SCOPE OF WORK

THIS PROJECT IS BEING SUBMITTED AS A TENANT IMPROVEMENT TO THE FACILITIES EXISTING FIRE ALARM SYSTEM. INSTALL DEVICES AS SHOWN IN EQUIPMENT LEGEND AND FLOORPLANS OF THIS DRAWING PACKAGE. SPLICE, CONTINUE, INSTALL & EXTEND WIRE AS NEEDED TO ENSURE PROPER OPERATING CONDITIONS.

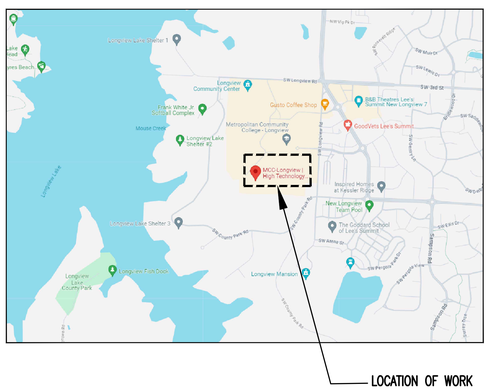
IT IS ASSUMED THAT THE FACILITIES EXISTING CONDITIONS (I.E. FIELD DEVICES, REMOTE EQUIPMENT, SEQUENCE OF OPERATIONS, INTERFACE MODULES, ETC.) ARE ALL IN GOOD WORKING CONDITION. ANY EXISTING EQUIPMENT, DEVICES, ETC. THAT MAY BE FOUND TO BE FAULTY SHALL NOT BE REQUIRED TO BE CORRECTED OR REPLACED UNDER THIS CONTRACT.

UPON COMPLETION A COMPLETE PRETEST SHALL BE PERFORMED TO VERIFY FUNCTIONALITY. IF THE FUNCTIONALITY IS COMPLETE THEN THE PROPER DOCUMENTATION SHALL BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION PRIOR TO SCHEDULING A FINAL INSPECTION.

THIS PROJECT INCLUDES THE FOLLOWING:

- MONITORING OF WATER FLOW & TAMPER SWITCHES IN FIRE PUMP ROOM
- MANUAL PULL STATIONS
- AUDIBLE/VISUAL NOTIFICATION
- SMOKE DETECTION FOR HVAC CONTROL
- HVAC SYSTEM SHUTDOWN ON REQUIRED UNITS
- HVLS FAN SHUTDOWN
- ADDITION OF SURGE SUPPRESSOR TO EXISTING SURGE PANEL.
- ELEVATOR CONTROL & SHUNT TRIP
- CO DETECTOR w/ SOUNDER BASE
- SMOKE DETECTORS
- HEAT DETECTORS

VICINITY MAP



LOCATION OF WORK

SHEET INDEX

DWG#	SHEET DESCRIPTION
FA0.01	SYSTEM INFORMATION, NOTES
FA0.02	SYSTEM INFORMATION, NOTES, LEGENDS & SEQUENCE OF OPERATION
FA1.10	LEVEL 01 FIRE ALARM PLAN – AREA B
FA1.11	LEVEL 01 FIRE ALARM PLAN – AREA A
FA1.20	LEVEL 2 FIRE ALARM PLAN – AREA B
FA1.21	LEVEL 2 FIRE ALARM PLAN – AREA A
FA2.01	SYSTEM RISER DIAGRAM – 1
FA2.02	SYSTEM RISER DIAGRAM – 2
FA3.01	EXISTING CONTROL PANEL LAYOUT – FACU F1
FA4.01	SYSTEM CALCULATIONS – 1
FA4.02	SYSTEM CALCULATIONS – 2
FA5.01	DEVICE MOUNTING & WIRING DETAILS – 1
FA5.02	DEVICE MOUNTING & WIRING DETAILS – 2
FA5.03	DEVICE MOUNTING & WIRING DETAILS – 3

DEVICE INSTALLATION/OPERATING GUIDELINES

100° 32°	THE UL LISTED OPERATING TEMPERATURE RANGE FOR ALL ADDRESSABLE DEVICES 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.
	FIRE ALARM EQUIPMENT SHALL NOT BE STORED OR INSTALLED IN AREAS EXPOSED TO THE ELEMENTS EXCEEDING NORMAL OPERATING CONDITIONS. LISTED WEATHERPROOF DEVICES MAY BE INSTALLED AT EXTERIOR LOCATIONS PER MANUFACTURER INSTRUCTIONS. ALL OTHER DEVICES NOT SPECIFICALLY LISTED AS WEATHERPROOF MUST BE INSTALLED IN SUITABLE LOCATIONS OR LISTED NEMA ENCLOSURES APPLICABLE FOR THE ANTICIPATED ENVIRONMENT AND DEVICES TO BE INSTALLED.
RF EMI	THE INSTALLATION OF A FIRE ALARM SYSTEM AND ANY FIRE ALARM EQUIPMENT MUST NOT BE INSTALLED NEXT TO OR WITHIN CLOSE PROXIMITY OF ANY RADIO FREQUENCY EQUIPMENT (EMI, RF, MF, HIGH OUTPUT, ETC.). SUCH INSTALLING CONDITIONS MAY CAUSE UNDESIRABLE EFFECTS TO THE SYSTEM SUCH AS INTERMITTENT FAULTS, IMPROPER SYSTEM OPERATIONS, FALSE ALARMS, ETC.
DPU	ENSURE EACH ADDRESSABLE DEVICE HAS BEEN PROPERLY PROGRAMMED PRIOR TO ITS INSTALLATION. DO NOT TERMINATE WIRES ONTO ADDRESSABLE DEVICES BEFORE IT HAS BEEN PROGRAMMED.
	DO NOT REMOVE DUST COVERS FROM SMOKE DETECTORS UNTIL ALL CONSTRUCTION HAS BEEN COMPLETED. DUST COVERS WHICH HAVE BEEN REMOVED FROM ANY DETECTOR PRIOR TO THE FINAL CLEAN–UP OF ALL TRADES SHALL BE CLEANED OR REPLACED, IN ACCORDANCE WITH NFPA 72. SIEMENS IS NOT RESPONSIBLE FOR FAULTS FOUND TO BE RELATED TO CONTAMINATION.
	ALL INITIATING DEVICES (DETECTORS, PULL STATIONS, ETC.) AND NOTIFICATION APPLIANCES (HORNS, STROBES, ETC.) MUST BE INSTALLED WITH BACKBOXES. THE EQUIPMENT SHOULD NEVER BE SUPPORTED WITH THE CIRCUIT WIRES.
	THE USE OF MAGNETS FOR THE PURPOSE OF TESTING DETECTORS FOR INITIATION OF AN ALARM IS STRICTLY PROHIBITED. TESTING WITH A MAGNET DOES NOT SATISFY NFPA 72 TEST METHOD REQUIREMENT OF 'SMOKE ENTRY INTO THE SENSING CHAMBER', AND MAY CAUSE UNDESIRABLE EFFECTS TO THE DETECTOR.
	THE PAINTING OR MODIFYING OF ANY FIRE ALARM EQUIPMENT IS STRICTLY PROHIBITED AND SHOULD NOT BE PERFORMED UNDER ANY CIRCUMSTANCES.

APPLICABLE CODES & REGULATIONS

–INTERNATIONAL BUILDING CODE: 2018 EDITION
–INTERNATIONAL FIRE CODE: 2018 EDITION
–NATIONAL ELECTRICAL CODE (NFPA 70): 2017 EDITION

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
–NFPA 72: 2010 EDITION

BUILDING/PROJECT INFORMATION

BUILDING OCCUPANCY:	B – BUSINESS, M – MERCANTILE
SPRINKLERS:	YES
NUMBER OF STORIES:	2 STORIES
SQUARE FOOTAGE OF PROJECT:	ESTIMATED 92,000 SQ. FT.

CIRCUIT INFORMATION

SIGNALING LINE CIRCUIT (SLC):	CLASS B
NOTIFICATION APPLIANCE CIRCUITS (NAC):	CLASS B
NETWORK/PANEL COMMUNICATION (SLC):	CLASS B
SPEAKER CIRCUIT VOLTAGE:	70V

CONTRACTOR INFORMATION

CONTRACTOR:	MARK ONE ELECTRIC COMPANY INC
ADDRESS:	1414 GENESSEE ST KANSAS CITY, MO 64102

SIEMENS CONTACT INFORMATION

PROJECT MANAGER:	STEPHEN SMITH
PHONE #:	(913) 954–7869
EMAIL:	smithss@siemens.com
SALES EXECUTIVE:	CHRIS FOSTER
PHONE #:	(913) 915–7216
EMAIL:	chris.foster@siemens.com

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 THAT ANY DISCREPANCIES/CHANGES BETWEEN THE ACTUAL CONDITIONS AND THE SYSTEM DRAWINGS SHOULD BE NOTED FOR INCLUSION ON THE FINAL RECORD DRAWINGS.

☐ ALL DEVICES HAVE BEEN INSTALLED AND TERMINATED PROPERLY.

☐ CONTACTED SIEMENS FIRE SAFETY PROJECT MANAGER 14 DAYS PRIOR TO SCHEDULED START UP.

☐ ALL FIELD DEVICES INCLUDING DETECTORS, MODULES, NOTIFICATION APPLIANCES BOTH VISUAL AND AUDIBLE ARE ADDRESSED AND OUTPUT SET (AS REQUIRED) AND INSTALLED.

☐ IF YOUR SYSTEM IS BEING FURNISHED WITH A DIALER, APPLICABLE AMOUNT OF RJ31X PHONE JACKS MUST BE INSTALLED WITHIN 3 FEET OF THE MAIN FIRE ALARM CONTROL UNIT. THESE PHONE LINES MUST BE CONNECTED BEFORE 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.

☐ CHECK HERE IF NOT APPLICABLE

CHECK FIELD WIRING WITH AN OHM METER:

ALL FIRE ALARM CIRCUITS SHOULD BE COMPLETED AND TESTED BEFORE THE ARRIVAL OF THE FIRE ALARM AUTHORIZED PERSONNEL. 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. MEG OHM GROUND FAULTS MAY INDICATE THE PRESENCE OF WATER IN CONTACT WITH SYSTEM WIRING. 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, THEN THE CIRCUIT WIRING HAS A SHORT, OPEN, OR GROUND FAULT, AND IS NOT READY FOR START UP!

GENERAL NOTES

1. IT IS THE INTENT THAT THE GENERAL NOTES INDICATED HERE BE APPLICABLE ONLY TO THE CONTRACTED SCOPE OF WORK INDICATED WITHIN THIS DRAWING PACKAGE. NOT ALL NOTES MAY APPLY TO THIS PROJECT.
2. THESE GENERAL NOTES SHALL NOT BE APPLICABLE TO ANY EXISTING CONDITIONS WITHIN THE FACILITY. I.E. EXISTING CONDITIONS FOUND TO BE PRESENT PRIOR TO THIS CONTRACT, WORK PREVIOUSLY PERFORMED BY OTHER OR PREVIOUS SYSTEM CONTRACTORS, SEPARATE WORK UNRELATED TO THIS CONTRACT, SYSTEMS PREVIOUSLY APPROVED UNDER PAST CODES / REGULATIONS, ETC.
3. SIEMENS EQUIPMENT IS UNDERWRITERS LABORATORIES (UL) LISTED FOR POWER LIMITED INSTALLATION.
4. A STAMPED SET OF APPROVED PLANS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION. ANY DEVIATION FROM APPROVED PLANS, INCLUDING THE SUBSTITUTION OF DEVICES SHALL BE APPROVED BY THE AUTHORITY HAVING JURISDICTION/ INSPECTOR OF RECORD. SIEMENS SHALL NOT BEAR ANY ADDITIONAL COST FOR RE–ENGINEERING AS A RESULT OF DEVIATIONS.
5. THESE DRAWINGS DEPICT GENERAL LOCATIONS OF LIFE SAFETY EQUIPMENT & FIELD DEVICES. ANY RACEWAY RUNS THAT ARE INDICATED WITHIN THIS DRAWING PACKAGE ARE SHOWN DIAGRAMMATICAL AND ARE FOR CIRCUITING PURPOSES ONLY. EXACT ROUTING OF THE CONDUITS TO BE DETERMINED IN THE FIELD BY THE INSTALLING CONTRACTOR TO SUIT CONDITIONS. ALL THE CHANGES SHALL BE CLEARLY INDICATED ON THE RECORD DRAWINGS.
6. WIRING SHALL NOT BE LOOPED UNDER DEVICE TERMINALS. WIRE MUST BE CUT FOR IN AND OUT RUNS PRIOR TO INSTALLING UNDER DEVICE TERMINALS.
7. ELECTRICAL CONTRACTOR SHALL BE REQUIRED TO USE COLOR CODE AND/OR WIRE NUMBERS PER CONTRACT DOCUMENTATION ON ALL WIRING. SUCH IDENTIFICATIONS SHALL BE MADE CONTINUOUS THROUGHOUT ALL CIRCUITS, CONNECTIONS, TERMINATIONS AND AT JUNCTION BOXES.
8. WHERE SHIELDED CABLE IS USED, THE SHIELD SHALL BE CONTINUOUS AND GROUNDED ONLY ONCE AT THE RESPECTIVE CONTROL UNIT.
9. T–TAPPING IS ONLY ACCEPTABLE ON SLC CLASS B CIRCUITS EXCEPT WHERE CONTRACT SPECIFICATIONS PROHIBIT.
10. ALL 120VAC CIRCUITS FEEDING FIRE ALARM EQUIPMENT SHALL BE FROM A DEDICATED CIRCUIT MARKED AS 'FIRE ALARM', MARKED RED, AND PROVIDED WITH A BREAKER LOCK–ON DEVICE.
11. ALL WIRING, INITIATING DEVICES AND ANNUNCIATOR PANELS SHALL BE SUPERVISED TO THE PRINCIPAL POINT OF ANNUNCIATION. (CONTROL UNIT(S) TO SUPERVISE ANNUNCIATOR PANEL(S), SUB–PANEL(S), ALL CIRCUITS AND INITIATING DEVICES).
12. UNLESS OTHERWISE NOTED, ALL MANUAL PULL STATIONS SHALL BE MOUNTED AT A MAXIMUM HEIGHT OF 48" ABOVE FINISHED FLOOR TO THE OPERABLE PART.
13. FIRE ALARM SIGNAL SHALL MEET ANSI S3.41, AUDIBLE EMERGENCY EVACUATION SIGNAL (TEMPORAL PATTERN). FIRE ALARM AUDIBILITY SHALL BE NO LESS THAN 15db (PUBLIC MODE) OR 10dB (PRIVATE MODE) ABOVE AMBIENT SOUND THROUGHOUT THE AREA OF ALARM.
14. WHERE MORE THAN TWO VISUAL APPLIANCES ARE IN THE SAME FIELD OF VIEW, THEY SHALL BE SYNCHRONIZED IN ACCORDANCE WITH NFPA 72.
15. CEILING MOUNTED VISUAL NOTIFICATION APPLIANCES SHALL BE MOUNTED BELOW VISUAL OBSTRUCTIONS, AND WHEN THESE APPLIANCES ARE MOUNTED ABOVE 10' A.F.F., THEY SHALL BE DERATED OR PROVIDED WITH PERFORMANCE–BASED ALTERNATIVE IN ACCORDANCE WITH NFPA 72.
16. IN ACCORDANCE WITH 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
17. INSTALLATION OF DEVICES SHALL BE IN ACCORDANCE WITH MANUFACTURER INSTALLATION INSTRUCTIONS AND LISTINGS. MISAPPLICATION OF EQUIPMENT AND SUCH, VOIDS ALL WARRANTIES EITHER EXPRESSED OR IMPLIED WITH REGARDS TO LOSS, DAMAGE, LIABILITIES AND/OR SERVICE PROBLEMS.
18. UNLESS NOTED OTHERWISE ALL WIRING AND INSTALLATION METHODS SHALL CONFORM TO APPLICABLE ELECTRICAL CODE. MINIMUM SIZE OF 3/4" METALLIC RACEWAY SHALL BE INSTALLED.
19. EFFORTS MUST BE PLACED ON MINIMIZING UNNECESSARY WIRE RUNS WITHIN DEVICE BACKBOXES. DO NOT INSTALL WIRE WITHIN A BACKBOX THAT DOES NOT SERVE ITS CORRESPONDING DEVICE AND WHICH MAY INHIBIT ITS PROPER INSTALLATION. GOOD WIRING/INSTALLATION PRACTICES MUST BE ADHERED TO AT ALL TIMES.
20. AS FIELD CONDITIONS DICTATE ACTUAL RACEWAY INSTALLATIONS, DEVICE BACK BOXES AND JUNCTION BOXES SHALL BE SIZED PER FIELD INSTALLING CONDITIONS. DEVICE BACK BOX SIZES INDICATED WITHIN THIS DRAWING PACKAGE ARE MINIMUM REQUIREMENTS ONLY. AN INCREASE IN BACK BOX DEPTH, ADDITION OF EXTENSION BOX/RING, ETC. MAY BE REQUIRED IN ORDER TO PROPERLY ACCOMMODATE FOR WIRE QUANTITIES INSTALLED WITHIN THE RACEWAY.
21. THE INSTALLATION OF DEVICE BACKBOXES & WIRE SHALL BE SIZED AND INSTALLED PER APPLICABLE ELECTRICAL CODE. IN ADDITION SUCH BOXES & WIRE SHALL BE INSTALLED IN A MANNER AS TO ALLOW FOR THE EASE OF DEVICE INSTALLATION & FUTURE MAINTENANCE. THE INSTALLATION OF DEVICES WHICH REQUIRE EXCESSIVE FORCE OR THE PINCHING OF WIRES IN ORDER TO PROPERLY SEAT THE DEVICE TO ITS FINISHED SURFACE MAY RESULT IN GROUND FAULTS OR OTHER SYSTEM TROUBLES, AND SHALL BE CONSIDERED AN UNACCEPTABLE INSTALLATION STANDARD.
22. DO NOT APPLY POWER TO CONTROL UNIT(S) UNTIL SIEMENS AUTHORIZED PERSONNEL HAVE VERIFIED THE SYSTEM INSTALLATIONS. UPON SATISFACTORY COMPLETION OF THEIR INSPECTION, POWER WILL BE APPLIED TO THE CONTROL UNIT(S). SIEMENS ASSUMES NO LIABILITY FOR ANY DAMAGE TO THE EQUIPMENT SUPPLIED IF POWER IS APPLIED TO THE CONTROL UNIT(S) PRIOR TO INSPECTION OF THE INSTALLATION BY SIEMENS AUTHORIZED PERSONNEL.
23. CABLE INSTALLED IN UNDERGROUND RACEWAYS OR OTHER WET LOCATIONS SHALL BE RATED/LISTED FOR WET LOCATIONS.
24. FOR ADDITIONAL INSTALLATION INSTRUCTIONS, REFER TO CATALOG CUT SHEETS AND/OR INSTALLATION INSTRUCTIONS.
25. ALL EXISTING HVAC UNITS ARE BEING DEMOED. ONLY ONE HVAC UNIT OVER 2000CFM IS BEING ADDED UNIT VRF IU–A201A.

