

1020 NORTHWEST PRYOR ROAD
LEE'S SUMMIT, MO 64081

| CABLE AND WIRE LEGEND | | | |
|-----------------------|-----|------------------|---|
| LABEL | AWG | RESISTANCE (MFT) | DESCRIPTION |
| A | 18 | 7.77 | 18 AWG, 1 PAIR, SOLID, TWISTED, OVERALL JACKET (SLC - INITIATION) |
| B | 14 | 3.07 | 14 AWG, 1 PAIR, SOLID, OVERALL JACKET (NAC - SIGNAL/STROBE) |
| J | 18 | 7.77 | 18 AWG, 1 PAIR, SOLID, TWISTED, SHIELDED (DATA) |
| U | 18 | 7.77 | 18 AWG, 1 PAIR, SOLID, TWISTED, OVERALL JACKET (CONVENTIONAL INITIATING DEVICE) |
| 2U | 18 | 7.77 | 18 AWG, 2 PAIR, SOLID, TWISTED, OVERALL JACKET (CONVENTIONAL INITIATING DEVICE) |



INSTALLING CONTRACTOR WILL NEED TO PROVIDE ACCURATE AS-BUILT INFORMATION TO TECH ELECTRONICS. THIS SHALL INCLUDE ALL WIRING TYPE AND ROUTING INFORMATION FOR ALL ADDRESSABLE LOOP (SLC), HORN, SPEAKER AND STROBE (NAC) AND ZONE (IDC) CIRCUITS. THE AS-BUILT DRAWINGS SHALL SHOW THE EXACT QUANTITY AND PLACEMENT OF ALL DEVICES AND EACH EXACT DEVICE ADDRESS INSTALLED, IF APPLICABLE. ALL DELETED, ADDED AND CHANGES MUST BE SHOWN.

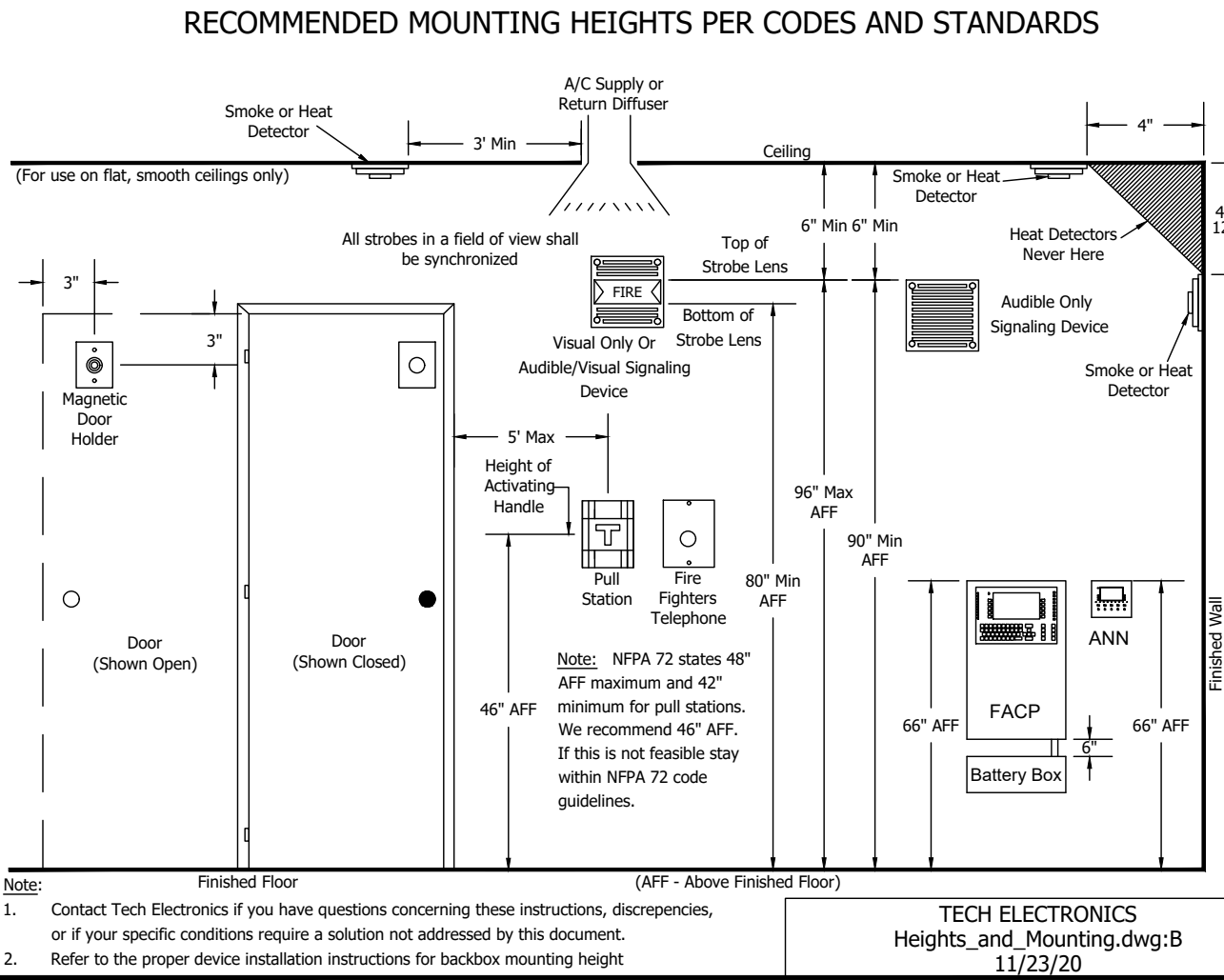
ALL 120VAC POWER SHALL BE NOTED WITH THE CIRCUIT BREAKER NUMBER, SIZE OF BREAKER AND THE LOCATION OF THE CIRCUIT BREAKER PANEL. THE CIRCUIT BREAKER MUST BE LOCKED.

