

SYSTEM INPUTS		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	
1	MANUAL FIRE ALARM BOXES	X	X							X	X	X	X									
2	BUILDING SMOKE DETECTORS	X	X							X	X	X	X									
3	FIRE ALARM POWER FAILURE					X	X						X									
4	FIRE ALARM LOW BATTERY					X	X						X									
5	OPEN CIRCUIT					X	X						X									
6	GROUND FAULT					X	X						X									
7	NOTIFICATION APPLIANCE SHORT CIRCUIT					X	X						X									
8	FLOW SWITCH	X	X							X	X	X	X									
9	TAMPER SWITCH			X	X								X									

FIRE ALARM SYSTEM MATRIX

3 FIRE ALARM SYSTEM MATRIX
FA0.1 SCALE: NTS

STANDBY LOAD	REQUIRED STANDBY TIME IN HOURS		
CURRENT (AMPS)	X (24 HOURS)	=	
()	()		
ALARM LOAD	REQUIRED ALARM TIME IN HOURS		
CURRENT (AMPS)	X (I.E. 5 MINUTES=0.084)	=	
()	()		
ADD STANDBY AND ALARM LOAD FOR REQUIRED AMPERE HOUR BATTERY			
MULTIPLY BY THE DERATING FACTOR OR 1.2			X 1.2
TOTAL AMPERE HOURS (AH) REQUIRED		=	

BATTERY CALCULATIONS
NOTE: BATTERY CALCULATIONS TO BE COMPLETED BY SUCCESSFUL FIRE ALARM CONTRACTOR

THROUGH-PENETRATION FIRESTOP SYSTEMS

System No. W-J-1007
(Formerly System No. 257)
F Rating - 2 Hr
T Rating - 0, 1/4 and 2 Hr (See Item 3C)

1. Wall Assembly - Min 5 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Will may also be constructed of any UL Classified Concrete Block. Max diam. of opening is 8 in. See Concrete Block (CAZ) category in the Fire Resistance Directory for names of manufacturers.

2. Through Penetrations - One metallic pipe, conduit or tubing to be installed either concentricity or eccentricity within the firestop system. Pipe, conduit, or tubing to be rigidly supported on both sides of wall assembly. The annular space between pipe, conduit or tubing and periphery of opening shall be as shown in the table below. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe** - Nom 1 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.
B. **Conduit** - Nom. 4 in. diam (or smaller) steel electrof metallic tubing or steel conduit.
C. **Copper Tubing** - Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.

3. Firestop System - The hourly F and T Rating for the firestop systems are dependent upon the type and size of pipe, conduit, or tubing, the material thickness and the material type as described in the table below. When the annular space in the table shows a range of distances, the penetrating item may be installed either concentricity or eccentricity within the firestop system. The firestop systems shall consist of the following:

A. **Steel Sleeve or Wire Mesh** - No. 8 steel wire mesh having a min. 1 in top along the longitudinal axis. Length of sleeve to be 1/4 to 1/2 in. less than overall thickness of wall such that, when installed in circular opening, the ends of the sleeve are recessed 1/8 to 1/4 in. from each surface of the wall. Sleeve may also be formed of min. 0.034 in. thick (20 MZ) galvanized steel.

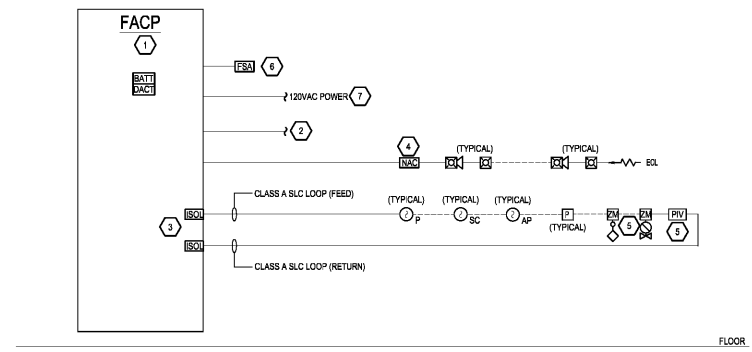
B. **Packing Material** - Mineral wool batt insulation firmly packed into opening as a permanent form of the thickness shown in the table below. Packing material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material. As an option to the above, bakker rod and/or formed plastic bakker material may be used.

