



Submittal #28 31 00-28 31 00-2.0

28 31 00 - Fire Alarm

McCarthy Building Companies Inc.
7930 Santa Fe Drive Suite 200
Overland Park, Kansas 66204
Phone: (913) 202-7002

Project: 003090.002 - Saint Luke's East Summit GI
100 NE Saint Luke's Blvd,
Lees Summit, Missouri 64086

003090.002 - Summit GI : 28 31 00 Fire Alarm - Shop Drawing

SPEC SECTION:	28 31 00 - Fire Alarm	SUBMITTAL MANAGER:	Nadia Opalenik (McCarthy Building Companies Inc)
STATUS:	Open	DATE CREATED:	05/12/2025
ISSUE DATE:		REVISION:	0
RESPONSIBLE CONTRACTOR:	P1 Group Inc	RECEIVED FROM:	Dylan Elzey
RECEIVED DATE:		SUBMIT BY:	
FINAL DUE DATE:	07/31/2025	LOCATION:	
TYPE:	Shop Drawing	COST CODE:	
CRITICAL:	No		
APPROVERS:	Nadia Opalenik (McCarthy Building Companies Inc), Liz Greer (Henderson Engineers Inc), Laurie Plimpton (Henderson Engineers Inc), Brian Dostal (ACI Boland Inc)		

BALL IN COURT:
Nadia Opalenik (McCarthy Building Companies Inc)

DISTRIBUTION:
Laurie Plimpton (Henderson Engineers Inc) , Liz Greer (Henderson Engineers Inc) , Joshua Halvorsen (McCarthy Building Companies Inc) , Brian Dostal (ACI Boland Inc) , Nadia Opalenik (McCarthy Building Companies Inc) , Sean Handley (Saint Luke's Health System) , Shayna Miller (McCarthy Building Companies Inc) , Kayla Smith (ACI Boland Inc) , Andy Hess (P1 Group Inc) , David Becerra (P1 Group Inc) , Dylan Elzey (P1 Group Inc) , Jack Pickman (P1 Group Inc) , Laura Adkins (P1 Group Inc) , Mike Hutchinson (P1 Group Inc) , Shawn Quenzer (P1 Group Inc)

DESCRIPTION:
B. Shop Drawings: 1. Shop Drawings shall be prepared by persons with the following qualifications: a. Trained and certified by manufacturer in fire alarm system design. b. Fire alarm certified by NICET, minimum Level III. 2. System Operation Description: Detailed description for this Project, including method of operation and supervision of each type of circuit and sequence of operations for manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems are not acceptable. 3. Device Address List: Coordinate with final system programming. 4. System riser diagram with device addresses, conduit sizes, and cable and wire types and sizes. 5. Wiring Diagrams: Power, signal, and control wiring. Include diagrams for equipment and for system with all terminals and interconnections identified. Show wiring color code. 6. Batteries: Size calculations. 7. Duct Smoke Detectors: Performance parameters and installation details for each detector, verifying that each detector is listed for the complete range of air velocity, temperature, and humidity possible when air-handling system is operating. 28 31 00 - 2 FIRE ALARM Date 8. Ductwork Coordination Drawings: Plans, sections, and elevations of ducts, drawn to scale and coordinating the installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, the detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations. 9. Floor Plans: Indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits.

ATTACHMENTS:

This review is for general conformance with Plans and Specifications only. Any deviations from same not clearly noted by the Preparer have not been reviewed. Review shall not constitute a complete check of detailed dimensions or count or serve to relieve the Preparer of contractual responsibility for any error or deviation from contract requirements.

SUBMITTAL WORKFLOW

#	NAME	SUBMITTER/ APPROVER	SENT DATE	DUE DATE	RETURNED DATE	RESPONSE	ATTACHMENTS
1	Laura Adkins	Submitter	6/30/2025	5/26/2025	7/1/2025	Submitted	#005-Fire Alarm Shop Drawings-



Submittal #28 31 00-28 31 00- 2.0 28 31 00 - Fire Alarm

#	NAME	SUBMITTER/ APPROVER	SENT DATE	DUE DATE	RETURNED DATE	RESPONSE	ATTACHMENTS
							202506301613 (2).pdf
COMMENTS:							
2	David Becerra	Submitter		5/26/2025		Pending	
COMMENTS:							
3	Dylan Elzey	Submitter		5/26/2025		Pending	
COMMENTS:							
4	Mike Hutchinson	Submitter		5/26/2025		Pending	
COMMENTS:							
5	Jack Pickman	Submitter		5/26/2025		Pending	
COMMENTS:							
6	Nadia Opalenik	Approver	7/1/2025	7/3/2025		Pending	
COMMENTS:							
7	Liz Greer	Approver		7/17/2025		Pending	
COMMENTS:							
8	Laurie Plimpton	Approver		7/17/2025		Pending	
COMMENTS:							
9	Brian Dostal	Approver		7/31/2025		Pending	
COMMENTS:							

