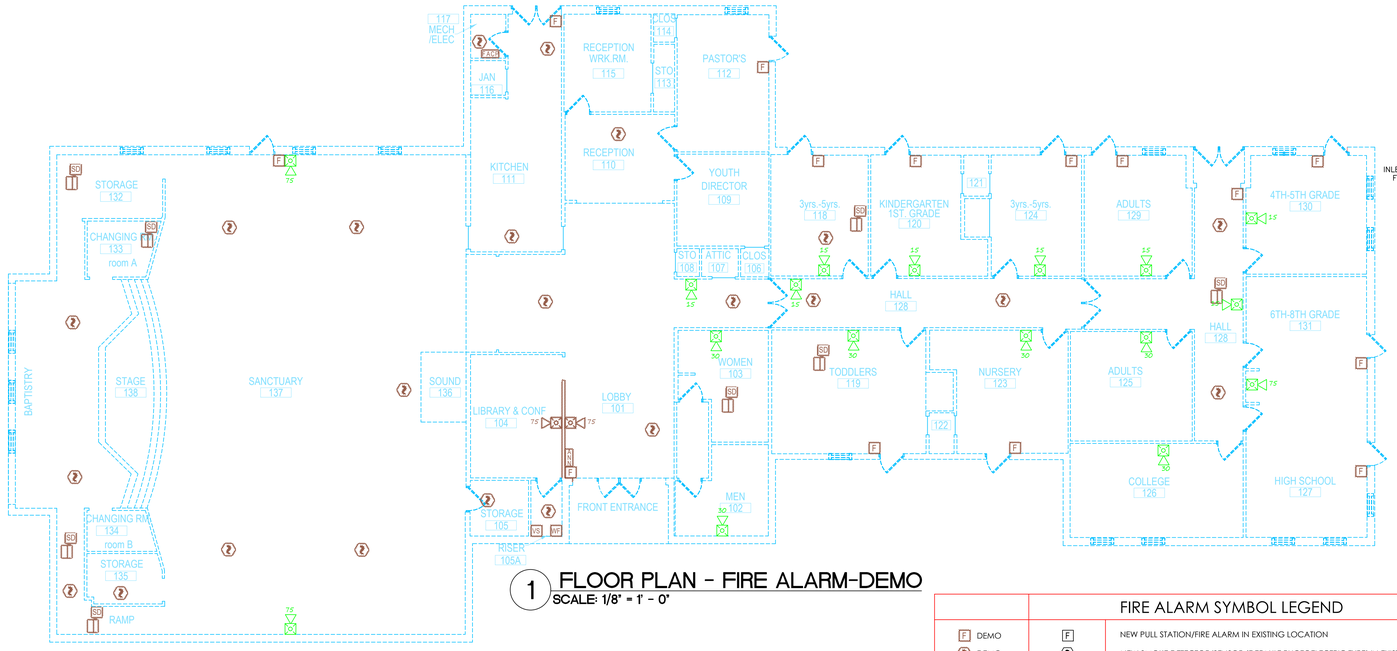
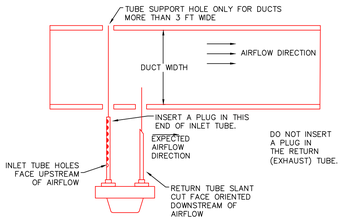
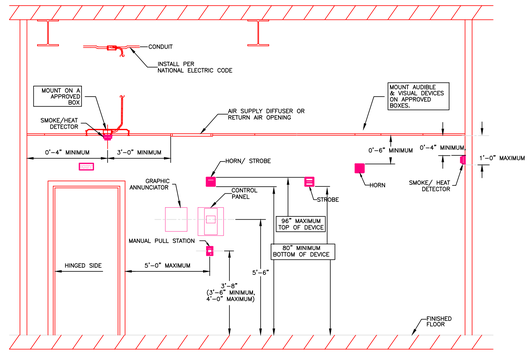



1 FLOOR PLAN - FIRE ALARM-DEMO
SCALE: 1/8" = 1' - 0"




3 INLET TUBE ORIENTATION
SCALE: NTS




4 DEVICE MOUNTING HEIGHTS - FIRE ALARM
SCALE: NONE

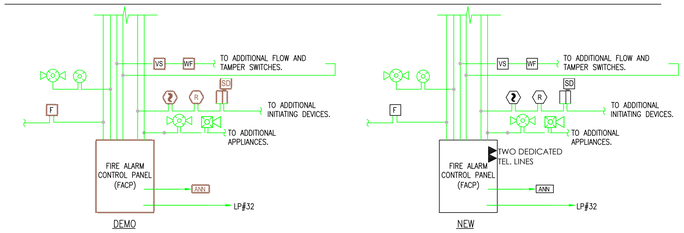
**FIRE ALARM SYSTEM INPUT/OUTPUT MATRIX**