C. **Fill, Void or Cavity Material - Caulk** - Applied within the annulus, flush with both surfaces of wall as shown in the table below:

Pipe Type	Max Pipe Diam, in	Annular Space, in	Min Filling and Depth, in	Type of Fill Mat	Min Filling and Depth, in	F Rating Hr	T Rating Hr
2A	1	1	1-1/4	A	1-1/4	2	2
2B	4	3/4 to 1	1-1/4	A	1-1/4	2	1/4
2B	4	3/4 to 1	1/2	A	1/2	0	0
2C	4	3-1/2	1/2	A	1/2	0	0
2B	4	3/4 to 1	1	A	1	2	1/4
2B	4	3/4 to 1	1	B	1	2	1/4

RECTORICAL - Minimum 800
RECTORICAL - Minimum 850
*Bearing the UL Classified Mark

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1 FIRE ALARM RISER DIAGRAM
FA0.1 SCALE: NTS

NOTES KEYED TO FIRE ALARM RISER 1/FA0.1

- NEW FIRE ALARM CONTROL PANEL. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PROGRAMMING AND MODIFICATIONS TO THE FACP TO ACCOMMODATE THE NEW DEVICES AS SHOWN ON THE FLOOR PLAN, AS DESCRIBED IN THE SPECIFICATIONS, AND AS REQUIRED TO PROVIDE A FULLY FUNCTIONAL SYSTEM IN ACCORDANCE WITH NFPA 72 AND THE 2018 NORTH CAROLINA BUILDING CODE.
- PROVIDE A DEDICATED TELEPHONE LINE TO THE FACP / DACT FOR THE PRIMARY TRANSMISSION MEANS IN ACCORDANCE WITH NFPA 72 IS ARTICLE 28.3.2.1(A). IN ADDITION TO THE TELEPHONE PROVIDED, A SECOND TRANSMISSION MEANS SHALL BE PROVIDED FOR THE FACP / DACT IN ACCORDANCE WITH NFPA 72 IS ARTICLE 28.3.2.1(A). FIRE ALARM CONTRACTOR SHALL CONFIRM TRANSMISSIONS MEANS TO BE PROVIDED WITH THE CITY OF WINSTON-SALEM. THE FACP / DACT SHALL BE CONNECTED / PROGRAMMED IN ACCORDANCE WITH NFPA 72. THE DACT SHALL COMPLY WITH NFPA 72 IS 28.3.2.1(C) CABLEING / WIRING. THE TRANSMISSION MEANS SHALL BE INSTALLED IN 3/4" CONDUIT AS REQUIRED.
- PROVIDE SLC LOOP WITH INDEPENDENT ISOLATORS PER DEVICE AND PER "BUILDING" MINIMUM AND CONNECT NUMBER OF DEVICES AS RECOMMENDED BY F.A. EQUIPMENT MANUFACTURER. TOTAL DEVICE COUNT IS LESS THAN 80% OF THE MANUFACTURER'S RECOMMENDED DEVICE CAPACITY. IF ISOLATOR MODULES, ONE ISOLATOR MODULE SHALL BE INSTALLED AT THE POINT OF THE LOOP. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- PROVIDE NOTIFICATION DEVICE FOR EACH SUPPLY AS REQUIRED PER NFPA 72. A SMOKE DETECTOR SHALL BE PROVIDED WITHIN 19' OF ALL NAC POWER SUPPLIES IN ACCORDANCE WITH NFPA 72 REQUIREMENTS. WHERE POWER SUPPLIES ARE INSTALLED OVER 15' FROM A SMOKE DETECTOR PROVIDING GENERAL COVERAGE FOR THE BUILDING, AN ADDITIONAL SMOKE DETECTOR SHALL BE PROVIDED, AT NO ADDITIONAL COST TO THE OWNER, AND INSTALLED WITHIN 19' OF THE NAC POWER SUPPLY AS REQUIRED.
- PROVIDE ZONE MODULE AT EACH FLOW AND TAPPING POINT SO THAT EACH DEVICE WILL BE SEPARATELY IDENTIFIED.
- FIRE ALARM ANNUNCIATOR PANEL. CONFIRM EXACT LOCATION AND MOUNTING HEIGHT WITH ARCHITECT. PROVIDE HANDLES ON CIRCUIT BREAKER(S) THAT FEED FACP AND FIRE ALARM ANNUNCIATOR PANEL.