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

STATE OF MISSOURI — JAY R. GUERRA — NUMBER E-26382 — REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

Jay R Guerra

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
SYSTEM INFORMATION, NOTES

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

DRAWING NUMBER: **FA0.01**

SHEET SIZE: ARCH E1 – 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA001-MCC - LV Automotive-SYS.dwg lucasf

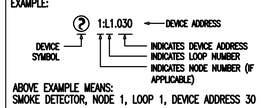
TYPICAL CALLOUTS & ABBREVIATIONS

AC	= ABOVE CEILING	HT	= HEIGHT
AFF	= ABOVE FINISHED FLOOR	ID	= IN-DUCT MOUNTED
AHJ	= AUTHORITY HAVING JURISDICTION	IDC	= INITIATING DEVICE CIRCUIT
AHU	= AIR HANDLING UNIT	MAX	= MAXIMUM
ANN	= ANNUNCIATOR	MIN	= MINIMUM
BMS	= BUILDING MANAGEMENT SYSTEM	N	= NEW
C	= CEILING MOUNTED	N/A	= NOT APPLICABLE
°C	= CONDUIT (CIRCULAR RACEWAY)	NAC	= NOTIFICATION APPLIANCE CIRCUIT
CD	= (i.e., 15CD) CANDELA	NIC	= NOT IN CONTRACT
CFM	= CUBIC FEET PER MINUTE (AIRFLOW)	NTS	= NOT TO SCALE
CKT	= CIRCUIT	PS	= POWER SUPPLY
CSFD	= COMBINATION SMOKE FIRE DAMPER	RA	= RETURN-AIR GRILL MOUNTED
DACT	= DIGITAL ALARM COMM. TRANSMITTER	RL	= RELOCATED DEVICE
DR	= DROP & RE-HANG EXISTING	RR	= REMOVE EXISTING, REPLACE w/ NEW
E	= EXISTING	SF	= DEVICE MOUNTED IN SUB-FLOOR
EL	= ELEVATOR RECALL	SLC	= SIGNALING LINE CIRCUIT
EOL	= END OF LINE	TBD	= TO BE DETERMINED
EPO	= EMERGENCY POWER OFF	TYP	= TYPICAL
ER	= EXISTING TO BE RELOCATED	UF	= UNDER-FLOOR
FAA	= FIRE ALARM ANNUNCIATOR	UON	= UNLESS OTHERWISE NOTED
FACP	= FIRE ALARM CONTROL PANEL	WM	= DEVICE WALL MOUNTED
FACU	= FIRE ALARM CONTROL UNIT	WP	= WEATHERPROOF
FATC	= FIRE ALARM TERMINAL CABINET	X	= DEMO EXISTING
FBO	= FURNISHED BY OTHERS	XP	= EXPLOSION PROOF
FSD	= FIRE SMOKE DAMPER		

DEVICE NUMBERING LEGEND

ADDRESSABLE ALARM INITIATING DEVICES

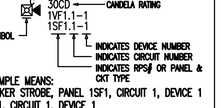
EXAMPLE:



ABOVE EXAMPLE MEANS:
SMOKE DETECTOR, NODE 1, LOOP 1, DEVICE ADDRESS 30

ALARM NOTIFICATION APPLIANCE

EXAMPLE:

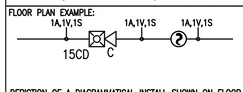


ABOVE EXAMPLE MEANS:
30CD SPEAKER STROBE, PANEL 1SF1, CIRCUIT 1, DEVICE 1
PANEL 1VF1, CIRCUIT 1, DEVICE 1

DEVICE CONDUIT WIRING GUIDELINE

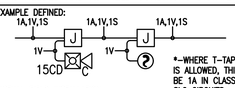
INSTALLATION GUIDELINES: DEVICE BACKBOXES SHOULD NOT CONTAIN WIRE THAT DOES NOT SERVE ITS ASSOCIATED DEVICE. TO PREVENT BACKBOX OVERFILL & IMPROPER DEVICE INSTALL, ALL EFFORTS MUST BE MADE TO PREVENT UNNECESSARY WIRE FILL WITHIN DEVICE BACKBOXES. MOUNTING SPECIFICATIONS INDICATED WITHIN THE EQUIPMENT & DEVICE LEGEND ARE MINIMUM RECOMMENDATIONS. JUNCTION BOXES, EXTENSION RINGS, ETC. MUST BE INSTALLED AS NEEDED AND AS FIELD CONDITIONS DICTATE.

FLOOR PLAN EXAMPLE:



DEPICTION OF A DIAGRAMMATICAL INSTALL SHOWN ON FLOOR PLAN

EXAMPLE DEFINED:



ACTUAL FIELD INSTALLATION

*-WHERE T-TAPPING IS ALLOWED, THIS CAN BE 1A IN CLASS B SLC CIRCUITS

SEQUENCE OF OPERATIONS

Building Sequence of Operations

AUDIBLE MESSAGE TO BE (FEMALE VOICE, ENGLISH) - "May I have your attention please, may I have your attention please? There has been a fire emergency reported in the building. Please evacuate the building by the nearest exit."

* - Elevator recall to primary or alternate floor and Visual Warning (Firefighter Hat) shall be performed by the elevator controller per the Elevator Code ASME A17.1

	Control Unit Annunciation				Notification						Required Fire Safety Control					
System Inputs	Activate control unit ALARM buzzer and LED	Activate control unit SUPERVISORY buzzer and LED	Activate control unit TROUBLE buzzer and LED	Annunciate at remote fire alarm annunciator	Send Signal to supervising station (24 Hour Attended location)	Activate all audible/visual devices throughout the building	Activate sprinkler alarm device	Activate associated CO sounders (Temp-4 Code)	Activate Alarm Speakers with "Lockdown" Message	Activate Alarm Speakers with "Weather" Message	Shutdown required air handling (HVAC) units throughout building immediately	Recall associated elevator(s) to primary recall floor *	Recall associated elevator(s) to alternate recall floor *	Shunt elevator power	Send signal to elevator controller of device activation in Elevator hoistway or machine room (Hat Light) *	Activate Associated Relay to Shutdown HVLS Fans throughout building immediately
Manual fire alarm box	X			X	X	X										
Blue - Weather Activation Pull Station		X		X	X					X						
White - Lockdown Activation Pull Station		X		X	X				X							
Smoke detector above FA panel	X			X	X	X										X
Area smoke / heat detector	X			X	X	X										X
Carbon monoxide sensor		X		X	X			X								
Duct smoke detector @ Fan duct		X		X	X						X					X
Elevator lobby smoke detector-main floor	X			X	X	X							X			X
Elevator lobby smoke detector-all other floors	X			X	X	X						X				X
Elevator hoistway smoke detector	X			X	X	X						X			X	X
Elevator hoistway heat detector	X			X	X	X								X	X	
Elevator120VAC shunt trip circuit failure		X		X	X											
Sprinkler water flow switch	X			X	X	X	X				X					X
Sprinkler valve supervisory switches		X		X	X											
FACU 120VAC power failure			X	X	X											
Remote power supply trouble (power, wiring)			X	X	X											
System device trouble			X	X	X											
System wiring trouble (ground, open, short)			X	X	X											

SEQUENCE OF OPERATIONS TO MATCH THE EXISTING BUILDING SEQUENCE OF OPERATIONS

Special Notes: X- Function of Fire Alarm System
O- Function by others

CABLE LEGEND

LTR	DESCRIPTION	AWG	# OF COND	SHIELD
A	(SLC) ADDRESSABLE LOOP	18	2	NO
P	24VDC POWER	14	2	NO
S	(NAC) SPEAKER CIRCUIT	16	2	NO
V	(NAC) VISUAL & AUDIO/VISUAL CIRCUIT	14	2	NO
SB	(NAC) SOUNDER BASE CIRCUIT	14	2	NO
HN	H-NET COMMUNICATION CIRCUIT	16	2	NO
N	NETWORK CABLE	CAT6 CABLE		
XB	BATTERY CABLE	12	2	NO
////-	120VAC POWER WIRING (W/GROUND)	12	3	NO

CONDUIT WIRE FILL CHART

	ELECTRICAL METALLIC CONDUIT		FLEXIBLE METALLIC CONDUIT		RIGID METALLIC CONDUIT		FLEXIBLE LIQUIDTIGHT METALLIC CONDUIT	
CONDUIT TRADE SIZE	INTERNAL DIAMETER	*MAXIMUM FILL-40%	INTERNAL DIAMETER	*MAXIMUM FILL-40%	INTERNAL DIAMETER	*MAXIMUM FILL-40%	INTERNAL DIAMETER	*MAXIMUM FILL-40%
3/4"	0.8240	0.2130	0.8240	0.2130	0.8360	0.2200	0.8300	0.2160
1"	1.0490	0.3460	1.0200	0.3270	1.0630	0.3550	1.0540	0.3490
1 1/4"	1.3800	0.5980	1.2750	0.5110	1.3940	0.6100	1.3950	0.6110
1 1/2"	1.6100	0.8140	1.5380	0.7430	1.6240	0.8290	1.5880	0.7920
2"	2.0670	1.3420	2.0400	1.3070	2.0830	1.3630	2.0330	1.2980

* UNIT MEASUREMENTS INDICATED UNDER 40% MAXIMUM FILL REPRESENT SQUARE INCHES.
FOR REFERENCE ONLY - RECOMMENDATION FOR CONDUIT SIZE PER N.E.C.

DEVICE & SYMBOL LEGEND

ALL PARTS ARE SIEMENS UNLESS OTHERWISE NOTED

SYMBOL	QTY	MODEL NUMBER	DESCRIPTION	*ROUGH IN
FACU (E)	1	DESIGO MODULAR	EXISTING DESIGO FIRE SAFETY MODULAR FIRE ALARM CONTROL UNIT	SEMI-FLUSH OR SURFACE MOUNT
BATT (E)	1	CAB-BATT 500-633917	EXISTING BATTERY CABINET FOR UP TO (2) 100 A.H. BATTERIES	EXISTING
	2	100AH	EXISTING 100AH BATTERIES	EXISTING
ANN	1	SSD-C 500-648733	SYSTEM STATUS DISPLAY WITH CONTROL	4S DEEP BOX
PAD5	2	PAD-5-9A S54339-A17-A1	ADDRESSABLE POWER SUPPLY NOTIFICATION APPLIANCE EXTENDER - 9A (INCLUDES PAB-ENCL, PAD-5-M8, FP2012-U1)	SURFACE MOUNT
BATT	2	CAB-BATT 500-633917	BATTERY CABINET FOR UP TO (2) 100 A.H. BATTERIES	SURFACE OR SEMI-FLUSH MOUNT
	4	DURA12-35C	DURACELL BATTERY 12 VOLT 35 AMP HOUR	BATTERY CABINET
SP (E)	1	EXISTING	EXISTING FIRE ALARM SURGE SUPPRESSION PANEL	SURFACE MOUNT
	7	CP2297	SURGE SUPPRESSOR 24VDC	INTERNAL PANEL COMPONENT
	1	FSP 4004 MC	SPEAKER SURGE SUPPRESSOR	INTERNAL PANEL COMPONENT
	1	FDBZ492 S54319-B22-A1	DUCT DETECTOR HOUSING	FIELD VERIFY
	1	FDO421 S54320-F4-A1	INTELLIGENT PHOTOELECTRIC SMOKE DETECTOR HEAD	FDBZ-492
	1	ST-100 500-649713	SAMPLING TUBE (FOR DUCTS 5' TO 10')	FDBZ-492
TSM	1	TSM-1X S54370-B7-A1	INTELLIGENT REMOTE TEST STATION w/ LED	4S DEEP BOX w/ EXT & 1-GANG RING
CO	54	FDOOT441 S54320-F7-A1	INTELLIGENT MULTI-CRITERIA SMOKE DETECTOR HEAD	DB-11
	54	DB-11 500-094151	DETECTOR BASE	4S DEEP BOX w/ 1-GANG RING
CO HS	30	FDOOTC441 S54320-F8-A1	INTELLIGENT MULTI-CRITERIA FIRE / CO DETECTOR	ABHW-4B
	30	ABHW-4B S54320-F13-A1	INTELLIGENT DETECTOR BASE w/ SOUNDER (TEMP-3, TEMP-4, STEADY)	4S DEEP BOX w/ EXTENSION
	35	FDT421 S54320-F5-A1	INTELLIGENT HEAT DETECTOR HEAD	DB-11
	35	DB-11 500-094151	DETECTOR BASE	4S DEEP BOX w/ 1-GANG RING
DA P	9	XMS-D S54321-F8-A1	INTELLIGENT MANUAL PULL STATION DUAL ACTION, KEY RESET	4S DEEP BOX w/ 1-GANG RING
DA P (E)	3	XMS-D S54321-F8-A1	EXISTING INTELLIGENT MANUAL PULL STATION DUAL ACTION, KEY RESET	4S DEEP BOX w/ 1-GANG RING
W P	3	RMS-1T-KL/BLUE	WEATHER NOTIFICAITON PULL STATION	4S DEEP BOX w/ 1-GANG RING
L P	3	RMS-1T-KL/WHITE	LOCKDOWN NOTIFICATION PULL STATION	4S DEEP BOX w/ 1-GANG RING
RM	14	XTRI-R S54370-B1-A1	INTELLIGENT CONTROLLABLE RELAY w/ SINGLE INPUT MONITOR MODULE	4S DEEP BOX
MM	6	XTRI-M S54370-B4-A1	INTELLIGENT SINGLE INPUT MINI-MONITOR MODULE	4S DEEP BOX
DM	3	XTRI-D S54370-B2-A1	INTELLIGENT DUAL INPUT MONITOR MODULE	4S DEEP BOX
	29	SLZSWR-F S54329-F208-A1	MULTI-CANDELA LED STROBE, WALL MOUNT - RED FIELD SELECTABLE 15/30/75/110/135/185cd	4S DEEP BOX w/ 1-GANG RING
	6	SLZSCW-F S54329-F198-A1	MULTI-CANDELA LED STROBE, CEILING MOUNT - WHITE FIELD SELECTABLE 15/30/75/110/150/177cd	4S DEEP BOX
C	39	SLZSPSCW-F S54329-F165-A1	HFI SPEAKER/STROBE, 25/70V, WALL MOUNT - CEILING- FIELD SELECTABLE 15/30/75/110/150/177cd, 1/8-5W	4S DEEP BOX w/ EXTENSION
C	104	SLZSPCW-F S54329-F146-A1	HFI SPEAKER, 25/70V, CEILING MOUNT - WHITE FIELD SELECTABLE 1/8-2W(25V), 1/8W-5W(70V)	4S DEEP BOX w/ EXTENSION
WP	4	AS-75-R-WP 500-636016	WEATHERPROOF HORN/STROBE, WALL MOUNT - RED	WPBBS-R
	4	WPBBS-R 500-636137	WEATHERPROOF BACKBOX - RED	SURFACE MOUNT
WP C	2	SET-S17-CW-WP 500-636057	WEATHERPROOF SPEAKER/STROBE, 25/70V, CEILING MOUNT - WHITE FIELD SELECTABLE 1/8-8W	MT-SUR-BOX-W
	2	MT-SUR-BOX-W 500-636118	WEATHERPROOF BACKBOX - WHITE	SURFACE MOUNT
(E)	3	ZR-MC-R 500-636169	EXISTING MULTI-CANDELA STROBE, WALL MOUNT - RED FIELD SELECTABLE 15/30/75/110cd	4S DEEP BOX w/ 2-GANG RING
SURGE	2	CP2341	SURGE SUPPRESSOR 120VAC	FIELD VERIFY
	F.B.O.	<BY OTHERS>	SPRINKLER WATERFLOW SWITCH	F.B.O.
	F.B.O.	<BY OTHERS>	SPRINKLER TAMPER SWITCH	F.B.O.

(*) THE ABOVE REFERENCED "ROUGH IN" MOUNTING REQUIREMENTS INDICATED SHALL BE CONSIDERED AS A MINIMUM RECOMMENDATION ONLY. SPECIFIC FIELD CONDITIONS SHALL DICTATE ACTUAL ROUGH IN REQUIRED INSTALLATIONS. I.E. MULTIPLE CONDUIT RACEWAYS WITHIN A DEVICE BACKBOX, WIRE SIZE, WIRE TYPE, ETC. THE ADDITION OF EXTENSION RINGS OR LARGER BACKBOXES MAY BE REQUIRED TO BE INSTALLED TO ACCOMMODATE FOR ACTUAL FIELD CONDITIONS. ALTERNATE ROUGH IN EQUIPMENT WHICH MEETS SIEMENS INSTALLATION STANDARDS AND IS OF A LIKE NATURE MAY BE UTILIZED. ALL ROUGH IN INSTALLATION SHALL PROPERLY COMPLY WITH ALL APPLICABLE CODES/STANDARDS/REGULATIONS. TO MINIMIZE ANY COST IMPACTS ALL ISSUES AND DISCREPANCIES MUST IMMEDIATELY BE BROUGHT TO THE ATTENTION OF SIEMENS PRIOR TO ANY ROUGH-IN/INSTALLATION.