ALL ABOVE INFORMATION IS REQUIRED BY AND SHALL BE PROVIDED PER NFPA 72. SEE CURRENTLY ENFORCED ORDINANCE IF NECESSARY.

[illegible]

- | | |
|-------------------------------------|-------------------------------------|
| AHJ - AUTHORITY HAVING JURISDICTION | FSD- FIRE/SMOKE DAMPER |
| DUC - DUCT DETECTOR | KB- KNOX BOX |
| DD - DOOR HOLDER | KK- KITCHEN HOOD |
| DUA- DWELLING UNIT ALARM | PIV- SPRINKLER POST INITIATOR VALVE |
| E- PSDIHD W/ ELEV INTERFACE | NT- NAC TRIGGER |
| ELEV1- PRIMARY ELEVATOR RECALL | RL- RETURN DUCT |
| ELEV2- ALTERNATE ELEVATOR RECALL | RD- RELOCATE |
| EST- ELEVATOR SHUNT TRIP | RTU- ROOF TOP UNIT |
| EX- EXISTING | SD- SUPPLY DUCT |
| FL- ELEVATOR FIREHAT | TS - TAMPER SWITCH |
| FL - FIELD LOCATE | LV - VERIFY LOCATION |
| FM- FLUSH MOUNT | WF - WATERFLOW |
| FGS- FIRE PLACE GAS SHUTOFF | WP- WEATHER PROOF |

1. INSTALLATION MUST COMPLY WITH ALL APPLICABLE FEDERAL, STATE, OR LOCAL LAWS, REGULATIONS, CODES, AND SPECIFICATIONS. THIS SYSTEM SHALL BE IN STRICT CONFORMANCE WITH THESE DRAWINGS; 2018 IBC/IFC ; NFPA 72 2016 EDITION; NFPA 70, 2017 EDITION; AND AHJ.
2. WHERE CONDUCTORS ARE RUN IN CONDUIT, USE ONLY APPROVED CABLE WITHIN RACEWAYS, PIPES OR CONDUITS. ALL SHIELDED WIRE MUST BE CONTINUOUS THROUGHOUT CIRCUIT. ALL SHIELDS SHALL BE ISOLATED FROM GROUND. ALL SHIELDS SHALL TERMINATE AT THE FIRE ALARM CONTROL PANEL (FACU) ONLY.
3. PER NFPA 72 2016, 17.7.1.1.1.1 - WHERE DETECTORS ARE INSTALLED FOR SIGNAL INITIATION DURING CONSTRUCTION, THEY SHALL BE CLEANED AND VERIFIED TO BE OPERATING IN ACCORDANCE WITH THE LISTED SENSITIVITY, OR THEY SHALL BE REPLACED PRIOR TO THE FINAL COMMISSIONING OF THE SYSTEM. WHERE DETECTORS ARE INSTALLED BUT NOT OPERATIONAL DURING CONSTRUCTION, THEY SHALL BE PROTECTED FROM CONSTRUCTION DEBRIS, DUST, DIRT, AND DAMAGE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND VERIFIED TO BE OPERATING IN ACCORDANCE WITH THE LISTED SENSITIVITY OR THEY SHALL BE REPLACED PRIOR TO THE FINAL COMMISSIONING OF THE SYSTEM. WHERE DETECTION IS NOT REQUIRED DURING CONSTRUCTION, DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER ALL OTHER CONSTRUCTION TRADES HAVE COMPLETED CLEANUP.
4. ALL FIRE ALARM SYSTEM WIRING SHALL BE CLEAR FROM SHORTS, OPENS AND GROUNDS.
5. NOTIFICATION CIRCUIT WIRE RUNS ARE CRITICAL. ANY INCREASE IN LENGTH OF WIRE MAY AFFECT CIRCUIT CONFIGURATIONS.





