SIEMENS

Ingenuity for life

FIRE SAFETY DIVISION

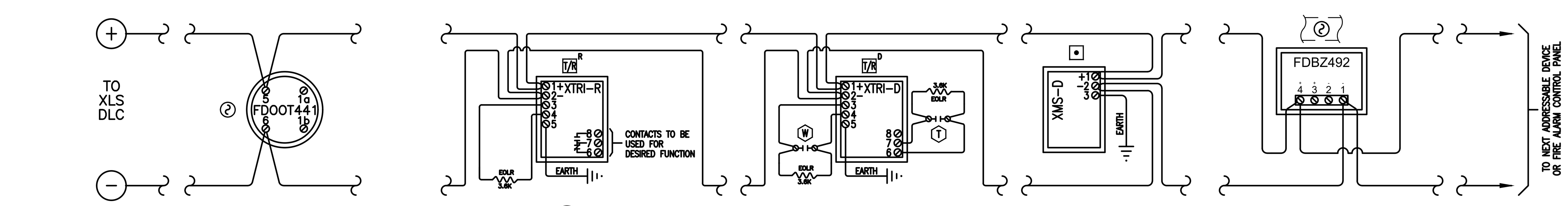
PROJECT NAME:

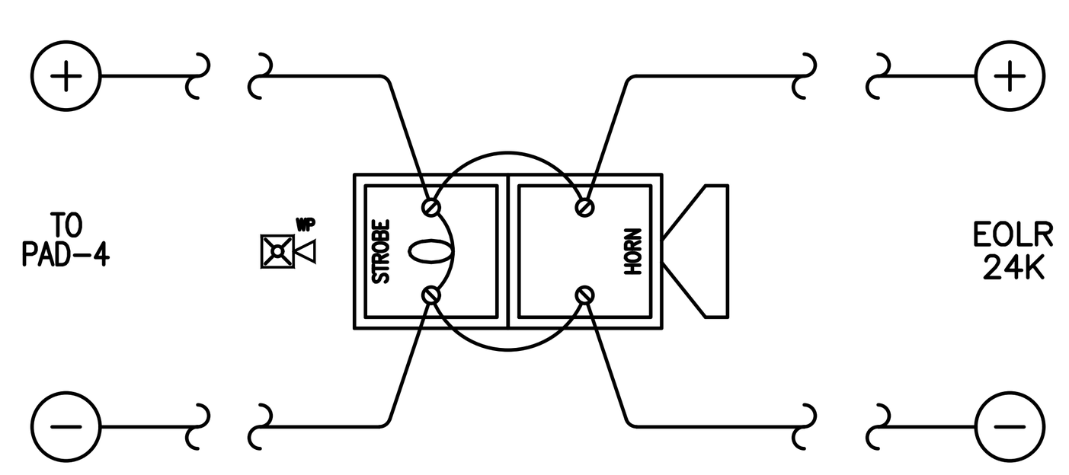
LEE'S SUMMIT MEDICAL CENTER - ICU EXPANSION , MISSOURI

PROJECT SYSTEM:
FIREFINDER XLS

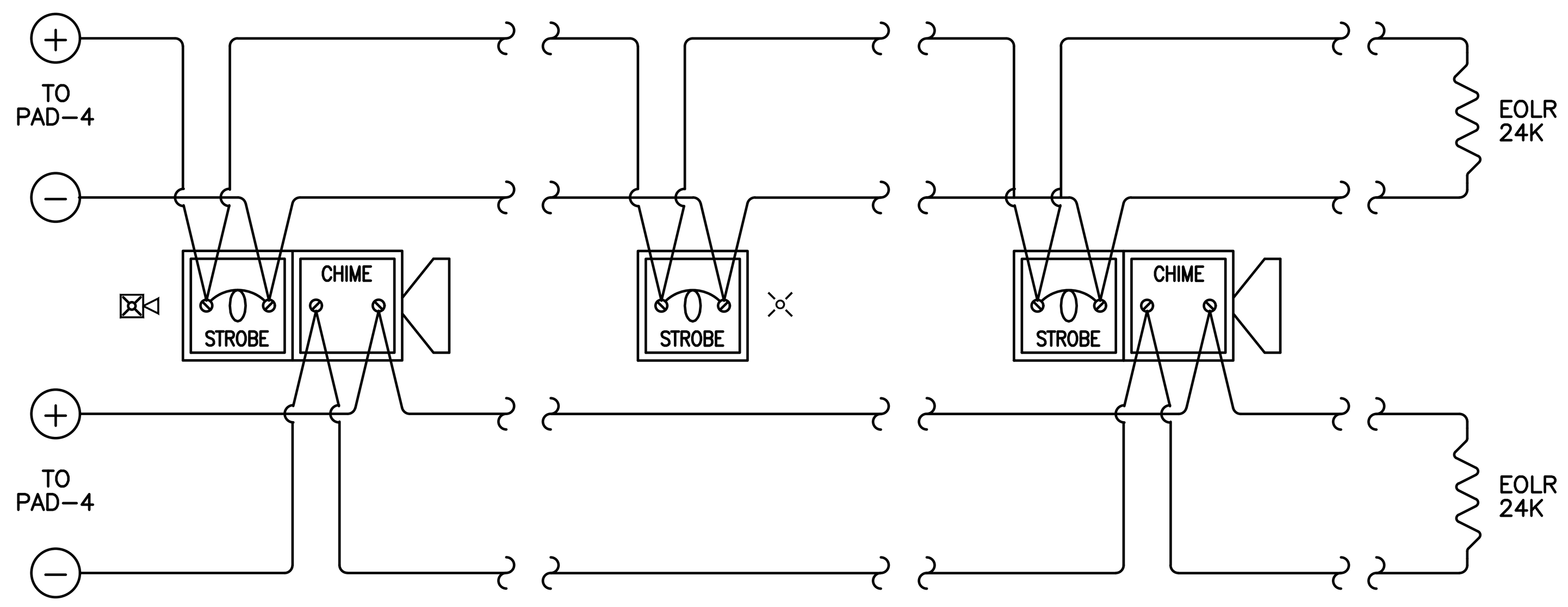
FOR PROJECT MANAGEMENT CALL: ERIC COTTER
+1 (913) 915-5819

FIRE ALARM DEVICE WIRING DIAGRAMS

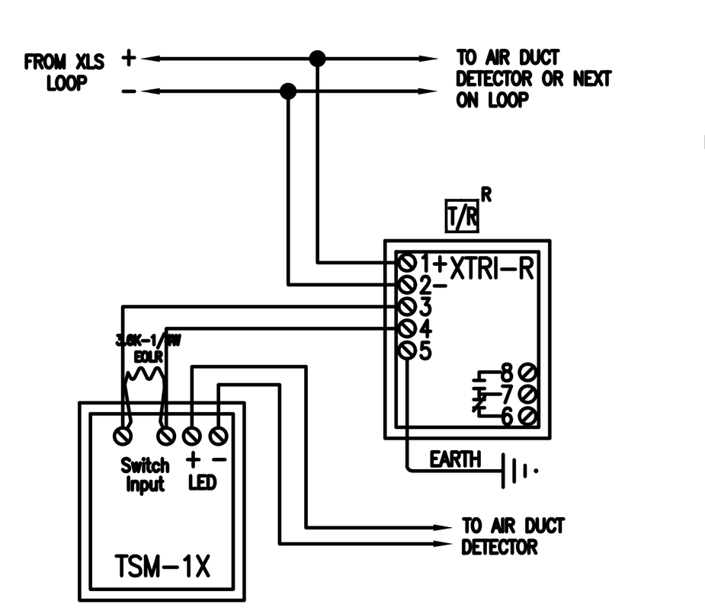




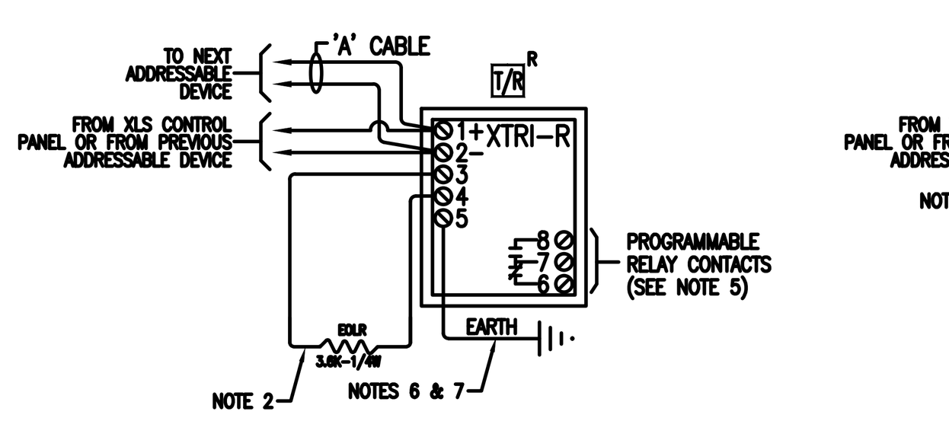
WEATHER PROOF NOTIFICATION CIRCUIT WIRING



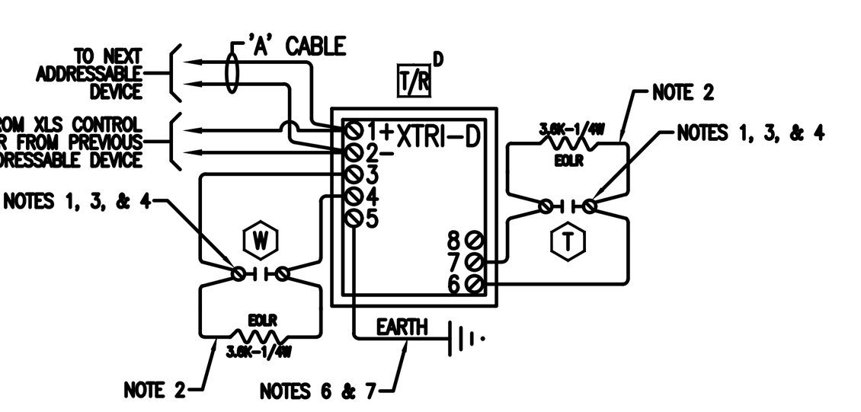
TYPICAL NOTIFICATION CIRCUIT WIRING



TEST SWITCH/DUCT DETECTOR WIRING



XTRI-R WIRING



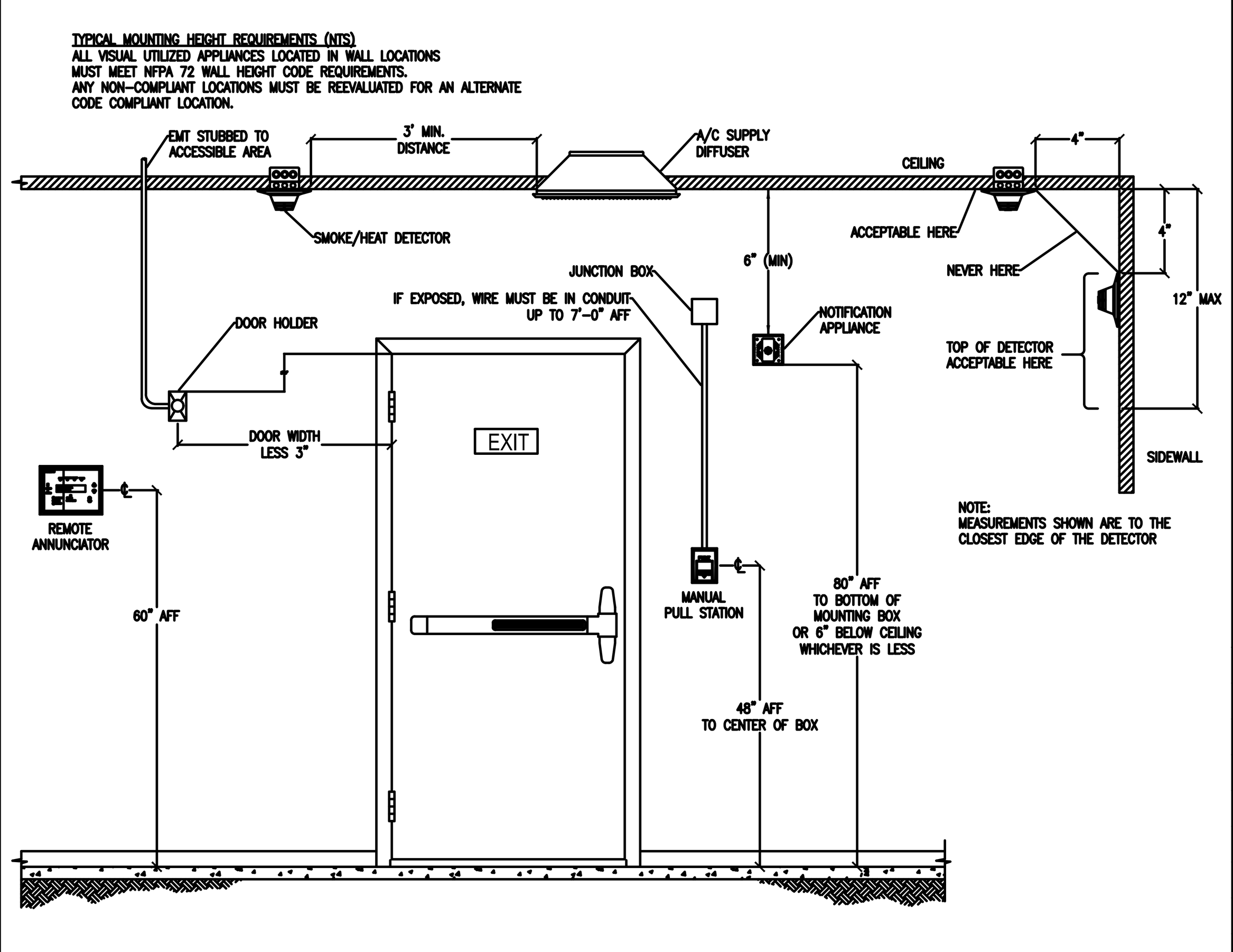
XTRI-D WIRING

5. Relay contacts are rated: Resistive: 4A, 125 VAC
   4A, 30 VDC
   Inductive: 3.5A, 120 VAC (0.6P.F.)
   3.0A, 30 VDC (0.6P.F.)
   2.0A, 120 VAC (0.4P.F.)
   2.0A, 120 VAC (0.35P.F.)
   2.0A, 30 VDC (0.35P.F.)

6. If a Good Local Earth Ground is Available:
   a. Terminal 5 must be connected to earth ground.
   b. Use wire nuts to pass the shield wire through the electrical box with NO connection to the device terminal block or to local ground.
   c. Use shielded wire to connect the switch wiring.
   d. Tie the switch wiring shield to the ALD wiring shield. Do not connect shield to terminal 5 or the local earth ground.

7. If a Good Local Earth Ground is NOT available: Connect shield to terminal 5. If ALD wiring is not shielded, the switch wiring must be in metal raceway.

8. In supervisory:
   TRI-S/R draws 1.6mA
   TRI-D draws 1.6mA



FIRE ALARM MATRIX

LEE'S SUMMIT MEDICAL CENTER
ICU EXPANSION

	PRIORITY			SYSTEM OUTPUTS							
	ALARM	SUPERVISORY	TROUBLE	REPORT TO FIRE ALARM CONTROL PANEL	SIGNAL TO SUPERVISING STATION	ACTIVATE GENERAL FIRE ALARM AUDIBLE/VISIBLE NOTIFICATION APPLIANCES	ACTIVATE FDC NOTIFICATION APPLIANCE	SHUTDOWN INDIVIDUAL FAN POWERED MECHANICAL AIR HANDLING EQUIPMENT AND DAMPER(S)	SHUTDOWN ALL FAN POWERED MECHANICAL AIR HANDLING EQUIPMENT FOR AFFECTED HVAC SYSTEM	SHUTDOWN ALL FAN POWERED MECHANICAL AIR HANDLING EQUIPMENT	CLOSE ASSOCIATED SMOKE DAMPER
SIGNALING LINE OR NOTIFICATION APPLIANCE CIRCUIT - OPEN			●	●	●						
SIGNALING LINE OR NOTIFICATION APPLIANCE CIRCUIT - SHORT			●	●	●						
SIGNALING LINE OR NOTIFICATION APPLIANCE CIRCUIT - GROUND			●	●	●						
FIRE ALARM CONTROL PANEL LOSS OF POWER			●		●						
MANUAL PULL STATION	●			●	●	●				●	
SMOKE DETECTOR - SPOT TYPE	●			●	●	●				●	●
SMOKE DETECTOR - DUCT MOUNTED		●		●	●			●	●		●
WATER FLOW ALARM SWITCH	●			●	●	●	●			●	
VALVE TAMPER SWITCH		●		●	●						

FIRE ALARM LEGENDS AND NOTES

SYMBOL LEGEND				
SYM.	DESCRIPTION	MODEL	BACK BOX	QTY.
PAD4	AUDIBLE EXTENDER PANEL	PAD-4-9A	INCLUDED	01
	CEILING MULTI CRITERIA DETECTOR/STANDARD BASE	FDOOT441/DB-11	4" SQUARE OR 4" OCTAGON	07
T/R R	ADDRESSABLE INTERFACE MODULE W/ RELAY	XTRI-R	3.50" DEEP DOUBLE GANG	05
T/R D	DUAL ADDRESSABLE INTERFACE MODULE	XTRI-D	3.50" DEEP DOUBLE GANG	01
	DUAL ACTION MANUAL PULL STATION	XMS-D	3.50" DEEP SINGLE GANG	01
TSM	ADDRESSABLE REMOTE TEST SWITCH MODULE	TSM-1X	SINGLE GANG	02
	DUCT SMOKE DETECTOR	FDBZ492/FD0421/ST100	N/A	02
	FIRE ALARM CHIME/STROBE	CH-MC-W	4" SQUARE	08
WP	FIRE ALARM WEATHERPROOF HORN STROBE	AS-HMC-R-WP	WPBBS-R	02
	DOOR HOLDERS	DH24120FC	–	04
EOLR	END OF LINE RESISTOR	–	N/A	03
JB	JUNCTION BOX	–	N/A	10
(E)	EXISTING – FIRE ALARM CHIME/STROBE	ZH-MC-W	4" SQUARE	03
(E)	EXISTING – CEILING SMOKE DETECTOR/STD. BASE	HFP-11/DB-11	4" SQUARE OR 4" OCTAGON	01
T	TAMPER SWITCH (BY OTHERS)	BY OTHERS	BY OTHERS	01
W	WATERFLOW SWITCH (BY OTHERS)	BY OTHERS	BY OTHERS	01

NOTE: 4" SQUARE x 2-1/8" BACKBOX W/4" SQUARE x 1-1/2" EXTENSION RING

DETECTION GENERAL NOTES

1. NUMBERS ADJACENT TO DEVICE SYMBOL DENOTE DEVICE CIRCUIT/ADDRESS DEVICE 001.002 WOULD BE THE SECOND DEVICE ON ADDRESSABLE LOOP 1.
2. DETECTOR AND AUDIBLE CIRCUIT POLARITY SHALL BE OBSERVED.
3. AUDIBLE/VISUAL CIRCUIT WIRING IS SUPERVISED. NO PARALLEL BRANCHING IS PERMISSIBLE. ALL WIRING IN NAC BOOSTER PANELS TO BE COMPLETED BY INSTALLER.
4. CONDUIT RUNS SHOWN DIAGRAMMATICALLY. EXACT LOCATION IS TO BE DETERMINED IN THE FIELD
5. INSTALLATION SHALL BE IN STRICT CONFORMANCE WITH THE NATIONAL ELECTRIC CODE, LOCAL CODE(S), IBC 2012, AND/OR AUTHORITY HAVING JURISDICTION.
6. INSTALLATION MATERIALS (I.E. CONDUIT, WIRE, FITTINGS, HANGERS, AND STANDARD BOXES) ARE NOT SUPPLIED BY SIEMENS.
7. DETECTORS SHALL NOT BE MOUNTED IN DIRECT AIR STREAM. MUST BE MINIMUM OF 3' FROM DIFFUSER.
8. WIRING SHALL BE PER PLAN WITH RESPECT TO CONDUCTOR SIZE, TYPE, QUANTITY AND COLOR CODE. CONDUCTORS SHALL BE PERMANENTLY MARKED FOR FUTURE IDENTIFICATION.
9. INSTALLING CONTRACTOR SHALL RETURN ONE SET OF ACCURATELY MARKED DRAWINGS FOR "AS BUILT" PURPOSES.
10. FOR ADDITIONAL INSTALLATION INSTRUCTIONS, REFER TO CATALOG CUT SHEETS AND/OR INSTALLATION INSTRUCTIONS.
11. 120vac POWER SHALL NOT BE APPLIED TO FIRE ALARM PANEL WITHOUT DIRECT SUPERVISION OF A SIEMENS TECHNICIAN.
12. ALL HORN/STROBE AND STROBE DEVICES SHALL BE MOUNTED AT A HEIGHT OF 80" A.F.F. OR 6" BELOW DROPPED CEILING, WHICHEVER IS LESS.
13. ALL MANUAL PULL STATIONS SHALL BE MOUNTED AT A HEIGHT OF 48" ABOVE FINISHED FLOOR.
14. SMOKE DETECTORS MOUNTED ON A WALL SHALL BE INSTALLED WITH THE TOP OF THE DETECTOR NOT LESS THAN 4" (102 mm) NOR MORE THAN 12" (305 mm) BELOW THE FINISHED CEILING.
15. SMOKE DETECTORS SHALL NOT BE INSTALLED CLOSER THAN 3' FROM ANY FLUORESCENT LIGHT SOURCE.
16. ADDRESSING OF FIELD DEVICES TO BE COMPLETED BY INSTALLING CONTRACTOR.
17. THE FIRE ALARM SYSTEM SHOWN HAS BEEN DESIGNED PER THE REQUIREMENTS OF NFPA 72, 2013 EDITION.

