1269 Jonesboro Road,
Dunn, NC, 28334

Duke Energy Dunn Operations Center
22296024

Submittal Record

Date: December 3, 2024

Reviewed for Fire Code Compliance
Harnett County North Carolina
Leslie Jackson
02/04/2025 8:05:36 AM

LS3P ASSOCIATES LTD.
205 1/2 KING STREET,
CHARLESTON, SC 29401

Attn: Anne Bean

Submittal #	283100.001
Cycle	1
Sub-Section	
Description	Fire Alarm
Type	Shop Drawings
Status	Open
Copies	
Subcontractor	SOUTH-FAIR ELECTRIC CONTRACTORS, INC
Contact Name	Chris Duven
Returned Due Date	12/17/2024

Submittal Stamp			
Swinerton Builders			
Submittal # 283100.001			
Reviewed only as to the general design and requirements of the contract documents. Subcontractor to verify dimensions, quantities, and field conditions for proper and complete installation of this work. Approval shall not relieve subcontractor or supplier from responsibility for errors or deviations from the contract documents			
By	Kwizera Josephat	Date	12/3/2024

STAMPS:

SUBMITTAL REVIEW

THIS REVIEW IS FOR GENERAL COMPLIANCE WITH THE DESIGN INTENT OF THE CONTRACT DOCUMENTS. ALL COORDINATION OF THE WORK AND STRICT COMPLIANCE WITH THE CONTRACT DOCUMENTS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILTIY FOR THE SUITABLITY OF ANY SUBSTITUTE MATERIALS AS DEPICTED IN THIS SUBMITTAL

	REVIEWED
✓	REVIEWED AS NOTED
	REVISE AND RESUBMIT
	REJECTED

BARRETT, WOODYARD, & ASSOCIATES, INC.
BY: AMR DATE: 12/05/24

Sincerely,

Kwizera Josephat
Swinerton Builders

Print Date: 12/3/2024 10:56 AM

SCOPE OF WORK

STAR LIFE SAFETY SHALL INSTALL A NEW ADDRESSABLE FIRE ALARM SYSTEM. THE ADDRESSABLE FIRE ALARM SYSTEM WILL HAVE VOICE COMMUNICATION IN THE USE OF HORN/STROBE NOTIFICATION DEVICES. SIGNAL LINE CIRCUITS FOR INITIATING DEVICES WILL ALSO BE INSTALLED. INSTALLATION OF ALL DEVICES SHALL MEET LOCAL AHJ & NFPA REQUIREMENTS.

SYSTEM INFORMATION:

SYSTEM TYPE: SIEMENS ADDRESSABLE FIRE ALARM SYSTEM
NOTIFICATION CIRCUIT: [4 CLASS "B" CIRCUIT]
SLC CIRCUIT: [1 CLASS "B" CIRCUIT]

BUILDING INFORMATION:

BUILDING STORIES: [1 STORY BUILDING]
BUILDING SQUARE FOOTAGE: [22,725 S.F.]

FIRE ALARM LEGEND

SYMBOL	DESCRIPTION	MAN.	MODEL NO.	QTY.
FACP	FIRE ALARM CONTROL PANEL	SIEMENS	FC922	1
FCPS	FIELD CHARGING POWER SUPPLY	SIEMENS	PAD-5-6A	1
FAA	FIRE ALARM REMOTE ANNUNCIATOR	SIEMENS	FT2015-U3	1
F	PULL STATION [DUAL ACTION]	SIEMENS	XMS-D	9
S P	PHOTOELECTRIC SMOKE DETECTOR W/ MOUNTING BASE	SIEMENS	OP921 W/DB-11	3
Xx C	HORN STROBE [CEILING MOUNTED] [RED] [FIRE] SEE FLOOR PLAN FOR CANDELA RATING	SIEMENS	SL2HSCR-F	33
Xx C	STROBE [CEILING MOUNTED] [RED] [FIRE] SEE FLOOR PLAN FOR CANDELA RATING	SIEMENS	SL2SCR-F	13
SP1	SURGE PROTECTOR [120V] [FOR USE WITH PRIMARY/SECONDARY CONTROLS]	DITEK	DTK-120SRD	2
	END OF LINE RESISTOR	F.B.O.	F.B.O.	--
F.B.O.	FURNISHED BY OTHERS	---	---	--

REVISION LEGEND

PAGE #	DESCRIPTION
FA-001	FIRE ALARM SCOPE OF WORK, LEGEND, MATRIX & RISER DIAGRAM
FA-002	FIRE ALARM FLOOR PLAN
FA-003	FIRE ALARM DEVICE WIRING DETAILS
FA-004	FIRE ALARM CONTROL PANEL WIRING DIAGRAM

FIRE ALARM NOTES

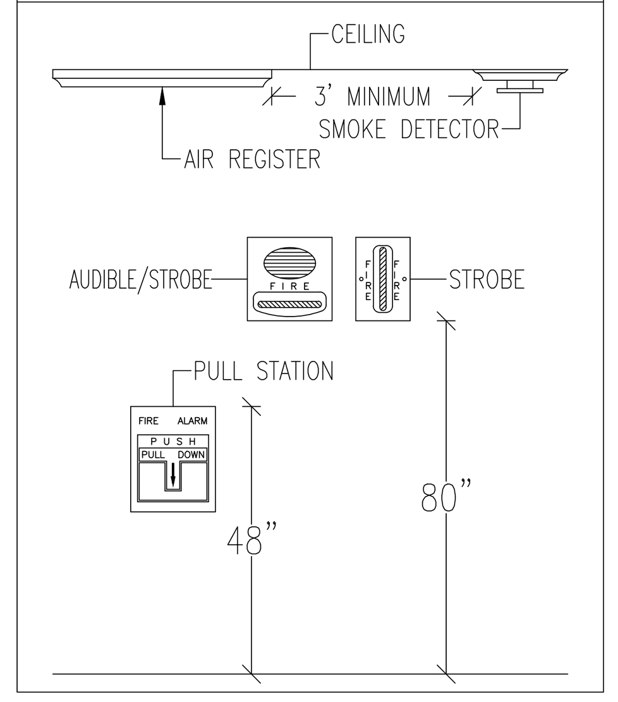
FACP & ANNUNCIATOR INFORMATION
1. THE FIRE ALARM SYSTEM SHALL BE A NEW ADDRESSABLE SYSTEM.
2. THE FIRE ALARM CONTROL PANEL (FACP) SHALL BE LOCATED IN THE BACK OF TRUCK BAY AREA.
3. ALL ALARMS SHALL BE TRANSMITTED BY A UL LISTED COMMUNICATOR TO UL LISTED CENTRAL STATION.
4. REMOTE ANNUNCIATOR SHALL BE READABLE AND VISIBLE FROM OUTSIDE THE BUILDING AND LOCATED AT THE MAIN ENTRANCE.