BY

DATE

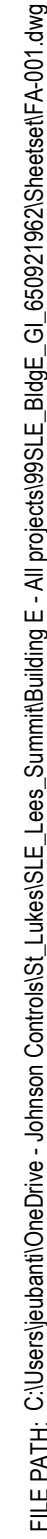
COPIES TO

Submittal item detail

#005-005-0: Fire Alarm Shop Drawings



Status	Created on	Ball in court due date
Open In Review	Jun 30, 2025	Jul 7, 2025
ID	5	
Pending action from	Mike Hutchison (P1 Construction LLC)	
Ball in court	Mike Hutchison (P1 Construction LLC)	
Manager	Laura Adkins (P1 Construction LLC)	
Responsible contractor	Mike Hutchison (P1 Construction LLC)	
Watchers	Jack Pickman (P1 Construction LLC) Mike Hutchison (P1 Construction LLC) Foreman- BT	
Spec section	005 Fire Alarm Shop Drawings	
Spec sub section		
Type	Shop Drawings	
Description		
Final Response		
Final Response Attachments		
Final Response Comments		
Package		



Johnson Controls

DISTRICT - 132
 11015 STRANG LINE ROAD
 LENOVA, IL 60175
 PHONE: 913-884-0010
 FAX: 913-884-0020
 SERVICE 913-884-0010

JOHNSON CONTROLS, LLP MISSOURI STATE
 CERTIFICATE OF AGENCIES & EMPLOYERS

RONALD A. HARRISON - PE MO# 2007007591

Sheet Number	Sheet Title
FA-001	COVER SHEET
FA-101	DEVICE PLACEMENT PLAN & DETAILS
FA-601	CALCULATIONS AND SCHEDULES

1. THESE DRAWINGS DEPict GENERAL LOCATIONS OF LIFE SAFETY EQUIPMENT & FIELD DEVICES. EXACT ROUTING OF CONDUITS IS TO BE DETERMINED IN THE FIELD BY THE INSTALLING CONTRACTOR TO SUIT CONDITIONS. ALL CHANGES SHALL BE CLEARLY INDICATED ON THE DRAWINGS.
2. SHOULD ANY CONDITIONS EXIST THAT DIFFER FROM WHAT IS INDICATED ON THESE DRAWINGS WHICH CAUSE MAJOR DEVIATIONS IN THE WORK SHOWN, THE CONTRACTOR SHALL CONTACT JOHNSON CONTROLS IN A TIMELY MANNER SO AS NOT TO IMPAIR THE CONSTRUCTION SCHEDULE.
3. THE CONTRACTOR IS RESPONSIBLE FOR MAKING AND OBTAINING APPROVAL FOR ALL NECESSARY ADJUSTMENTS IN CIRCUITING AS REQUIRED TO ACCOMMODATE THE RELOCATION OF EQUIPMENT AND/OR DEVICES WHICH ARE AFFECTED BY ANY AUTHORIZED CHANGE. ALL CHANGES SHALL BE CLEARLY INDICATED ON THE RECORD DRAWINGS.
4. THE LOCATION OF APPROXIMATE FIRE ALARM DEVICES SHALL BE SHOWN ON THIS SITE AND SHALL BE USED FOR INSTALLATION.
5. THE POWER CIRCUIT TO THE FACP AND TO THE FIRE ALARM POWER SUPPLIES SHALL BE ON A DEDICATED 120V, 20 AMP BRANCH CIRCUIT BREAKER, AND SHALL HAVE A RED MARKING, LOCK OR PROVISION AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT CONTROL". THE LOCATION OF THE CIRCUIT DISCONNECT MEANS (CIRCUIT BREAKER) SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CIRCUIT UNIT.
6. UPDATE THE AS-BUILT DRAWING SET FINAL WITH JOB PROGRESS. RETURN THE AS-BUILT DRAWING SET TO JOHNSON CONTROLS NO LATER THAN 7 DAYS AFTER FINAL TEST.
7. THE CONTRACTOR WILL MAINTAIN ALL AREAS OF THE BUILDING IN A NEAT AND WORKMANLIKE MANNER.
8. DO NOT APPLY POWER EXCEPT IN THE PRESENCE OF A FACTORY TRAINED JOHNSON CONTROLS TECHNICAL REPRESENTATIVE.
9. ANY SMOKE DETECTOR HEAD INSTALLED BEFORE THE BUILDING IS CLEANED AND ACCEPTED SHALL BE COVERED TO PROTECT FROM DAMAGE. IF A SMOKE DETECTOR HEAD IS INSTALLED AFTER THE BUILDING IS CLEANED AND ACCEPTED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE DETECTOR HEAD.
10. THE FIRE ALARM INSTALLER WILL MAINTAIN THE FIRE RESISTANCE INTEGRITY OF ALL WALL, CEILING, AND ROOF ASSEMBLIES ANY TIME THAT WORK IS NOT ACTIVELY BEING PERFORMED.
11. INSTALLATION OF DEVICES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. POWER LIMITED AND NON-POWER LIMITED FIELD WIRING SHALL BE INSTALLED WITHIN THE FACP ENCLOSURE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPLICABLE ELECTRICAL CODES REFER TO APPLICABLE CODES & STANDARDS FOR SPECIFIC CODE REFERENCES.
12. ALL WIRING SHALL BE INSTALLED ACCORDING TO APPLICABLE ELECTRICAL CODES.
13. ALL ELECTRICAL CIRCUITS SHALL BE IDENTIFIED AND LABELED IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODES. MARK ALL FIRE ALARM WIRES IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODE SECTIONS FOR POWER LIMITED AND NON-POWER LIMITED WIRE.
14. FIRE ALARM CABLE INSTALLED IN DUCTS, PLENUM, AND OTHER SPACES USED FOR ENVIRONMENTAL AIR SHALL BE TYPE FPLP.
15. FIRE ALARM CABLE SHALL BE INSTALLED IN VERTICAL RUNS AND PENETRATING MORE THAN ONE FLOOR OR CABLES INSTALLED IN VERTICAL RUNS IN SHAFTS SHALL BE TYPE FPLR.
16. FIRE ALARM CABLE INSTALLED IN UNDERGROUND CONDUIT OR OTHER WET LOCATIONS SHALL BE UL LISTED FOR WET LOCATIONS.
17. FIRE ALARM CIRCUITS EXTENDING BEYOND ONE BUILDING AND RUN OUTDOORS SHALL BE INSTALLED IN ACCORDANCE APPLICABLE ELECTRICAL CODES, WHERE APPLICABLE.
18. ALL WIRING, INCLUDING SHELDS MUST BE DRY AND FREE OF SHORTS AND GROUNDS.
19. ALL SHIELDED WIRE MUST HAVE SHELDS CONTINUOUS AT FULL LENGTH OF THE WIRE.
20. ALL SYSTEM WIRING CAN BE RUN IN THE SAME CONDUIT.
21. 120VAC IS NOT PERMITTED IN THE SAME CONDUIT WITH LOW VOLTAGE WIRING.
22. MAINTAIN MAXIMUM CONDUIT FILL RATIO AS PER APPLICABLE ELECTRICAL CODES REQUIREMENTS.
23. ALL SYSTEMS AND EQUIPMENT SHALL BE IDENTIFIED AND LABELED IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODES. HOWEVER, ANY EXISTING CONDUIT OR EQUIPMENT WILL BE USED ONLY IF CONDUITS MEET CURRENT STANDARDS AND CODES. JOHNSON CONTROLS MAKES NO STATEMENTS WRITTEN OR VERBAL AS TO THE CONDITION OF EXISTING CONDUITS.