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

STATE OF MISSOURI
JAY R. GUERRA
NUMBER E-26382
PROFESSIONAL ENGINEER
7/15/2024

JAY R. GUERRA
LICENSE # E-26382
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
SYSTEM INFORMATION, NOTES, LEGENDS & SEQUENCE OF OPERATION

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

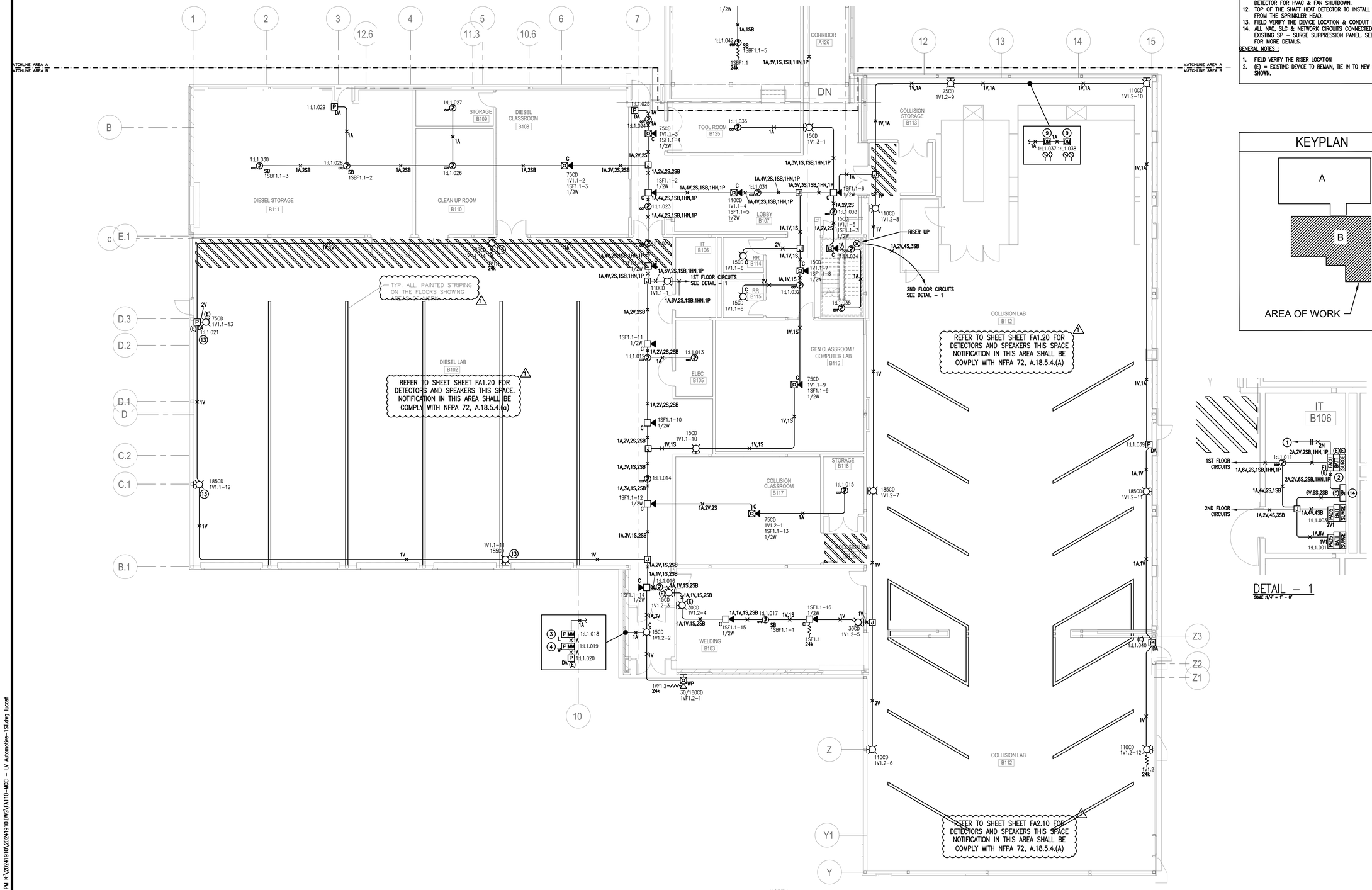
DRAWING NUMBER: **FA0.02**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910\FA001-MCC - LV Automotive-SYS.dwg lucasf

CABLE LEGEND

LTR	DESCRIPTION	AWG	# OF COND	SHIELD
A	(SLC) ADDRESSABLE LOOP	18	2	NO
P	24VDC POWER	14	2	NO
S	(NAC) SPEAKER CIRCUIT	16	2	NO
V	(NAC) VISUAL & AUDIO/VISUAL CIRCUIT	14	2	NO
SB	(NAC) SOUNDER BASE CIRCUIT	14	2	
HN	H-NET COMMUNICATION CIRCUIT	16	2	NO
N	NETWORK CABLE	CAT6 CABLE		
XB	BATTERY CABLE	12	2	NO
-///-	120VAC POWER WIRING (W/GROUND)	12	3	NO



1 LEVEL 01 FIRE ALARM PLAN - AREA B

SCALE: 1/8" = 1'-0"

0 4' 8' 16'

NORTH

DETAIL - 1

SCALE 1/4" = 1' - 0"

NOTES

PLAN NOTES: @

1. PROVIDE EXISTING NETWORK DROP FROM MCC BUILDING NETWORK FOR DVTEL EQUIPMENT.
2. RELOCATE EXISTING EXISTING FACU F1 & SURGE PROTECTOR PANEL.
3. USE WHITE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR BUILDING LOCK DOWN.
4. USE BLUE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR EMERGENCY WEATHER NOTIFICATION.
5. XTRI-R MODULE ASSOCIATED WITH ELEVATOR PRIMARY RECALL.
6. XTRI-R MODULE ASSOCIATED WITH ELEVATOR ALTERNATE RECALL.
7. XTRI-R MODULE ASSOCIATED WITH ELEVATOR FIRE HAT.
8. XTRI-R MODULE ASSOCIATED WITH SHUNT TRIP.
9. XTRI-D MODULE ASSOCIATED WITH SPRINKLER SYSTEM WATER FLOW & TAMPER SWITCH MONITORING. FIELD VERIFY THE LOCATION & QUANTITIES.
10. XTRI-R MODULE ASSOCIATED WITH HVLS FAN SHUT DOWN. FIELD VERIFY THE LOCATION OF FAN CONTROLLER.
11. XTRI-R MODULE ASSOCIATED WITH VRF UI-A201A DUCT DETECTOR FOR HVAC & FAN SHUTDOWN.
12. TOP OF THE SHAFT HEAT DETECTOR TO INSTALL WITHIN 2 FT FROM THE SPRINKLER HEAD.
13. FIELD VERIFY THE DEVICE LOCATION & CONDUIT ROUTING.
14. ALL NAC, SLC & NETWORK CIRCUITS CONNECTED TO EXISTING SP - SURGE SUPPRESSION PANEL. SEE FA3.01 FOR MORE DETAILS.

GENERAL NOTES :

1. FIELD VERIFY THE RISER LOCATION
2. (E) = EXISTING DEVICE TO REMAIN, TIE IN TO NEW CIRCUITS AS SHOWN.

KEYPLAN

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

STATE OF MISSOURI — JAY R. GUERRA — NUMBER E-26382 — REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV

CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
LEVEL 01 FIRE ALARM PLAN - AREA B

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

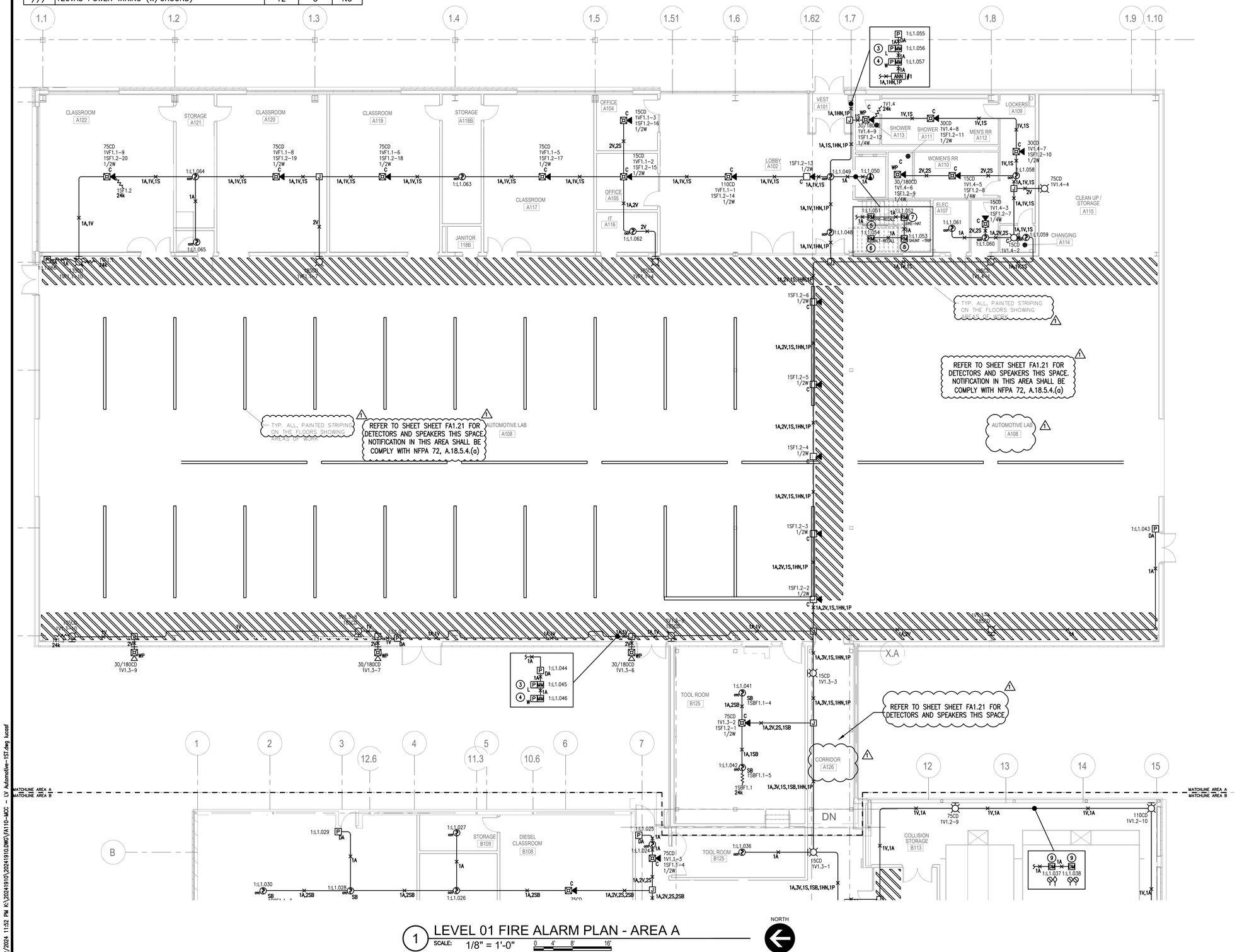
DRAWING NUMBER: **FA1.10**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA110-MCC - LV Automotive-1ST.dwg lucasf

CABLE LEGEND

LTR	DESCRIPTION	AWG	# OF COND	SHIELD
A	(SLC) ADDRESSABLE LOOP	18	2	NO
P	24VDC POWER	14	2	NO
S	(NAC) SPEAKER CIRCUIT	16	2	NO
V	(NAC) VISUAL & AUDIO/VISUAL CIRCUIT	14	2	NO
SB	(NAC) SOUNDER BASE CIRCUIT	14	2	
HN	H-NET COMMUNICATION CIRCUIT	16	2	NO
N	NETWORK CABLE	CAT6 CABLE		
XB	BATTERY CABLE	12	2	NO
-///-	120VAC POWER WIRING (W/GROUND)	12	3	NO



1 LEVEL 01 FIRE ALARM PLAN - AREA A

SCALE: 1/8" = 1'-0"

NORTH

NOTES

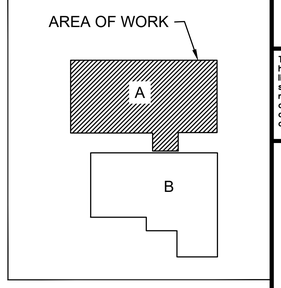
PLAN NOTES: @

1. PROVIDE EXISTING NETWORK DROP FROM MCC BUILDING NETWORK FOR DVTEL EQUIPMENT.
2. RELOCATE EXISTING EXISTING FACU F1 & SURGE PROTECTOR PANEL.
3. USE WHITE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR BUILDING LOCK DOWN.
4. USE BLUE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR EMERGENCY WEATHER NOTIFICATION.
5. XTRI-R MODULE ASSOCIATED WITH ELEVATOR PRIMARY RECALL.
6. XTRI-R MODULE ASSOCIATED WITH ELEVATOR ALTERNATE RECALL.
7. XTRI-R MODULE ASSOCIATED WITH ELEVATOR FIRE HAT.
8. XTRI-R MODULE ASSOCIATED WITH SHUNT TRIP.
9. XTRI-D MODULE ASSOCIATED WITH SPRINKLER SYSTEM WATER FLOW & TAMPER SWITCH MONITORING. FIELD VERIFY THE LOCATION & QUANTITIES.
10. XTRI-R MODULE ASSOCIATED WITH HVLS FAN SHUT DOWN. FIELD VERIFY THE LOCATION OF FAN CONTROLLER.
11. XTRI-R MODULE ASSOCIATED WITH VRF UI-A201A DUCT DETECTOR FOR HVAC & FAN SHUTDOWN.
12. TOP OF THE SHAFT HEAT DETECTOR TO INSTALL WITHIN 2 FT FROM THE SPRINKLER HEAD.
13. FIELD VERIFY THE DEVICE LOCATION & CONDUIT ROUTING.
14. ALL NAC, SLC & NETWORK CIRCUITS CONNECTED TO EXISTING SP - SURGE SUPPRESSION PANEL. SEE FA3.01 FOR MORE DETAILS.

GENERAL NOTES :

1. FIELD VERIFY THE RISER LOCATION
2. (E) = EXISTING DEVICE TO REMAIN, TIE IN TO NEW CIRCUITS AS SHOWN.

KEYPLAN



GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

STATE OF MISSOURI — JAY R. GUERRA — NUMBER E-26382 — REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
LEVEL 01 FIRE ALARM PLAN - AREA A

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

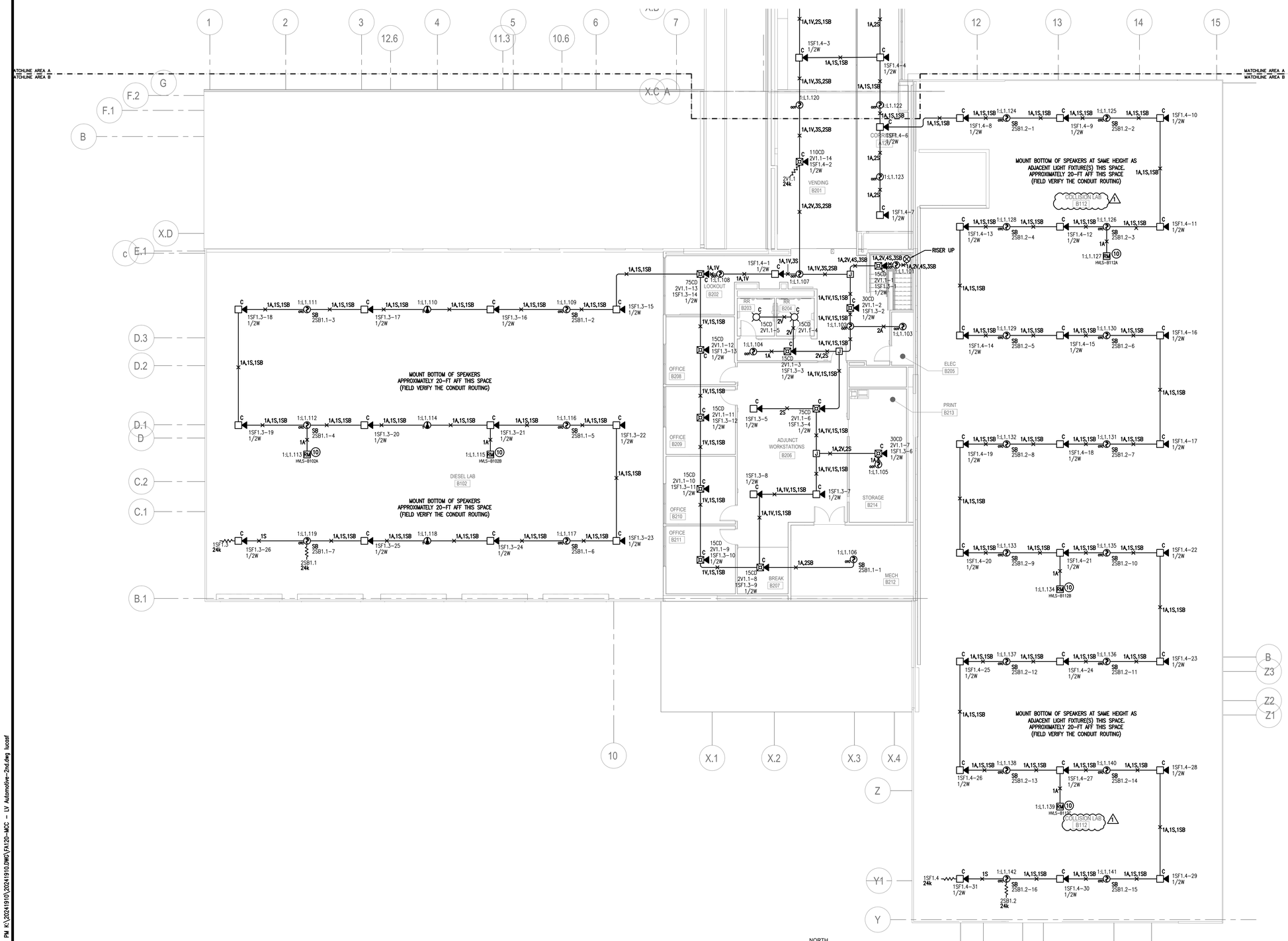
DRAWING NUMBER: **FA1.11**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA110-MCC - LV Automotive-1ST.dwg lucasf

CABLE LEGEND

LTR	DESCRIPTION	AWG	# OF COND	SHIELD
A	(SLC) ADDRESSABLE LOOP	18	2	NO
P	24VDC POWER	14	2	NO
S	(NAC) SPEAKER CIRCUIT	16	2	NO
V	(NAC) VISUAL & AUDIO/VISUAL CIRCUIT	14	2	NO
SB	(NAC) SOUNDER BASE CIRCUIT	14	2	
HN	H-NET COMMUNICATION CIRCUIT	16	2	NO
N	NETWORK CABLE	CAT6 CABLE		
XB	BATTERY CABLE	12	2	NO
-///-	120VAC POWER WIRING (W/GROUND)	12	3	NO



1 LEVEL 2 FIRE ALARM PLAN - AREA B

SCALE: 1/8" = 1'-0"

0 4' 8' 16'

NORTH

NOTES

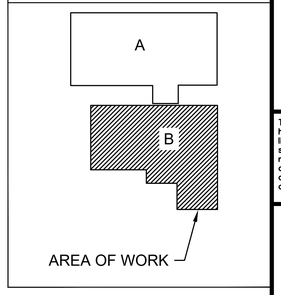
PLAN NOTES: @

1. PROVIDE EXISTING NETWORK DROP FROM MCC BUILDING NETWORK FOR DVTEL EQUIPMENT.
2. RELOCATE EXISTING EXISTING FACU F1 & SURGE PROTECTOR PANEL.
3. USE WHITE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR BUILDING LOCK DOWN.
4. USE BLUE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR EMERGENCY WEATHER NOTIFICATION.
5. XTRI-R MODULE ASSOCIATED WITH ELEVATOR PRIMARY RECALL.
6. XTRI-R MODULE ASSOCIATED WITH ELEVATOR ALTERNATE RECALL.
7. XTRI-R MODULE ASSOCIATED WITH ELEVATOR FIRE HAT.
8. XTRI-R MODULE ASSOCIATED WITH SHUNT TRIP.
9. XTRI-D MODULE ASSOCIATED WITH SPRINKLER SYSTEM WATER FLOW & TAMPER SWITCH MONITORING. FIELD VERIFY THE LOCATION & QUANTITIES.
10. XTRI-R MODULE ASSOCIATED WITH HVLS FAN SHUT DOWN. FIELD VERIFY THE LOCATION OF FAN CONTROLLER. 1
11. XTRI-R MODULE ASSOCIATED WITH VRF UI-A201A DUCT DETECTOR FOR HVAC & FAN SHUTDOWN.
12. TOP OF THE SHAFT HEAT DETECTOR TO INSTALL WITHIN 2 FT FROM THE SPRINKLER HEAD.
13. FIELD VERIFY THE DEVICE LOCATION & CONDUIT ROUTING.