FIRE ALARM SYMBOLS

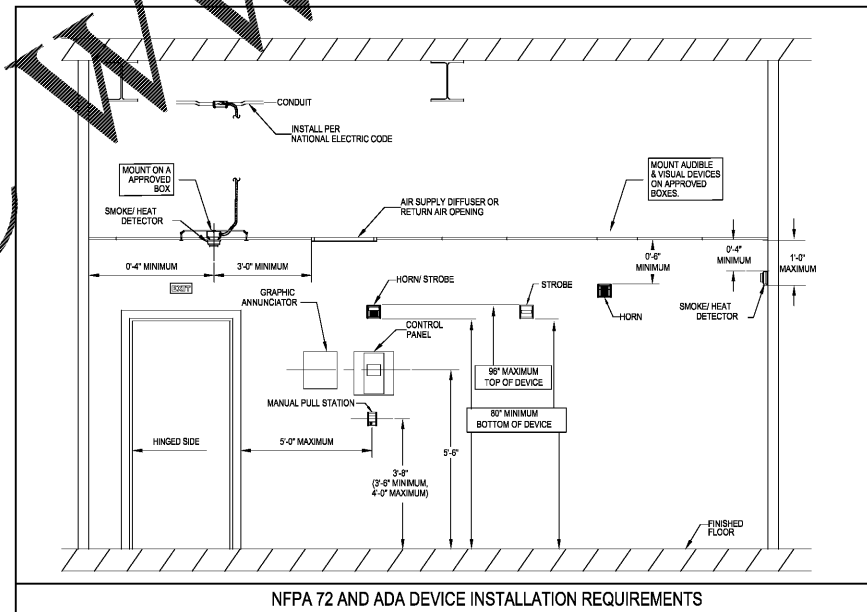
- | SYMBOL | DESCRIPTION |
|--------|---|
| 30 [] | FIRE ALARM HORN/STROBE UNIT. NUMBER INDICATES CANDLE RATING. CLG INDICATES CEILING MOUNTED |
| [] | FIRE ALARM PULL STATION |
| 30 [] | FIRE ALARM STROBE UNIT. NUMBER INDICATES CANDLE RATING |
| [] | FIRE ALARM CONTROL PANEL |
| [] | FIRE ALARM SYSTEM ANNUNCIATOR |
| [] | NAC POWER SUPPLY PANEL |
| — V — | END OF LINE RESISTOR |
| [] | PHOTOELECTRIC SMOKE DETECTOR |
| [] | PHOTOELECTRIC SMOKE DETECTOR WITH AUDIBLE SOUNDER |
| [] | 15dB ABOVE AMBIENT SOUND LEVEL, OR 5dB ABOVE THE MAXIMUM SOUND LEVEL, OR AT LEAST 75DBA WHICHEVER IS CALIBRATED AT THE FOLLOW |
| [] | PHOTOELECTRIC COMBINATION SMOKE/CO DETECTOR |
| [] | TAMPER DETECTOR/SWITCH |
| [] | FLOW DETECTOR/SWITCH |
| [] | POST INDICATING VALVE |

RACEWAY SYMBOLS

- | SYMBOL | DESCRIPTION |
|--------|--|
| [] | CONDUIT CONCEALED IN WALLS OR ABOVE CEILINGS |
| [] | UNSWITCHED LIGHTING CIRCUIT |
| [] | NEW HOMERUN TO PANELBOARD. LETTERS INDICATE PANELBOARD AND NUMBERS INDICATE CIRCUITS IN PANELBOARD |
| [] | CONDUIT BREAK |