SYMBOL		DESCRIPTION	BRAND / MODEL	BACKBOX	WIRE TYPE(S)
INITIATING DEVICES					
	SMOKE SENSOR, ADDRESSABLE, PHOTOELECTRIC W/ STANDARD BASE, ADDRESSABLE		4098-9714 HEAD 4098-9792 BASE	4" OCT, 1-1/2" D	M
		DOUBLE ACTION MANUAL PUSH/PULL STATION, ADDRESSABLE			
MODULES AND RELAYS					
	IDNET RELAY IAM, ADDRESSABLE		4090-9002	4" SQ, 2-1/8" D W/ COVER	M,R
	TRIM PLATE FOR SURFACE MOUNTING		4090-5802		
NOTIFICATION APPLIANCES					
	HIGH FIDELITY SPEAKER, ADDRESSABLE, WALL MOUNT, APPLIANCE ONLY		49HF-APPLW	4" SQ, 2-1/8" D	A,S
	APPLIANCE COVER, RED, FIRE LETTERING MOUNTING PLATE, RED		45SQC-WRFIRE 49MP-SQWR		
	HIGH FIDELITY SPEAKER/STROBE, ADDRESSABLE, WALL MOUNT, MULTI-CANDELA, CLEAR LENS, APPLIANCE ONLY		49HFV-APPLW	4" SQ, 2-1/8" D	A,S
	APPLIANCE COVER, RED, FIRE LETTERING MOUNTING PLATE, RED		49SVC-WRFIRE 49MP-SQWR		
MISCELLANEOUS DEVICES					
	FIRE/SMOKE DAMPER		BY OTHERS FIRE/SMOKE DAMPER		
	END-OF-LINE RESISTOR 10K, 1/2W (EOL)		4081-9008		

CIRCUIT DESCRIPTION		CONSTRUCTION	GAUGE	CIRCUIT PROPERTIES						C.L.
				FLR	FFR	THN	TFN	OUT		
A	ADDRESSABLE NOTIFICATION	UTP SOLID	14 AWG	60pfr. MAX CAPACITANCE; 3 watts/ft. MINIMUM				X	X	
M	IDNET			0.60uF MAX TOTAL LINE CAPACITANCE				X	X	
R	RELAY	2 COND. SOLID	14 AWG		X	X	X	X		
S	AUDIO - SPEAKER	UTP SOLID	18 AWG	30pfr. MAX CAPACITANCE RECOMMENDED				X	X	
	CONDUIT SIZE	MAX CONDUCTOR AREA		CONDUIT SIZE				MAX CONDUCTOR AREA		
	1/2"	0.122 SQ. INCH"		1-1/4"				0.598 SQ INCH"		
	3/4"	0.213 SQ INCH"		1-1/2"				0.814 SQ INCH"		
	1"	0.346 SQ INCH"		2"				1.342 SQ INCH"		
-40% CONDUIT FILL PER N.E.C. STP = SHIELDED TWISTED PAIR UTP = UNSHIELDED TWISTED PAIR										
ITEMS SUCH AS CAPACITANCE BETWEEN CONDUCTORS AND WIRE GAUGE CAN BE CRUCIAL TO THE CIRCUIT DESIGN OF THIS SYSTEM INSTALLATION. THE INSTALLING CONTRACTOR IS RESPONSIBLE FOR SELECTING AND INSTALLING CABLE MANUFACTURERS AND MODEL THAT MEETS OR EXCEEDS THE ABOVE REQUIREMENTS. RECOMMENDED CABLE MANUFACTURERS AND MODEL NUMBERS ARE AVAILABLE UPON REQUEST!										

INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION	
INTERNATIONAL FIRE CODE (IFC), 2018 EDITION	
NATIONAL ELECTRIC CODE (NFPA 70), 2017 EDITION	
NATIONAL FIRE ALARM AND SIGNALING CODE (NFPA 72), 2012 EDITION	
OCCUPANCY TYPE(S): B BUSINESS GROUP	SPRINKLER PROTECTION: BUILDING IS FULLY SPRINKLERED

MODIFY EXISTING FIRE ALARM SYSTEM: PROVIDE NEW DEVICES AS SHOWN ON DRAWINGS.

ALL NEW WIRING TO BE CLASS B.

THE EXISTING FIRE ALARM SYSTEM SHALL NOT BE DISCONNECTED OR TAKEN OUT OF SERVICE WITHOUT WRITTEN PERMISSION FROM THE OWNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE OWNER THE TIMING OF ANY EXISTING FIRE ALARM SYSTEM DEMOLITION WORK.

THIS PROJECT'S DESIGN IS BASED ON THE ENGINEERED PLANS AND SPECIFICATIONS PREPARED BY: HENDERSON ENGINEERS

ARCHITECTURAL PLANS DATED: 04/07/2025

AC = ABOVE CEILING
AFF = ABOVE FINISHED FLOOR
AHJ = AUTHORITY HAVING JURISDICTION
AL = ALARM
ANN = ANNUNCIATOR
BMS = BUILDING MANAGEMENT SYSTEM
C = CEILING MOUNTED
CD = CANDLE RATING
DET = DETECTOR
DGP = DATA GATHERING PANEL
E = EXISTING TO REMAIN
EOL = END OF LINE
EOP = EMERGENCY POWER OFF
ER = ELEVATOR RECALL
FA = FIRE ALARM ANNUNCIATOR
FACP = FIRE ALARM CONTROL PANEL
FATO = FIRE ALARM TERMINAL CABINET
FDC = FIRE DISTRIBUTION CONTROLLER
FIS = FIRE INTERMEDIATE SIGNAL
FIS = FURNISHED BY OTHERS
FCC = FIRE COMMAND CENTER
FSD = FIRE SMOKE DAMPER
FIR = FIRE ALARM TRANSDUCER
H = HIGH HUMIDITY
HT = HEIGHT
HVAC = HEATING VENTILATION & AIR CONDITIONING
IMS = INFORMATION MANAGEMENT SYSTEM
MAX = MAXIMUM
MIN = MINIMUM
NA = NOT APPLICABLE
NAC = NOTIFICATION APPLIANCE CIRCUIT
ND = NETWORK DISPLAY UNIT
NEC = NATIONAL ELECTRIC CODE
NFPA = NATIONAL FIRE PROTECTION ASSOCIATION
NIC = NOT IN CONTRACT
NPU = NETWORK PROCESSING UNIT
NTS = NOT TO SCALE
OAC = OVER-ACTION PANEL
RO = EXISTING TO REMOVE AND COVER
RD = EXISTING DEVICE TO BE RELOCATED
RL = RELOCATED DEVICE
RR = REMOVE EXISTING & REPLACE WITH NEW
SCC = STATUS COMMAND CENTER
SUC = SIGNALING LINE CIRCUIT
SUM = SMOKE
SUPP = SUPERVISORY
TAC = TRIGGERABLE ADDRESSABLE CONTROLLER
TOS = TOP OF SHAFT
TRB = TRIPBOLE
TS = TAMPER SWITCH
TYP = TYPICAL
UNV = UNLESS OTHERWISE NOTED
VCC = VOICE COMMAND CENTER
VT = VALVE TAMPER
W = WATTAGE
W = WITH
W/O = WITHOUT
WF = WATERFLOW
WG = WIRE GUARD
WP = WEATHERPROOF
XP = EXPLOSION PROOF

<u>Sales Representative</u>	<u>Scheduling</u>	<u>Drawings Prepared By</u>	<u>Drawings Reviewed By</u>
TODD WHALEN DONALD.TODD.WHALEN@JCI.COM PHONE: 785-249-2200	CARLA FRATZEL CARLA.FRATZEL@JCI.COM PHONE: 816-490-3229	BEATRICE LOSTRACCO BEATRICE.LOSTRACCO@JCI.COM	TIM EUBANKS TIMOTHY.EUBANKS@JCI.COM

<u>Site</u>	<u>Installer</u>	<u>Johnson Controls District - 332</u>
SAINT LUKE'S EAST HOSPITAL 100 NORTHEAST ST. LUKE'S BLVD LEE'S SUMMIT, MO 64086	P1 CONSTRUCTION 13605 W. 96TH TERRACE LEXANA, KS 66215	11019 STRANG LINE ROAD LENEXA, KS 66215 PHONE: 913-894-0010 FAX: 913-894-0020 SERVICE: 913-894-0010

PANEL DESIGNATOR

- FA = FACP (NON-NETWORK)
- # = NODE NUMBER
- TA = TRANSPONDER NUMBER
- #TA# = NODE TRANSPONDER NUMBER
- N# = NAC EXTENDER NUMBER