SPRINKLER INFORMATION
1. ENTIRE BUILDING SHALL BE PROTECTED BY A SPRINKLER SYSTEM.
2. SPRINKLER SYSTEM SHALL BE MONITORED VIA WATERFLOW & TAMPER SWITCH.

INITIATING DEVICES
1. ALL EQUIPMENT SHALL BE INSTALLED IN COMPLIANCE WITH ALL LISTED DISTANCES, LOCAL ORDINANCES AND NFPA-72 RECOMMENDATIONS.
2. ALL MANUAL PULL STATIONS SHALL BE MOUNTED 48-INCHES FROM FINISHED FLOOR TO THE TOP OF THE DEVICE.

NOTIFICATION DEVICES
1. ALL AUDIBLE/STROBE DEVICES SHALL HAVE A TEMPORAL-3 CODE.
2. ALL STROBE DEVICES SHALL REMAIN ACTIVE AFTER SILENCE FUNCTION OCCURS.
3. ALL AUDIBLE/STROBE AND STROBE DEVICES SHALL BE MOUNTED 80-INCHES FROM THE FINISHED FLOOR TO THE BOTTOM OF THE DEVICE.

TYPICAL DEVICE LOCATIONS



WIRE LEGEND

SYMBOL	WIRE DESCRIPTION	TYPE
A	16-2 TWISTED / NON-SHIELDED	FPLP
B	14-2 NON-SHIELDED	FPLP
C	12-2 NON-SHIELDED	FPLP
D	16-2 TWISTED / SHEILDED	FPLP

FIRE ALARM SYSTEM MATRIX

BUILDING SYSTEM OUTPUTS (columns 1–16); CENTRAL COMM (columns 17–21)

	ACTIVATE COMMON ALARM SIGNAL INDICATOR	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTIVATE AUDIBLE SUPERVISORY INDICATOR	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR	ACTIVATE AUDIBLE TROUBLE SIGNAL	ACTIVATE GENERAL EVACUATION SIGNAL	DISPLAY CHANGE OF STATUS	ACTIVATE EXTERNAL HORNS/STROBES	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION	RETURN ELEVATOR TO ALTERNATE FLOOR	RETURN ELEVATOR TO FIRST FLOOR	SHUNT TRIP AFTER ELEVATOR REACHES DESIGNATED FLOOR	SHUT DOWN RESPECTIVE HVAC	SHOW CHANGE OF STATUES ON AUNNUNICATOR	SHOW CHANGE OF STATUS ON CENTRAL PANEL	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION
MANUAL FIRE ALARM PULL BOXES	X	X					X	X	X	X							X	X	X		
BUILDING SMOKE DETECTOR	X	X					X	X	X	X							X	X	X		
DUCT SMOKE DETECTOR			X	X				X			X					X	X	X		X	
SPRINKLER WATER FLOW	X	X					X	X	X	X							X	X	X		
SPRINKLER TAMPER			X	X				X			X						X	X		X	
ELEV. EQ. ROOM SMOKE DETECTOR	X	X					X	X	X	X				X			X	X	X		
ELEV. EQ. ROOM HEAT DETECTOR	X	X					X	X	X	X				X	X		X	X	X		
ELEV. SHAFT HEAT DETECTORS	X	X					X	X	X	X					X		X	X	X		
1ST FLOOR ELEV. LOBBY SMOKE DETECTOR	X	X					X	X	X	X			X				X	X	X		
UPPER FLOOR ELEV. LOBBY SMOKE DETECTOR	X	X					X	X	X	X				X			X	X	X		
HOOD SUPPRESSION SYSTEM	X	X					X	X	X	X							X	X	X		
NOTIFICATION APPLIANCE CIRCUIT SHORT					X	X		X				X					X	X			X
OPEN CIRCUIT					X	X		X				X					X	X			X
GROUND FAULT					X	X		X				X					X	X			X
FIRE ALARM AC POWER FAILURE					X	X		X				X					X	X			X
FIRE ALARM SYSTEM LOW BATTERY					X	X		X				X					X	X			X