SYSTEM OUTPUTS — FACP ANNUNCIATION | NOTIFICATION | REQUIRED FIRE SAFETY CONTROL

| SYSTEM INPUTS | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 FIRE ALARM SYSTEM AC POWER FAILURE | | | | ● | | | | | | | ● | | | | | | | | | | | | | | | 1 |
| 2 FIRE ALARM SYSTEM LOW BATTERY | | | | | ● | | | | | | | ● | | | | | | | | | | | | | | 2 |
| 3 OPEN CIRCUIT | | | | | ● | | | | | | | ● | | | | | | | | | | | | | | 3 |
| 4 GROUND FAULT | | | | | ● | | | | | | | ● | | | | | | | | | | | | | | 4 |
| 5 NOTIFICATION APPLIANCE CIRCUIT SHORT | | | | | ● | | | | | | | ● | | | | | | | | | | | | | | 5 |
| 6 BUILDING MANUAL PULL STATIONS | ● | ● | | | | | ● | ● | ● | | | | ● | | | | | ● | | | | | | | | 6 |
| 7 CORRIDOR SMOKE DETECTORS | ● | ● | | | | | ● | ● | ● | | | | ● | ● | | | | ● | | | | | | | | 7 |
| 8 AREA SMOKE DETECTORS | ● | ● | | | | | ● | ● | ● | | | | ● | ● | | | | ● | | | | | | | | 8 |
| 9 HVAC AIR DUCT SMOKE DETECTORS | | | ● | ● | | | ● | | | | | | | | | | | | ● | | | | | | | 9 |
| 10 SPRINKLER TAMPER SWITCH | | | ● | ● | | | ● | | | | | | | | | | | | | | | | | | | 10 |
| 11 SPRINKLER WATER FLOW IN BUILDING | ● | ● | | | | | ● | ● | ● | ● | | | ● | ● | | | | ● | | | | | | | | 11 |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | 12 |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | 13 |
| 14 | | | | | | | | | | | | | | | | | | | | | | | | | | 14 |
| 15 | | | | | | | | | | | | | | | | | | | | | | | | | | 15 |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | 16 |
| 17 | | | | | | | | | | | | | | | | | | | | | | | | | | 17 |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | | 18 |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | | 19 |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | 20 |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | |

**FIRE ALARM SYMBOL LEGEND**

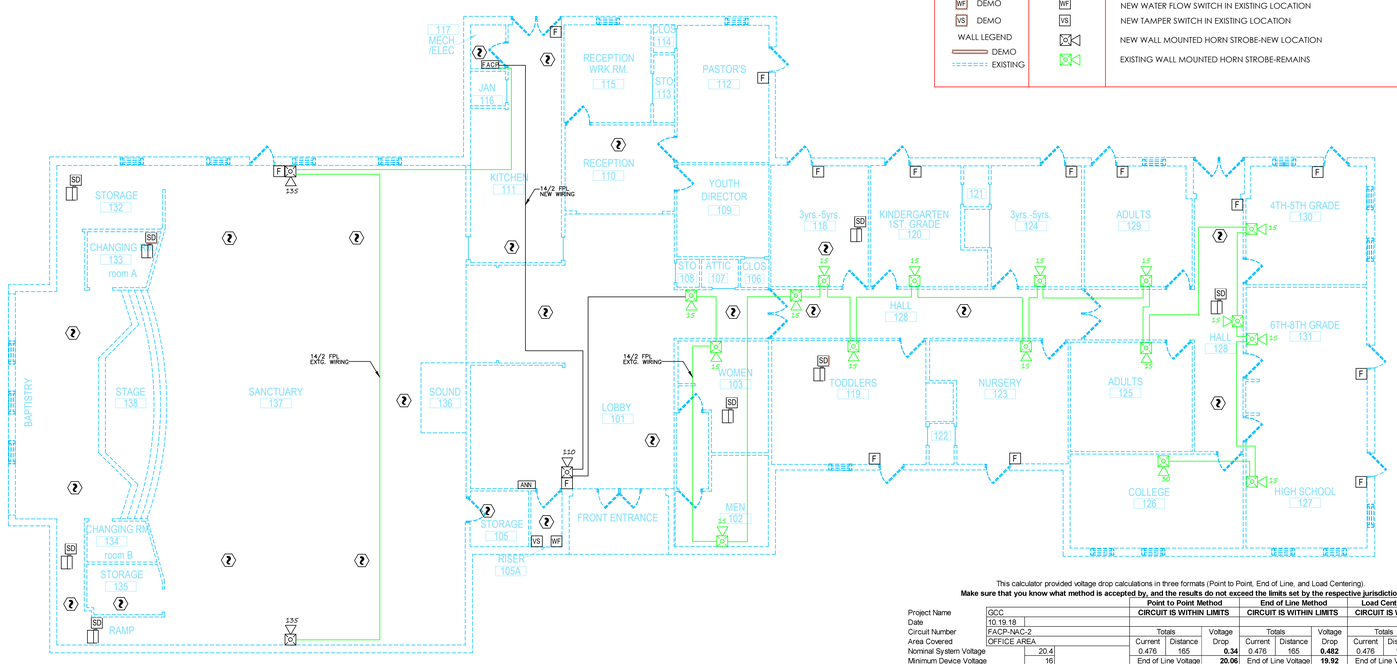
| | | |
|---|---|---|
| F DEMO | F | NEW PULL STATION/FIRE ALARM IN EXISTING LOCATION |
| DEMO | | NEW SMOKE DETECTOR/SENSOR (DEFAULT PHOTOELECTRIC TYPE) IN EXISTING LOCATION |
| ANN DEMO | ANN | NEW FIRE ALARM ANNUNCIATOR-NEW LOCATION |
| FACP DEMO | FACP | NEW FIRE ALARM CONTROL PANEL IN EXISTING LOCATION |
| SD DEMO | SD | NEW DUCT SMOKE DETECTOR IN EXISTING LOCATION |
| R DEMO | R | NEW CONTROL RELAY FOR DUCT FOR HVAC SHUTDOWN IN EXISTING LOCATION |
| WF DEMO | WF | NEW WATER FLOW SWITCH IN EXISTING LOCATION |
| VS DEMO | VS | NEW TAMPER SWITCH IN EXISTING LOCATION |
| WALL LEGEND | | NEW WALL MOUNTED HORN STROBE-NEW LOCATION |
| DEMO | | EXISTING WALL MOUNTED HORN STROBE-REMAINS |
| EXISTING | | |