CIRCUIT DESIGNATOR

- A# = IDNAC¹ CIRCUIT NUMBER
- D# = DOOR HOLDER CIRCUIT NUMBER
- F# = FIRE PHONE CIRCUIT
- H# = AUDIBLE HORN CIRCUIT NUMBER
- M# = IDNET LOOP NUMBER
- P# = POWER CIRCUIT NUMBER
- SP = SPEAKER CIRCUIT NUMBER
- V# = VISUAL CIRCUIT NUMBER
- Z# = ZONE NUMBER

DEVICE NUMBER

BRANCH / ISOLATED LOOP DESIGNATOR:

- (L#) = IDNET ISOLATED LOOP NUMBER
- (#) = IDNAC BRANCH NUMBER
- (E#) = EPR² NUMBER BRANCH NUMBER

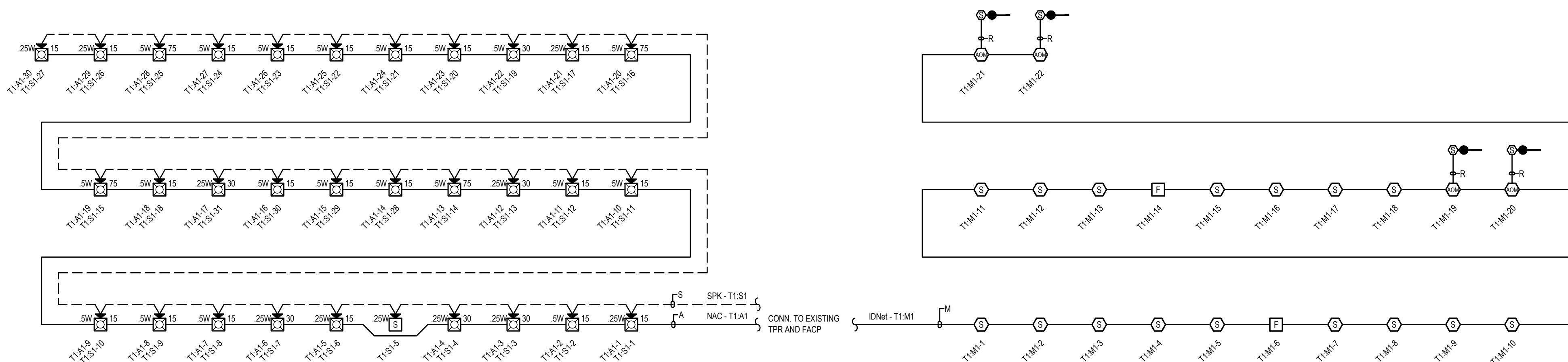
1. IDNAC = ADDRESSABLE NOTIFICATION CIRCUIT
2. EPR = ENHANCED POWER REPEATER

Example Code: 1:2A2-1(E)1:1

The first two digits of the panel designator (1:2) are highlighted in the example code.

EXISTING SYSTEM SEQUENCE OF OPERATIONS

1. RISER IS A DIAGRAMMATICAL REPRESENTATION OF THE SYSTEM ARCHITECTURE IN BUILDING CROSS SECTION. IT IS NOT INTENDED TO REPRESENT ACTUAL WIRE RUNS, PANEL CONFIGURATIONS OR PENETRATIONS. REFER TO FLOOR PLANS AND PANEL DETAILS FOR CIRCUIT ROUTING AND CONFIGURATION INFORMATION.
2. ALL WIRING SHALL COMPLY WITH APPLICABLE ELECTRICAL CODES. REFER TO 'APPLICABLE CODES & STANDARDS' ON SHEET FA-001 FOR SPECIFIC CODE REFERENCES.



SYSTEM	
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100	100

	SMOKE SENSOR DETECTOR	X X	X X	X X	X X					X
3	SMOKE HEAT SENSOR W SOUNDER BASE		X X		X X	X X				
4	MANUAL FULI STATION	X X		X X	X X	X X				
4	HEAT SENSOR DETECTOR	X X		X X	X X	X X				
9	DUCT SENSOR DETECTOR - SUPERVISORY		X X	X		X	X			
6	MAIN FLR ELEV LOBBY SMOKE DETECTOR	X X		X X	X X			X X	X X	
7	ELEVATOR LOBBY SMOKE DETECTORS (E/C MAIN FLR)	X X		X X	X X			X	X X	
8	ELEVATOR MECH ROOM HEAT DETECTOR	X X		X X	X X	X X			X	
9	ELEVATOR MECH ROOM SMOKE DETECTOR	X X		X X	X X	X X		X	X	X
10	ELEVATOR SHAFT HEAT DETECTOR	X X		X X	X X					
11	ELEVATOR SHAFT SMOKE DETECTOR	X X		X X	X X	X X		X	X X	X
12	ELEVATOR POWER MONITOR	X X	X X	X						
13	WATERFLOW SWITCH			X X	X X	X X				
14	TAMPER SWITCH		X X	X		X	X			
15	FIRE ALARM AC POWER FAILURE			X X		X	X		X	
16	FIRE ALARM SYSTEM LOW BATTERY			X X		X	X			
17	OPEN CIRCUIT OR GROUND FAULT			X X		X	X			
18	CLASS B NOTIFICATION CIRCUIT (NAC) - SHORT			X X		X X				

NOTE: SYSTEM OPERATION SHALL REMAIN UNCHANGED, MATRIX SHOWN FOR REFERENCE. NOTE ANY DISCREPANCY

[illegible]