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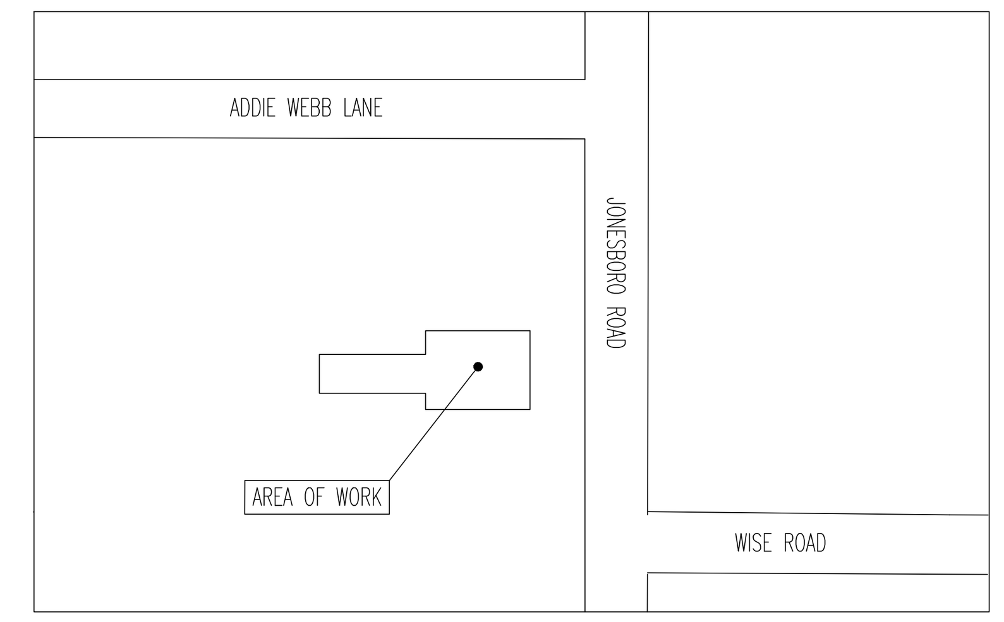
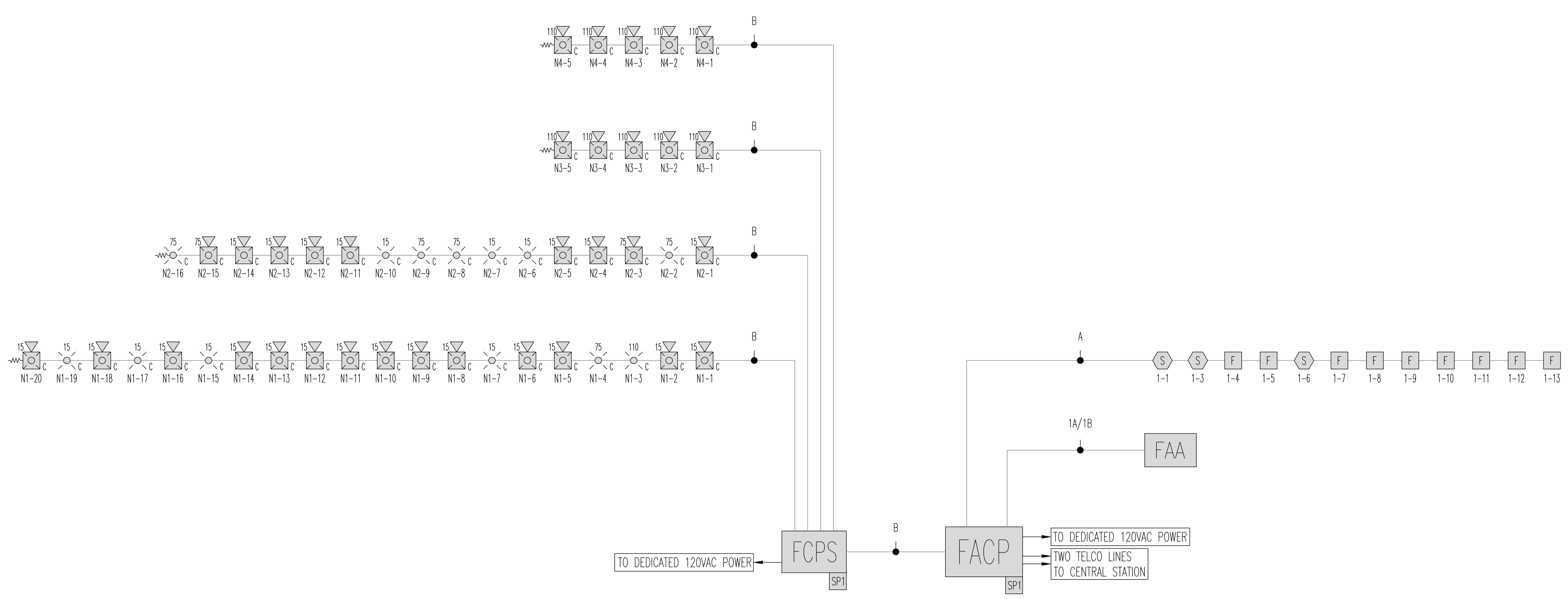
1000 N. MAIN ST., STE. 201
FUQUAY VARINA, N.C. 27526
Ph. 919.346.4630
NC LICENSE #: SP.FA/LV.31726



SITE PLAN
SCALE: N.T.S.



RISER DIAGRAM
FIRE ALARM SYSTEM
SCALE: N.T.S.

DATE	DESCRIPTION	REVISION
11.25.2024	ORIGINAL RELEASE	A

PROJECT: DUNN OPERATIONS CENTER – OPERATIONS BUILDING
1269 JONESBORO RD
HARNETT COUNTY
N.C. 28334

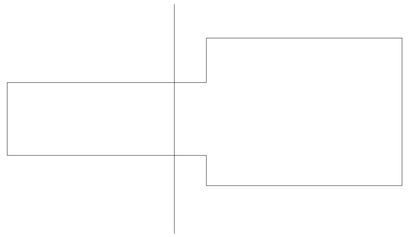
FLOOR NUMBER: OPERATIONS BUILDING

DRAWING TITLE: FIRE ALARM NOTES, LEGEND & RISER DIAGRAM

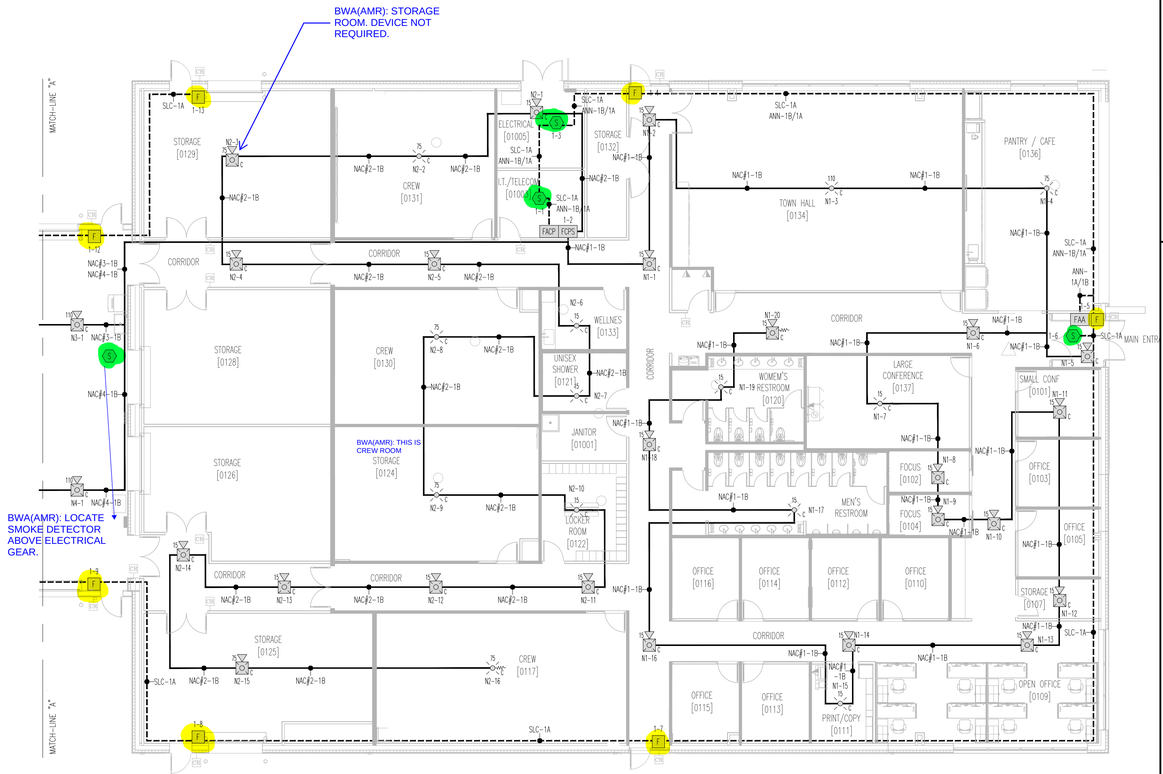
SEAL & SIGNATURE:

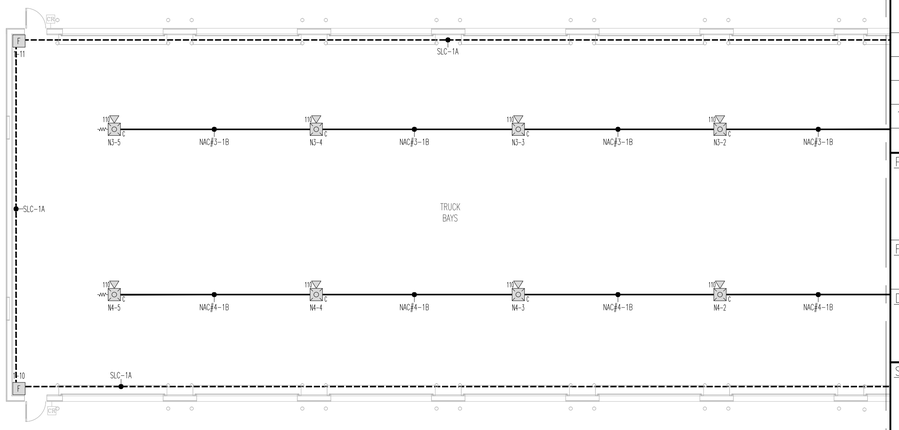
SHEET #: 1 OF 4
DRAWN BY: M.H.
CHECKED BY: M.H.
WO#:
SCALE: AS NOTED
CONTACT:
DRAWING NO: FA-001

PLOT DATE / TIME: 11/26/2024 4:28 PM
LAST SAVE DATE / TIME: Tuesday, November 26, 2024 4:09:45 PM



FLOOR PLAN MATCHLINE
SCALE: N.T.S.





GROUND FLOOR
FIRE ALARM FLOOR PLAN SCALE: 3/32=1'-0"

PLOT DATE / TIME: 11/26/2024 4:29 PM
LAST SAVE DATE / TIME: Tuesday, November 26, 2024 4:09:45 PM

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NC LICENSE #: SP.FA/LV.31726

DATE	DESCRIPTION	REVISION
11.25.2024	ORIGINAL RELEASE	A

PROJECT: DUNN OPERATIONS CENTER – OPERATIONS BUILDING
1269 JONESBORO RD
HARNETT COUNTY
N.C. 28334

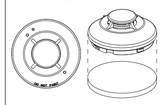
FLOOR NUMBER: OPERATIONS BUILDING

DRAWING TITLE: FIRE ALARM FLOOR PLAN
GROUND FLOOR

SEAL & SIGNATURE:

SHEET #:	2 OF 4
DRAWN BY:	M.H.
CHECKED BY:	M.H.
WO#:	
SCALE:	AS NOTED
CONTACT:	
DRAWING NO:	FA-002

FIGURE 1: MOUNTING/INSTALLATION OF DETECTOR



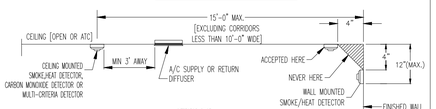
DETECTOR MOUNTING:
1. TO ENSURE PROPER INSTALLATION OF THE DETECTOR HEAD INTO THE BASE, BE SURE THE WIRES ARE PROPERLY DRESSED AT INSTALLATION.
2. POSITION ALL WIRES FLAT AGAINST THE BASE.
3. TAKE UP ALL SLACK IN THE OUTLET BOX.

DETECTOR INSTALLATION:
1. ROTATE DETECTOR COUNTERCLOCKWISE WHILE GENTLY PRESSING ON IT UNTIL THE DETECTOR SEATS FULLY INTO THE BASE.
2. THEN ROTATE THE DETECTOR CLOCKWISE UNTIL UNTIL IT STOPS AND LOCKS IN PLACE. INSERT OPTIONAL LOCKING SCREW (ORDER MODEL LK-11).

TABLE 1: CONDITIONS/DETECTOR STATUS

FLASH COLOR	CONDITION	FLASH INT IN SEC.
GREEN	NORMAL SUPERVISORY OPERATION, SMOKE SENSITIVITY IS WITHIN RATED LIMITS.	10
YELLOW	DETECTOR IS IN TROUBLE AND NEEDS REPLACEMENT.	4
RED	ALARM	1
NO FLASH	DETECTOR IS NOT POWERED, OR REPLACEMENT IS NEEDED.	---
LED CAN BE TURNED OFF, PLEASE FOLLOW THE CORRESPONDING DESCRIPTION OF THE PANEL USED.		