WIRE LIST & LEGEND

SYM.	DESCRIPTION	AWG
A	DETECTION (TWISTED PAIR)	1 PAIR 18GA. TW/SOLID
B	STROBE (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
C	CHIME (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
D	DOOR HOLDER 24VDC POWER (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
P	PAD-4 ACTIVATION CIRCUIT	1 PAIR 18GA. TW/SHLD SOLID

DRAWING INDEX

SCOPE OF WORK:

NEW ADDITION TO HOSPITAL WITH EXISTING FIRE ALARM SYSTEM. ADDING NEW CHIME AND STROBE CIRCUITS TO THE AREA OF WORK. ADDING ADDITIONAL INITIATING DEVICES TO THE AREA OF WORK. NEW SLC CIRCUITS WILL CONNECT TO THE EXISTING FIRE ALARM SYSTEM.

Missouri State Certificate of Authority #000816

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NUMBER PE-23228
PROFESSIONAL ENGINEER
4-24-2023
TIM L. SCOTT
LICENSE # E-23228

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PROJECT NUMBER
44OP-331138

JOB NAME & LOCATION (STREET ADDRESS)
LEE'S SUMMIT MEDICAL CENTER - ICU EXPANSION
2100 SE BLUE PARKWAY
LEE'S SUMMIT, MISSOURI 64063

DRAWING SET REVISIONS

REV	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	SS	3/31/2022

PROJECT ENGINEER OF RECORD

PROJECT INSTALLATION CONTRACTOR

SIEMENS CONTACT INFORMATION
PROJECT MANAGER
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SHEET CONTENTS
FA - COVER SHEET SYMBOLS & LEGENDS

INSTALLATION TYPE
- NEW / EXISTING / TENANT RENOVATION
- PER CONTRACT DOCUMENTS

- ☐ FOR PRELIMINARY SUBMISSION
- ■ FOR SUBMISSON AND APPROVAL
- ☐ FOR CONSTRUCTION

DWG FILE:	44OP-331138 FA DWG_R0.dwg
SCALE:	NTS
DRAWN BY: SURYA	CHECKED BY: PAVAN
BASE DRAWN DATE: 3/24/2022	PLOT DATE: 3/31/2022

SHEET
FA-01

GENERAL REFERENCE NOTE REGARDING FPL: PER NFPA 70 (NATIONAL ELECTRIC CODE)

TYPE FPLP:
TYPE FPLP POWER-LIMITED FIRE ALARM PLENUM CABLE SHALL BE LISTED AS BEING SUITABLE FOR USE IN DUCTS, PLENUMS, AND OTHER SPACE USED FOR ENVIRONMENTAL AIR AND SHALL ALSO BE LISTED AS HAVING ADEQUATE FIRE-RESISTANT AND LOW SMOKE-PRODUCING CHARACTERISTICS.

TYPE FPLR:
TYPE FPLR POWER-LIMITED FIRE ALARM RISER CABLE SHALL BE LISTED AS BEING SUITABLE FOR USE IN A VERTICAL RUN IN A SHAFT OR FROM FLOOR TO FLOOR AND SHALL ALSO BE LISTED AS HAVING FIRE-RESISTANT CHARACTERISTICS CAPABLE OF PREVENTING THE CARRYING OF FIRE FROM FLOOR TO FLOOR.

NOTE: SPEAKER/STROBE APPLIANCES ARE 4-WIRE DEVICES REQUIRING SEPARATE CIRCUITS. THE RISER DIAGRAM DEPICTS THESE SEPARATE CIRCUITS FOR CLARITY AND SEQUENTIAL APPLIANCE LABELING ONLY.

WIRE SELECTION & REQUIREMENTS

PLENUM CABLE VS. NON-PLENUM
THE NEC RECOGNIZES 3 TYPES OF POWER LIMITED FIRE ALARM CABLING:

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

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

FPLP – THIS IS A POWER LIMITED CABLE THAT CAN BE USED IN A PLENUM, RISER, OR FOR GENERAL PURPOSES.

A PLENUM IS ANY AREA USED TO CONDUCT ENVIRONMENTAL AIR. PLENUM SPACES CAN BE DUCTWORK, THE SPACE ABOVE A DROP CEILING, OR BELOW A RAISED FLOOR. BECAUSE THESE SPACES ARE BEING USED FOR THE AIR HANDLING SYSTEM THERE ARE STRICT RULES THAT MUST BE FOLLOWED TO REDUCE THE RISK OF INTRODUCING TOXIC FUMES IN THE EVENT OF A FIRE. SINCE FIRE ALARM CABLING IS OFTEN INSTALLED EXPOSED, WITHOUT CONDUIT, ABOVE DROP CEILINGS THE CABLING MUST BE RATED FOR USE IN A PLENUM SPACE.

CIRCUIT MARKING
THE EQUIPMENT SHALL BE DURABLY MARKED WHERE PLAINLY VISIBLE TO INDICATE EACH CIRCUIT THAT IS A POWER-LIMITED FIRE ALARM CIRCUIT.

EXCEPTION WHERE A POWER- LIMITED CIRCUIT IS TO BE RECLASSIFIED AS A NON-POWER-LIMITED CIRCUIT.

SUPPORT OF CONDUCTORS
POWER-LIMITED FIRE ALARM CIRCUIT CONDUCTORS SHALL NOT BE STRAPPED, TAPED, OR ATTACHED BY ANY MEANS TO THE EXTERIOR OF ANY CONDUIT OR OTHER RACEWAY AS A MEANS OF SUPPORT.

WIRE ROUTING
SEPARATION FROM ELECTRIC LIGHT, POWER, CLASS 1, NPLFA, AND MEDIUM POWER NETWORK-POWERED BROADBAND COMMUNICATIONS CIRCUIT CONDUCTORS.

(A) GENERAL. POWER-LIMITED FIRE ALARM CIRCUIT CABLES AND CONDUCTORS SHALL NOT BE PLACED IN ANY CABLE, CABLE TRAY, COMPARTMENT, ENCLOSURE, MANHOLE, OUTLET BOX, DEVICE BOX, RACEWAY, OR SIMILAR FITTING WITH CONDUCTORS OF ELECTRIC LIGHT, POWER, CLASS 1, NON-POWER-LIMITED FIRE ALARM CIRCUITS, AND MEDIUM POWER NETWORK-POWERED BROADBAND COMMUNICATIONS CIRCUITS.

IN HOISTWAYS, POWER-LIMITED FIRE ALARM CIRCUIT CONDUCTORS SHALL BE INSTALLED IN RIGID METAL CONDUIT, RIGID NONMETALLIC CONDUIT, INTERMEDIATE METAL CONDUIT, LIQUID TIGHT FLEXIBLE NONMETALLIC CONDUIT, OR ELECTRICAL METALLIC TUBING. FOR ELEVATORS OR SIMILAR EQUIPMENT, THESE CONDUCTORS SHALL BE PERMITTED TO BE INSTALLED.

CABLES INSTALLED IN DUCTS, PLENUMS, AND OTHER SPACES USED FOR ENVIRONMENTAL AIR SHALL BE TYPE FPLP. ABANDONED CABLES SHALL NOT BE PERMITTED TO REMAIN. TYPES FPLP, FPLR, AND FPL CABLES SHALL BE PERMITTED.

CABLES INSTALLED IN VERTICAL RUNS AND PENETRATING MORE THAN ONE FLOOR, OR CABLES INSTALLED IN VERTICAL RUNS IN A SHAFT, SHALL BE TYPE FPLR. FLOOR PENETRATIONS REQUIRING TYPE FPLR SHALL CONTAIN ONLY CABLES SUITABLE FOR RISER OR PLENUM USE. ABANDONED CABLES SHALL NOT BE PERMITTED TO REMAIN.

DEVICE I.D. NOMENCLATURE

NOTIFICATION APPLIANCE (NAC) PANEL:

PWR

NOTE:
NAC PANEL NUMBER INCORPORATED INTO NAC APPLIANCE ADDRESS AS SHOWN BELOW:

CH75-1
ST75-1

INITIATING DEVICES:

104.013
- DENOTES DEVICE NUMBER
- DENOTES CARD LOOP NUMBER

NAC STROBE APPLIANCE:

CH75-1
ST75-1
30cd
- DENOTES NOTIFICATION CIRCUIT NUMBER
- DENOTES NOTIFICATION DEVICE NUMBER
- DENOTES CANDELA RATING

NOTE: ANY NOTIFICATION APPLIANCE LABELED WITH A 'WP' DESIGNATION DENOTES WEATHERPROOF

STROBE CANDELA

STROBE UNITS SHALL BE SET TO THE CANDELA SETTING AS INDICATED ON THE PLANS.

SETTING KEY:

WALL MOUNTED:	CEILING MOUNTED:
15cd = 15 CANDELA SETTING	15cd = 15 CANDELA SETTING
30cd = 30 CANDELA SETTING	30cd = 30 CANDELA SETTING
75cd = 75 CANDELA SETTING	75cd = 75 CANDELA SETTING
110cd = 110 CANDELA SETTING	95cd = 95 CANDELA SETTING

WEATHERPROOF:
30cd = 30 CANDELA SETTING   115cd = 115 CANDELA SETTING
* NOTE: WEATHERPROOF APPLIANCES HAVE A HIGHER CURRENT DRAW

ALL SETTINGS OF THE STROBES IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR ALL SETTINGS ARE TO BE MADE PRIOR TO INSTALLATION OF THE DEVICE.

WIRE FILL CHART FOR EMT

TRADE SIZE	NOMINAL INTERNAL DIA. INCH	TOTAL AREA 100% FILL SQ INCH	60% FILL SQ INCH	1 WIRE 53% FILL SQ INCH	2 WIRES 31% FILL SQ INCH	2+ WIRES 40% FILL SQ INCH
1/2 INCH	.622	.304	.182	.161	.094	.122
3/4 INCH	.824	.533	.320	.283	.165	.213
1 INCH	1.049	.864	.519	.458	.268	.346
1-1/4 INCH	1.380	1.496	.897	.793	.464	.598
1-1/2 INCH	1.610	2.036	1.221	1.079	.631	.814
2 INCH	2.067	3.356	2.013	1.778	1.040	1.342
2-1/2 INCH	2.731	5.858	3.515	3.105	1.816	2.343
3 INCH	3.356	8.846	5.307	4.688	2.742	3.538
3-1/2 INCH	3.834	11.545	6.927	6.119	3.579	4.618
4 INCH	4.334	14.753	8.852	7.819	4.573	5.901

NOTE: DRAWINGS ARE BASED UPON A CONDUIT INSTALLATION.

BEFORE YOU START INSTALLING...

1. CALL SIEMENS TO SCHEDULE A PROJECT REVIEW MEETING BEFORE INSTALLING ANY DEVICES.
2. IT IS BEST TO USE "DEEP" BACK BOXES WHEN INSTALLING MODULES AND PULL STATIONS. THE DEEP BACK BOX WILL PROVIDE MORE ROOM FOR THE WIRES, AND IT WILL CUT DOWN ON GROUNDS AND SHORTS.
3. WHEN INSTALLING DEVICES, TAPE THE "IN" SIDE OF THE WIRE WITH BLACK ELECTRICAL TAPE TO AVOID CROSSING WIRES AND POLARITY.
4. WHEN USING SHIELDED CABLE, THE SHIELD MUST BE GROUNDED ONLY AT THE FIRE ALARM CONTROL PANEL (DO NOT GROUND ANYWHERE ELSE). SHIELDS SHALL BE KEPT CONTINUOUS THROUGHOUT THE CIRCUIT AND KEPT FREE FROM ANY REFERENCE TO EARTH GROUND. SHIELDS MUST BE SPLICED THRU AND INSULATED FROM EVERY BACK BOX. DO NOT LAND THE SHIELD ON THE DEVICE.
5. THE CUSTOM DEVICE MESSAGES FOR ANNUNCIATION ARE BASED ON DRAWINGS PROVIDED BY ARCHITECT/ ENGINEER. IF MESSAGES ARE GOING TO CHANGE, END USER MUST SIGN OFF.
6. ALWAYS USE GROMMETS/BUSHINGS ON THE END OF CONDUIT STUB-UPS, IN ELECTRICAL BOXES & CONNECTIONS TO PANELS, & ALL POINTS WHERE WIRING EXITS CONDUIT, TO AVOID SCRAPING OF WIRE COATING AND POTENTIAL GROUND FAULTS.
7. REVIEW CUT SHEETS FOR ALL DEVICES TO VERIFY CORRECT INSTALLATION PROCEDURES ARE USED. EACH EACH DEVICE HAS INSTALLATION AND WIRING INSTRUCTIONS INCLUDED IN PACKAGING. ALWAYS SAVE INSTRUCTION SHEETS, CUT SHEETS AND MANUALS FOR THE OWNER.
8. FIRE WALL/ FLOOR PENETRATIONS MUST BE PATCHED WITH APPROVED FIRE PATCH WHICH MAINTAINS THE PARTITION'S RATING. BOTH SIDES OF THE PENETRATION MUST BE FIRESTOPPED.
9. PRIOR TO SCHEDULING START UP WITH SIEMENS FIRE SAFETY, VERIFY THAT YOUR PROJECT MEETS ALL THE CRITERIA OUTLINED BELOW IN THE "CHECK LIST FOR START UP". A MINIMUM OF TEN DAYS NOTICE IS REQUIRED FOR SCHEDULING YOUR START UP.

POWER UP/DOWN SEQUENCE

CAUTION: ALWAYS REMOVE POWER (BATTERY/AC) AND WAIT AT LEAST 10 SECONDS TO ALLOW SUPPLY VOLTAGES TO DECAY BEFORE INSTALLING OR REMOVING ANY MODULE, CARD, CABLE, OR WIRING. AUXILIARY SUPPLIES MUST BE POWERED DOWN PRIOR TO THE MAIN (MXL) SUPPLIES.

1. POWER UP.
   A. CONNECT AC POWER FIRST.
   B. CONNECT THE BATTERY SECOND.
2. POWER DOWN.
   A. DISCONNECT THE BATTERY FIRST.
   B. DISCONNECT AC POWER SECOND.

NOTE:
PLEASE REFER TO THE LOCAL JURISDICTION (AHJ) AND A CURRENT COPY OF THE NATIONAL FIRE PROTECTION ASSOCIATION'S NATIONAL ELECTRICAL CODE AND NATIONAL FIRE ALARM CODE FOR ANY QUESTIONS YOU HAVE RELATED TO CODE COMPLIANCE. ALL INFORMATION CONTAINED ON THIS SHEET IS GENERAL INFORMATION AND SHOULD NOT BE USED AS A SOLE SOURCE FOR INSTALLATIONS. SIEMENS FIRE SAFETY OR SIEMENS EMPLOYEES SHALL NOT BE RESPONSIBLE FOR ANY MISINTERPRETATIONS OR LIABILITIES THAT MAY ARISE FROM THE USE OF THIS DOCUMENT.

CHECK LIST FOR START UP

THE FOLLOWING IS A LIST OF CRITERIA THAT MUST BE MEET PRIOR TO START UP

- ☐ MARK-UP THE SIEMENS FIRE SAFETY SHOP DRAWINGS, SHOWING THE ACTUAL WIRE RUNS. NOTE ANY DISCREPENCIES/CHANGES BETWEEN THE ACTUAL CONDITIONS AND THE SYSTEM DRAWINGS SHOULD BE NOTED FOR INCLUSION ON THE FINAL AS-BUILT DRAWINGS OF RECORD.
- ☐ ALL DEVICES HAVE BEEN INSTALLED AND TERMINATED PROPERLY.
- ☐ CONTACTED SIEMENS FIRE SAFETY PROJECT MANAGER TEN DAYS PRIOR TO SCHEDULED START UP.
- ☐ IF YOUR SYSTEM IS BEING FURNISHED WITH A DIALER, (2) RJ31X PHONE JACKS MUST BE INSTALLED WITHIN 3FT. OF THE F.A.C.P. THESE PHONE LINES MUST BE CONNECTED BEFORE TO ALL BUILDING PHONE EQUIPMENT (NO "9" PREFIX), AND SHOULD HAVE NO DIAL-OUT RESTRICTIONS. PROVIDE THE SIEMENS PROJECT MANAGER WITH A CUSTOMER EMERGENCY CALL LIST. IF MONITORING NOT PROVIDED BY SIEMENS, THEN FOLLOWING INFORMATION MUST ALSO BE OBTAINED PRIOR TO START UP: CENTRAL STATION ACCOUNT NUMBER, RECEIVER PHONE NUMBERS, CENTRAL STATION VOICE LINE NUMBER,AND ALARM COMPANY PHONE NUMBER.
- ☐ ALL FIELD DEVICES, SMOKE DETECTORS, MONITOR MODULES, CONTROL MODULES, NOTIFICATION APPLIANCES BOTH VISUAL AND AUDIBLE ARE ADDRESSED AND OUTPUT SET (AS REQUIRED) AND INSTALLED.

CHECK FIELD WIRING WITH AN OHM METER:

ALL FIRE ALARM CIRCUITS SHOULD BE COMPLETED AND TESTED BEFORE THE ARRIVAL OF THE FIRE ALARM TECHNICIAN. CIRCUITS MUST BE FREE OF OPENS, SHORTS, AND GROUND FAULTS BEFORE BEING CONNECTED TO THE SYSTEM. CIRCUITS SHOULD HAVE END OF LINE RESISTORS INSTALLED BEFORE TESTING THEM. A WRITTEN CONFIRMATION SHALL BE PROVIDE TO SIEMENS BY THE INSTALLER ACKNOWLEDGING ALL CIRCUITS HAVE BEEN TESTED. ADHERENCE TO THIS PRACTICE WILL SAVE TIME AND MONEY FOR ALL CONCERNED PARTIES. IF IT IS A NAC CIRCUIT, THE RESISTOR IS WITH THE EQUIPMENT THAT CONTROLS THAT CIRCUIT.