DRAWN BY:	BEATRICE LOSTRACCO
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CHECKED BY:	TIM EUBANKS
ISSUE DATE:	6/22/96

ISSUE DATE:	6/26/25
JOB #:	

PROJECT #:	332:650921962
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JOHNSON CONTROLS © 2025

FIRE ALARM SYSTEM

SHEET:

COVER SHEET

COVER SHEET

5A.004

FA-001

LAST SAVED BY: JEUBANTI

FILE PATH: C:\Users\jbaum@stjohns\OneDrive - Johnson Controls\Documents\TPR6 FL2 4100es XPDR BATTERY CALC - Page_GI_65091262Sheet61FA-601.dwg

LAST SAVED BY: JBAUMANT

LAST PRINTED: 02/26/2025 2:06:39 PM

30" x 42" - Arch E Size

TPR6 FL2 4100es XPDR BATTERY CALCULATION							
Module	Qty	Description	Standby Current	Total Standby	Alarm Current	Total Alarm	
Panel Equipment							
4100-9600	1	4100ES FIRE ALARM TRANSPONDER PANEL, 120 VAC	0.0360	0.0360	0.0360	0.0360	
4100-5451	1	4100ES IDNAC Card	0.1240	0.1240	0.2300	0.2300	
4100-1313	1	ANALOG FLEX 50W AMP W/3 CLASS B NACS 70V	0.0850	0.0850	2.2700	2.2700	
4100-0621	1	4100 ANALOG AUDIO RISER MODULE	0.0150	0.0150	0.0150	0.0150	
4100-3109	1	4100ES IDNn2 MODULE - UP TO 250 DEVICES 2 ISOLATED LOOPS	0.0500	0.0500	0.1000	0.1000	
4100-5401	2	4100ES ES Power Supply Only	0.0680	0.1360	0.0770	0.1540	
Panel Totals				0.4460		2.8050	
IDNet Addressable Devices (SLC)							
4090-9002	4	IDNET RELAY IAM, ADDR. *	SEE NOTE BELOW				
4098-9714	16	SMOKE SENSOR, ADDR., PHOTOELECTRIC					
4098-9792	16	STANDARD BASE, ADDR. *					
4099-9904	2	MANUAL PULL STATION, SINGLE ACTION, ADDR. *					
Constant current draw of .8mA standby and 1mA alarm per address used. Devices requiring additional current are accounted for in the section labeled "Miscellaneous Peripheral Devices Requiring Additional System Power".							
IDNAC Addressable Notification Appliances							
49HFV-APPLW	20	HIGH FIDELITY SPEAKER/STROBE, ADDR., WALL MNT, MULTI CD, CLEAR LENS, APPLIANCE ONLY	15	0.0008	0.0160	0.0470	0.9400
49HFV-APPLW	6	HIGH FIDELITY SPEAKER/STROBE, ADDR., WALL MNT, MULTI CD, CLEAR LENS, APPLIANCE ONLY	30	0.0008	0.0048	0.0570	0.3420
49HFV-APPLW	4	HIGH FIDELITY SPEAKER/STROBE, ADDR., WALL MNT, MULTI CD, CLEAR LENS, APPLIANCE ONLY	75	0.0008	0.0032	0.1000	0.4000
49VO-WRF	38	STROBE, ADDR., WALL MNT, CLEAR LENS, RED, FIRE	110	0.0008	0.0304	0.1320	5.0160
Total IDNAC Device Current:				0.0544		6.6980	
IDNAC Current Boost for 29vdc Regulated Output **						3.8186	
Speakers							
49HFV-APPLW	30	HIGH FIDELITY SPEAKER/STROBE, ADDR., WALL MNT, MULTI CD, CLEAR LENS, APPLIANCE ONLY	Speaker quantities shown for reference only. See Amplifiers chart for Speaker Circuit dB Loss Calculations.				
49HF-APPLW	1	HIGH FIDELITY SPEAKER, ADDR., WALL MNT, APPLIANCE ONLY					
Peripheral Totals				0.0000		10.5166	
Address Totals				22	Addresses	0.0176	0.0220
System Totals:				Standby		Alarm	13.3436
* Device Address current draw included below (See Additional Current Draws):							
IDNet cards include 40mA alarm current for 20 device LEDs in alarm in addition to base current listed on datasheet.							
1. Base FACP includes current draw for all included components. See data sheet for details.							

Battery Set #1 (Cabinet/Charger #1)		Standby Current	Standby Total	Alarm Current	Alarm Total
Select ALL Power Supplies on this battery set:					
ESPS-1			0.3474		7.1560
ESPS-2			0.1530		2.3470
Sub Total			0.5004		9.5030
Additional Current Draws:					
RUI Connected Peripheral Devices		0	x 0.0035	= 0.0000	x 0.0035 = 0.0000
MAPNET/IDNet Device Address Communication Current		22	x 0.000800	= 0.0176	x 0.001000 = 0.0220
Sub Total			0.5180		13.3436
Spare addressable point capacity		0%	0	x 0.0008	= 0.0000 x 0.001 = 0.0000
Total			0.5180		13.3436
Standby Time = 24 Hrs x 0.5180 = 12.4320 Standby Ah					
Alarm Time = 15 Min 0.25 x 13.3436 = 3.3359 Alarm Ah					
Additional Spare Battery Capacity = 0%				+	0.0000
					15.7679
Battery Discharge Factor = 20%				+	3.1536
Minimum Battery Required 2081-9287 25AH (2x)					18.9215
Battery Supplied 2081-9287 25AH (2x)					

* System Totals represent total system current requirements. Those currents may be distributed between multiple battery sets or power supplies as shown above.