GENERAL NOTES :

1. FIELD VERIFY THE RISER LOCATION
2. (E) = EXISTING DEVICE TO REMAIN, TIE IN TO NEW CIRCUITS AS SHOWN.

KEYPLAN



GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

STATE OF MISSOURI — JAY R. GUERRA — NUMBER E-26382 — REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
LEVEL 2 FIRE ALARM PLAN - AREA B

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

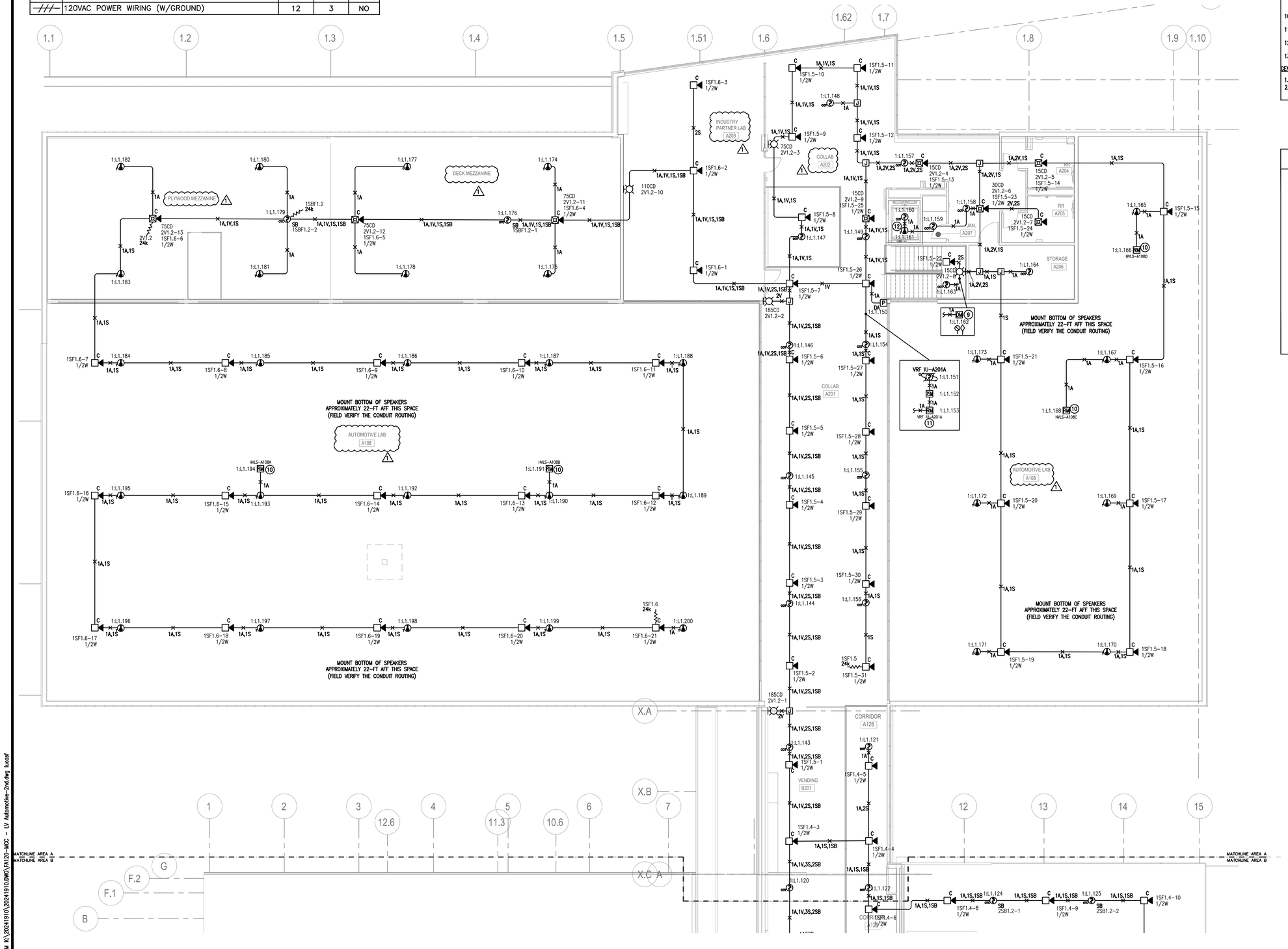
DRAWING NUMBER: **FA1.20**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA120-MCC - LV Automotive-2nd.dwg lucasf

CABLE LEGEND

LTR	DESCRIPTION	AWG	# OF COND	SHIELD
A	(SLC) ADDRESSABLE LOOP	18	2	NO
P	24VDC POWER	14	2	NO
S	(NAC) SPEAKER CIRCUIT	16	2	NO
V	(NAC) VISUAL & AUDIO/VISUAL CIRCUIT	14	2	NO
SB	(NAC) SOUNDER BASE CIRCUIT	14	2	
HN	H-NET COMMUNICATION CIRCUIT	16	2	NO
N	NETWORK CABLE	CAT6 CABLE		
XB	BATTERY CABLE	12	2	NO
-///-	120VAC POWER WIRING (W/GROUND)	12	3	NO



1 LEVEL 2 FIRE ALARM PLAN - AREA A

SCALE: 1/8" = 1'-0"

NORTH

NOTES

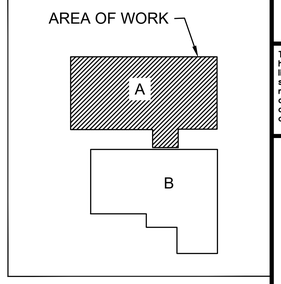
PLAN NOTES: @

1. PROVIDE EXISTING NETWORK DROP FROM MCC BUILDING NETWORK FOR DVTEL EQUIPMENT.
2. RELOCATE EXISTING EXISTING FACU F1 & SURGE PROTECTOR PANEL.
3. USE WHITE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR BUILDING LOCK DOWN.
4. USE BLUE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR EMERGENCY WEATHER NOTIFICATION.
5. XTRI-R MODULE ASSOCIATED WITH ELEVATOR PRIMARY RECALL.
6. XTRI-R MODULE ASSOCIATED WITH ELEVATOR ALTERNATE RECALL.
7. XTRI-R MODULE ASSOCIATED WITH ELEVATOR FIRE HAT.
8. XTRI-R MODULE ASSOCIATED WITH SHUNT TRIP.
9. XTRI-D MODULE ASSOCIATED WITH SPRINKLER SYSTEM WATER FLOW & TAMPER SWITCH MONITORING. FIELD VERIFY THE LOCATION & QUANTITIES.
10. XTRI-R MODULE ASSOCIATED WITH HVLS FAN SHUT DOWN. FIELD VERIFY THE LOCATION OF FAN CONTROLLER.
11. XTRI-R MODULE ASSOCIATED WITH VRF UI-A201A DUCT DETECTOR FOR HVAC & FAN SHUTDOWN.
12. TOP OF THE SHAFT HEAT DETECTOR TO INSTALL WITHIN 2 FT FROM THE SPRINKLER HEAD.
13. FIELD VERIFY THE DEVICE LOCATION & CONDUIT ROUTING.

GENERAL NOTES :

1. FIELD VERIFY THE RISER LOCATION
2. (E) = EXISTING DEVICE TO REMAIN, TIE IN TO NEW CIRCUITS AS SHOWN.

KEYPLAN



GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

STATE OF MISSOURI — JAY R. GUERRA — NUMBER E-26382 — REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
LEVEL 2 FIRE ALARM PLAN - AREA A

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

DRAWING NUMBER: **FA1.21**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA1.20-MCC - LV Automotive-2nd.dwg lucasf

CABLE LEGEND

LTR	DESCRIPTION	AWG	# OF COND	SHIELD
A	(SLC) ADDRESSABLE LOOP	18	2	NO
P	24VDC POWER	14	2	NO
S	(NAC) SPEAKER CIRCUIT	16	2	NO
V	(NAC) VISUAL & AUDIO/VISUAL CIRCUIT	14	2	NO
SB	(NAC) SOUNDER BASE CIRCUIT	14	2	
HN	H-NET COMMUNICATION CIRCUIT	16	2	NO
N	NETWORK CABLE	CAT6 CABLE		
XB	BATTERY CABLE	12	2	NO
-///-	120VAC POWER WIRING (W/GROUND)	12	3	NO

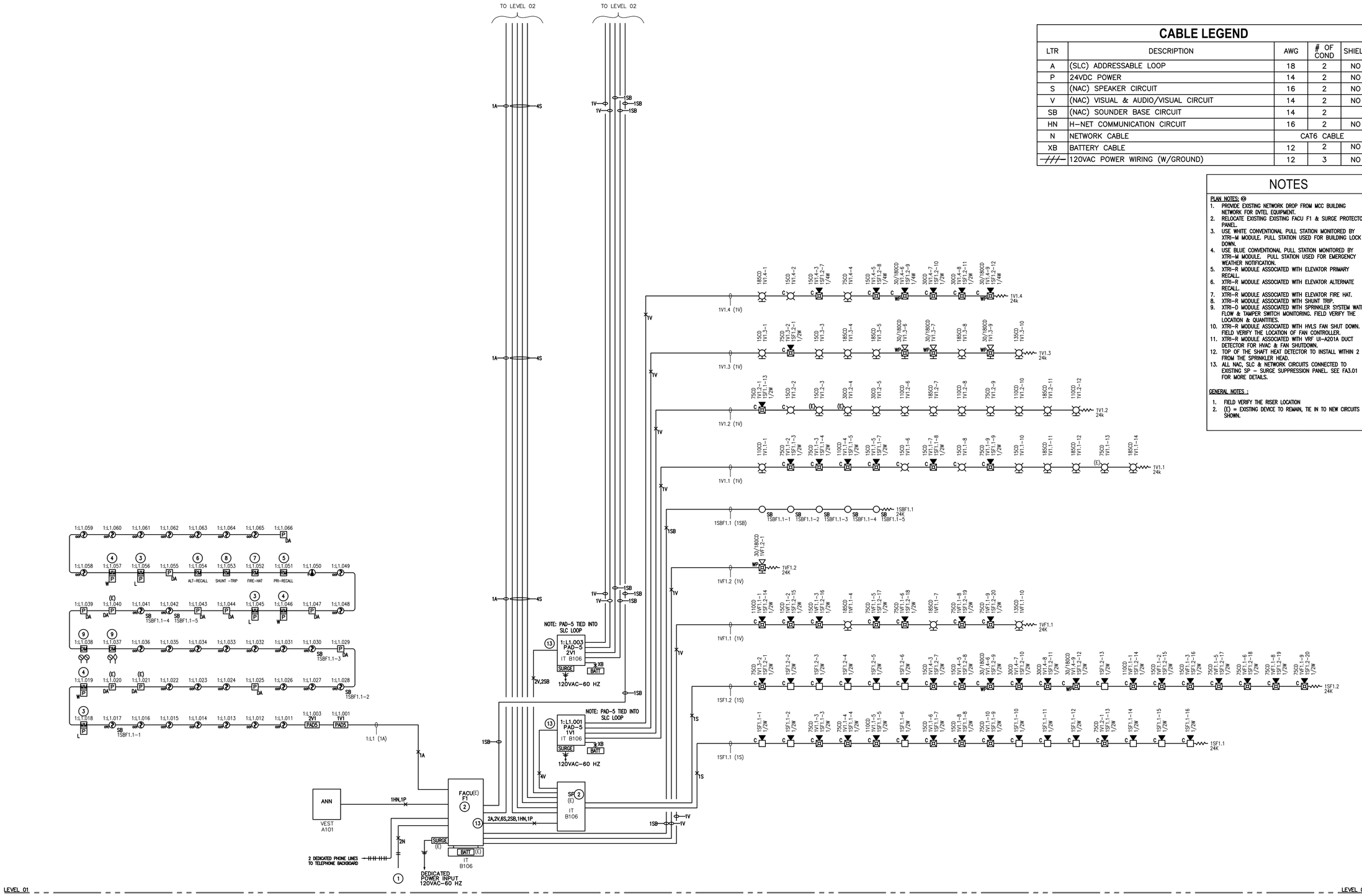
NOTES

PLAN NOTES: @

1. PROVIDE EXISTING NETWORK DROP FROM MCC BUILDING NETWORK FOR DVTEL EQUIPMENT.
2. RELOCATE EXISTING EXISTING FACU F1 & SURGE PROTECTOR PANEL.
3. USE WHITE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR BUILDING LOCK DOWN.
4. USE BLUE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR EMERGENCY WEATHER NOTIFICATION.
5. XTRI-R MODULE ASSOCIATED WITH ELEVATOR PRIMARY RECALL.
6. XTRI-R MODULE ASSOCIATED WITH ELEVATOR ALTERNATE RECALL.
7. XTRI-R MODULE ASSOCIATED WITH ELEVATOR FIRE HAT.
8. XTRI-R MODULE ASSOCIATED WITH SHUNT TRIP.
9. XTRI-D MODULE ASSOCIATED WITH SPRINKLER SYSTEM WATER FLOW & TAMPER SWITCH MONITORING. FIELD VERIFY THE LOCATION & QUANTITIES.
10. XTRI-R MODULE ASSOCIATED WITH HVLS FAN SHUT DOWN. FIELD VERIFY THE LOCATION OF FAN CONTROLLER.
11. XTRI-R MODULE ASSOCIATED WITH VRF UI-A201A DUCT DETECTOR FOR HVAC & FAN SHUTDOWN.
12. TOP OF THE SHAFT HEAT DETECTOR TO INSTALL WITHIN 2 FT FROM THE SPRINKLER HEAD.
13. ALL NAC, SLC & NETWORK CIRCUITS CONNECTED TO EXISTING SP - SURGE SUPPRESSION PANEL. SEE FA3.01 FOR MORE DETAILS.

GENERAL NOTES :

1. FIELD VERIFY THE RISER LOCATION
2. (E) = EXISTING DEVICE TO REMAIN, TIE IN TO NEW CIRCUITS AS SHOWN.



1 SYSTEM RISER DIAGRAM - 1
SCALE: NOT TO SCALE

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

ENGINEERING

STATE OF MISSOURI
JAY R. GUERRA
NUMBER E-26382
REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
SYSTEM RISER DIAGRAM - 1

JOB NUMBER:
44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

DRAWING NUMBER:
FA2.01

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA201-MCC - LV Automotive-RSR.dwg lucasf

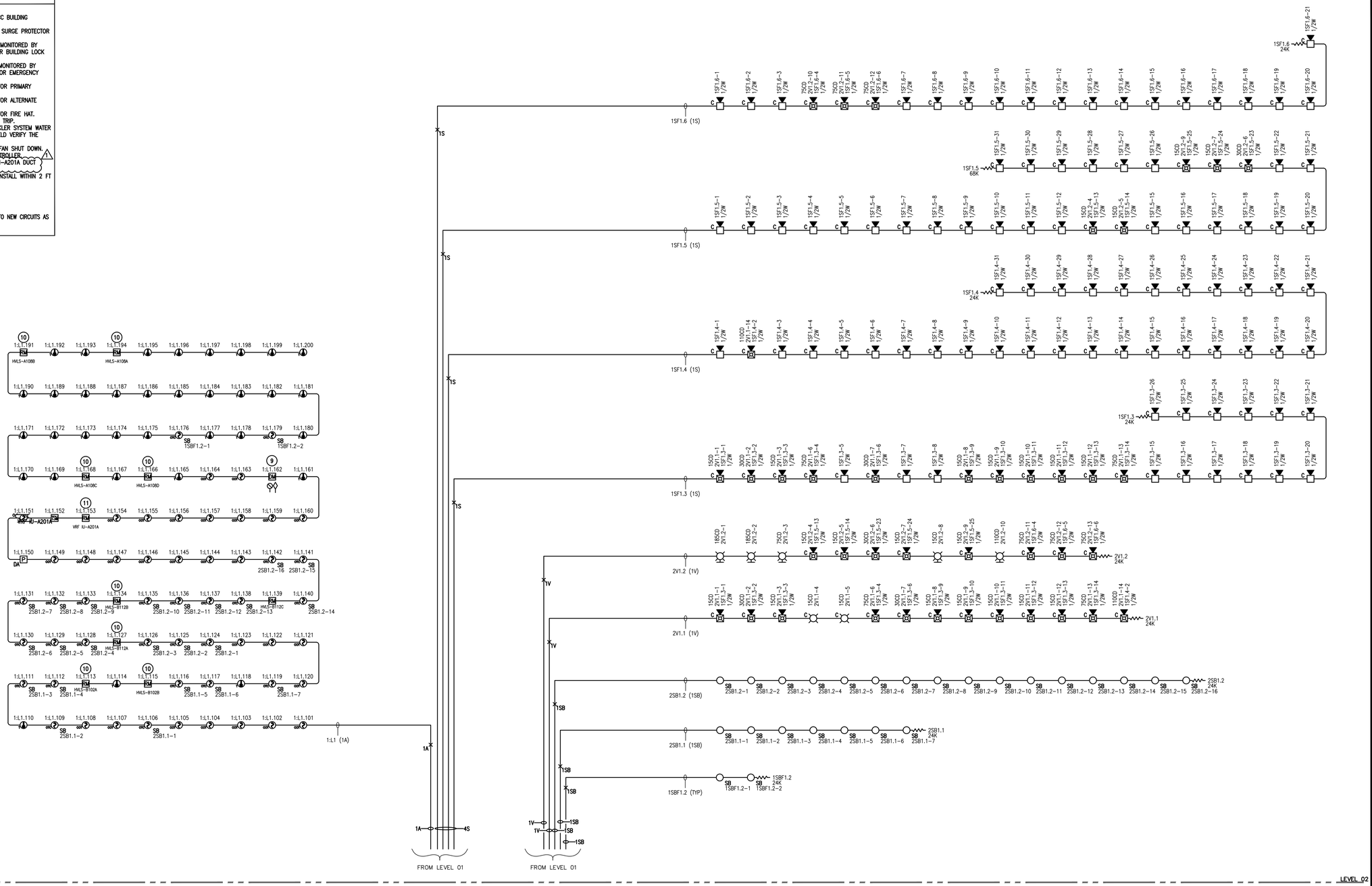
NOTES

PLAN NOTES: @

1. PROVIDE EXISTING NETWORK DROP FROM MCC BUILDING NETWORK FOR DVTEL EQUIPMENT.
2. RELOCATE EXISTING EXISTING FACU F1 & SURGE PROTECTOR PANEL.
3. USE WHITE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR BUILDING LOCK DOWN.
4. USE BLUE CONVENTIONAL PULL STATION MONITORED BY XTRI-M MODULE. PULL STATION USED FOR EMERGENCY WEATHER NOTIFICATION.
5. XTRI-R MODULE ASSOCIATED WITH ELEVATOR PRIMARY RECALL.
6. XTRI-R MODULE ASSOCIATED WITH ELEVATOR ALTERNATE RECALL.
7. XTRI-R MODULE ASSOCIATED WITH ELEVATOR FIRE HAT.
8. XTRI-R MODULE ASSOCIATED WITH SHUNT TRIP.
9. XTRI-D MODULE ASSOCIATED WITH SPRINKLER SYSTEM WATER FLOW & TAMPER SWITCH MONITORING. FIELD VERIFY THE LOCATION & QUANTITIES.
10. XTRI-R MODULE ASSOCIATED WITH HVLS FAN SHUT DOWN. FIELD VERIFY THE LOCATION OF FAN CONTROLLER.
11. XTRI-R MODULE ASSOCIATED WITH VRF UI-A201A DUCT DETECTOR FOR HVAC & FAN SHUTDOWN.
12. TOP OF THE SHAFT HEAT DETECTOR TO INSTALL WITHIN 2 FT FROM THE SPRINKLER HEAD.