5720 Reeder Shawnee, Ks. 66203 (913)262-1772

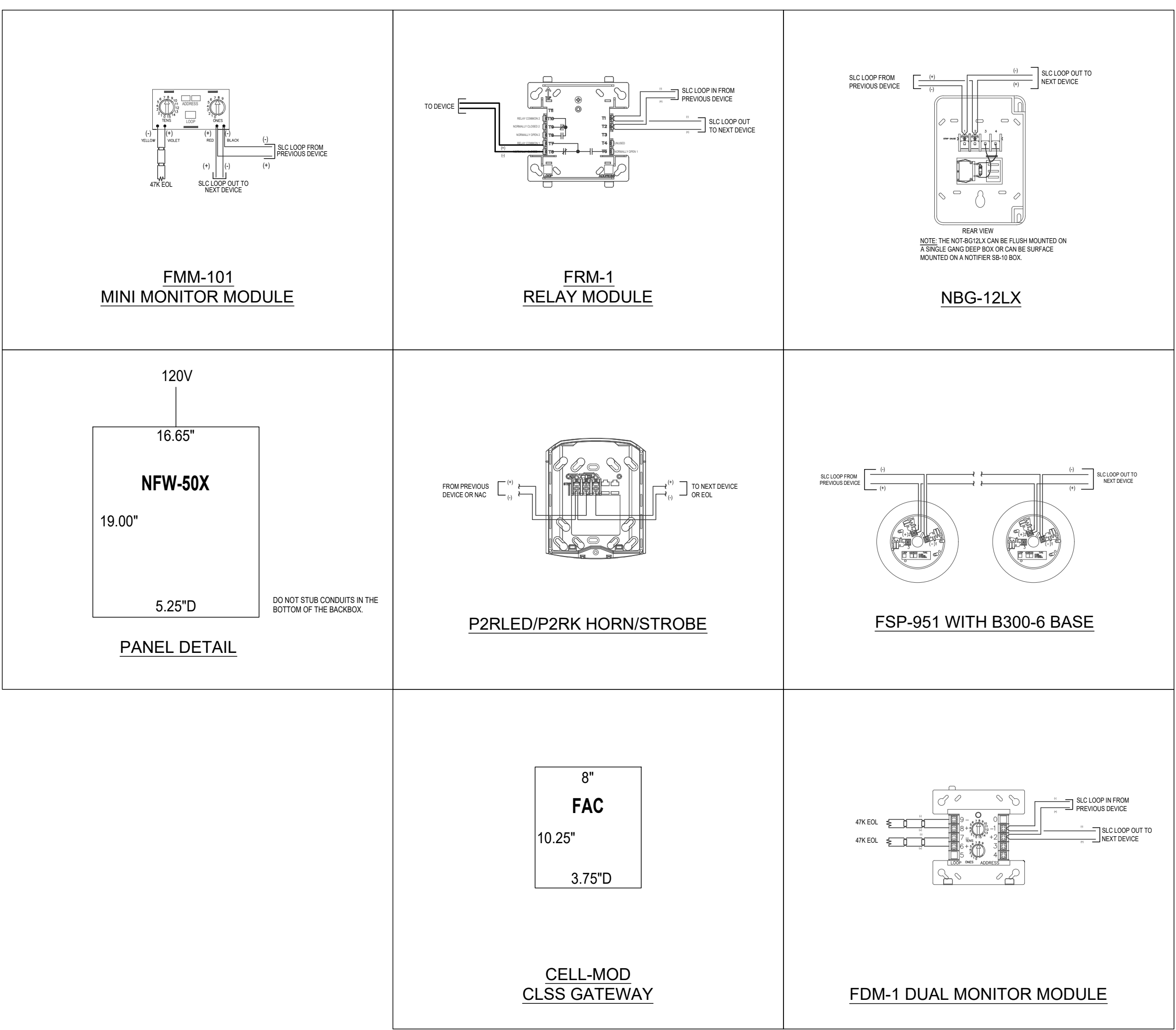


ISSUED FOR: CONSTRUCTION

| P1 N1 POINT-TO-POINT REPORT | | | | | | | CIRCUIT SETTINGS | | TOTALS | |
|---|----------|--------------------------------|--------------------|-----------------------|--------------------------|------------------------------|---|-------------------|----------------------------|----------------------|
| | | | | | | | Starting Calculation Voltage: | 20.4 | Max. Voltage Drop: | 0.2 |
| | | | | | | | Min. Operational Voltage: | 16 | End Of Line Voltage: | 20.2 |
| | | | | | | | Max. Circuit Current (A): | 2.5 | Voltage Drop Percent: | 0.99 % |
| | | | | | | | Wire Resistance (Ω/KFt): | 3.07 | Total Circuit Current (A): | 0.376 |
| | | | | | | | Total Circuit Length (Ft): | 158 | Spare Current (A): | 2.124 |
| | | | | | | | Total Circuit Resistance (Ω): | 0.972857 | Spare Current (A) Percent: | 84.96 % |
| Circuit Wiring Properties: 'B' TP1690 14 AWG, 14 AWG, 1 Pair, Solid, Overall Jacket (NAC - Signal/Strobe) | | | | | | | Distance measured using drawn segment lengths with 10.00 % additional length calculated | | | |
