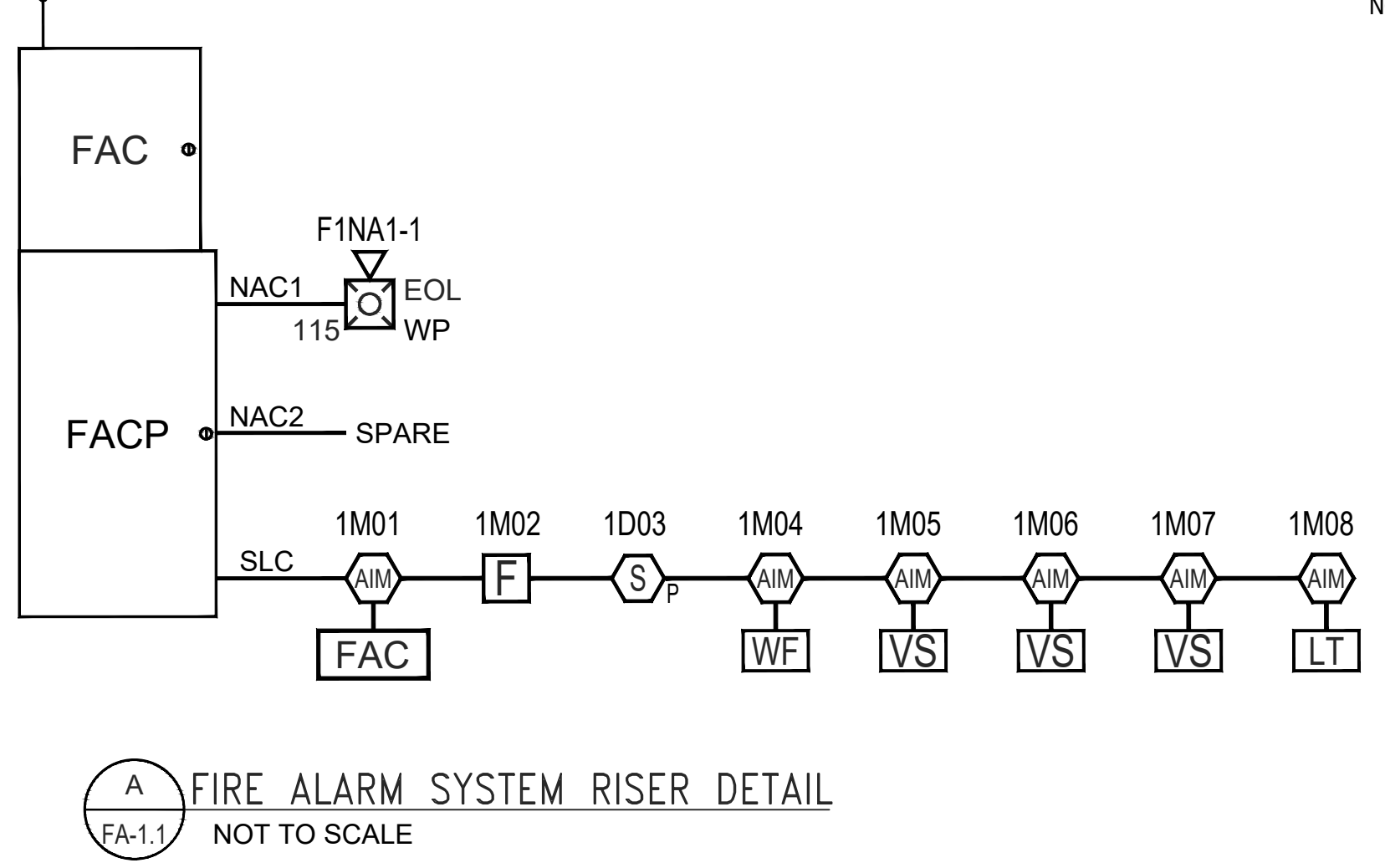
DRAWN BY: JH  
SALESMAN: ML  
PROJECT MGR:  
DATE: 04/02/2021  
SCALE: AS SHOWN ON DRAWINGS  
SHEET NO. 1 OF 2

DRAWING NO.  
**FA0.1**

J:\JRH\_FIRE\_DESIGN\2021\21-1214 Natural Stone, Fuquay-Varina, NCIENGINEERING\IN-HOUSE (SHOP DRAWINGS)\SHOP DRAWINGS\DWG21-1214-00-FA02.dwg, 4/2/2021 11:16:48 PM



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



**NORTH CAROLINA ELECTRICAL LICENSE**  
JRH FIRE DESIGN & CONSULTING, LLC  
2315 HIGHTSTONE ROAD, CARY, NC 27519  
LICENSE # 8P FA1V 30840  
SPECIAL RESTRICTED FIRE ALARM OR VOLTAGE CLASSIFICATION LICENSE  
EXPIRATION DATE: 05/04/2021  
QUALIFIER NAME: JOE RAY LAY

**NATURAL STONE**  
148 JARCO DRIVE  
FUQUAY-VARINA, NC 27526  
FIRE ALARM SYSTEM

**J & D SPRINKLER COMPANY**  
315 WEST MAIN STREET  
CLAYTON, N. CAROLINA 27520  
919-553-2356

**JRH**  
Fire Design & Consulting  
JRH FIRE DESIGN & CONSULTING, LLC.  
2315 HIGHTSTONE ROAD  
CARY, NC 27519  
www.jrd.com

**SHOP DRAWINGS**  
PREPARED BY:  
JRH FIRE DESIGN & CONSULTING

**INSTALLATION BY:**  
J & D SPRINKLER CO. INC.  
NO SPECIAL RESTRICTED FIRE ALARM/  
LOW VOLTAGE CLASSIFICATION LICENSE  
# 8P FA1V 32253  
QUALIFIER: MARC LAKEY

JRH JOB # 21-1214  
REVISION: 0 DATE: 04/02/2021  
INITIAL RELEASE  
REVISION: DATE:  
REVISION: DATE:  
REVISION: DATE:  
REVISION: DATE:  
REVISION: DATE:  
REVISION: DATE:  
REVISION: DATE:  
REVISION: DATE:  
REVISION: DATE:  
REVISION: DATE:

**DRAWING TITLE:**  
FIRST FLOOR FIRE ALARM  
PLAN, FIRE ALARM MATRIX  
& INSTALLATION REQUIREMENTS

**DRAWN BY:** JH  
**SALESMAN:** ML  
**PROJECT MGR:**  
**DATE:** 04/02/2021  
**SCALE:** AS SHOWN ON DRAWINGS  
**SHEET NO. 2 OF 2**

**DRAWING NO.**  
**FA1.1**