GENERAL NOTES :

1. FIELD VERIFY THE RISER LOCATION
2. (E) = EXISTING DEVICE TO REMAIN, TIE IN TO NEW CIRCUITS AS SHOWN.



CABLE LEGEND

LTR	DESCRIPTION	AWG	# OF COND	SHIELD
A	(SLC) ADDRESSABLE LOOP	18	2	NO
P	24VDC POWER	14	2	NO
S	(NAC) SPEAKER CIRCUIT	16	2	NO
V	(NAC) VISUAL & AUDIO/VISUAL CIRCUIT	14	2	NO
SB	(NAC) SOUNDER BASE CIRCUIT	14	2	
HN	H-NET COMMUNICATION CIRCUIT	16	2	NO
N	NETWORK CABLE	CAT6 CABLE		
XB	BATTERY CABLE	12	2	NO
-///-	120VAC POWER WIRING (W/GROUND)	12	3	NO

1 SYSTEM RISER DIAGRAM - 2
SCALE: NOT TO SCALE

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

ENGINEERING

STATE OF MISSOURI
JAY R. GUERRA
NUMBER E-26382
REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
SYSTEM RISER DIAGRAM - 2

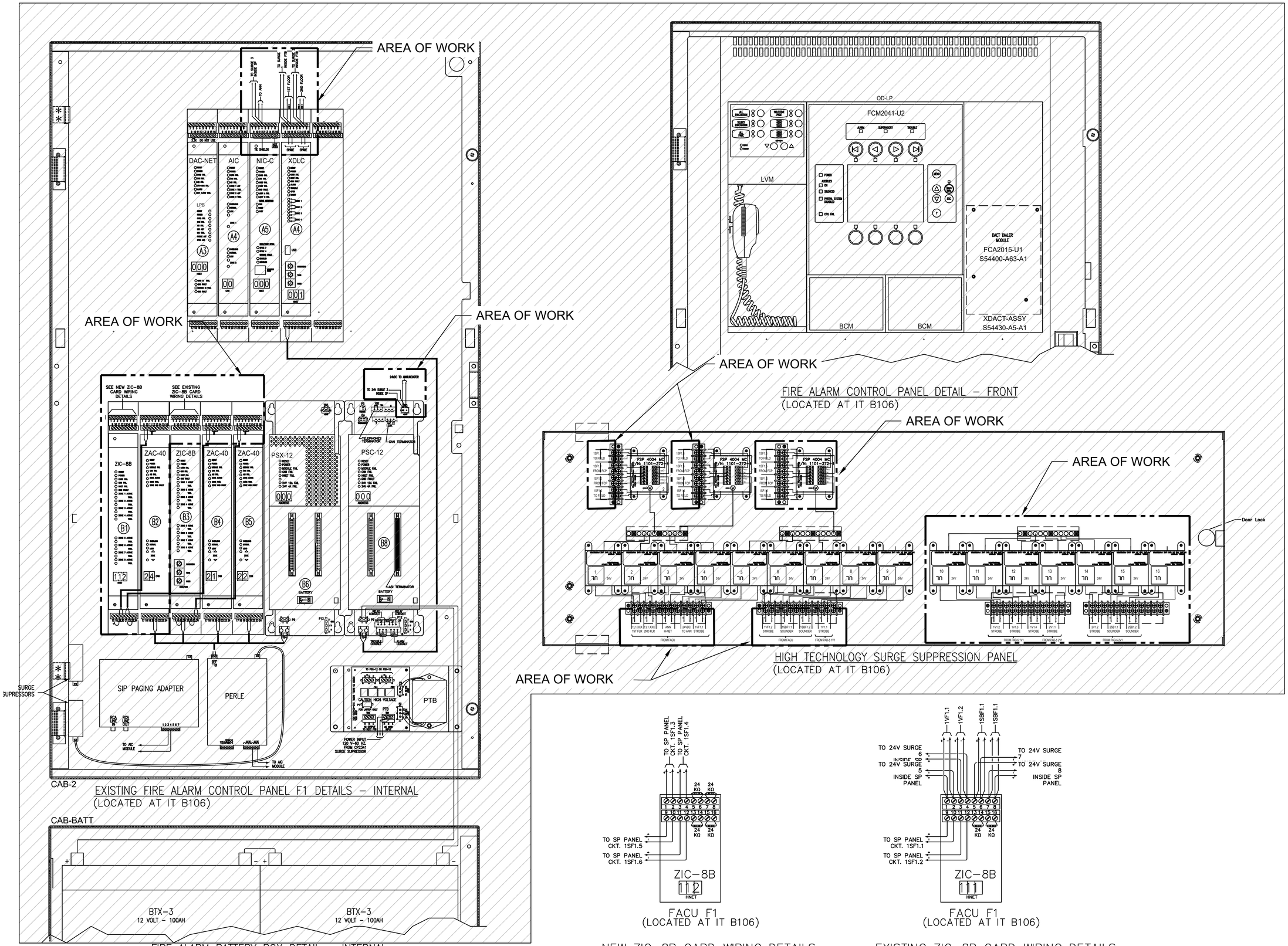
JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

DRAWING NUMBER: **FA2.02**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA201-MCC - LV Automotive-RSR.dwg lucasf



GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

ENGINEERING

STATE OF MISSOURI
JAY R. GUERRA
NUMBER E-26382
REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV

CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
EXISTING CONTROL PANEL LAYOUT - FACU F1

JOB NUMBER:
44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

DRAWING NUMBER:
FA3.01

SHEET SIZE: ARCH E1 – 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA301-MCC - LV Automotive-PNL.dwg lucasf

1. CURRENT DRAW CALCUL/ POWER SUPPLY: PAD-5 9AMP — EXTENDER: 1V1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

DEVICE MODEL	DEVICE TYPE	STROBE CANDELA	CURRENT (AMPS) Standby	CURRENT (AMPS) Alarm	1V1.1	1V1.2	1V1.3	1V1.4	AUX
ABHW-4B	Sounder Base	N/A			0	0	0	0	
AS-75-R-WP	Horn Strobe	30/180cd		0.178	0	0	3	0	
SET-S17-CW-WP	Speaker Strobe	30/180cd		0.146	0	0	0	2	
SL2SCW-F	Strobe	15cd		0.022	2	1	0	1	
SL2SPSCW-F	Speaker Strobe	15cd		0.022	2	0	0	2	
SL2SPSCW-F	Speaker Strobe	30cd		0.030	0	0	0	2	
SL2SPSCW-F	Speaker Strobe	75cd		0.060	3	1	1	0	
SL2SPSCW-F	Speaker Strobe	110cd		0.086	1	0	0	0	
SL2SWR-F	Strobe	15cd		0.022	1	0	2	0	
SL2SWR-F	Strobe	30cd		0.030	0	1	0	0	
SL2SWR-F	Strobe	75cd		0.060	0	1	0	1	
SL2SWR-F	Strobe	110cd		0.086	1	4	0	0	
SL2SWR-F	Strobe	135cd		0.125	0	0	1	0	
SL2SWR-F	Strobe	185cd		0.185	3	2	3	1	
ZR-MC-R	Strobe	15cd		0.064	0	1	0	0	
ZR-MC-R	Strobe	30cd		0.098	0	1	0	0	
ZR-MC-R	Strobe	75cd		0.175	1	0	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: 14 12 10 9

AUXILIARY OUTPUT	Standby	Alarm	AUX on Battery?			No
24vdc door holder [SDH-2D/3D/4D/5D]	0.068	0.068				
Double floor mount door holder [SDH-6D]	0.136	0.136				
MR-101C	0.018	0.018				
MR-201C	0.040	0.040				
HZM	0.001	0.000				
HCP						
CURRENT DRAW PER CIRCUIT IN AMPERES:			1.192	1.048	1.318	0.663	0.000

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — 1V1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

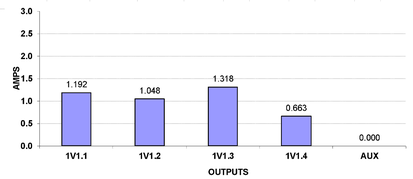
SYSTEM INFORMATION & PROJECT THRESHOLDS - PAD-5 9AMP

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 CALCULATION RESULTS

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	ALARM CURRENT (AMP)		CKT. OHMS		VOLTS @ EOL (min 16.0)		PERCENT DROP (max 20%)	
1V1.1	14 AWG	650.00	3.07	1.192	PASS	3.991	PASS	19.2	PASS	19.8%	PASS
1V1.2	14 AWG	716.00	3.07	1.048	PASS	4.396	PASS	19.4	PASS	19.2%	PASS
1V1.3	14 AWG	580.00	3.07	1.318	PASS	3.561	PASS	19.3	PASS	19.6%	PASS
1V1.4	14 AWG	504.00	3.07	0.663	PASS	3.095	PASS	21.9	PASS	8.5%	PASS
AUX	14 AWG		3.07	0.000	PASS	0.000	PASS	24.0	PASS	0.0%	PASS
TOTAL EXTENDER CURRENT [AMPS]:				4.221	PASS						



3. BATTERY SIZE CALCULATION — 1V1

STANDBY		ALARM	
Standby Period in Hours->	24 Hr	15 Min	<-Alarm Period in Minutes
Extender internal current->	0.078 amp	0.174 amp	<-Extender internal current
Extender circuit current->	0.004 amp	4.221 amp	<-Extender circuit current
Total Standby Current ->	0.082 amp	4.395 amp	<-Total Alarm Current:
Standby Amp-Hrs Required->	1.97 AH	1.10 AH	<-Alarm Amp-Hrs Required

Standby + Alarm Amp-Hrs->	3.07 AH
Multiplied by the De-rating Factor ->	20%
Minimum Battery Amp-Hrs Required->	3.68 AH
Actual Battery Size->	**35.00 AH** PASS
Battery Safety Factor->	1141%

Maximum Battery Capacity: 100 A.H (Maximum Inside Enclosure: 18 A.H.)

1. CURRENT DRAW CALCUL/ POWER SUPPLY: PAD-5 9AMP — EXTENDER: 2V1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

DEVICE MODEL	DEVICE TYPE	STROBE CANDELA	CURRENT (AMPS) Standby	CURRENT (AMPS) Alarm	2V1.1	2V1.2	2SB1.1	2SB1.2	AUX
ABHW-4B	Sounder Base	N/A		0.008	0	0	7	16	
AS-75-R-WP	Horn Strobe	30/180cd		0.178	0	0	0	0	
SET-S17-CW-WP	Speaker Strobe	30/180cd		0.146	0	0	0	0	
SL2SCW-F	Strobe	15cd		0.022	2	0	0	0	
SL2SPSCW-F	Speaker Strobe	15cd		0.022	7	4	0	0	
SL2SPSCW-F	Speaker Strobe	30cd		0.030	2	1	0	0	
SL2SPSCW-F	Speaker Strobe	75cd		0.060	2	3	0	0	
SL2SPSCW-F	Speaker Strobe	110cd		0.086	1	0	0	0	
SL2SWR-F	Strobe	15cd		0.022	0	1	0	0	
SL2SWR-F	Strobe	30cd		0.030	0	0	0	0	
SL2SWR-F	Strobe	75cd		0.060	0	1	0	0	
SL2SWR-F	Strobe	110cd		0.086	0	1	0	0	
SL2SWR-F	Strobe	135cd		0.125	0	0	0	0	
SL2SWR-F	Strobe	185cd		0.185	0	2	0	0	
ZR-MC-R	Strobe	15cd		0.064	0	0	0	0	
ZR-MC-R	Strobe	30cd		0.098	0	0	0	0	
ZR-MC-R	Strobe	75cd		0.175	0	0	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: 14 13 7 16

AUXILIARY OUTPUT	Standby	Alarm	AUX on Battery?			No
24vdc door holder [SDH-2D/3D/4D/5D]	0.068	0.068				
Double floor mount door holder [SDH-6D]	0.136	0.136				
MR-101C	0.018	0.018				
MR-201C	0.040	0.040				
HZM	0.001	0.000				
HCP						
CURRENT DRAW PER CIRCUIT IN AMPERES:			0.464	0.836	0.056	0.128	0.000

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — 2V1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

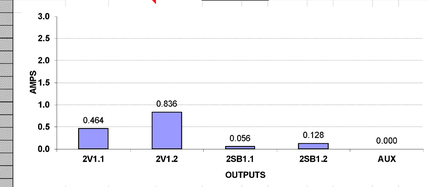
SYSTEM INFORMATION & PROJECT THRESHOLDS - PAD-5 9AMP

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 CALCULATION RESULTS

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	ALARM CURRENT (AMP)		CKT. OHMS		VOLTS @ EOL (min 16.0)		PERCENT DROP (max 20%)	
2V1.1	14 AWG	450.00	3.07	0.464	PASS	2.763	PASS	22.7	PASS	5.3%	PASS
2V1.2	14 AWG	600.00	3.07	0.836	PASS	3.684	PASS	20.9	PASS	12.8%	PASS
2SB1.1	14 AWG	455.00	3.07	0.056	PASS	2.794	PASS	23.8	PASS	0.7%	PASS
2SB1.2	14 AWG	550.00	3.07	0.128	PASS	3.377	PASS	23.6	PASS	1.8%	PASS
AUX	14 AWG		3.07	0.000	PASS	0.000	PASS	24.0	PASS	0.0%	PASS
TOTAL EXTENDER CURRENT [AMPS]:				1.484	PASS						



3. BATTERY SIZE CALCULATION — 2V1

STANDBY		ALARM	
Standby Period in Hours->	24 Hr	15 Min	<-Alarm Period in Minutes
Iinternal current->	0.078 amp	0.174 amp	<-Extender internal current
Circuit current->	0.004 amp	1.484 amp	<-Extender circuit current
Total Standby Current ->	0.082 amp	1.658 amp	<-Total Alarm Current:
Standby Amp-Hrs Required->	1.97 AH	0.41 AH	<-Alarm Amp-Hrs Required

Standby + Alarm Amp-Hrs->	2.38 AH
Multiplied by the De-rating Factor ->	20%
Minimum Battery Amp-Hrs Required->	2.86 AH
Actual Battery Size->	**35.00 AH** PASS
Battery Safety Factor->	1469%

Maximum Battery Capacity: 100 A.H (Maximum Inside Enclosure: 18 A.H.)

1. CURRENT DRAW CALCULATION - NON-VOICE — ZIC-8B #1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

NOTIFICATION APPLIANCES	DEVICE TYPE	STROBE CANDELA	CURRENT (AMPS) Standby	CURRENT (AMPS) Alarm	1VF1.1	1VF1.2	1SBF1.1	1SBF1.2
ABHW-4B	Sounder Base	N/A		0.008	0	0	5	2
AS-75-R-WP	Horn Strobe	30/180cd		0.178	0	1	0	0
SET-S17-CW-WP	Speaker Strobe	30/180cd		0.146	0	0	0	0
SL2SCW-F	Strobe	15cd		0.022	0	0	0	0
SL2SPSCW-F	Speaker Strobe	15cd		0.022	2	0	0	0
SL2SPSCW-F	Speaker Strobe	30cd		0.030	0	0	0	0
SL2SPSCW-F	Speaker Strobe	75cd		0.060	4	0	0	0
SL2SPSCW-F	Speaker Strobe	110cd		0.086	1	0	0	0
SL2SWR-F	Strobe	15cd		0.022	0	0	0	0
SL2SWR-F	Strobe	30cd		0.030	0	0	0	0
SL2SWR-F	Strobe	75cd		0.060	0	0	0	0
SL2SWR-F	Strobe	110cd		0.086	0	0	0	0
SL2SWR-F	Strobe	135cd		0.125	1	0	0	0
SL2SWR-F	Strobe	185cd		0.185	2	0	0	0
ZR-MC-R	Strobe	15cd		0.064	0	0	0	0
ZR-MC-R	Strobe	30cd		0.098	0	0	0	0
ZR-MC-R	Strobe	75cd		0.175	0	0	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: 10 1 5 2

	output #1	output #2	output #3	output #4
ZIC-8B CURRENT DRAW PER CIRCUIT IN AMPERES:	0.865	0.178	0.040	0.016

The ZIC-8B has up to (8) eight NFPA 72 class B outputs, the calculations are continued on the next page.

1. CURRENT DRAW CALCULATION - NON-VOICE, CONTINUED — ZIC-8B #1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

NOTIFICATION APPLIANCES	DEVICE TYPE	STROBE CANDELA	CURRENT (AMPS) Standby	CURRENT (AMPS) Alarm
ABHW-4B	Sounder Base	N/A		0.008
AS-75-R-WP	Horn Strobe	30/180cd		0.178
SET-S17-CW-WP	Speaker Strobe	30/180cd		0.146
SL2SCW-F	Strobe	15cd		0.022
SL2SPSCW-F	Speaker Strobe	15cd		0.022
SL2SPSCW-F	Speaker Strobe	30cd		0.030
SL2SPSCW-F	Speaker Strobe	75cd		0.060
SL2SPSCW-F	Speaker Strobe	110cd		0.086
SL2SWR-F	Strobe	15cd		0.022
SL2SWR-F	Strobe	30cd		0.030
SL2SWR-F	Strobe	75cd		0.060
SL2SWR-F	Strobe	110cd		0.086
SL2SWR-F	Strobe	135cd		0.125
SL2SWR-F	Strobe	185cd		0.185
ZR-MC-R	Strobe	15cd		0.064
ZR-MC-R	Strobe	30cd		0.098
ZR-MC-R	Strobe	75cd		0.175
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: 0 0 0 0

	output #5	output #6	output #7	output #8
ZIC-8B CURRENT DRAW PER CIRCUIT IN AMPERES:	0.000	0.000	0.000	0.000

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — ZIC-8B #1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

SYSTEM INFORMATION & PROJECT THRESHOLDS

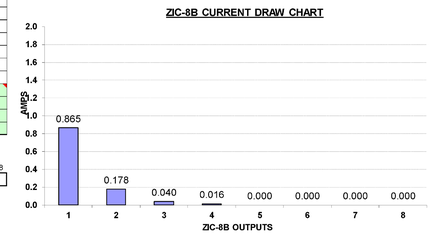
2.00 amps	Maximum ZIC-8B Circuit Current	1.60 amps	Maximum Permitted Current Capacity
16.0 amps	Maximum ZIC-8B Capacity	12.80 amps	Maximum Permitted ZIC-8B Current Capacity
24.0 Vdc	Nominal System Voltage Output	20.4 Vdc	Calculated Starting Voltage
20%	Voltage Drop Threshold %	16.0 Vdc	Minimum Voltage Threshold

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

CIRCUIT CALCULATION RESULTS

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	ALARM CURRENT (AMP)		CKT. OHMS		VOLTS @ EOL (min 16.0)		PERCENT DROP (max 20%)	
1VF1.1	14 AWG	344.33	3.07	0.865	PASS	2.114	PASS	18.6	PASS	9.0%	PASS
1VF1.2	14 AWG	68.00	3.07	0.178	PASS	0.418	PASS	20.3	PASS	0.4%	PASS
1SBF1.1	14 AWG	394.50	3.07	0.040	PASS	2.422	PASS	20.3	PASS	0.5%	PASS
1SBF1.2	14 AWG	124.00	3.07	0.016	PASS	0.761	PASS	20.4	PASS	0.1%	PASS
	14 AWG	0.00	3.07	0.000	PASS	0.000	PASS	20.4	PASS	0.0%	PASS
	14 AWG	0.00	3.07	0.000	PASS	0.000	PASS	20.4	PASS	0.0%	PASS
	14 AWG	0.00	3.07	0.000	PASS	0.000	PASS	20.4	PASS	0.0%	PASS
	14 AWG	0.00	3.07	0.000	PASS	0.000	PASS	20.4	PASS	0.0%	PASS
TOTAL ZIC-8B CURRENT [AMPS]:				1.099	PASS						

ZIC-8B CURRENT DRAW CHART



NOTE: The ZIC-8B is a Module of the Desigo Modular. See FACP for the standby battery calculations

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133
ENGINEERING

STATE OF MISSOURI — JAY R. GUERRA — NUMBER E-26382 — PROFESSIONAL ENGINEER
7/15/2024
JAY R. GUERRA
LICENSE # E-26382
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE: .