| Device Label | Part No. | Description | Device Current (A) | Remaining Current (A) | Dist. From Previous (Ft) | Resistance From Previous (Ω) | Voltage Drop From Previous | Voltage At Device | Total Voltage Drop | Voltage Drop Percent |
| P1-N1-01 | P2RLED | 2-Wire, Horn Strobe, Red 110cd | 0.094 | 0.376 | 18 | 0.108373 | 0.04 | 20.36 | 0.04 | 0.20 % |
| P1-N1-02 | P2RLED | 2-Wire, Horn Strobe, Red 110cd | 0.094 | 0.282 | 34 | 0.211063 | 0.06 | 20.3 | 0.1 | 0.49 % |
| P1-N1-03 | P2RLED | 2-Wire, Horn Strobe, Red 110cd | 0.094 | 0.188 | 68 | 0.417624 | 0.08 | 20.22 | 0.18 | 0.88 % |
| P1-N1-04 EOL 4.7k | P2RLED | 2-Wire, Horn Strobe, Red 110cd | 0.094 | 0.094 | 38 | 0.235827 | 0.02 | 20.2 | 0.2 | 0.99 % |
| Calculation Methods: | | | | | | | | | | |
| Resistance From Previous (Ω) = Wire Resistance (Ω/Ft) x 2 x Dist. From Previous (Ft) | | | | | | | | | | |
| Voltage Drop From Previous = Resistance From Previous (Ω) x Remaining Current (A) | | | | | | | | | | |