FIGURE 2: ACCEPTABLE PLACEMENT OF DETECTORS



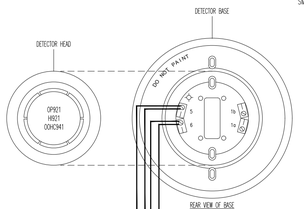
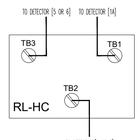


TABLE 2: DETECTOR TYPES & REMOTE LAMPS

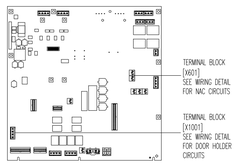
MODEL#	DETECTOR TYPE
OP921	PHOTOELECTRIC SMOKE DETECTOR
OH921	FIXED TEMP HEAT DETECTOR
OXH341	MULTI-CRITERIA DETECTOR
RL-HC	OPTIONAL REMOTE LAMP [CEILING]
RL-HW	OPTIONAL REMOTE LAMP [WALL]

FIGURE 3: OPTIONAL REMOTE LAMP



SIEMENS
DETECTOR W/ STANDARD BASE WIRING DIAGRAM
MODEL#: SEE TABLE 2
FOR ADDITIONAL INFORMATION SEE PRODUCT'S INSTALLATION MANUAL

FIGURE 1: CIRCUIT BOARD LOCATIONS FOR NAC AND DOOR HOLDER TERMINALS



WIRING: [SLC LOOP] [INITIATING DEVICES]

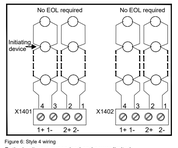


Figure 6: Style 4 wiring
Both circuits are supervised and power limited.

WIRING: ANNUNCIATOR [RS485 MODULE]

WIRING: NOTIFICATION APPLIANCE CIRCUITS

The following wiring diagrams show how to connect notification devices to the circuit, either as class A (style Z) or class B (style Y) circuit. For class A, no end-of-line resistor is needed. It is built into the circuit.

To ensure proper functioning, the jumpers must be set correctly for class A/B selection.

In the diagrams below, polarity is shown in activated condition.
Notification appliance circuit supervised and power limited.

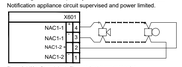


Figure 3: X601: Class A (style Z) supervised output connection

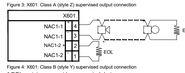


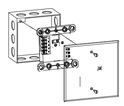
Figure 4: X601: Class B (style Y) supervised output connection
* EOL resistance must be connected during non-use.
EOL resistance: 2.4 KΩ, 0.5 W

1.5.2 X601 terminal block – NAC 1 class A / NAC 1-1 class B / NAC 1-2 class B

Pin	Designation	Description
4	NAC1-1 (+)	Positive feed for notification appliances for NAC 1 class A or NAC 1-1 class B
3	NAC1-1 (-)	Return feed for notification appliances for NAC 1 class A or NAC 1-1 class B
2	NAC1-2 (+)	Positive feed for notification appliances for NAC 1 class A or NAC 1-2 class B
1	NAC1-2 (-)	Return feed for notification appliances for NAC 1 class A or NAC 1-2 class B

SIEMENS
FIRE ALARM CONTROL PANEL WIRING DIAGRAM
MODEL#: FC922
FOR ADDITIONAL INFORMATION SEE PRODUCT'S INSTALLATION MANUAL

FIGURE 2: MOUNTING THE XTRI-S MODULE



1. THE XTRI-S MOUNTS DIRECTLY INTO A USER SUPPLIED DOUBLE GANG BOX OR 4 INCH SWITCHBOX.
2. FASTEN THE MODULE TO THE SWITCHBOX WITH A SWITCHPLATE USING THE 2 SCREWS PROVIDED.
3. A RED LED WILL BLINK TO INDICATE AN OFF-NORMAL INPUT SWITCH POSITION AND/OR AN INTERNAL RELAY TRANSFER.
4. PROGRAM THE XTRI BEFORE FASTENING THE SWITCHPLATE TO THE UNIT.

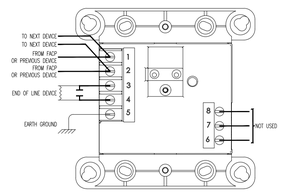
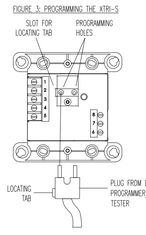


FIGURE 3: PROGRAMMING THE XTRI-S



SIEMENS
MONITOR MODULE WIRING DIAGRAM
MODEL#: XTRI-S
FOR ADDITIONAL INFORMATION SEE PRODUCT'S INSTALLATION MANUAL

FIGURE 1: OPENING FOR PROGRAMMING POINTS

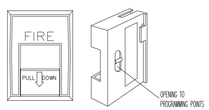


FIGURE 2: MOUNTING OPTIONS [HMS-M]

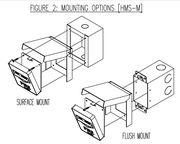


FIGURE 2: MOUNTING OPTIONS [HMS-S & HMS-D]

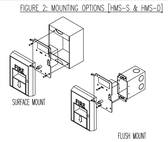
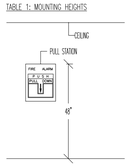


TABLE 1: MOUNTING HEIGHTS



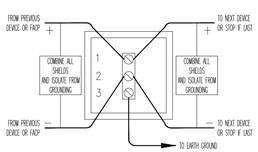


TABLE 2: PULL STATION TYPES

MODEL#	PULL STATION TYPE
XMS-M	SINGLE ACTION [METAL]
XMS-S	SINGLE ACTION [PLASTIC]
XMS-D	DOUBLE ACTION [PLASTIC]

SIEMENS
PULL STATION WIRING DIAGRAM
MODEL#: SEE TABLE 2
FOR ADDITIONAL INFORMATION SEE PRODUCT'S INSTALLATION MANUAL

FIGURE 1: WALL MOUNTED DEVICE

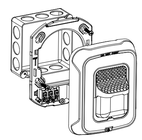
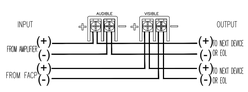


FIGURE 2: CEILING MOUNTEDDEVICE

FIGURE 3: TERMINAL DETAIL



SIEMENS
STROBE AND HORN/STROBE (TYP) WIRING DIAGRAM
MODEL#: SI2 SERIES
FOR ADDITIONAL INFORMATION SEE PRODUCT'S INSTALLATION MANUAL

Star Life Safety Inc.
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1000 N. MAIN ST., STE. 201
FUQUAY VARINA, N.C. 27526
Ph. 919.346.4630
NC LICENSE #: SP.FA/LV.31726

DATE	DESCRIPTION	REVISION
11.25.2024	ORIGINAL RELEASE	A

PROJECT: DUNN OPERATIONS CENTER – OPERATIONS BUILDING
1269 JONESBORO RD
HARNETT COUNTY
N.C. 28334

FLOOR NUMBER: OPERATIONS BUILDING

DRAWING TITLE: WIRING DETAILS
FIRE ALARM DEVICES

SEAL & SIGNATURE:

SHEET #: 3 OF 4
DRAWN BY: M.H.
CHECKED BY: M.H.
WO#:
SCALE: AS NOTED
CONTACT:

DRAWING NO: FA-003

PLOT DATE / TIME: 11/26/2024 4:28 PM
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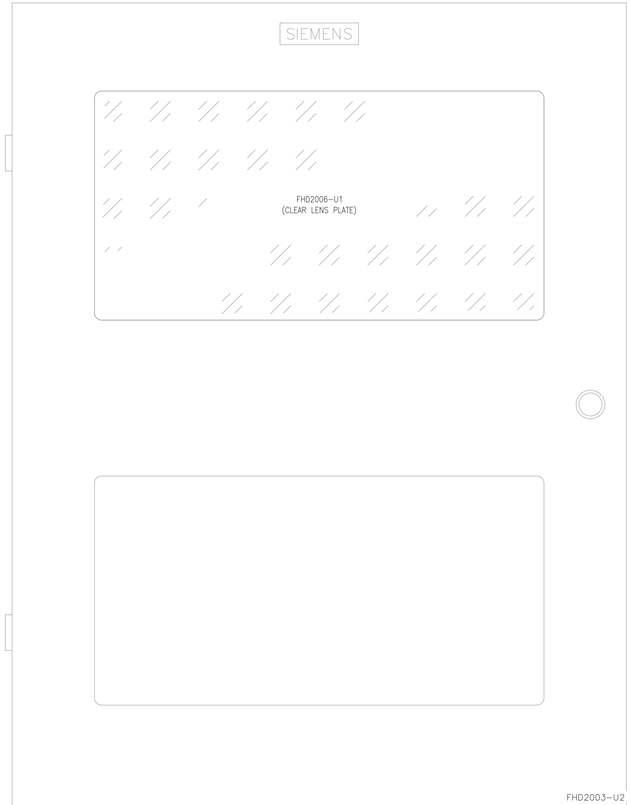

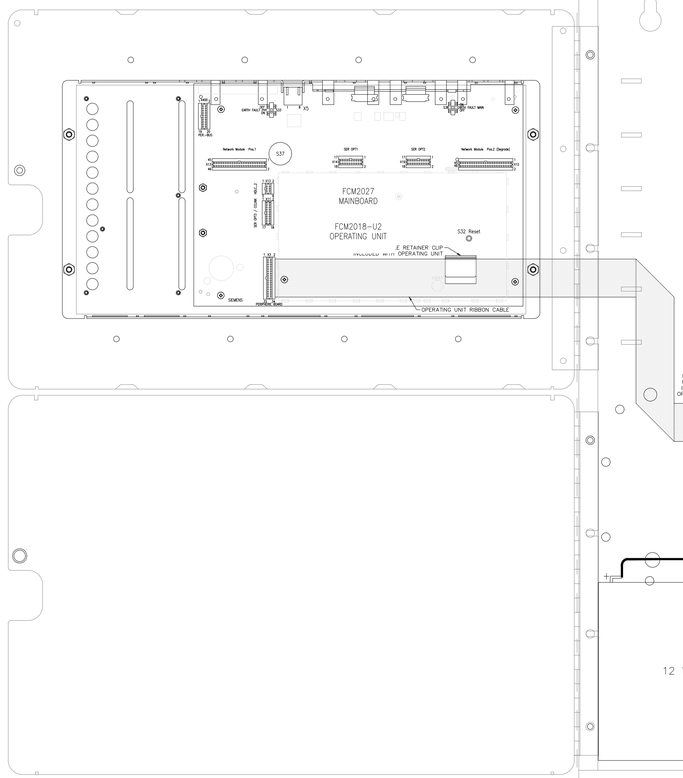

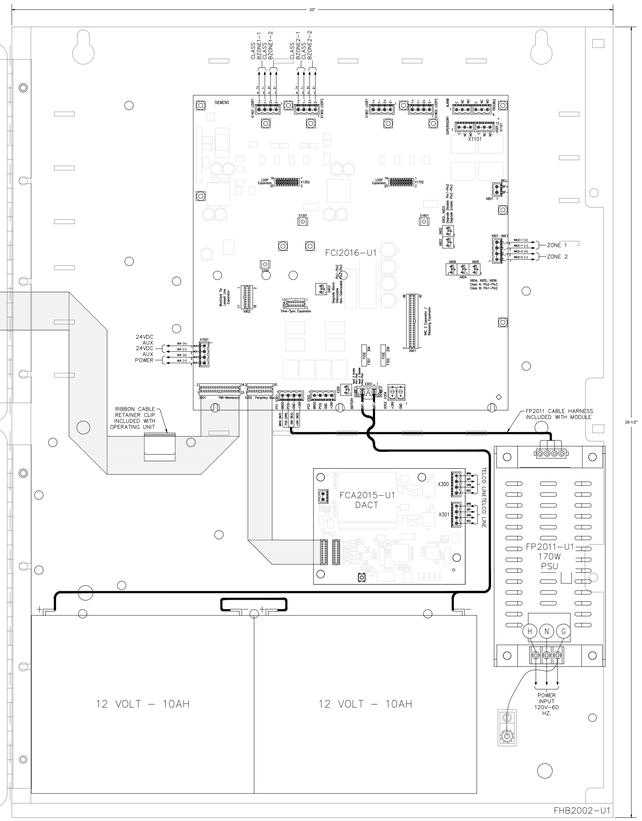

PANEL DETAIL
FIRE ALARM SYSTEM SCALE: N.T.S.

PLOT DATE / TIME: 11/26/2024 4:28 PM
LAST SAVE DATE / TIME: Tuesday, November 26, 2024 4:09:45 PM

Star Life Safety Inc.
Protection. More Ways Than One.