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
SYSTEM CALCULATIONS - 1

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

DRAWING NUMBER: **FA4.01**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA401-MCC - LV Automotive-CALC.dwg lucasf

1. SPEAKER WATTAGE AND CURRENT LOAD BY ZONE — ZIC-8B #1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

DEVICE MODEL	DEVICE TYPE	SPEAKER WATTS	CURRENT (AMPS) Standby	CURRENT (AMPS) Alarm	APPLIANCE QUANTITIES PER CIRCUIT			
SET-S17-CW-WP	Speaker Strobe	1/4W		0.004				
SL2SPCW-F	Speaker	1/2W		0.007				
SL2SPSCW-F	Speaker Strobe	1/2W		0.007				
SL2SPSCW-F	Speaker Strobe	1/4W		0.004				

	output #1	output #2	output #3	output #4
ZIC-8B CURRENT DRAW PER CIRCUIT IN AMPERES:	0.000	0.000	0.000	0.000
ZIC-8B WATTS PER CIRCUIT:	0.000	0.000	0.000	0.000

The ZIC-8B has up to (8) eight NFPA 72 class B outputs, the calculations are continued on the next page.

1. SPEAKER WATTAGE AND CURRENT LOAD BY ZONE — ZIC-8B #1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

DEVICE MODEL	DEVICE TYPE	SPEAKER WATTS	CURRENT (AMPS) Standby	CURRENT (AMPS) Alarm	APPLIANCE QUANTITIES PER CIRCUIT 1SF1.1	1SF1.2		
SET-S17-CW-WP	Speaker Strobe	1/4W		0.004	0	2		
SL2SPCW-F	Speaker	1/2W		0.007	9	6		
SL2SPSCW-F	Speaker Strobe	1/2W		0.007	7	10		
SL2SPSCW-F	Speaker Strobe	1/4W		0.004	0	2		

	output #5	output #6	output #7	output #8
ZIC-8B CURRENT DRAW PER CIRCUIT IN AMPERES:	0.113	0.127	0.000	0.000
ZIC-8B WATTS PER CIRCUIT:	8.000	9.000	0.000	0.000

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — ZIC-8B #1

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

SYSTEM INFORMATION & PROJECT THRESHOLDS

PANEL ID:		AMPLIFIER MODEL.:	ZAM-180	
30 Watts	Maximum ZIC-8B Zone Wattage		24 Watts	Max. Permitted Zone Wattage
70.7VRMS	Nominal System Voltage Output		80%	Max. NAC Capacity %
20%	Voltage Drop Threshold %		56.6VRMS	Minimum Permitted Voltage

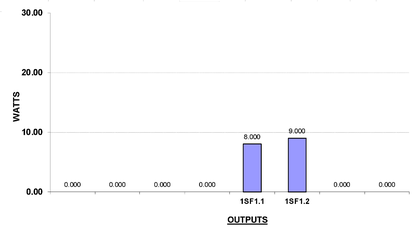
Standard Solid Copper Wire Resistance in Ohms per 1000 ft from NEC Chapter 9, Table 8 adjusted to: 167°F

18AWG= 7.77 16AWG= 4.89 14AWG= 3.07 12AWG= 1.93

CIRCUIT CALCULATION RESULTS

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	CIRCUIT POWER (WATTS)		CKT. OHMS		VOLTS @ EOL		PERCENT DROP (max 20%)	
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS
1SF1.1	16 AWG	495	4.89	8.000	PASS	4.84	PASS	70.15	PASS	0.8%	PASS
1SF1.2	16 AWG	634	4.89	9.000	PASS	6.20	PASS	69.91	PASS	1.1%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS

TOTAL ZIC-8B WATTS: 17.000



NOTE: The ZIC-8B is a Module of the Desigo Modular. See FACP for the standby battery calculations

BUILDING NAME: MCC - LV Automotive Institute
PANEL NAME: FACU F1
PANEL LOCATION: 1ST FLOOR, IT B106

Qty	Model	Description	Standby Current (mA) Per Device Current	Standby Current (mA) Total Current	Alarm Current (mA) 6.2V Backplane Current	6.2v to 24V equivalent current	24V Backplane Current	24V Screw Terminal Current	Per Device Current	Total Current
			A	B (Qty*A)	C	D (C*6.2/24)	E	F	G (D+E+F)	H (Qty*G)
1	FCM2041-U2	Desigo Modular Operator Interface	125	125			195		195	195
1	PSC-12	Power Supply/Battery Charger	150	150				150	150	150
4		Active Relays	20	80				20	20	80
1	PSX-12	Power Supply Extender	150	150				150	150	150
1	AIC	Audio Interface Card	50	50	25	6.46	25		31.46	31.46
1	DAC-NET	Digital Audio Card with Network	230	230			230		230	230
1	LPB	Local Page Board	50	50	130	33.58	25		58.58	58.58
1	LVM	Live Voice Microphone	51	51				51	51	51
1	NIC-C	Network Interface Card	120	120			120		120	120
3	ZAC-40	Zone Amplifier Card 40 Watts	150	450				150	150	450
120		Speaker Load Watts	0	0				53.75	53.75	6450
2	ZIC-8B	Zone Indicating Card	105	210					0	0
16		Active Circuits	0	0			17		17	272
		24VDC NAC Cirpuit Draw	0	0				1083	1083	1083
1	XDLC	Class X Device Loop Card	100	100	1	0.26		100	100.26	100.26
1	FDO421	Photo detector	0.25	0.25				0.41	0.41	0.41
54	FDOOT441	Dual optical/thermal detector	0.65	35.1				0.65	0.65	35.1
30	FDOOTC441	Dual optical/thermal/CO detector	0.75	22.5				0.75	0.75	22.5
35	FDT421	Thermal detector	0.25	8.75				0.41	0.41	14.35
1	TSM-1X	Intelligent Switch	0.5	0.5				0.5	0.5	0.5
12	XMS-D	X Manual station	0.5	6				0.5	0.5	6
3	XTRI-D	X Dual input module	0.5	1.5				0.95	0.95	2.85
6	XTRI-M	X Single input mini module	0.5	3				0.5	0.5	3
14	XTRI-R	X Single input/single relay module	0.5	7				0.75	0.75	10.5
30	APHW-4R	Sounder Base (Ext. 24VDC Horn)	0.25	7.5				0.25	0.25	7.5
1	FCA2015-U1	Digital Alarm Communicator Transmitter	33.5	33.5				43.5	43.5	43.5
1	SSD-C	System Status Display w/ Control	200	200				200	200	200
1	PERLE MNS	PERLE SIP Paging Adapter	200	200		0		200	200	200
		Total Standby Current:		2.2916 Amps				Total Alarm Current:		9.9675 Amps

AREA OF WORK

AREA OF WORK

BATTERY SIZING CALCULATIONS:

Total Standby Current:	2.2916 Amps	Standby Time Required:	24 Hours
Total Alarm Current:	9.9675 Amps	Alarm Time Required:	15 Minutes
Total Standby Current x Standby Time:	54.9984 Ah	Battery Size Provided:	100 Ah
Total Alarm Current x Alarm Time:	2.4919 Ah	Calculated Minimum Battery:	71.86 Ah
Total LOAD (Total Standby Ah + Total Alarm Ah):	57.4903 Ah	Spare Battery Capacity:	28.14 Ah
Min. Battery Size (Total LOAD x 1.25 Safety Factor):	71.8629 Ah		
		120VAC Current:	7 Amps

1. SPEAKER WATTAGE AND CURRENT LOAD BY ZONE — ZIC-8B #2

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

DEVICE MODEL	DEVICE TYPE	SPEAKER WATTS	CURRENT (AMPS) Standby	CURRENT (AMPS) Alarm	APPLIANCE QUANTITIES PER CIRCUIT 1SF1.3	1SF1.4		
SET-S17-CW-WP	Speaker Strobe	1/4W		0.004	0	0		
SL2SPCW-F	Speaker	1/2W		0.007	15	30		
SL2SPSCW-F	Speaker Strobe	1/2W		0.007	11	1		
SL2SPSCW-F	Speaker Strobe	1/4W		0.004	0	0		

	output #1	output #2	output #3	output #4
ZIC-8B CURRENT DRAW PER CIRCUIT IN AMPERES:	0.184	0.219	0.000	0.000
ZIC-8B WATTS PER CIRCUIT:	13.000	15.500	0.000	0.000

The ZIC-8B has up to (8) eight NFPA 72 class B outputs, the calculations are continued on the next page.

1. SPEAKER WATTAGE AND CURRENT LOAD BY ZONE — ZIC-8B #2

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

DEVICE MODEL	DEVICE TYPE	SPEAKER WATTS	CURRENT (AMPS) Standby	CURRENT (AMPS) Alarm	APPLIANCE QUANTITIES PER CIRCUIT 1SF1.5	1SF1.6		
SET-S17-CW-WP	Speaker Strobe	1/4W		0.004	0	0		
SL2SPCW-F	Speaker	1/2W		0.007	27	18		
SL2SPSCW-F	Speaker Strobe	1/2W		0.007	4	3		
SL2SPSCW-F	Speaker Strobe	1/4W		0.004	0	0		

	output #1	output #2	output #3	output #4
ZIC-8B CURRENT DRAW PER CIRCUIT IN AMPERES:	0.219	0.149	0.000	0.000
ZIC-8B WATTS PER CIRCUIT:	15.500	10.500	0.000	0.000

2. CURRENT LOAD & VOLTAGE DROP CALCULATIONS — ZIC-8B #2

Project Name: MCC - LV Automotive Institute — Project #: 44OP-379485

SYSTEM INFORMATION & PROJECT THRESHOLDS

PANEL ID:		AMPLIFIER MODEL.:	ZAM-180	
30 Watts	Maximum ZIC-8B Zone Wattage		24 Watts	Max. Permitted Zone Wattage
70.7VRMS	Nominal System Voltage Output		80%	Max. NAC Capacity %
20%	Voltage Drop Threshold %		56.6VRMS	Minimum Permitted Voltage

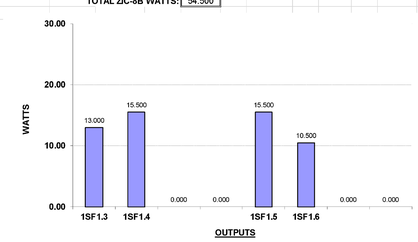
Standard Solid Copper Wire Resistance in Ohms per 1000 ft from NEC Chapter 9, Table 8 adjusted to: 167°F

18AWG= 7.77 16AWG= 4.89 14AWG= 3.07 12AWG= 1.93

CIRCUIT CALCULATION RESULTS

CIRCUIT NUMBER	SOLID WIRE (AWG)	EST'D CKT LENGTH (FT)	NEC OHMS (kFT)	CIRCUIT POWER (WATTS)		CKT. OHMS		VOLTS @ EOL		PERCENT DROP (max 20%)	
1SF1.3	16 AWG	758	4.89	13.000	PASS	7.42	PASS	69.34	PASS	1.9%	PASS
1SF1.4	16 AWG	926	4.89	15.500	PASS	9.05	PASS	68.72	PASS	2.8%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS
1SF1.5	16 AWG	915	4.89	15.500	PASS	8.95	PASS	68.74	PASS	2.8%	PASS
1SF1.6	16 AWG	804	4.89	10.500	PASS	7.86	PASS	69.53	PASS	1.7%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS
	16 AWG	0	4.89	0.000	PASS	0.00	PASS	70.70	PASS	0.0%	PASS

TOTAL ZIC-8B WATTS: 54.500



NOTE: The ZIC-8B is a Module of the Desigo Modular. See FACP for the standby battery calculations

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133
ENGINEERING

STATE OF MISSOURI — JAY R. GUERRA — NUMBER E-26382 — REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INITL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
SYSTEM CALCULATIONS - 2

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

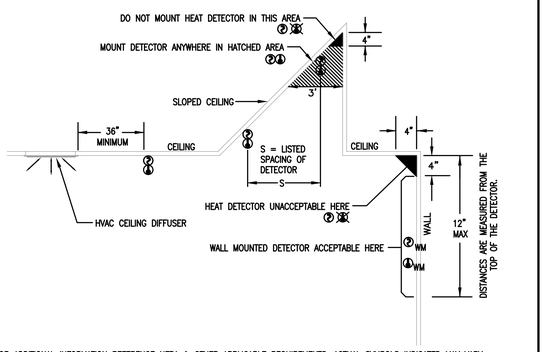
DRAWING NUMBER: **FA4.02**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA401-MCC - LV Automotive-CALC.dwg lucasf

1 DETECTOR LOCATION DETAIL

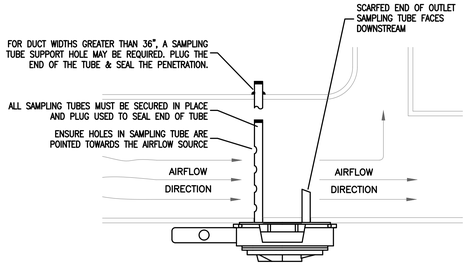
NOT TO SCALE -- SEE APPLICABLE EQUIPMENT INSTRUCTIONS FOR ADDITIONAL INFORMATION



FOR ADDITIONAL INFORMATION REFERENCE NFPA & OTHER APPLICABLE REQUIREMENTS. ACTUAL SYMBOLS INDICATED MAY VARY

2 DUCT DETECTOR MOUNTING DETAIL

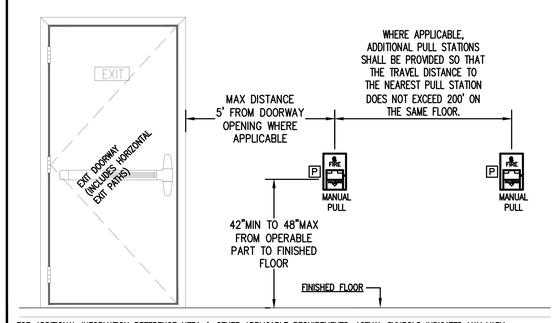
NOT TO SCALE -- SEE APPLICABLE EQUIPMENT INSTRUCTIONS FOR ADDITIONAL INFORMATION



DUCT DETECTOR MUST BE LOCATED TO BE ACCESSIBLE FOR TESTING AND MAINTENANCE, AND SHALL BE INSTALLED ON THE DUCTWORK IN A LOCATION SUCH THAT THERE ARE NO DUCTING SPLITS/MANIFOLDS BETWEEN THE DETECTOR AND THE EQUIPMENT BEING PROTECTED.

3 MANUAL PULL STATION DEVICE LOCATION DETAIL

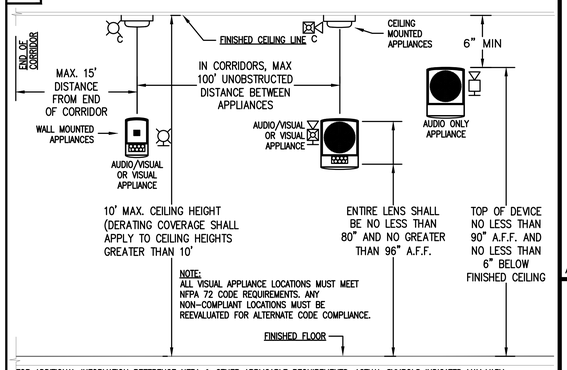
NOT TO SCALE -- SEE APPLICABLE EQUIPMENT INSTRUCTIONS FOR ADDITIONAL INFORMATION



FOR ADDITIONAL INFORMATION REFERENCE NFPA & OTHER APPLICABLE REQUIREMENTS. ACTUAL SYMBOLS INDICATED MAY VARY

4 NOTIFICATION APPLIANCE LOCATION DETAIL

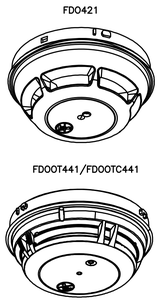
NOT TO SCALE -- SEE APPLICABLE EQUIPMENT INSTRUCTIONS FOR ADDITIONAL INFORMATION



FOR ADDITIONAL INFORMATION REFERENCE NFPA & OTHER APPLICABLE REQUIREMENTS. ACTUAL SYMBOLS INDICATED MAY VARY

5 ADDRESSABLE DETECTOR

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



*VERIFY COMPATIBILITY WITH CONTROL UNIT, FIRMWARE, AND LOOP CARD PRIOR TO USE

DPU

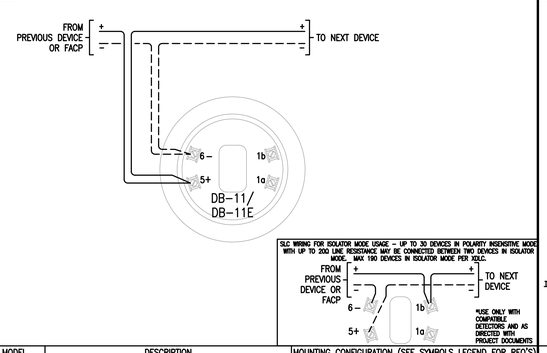
DEVICE PROGRAMMING INFORMATION
1. SELECT SYSTEM TYPE, AND CONNECT DEVICE USING SUPPLIED PROGRAMMING CABLE.
2. PRESS "ACKNOWLEDGE" BUTTON TO WAKEUP APPROPRIATE FIELD.
3. ENTER THE NUMERIC VALUE FOR THE DEVICE ADDRESS USING THE KEYPAD.
4. PRESS "PROGRAM" TO SET THE ADDRESS OF THE DEVICE.
5. DPU UNIT WILL AUTOMATICALLY GO TO NEXT HIGHER ADDRESS FOR SUBSEQUENT DEVICE PROGRAMMING
6. PRESS "EXIT" TO RETURN TO MAIN MENU

CAUTION: TO PREVENT DAMAGE TO THE DPU, DO NOT PROGRAM UNTIL ALL FIELD WIRING IS REMOVED.

MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
-MULTIPLE-	ADDRESSABLE DETECTOR HEAD	COMPATIBLE BASE/HOUSING

6 DETECTOR BASE WIRING DIAGRAM

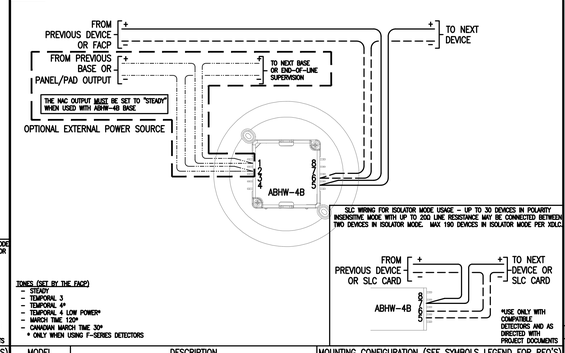
NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS AND SYMBOLS LEGEND FOR ADDITIONAL INFORMATION



MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
DB-11	DETECTOR BASE	4" SQUARE, 4" OCTAGON, OR SINGLE GANG

7 ABHW-4B INTELLIGENT AUDIBLE BASE (LOOP POWERED) WIRING DIAGRAM

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



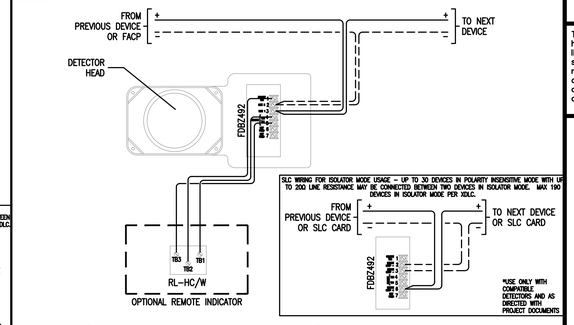
TONES (SET BY THE FACP)
- STEADY
- TEMPORAL 3
- TEMPORAL 4*
- TEMPORAL 4 LOW POWER*
- MARCH TIME 120*
- CANADIAN MARCH TIME 30*

* ONLY WHEN USING F-SERIES DETECTORS

MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
ABHW-4B	DETECTOR w/ ABHW-4B (SOUNDER BASE)	4" SQUARE

8 DUCT DETECTOR HOUSING WIRING DIAGRAM

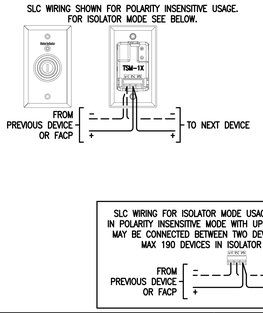
NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
FDBZ492	DUCT HOUSING w/DETECTOR	SEE INSTALLATION INSTRUCTIONS RL-HC (CEILING MOUNT) : 4" OCTAGON BOX RL-HW (WALL MOUNT) : SINGLE GANG

9 INTELLIGENT REMOTE TEST SWITCH

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



DPU

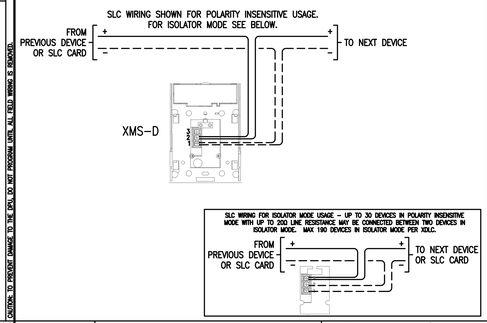
DEVICE PROGRAMMING INFORMATION
1. SELECT SYSTEM TYPE, AND CONNECT DEVICE USING SUPPLIED PROGRAMMING CABLE.
2. PRESS "ACKNOWLEDGE" BUTTON TO WAKEUP APPROPRIATE FIELD.
3. ENTER THE NUMERIC VALUE FOR THE DEVICE ADDRESS USING THE KEYPAD.
4. PRESS "PROGRAM" TO SET THE ADDRESS OF THE DEVICE.
5. DPU UNIT WILL AUTOMATICALLY GO TO NEXT HIGHER ADDRESS FOR SUBSEQUENT DEVICE PROGRAMMING
6. PRESS "EXIT" TO RETURN TO MAIN MENU

CAUTION: TO PREVENT DAMAGE TO THE DPU, DO NOT PROGRAM UNTIL ALL FIELD WIRING IS REMOVED.

MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
TSM-1X	INTELLIGENT TEST SWITCH MODULE	SINGLE GANG

10 ADDRESSABLE MANUAL PULL STATION WIRING DIAGRAM

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



DPU

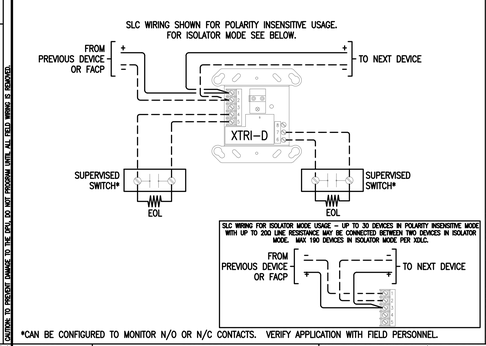
DEVICE PROGRAMMING INFORMATION
1. SELECT SYSTEM TYPE, AND CONNECT DEVICE USING SUPPLIED PROGRAMMING CABLE.
2. PRESS "ACKNOWLEDGE" BUTTON TO WAKEUP APPROPRIATE FIELD.
3. ENTER THE NUMERIC VALUE FOR THE DEVICE ADDRESS USING THE KEYPAD.
4. PRESS "PROGRAM" TO SET THE ADDRESS OF THE DEVICE.
5. DPU UNIT WILL AUTOMATICALLY GO TO NEXT HIGHER ADDRESS FOR SUBSEQUENT DEVICE PROGRAMMING
6. PRESS "EXIT" TO RETURN TO MAIN MENU

CAUTION: TO PREVENT DAMAGE TO THE DPU, DO NOT PROGRAM UNTIL ALL FIELD WIRING IS REMOVED.

MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
XMS-D	ADDRESSABLE MANUAL PULL STATION	SINGLE GANG

11 DUAL INPUT MONITOR MODULE WIRING DIAGRAM

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



*CAN BE CONFIGURED TO MONITOR N/O OR N/C CONTACTS. VERIFY APPLICATION WITH FIELD PERSONNEL.

DPU

DEVICE PROGRAMMING INFORMATION
1. SELECT SYSTEM TYPE, AND CONNECT DEVICE USING SUPPLIED PROGRAMMING CABLE.
2. PRESS "ACKNOWLEDGE" BUTTON TO WAKEUP APPROPRIATE FIELD.
3. ENTER THE NUMERIC VALUE FOR THE DEVICE ADDRESS USING THE KEYPAD.
4. PRESS "PROGRAM" TO SET THE ADDRESS OF THE DEVICE.
5. DPU UNIT WILL AUTOMATICALLY GO TO NEXT HIGHER ADDRESS FOR SUBSEQUENT DEVICE PROGRAMMING
6. PRESS "EXIT" TO RETURN TO MAIN MENU

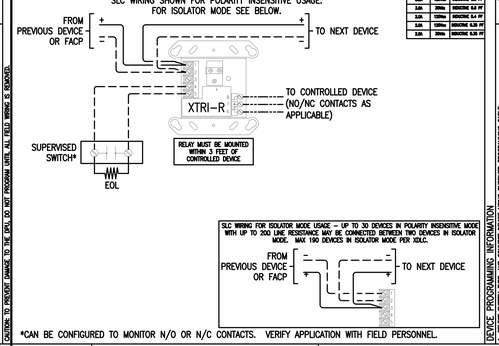
CAUTION: TO PREVENT DAMAGE TO THE DPU, DO NOT PROGRAM UNTIL ALL FIELD WIRING IS REMOVED.

MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
XTRI-D	DUAL INPUT MONITOR MODULE	4" SQUARE

12 SINGLE INPUT RELAY MODULE WIRING DIAGRAM

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION

XTRI-R RELAY CONTACT RATINGS		
AMPERAGE	VOLTAGE	TYPE
16	120Vac	RESISTIVE
16	28Vdc	RESISTIVE
3.0A	120Vac	INDUCTIVE 0.6 PF
3.0A	28Vdc	INDUCTIVE 0.6 PF
3.0A	120Vac	INDUCTIVE 0.4 PF
3.0A	120Vac	INDUCTIVE 0.35 PF
3.0A	28Vdc	INDUCTIVE 0.35 PF



*CAN BE CONFIGURED TO MONITOR N/O OR N/C CONTACTS. VERIFY APPLICATION WITH FIELD PERSONNEL.

DPU

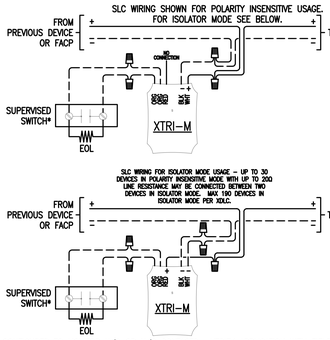
DEVICE PROGRAMMING INFORMATION
1. SELECT SYSTEM TYPE, AND CONNECT DEVICE USING SUPPLIED PROGRAMMING CABLE.
2. PRESS "ACKNOWLEDGE" BUTTON TO WAKEUP APPROPRIATE FIELD.
3. ENTER THE NUMERIC VALUE FOR THE DEVICE ADDRESS USING THE KEYPAD.
4. PRESS "PROGRAM" TO SET THE ADDRESS OF THE DEVICE.
5. DPU UNIT WILL AUTOMATICALLY GO TO NEXT HIGHER ADDRESS FOR SUBSEQUENT DEVICE PROGRAMMING
6. PRESS "EXIT" TO RETURN TO MAIN MENU

CAUTION: TO PREVENT DAMAGE TO THE DPU, DO NOT PROGRAM UNTIL ALL FIELD WIRING IS REMOVED.

MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
XTRI-R	SINGLE INPUT RELAY MODULE	4" SQUARE

13 MINI MONITOR MODULE WIRING DIAGRAM

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



*CAN BE CONFIGURED TO MONITOR N/O OR N/C CONTACTS. VERIFY APPLICATION WITH FIELD PERSONNEL.

DPU

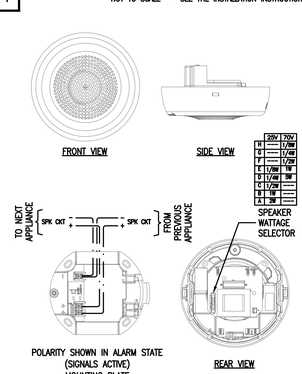
DEVICE PROGRAMMING INFORMATION
1. SELECT SYSTEM TYPE, AND CONNECT DEVICE USING SUPPLIED PROGRAMMING CABLE.
2. PRESS "ACKNOWLEDGE" BUTTON TO WAKEUP APPROPRIATE FIELD.
3. ENTER THE NUMERIC VALUE FOR THE DEVICE ADDRESS USING THE KEYPAD.
4. PRESS "PROGRAM" TO SET THE ADDRESS OF THE DEVICE.
5. DPU UNIT WILL AUTOMATICALLY GO TO NEXT HIGHER ADDRESS FOR SUBSEQUENT DEVICE PROGRAMMING
6. PRESS "EXIT" TO RETURN TO MAIN MENU

CAUTION: TO PREVENT DAMAGE TO THE DPU, DO NOT PROGRAM UNTIL ALL FIELD WIRING IS REMOVED.

MODEL	DESCRIPTION	MOUNTING CONFIGURATION (SEE SYMBOLS LEGEND FOR REQ'S)
XTRI-M	MINIATURE SINGLE INPUT MONITOR MODULE	4" SQUARE

14 CEILING-MOUNTED HIGH-FIDELITY SPEAKER APPLIANCE WIRING

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



SL2SPC SERIES CEILING SPEAKER

MODEL	DESCRIPTION
SL2SPCx-y	SPEAKER

x = R-RED, W-WHITE, B-BLACK [FIRE WORDING ONLY]
y = A-AGENT [WHITE DEVICE ONLY], AL-ALERT, F-FIRE, N-(NONE)

FLUSH MOUNT BACKBOX
4" SQUARE 2-1/8" DEEP ELECTRICAL BOX

	25V	70V
N	—	1/8W
S	—	1/4W
T	—	1/2W
U	1/2W	1W
V	1/4W	2W
C	1/2W	—
D	1W	—
A	2W	—

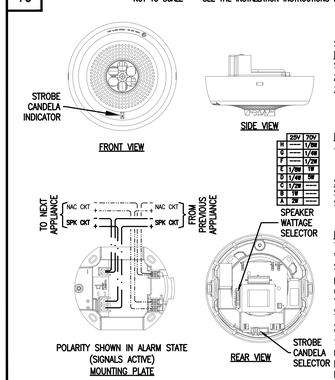
SURFACE MOUNT BACKBOX
SLSPBBCR FOR RED
SLSPBBCW FOR WHITE

INSTALLATION NOTES
THE DEVICE FASTENS ONTO THE MOUNTING PLATE, WHICH IS MOUNTED DIRECTLY ONTO THE BACKBOX, SCREWS PROVIDED.

BEFORE INSTALLING THE DEVICE, SLIDE THE STROBE CANDELA SWITCH TO MATCH THE STROBE CANDELA VALUE SHOWN ON THE FLOOR PLANS WITH A SMALL SCREWDRIVER. THIS SETTING IS ALSO VISIBLE THROUGH A HOLE IN THE COVER PLATE. SET THE VOLTAGE AND WATTAGE AS DETAILED ON THE FLOOR PLANS AND IN THE SYSTEM CALCULATIONS PER THE WATTAGE CHART USING SPEAKER WATTAGE SWITCH. AFTER WIRING AND MOUNTING THE SPEAKER STROBE APPLIANCE, SNAP THE FINISH COVER PLATE INTO PLACE.

15 CEILING-MOUNTED HIGH-FIDELITY SPEAKER STROBE APPLIANCE WIRING

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



SL2SPSC SERIES CEILING SPEAKER STROBE

MODEL	DESCRIPTION
SL2SPSCx-y	15, 30, 75, 110, 150, 177 CANDELA

x = R-RED OR W-WHITE
y = A-AGENT, AL*-ALERT, F-FIRE, N*-(NONE), OR FP-(PICTOGRAM).
* - ADD A-AMBER LENS

FLUSH MOUNT BACKBOX
4" SQUARE 2-1/8" DEEP ELECTRICAL BOX

	25V	70V
N	—	1/8W
S	—	1/4W
T	—	1/2W
U	1/2W	1W
V	1/4W	2W
C	1/2W	—
D	1W	—
A	2W	—

SURFACE MOUNT BACKBOX
SLSPBBCR FOR RED
SLSPBBCW FOR WHITE

INSTALLATION NOTES
THE DEVICE FASTENS ONTO THE MOUNTING PLATE, WHICH IS MOUNTED DIRECTLY ONTO THE BACKBOX, SCREWS PROVIDED.

BEFORE INSTALLING THE DEVICE, SLIDE THE STROBE CANDELA SWITCH TO MATCH THE STROBE CANDELA VALUE SHOWN ON THE FLOOR PLANS WITH A SMALL SCREWDRIVER. THIS SETTING IS ALSO VISIBLE THROUGH A HOLE IN THE COVER PLATE. SET THE VOLTAGE AND WATTAGE AS DETAILED ON THE FLOOR PLANS AND IN THE SYSTEM CALCULATIONS PER THE WATTAGE CHART USING SPEAKER WATTAGE SWITCH. AFTER WIRING AND MOUNTING THE SPEAKER STROBE APPLIANCE, SNAP THE FINISH COVER PLATE INTO PLACE.

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

STATE OF MISSOURI JAY R. GUERRA NUMBER E-26382 REGISTERED PROFESSIONAL ENGINEER
7/15/2024
JAY R. GUERRA
LICENSE # E-26382
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
DEVICE MOUNTING & WIRING DETAILS - 1

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

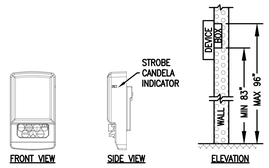
DRAWING NUMBER: **FA5.01**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\TA501-MCC - LV Automotive-DET.dwg lucasf

1 WALL-MOUNTED STROBE APPLIANCE WIRING

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



SL2SW SERIES WALL STROBE

MODEL	DESCRIPTION
SL2SWx-y	15, 30, 75, 110, 135, 185 CANDELA

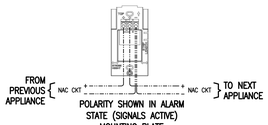
x = R-RED OR W-WHITE

y = A-AGENT, AL*-ALERT, F-FIRE, N*-(NONE), EV-EVACUATE [WHITE DEVICE ONLY], OR FR-(PICTOGRAM),

* - ADD A-AMBER LENS, B-BLUE LENS

FLUSH MOUNT BACKBOX
SINGLE GANG MOUNTING OR 4" SQ ELECTRICAL BOX MOUNTING WITH SINGLE-GANG RING ADAPTER AND SLSGP-(R or W) TRIM PLATE

SURFACE MOUNT BACKBOX
SL2SBB-R FOR RED
SL2SBB-W FOR WHITE



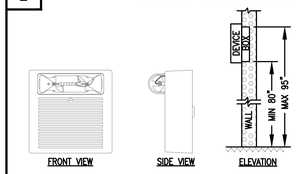
INSTALLATION NOTES
THE DEVICE FASTENS ONTO THE MOUNTING PLATE, WHICH IS MOUNTED DIRECTLY ONTO THE BACKBOX (SURFACE OR FLUSH), SCREWS PROVIDED.

BEFORE INSTALLING THE DEVICE, SLIDE THE STROBE CANDELA SWITCH TO MATCH THE STROBE CANDELA VALUE SHOWN ON THE FLOOR PLANS WITH A SMALL SCREWDRIVER. THIS SETTING IS ALSO VISIBLE THROUGH A HOLE IN THE COVER PLATE.

AFTER WIRING AND MOUNTING THE STROBE APPLIANCE, SNAP THE FINISH COVER PLATE INTO PLACE.

2 WALL-MOUNTED WEATHERPROOF HORN STROBE APPLIANCE WIRING

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION

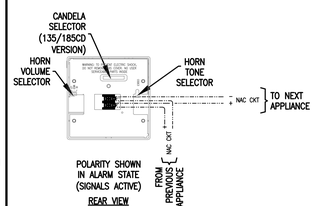


AS WP WALL HORN STROBE

MODEL	DESCRIPTION
AS-75-R-WP	RED COVER - 30 CANDELA
AS-HMC-R-WP	RED COVER - 135 OR 185 CANDELA
AS-HMC-W-WP	WHITE COVER - 135 OR 185 CANDELA

FLUSH MOUNT BACKBOX
SINGLE GANG, DOUBLE GANG, OR 4" SQUARE ELECTRICAL BOX AND
SIEMENS MODEL WFPAS-(R OR W) ADAPTER PLATE

SURFACE MOUNT BACKBOX
SIEMENS MODEL: WPBBS-R FOR RED
SIEMENS MODEL: WPBBS-W FOR WHITE

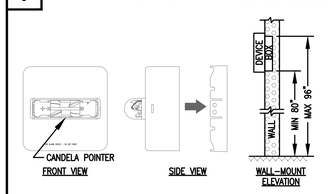


INSTALLATION NOTES
THE DEVICE FASTENS TO A SINGLE GANG, DOUBLE GANG, OR 4" SQUARE ELECTRICAL BOX USING THE WFPAS ADAPTER PLATE. DRESS THE WIRES THROUGH THE HOLE IN THE HOLE IN THE ADAPTER PLATE. ADAPTER PLATE IS NOT USED WITH THE WPBBS BACKBOX; THE DEVICE MOUNTS DIRECTLY TO THE BOX.

BEFORE INSTALLING THE DEVICE, SET THE HORN VOLUME AND TONE AS DETAILED ON THE FLOOR PLANS AND IN THE SYSTEM CALCULATIONS USING THE JUMPER PLUGS. FOR HMC DEVICES SET THE CANDELA RATING OF THE STROBE AS DETAILED ON THE FLOOR PLANS AND IN THE SYSTEM CALCULATIONS USING THE CANDELA SELECTOR SWITCH.

3 STROBE APPLIANCE WIRING

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



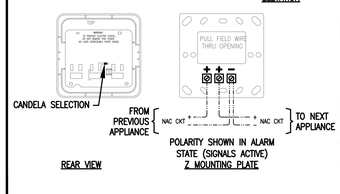
ZR CEILING STROBE

MODEL	DESCRIPTION
ZR-MC-CR	RED COVER (15, 30, 75, 110 CANDELA)
ZR-MC-CW	WHITE COVER (15, 30, 75, 110 CANDELA)
ZR-HMC-CR	RED COVER (135, 185 CANDELA) WHITE
ZR-HMC-CW	COVER (135, 185 CANDELA)

ZR WALL STROBE

MODEL	DESCRIPTION
ZR-MC-R	RED COVER (15, 30, 75, 110 CANDELA)
ZR-MC-W	WHITE COVER (15, 30, 75, 110 CANDELA)
ZR-HMC-R	RED COVER (135, 185 CANDELA)
ZR-HMC-W	WHITE COVER (135, 185 CANDELA)

FLUSH MOUNT BACKBOX
SINGLE GANG ELECTRICAL BOX OR 4" SQUARE, MIN. 1-1/2" DEEP ELECTRICAL BOX OR DOUBLE GANG ELECTRICAL BOX



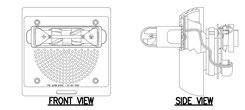
SURFACE MOUNT BACKBOX
SIEMENS MODEL: SHBBS-R OR ZB-R FOR RED
SIEMENS MODEL: SHBBS-W OR ZB-W FOR WHITE

INSTALLATION NOTES
THE Z MOUNTING PLATE FASTENS DIRECTLY ONTO THE BACKBOX (SURFACE OR FLUSH), SCREWS PROVIDED.