| P1 N2 POINT-TO-POINT REPORT | | | | | | | CIRCUIT SETTINGS | | TOTALS | |
|---|----------|---|--------------------|-----------------------|--------------------------|------------------------------|---|-------------------|----------------------------|----------------------|
| | | | | | | | Starting Calculation Voltage: | 20.4 | Max. Voltage Drop: | 0.03 |
| | | | | | | | Min. Operational Voltage: | 16 | End Of Line Voltage: | 20.37 |
| | | | | | | | Max. Circuit Current (A): | 2.5 | Voltage Drop Percent: | 0.16 % |
| | | | | | | | Wire Resistance (Ω/KFt): | 3.07 | Total Circuit Current (A): | 0.212 |
| | | | | | | | Total Circuit Length (Ft): | 25 | Spare Current (A): | 2.288 |
| | | | | | | | Total Circuit Resistance (Ω): | 0.155958 | Spare Current (A) Percent: | 91.52 % |
| Circuit Wiring Properties: 'B' TP1690 14 AWG, 14 AWG, 1 Pair, Solid, Overall Jacket (NAC - Signal/Strobe) | | | | | | | Distance measured using drawn segment lengths with 10.00 % additional length calculated | | | |
| Device Label | Part No. | Description | Device Current (A) | Remaining Current (A) | Dist. From Previous (Ft) | Resistance From Previous (Ω) | Voltage Drop From Previous | Voltage At Device | Total Voltage Drop | Voltage Drop Percent |
| P1-N2-01 EOL 4.7k | P2RK | 2-Wire Horn Strobe, Standard cd, Red, Outdoor 110cd | 0.212 | 0.212 | 25 | 0.155958 | 0.03 | 20.37 | 0.03 | 0.16 % |
| Calculation Methods: | | | | | | | | | | |
| Resistance From Previous (Ω) = Wire Resistance (Ω/Ft) x 2 x Dist. From Previous (Ft) | | | | | | | | | | |
| Voltage Drop From Previous = Resistance From Previous (Ω) x Remaining Current (A) | | | | | | | | | | |

| PANEL P1 (NFW-50X) BATTERY CALCULATION (SECONDARY POWER SOURCE REQUIREMENTS) | | | | | | | | |
|---|--------|-----|--------------------|---|----------------------------------|-----------|--------------------------------|-----------|
| PANEL POWER SUPPLY MAX CURRENT = 2.7A | | | | TOTAL USED CAPACITY (IN ALARM) = 0.9923A (36.75 %) | | | | |
| PANEL COMPONENTS | | QTY | PART NO. | DESCRIPTION | STANDBY CURRENT (AMPS) | | SECONDARY ALARM CURRENT (AMPS) | |
| | | 1 | NFW-50X Main Board | Fire Alarm Control Panel Main Board | CURRENT DRAW (A) | TOTAL (A) | CURRENT DRAW (A) | TOTAL |
| CIRCUIT | SYMBOL | QTY | PART NO | DESCRIPTION | CURRENT DRAW (A) | TOTAL (A) | CURRENT DRAW (A) | TOTAL (A) |
| P1-1 | | 10 | DNR w/FSP-951R | Intelligent Non-Relay Photoelectric Dust Detector/ FSP-951R, FlashScan and CLIP mode. | 0.0002 | 0.002 | 0.0045 | 0.045 |
| | | 2 | FDM-1 | Addressable Dual Monitor Module W/ FlashScan, 2 Class B | 0.00075 | 0.0015 | 0.0064 | 0.0128 |
| | | 10 | FRM-1 | Addressable Relay Module W/ FlashScan, 2 Form-C Dry Contacts | 0.000255 | 0.00255 | 0.0065 | 0.065 |
| | | 1 | FSP-951 w/B300-6 | Addressable low-profile photoelectric smoke detector, FlashScan only. | 0.0002 | 0.0002 | 0.0045 | 0.0045 |
| | | 4 | NBG-12LX | Dual-action addressable pull station. Includes key locking feature. | 0.000375 | 0.0015 | 0.005 | 0.02 |
| P1-N1 | | 4 | P2RLED | 2-Wire, Horn Strobe, Red 110cd | 0 | 0 | 0.094 | 0.376 |
| P1-N2 | | 1 | P2RK | 2-Wire Horn Strobe, Standard cd, Red, Outdoor 110cd | 0 | 0 | 0.212 | 0.212 |
| | | | | | TOTAL STANDBY (A) | 0.14875 | TOTAL ALARM (A) | 0.9923 |
| | | | | | REQUIRED STANDBY TIME = 24 HOURS | | | |
| | | | | | REQUIRED ALARM TIME = 5 MINUTES | | | |
| SECONDARY STANDBY LOAD (A) | | | | 0.14875 | 24 | | 3.57 | |
| SECONDARY ALARM LOAD (A) | | | | 0.9923 | 0.08 | | 0.08 | |
| STANDBY AND ALARM SUBTOTAL (AMP HOURS) | | | | | | 3.65 | | |
| DERATING FACTOR | | | | | | 1.2 | | |
| SECONDARY LOAD REQUIREMENTS (AMP HOURS) | | | | | | 4.38 | | |
| PROVIDE (2) 12V 7AH BATTERIES | | | | | | | | |
| *BATTERY BOX SIZE CAPACITY NOT SPECIFIED. REFER TO MANUFACTURER DOCUMENTATION. | | | | | | | | |