A GROUND FAULT IS A CONDUCTOR THAT IS CONNECTED TO GROUND. THEY CAN OCCUR FROM SKINNED INSULATION OR INTERNAL DEVICE FAILURES. FIRE ALARM SYSTEMS MONITOR BOTH THE POSITIVE AND NEGATIVE CONDUCTORS FOR SHORTS TO GROUND. SHORTS CAN BE DETECTED BY USING A CONTINUITY DETECTOR OR AN OHMMETER. SIMPLY CONNECT ONE LEAD OF YOUR METER TO A GOOD GROUND SOURCE AND THE OTHER TO THE CONDUCTOR YOU ARE TRYING TO TEST. THE METER SHOULD GIVE AN INDICATION OF AN OPEN IF THE CIRCUIT IF FREE FROM A FAULT. ALL SYSTEM FIELD WIRING MUST BE FREE OF GROUNDS AND SHORTS, BEFORE THE START UP.

- ☐ MEASURE EACH CONDUCTOR OF THE ADDRESSABLE LOOP (SLC) TO GROUND, CONDUCTOR TO CONDUCTOR, CONDUCTOR TO SHIELD, AND SHIELD TO EARTH. THE RESISTANCE SHOULD BE GREATER THAN 1 MEGA OHM. NOTE LINE TO LINE MEASUREMENTS REQUIRE ONE END OF THE PAIR TO BE SHORTED. STRAY VOLTAGES SHOULD BE LESS THAN 1 VDC/AC. RECORD THE READINGS
- ☐ MEASURE EACH CONDUCTOR OF THE NOTIFICATION APPLIANCE CIRCUIT (NAC) TO GROUND, AND CONDUCTOR TO CONDUCTOR. THE RESISTANCE SHOULD BE GREATER THAN 1 MEGA OHM, WITHOUT THE END OF LINE RESISTOR. STRAY VOLTAGES SHOULD BE LESS THAN 1 VDC/AC.
- ☐ MEASURE ACROSS THE CONDUCTORS OF A NOTIFICATION APPLIANCE CIRCUIT(NAC), YOUR READING SHOULD BE EQUIVALENT TO THE VALUE OF THE END OF LINE RESISTOR INSTALLED AT THE LAST DEVICE.

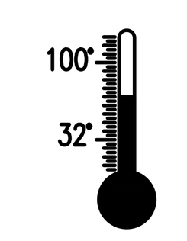
IF THE MEASUREMENTS ARE NOT WITHIN THE ACCEPTABLE VALUES, THE CIRCUIT WIRING HAS A SHORT OR AN OPEN, AND IS NOT READY FOR START UP!

INSTALLATION GENERAL NOTES

1. NUMBERS ADJACENT TO DEVICE SYMBOL DENOTE DEVICE CIRCUIT/ADDRESS. ALL ADDRESSABLE DEVICES INCLUDING BUT NOT LIMITED TO SMOKE DETECTORS, PULL STATIONS, INTERFACE MODULES MUST BE PROGRAMMED WITH DEVICE ADDRESS PRIOR TO INSTALLATION.
2. DETECTION AND NOTIFICATION CIRCUIT POLARITY SHALL BE OBSERVED.
3. AUDIBLE/VISUAL CIRCUIT WIRING IS SUPERVISED. NO PARALLEL BRANCHING (T-TAPPING) IS PERMISSIBLE.
4. CONDUIT RUNS SHOWN DIAGRAMMATICALLY. EXACT LOCATION IS TO BE DETERMINED IN THE FIELD.
5. INSTALLATION SHALL BE IN STRICT CONFORMANCE WITH THE NATIONAL ELECTRIC CODE, LOCAL CODE(S), AND/OR AUTHORITY HAVING JURISDICTION.
6. INSTALLATION MATERIALS (I.E. CONDUIT, WIRE, FITTINGS, HANGERS, AND STANDARD BOXES) ARE NOT SUPPLIED BY SIEMENS.
7. DETECTORS SHALL NOT BE MOUNTED IN DIRECT AIR STREAM OF AIR SUPPLY OUTLETS.
8. WIRING SHALL BE PER PLAN WITH RESPECT TO CONDUCTOR SIZE, TYPE, QUANTITY AND COLOR CODE. CONDUCTORS SHALL BE PERMANENTLY MARKED FOR FUTURE IDENTIFICATION.
9. INSTALLING CONTRACTOR SHALL RETURN ONE SET OF ACCURATELY MARKED DRAWINGS FOR "AS BUILT" PURPOSES.
10. FOR ADDITIONAL INSTALLATION INSTRUCTIONS, REFER TO CATALOG CUT SHEETS AND/OR INSTALLATION INSTRUCTIONS.
11. 120vac POWER SHALL NOT BE APPLIED TO FIRE ALARM PANEL WITHOUT DIRECT SUPERVISION OF TECHNICIAN.
12. ALL HORN/STROBE AND STROBE DEVICES SHALL BE MOUNTED AT A HEIGHT OF 80" A.F.F. OR 6" BELOW DROPPED CEILING, WHICHEVER IS LESS.
13. ALL MANUAL PULL STATIONS SHALL BE MOUNTED AT A HEIGHT OF 48" ABOVE FINISHED FLOOR.
14. SMOKE DETECTORS MOUNTED ON A WALL SHALL BE INSTALLED WITH THE TOP OF THE DETECTOR NOT LESS THAN 4" (102 mm) NOR MORE THAN 12" (305 mm) BELOW THE FINISHED CEILING.
15. SMOKE DETECTORS SHALL BE INSTALLED NOT LESS THAN 1' FROM ANY FLUORESCENT LIGHT SOURCE AND 3' FROM ANY SUPPLY OR RETURN GRILLES.
16. ALL ADDRESSABLE DEVICES (SMOKE DETECTORS PULL STATION, INTERFACE MODULES, ETC.) SHALL BE PROGRAMMED PRIOR TO INSTALLATION.
17. STROBE CANDELA SETTINGS SHALL BE SET AS SHOWN ON DRAWINGS PRIOR TO INSTALLATION. IF CANDELA SETTING IS NOT SHOWN THEN STROBE CANDELA SHALL BE SET AT 15cd (FACTORY DEFAULT).
18. EXACT LOCATION OF DUCT SMOKE DETECTORS SHALL BE COORDINATED IN THE FIELD WITH THE MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL NOTIFY SIEMENS OF ACTUAL DUCT WIDTHS SO THAT THE PROPER DUCT DETECTOR SAMPLING TUBE CAN BE PROVIDED. DUST COVERS MUST NOT BE REMOVED PRIOR TO STARTUP OF THE AIR HANDLING SYSTEM.
19. SPEAKER WATTAGE TAPS SHALL BE SET AS SHOWN ON DRAWINGS PRIOR TO INSTALLATION. IF WATTAGE TAP IS NOT SHOWN THEN SPEAKERS SHALL BE TAPPED AT 1/2 WATT. SET SPEAKER VOLTAGE TO 70V.
20. PER NFPA 72, DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER THE CONSTRUCTION CLEAN-UP OF ALL TRADES IS COMPLETE AND FINAL. EXCEPTION: WHERE REQUIRED BY THE AUTHORITY HAVING JURISDICTION FOR PROTECTION DURING CONSTRUCTION. DETECTORS THAT HAVE BEEN INSTALLED PRIOR TO FINAL CLEAN-UP BY ALL TRADES SHALL BE CLEANED OR REPLACED (IN ACCORDANCE WITH NFPA 72).
21. WIRING SHALL RUN CONTINUOUS FROM FACP TO FIRST DEVICE ON A CIRCUIT AND THEN FROM DEVICE TO DEVICE WITHOUT SPLICING IN PULL BOXES OR OTHER BACK BOXES OF DIFFERENT CIRCUITS.
22. ALL CABLES SHALL BE MARKED AS INDICATED ON FIRE ALARM RISER WITH A PERMANENT LABEL AT ALL DEVICES, JUNCTION BOXES AND FACP.
23. THE ELECTRICAL CONTRACTOR SHALL CLEAN ALL DIRT AND DEBRIS FROM THE OUTSIDE AND INSIDE OF THE FIRE ALARM BACK BOXES AND JUNCTION BOXES AFTER COMPLETION OF THEIR INSTALLATION.
24. DETECTORS MUST BE RATED FOR TEMPERATURE IN THE ENVIRONMENT IN WHICH IT IS LOCATED.
25. ALL WIRING BETWEEN FLOORS SHALL BE LOCATED IN CONDUIT.
26. ALL ADDRESSABLE INTERFACE MODULES ARE TO MONITOR NORMALLY OPEN CONTACTS.

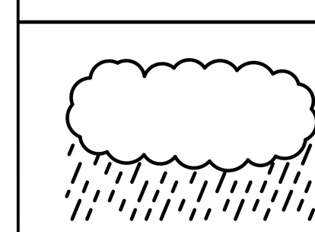
BUILDING IS PROTECTED THROUGHOUT WITH AUTOMATIC SPRINKLERS.

INSTALLATION GUIDELINES



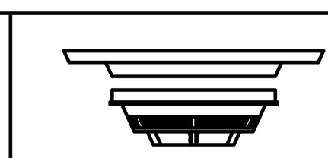
THE UL LISTED OPERATING TEMPERATURE RANGE FOR ALL ADDRESSABLE DEVICES: (FP-11'S, TRI'S, FPT-11'S, ETC.) IS FROM 32°F (0°C) TO 100°F (38°C). IF A DEVICE IS SHOWN IN AN AREA WHICH MAY EXPERIENCE EXTREME COLD OR HEAT, CONTACT YOUR SIEMENS REPRESENTATIVE.

GENERAL RULE: IF IT IS UNCOMFORTABLE FOR YOU, THE DEVICE WILL PROBABLY NOT OPERATE CORRECTLY.

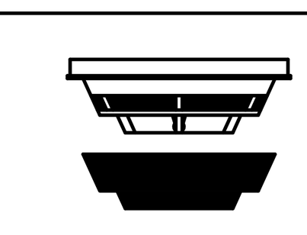


NEVER ALLOW ANY FIRE ALARM EQUIPMENT TO GET WET. ONLY WEATHERPROOF NOTIFICATION APPLIANCES (HORN/STROBES, STROBES, ETC.) MAY BE PLACED OUTSIDE.

IF EQUIPMENT DOES GET WET, CONTACT YOUR SIEMENS PROJECT MANAGER.

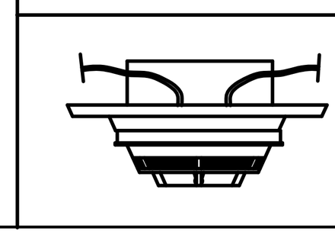


DO NOT INSTALL ADDRESSABLE DEVICES UNTIL THEY HAVE BEEN PROGRAMMED. CONTACT SIEMENS FIRE SAFETY TO SCHEDULE A PROGRAMMING SESSION.



DO NOT REMOVE RED DUST COVER(S) FROM SMOKE DETECTORS UNTIL ALL CONSTRUCTION HAS BEEN COMPLETED.

DETECTORS THAT HAVE HAD THEIR DUST COVERS REMOVED PRIOR TO THE FINAL CLEAN-UP OF ALL TRADES SHALL BE CLEANED OR REPLACED. SIEMENS CANNOT BE RESPONSIBLE FOR FAULTS FOUND TO BE DUST & DIRT RELATED.



ALL INITIATING DEVICES (SMOKES, MANUAL PULLS, ETC.) AND NOTIFICATION APPLIANCES (HORNS, STROBES, ETC.) MUST BE INSTALLED WITH BACKBOXES. THE EQUIPMENT SHOULD NEVER BE SUPPORTED WITH THE CIRCUIT WIRES.

ABBREVIATIONS LEGEND

TYPICAL

(AC) = ABOVE CEILING	EOL = END OF LINE	NIC = NOT IN CONTRACT
(C) = CEILING MOUNTED	EPO = EMERGENCY POWER OFF	NTS = NOT TO SCALE
(E) = EXISTING	ETR = EXISTING TO REMAIN	OAHU = OUTSIDE AIR HANDLING UNIT
(N) = NEW	FACP = FIRE ALARM CONTROL PANEL	PIT = ELEVATOR PIT
(RC) = EXISTING TO REMOVE AND COVER	FATC = FIRE ALARM TERMINAL CABINET	RTU = ROOF TOP UNIT
(RD) = EXISTING DEVICE TO BE RELOCATED	FBO = FURNISHED BY OTHERS	SCC = STATUS COMMAND CENTER
(RL) = RELOCATED DEVICE	FCC = FIRE COMMAND CENTER	SLC = SIGNALING LINE CIRCUIT
(RR) = REMOVE EXISTING AND REPLACE W/NEW	FS = WATERFLOW SWITCH	SMOK = SMOKE
(SF) = DEVICE MOUNTED IN SUBFLOOR	FSD = FIRE SMOKE DAMPER	SUPV = SUPERVISORY
(WM) = WALL MOUNT	GCC = GRAPHIC COMMAND CENTER	TOS = ELEVATOR TOP OF SHAFT
AFF = ABOVE FINISHED FLOOR	HT = HEIGHT	TRBL = TROUBLE
AHJ = AUTHORITY HAVING JURISDICTION	HI/LO = HIGH/LOW AIR PRESSURE	TS = VALVE TAMPER
AHU = AIR HANDLING UNIT	MAX = MAXIMUM	TYP = TYPICAL
ALM = ALARM	MIN = MINIMUM	UNO = UNLESS NOTED OTHERWISE
ANN = ANNUNCIATOR	N/A = NOT APPLICABLE	VCC = VOICE COMMAND CENTER
BMS = BUILDING MANAGEMENT SYSTEM	NAC = NOTIFICATION APPLIANCE CIRCUIT	W/ = WITH
CD = CANDELA (EX. 15CD)	NDU = NETWORK DISPLAY UNIT	W = (EX. 1/2W) WATT
DET = DETECTOR	NEC = NATIONAL ELECTRICAL CODE	WP = WEATHERPROOF
ELEV = ELEVATOR	NFPA = NATIONAL FIRE PROTECTION ASSOCIATION	XP = EXPLOSION PROOF

FIELD WIRING STYLE

– INITIATING WIRING – CLASS "B"
– NAC CIRUITS – CLASS "B"

Missouri State Certificate of Authority #000816

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4-24-2023
TIM L. SCOTT
LICENSE # E-23228

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PROJECT NUMBER
44OP-331138

JOB NAME & LOCATION (STREET ADDRESS)
LEE'S SUMMIT MEDICAL CENTER - ICU EXPANSION
2100 SE BLUE PARKWAY
LEE'S SUMMIT, MISSOURI 64063

DRAWING SET REVISIONS

REV	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	SS	3/31/2022

PROJECT ENGINEER OF RECORD

PROJECT INSTALLATION CONTRACTOR

SIEMENS CONTACT INFORMATION
PROJECT MANAGER
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ERIC.COTTER@SIEMENS.COM

SALES REPRESENTATIVE
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SHEET CONTENTS
FA - GERNERAL NOTES AND INSTRUCTIONS

INSTALLATION TYPE
- NEW / EXISTING / TENANT RENOVATION
- PER CONTRACT DOCUMENTS

- ☐ FOR PRELIMINARY SUBMISSION
- ■ FOR SUBMISSON AND APPROVAL
- ☐ FOR CONSTRUCTION

DWG FILE:	44OP-331138 FA DWG_R0.dwg
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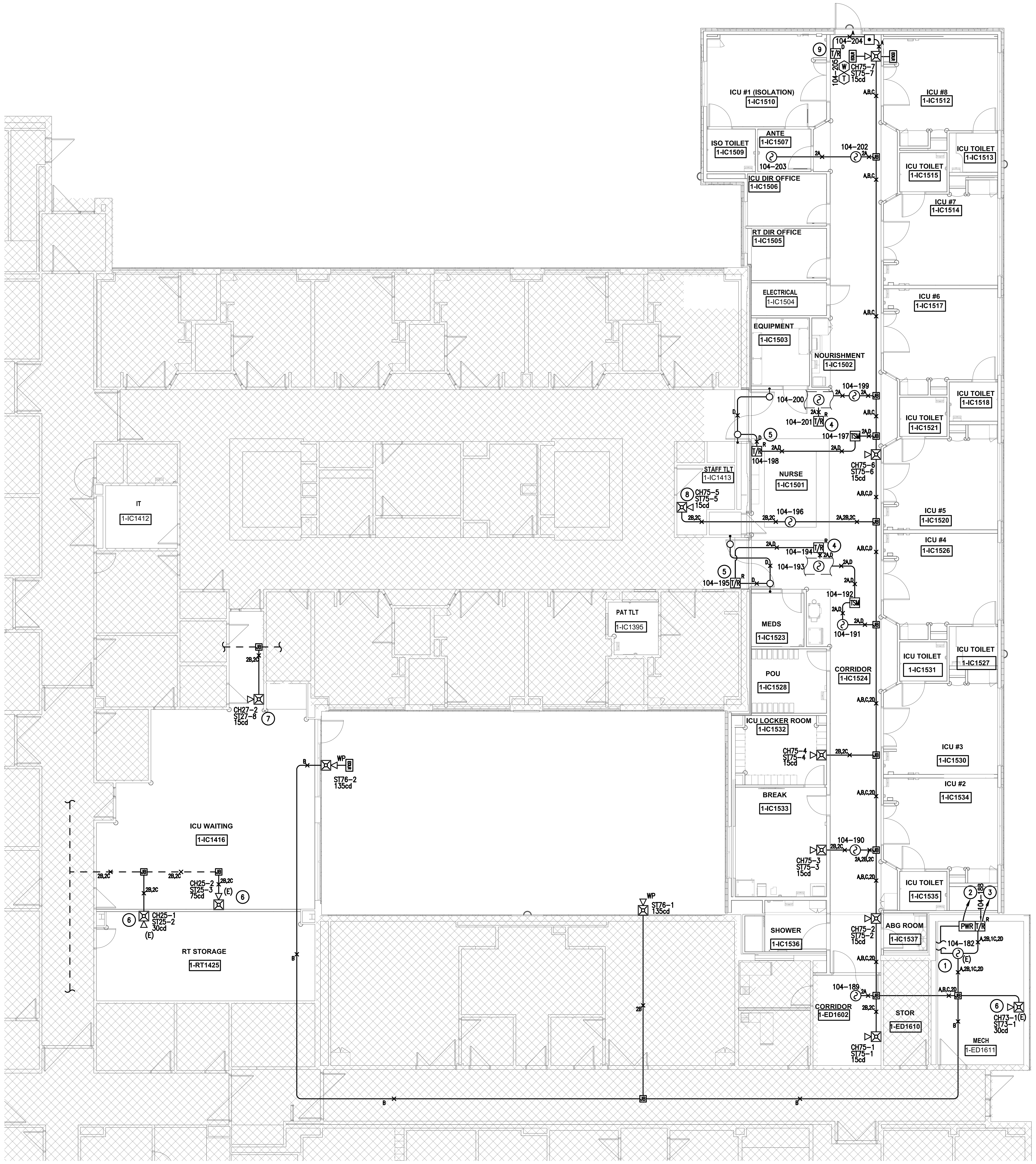
BASE DRAWN DATE: 3/24/2022	PLOT DATE: 3/31/2022

SHEET
FA-02



PLAN

FIRST FLOOR FIRE ALARM FLOOR PLAN

SCALE - 1/8" - 1'

PLAN NOTES

1. SLC CIRCUIT (104) FROM EXISTING DEVICE.
2. POWER INPUT 120VAC-60HZ (BY OTHERS).
3. XTRI-R IS USED FOR PAD-ACTIVATION.
4. XTRI-R IS ASSOCIATED WITH DUCT DETECTOR.
5. XTRI-R IS ASSOCIATED WITH DOOR HOLDERS.
6. REMOVE EXISTING CHIME STROBE AND RELOCATE AS SHOWN ON DRAWING. EXTEND EXISTING CIRCUIT "B,C" CABLE.
7. REMOVE EXISTING STROBE AND REPLACE CHIME STROBE AS SHOWN ON DRAWING. EXTEND EXISTING CIRCUIT "B,C" CABLE.
8. REMOVE EXISTING STROBE AND REPLACE NEW CHIME STROBE AS SHOWN ON DRAWING. CONNECT NEW CIRCUIT "B" & CHIME CIRCUIT "C" FROM NEW PAD PANEL #35.
9. XTRI-D IS ASSOCIATED WITH TAMPER SWITCH AND FLOW SWITCH. ITS LOCATION TO FINALIZED AS PER SITE CONDITION.