ABBREVIATIONS

- | SYMBOL | DESCRIPTION |
|--------|------------------------------------|
| C | CONDUIT |
| EGC | EQUIPMENT GROUND CONDUCTOR |
| EM | EMERGENCY |
| G, GND | GROUND |
| GEC | GROUNDING ELECTRODE CONDUCTOR |
| GFI | GROUND FAULT INTERRUPTER |
| KVMA | ONE THOUSAND CIRCULAR MILS |
| KVA | KILO-VOLT AMPERES |
| KW | KILOWATTS |
| KWH | KILOWATT-HOURS |
| MKB | MAIN CIRCUIT BREAKER |
| MLO | MAIN LUG ONLY |
| NBC | NATIONAL ELECTRICAL CODE |
| NTS | NOT TO SCALE |
| PH, P | PHASE |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| UN | UNLESS OTHERWISE NOTED |
| V | VOLTS |
| WP | WEATHERPROOF |



2 FIRE ALARM DEVICE INSTALLATION REQUIREMENTS
FA0.1 SCALE: NTS

NEC 517 - HEALTH CARE SPACE NOTE

TRAIGE 101 IS PROVIDED WITHIN THE FACILITY TO OFFER FIRST AID FOR BUILDING OCCUPANTS AND THE SURROUNDING COMMUNITY AND INCLUDES PATIENT CARE AREAS AS DEFINED BY NEC 517. THEREFORE, ALL ASPECTS OF THE ELECTRICAL INSTALLATION ASSOCIATED WITH TRAIGE 101 SHALL MEET THE REQUIREMENTS OF THE APPLICABLE SECTIONS OF NEC 517. THIS INCLUDES BUT IS NOT LIMITED TO SUCH ITEMS AS INSULATED GROUND CONDUCTORS, PANELBOARD BONDING, APPROPRIATE RECEPTABLE TYPES, GROUND FAULT PROTECTION, ETC.

ALL RECEPTABLE LIGHTING AND EQUIPMENT CIRCUITS IN PATIENT CARE AREAS SHALL BE PROVIDED WITH AN INSULATED GROUND CONDUCTOR PER NEC 517.13.

ALL LOW VOLTAGE WIRING IN PATIENT CARE AREAS SHALL BE INSTALLED PER NEC 517.80.

FIRE ALARM RISER DIAGRAM

THE FIRE ALARM RISER DIAGRAM IS DIAGRAMMATIC IN NATURE AND INTENDED TO PROVIDE INTENDED CONCEPT FOR FIRE ALARM SYSTEM LAYOUT. CONTRACTOR SHALL REFER TO SPECIFICATIONS AND FLOOR PLANS FOR OVERALL QUANTITIES OF DEVICES AND ADDITIONAL REQUIREMENTS NOT SPECIFICALLY IDENTIFIED ON THE FIRE ALARM RISER DIAGRAM.

RED CONDUIT / JUNCTION BOX NOTE

ALL JUNCTION BOXES FOR FIRE ALARM CONDUIT / WIRING SHALL BE PROVIDED WITH RED COVERS. ALL CONDUIT ASSOCIATED WITH THE FIRE ALARM SYSTEM SHALL BE FACTORY PANTED RED.

FIRE ALARM SUBMITTAL NOTE

IN ADDITION TO THE SUBMITTALS REQUIRED IN SPECIFICATION 28111, THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR SUBMITTING THE FIRE ALARM SHOP DRAWINGS (HARD COPY FORMAT) TO THE WINSTON-SALEM JURISDICTIONAL FIRE DEPARTMENT HAVING AUTHORITY FOR REVIEW / APPROVAL. THE SHOP DRAWINGS SHALL INCLUDE AT A MINIMUM PRODUCT DATA, TO SCALE FLOOR PLANS WITH DEVICE LAYOUTS, INSTALLATION DETAILS, VOLTAGE DROP CALCULATIONS, BATTERY CALCULATIONS, SYSTEM OPERATION DESCRIPTION, ETC. IN ACCORDANCE WITH THE JURISDICTIONAL AUTHORITY FIRE DEPARTMENT REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND SHALL NOTIFY LOCAL INSPECTION DEPARTMENTS AS WORK PROGRESSES TO SCHEDULE ALL REQUIRED INSPECTIONS.



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