| SYSTEM INPUTS | | | | | | | | | | | | | | | | SYSTEM OUTPUTS | | | | | | | | | | | | | |
|---------------|---|---------------------------------------|------------------------------|-----------------------------------|--|-------------------------------|--------------------------------|--|--------------------------------------|---|---|---|-----------------------------------|-------------------------------------|---|----------------|----|--|--|--|--|--|--|--|--|--|--|--|--|
| SYSTEM INPUTS | | | | | | | | | | | | | | | | SYSTEM OUTPUTS | | | | | | | | | | | | | |
| | | CONTROL UNIT ANNUNCIATION | | | | | | NOTIFICATION | | | | | | REQUIRED SAFETY CONTROLS | | | | | | | | | | | | | | | |
| | | ACTUATE COMMON ALARM SIGNAL INDICATOR | ACTUATE AUDIBLE ALARM SIGNAL | ACTUATE COMMON SUPERVISORY SIGNAL | ACTUATE AUDIBLE SUPERVISORY SIGNAL INDICATOR | ACTUATE COMMON TROUBLE SIGNAL | ACTUATE AUDIBLE TROUBLE SIGNAL | ACTUATE AUDIBLE NOTIFICATION APPLANCES | DISPLAY/PRINT NOTIFICATION APPLANCES | TRANSMIT FIRE ALARM SIGNAL TO SUPERVISING STATION | TRANSMIT FIRE SUPERVISORY SIGNAL TO SUPERVISING STATION | ACTIVATE NOTIFICATION APPLANCE ABOVE FIRE DEPARTMENT CONNECTION | SHUTDOWN ALL AIR HANDLING UNIT(S) | SHUTDOWN ASSC. AIR HANDLING UNIT(S) | | | | | | | | | | | | | | | |
| 1 | MANUAL PULL STATION | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | 1 | | | | | | | | | | | | |
| 2 | SMOKE DETECTOR | • | • | | | | | • | • | • | • | | | | • | | 2 | | | | | | | | | | | | |
| 5 | WATERFLOW SWITCH | • | • | | | | | • | • | • | • | | | • | • | | 5 | | | | | | | | | | | | |
| 12 | DUCT DETECTOR (AT HVAC UNIT) | | | | • | • | | | | | • | | • | | | • | 12 | | | | | | | | | | | | |
| 14 | VALVE TAMPER SWITCH | | | | • | • | | | | | • | | • | | | | 14 | | | | | | | | | | | | |
| 15 | FIRE ALARM CONTROL PANEL AC POWER FAILURE | | | | | | • | • | | | • | | | • | | | 15 | | | | | | | | | | | | |
| 16 | FIRE ALARM CONTROL PANEL LOW BATTERY | | | | | | • | • | | | • | | | • | | | 16 | | | | | | | | | | | | |
| 17 | OPEN CIRCUIT | | | | | | • | • | | | • | | | • | | | 17 | | | | | | | | | | | | |
| 18 | GROUND FAULT | | | | | | • | • | | | • | | | • | | | 18 | | | | | | | | | | | | |
| 19 | NOTIFICATION APPLANCE CIRCUIT SHORTED | | | | | | • | • | | | • | | | • | | | 19 | | | | | | | | | | | | |
| 20 | ALL OTHER TROUBLES | | | | | | • | • | | | • | | | • | | | 20 | | | | | | | | | | | | |
| | | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | | | | | | | | | | | | | |

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5/28/2024



BC ENGINEERS
INCORPORATED

5720 Reeder Shawnee, Ks. 66203 (913)262-1772

REVISION DESCRIPTION

DATE

NO

PROJECT NAME / CUSTOMER / LOCATION:

STREETS OF WEST PRYOR
1020 NORTHWEST PRYOR ROAD
LEE'S SUMMIT, MO 64081

NEW FIRE ALARM SYSTEM

SYSTEM DESCRIPTION:

PROJECT MANAGER:
BOJAN BALTIC
(785) 430-5824

DESIGNER: RN

DRAFTER: VGM

DRAWING #:

FA102

PROJECT

JOB#: PJ2403210005

DATE:

04/26/2024

ISSUED

FOR: CONSTRUCTION