CONSTRUCTION NOTES

A. HATCHED AREA IS NOT PART OF THE SCOPE OF WORK FOR THIS PROJECT.

B. PULL NEW STROBE "B" CABLE AND CHIME "C" CABLE FROM PAD PANEL #35 LOCATED IN "MECH 1-ED1611".

C. PULL INITIATING "A" CABLE FROM EXISTING DEVICE [104-187] LOCATED IN "PLAN ROOM 1-ME1134".

LINE TYPE	DESCRIPTION
– – – – – – –	EXISTING CONDUIT ROUTING
————	PROPOSED CONDUIT ROUTING

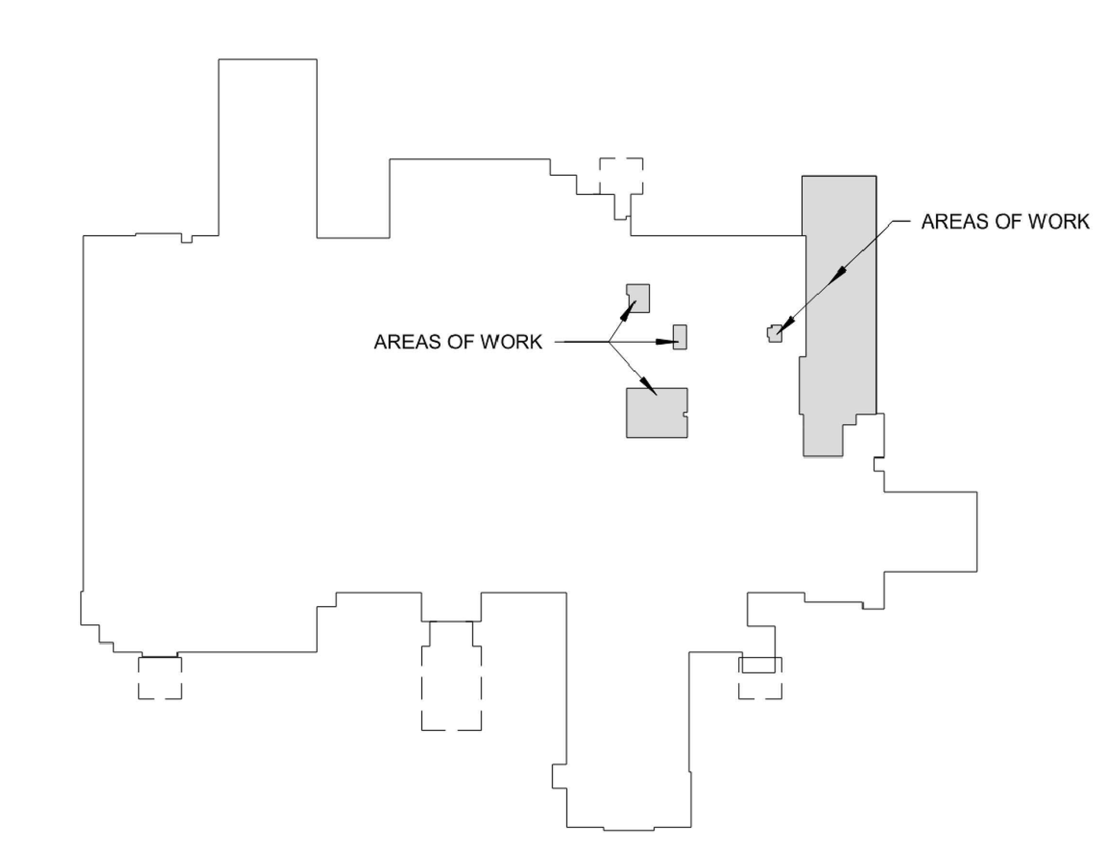
SYMBOL LEGEND

SYM.	DESCRIPTION	MODEL	BACK BOX	QTY.
PAD4	AUDIBLE EXTENDER PANEL	PAD-4-9A	INCLUDED	01
	CEILING MULTI CRITERIA DETECTOR/STANDARD BASE	FDOOT441/DB-11	4" SQUARE OR 4" OCTAGON	07
T/R R	ADDRESSABLE INTERFACE MODULE W/ RELAY	XTRI-R	3.50" DEEP DOUBLE GANG	05
T/R D	DUAL ADDRESSABLE INTERFACE MODULE	XTRI-D	3.50" DEEP DOUBLE GANG	01
	DUAL ACTION MANUAL PULL STATION	XMS-D	3.50" DEEP SINGLE GANG	01
TSM	ADDRESSABLE REMOTE TEST SWITCH MODULE	TSM-1X	SINGLE GANG	02
	DUCT SMOKE DETECTOR	FDBZ492/FDO421/ST100	N/A	02
	FIRE ALARM CHIME/STROBE	CH-MC-W	4" SQUARE	08
WP	FIRE ALARM WEATHERPROOF HORN STROBE	AS-HMC-R-WP	WPBBS-R	02
	DOOR HOLDERS	DH24120FC	–	04
EOLR	END OF LINE RESISTOR	–	N/A	03
JB	JUNCTION BOX	–	N/A	10
(E)	EXISTING – FIRE ALARM CHIME/STROBE	ZH-MC-W	4" SQUARE	03
(E)	EXISTING – CEILING SMOKE DETECTOR/STD. BASE	HFP-11/DB-11	4" SQUARE OR 4" OCTAGON	01
T	TAMPER SWITCH (BY OTHERS)	BY OTHERS	BY OTHERS	01
W	WATERFLOW SWITCH (BY OTHERS)	BY OTHERS	BY OTHERS	01

WIRE LIST & LEGEND

SYM.	DESCRIPTION	AWG
A	DETECTION (TWISTED PAIR)	1 PAIR 18GA. TW/SOLID
B	STROBE (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
C	CHIME (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
D	DOOR HOLDER 24VDC POWER (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
P	PAD-4 ACTIVATION CIRCUIT	1 PAIR 18GA. TW/SHLD SOLID

KEYPLAN



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NUMBER PE-23228
PROFESSIONAL ENGINEER
4-24-2023
TIM L. SCOTT
LICENSE # E-23228

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PROJECT NUMBER

44OP-331138

JOB NAME & LOCATION (STREET ADDRESS)

LEE'S SUMMIT MEDICAL CENTER - ICU EXPANSION
2100 SE BLUE PARKWAY
LEE'S SUMMIT, MISSOURI 64063

DRAWING SET REVISIONS

REV	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	SS	3/31/2022

PROJECT ENGINEER OF RECORD

PROJECT INSTALLATION CONTRACTOR

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SHEET CONTENTS

FA - FIRST FLOOR DEVICE LAYOUT

INSTALLATION TYPE
- NEW / EXISTING / TENANT RENOVATION
- PER CONTRACT DOCUMENTS

- ☐ FOR PRELIMINARY SUBMISSION
- ■ FOR SUBMISSON AND APPROVAL
- ☐ FOR CONSTRUCTION

DWG FILE:	44OP-331138 FA DWG_R0.dwg
SCALE:	1/8 INCH = 1 FOOT
DRAWN BY: SURYA	CHECKED BY: PAVAN
BASE DRAWN DATE: 3/24/2022	PLOT DATE: 3/31/2022

SHEET

FA-101

WIRE FILL CHART FOR EMT

TRADE SIZE	NOMINAL INTERNAL DIA. INCH	TOTAL AREA 100% FILL SQ INCH	60% FILL SQ INCH	1 WIRE 53% FILL SQ INCH	2 WIRES 31% FILL SQ INCH	2+ WIRES 40% FILL SQ INCH
1/2 INCH	.622	.304	.182	.161	.094	.122
3/4 INCH	.824	.533	.320	.283	.165	.213
1 INCH	1.049	.864	.519	.458	.268	.346
1-1/4 INCH	1.380	1.496	.897	.793	.464	.598
1-1/2 INCH	1.610	2.036	1.221	1.079	.631	.814
2 INCH	2.067	3.356	2.013	1.778	1.040	1.342
2-1/2 INCH	2.731	5.858	3.515	3.105	1.816	2.343
3 INCH	3.356	8.846	5.307	4.688	2.742	3.538
3-1/2 INCH	3.834	11.545	6.927	6.119	3.579	4.618
4 INCH	4.334	14.753	8.852	7.819	4.573	5.901

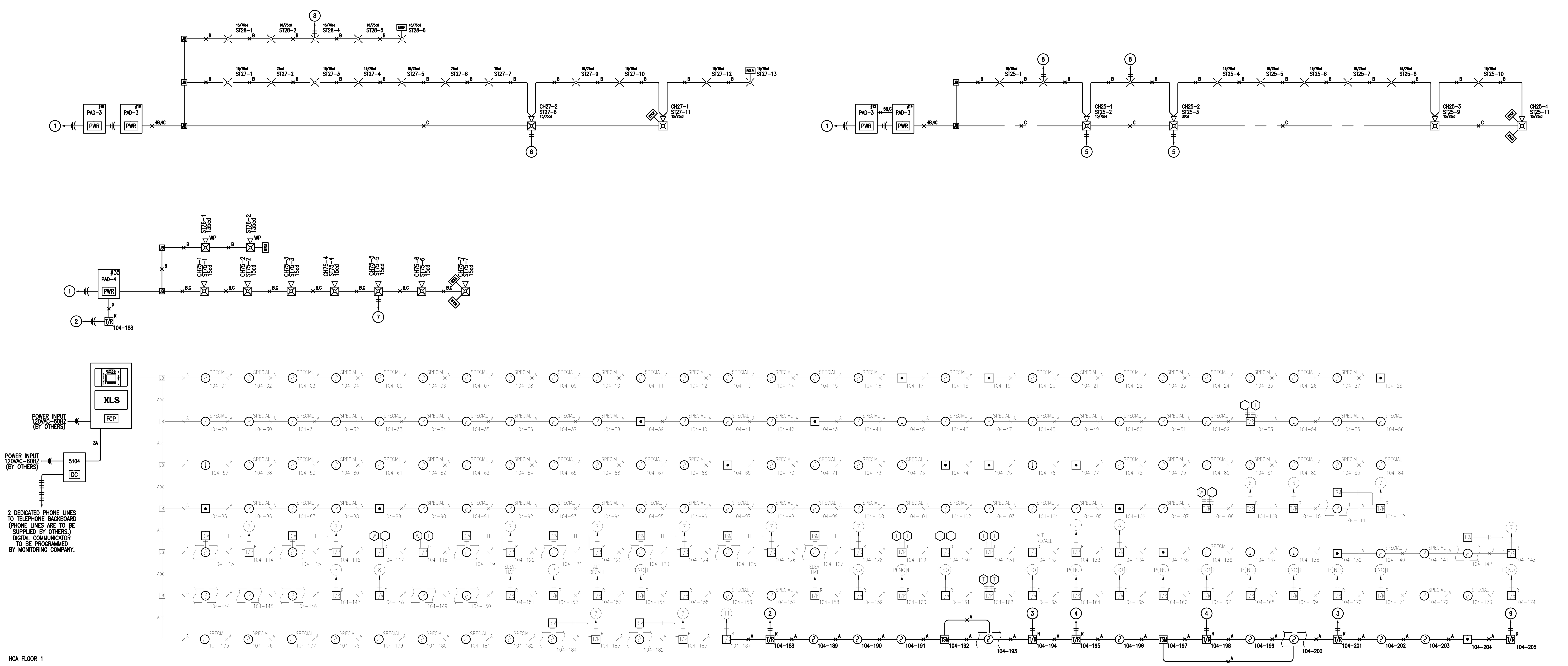
NOTE: DRAWINGS ARE BASED UPON A CONDUIT INSTALLATION.

WIRE LIST & LEGEND

SYM.	DESCRIPTION	AWG
A	DETECTION (TWISTED PAIR)	1 PAIR 18GA. TW/SOLID
B	STROBE (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
C	CHIME (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
D	DOOR HOLDER 24VDC POWER (TWISTED PAIR)	1 PAIR 14GA. TW/SOLID
P	PAD-4 ACTIVATION CIRCUIT	1 PAIR 18GA. TW/SHLD SOLID

PLAN NOTES

1. POWER INPUT 120VAC-60HZ (BY OTHERS)
2. XTRI-R IS USED FOR PAD-ACTIVATION.
3. XTRI-R IS ASSOCIATED WITH DUCT DETECTOR.
4. XTRI-R IS ASSOCIATED WITH DOOR HOLDERS.
5. REMOVE EXISTING CHIME STROBE AND RELOCATE AS SHOWN ON DRAWING. EXTEND EXISTING CIRCUIT "B,C" CABLE.
6. REMOVE EXISTING STROBE AND REPLACE CHIME STROBE AS SHOWN ON DRAWING. EXTEND EXISTING CIRCUIT "B,C" CABLE.
7. REMOVE EXISTING STROBE AND REPLACE NEW CHIME STROBE AS SHOWN ON DRAWING. CONNECT NEW CIRCUIT "B" & CHIME CIRCUIT "C" FROM NEW PAD PANEL #35.
8. REMOVE EXISTING STROBE AS PER THE NEW ARCHITECTURE PLAN.
9. XTRI-D IS ASSOCIATED WITH TAMPER SWITCH AND FLOW SWITCH. ITS LOCATION TO FINALIZED AS PER SITE CONDITION.



FIRE ALARM RISER DIAGRAM

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SHEET CONTENTS
FA-RISER DIAGRAM

INSTALLATION TYPE
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- PER CONTRACT DOCUMENTS

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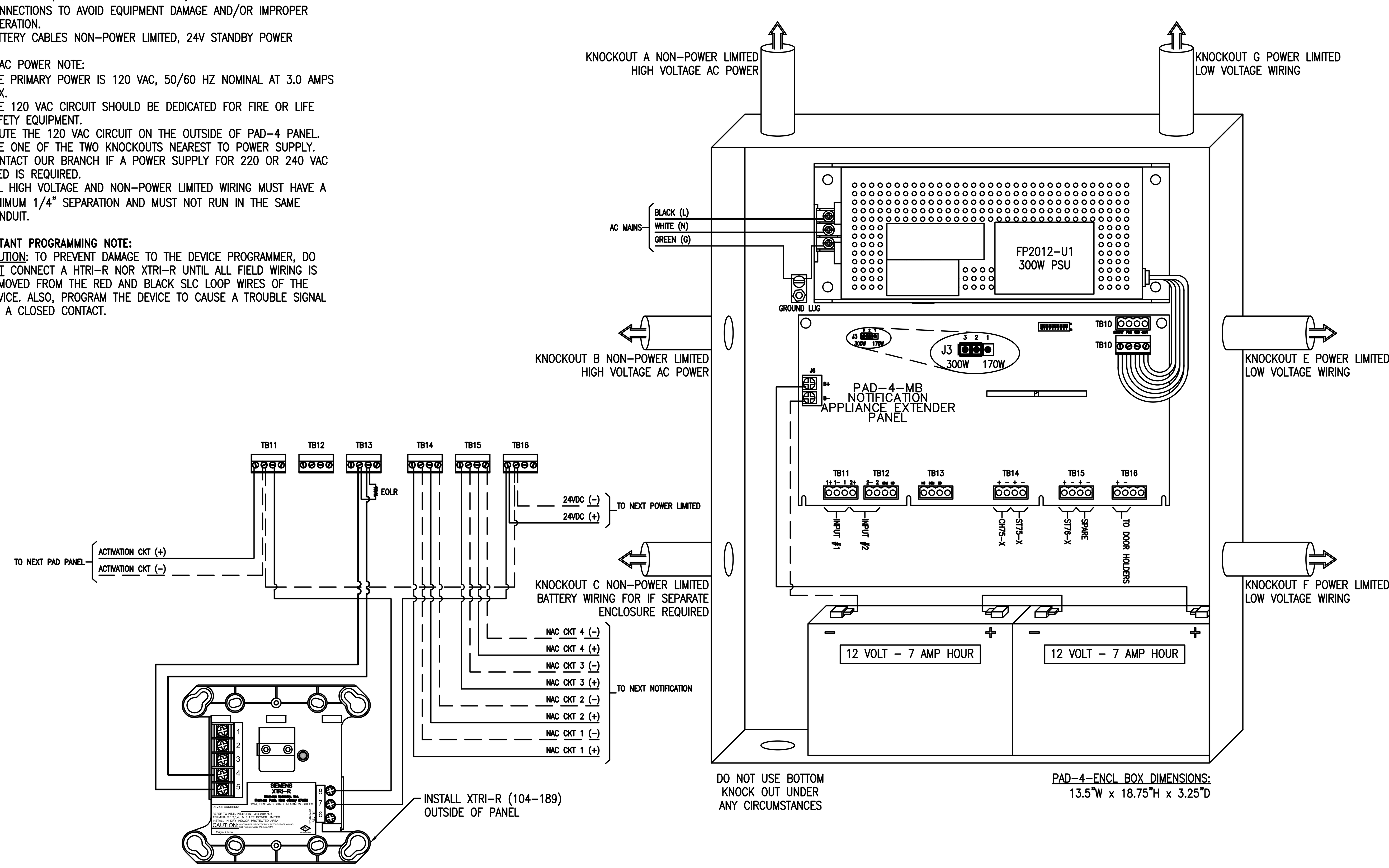
- ■ FOR SUBMISSON AND APPROVAL
- ☐ FOR CONSTRUCTION

DWG FILE: 44OP-331138 FA DWG_R0.dwg
SCALE: NTS
DRAWN BY: SURYA
CHECKED BY: PAVAN
BASE DRAWN DATE: 3/24/2022
PLOT DATE: 3/31/2022
SHEET
FA-201

NOTE:
1. INSTALLATION AND WIRING SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY. EQUIPMENT DAMAGE AND/OR MALFUNCTION MAY RESULT FROM IMPROPER INSTALLATION.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES AND/OR STANDARDS SET BY THE AUTHORITY HAVING JURISDICTION.
3. THE 12AWG GROUND STRAP ASSEMBLY IS TO BE CONNECTED TO THE BACK OF THE DOOR AND THE CABINET.
4. POWER LIMITED AND NON-POWER LIMITED CIRCUIT WIRING MUST REMAIN SEPARATED IN THE CABINET. ALL POWER LIMITED CIRCUIT WIRING MUST REMAIN AT LEAST 1/4" AWAY FROM NON-POWER LIMITED CIRCUIT WIRING AND MUST ENTER AND EXIT THE CABINET THROUGH DIFFERENT KNOCKOUTS AND/OR CONDUITS.
5. THERE ARE TWO KNOCKOUTS ON THE TOP, TWO KNOCKOUT ON THE LEFT (HINGED) AND TWO KNOCKOUTS ON THE RIGHT SIDE OF THIS CABINET. KNOCKOUTS ARE FOR 1/2" DIAMETER CONDUIT.
6. EXACT RESISTOR VALUES FOR END OF LINE RESISTORS VARY DEPENDING ON INSTALLATION TYPE. SEE THE MODEL PAD-4 INSTALLATION, OPERATION, AND MAINTENANCE MANUAL (P/N: 315-050217) FOR EXACT RESISTOR VALUE BY INSTALLATION TYPE.
7. PRIOR TO CONNECTING 120VAC POWER, VERIFY ALL WIRE CONNECTIONS, ALL DIP SWITCH SETTING, AND JUMPER CONNECTIONS TO AVOID EQUIPMENT DAMAGE AND/OR IMPROPER OPERATION.
8. BATTERY CABLES NON-POWER LIMITED, 24V STANDBY POWER

120 VAC POWER NOTE:
1. THE PRIMARY POWER IS 120 VAC, 50/60 HZ NOMINAL AT 3.0 AMPS MAX.
2. THE 120 VAC CIRCUIT SHOULD BE DEDICATED FOR FIRE OR LIFE SAFETY EQUIPMENT.
3. ROUTE THE 120 VAC CIRCUIT ON THE OUTSIDE OF PAD-4 PANEL.
4. USE ONE OF THE TWO KNOCKOUTS NEAREST TO POWER SUPPLY.
5. CONTACT OUR BRANCH IF A POWER SUPPLY FOR 220 OR 240 VAC FEED IS REQUIRED.
6. ALL HIGH VOLTAGE AND NON-POWER LIMITED WIRING MUST HAVE A MINIMUM 1/4" SEPARATION AND MUST NOT RUN IN THE SAME CONDUIT.