POWER SUPPLY SUMMARY			Powered By Ext. Source Qty.	Standby Current	Alarm Current
Module	Qty	Description			
PANEL COMPONENTS POWERED BY POWER SUPPLY					
4100-9600	1	4100ES FIRE ALARM TRANSPONDER PANEL, 120 VAC		0.0360	0.0360
4100-5451	1	4100ES IDNAC Card		0.1240	0.2300
4100-1313	1	ANALOG FLEX 50W AMP W/3 CLASS B NACS 70V		0.0850	2.2700
4100-0621	1	4100 ANALOG AUDIO RISER MODULE		0.0150	0.0150
4100-3109	1	4100ES IDNn2 MODULE - UP TO 250 DEVICES 2 ISOLATED LOOPS		0.0500	0.1000
4100-5401	2	4100ES ES Power Supply Only		0.0680	0.0770
Components					
NAC Currents from Voltage Drops				0.2830	0.4580
IDNac Current Boost for 29vdc Regulated Output *				0.0544	6.6980
MAPNET/IDNet Device Addresses used				0.0000	3.8186
Total				0.0176	0.0220

ESPS-1 SUMMARY			Qty	Total Standby	Total Alarm
				0.0000	0.0000
			1	0.0360	0.0360
			1	0.1240	0.2300
			1	0.0000	0.0000
			1	0.0150	0.0150
			1	0.0000	0.0000
			1	0.0000	0.0000
			1	0.0680	0.0770
			Total	0.3474	7.1560

ESPS-1 Configuration			Capacity: 9.500A
			Ckt. Capacity: 3.000A
			Aux. Capacity: 2.000A

ESPS-2 SUMMARY			Qty	Total Standby	Total Alarm
				0.0000	0.0000
			0	0.0000	0.0000
			1	0.0000	0.0000
			0	0.0000	0.0000
			0	0.0000	0.0000
			0	0.0000	0.0000
			1	0.0680	0.0770
			Total	0.1530	2.3470

ESPS-2 Configuration			Capacity: 9.500A
			Ckt. Capacity: 3.000A
			Aux. Capacity: 2.000A

TPR6 FL2 - IDNAC-1 CIRCUIT SUMMARY & VOLTAGE DROP							
Circuit	Description	Alarm Current	% Drop	Unit Load	Wire Length	Spare Current	Spare Voltage Drop
T1-A1	FL2 GI ADDITION	1.682A	9.97%	30	875	44%	52%
T1-A2	EXISTING DEVICES	2.508A	13.28%	19	475	16%	36%
T1-A3	EXISTING DEVICES	2.508A	13.28%	19	475	16%	36%

POINTS SHOWN IN ITALIC TEXT REFER TO EXISTING DEVICES.

ES POWER SUPPLY 2 - IDNAC CARD 1 - CIRCUIT T1-A1					SWITCH SETTINGS							
IDNAC Address	Device Type	PID	Setting	Custom Label (Max 40 Characters)	1	2	3	4	5	6	7	8
T1-A1-1	SV	49HFV-APPLW	15cd	FL2 NP OFFICE 02 ZE535	27	X						ON
T1-A1-2	SV	49HFV-APPLW	15cd	FL2 CORR. BY DOCTORS OFC. 02 ZE537	12	X						ON
T1-A1-3	SV	49HFV-APPLW	30cd	FL2 DOCTORS OFFICES 02 ZE537	17	X	X					ON
T1-A1-4	SV	49HFV-APPLW	30cd	FL2 STAFF LOUNGE 02 ZE536	32	X	X					ON
T1-A1-5	SV	49HFV-APPLW	15cd	FL2 STAFF TLT 02 ZE532	37	X	X					ON
T1-A1-6	SV	49HFV-APPLW	30cd	FL2 SCHEDULER OFFICE 02 ZE531	26	X	X					ON
T1-A1-7	SV	49HFV-APPLW	15cd	FL2 CORR. BY SCHED. OFFICE 02 ZE531	22	X	X	X				ON
T1-A1-8	SV	49HFV-APPLW	15cd	FL2 CORR. BY CHECK OUT 02 ZE526	34		X					ON
T1-A1-9	SV	49HFV-APPLW	15cd	FL2 CORR. BY CHECK OUT 02 ZE529	46	X	X	X				ON
T1-A1-10	SV	49HFV-APPLW	15cd	FL2 CORR. BY ELEVATOR LOBBY 02 ZE500	33	X	X	X				ON
T1-A1-11	SV	49HFV-APPLW	15cd	FL2 STAFF TLT 02 ZE530	23	X	X	X				ON
T1-A1-12	SV	49HFV-APPLW	30cd	FL2 NURSES OFFICE 02 ZE540	40		X	X				ON
T1-A1-13	SV	49HFV-APPLW	75cd	FL2 NURSES OFFICE 02 ZE540	38	X	X	X				ON
T1-A1-14	SV	49HFV-APPLW	15cd	FL2 CORR. BY EXAM 02 ZE524	84	X	X	X				ON
T1-A1-15	SV	49HFV-APPLW	15cd	FL2 CORR. BY EXAM 02 ZE518	57	X	X	X	X			ON
T1-A1-16	SV	49HFV-APPLW	15cd	FL2 CORR. BY	31				X			ON
T1-A1-17	SV	49HFV-APPLW	30cd	FL2 CORRIDOR 02 ZE600A	14	X	X	X				ON
T1-A1-18	SV	49HFV-APPLW	15cd	FL2 CHECK IN 02 ZE502B	83	X	X	X				ON
T1-A1-19	SV	49HFV-APPLW	75cd	FL2 WAITING ROOM 02 ZE502A	40	X	X	X				ON
T1-A1-20	SV	49HFV-APPLW	75cd	FL2 UNOCCUPIED SPACE 02 ZE601	10	X	X	X				ON
T1-A1-21	SV	49HFV-APPLW	15cd	FL2 PAT ENT TLT 02 ZE503	25	X	X	X				ON
T1-A1-22	SV	49HFV-APPLW	30cd	FL2 MA 02 ZE550	42	X	X	X				ON
T1-A1-23	SV	49HFV-APPLW	15cd	FL2 CORR. BY VITALS 02 ZE530A	25	X	X	X	X			ON
T1-A1-24	SV	49HFV-APPLW	15cd	FL2 CORR. BY EXAM 02 ZE507	24	X	X	X				ON
T1-A1-25	SV	49HFV-APPLW	15cd	FL2 PAT ENT TLT 02 ZE505	21	X	X	X	X			ON
T1-A1-26	SV	49HFV-APPLW	15cd	FL2 PAT ENT TLT 02 ZE506	18	X	X	X	X			ON
T1-A1-27	SV	49HFV-APPLW	15cd	FL2 CORR. BY STAFF TLT 02 ZE513	38	X	X	X	X			ON
T1-A1-28	SV	49HFV-APPLW	75cd	FL2 STORAGE 02 ZE511	27	X	X	X	X			ON
T1-A1-29	SV	49HFV-APPLW	15cd	FL2 STAFF TLT 02 ZE513	20	X	X	X	X			ON
T1-A1-30	SV	49HFV-APPLW	15cd	FL2 TRAINING 02 ZE512	19	X	X	X	X			ON