1000 N. MAIN ST., STE. 201
FUQUAY VARINA, N.C. 27526
Ph. 919.346.4630
NC LICENSE #: SP.FA/LV.31726

DATE	DESCRIPTION	REVISION
11.25.2024	ORIGINAL RELEASE	A

PROJECT: DUNN OPERATIONS CENTER – OPERATIONS BUILDING
1269 JONESBORO RD
HARNETT COUNTY
N.C. 28334

FLOOR NUMBER: OPERATIONS BUILDING

DRAWING TITLE: PANEL WIRING DETAIL

SEAL & SIGNATURE:

SHEET #:	4 OF 4
DRAWN BY:	M.H.
CHECKED BY:	M.H.
WO#:	
SCALE:	AS NOTED
CONTACT:	
DRAWING NO:	FA-004

BATTERY CALCULATIONS

1269 JONESBORO ROAD
HARNETT COUNTY, N.C. 28334

FIRE ALARM CONTROL PANEL							
DESCRIPTION	**MAN.**	**MODEL NO.**	**QTY.**	**SUPV. CURRENT (A)**		**ALARM CURRENT (A)**	
				PER UNIT	**EXTENDED**	**PER UNIT**	**EXTENDED**
MAIN CIRCUIT BOARD	SIEMENS	FC922	1	0.105000	0.105000	0.105000	0.105000
PERIPHERAL DEVICES							
REMOTE ANNUNCIATOR	SIEMENS	FT2015-U3	1	0.089000	0.089000	0.110000	0.110000
SMOKE DETECTOR W/ STANDARD BASE	SIEMENS	OP921 W/DB-11	4	0.000280	0.001120	0.000280	0.001120
PULL STATION	SIEMENS	XMS-D	9	0.001400	0.012600	0.001400	0.012600
CURRENT SUBTOTAL					0.207720		0.228720
TIME (HOURS)				X	24.00000	X	0.083333
AMP HOUR SUBTOTAL					0.000000	+	4.985280
TOTAL AMP HOURS							4.985280
20% DETERIORATION FACTOR						+	0.997056
TOTAL AMP HOURS REQUIRED							5.982336
TWO 10 BATTERIES REQUIRED							

VOLTAGE DROP CALCULATION

FACP #	0	DGP / XPDR #	0
POWER SUPPLY #	1	CIRCUIT #	1

NOMINAL VOLTAGE:	20.4
MINIMUM VOLTAGE:	16

DUNN OPERATIONS CENTER - OPERATIONS BUILDING
1269 JONESBORO ROAD
HARNETT COUNTY, N.C. 28334

END OF LINE AND LOAD CENTERING METHODS USE ONLY THE WIRE GAUGE FOR THE FIRST DEVICE TO SOURCE

1 8 - 14 AWG = SOLID CONDUCTORS / 12 - 10 AWG = STRANDED CONDUCTORS

		GAUGE	OHM'S
DISTANCE FROM SOURCE TO 1ST DEVICE:	35	14	3.07
WIRE GAUGE FOR BALANCE OF CIRCUIT:		14	3.07

STANDARD WIRE RESITANCE IN OHMS PER 1000 FEET				
18 = 7.77	16 = 4.89	14 = 3.07	12 = 1.98	10 = 1.24

DEVICE NUMBER	DEVICE DESCRIPTION	DEVICE MFR.	MODEL NUMBER	DEVICE CURRENT	DISTANCE FROM LAST DEVCIE	VOLTAGE AT DEVCIE	VLTG. DROP FROM SOURCE	VOLTAGE % DROP
1	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	35	20.26	0.141	0.69%
2	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	30	20.14	0.255	1.25%
3	STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2S(W/R)-F	0.086	35	20.02	0.383	1.88%
4	STROBE [CEILING MOUNTED] [75CD]	SIEMENS	SL2S(W/R)-F	0.060	40	19.89	0.508	2.49%
5	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	40	19.78	0.618	3.03%
6	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	25	19.72	0.682	3.34%
7	STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2S(W/R)-F	0.022	30	19.65	0.754	3.69%
8	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	25	19.59	0.810	3.97%
9	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	15	19.56	0.841	4.12%
10	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	15	19.53	0.869	4.26%
11	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	35	19.47	0.928	4.55%
12	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	45	19.40	0.996	4.88%
13	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	20	19.38	1.023	5.01%
14	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	30	19.34	1.057	5.18%
15	STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2S(W/R)-F	0.022	20	19.32	1.076	5.27%
16	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	50	19.28	1.117	5.48%
17	STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2S(W/R)-F	0.022	55	19.25	1.152	5.65%
18	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	45	19.22	1.175	5.76%
19	STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2S(W/R)-F	0.022	35	19.21	1.186	5.81%
20	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	40	19.21	1.194	5.85%
			TOTAL:	0.654	665	END OF LINE VOLTAGE:		19.21

POINT TO POINT METHOD						
CURRENT	DISTANCE	VOLTAGE DROP	END OF LINE VOLTAGE	PERCENTAGE DROP	CIRCUIT WITHIN LIMITS	
0.654	665	1.194	19.21	5.85%		YES

END OF LINE METHOD						
CURRENT	DISTANCE	VOLTAGE DROP	END OF LINE VOLTAGE	PERCENTAGE DROP	CIRCUIT WITHIN LIMITS	
0.654	665	2.670	17.73	13.09%		YES