IMPORTANT PROGRAMMING NOTE:
1. CAUTION: TO PREVENT DAMAGE TO THE DEVICE PROGRAMMER, DO NOT CONNECT A HTRI-R NOR XTRI-R UNTIL ALL FIELD WIRING IS REMOVED FROM THE RED AND BLACK SLC LOOP WIRES OF THE DEVICE. ALSO, PROGRAM THE DEVICE TO CAUSE A TROUBLE SIGNAL ON A CLOSED CONTACT.



PAD-4 - 9 AMP NOTIFICATION CIRCUIT POWER EXTENDER, POINT-TO-POINT WIRING, ACTIVATION BY XTRI-R
NOT TO SCALE

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P: (913) 905-6700 F: (913) 492-9039

PROJECT NUMBER
44OP-331138

JOB NAME & LOCATION (STREET ADDRESS)

LEE'S SUMMIT MEDICAL CENTER - ICU EXPANSION
2100 SE BLUE PARKWAY
LEE'S SUMMIT, MISSOURI 64063

DRAWING SET REVISIONS

REV	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	SS	3/31/2022

PROJECT ENGINEER OF RECORD

PROJECT INSTALLATION CONTRACTOR

SIEMENS CONTACT INFORMATION
PROJECT MANAGER
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SHEET CONTENTS

FA-PAD4 9A PANEL WIRING DETAILS

INSTALLATION TYPE
- NEW / EXISTING / TENANT RENOVATION
- PER CONTRACT DOCUMENTS

☐ FOR PRELIMINARY SUBMISSION
■ FOR SUBMISSON AND APPROVAL
☐ FOR CONSTRUCTION

DWG FILE: 44OP-331138 FA DWG_R0.dwg

SCALE: NTS

DRAWN BY: SURYA | CHECKED BY: PAVAN

BASE DRAWN DATE: 3/24/2022 | PLOT DATE: 3/31/2022

SHEET

SIEMENS

Date 4/6/2021 | Project Name: HCA Hospital | **Main Panel** | **Kansas City**

XLS Power Supply & Battery Calculations

Power Supply - Supervisory Load Current

Module Part Number & Description		QTY	Module Current	EOL Current	Device Current	Total 24 VDC Standby Current	
PMI	Person Machine Interface	1	230 mA			0.230	Amps
PMI-REM	Remote Annunciator	0	230 mA			0.000	Amps
PSC-12	Power Supply/Battery Charger	1	150 mA			0.150	Amps
	Active Relays	4			20 mA per active relay	0.080	Amps
PSX-12	Power Supply Extender	0	170 mA			0.000	Amps
CPC	Central Processor Card						
CRC-6	Controllable Relay Card	0	51 mA			0.000	Amps
	Active Relays	0			20.5 mA per active relay	0.000	Amps
DLC	Device Loop Card	5	145 mA			0.725	Amps
	Devices	435			1.8 mA per device	0.783	Amps
CDC-4	Conventional Detector Card						
NIC-C	Network Interface Card	1	120 mA			0.120	Amps
WAC	Wide Area Card						
RPM	Remote Printer Module	1	150 mA			0.150	Amps
ZIC-4A	Zone Indicating Card	0	90 mA			0.000	Amps
	Active Circuits	0		1 mA per circuit		0.000	Amps
	Devices	-					
ZIC-8B	Zone Indicating Card	2					
	Active Circuits	8					
	Devices						
ZAC-40	Zone Amplifier Card 40 Watts	0	150 mA			0.000	Amps
	Speaker Load Watts	N/A					
ZAM-80	Zone Amplifier Module 80 Watts						
	Speaker Load Watts						
ZAM-180	Zone Amplifier Module 180 Watts	0	280 mA			0.000	Amps
	Speaker Load Watts	N/A					
ARC	Audio Router Card						
AIC	Audio Interface Card (External Input)	0	150 mA			0.000	Amps
DAC	Digital Audio Card	0	100 mA			0.000	Amps
DAC-NET	Digital Audio Card with Network	0	140 mA			0.000	Amps
LVM	Live Voice Microphone	0	25 mA			0.000	Amps
LPB	Local Page Board	0	100 mA			0.000	Amps
TRC	Tape Recorder Card						
FRC	Firefighter Riser Card						
FMT	Firefighter Master Telephone	0	150 mA			0.000	Amps
	Active Handsets	0			30 mA per handset	0.000	Amps
TZC-8	Telephone Zone Card	0	280 mA			0.000	Amps
	Active Zones	0			35 mA per zone	0.000	Amps
FCM-6	Fan Control Module	0	14 mA			0.000	Amps
	Active LEDs	0			1 mA per LED	0.000	Amps
LCM-8	LED Control Module	0	14 mA			0.000	Amps
	Active LEDs	0			1 mA per LED	0.000	Amps
SCM-8	Switch Control Module	0	14 mA			0.000	Amps
	Active LEDs	0			1 mA per LED	0.000	Amps
CSB	CAN Sounder Board						
OCM-16	Output Control Module	0	14 mA			0.000	Amps
	Active LEDs	0			10 mA per LED	0.000	Amps
SIM-16	Supervised Input Module	0	20 mA			0.000	Amps
	Active Outputs	0		1.2 mA/supv'd input		0.000	Amps
	Active Relays	0			10 mA per active relay	0.000	Amps
RNI	Remote Network Interface	0	75 mA			0.000	Amps
SSD	System Status Display	4	200 mA			0.800	Amps
					Total Supervisory Current	**3.038**	**Amps**

Power Supply - Active Load Current

Module Part Number & Description		QTY	24 VDC Current Back Plane Per Card	 Total 1	 Screw Terminal Per Card	 Total 2	Total 24 VDC Current (Total 1 + Total 2)	6.2 VDC Current Per Card	 Total
PMI	Person Machine Interface	1	230 mA	0.230			0.230		
PMI-REM	Remote Annunciator	0	230 mA	0.000			0.000		
CPC	Central Processor Card	0							
CRC-6	Controllable Relay Card	0	10 mA	0.000			0.000	120 mA	0.000
	Active Relays	0	20.5 mA	0.000			0.000		
DLC	Device Loop Card	5			95 mA	0.475	0.475	200 mA	1.000
	Devices	435			1.8 mA	0.783	0.783		
CDC-4	Conventional Detector Card	0							
NIC-C	Network Interface Card	1	120 mA	0.120			0.120		
WAC	Wide Area Card	0							
RPM	Remote Printer Module	1			150 mA	0.150	0.150		
ZIC-4A	Zone Indicating Card	0	275 mA	0.000			0.000		
	Active Circuits	0			1 mA	0.000	0.000		
	Devices	-			Total NAC	0	0.000		
ZIC-8B	Zone Indicating Card	2							
	Active Circuits	8							
	Devices								
ZAC-40	Zone Amplifier Card 40 Watts	0			150 mA	0.000	0.000		
	Speaker Load Watts	0			53 mA/W	0.000	0.000		
ZAM-80	Zone Amplifier Module 80 Watts	0							
	Speaker Load Watts								
ZAM-180	Zone Amplifier Module 180 Watts	0			280 mA	0.000	0.000		
	Speaker Load Watts	0			53 mA/W	0.000	0.000		
ARC	Audio Router Card	0							
AIC	Audio Interface Card (External Input)	0	30 mA	0.000			0.000	200 mA	0.000
DAC	Digital Audio Card	0	100 mA	0.000			0.000		
DAC-NET	Digital Audio Card with Network	0	140 mA	0.000			0.000		
LVM	Live Voice Microphone	0			25 mA	0.000	0.000		
LPB	Local Page Board	0	50 mA	0.000			0.000	200 mA	0.000
TRC	Tape Recorder Card	0							
FRC	Firefighter Riser Card	0							
FMT	Firefighter Master Telephone	0			150 mA	0.000	0.000		
	Active Handsets	0			30 mA	0.000	0.000		
TZC-8	Telephone Zone Card	0			275 mA	0.000	0.000		
	Active Zones	0			35 mA	0.000	0.000		
FCM-6	Fan Control Module	0			14 mA	0.000	0.000		
	Active LEDs	0			1 mA	0.000	0.000		
LCM-8	LED Control Module	0			14 mA	0.000	0.000		
	Active LEDs	0			1 mA	0.000	0.000		
SCM-8	Switch Control Module	0			14 mA	0.000	0.000		
	Active LEDs	0			1 mA	0.000	0.000		
CSB	CAN Sounder Board	0							
OCM-16	Output Control Module	0			14 mA	0.000	0.000		
	Active LEDs	0			10 mA	0.000	0.000		
SIM-16	Supervised Input Module	0			20 mA	0.000	0.000		
	Active Relays	0			10 mA	0.000	0.000		
	Active Inputs	0			1.2 mA	0.000	0.000		
RNI	Remote Network Interface	0	75 mA	0.000			0.000		
SSD	System Status Display	4			200 mA	0.800	0.800		
		Totals	**0.35**	**Amps**	**1.408**	**Amps**	**1.758 Amps**	**1.000**	**Amps**
			2 Amps MAX				**12 Amps MAX**	**2 Amps MAX**	

Minimum Number of Power Supplies = 1

See ZIC-4A and ZIC-8B NAC worksheets for the details on the circuit loads.

Backup Battery Calculations

Total Supervisory Current	3.04 Amps	Standby Battery Model Supplied	100 AH
Standby Time Required	24 Hours	Standby Battery Size	100.000 AH
AMP/Hour Required	72.91 AH		
Standby Battery With Reserve	94.79 AH	Reserve Battery Power	5.214 AH

BATTERY CALCULATION

1. CURRENT DRAW CALCULATION — PAD-3 #13

Project Name: Lee's Summit Hospital Project #:

NOTIFICATION APPLIANCES	MOUNTING	STROBE CANDELA	CURRENT (AMPS) Standby	 Alarm	APPLIANCE QUANTITIES PER CIRCUIT ST23	 ST24	 CH24	 SPARE	 AUX 1
STROBE	wall	15	0.000	0.064	8	5			
		30	0.000	0.098	1	2			
		75	0.000	0.175	2	3			
		110	0.000	0.233					
	ceiling	15	0.000	0.069					
		30	0.000	0.111					
		75	0.000	0.200					
		95	0.000	0.264					
HIGH OUTPUT STROBE	wall	135	0.000	0.318					
		185	0.000	0.445					
	ceiling	115	0.000	0.318					
		177	0.000	0.445					
CHIME/ STROBE	wall	15	0.000	0.064			2		
		30	0.000	0.098			1		
		75	0.000	0.175					
		110	0.000	0.233					
	ceiling	15	0.000	0.069					
		30	0.000	0.111					
		75	0.000	0.200					
		95	0.000	0.264					
HIGH OUTPUT SPEAKER/ STROBE	wall	135	0.000	0.318					
		185	0.000	0.445					
	ceiling	115	0.000	0.324					
		177	0.000	0.455					
Horn Strobe	Wall	15/75		0.069					
CHIME	wall			0.024					
W.P. STROBE	wall	115	0.000	0.146					
	wall	115	0.000	0.445					
W.P. HORN/ STROBE	wall	30	0.000	0.146					
	wall	185	0.000	0.445					
ABHW-4B	wall/ ceiling		0.000	0.008					
PAD-3	Wall		0.000	0.006					
0	0								
0	0								

NOTE: All calculations utilize horn settings @ the higest setting (largest draw)

AUXILIARY OUTPUT	Standby	Alarm
Flush 24vdc door holder [SDH-2D]	0.068	0.068
Surface 24vdc door holder [SDH-3D]	0.068	0.068
Flush 24vdc door holder [SDH-4D]	0.068	0.068
Floor mount 24vdc door holder [SDH-5D]	0.068	0.068
Double floor mount door holder [SDH-6D]	0.136	0.136

CURRENT DRAW PER CIRCUIT IN AMPERES: 0.960 | 1.041 | 0.226 | 0.000 | 0.000

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — PAD-3 #13

Project Name: Lee's Summit Hospital Project #:

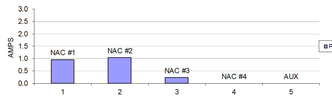
SYSTEM INFORMATION & PROJECT THRESHOLDS

3.00 amps	Maximum PAD-3 Circuit Current	2.40 amps	Maximum Permitted Current Capacity
6.00 amps	Maximum PAD-3 Capacity	4.80 amps	Maximum Permitted PAD-3 Current Capacity
24.0 Vdc	Nominal System Voltage Output	20.4 Vdc	Calculated starting Voltage
20%	Voltage Drop Threshold %	16.0 Vdc	Minimum Voltage Threshold

Standard Solid Copper Wire Resistance in Ohms per 1000 ft from NEC Chapter 9, Table 8
18=7.77 16=4.89 14=3.07 12=1.93

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	CIRCUIT CALCULATION RESULTS ALARM CURRENT (AMP)		CKT. OHMS		VOLTS @ EOL (min 16.0)		PERCENT DROP (max 20%)	
ST23	14 GAGE	400	3.07	0.960	PASS	2.456	PASS	18.0	PASS	11.6%	PASS
ST24	14 GAGE	450	3.07	1.041	PASS	2.763	PASS	17.5	PASS	14.1%	PASS
CH24	14 GAGE	400	3.07	0.226	PASS	2.456	PASS	19.8	PASS	2.7%	PASS
SPARE	14 GAGE	0	3.07	0.000	PASS	0	PASS	20.4	PASS	0.0%	PASS
AUX # 1	14 GAGE		3.07	0.000	PASS	0	PASS	20.4	PASS	0.0%	PASS

TOTAL PAD-3 CURRENT [AMPS]: 2.227 **PASS**



3. BATTERY SIZE CALCULATION — PAD-3 #13

STANDBY		ALARM	
Standby Period in Hours->	24 Hr	15 Min	<-Alarm Period in Minutes
PAD-3 internal current->	0.035 amp	0.140 amp	<-PAD-3 internal current
PAD-3 circuit current->	0.004 amp	2.227 amp	<-PAD-3 circuit current
Total Standby Current ->	0.039 amp	2.367 amp	<-Total Alarm Current:
Standby Amp-Hrs Required->	0.94 AH	0.59 AH	<-Standby Amp-Hrs Required

Standby + Alarm Amp-Hrs->	1.53 AH
Multiplied by the Derating Factory ->	20%
Minimum Battery Amp-Hrs Required->	1.83 AH
Actual Battery Size->	**7.00 AH**
Battery Safety Factor->	458%

NOTE: The PAD-3 draws 0.035 amps in standby mode and 0.140 amps in alarm mode for internal operations.

1. CURRENT DRAW CALCULATION — PAD-3 #14

Project Name: Lee's Summit Hospital Project #:

NOTIFICATION APPLIANCES	MOUNTING	STROBE CANDELA	CURRENT (AMPS) Standby	 Alarm	APPLIANCE QUANTITIES PER CIRCUIT ST25	 ST26	 CH25	 CH26	 AUX 2
STROBE	wall	15	0.000	0.064	7	8			
		30	0.000	0.098					
		75	0.000	0.175					
		110	0.000	0.233					
	ceiling	15	0.000	0.069					
		30	0.000	0.111					
		75	0.000	0.200					
		95	0.000	0.264					
HIGH OUTPUT STROBE	wall	135	0.000	0.318					
		185	0.000	0.445					
	ceiling	115	0.000	0.318					
		177	0.000	0.445					
CHIME/ STROBE	wall	15	0.000	0.064			3	2	
		30	0.000	0.098			1		
		75	0.000	0.175					
		110	0.000	0.233					
	ceiling	15	0.000	0.069					
		30	0.000	0.111					
		75	0.000	0.200					
		95	0.000	0.264					
HIGH OUTPUT SPEAKER/ STROBE	wall	135	0.000	0.318					
		185	0.000	0.445					
	ceiling	115	0.000	0.324					
		177	0.000	0.455					
Horn Strobe	Wall	15/75		0.069					
CHIME	wall			0.024					
W.P. STROBE	wall	115	0.000	0.146					
	wall	115	0.000	0.445					
W.P. SPEAKER/ STROBE	wall	30	0.000	0.146					
	wall	185	0.000	0.445					
ABHW-4B	wall/ ceiling		0.000	0.090					
PAD-3	Wall		0.000	0.006					
0	0								
0	0								

NOTE: All calculations utilize horn settings @ the higest setting (largest draw)

AUXILIARY OUTPUT	Standby	Alarm
Flush 24vdc door holder [SDH-2D]	0.068	0.068
Surface 24vdc door holder [SDH-3D]	0.068	0.068
Flush 24vdc door holder [SDH-4D]	0.068	0.068
Floor mount 24vdc door holder [SDH-5D]	0.068	0.068
Double floor mount door holder [SDH-6D]	0.136	0.136

CURRENT DRAW PER CIRCUIT IN AMPERES: 0.448 | 0.512 | 0.290 | 0.128 | 0.000

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — PAD-3 #14

Project Name: Lee's Summit Hospital Project #:

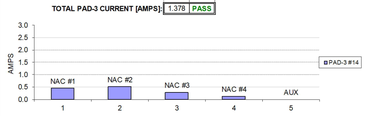
SYSTEM INFORMATION & PROJECT THRESHOLDS

3.00 amps	Maximum Panel Circuit Current	2.40 amps	Maximum Permitted Current Capacity
6.00 amps	Maximum Panel Capacity	4.80 amps	Maximum Permitted PAD-3 Current Capacity
24.0 Vdc	Nominal System Voltage Output	20.4 Vdc	Calculated starting Voltage
20%	Voltage Drop Threshold %	16.0 Vdc	Minimum Voltage Threshold

Standard Solid Copper Wire Resistance in Ohms per 1000 ft from NEC Chapter 9, Table 8
18=7.77 16=4.89 14=3.07 12=1.93

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	CIRCUIT CALCULATION RESULTS ALARM CURRENT (AMP)		CKT. OHMS		VOLTS @ EOL (min 16.0)		PERCENT DROP (max 20%)	
ST25	14 GAGE	450	3.07	0.448	PASS	2.763	PASS	19.2	PASS	6.1%	PASS
ST26	14 GAGE	450	3.07	0.512	PASS	2.763	PASS	19.0	PASS	6.9%	PASS
CH25	14 GAGE	450	3.07	0.290	PASS	2.763	PASS	19.6	PASS	3.9%	PASS
CH36	14 GAGE	450	3.07	0.128	PASS	2.763	PASS	20.0	PASS	1.7%	PASS
AUX # 2	14 GAGE		3.07	0.000	PASS	0	PASS	20.4	PASS	0.0%	PASS

TOTAL PAD-3 CURRENT [AMPS]: 1.378 **PASS**



3. BATTERY SIZE CALCULATION — PAD-3 #14

STANDBY		ALARM	
Standby Period in Hours->	24 Hr	15 Min	<-Alarm Period in Minutes
PAD-3 internal current->	0.035 amp	0.140 amp	<-PAD-3 internal current
PAD-3 circuit current->	0.004 amp	1.378 amp	<-PAD-3 circuit current
Total Standby Current ->	0.039 amp	1.518 amp	<-Total Alarm Current:
Standby Amp-Hrs Required->	0.94 AH	0.38 AH	<-Standby Amp-Hrs Required

Standby + Alarm Amp-Hrs->	1.32 AH
Multiplied by the Derating Factory ->	20%
Minimum Battery Amp-Hrs Required->	1.58 AH
Actual Battery Size->	**7.00 AH**
Battery Safety Factor->	532%

NOTE: The PAD-3 draws 0.035 amps in standby mode and 0.140 amps in alarm mode for internal operations.