IDNET CHANNEL M1		ADDRESSES IN USE: 22 (8.8%) SPARE ADDRESSES: 228 (91.2%)				SWITCH SETTINGS							
Address	Device Type	Point Type	Location Description		1	2	3	4	5	6	7	8	
M1-1	PHOTO	SMOKE	FL2 STAFF LOUNGE 02 ZE536	M1-1	X							ON	
M1-2	PHOTO	SMOKE	FL2 SCHEDULER OFFICE 02 ZE531	M1-2	X							ON	
M1-3	PHOTO	SMOKE	FL2 CORR. BY CHECK OUT 02 ZE527	M1-3	X	X						ON	
M1-4	PHOTO	SMOKE	FL2 CORR. BY SCHED. OFFICE 02 ZE531	M1-4	X							ON	
M1-5	PHOTO	SMOKE	FL2 CORR. BY CHECK IN 02 ZE502B	M1-5	X	X						ON	
M1-6	ADRPUL	PULL	FL2 ELEVATOR LOBBY 02 ZE500	M1-6	X	X						ON	
M1-7	PHOTO	SMOKE	FL2 CORR. BY ELEVATOR LOBBY 02 ZE500	M1-7	X	X						ON	
M1-8	PHOTO	SMOKE	FL2 CORR. BY CHECK OUT 02 ZE529	M1-8			X					ON	
M1-9	PHOTO	SMOKE	FL2 CHECK OUT 02 ZE529	M1-9	X	X						ON	
M1-10	PHOTO	SMOKE	FL2 CHECK OUT 02 ZE526	M1-10	X	X	X					ON	
M1-11	PHOTO	SMOKE	FL2 CORR. BY EXAM 02 ZE520	M1-11	X	X	X					ON	
M1-12	PHOTO	SMOKE	FL2 CORR. BY EXAM 02 ZE517	M1-12		X	X					ON	
M1-13	PHOTO	SMOKE	FL2 CORRIDOR 02 ZE600A	M1-13	X	X	X					ON	
M1-14	ADRPUL	PULL	FL2 CORRIDOR 02 ZE600A	M1-14	X	X	X					ON	
M1-15	PHOTO	SMOKE	FL2 CORR. BY STAFF TLT	M1-15	X	X	X	X				ON	
M1-16	PHOTO	SMOKE	FL2 MA 02 ZE530	M1-16				X				ON	
M1-17	PHOTO	SMOKE	FL2 VITALS 02 ZE504	M1-17	X							ON	
M1-18	PHOTO	SMOKE	FL2 EXAM 02 ZE508	M1-18	X	X						ON	
M1-19	RIAM	CDAMPER	FL2 ZE511 DAMPER E	M1-19	X	X	X					ON	
M1-20	RIAM	CDAMPER	FL2 ZE511 DAMPER E	M1-20		X	X					ON	
M1-21	RIAM	CDAMPER	FL2 ZE511 DAMPER W	M1-21	X	X	X					ON	
M1-22	RIAM	CDAMPER	FL2 ZE511 DAMPER S	M1-22		X	X	X				ON	
M1-23					X	X	X					ON	
M1-24							X	X				ON	
M1-25					X	X	X	X				ON	