VOLTAGE DROP CALCULATION

FACP #	0	DGP / XPDR #	0
POWER SUPPLY #	1	CIRCUIT #	2

NOMINAL VOLTAGE:	20.4
MINIMUM VOLTAGE:	16

DUNN OPERATIONS CENTER - OPERATIONS BUILDING
1269 JONESBORO ROAD
HARNETT COUNTY, N.C. 28334

END OF LINE AND LOAD CENTERING METHODS USE ONLY THE WIRE GAUGE FOR THE FIRST DEVICE TO SOURCE

1 8 - 14 AWG = SOLID CONDUCTORS / 12 - 10 AWG = STRANDED CONDUCTORS

		GAUGE	OHM'S
DISTANCE FROM SOURCE TO 1ST DEVICE:	45	14	3.07
WIRE GAUGE FOR BALANCE OF CIRCUIT:		14	3.07

STANDARD WIRE RESITANCE IN OHMS PER 1000 FEET				
18 = 7.77	16 = 4.89	14 = 3.07	12 = 1.98	10 = 1.24

DEVICE NUMBER	DEVICE DESCRIPTION	DEVICE MFR.	MODEL NUMBER	DEVICE CURRENT	DISTANCE FROM LAST DEVCIE	VOLTAGE AT DEVCIE	VLTG. DROP FROM SOURCE	VOLTAGE % DROP
1	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	45	20.24	0.162	0.79%
2	STROBE [CEILING MOUNTED] [75CD]	SIEMENS	SL2S(W/R)-F	0.060	35	20.12	0.281	1.38%
3	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	75	19.89	0.510	2.50%
4	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	45	19.76	0.639	3.13%
5	STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2S(W/R)-F	0.022	50	19.63	0.772	3.79%
6	STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2S(W/R)-F	0.022	30	19.55	0.849	4.16%
7	STROBE [CEILING MOUNTED] [75CD]	SIEMENS	SL2S(W/R)-F	0.060	40	19.46	0.945	4.63%
8	STROBE [CEILING MOUNTED] [75CD]	SIEMENS	SL2S(W/R)-F	0.060	40	19.37	1.026	5.03%
9	STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2S(W/R)-F	0.022	40	19.31	1.093	5.36%
10	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	35	19.25	1.147	5.62%
11	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	35	19.21	1.194	5.85%
12	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	35	19.16	1.235	6.05%
13	HORN STROBE [CEILING MOUNTED] [15CD]	SIEMENS	SL2HSC(W/R)-F	0.030	30	19.14	1.265	6.20%
14	HORN STROBE [CEILING MOUNTED] [75CD]	SIEMENS	SL2HSC(W/R)-F	0.070	35	19.11	1.293	6.34%
15	STROBE [CEILING MOUNTED] [75CD]	SIEMENS	SL2S(W/R)-F	0.060	50	19.09	1.311	6.43%
			TOTAL:	0.586	620	END OF LINE VOLTAGE:		19.09

POINT TO POINT METHOD

CURRENT	DISTANCE	VOLTAGE DROP	END OF LINE VOLTAGE	PERCENTAGE DROP	CIRCUIT WITHIN LIMITS	
0.586	620	1.311	19.09	6.43%		YES

END OF LINE METHOD

CURRENT	DISTANCE	VOLTAGE DROP	END OF LINE VOLTAGE	PERCENTAGE DROP	CIRCUIT WITHIN LIMITS	
0.586	620	2.231	18.17	10.94%		YES

VOLTAGE DROP CALCULATION

FACP #	0	DGP / XPDR #	0
POWER SUPPLY #	1	CIRCUIT #	3

DUNN OPERATIONS CENTER - OPERATIONS BUILDING
1269 JONESBORO ROAD
HARNETT COUNTY, N.C. 28334

NOMINAL VOLTAGE:	20.4
MINIMUM VOLTAGE:	16

END OF LINE AND LOAD CENTERING METHODS USE ONLY THE WIRE GAUGE FOR THE FIRST DEVICE TO SOURCE

1 8 - 14 AWG = SOLID CONDUCTORS / 12 - 10 AWG = STRANDED CONDUCTORS

		GAUGE	OHM'S
DISTANCE FROM SOURCE TO 1ST DEVICE:	125	14	3.07
WIRE GAUGE FOR BALANCE OF CIRCUIT:		14	3.07

STANDARD WIRE RESITANCE IN OHMS PER 1000 FEET				
18 = 7.77	16 = 4.89	14 = 3.07	12 = 1.98	10 = 1.24

DEVICE NUMBER	DEVICE DESCRIPTION	DEVICE MFR	MODEL NUMBER	DEVICE CURRENT	DISTANCE FROM LAST DEVCIE	VOLTAGE AT DEVCIE	VLTG. DROP FROM SOURCE	VOLTAGE % DROP
1	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	125	20.01	0.391	1.92%
2	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	45	19.90	0.504	2.47%
3	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	45	19.81	0.589	2.89%
4	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	45	19.75	0.645	3.16%
5	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	45	19.73	0.673	3.30%
			TOTAL:	0.510	305	END OF LINE VOLTAGE:		19.73

POINT TO POINT METHOD

CURRENT	DISTANCE	VOLTAGE DROP	END OF LINE VOLTAGE	PERCENTAGE DROP	CIRCUIT WITHIN LIMITS	
0.510	305	0.673	19.73	3.30%		YES

END OF LINE METHOD

CURRENT	DISTANCE	VOLTAGE DROP	END OF LINE VOLTAGE	PERCENTAGE DROP	CIRCUIT WITHIN LIMITS	
0.510	305	0.955	19.44	4.68%		YES

VOLTAGE DROP CALCULATION

FACP #	0	DGP / XPDR #	0
POWER SUPPLY #	1	CIRCUIT #	4

DUNN OPERATIONS CENTER - OPERATIONS BUILDING
1269 JONESBORO ROAD
HARNETT COUNTY, N.C. 28334

NOMINAL VOLTAGE:	20.4
MINIMUM VOLTAGE:	16

END OF LINE AND LOAD CENTERING METHODS USE ONLY THE WIRE GAUGE FOR THE FIRST DEVICE TO SOURCE

1 8 - 14 AWG = SOLID CONDUCTORS / 12 - 10 AWG = STRANDED CONDUCTORS

		GAUGE	OHM'S
DISTANCE FROM SOURCE TO 1ST DEVICE:	175	14	3.07
WIRE GAUGE FOR BALANCE OF CIRCUIT:		14	3.07

STANDARD WIRE RESITANCE IN OHMS PER 1000 FEET				
18 = 7.77	16 = 4.89	14 = 3.07	12 = 1.98	10 = 1.24

DEVICE NUMBER	DEVICE DESCRIPTION	DEVICE MFR	MODEL NUMBER	DEVICE CURRENT	DISTANCE FROM LAST DEVCIE	VOLTAGE AT DEVCIE	VLTG. DROP FROM SOURCE	VOLTAGE % DROP
1	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	175	19.85	0.548	2.69%
2	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	45	19.74	0.661	3.24%
3	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	45	19.65	0.745	3.65%
4	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	45	19.60	0.802	3.93%
5	HORN STROBE [CEILING MOUNTED] [110CD]	SIEMENS	SL2HSC(W/R)-F	0.102	45	19.57	0.830	4.07%
			TOTAL:	0.510	355	END OF LINE VOLTAGE:		19.57

POINT TO POINT METHOD						
CURRENT	DISTANCE	VOLTAGE DROP	END OF LINE VOLTAGE	PERCENTAGE DROP	CIRCUIT WITHIN LIMITS	
0.510	355	0.830	19.57	4.07%		YES

END OF LINE METHOD						
CURRENT	DISTANCE	VOLTAGE DROP	END OF LINE VOLTAGE	PERCENTAGE DROP	CIRCUIT WITHIN LIMITS	
0.510	355	1.112	19.29	5.45%		YES