1. CURRENT DRAW CALCULATION — PAD-3 #15

Project Name: Lee's Summit Hospital Project #: 44OP-307325

NOTIFICATION APPLIANCES	MOUNTING	STROBE CANDELA	CURRENT (AMPS) Standby	 Alarm	APPLIANCE QUANTITIES PER CIRCUIT ST27	 ST28	 CH27	 SPARE	 AUX 3
STROBE	wall	15	0.000	0.064	9	4			
		30	0.000	0.098					
		75	0.000	0.175	3				
		110	0.000	0.233					
	ceiling	15	0.000	0.069					
		30	0.000	0.111					
		75	0.000	0.200					
		95	0.000	0.264					
HIGH OUTPUT STROBE	wall	135	0.000	0.318					
		185	0.000	0.445					
	ceiling	115	0.000	0.318					
		177	0.000	0.445					
CHIME/ STROBE	wall	15	0.000	0.064			2		
		30	0.000	0.098					
		75	0.000	0.175					
		110	0.000	0.233					
	ceiling	15	0.000	0.069					
		30	0.000	0.111					
		75	0.000	0.200					
		95	0.000	0.264					
HIGH OUTPUT SPEAKER/ STROBE	wall	135	0.000	0.318					
		185	0.000	0.445					
	ceiling	115	0.000	0.318					
		177	0.000	0.445					
CHIME	wall			0.024					
W.P. STROBE	wall	115	0.000	0.146					
	wall	115	0.000	0.445					
W.P. SPEAKER/ STROBE	wall	30	0.000	0.146					
	wall	185	0.000	0.445					
ABHW-4B	wall/ ceiling		0.000	0.024					
PAD-3	Wall		0.000	0.008					
0	0								
0	0								

NOTE: All calculations utilize horn settings @ the higest setting (largest draw)

AUXILIARY OUTPUT	Standby	Alarm
Flush 24vdc door holder [SDH-2D]	0.068	0.068
Surface 24vdc door holder [SDH-3D]	0.068	0.068
Flush 24vdc door holder [SDH-4D]	0.068	0.068
Floor mount 24vdc door holder [SDH-5D]	0.068	0.068
Double floor mount door holder [SDH-6D]	0.136	0.136

CURRENT DRAW PER CIRCUIT IN AMPERES: 1.101 | 0.256 | 0.128 | 0.000 | 0.000

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — PAD-3 #15

Project Name: Lee's Summit Hospital Project #: 44OP-307325

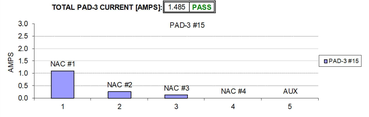
SYSTEM INFORMATION & PROJECT THRESHOLDS

3.00 amps	Maximum PAD-3 Circuit Current	2.40 amps	Maximum Permitted Current Capacity
6.00 amps	Maximum PAD-3 Capacity	4.80 amps	Maximum Permitted PAD-3 Current Capacity
24.0 Vdc	Nominal System Voltage Output	20.4 Vdc	Calculated starting Voltage
20%	Voltage Drop Threshold %	16.0 Vdc	Minimum Voltage Threshold

Standard Solid Copper Wire Resistance in Ohms per 1000 ft from NEC Chapter 9, Table 8
18=7.77 16=4.89 14=3.07 12=1.93

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	CIRCUIT CALCULATION RESULTS ALARM CURRENT (AMP)		CKT. OHMS		VOLTS @ EOL (min 16.0)		PERCENT DROP (max 20%)	
ST27	14 GAGE	450	3.07	1.101	PASS	2.763	PASS	17.4	PASS	14.9%	PASS
ST28	14 GAGE	450	3.07	0.256	PASS	2.763	PASS	19.7	PASS	3.5%	PASS
CH27	14 GAGE	450	3.07	0.128	PASS	2.763	PASS	20.0	PASS	1.7%	PASS
SPARE	14 GAGE	0	3.07	0.000	PASS	0	PASS	20.4	PASS	0.0%	PASS
AUX # 3	14 GAGE		3.07	0.000	PASS	0	PASS	20.4	PASS	0.0%	PASS

TOTAL PAD-3 CURRENT [AMPS]: 1.485 **PASS**



3. BATTERY SIZE CALCULATION — PAD-3 #15

STANDBY		ALARM	
Standby Period in Hours->	24 Hr	15 Min	<-Alarm Period in Minutes
PAD-3 internal current->	0.035 amp	0.140 amp	<-PAD-3 internal current
PAD-3 circuit current->	0.004 amp	1.485 amp	<-PAD-3 circuit current
Total Standby Current ->	0.039 amp	1.625 amp	<-Total Alarm Current:
Standby Amp-Hrs Required->	0.94 AH	0.41 AH	<-Standby Amp-Hrs Required

Standby + Alarm Amp-Hrs->	1.34 AH
Multiplied by the Derating Factory ->	20%
Minimum Battery Amp-Hrs Required->	1.61 AH
Actual Battery Size->	**7.00 AH**
Battery Safety Factor->	522%

NOTE: The PAD-3 draws 0.035 amps in standby mode and 0.140 amps in alarm mode for internal operations.

EXISTING PAD-3 CALCULATION

1. CURRENT DRAW CALCUPOWER SUPPLY: PAD-4 9AMP — EXTENDER: PAD-4 #35

Project Name: Project #:

DEVICE MODEL	DEVICE TYPE	STROBE CANDELA	CURRENT (AMPS) Standby	 Alarm	APPLIANCE QUANTITIES PER CIRCUIT ST75	 CH75	 ST-76	 SPARE	 AUX
AS-HMC-R-WP	WP H.O. Horn Strobe	135cd		0.356	0	0	2	0	
CH-MC-W	ChimeStrobe	15cd		0.064	7	7	0	0	
PAD-3	Power Supply		0.000	0.007					
PAD-4	Power Supply		0.000	0.007					
NOTE: All calculations utilize horn settings @ the highest setting. QTY Totals					7	7	2	0	

AUXILIARY OUTPUT			Standby	Alarm	AUX
24vdc door holder			0.020	0.020	4

CURRENT DRAW PER CIRCUIT IN AMPERES: 0.448 | 0.448 | 0.712 | 0.000 | 0.080

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — PAD-4 #35

Project Name: Project #:

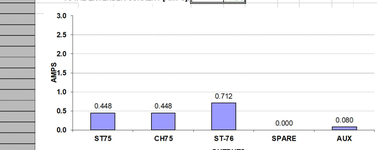
SYSTEM INFORMATION & PROJECT THRESHOLDS - PAD-4 9AMP

3.00 amps	Maximum Circuit Current	2.40 amps	Max. Permitted Current Capacity
9.00 amps	Maximum Extender Capacity	7.20 amps	Max. Permitted Extender Current Capacity
24.0 Vdc	Nominal System Voltage Output	24.0 Vdc	Calculated Starting Voltage
20%	Voltage Drop Threshold %	16.0 Vdc	Minimum Voltage Threshold

Standard Solid Copper Wire Resistance in Ohms per 1000 ft from NEC Chapter 9, Table 8 adjusted to: 167°F
18AWG= 7.77 16AWG= 4.89 14AWG= 3.07 12AWG= 1.93

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	CIRCUIT CALCULATION RESULTS ALARM CURRENT (AMP)		CKT. OHMS		VOLTS @ EOL (min 16.0)		PERCENT DROP (max 20%)	
ST75	14 AWG	350.00	3.07	0.448	PASS	2.149	PASS	23.0	PASS	4.0%	PASS
CH75	14 AWG	350.00	3.07	0.448	PASS	2.149	PASS	23.0	PASS	4.0%	PASS
ST-76	14 AWG	295.00	3.07	0.712	PASS	1.811	PASS	22.7	PASS	5.4%	PASS
SPARE	14 AWG	0.00	3.07	0.000	PASS	0.000	PASS	24.0	PASS	0.0%	PASS
AUX	14 AWG	286.00	3.07	0.080	PASS	1.756	PASS	23.9	PASS	0.6%	PASS

TOTAL EXTENDER CURRENT [AMPS]: 1.688 **PASS**



3. BATTERY SIZE CALCULATION — PAD-4 #35

STANDBY		ALARM	
Standby Period in Hours->	24 Hr	15 Min	<-Alarm Period in Minutes
Extender internal current->	0.066 amp	5.000 amp	<-Extender internal current
Extender circuit current->	0.001 amp	1.688 amp	<-Extender circuit current
Total Standby Current ->	0.067 amp	6.688 amp	<-Total Alarm Current:
Standby Amp-Hrs Required->	1.61 AH	1.67 AH	<-Alarm Amp-Hrs Required

Standby + Alarm Amp-Hrs->	3.28 AH	
Multiplied by the De-rating Factory ->	20%	
Minimum Battery Amp-Hrs Required->	3.94 AH	
Actual Battery Size->	**7.00 AH**	PASS
Battery Safety Factor->	213%	

Maximum Battery Capacity: 18 A.H (Maximum Inside Enclosure: 7 A.H.)

NEW PAD-4 CALCULATION

Missouri State Certificate of Authority #000816

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THIS DRAWING IS A SINGLE PART OF AN INTEGRATED SET OF CONSTRUCTION CONTRACT DOCUMENTS. REFER TO DRAWING AND SPECIFICATION SHEETS INCLUDING, BUT NOT LIMITED TO, ALL "GENERAL CONDITIONS", "SUMMARY OF WORK", AND APPLICABLE SPECIFICATION SECTIONS WHICH APPLY TO THIS DRAWING. REFER TO ALL DOCUMENTS FOR THE COMPLETE SCOPE OF WORK. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL INFORMATION CONTAINED IN THE "SET" OF DOCUMENTS ISSUED. THIS DRAWING IS SCHEMATIC AND IS NOT TO BE USED AS A SHOP DRAWING. ALTERATIONS FROM THAT SHOWN REQUIRED TO COORDINATE WITH OTHER TRADES OR TO CONFORM TO ACTUAL SITE CONDITIONS ARE THE CONTRACTOR'S RESPONSIBILITY. VERIFY THE LOCATIONS OR DIMENSIONS OF ALL ARCHITECTURAL AND STRUCTURAL ELEMENTS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS ISSUED. THE SHOWING OF THESE ELEMENTS ARE FOR REFERENCE ONLY AND ARE TO BE VERIFIED PRIOR TO DESIGN OR CONSTRUCTION. NO LIABILITY IS ASSUMED BY THE INDICATION OF ELEMENTS IN THESE DRAWINGS. THE ACCOMPANYING PROFESSIONAL SEAL INDICATES THAT THE PERSON WHOSE NAME APPEARS ON THE SEAL HAS PREPARED OR SUPERVISED PREPARATION OF THE DOCUMENT ON WHICH THE SEAL APPEARS. THAT PERSON AND THE FIRM FOR WHICH THAT PERSON IS EMPLOYED BY DISCLAIM RESPONSIBILITY FOR ANY PORTIONS OF THE WORK ON WHICH THEIR SEAL DOES NOT APPEAR.

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TIM L. SCOTT
NUMBER PE-23228
4-24-2023

TIM L. SCOTT
LICENSE # E-23228

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Lenexa, Kansas 66214
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PROJECT NUMBER
44OP-331138

JOB NAME & LOCATION (STREET ADDRESS)
LEE'S SUMMIT MEDICAL CENTER - ICU EXPANSION
2100 SE BLUE PARKWAY
LEE'S SUMMIT, MISSOURI 64063

DRAWING SET REVISIONS

REV	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	SS	3/31/2022

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PROJECT INSTALLATION CONTRACTOR

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SHEET CONTENTS
FA-CALCULATIONS

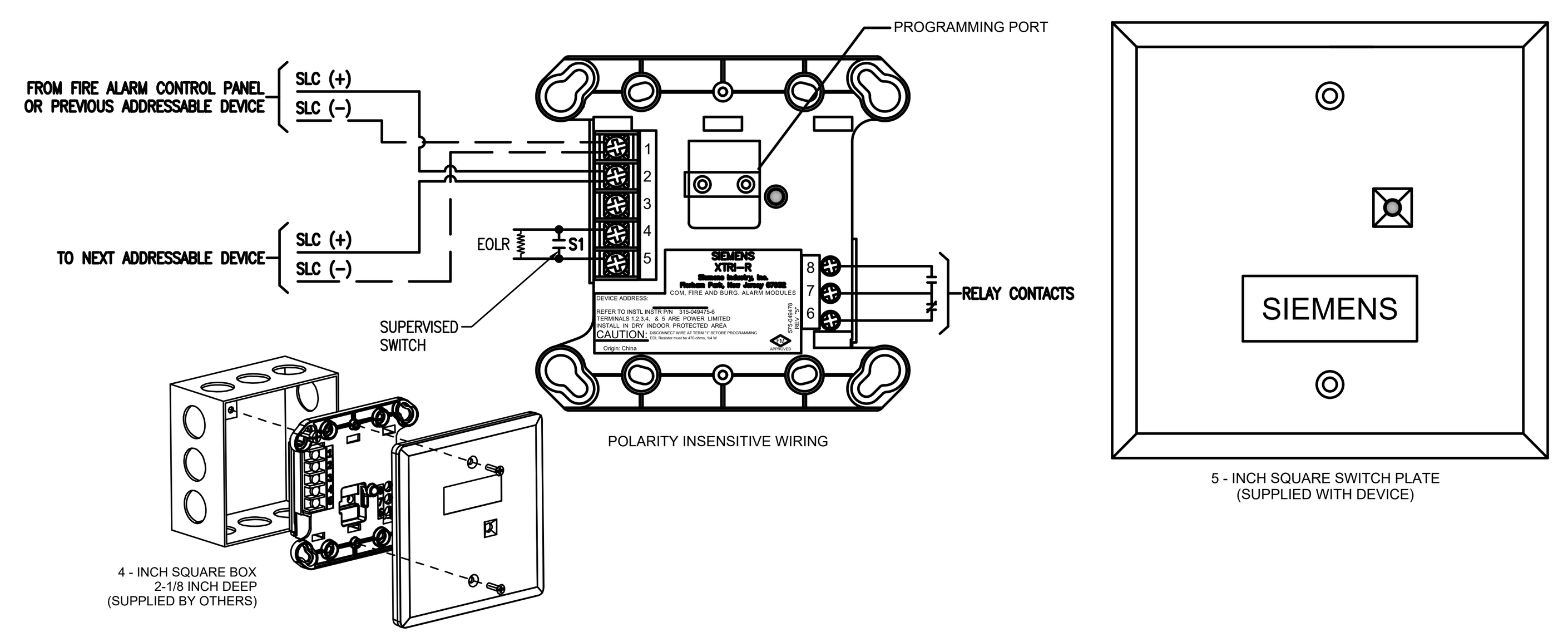
INSTALLATION TYPE
- NEW / EXISTING / TENANT RENOVATION
- PER CONTRACT DOCUMENTS

☐ FOR PRELIMINARY SUBMISSION
■ FOR SUBMISSON AND APPROVAL
☐ FOR CONSTRUCTION

DWG FILE: 44OP-331138 FA DWG_R0.dwg
SCALE: NTS
DRAWN BY: SURYA CHECKED BY: PAVAN
BASE DRAWN DATE: 3/24/2022 PLOT DATE: 3/31/2022
SHEET
FA-401

NOTE:
1. DEVICE HAS DUAL BUILT IN ISOLATORS.
2. DEVICE SUPPORTS 2 MODES OF OPERATION:
   - POLARITY INSENSITIVE MODE
   - ISOLATOR MODE
3. MODULE PROVIDES FOR RELAY CONTROL AND DRY CONTACT MONITORING VIA A SINGLE ADDRESS.
4. INTEGRAL SINGLE-POLE, DOUBLE-THROW (SPDT) RELAY: UP TO 4 AMPS
5. SUPERVISES AND CONTROLS NORMALLY OPEN (N.O.) AND NORMALLY CLOSED (N.C.) CONTACTS
6. END OF LINE RESISTOR FOR SWITCH SUPERVISION MUST BE 470 OHM
7. TRI COLOR LED FOR DEVICE STATUS
8. PREFERRED MOUNTING IS A 4 INCH SQUARE BOX 2-1/8 DEEP BOX. ALTHOUGH A DOUBLE GANG BOX 3-1/2 INCH DEEP IS PERMITTED AS AN ALTERNATE MOUNTING OPTION.
9. THE MODULE BARRIER MUST BE INSTALLED WHEN RELAY CONTACTS ARE CONNECTED TO NON-POWER LIMITED LINES.
10. SEE INSTALLATION SHEET FOR ADDITIONAL INFORMATION

LED STATUS		
Flash Color	Condition	Flash Intervals (Seconds)
Green	Normal Supervisory operation	10
Amber	Device is in trouble	4
Red	Locate/Alarm	1
	Output Active (XTRI-R only)	10
No Flashes	No power or need to be replaced	–

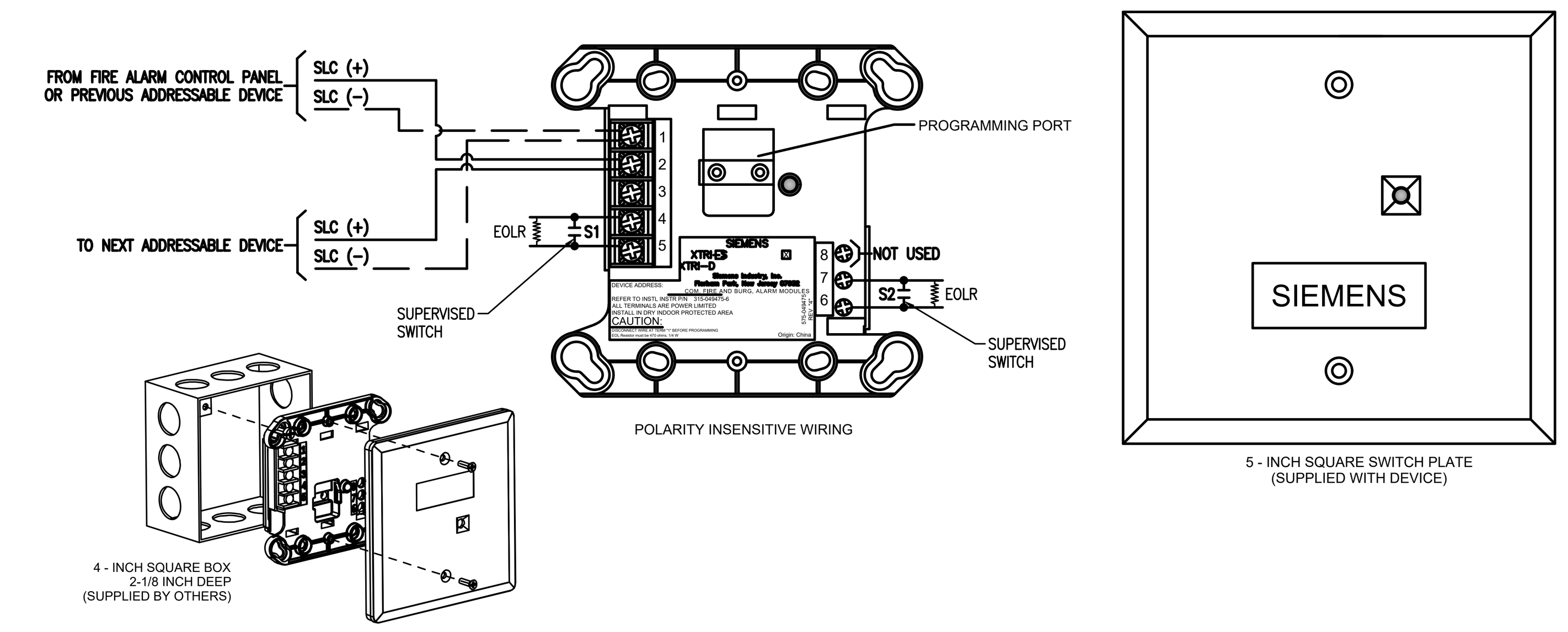


XTRI-R - RELAY MODULE W/ MONITOR
NOT TO SCALE

CLICK HERE FOR DATA SHEET

NOTE:
1. DEVICE HAS BUILT IN DUAL ISOLATORS.
2. DEVICE SUPPORTS 2 MODES OF OPERATION
   - POLARITY INSENSITIVE MODE
   - ISOLATOR MODE
3. DUAL INPUT MODULE MONITORS 2 SETS OF DRY CONTACTS. EACH INPUT RESPONDS INDEPENDENTLY OF EACH OTHER
4. REQUIRES ONLY ONE ADDRESS ON SLC LOOP.
5. MONITORS AND REPORTS THE STATUS OF NORMALLY OPEN (N.O.) AND NORMALLY CLOSED (N.C.) CONTACTS
6. EOL OF LINE RESISTOR FOR SWITCH SUPERVISION MUST BE 470 OHM.
7. TRI COLOR LED FOR DEVICE STATUS.
8. PREFERRED MOUNTING IS A 4 INCH SQUARE, 2-1/8 DEEP BACK BOX. ALTHOUGH A DOUBLE GANG BOX 3-1/2 INCH DEEP IS PERMITTED AS AN ALTERNATE MOUNTING OPTION.
9. SEE INSTALLATION SHEET FOR ADDITIONAL INFORMATION