ON THE BACK OF THE STROBE APPLIANCE, SLIDE THE STROBE CANDELA SWITCH TO MATCH THE STROBE CANDELA VALUE SHOWN ON THE FLOOR PLANS. AFTER TESTING THE CIRCUIT, SNAP THE STROBE APPLIANCE ONTO THE Z MOUNTING PLATE. TWO OPTIONAL LOCKING SCREWS ARE INCLUDED TO PROVIDE AN EXTRA SECURE INSTALLATION.
TO REMOVE THE APPLIANCE, INSERT A SMALL FLAT-BLADE SCREWDRIVER INTO THE RELEASE TABS ON THE SIDE OF THE APPLIANCE - DO NOT PRY OFF.

4 WEATHERPROOF CEILING-MOUNTED SPEAKER/STROBE APPLIANCE WIRING

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION

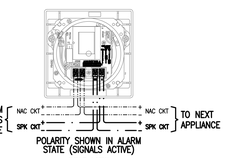


SET CEILING WEATHER-PROOF SPEAKER STROBE

MODEL	DESCRIPTION
SET-S17-CW-WP	WHITE COVER

FLUSH MOUNT BACKBOX
4" SQUARE 2-1/8" DEEP ELECTRICAL BOX AND
4" SQUARE 1-1/2" EXTENSION RING AND
SIEMENS MODEL: WFPS-W FOR WHITE

SURFACE MOUNT BACKBOX
SIEMENS MODEL: MT-SUR-BOX-W FOR WHITE
AND SIEMENS MODEL: WPS-KIT FOR CONCEALED CONDUIT INSTALLATION

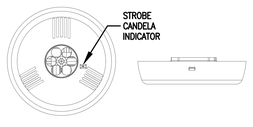


INSTALLATION NOTES
THE DEVICE FASTENS DIRECTLY ONTO THE BACKBOX (SURFACE OR FLUSH), SCREWS PROVIDED. WHEN USING THE MT-SUR-BOX THIS UNIT MUST BE MOUNTED ON A FLAT SURFACE, SO THAT THE SURFACE COVERS THE ENTIRE BACK SURFACE OF THE BACKBOX. WHEN USED IN AN OUTDOOR APPLICATION OR A NEMA 3R APPLICATION KNOCKOUTS IN THE REAR OF THE BACKBOX MUST REMAIN INTACT.

ON THE BACK OF THE SPEAKER STROBE APPLIANCE, SET THE VOLTAGE AND WATTAGE AS DETAILED ON THE FLOOR PLANS AND IN THE SYSTEM CALCULATIONS USING THE JUMPER PLUG POSITIONED PER THE WATTAGE CHART.

7 CEILING-MOUNTED STROBE APPLIANCE WIRING

NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



SL2SC SERIES CEILING STROBE

MODEL	DESCRIPTION
SL2SCx-y	15, 30, 75, 110, 150, 177 CANDELA

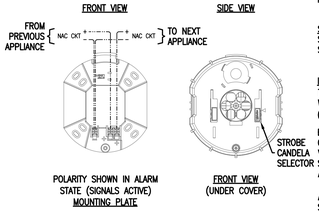
x = R-RED OR W-WHITE

y = A-AGENT, AL*-ALERT, F-FIRE, N*-(NONE), EV-EVACUATE [WHITE DEVICE ONLY], OR FR-(PICTOGRAM),

* - ADD A-AMBER LENS, B-BLUE LENS

FLUSH MOUNT BACKBOX
4" SQUARE OR 4" OCTAGON OR SINGLE-GANG BOX MOUNTING

SURFACE MOUNT BACKBOX
SL2PBBCR FOR RED
SL2PBBCW FOR WHITE



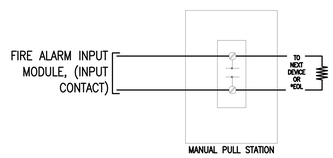
INSTALLATION NOTES
THE DEVICE FASTENS ONTO THE MOUNTING PLATE, WHICH IS MOUNTED DIRECTLY ONTO THE BACKBOX (SURFACE OR FLUSH), SCREWS PROVIDED.

BEFORE INSTALLING THE DEVICE, SLIDE THE STROBE CANDELA SWITCH TO MATCH THE STROBE CANDELA VALUE SHOWN ON THE FLOOR PLANS WITH A SMALL SCREWDRIVER. THIS SETTING IS ALSO VISIBLE THROUGH A HOLE IN THE COVER PLATE.

AFTER WIRING AND MOUNTING THE STROBE APPLIANCE, SNAP THE FINISH COVER PLATE INTO PLACE.

6 CONVENTIONAL MANUAL PULL STATION WIRING DIAGRAM

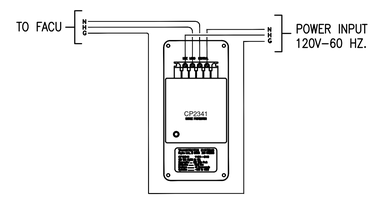
NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



*REFER TO INPUT MODULE INSTALLATION INSTRUCTION FOR END OF LINE RESISTOR VALUE

7 SURGE SUPPRESSOR WIRING DIAGRAM

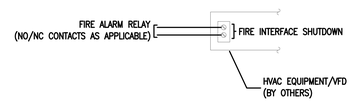
NOT TO SCALE -- SEE THE INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION



*REFER TO INPUT MODULE INSTALLATION INSTRUCTION FOR END OF LINE RESISTOR VALUE

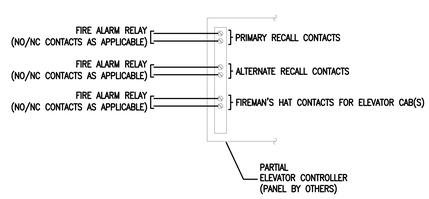
8 FAN SHUTDOWN WIRING DIAGRAM TO LOW-VOLTAGE CONTACT

NOT TO SCALE -- SEE APPLICABLE DEVICE INSTRUCTIONS FOR ADDITIONAL INFORMATION



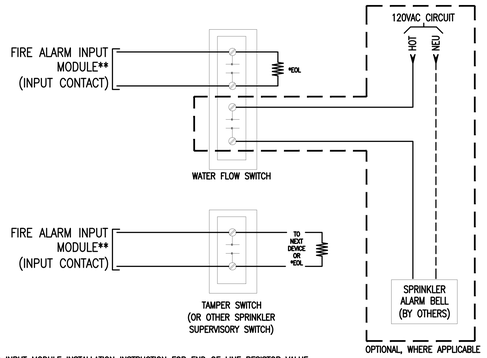
9 ELEVATOR INTERFACE WIRING DIAGRAM

NOT TO SCALE -- SEE APPLICABLE DEVICE INSTRUCTIONS FOR ADDITIONAL INFORMATION



10 SPRINKLER SYSTEM MONITORING WIRING DIAGRAM

NOT TO SCALE -- SEE APPLICABLE DEVICE INSTRUCTIONS FOR ADDITIONAL INFORMATION



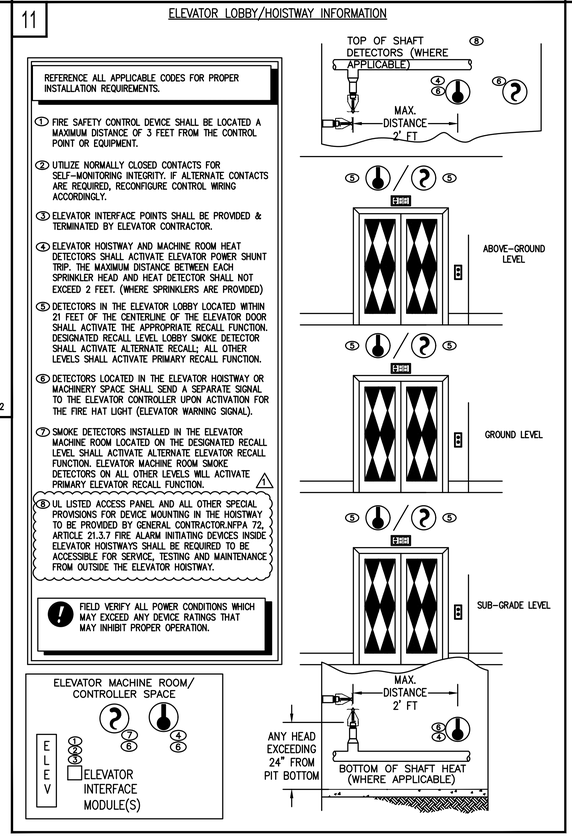
*REFER TO INPUT MODULE INSTALLATION INSTRUCTION FOR END OF LINE RESISTOR VALUE
**WHEN USING DUAL MONITOR MODULE FOR BOTH, CONNECT WATERFLOW SWITCH TO INPUT #1, AND SUPERVISORY SWITCH TO INPUT #2

11 ELEVATOR LOBBY/HOISTWAY INFORMATION

REFERENCE ALL APPLICABLE CODES FOR PROPER INSTALLATION REQUIREMENTS.

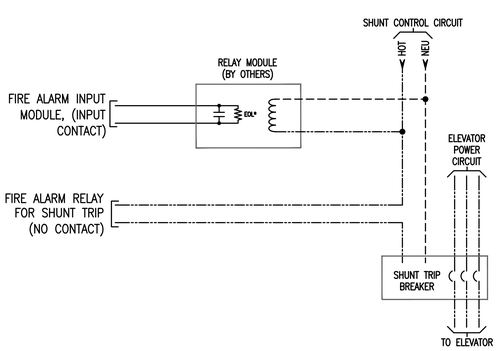
1. FIRE SAFETY CONTROL DEVICE SHALL BE LOCATED A MAXIMUM DISTANCE OF 3 FEET FROM THE CONTROL POINT OR EQUIPMENT.
2. UTILIZE NORMALLY CLOSED CONTACTS FOR SELF-MONITORING INTEGRITY. IF ALTERNATE CONTACTS ARE REQUIRED, RECONFIGURE CONTROL WIRING ACCORDINGLY.
3. ELEVATOR INTERFACE POINTS SHALL BE PROVIDED & TERMINATED BY ELEVATOR CONTRACTOR.
4. ELEVATOR HOISTWAY AND MACHINE ROOM HEAT DETECTORS SHALL ACTIVATE ELEVATOR POWER SHUNT TRIP. THE MAXIMUM DISTANCE BETWEEN EACH SPRINKLER HEAD AND HEAT DETECTOR SHALL NOT EXCEED 2 FEET. (WHERE SPRINKLERS ARE PROVIDED)
5. DETECTORS IN THE ELEVATOR LOBBY LOCATED WITHIN 21 FEET OF THE CENTERLINE OF THE ELEVATOR DOOR SHALL ACTIVATE THE APPROPRIATE RECALL FUNCTION. DESIGNATED RECALL LEVEL LOBBY SMOKE DETECTOR SHALL ACTIVATE ALTERNATE RECALL; ALL OTHER LEVELS SHALL ACTIVATE PRIMARY RECALL FUNCTION.
6. DETECTORS LOCATED IN THE ELEVATOR HOISTWAY OR MACHINERY SPACE SHALL SEND A SEPARATE SIGNAL TO THE ELEVATOR CONTROLLER UPON ACTIVATION FOR THE FIRE HAT LIGHT (ELEVATOR WARNING SIGNAL).
7. SMOKE DETECTORS INSTALLED IN THE ELEVATOR MACHINE ROOM LOCATED ON THE DESIGNATED RECALL LEVEL SHALL ACTIVATE ALTERNATE ELEVATOR RECALL FUNCTION. ELEVATOR MACHINE ROOM SMOKE DETECTORS ON ALL OTHER LEVELS WILL ACTIVATE PRIMARY ELEVATOR RECALL FUNCTION.
8. UL LISTED ACCESS PANEL AND ALL OTHER SPECIAL PROVISIONS FOR DEVICE MOUNTING IN THE HOISTWAY TO BE PROVIDED BY GENERAL CONTRACTOR.NFPA 72, ARTICLE 21.3.7 FIRE ALARM INITIATING DEVICES INSIDE ELEVATOR HOISTWAYS SHALL BE REQUIRED TO BE ACCESSIBLE FOR SERVICE, TESTING AND MAINTENANCE FROM OUTSIDE THE ELEVATOR HOISTWAY.

FIELD VERIFY ALL POWER CONDITIONS WHICH MAY EXCEED ANY DEVICE RATINGS THAT MAY INHIBIT PROPER OPERATION.



12 ELEVATOR SHUNT TRIP & SHUNT CONTROL CIRCUIT MONITORING WIRING DIAGRAM

NOT TO SCALE -- SEE APPLICABLE DEVICE INSTRUCTIONS FOR ADDITIONAL INFORMATION



*REFER TO INPUT MODULE INSTALLATION INSTRUCTION FOR END OF LINE RESISTOR VALUE

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

STATE OF MISSOURI — JAY R. GUERRA — NUMBER E-26382 — PROFESSIONAL ENGINEER
7/15/2024
JAY R. GUERRA
LICENSE # E-26382
PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE: .

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
DEVICE MOUNTING & WIRING DETAILS - 2

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

DRAWING NUMBER: **FA5.02**

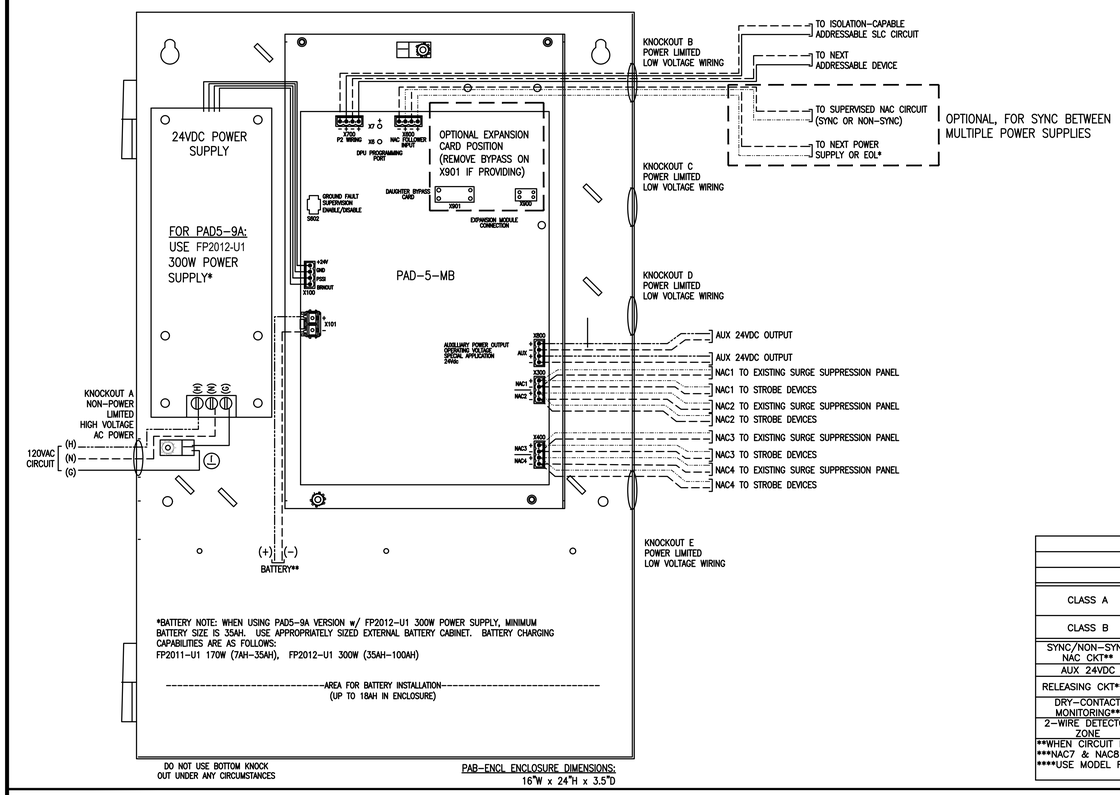
SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA501-MCC - LV Automotive-DET.dwg tucsaf

1

PAD-5 SERIES POWER SUPPLY DETAIL

NOT TO SCALE -- SEE APPLICABLE EQUIPMENT INSTRUCTIONS FOR ADDITIONAL INFORMATION



CIRCUIT CLASSES & USES												
	MAIN BOARD				PAD5-CLSA				PAD5-CDC			
	NAC1	NAC2	NAC3	NAC4	NAC5	NAC6	NAC7	NAC8	ZONE1	ZONE2	ZONE3	ZONE4
CLASS A	X	(NAC1 RTN)	X	(NAC3 RTN)	X	(NAC5 RTN)	X	(NAC7 RTN)	X	X	X	X
CLASS B	X	X	X	X	X	X	X	X	X	X	X	X
SYNC/NON-SYNC NAC CKT**	X	X	X	X	X	X	X***	X***				
AUX 24VDC	X	X	X	X	X	X	X***	X***				
RELEASING CKT****					X	X						
DRY-CONTACT MONITORING**	X	X	X	X	X	X	X	X	X	X	X	X
2-WIRE DETECTOR ZONE									X	X	X	X

**WHEN CIRCUIT IS IN CLASS B CONFIGURATION, USE 2.2K-24K OHM RESISTOR FOR SUPERVISION
***NAC7 & NAC8 CANNOT BE USED FOR OUTPUT CIRCUITS IF NAC5 OR NAC6 ARE USED FOR RELEASING CKT
****USE MODEL REL-EOL AT SOLENOID FOR RELEASING APPLICATIONS

GIBBENS DRAKE SCOTT, INC
Missouri State Certificate of Authority #000816
9201 E. 63rd STREET, SUITE 100
RAYTOWN, MISSOURI 64133

ENGINEERING

STATE OF MISSOURI
JAY R. GUERRA
NUMBER E-26382
REGISTERED PROFESSIONAL ENGINEER

7/15/2024

JAY R. GUERRA
LICENSE # E-26382

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

APPROVAL STAMPS

SIEMENS

SIEMENS INDUSTRY, INC.
8066 FLINT STREET
LENEXA, KS 66214
913.905.6700

This drawing and the information and design application herein contained is the property of SIEMENS INDUSTRY, INC. and is loaned upon the express condition that the same be returned to SIEMENS INDUSTRY, INC. upon request; all information herein contained shall be treated as secret and confidential; no reproduction of this drawing or part thereof shall be made without the written consent of SIEMENS INDUSTRY, Incorporated.

AGENCY REFERENCE:
.

REV NO.	DATE	REMARKS	INTL
1	07/12/2024	REVISED AS PER ENGINEERING COMMENTS	VTR
0	07/08/2024	INITIAL SUBMISSION	VTR

DRAWN: VAISHNAV
CHECKED: AKSHAY

SHEET DESCRIPTION:
FIRE ALARM SYSTEM
DEVICE MOUNTING & WIRING DETAILS - 3

JOB NUMBER: 44OP-379485

PROJECT NAME \ ADDRESS:
MCC AUTOMOTIVE INSTITUTE
500 SW LONGVIEW RD.
LEE'S SUMMIT, MO 64081

DRAWING NUMBER: **FA5.03**

SHEET SIZE: ARCH E1 - 30x42

7/12/2024 11:52 PM K:\20241910\20241910.DWG\FA501-MCC - LV Automotive-DET.dwg lucasf