LED STATUS		
Flash Color	Condition	Flash Intervals (Seconds)
Green	Normal Supervisory operation	10
Amber	Device is in trouble	4
Red	Locate/Alarm	1
	Output Active (XTRI-R only)	10
No Flashes	No power or need to be replaced	–

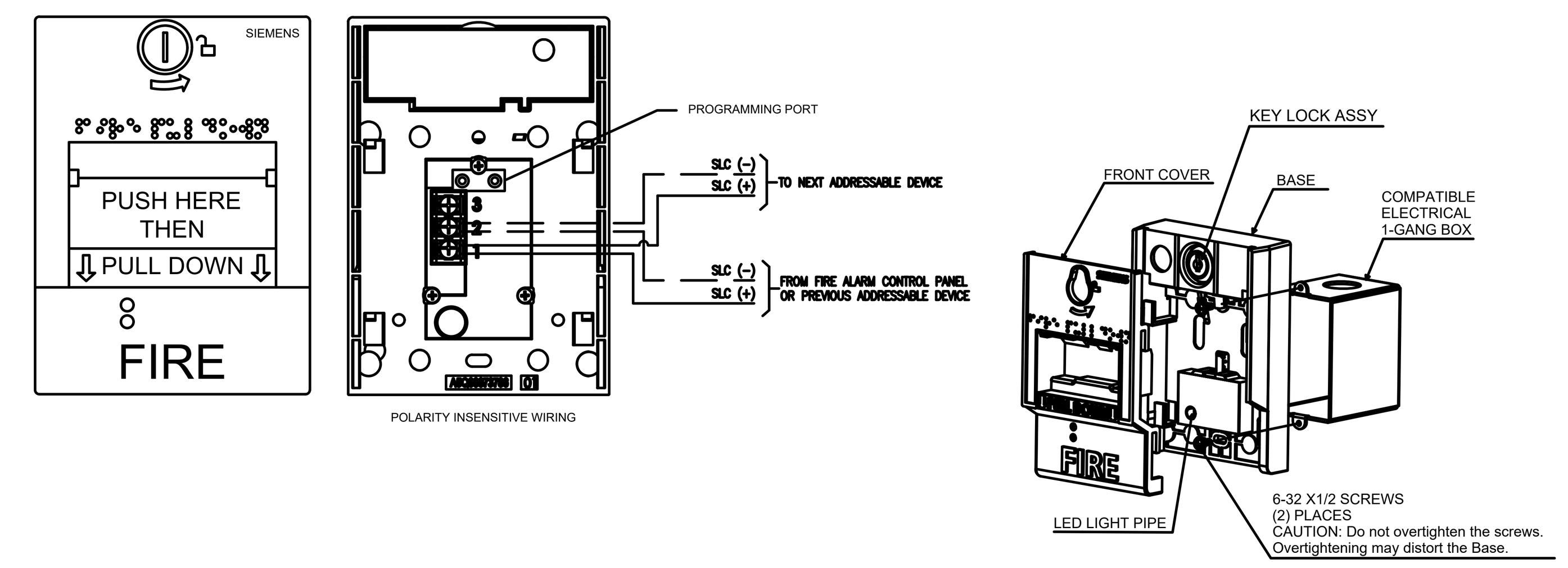


XTRI-D - DUAL MONITOR MODULE
NOT TO SCALE

CLICK HERE FOR DATA SHEET

NOTE:
1. DEVICE HAS BUILT IN DUAL ISOLATORS.
2. DEVICE SUPPORTS 2 MODES OF OPERATIONS:
   - POLARITY INSENSITIVE MODE
   - ISOLATOR MODE
3. PULL DOWN LEVER REMAINS DOWN UNTIL RESET.
4. RESET WITH SIEMENS T-45 KEY.
5. FLUSH MOUNT TO A SINGLE GANG 2-1/2" DEEP ELECTRICAL BOX.
6. SEE INSTALLATION SHEET FOR ADDITIONAL INFORMATION.

OPTIONAL MOUNTING OPTIONS	
PART #	DESCRIPTION
S54321-F20-A1	SURFACE MOUNT BOX
S54321-F21-A1	ADAPTER PLATE FOR EXISTING SB-5R SURFACE MOUNTED BOX
S54321-F22-A1	ADAPTER PLATE FOR EXISTING 4" SQ BOXES AND 2-GANG BOXES

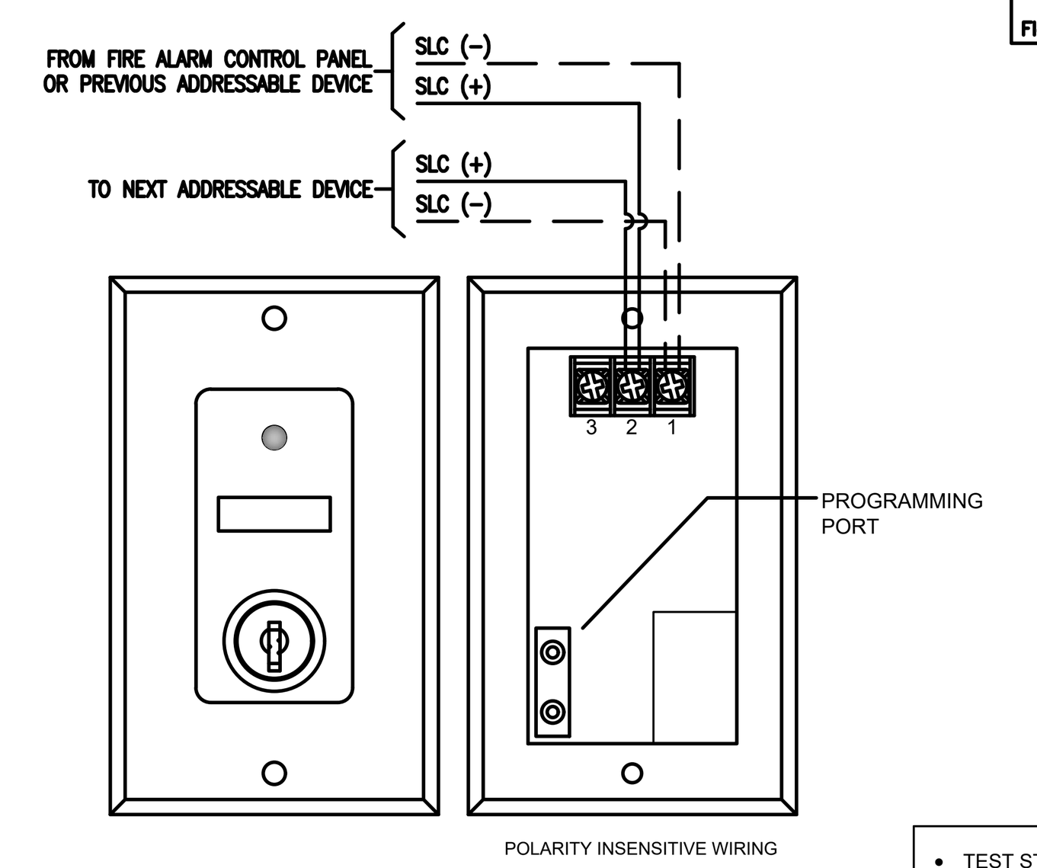


XMS-D - DOUBLE ACTION PULL STATION
NOT TO SCALE

CLICK HERE FOR DATA SHEET

NOTE:
1. DEVICE HAS BUILT IN DUAL ISOLATORS
2. DEVICE SUPPORTS 2 MODES OF OPERATIONS
   - POLARITY INSENSITIVE MODE
   - ISOLATOR MODE
3. INTELLIGENT TEST-SWITCH MODULE WITH MOMENTARY, N.O. TURN-KEY ACTIVATED (T-45 KEY) SWITCH.
4. TRI-COLOR LIGHT-EMITTING DIODE (LED) MIMICS THE STATUS OF THE ASSOCIATED DEVICE.
5. MOUNTS IN A SINGLE GANG ELECTRICAL BOX 3-1/2 INCHES DEEP.
6. CAPABILITY OF BEING INSTALLED ANYWHERE ON A SLC LOOP.
7. SEE INSTALLATION SHEETS FOR MORE INFORMATION.

LED STATUS		
Flash Color	Condition	Flash Interval (Seconds)
Green	Normal supervisory operation. Smoke sensitivity is within rated limits.	10
Yellow	Detector is in trouble and needs replacement	4
Red	Alarm	1
No Flashes	Detector is not powered, or replacement is needed.	–

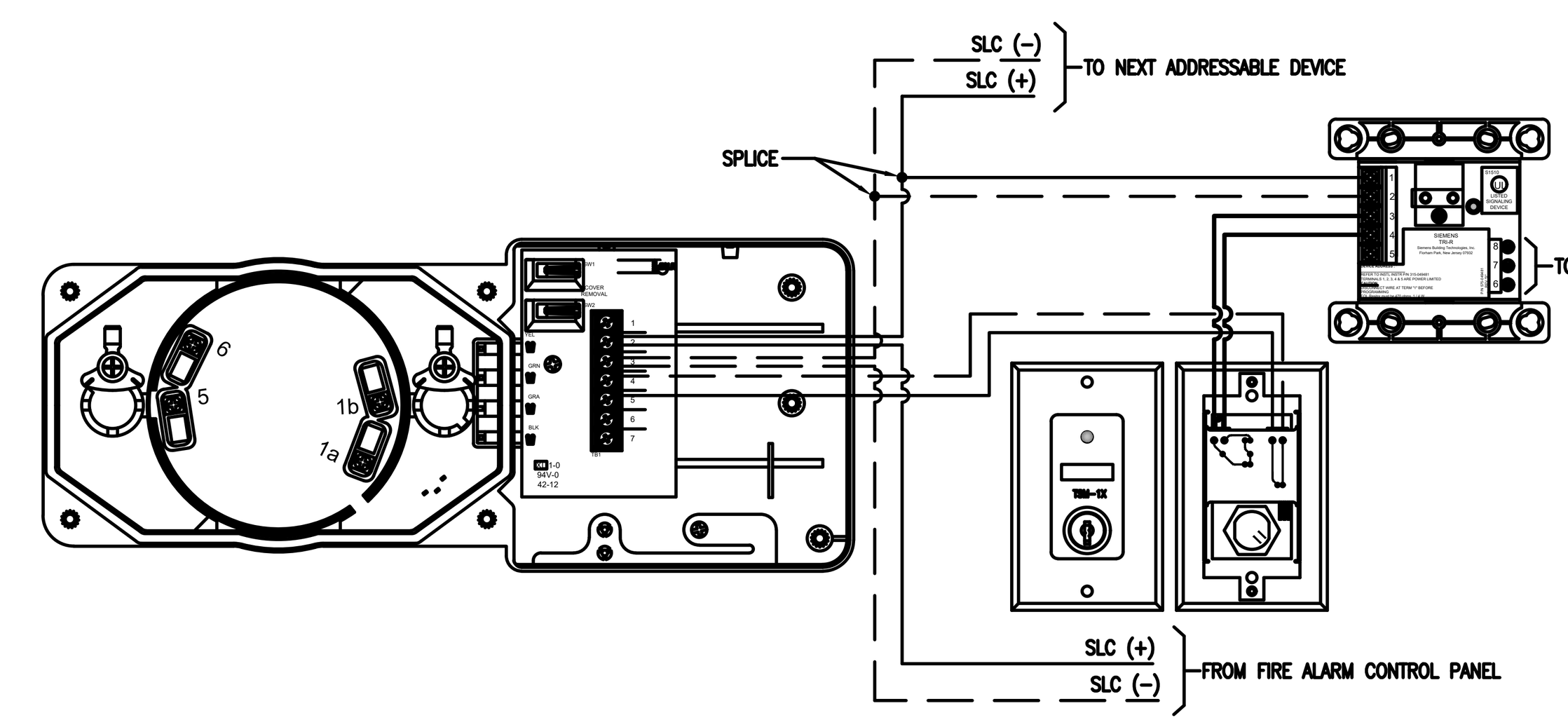


- TEST STATION DOES NOT PERFORM ALL OF THE REQUIRED SMOKE DETECTOR TEST AS SPECIFIED IN NFPA72.
- REFER TO THE INSTRUCTIONS PROVIDED WITH THE SMOKE DETECTOR FOR FURTHER INFORMATION ON TESTING THE DETECTOR.

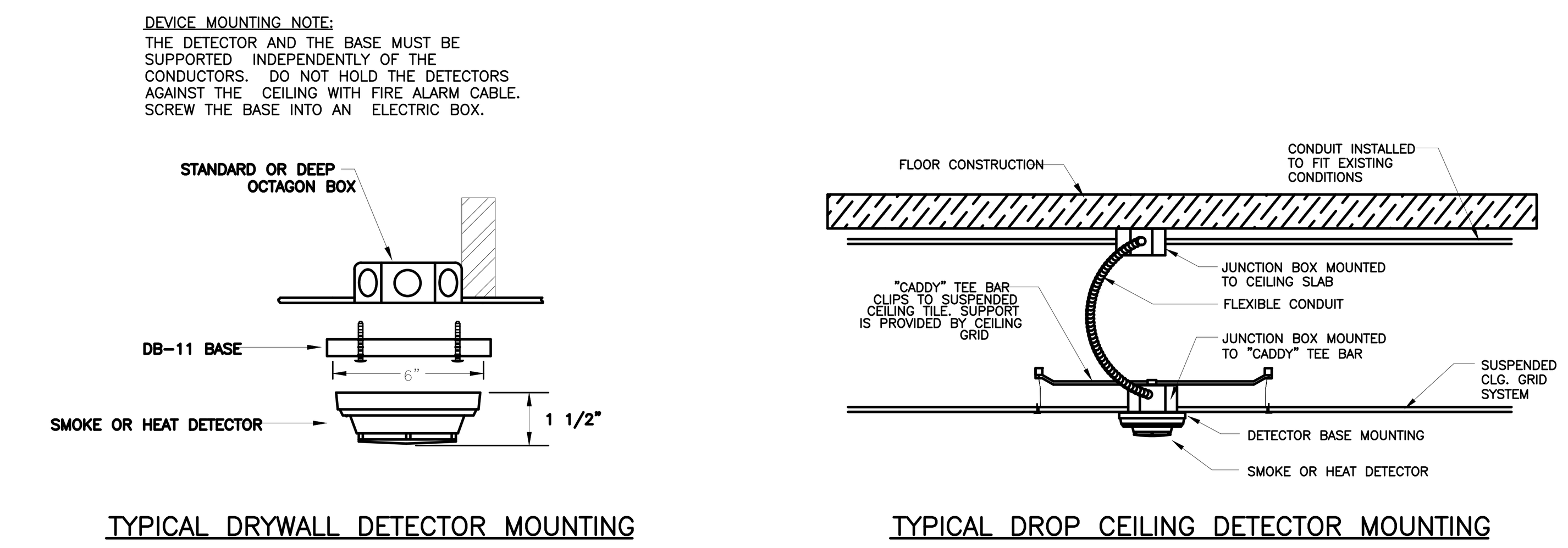
TSM-1X - ADDRESSABLE TEST SWITCH MODULE
NOT TO SCALE

CLICK HERE FOR DATA SHEET

NOTE:
1. SEE DETAIL OF FDBZ421 FOR ADDITIONAL INFORMATION
2. SEE DETAIL OF TSM-1 FOR ADDITIONAL INFORMATION
3. SEE DETAIL OF TRI-R FOR ADDITIONAL INFORMATION
4. SEE INSTALLATION SHEETS FOR ADDITIONAL INFORMATION

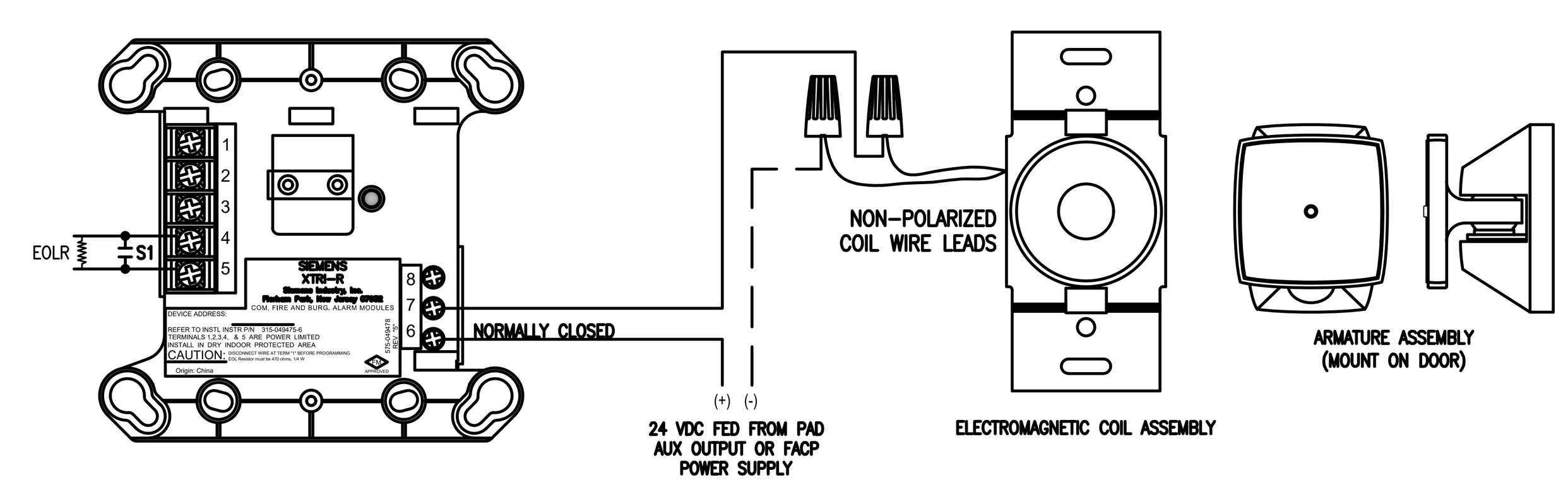


FDBZ421 - AIR DUCT HOUSING WITH TSM-1X TEST SWITCH & TRI-R RELAY MODULE
NOT TO SCALE



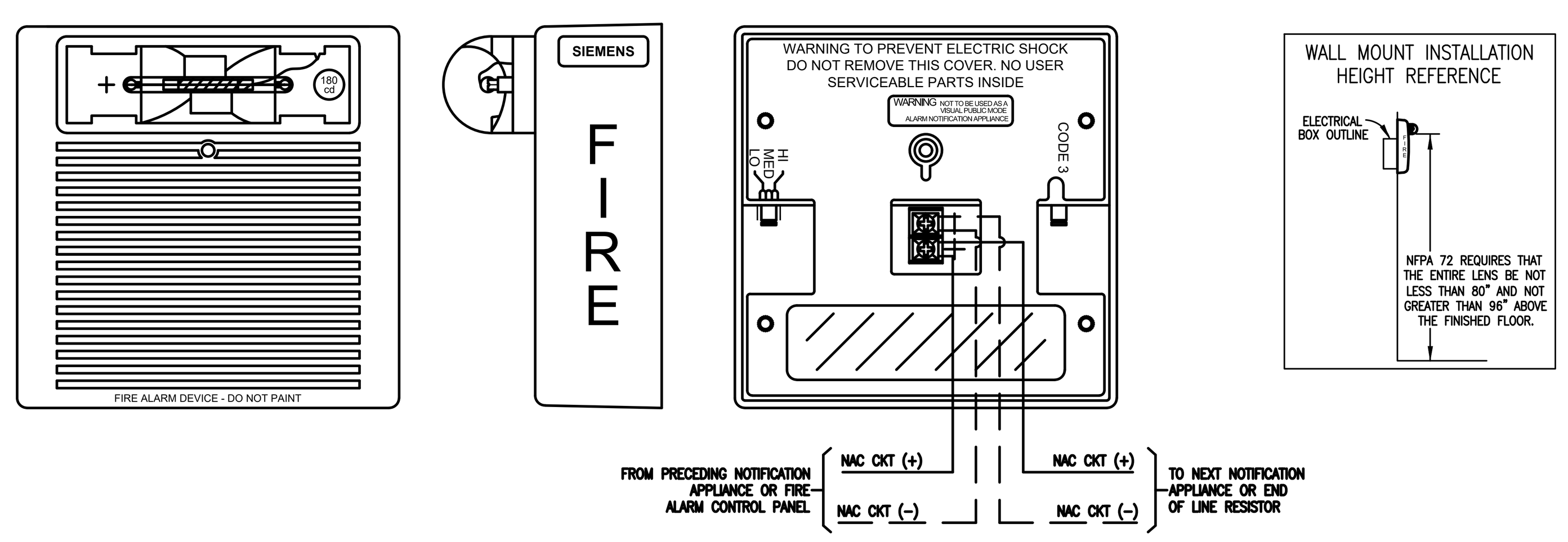
TYPICAL SMOKE DETECTOR MOUNTING METHODS
NOT TO SCALE

NOTE:
1. THIS DEVICE IS FOR USE WITH SELF-CLOSING, SWINGING, FIRE AND SMOKE BARRIER DOORS.
2. THE UNIT, WHICH USES CONCEALED WIRING SHALL BE MOUNTED IN A SINGLE GANG BACK BOX WITH THE INCLUDED HOUSING AND OUTLET BOX BRACKET.
3. THIS UNIT IS DESIGNED TO OPERATE WITH 24VDC, WHICH DRAWS 68mA DC.
4. SEE THE SIEMENS CATALOG CUT SHEET #2350 AND THE INSTALLATION INSTRUCTIONS INCLUDED WITH THE FIRE DOOR HOLDER FOR ADDITIONAL MOUNTING AND DIAGNOSTIC INFORMATION.



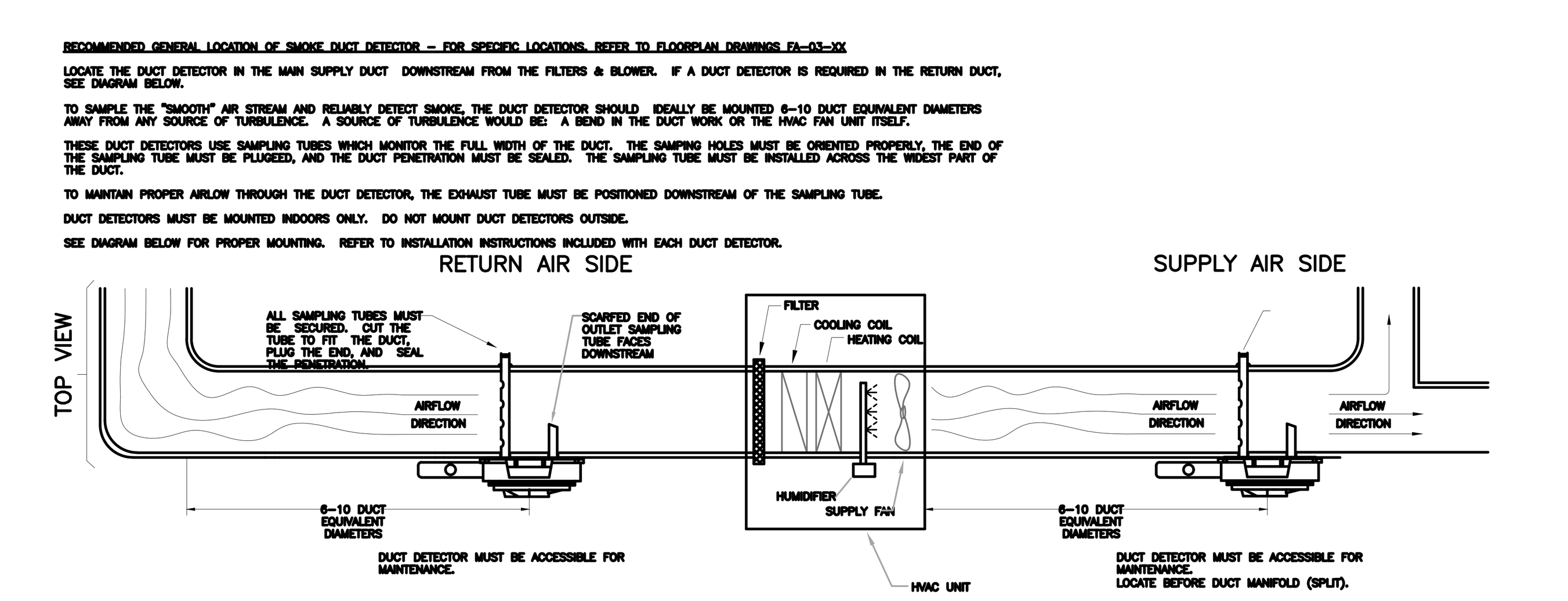
XTRI-R Connected to Door Holders
NOT TO SCALE

NOTE:
1. STROBES CAN BE SYNCHRONIZED USING THE SIEMENS DSC SYNC MODULE OR WITH THE BUILT-IN SYNC PROTOCOL IN SIEMENS PANELS AND POWER SUPPLIES.
2. FIELD SELECTABLE CANDELA.
3. MOUNT TO THE SIEMENS WPBBS BACK BOX.
4. WHEN TERMINATING FIELD WIRES, DO NOT USE MORE LEAD LENGTH THAN REQUIRED. EXCESS LEAD LENGTH COULD RESULT IN INSUFFICIENT SPACE FOR THE APPLIANCE.
5. REFER TO THE APPLICABLE NFPA CODE AND FIELD DEVICE INSTALLATION FOR CORRECT MOUNTING HEIGHTS.
6. SEE INSTALLATION SHEET FOR ADDITIONAL INFORMATION ON MOUNTING AND CONNECTION OPTIONS.



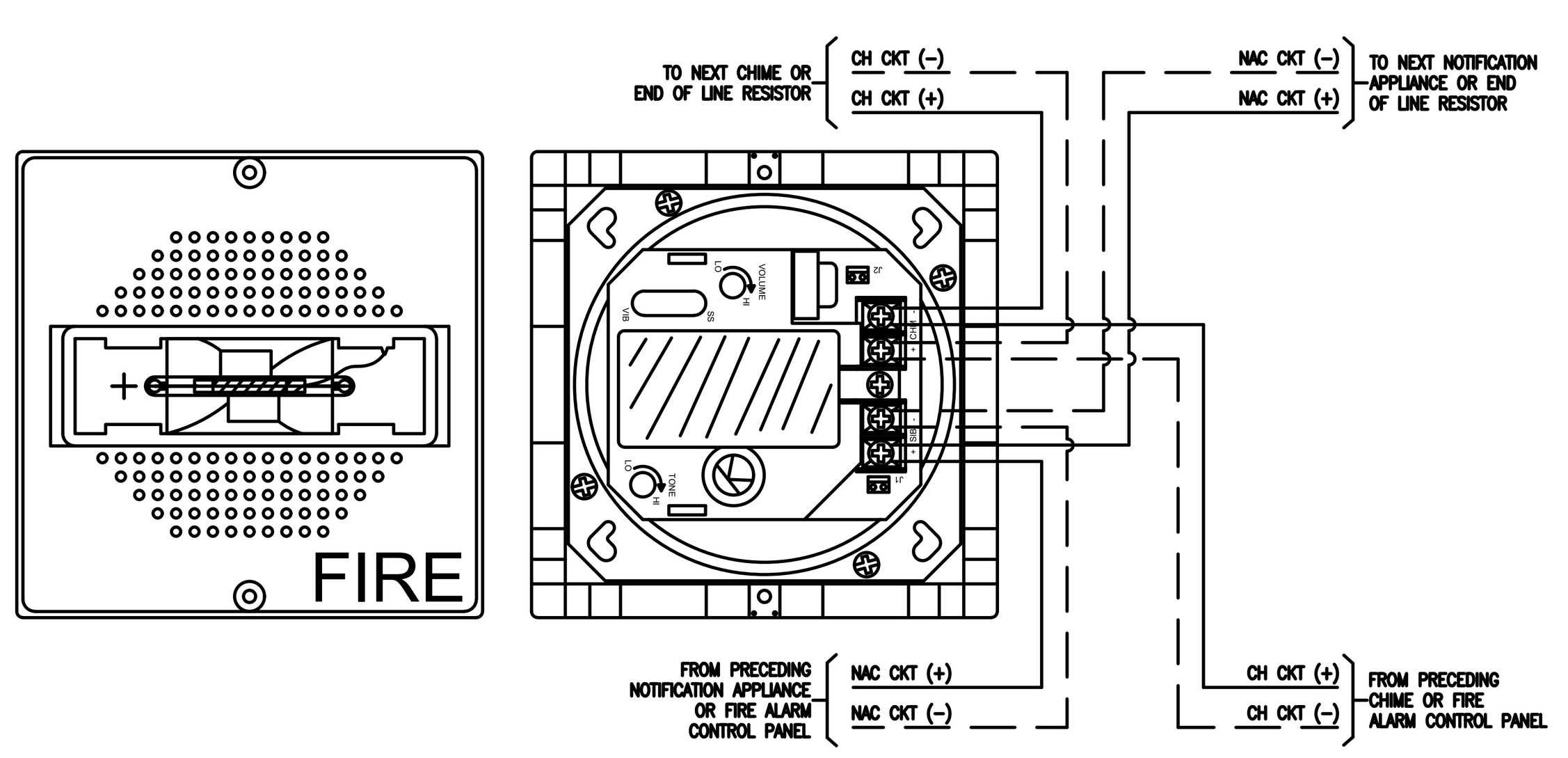
AS-HMC-R-WP - MULTI CANDELA WEATHER PROOF HORN/STROBE
NOT TO SCALE

CLICK HERE FOR DATASHEET



GENERAL SMOKE DUCT DETECTOR PLACEMENT
NOT TO SCALE

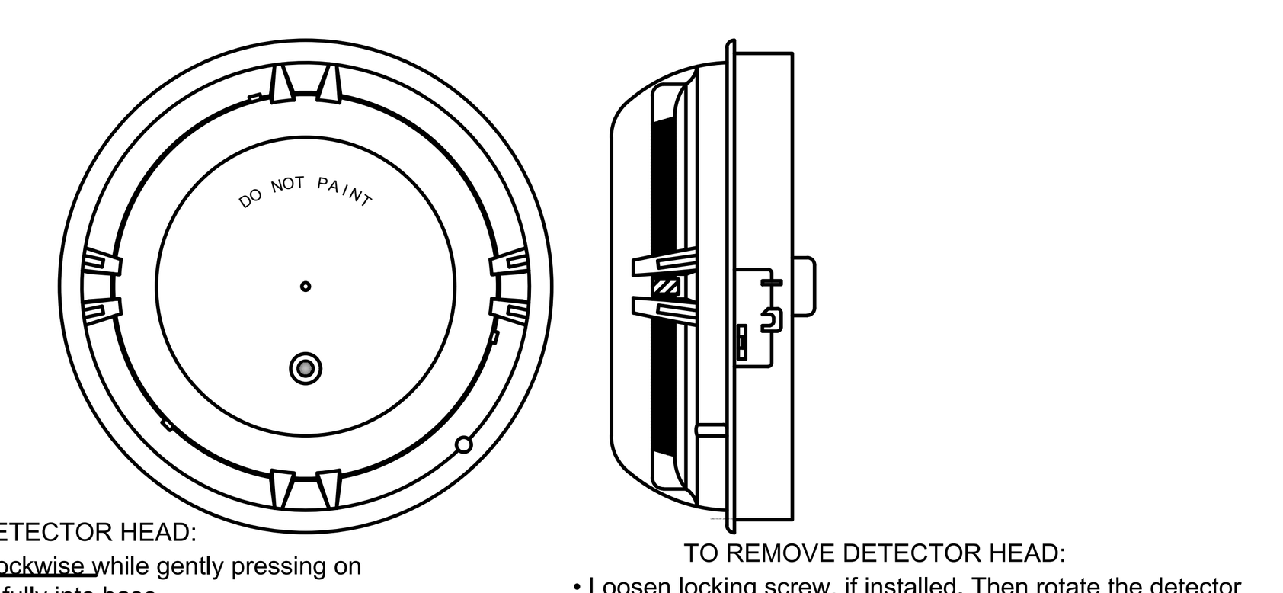
NOTE:
1. STROBES CAN BE SYNCHRONIZED USING THE SIEMENS DSC SYNC MODULE OR WITH THE BUILT-IN SYNC PROTOCOL IN SIEMENS PANELS AND POWER SUPPLIES.
2. FIELD SELECTABLE CANDELA, TONE AND dBA SETTINGS. (FREQUENCY RANGE OF 800 – 1200 Hz)
3. WALL AND CEILING MOUNTED MODELS AVAILABLE.
4. CH SERIES DEVICES TO BE MOUNTED ON A SBBS ELECTRICAL BOX OR A 4" SQUARE 2-1/8" DEEP BACKBOX WITH A 1-1/2" EXTENSION RING.
5. SEE INSTALLATION SHEET FOR ADDITIONAL INFORMATION ON MOUNTING AND CONNECTION OPTIONS.



CH-MC SERIES - MULTI CANDELA CHIME/STROBE
NOT TO SCALE

NOTE:
1. FOR USE WITH XLS AND DESIGO SERIES PANELS AND ACCESSORIES.
2. DETECTORS ARE SELF-TESTING, COMPLETING DIAGNOSTICS EVERY TEN (10) SECONDS.
3. MULTI-COLOR STATUS LED.
4. DETECTORS MAY BE INSTALLED ON THE SAME INITIATING CIRCUIT WITH SIEMENS MODEL H-SERIES AND X-SERIES DEVICES.
5. DETECTOR FEATURES:
   - CO DETECTION
   - LOW-TEMP. WARNING FOR SPRINKLER SYSTEMS
   - UL 268A LISTED FOR DIRECT AIR DUCT USE
   - SUPERVISORY TEMPERATURE-MONITORING FEATURE
   - REMOTE SENSITIVITY-MEASUREMENT CAPABILITY AND AUTOMATIC ENVIRONMENT COMPENSATION.
6. DETECTOR PROVIDES PRE-PROGRAMMED PARAMETERS FOR SMOKE SENSING, HEAT DETECTION, AND CO DETECTION. THE APPLICABLE PARAMETERS ARE SELECTED DURING PROGRAMMING.
7. SEE INSTALLATION SHEET FOR ADDITIONAL INFORMATION ON MOUNTING AND CONNECTION OPTIONS.

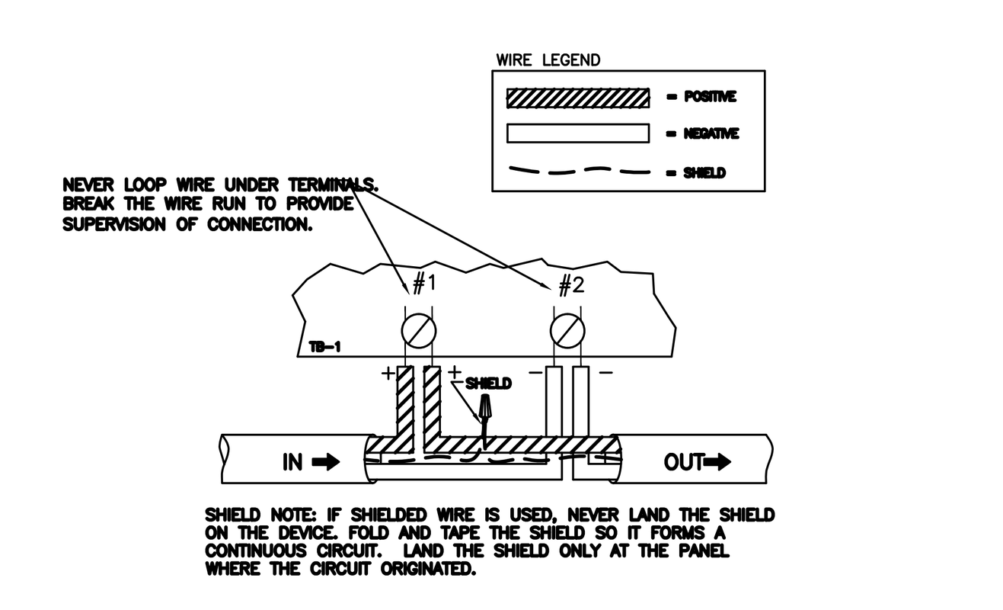
LED STATUS		
Flash Color	Condition	Flash Interval (Seconds)
Green*	Normal supervisory operation. Smoke sensitivity is within rated limits.	10
Yellow	Detector is in trouble and needs replacement	4
Red	Alarm	1
No Flashes	Detector is not powered, or replacement is needed.	—
*LED can be turned off. Please follow the corresponding description of the panel used.		



TO INSTALL DETECTOR HEAD:
- Rotate detector counterclockwise while gently pressing on it until the detector seats fully into base.
- Then rotate the detector clockwise until it stops and locks in place. If applicable insert optional locking screw (Order Model LK-11).

TO REMOVE DETECTOR HEAD:
- Loosen locking screw, if installed. Then rotate the detector counterclockwise until stop is reached.
- Pull detector out of base.

FDOOTC441 - PHOTOELECTRIC/THERMAL/CARBON MONOXIDE DETECTOR
NOT TO SCALE



TYPICAL DEVICE CONNECTIONS & NAC DEVICE SETTINGS
NOT TO SCALE

Missouri State Certificate of Authority #000816

ENGINEERING

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4-24-2023
TIM L. SCOTT
LICENSE # E-23228

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PROJECT NUMBER
44OP-331138

JOB NAME & LOCATION (STREET ADDRESS)
LEE'S SUMMIT MEDICAL CENTER - ICU EXPANSION
2100 SE BLUE PARKWAY
LEE'S SUMMIT, MISSOURI 64063

DRAWING SET REVISIONS

REV.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	SS	3/31/2022

PROJECT ENGINEER OF RECORD

PROJECT INSTALLATION CONTRACTOR

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SHEET CONTENTS
FA-DEVICE WIRING DIAGRAM

INSTALLATION TYPE
- NEW / EXISTING / TENANT RENOVATION
- PER CONTRACT DOCUMENTS

- ☐ FOR PRELIMINARY SUBMISSION
- ■ FOR SUBMISSON AND APPROVAL
- ☐ FOR CONSTRUCTION

DWG FILE:	44OP-331138 FA DWG_R0.dwg		
SCALE:	NTS		
DRAWN BY:	SURYA	CHECKED BY:	PAVAN
BASE DRAWN DATE:	3/24/2022	PLOT DATE:	3/31/2022

SHEET
FA-501