5 RISER DIAGRAM- PARTIAL
SCALE: NONE

FIRE ALARM GENERAL NOTES

1. THIS PROJECT IS A REPLACEMENT OF THE EXISTING FIRE ALARM SYSTEM. AND ITS PERIPHERAL DEVICES IN A ONE TO ONE BASIS. DEVICES SHALL BE LISTED BY THE FACP MANUFACTURER AS 100% COMPATIBLE WITH THE EXISTING FIRE ALARM SYSTEM. ALL NEW FIRE ALARM DEVICES SHALL BE ADA APPROVED.
2. COORDINATE FIRE ALARM SYSTEM REPROGRAMMING WITH BUILDING MANAGEMENT. AT THE CONCLUSION OF THIS PROJECT, THE FIRE ALARM SYSTEM SHALL BE TESTED IN ACCORDANCE WITH THE 2013 EDITION OF NFPA 72 UNDER TITLE: "REACCEPTANCE TESTING", INCLUDING THE REQUIREMENT FOR TESTS OF ALL NEW DEVICES LOCATED INSIDE THIS BUILDING.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO KEEP THE BUILDING FIRE ALARM SYSTEM FUNCTIONAL DURING THE PERFORMANCE OF THIS PROJECT.




2 FLOOR PLAN - FIRE ALARM
SCALE: 1/8" = 1' - 0"

**FACP**

Note 1: You are **fully responsible for verifying these calculations**.
Note 2: Use the dropdowns in the **yellow** cells to enter values.

FIRE-LITE ALARMS by Honeywell — **ES-50X Battery Calculation**

Secondary Power Source Requirements

| Device | Qty | Standby Current (amps) | | Alarm Current (amps) | | Secondary Item Current (amps) Standby | | Alarm | |
|---|---|---|---|---|---|---|---|---|---|
| Main Circuit Panel | 1 | x 0.141000 | + | 0.585000 | = | 1 x 0.250000 | + | 0.250000 | = |
| IFOTS-COM Communicator | 1 | x 0.040000 | + | 0.040000 | = | 1 x 0.040000 | + | 0.04000 | = |
| 4XTMF | 0 | x 0.090000 | + | | | 0 x 0.015000 | + | | |
| EDLR-1 | 0 | x 0.020000 | + | | | 0 x 0.020000 | + | | |
| CELL-MOD-FL (CELL-CAB) | 0 | x 0.055000 | + | | | 0 x 0.100000 | + | | |
| **ANN-BUS Devices** | | | | | | | | | |
| ANN-SEC Card | 0 | x 0.060000 | + | | | 0 x 0.060000 | + | | |
| ANN-BIL-W1 | 1 | x 0.015000 | + | 0.015000 | = | 1 x 0.040000 | + | 0.040000 | = |
| ANN-500 | 0 | x 0.020000 | + | | | 0 x 0.025000 | + | | |
| ANN-LED/LED | 0 | x 0.028000 | + | | | 0 x 0.066000 | + | | |
| ANN-BLT | 0 | x 0.013000 | + | | | 0 x 0.075000 | + | | |
| ANN-I/O | 0 | x 0.030000 | + | | | 0 x 0.200000 | + | | |
| ANN-I/O LED | 0 | x 0.060000 | + | | | 0 x 0.210000 | + | | |
| ANN-SYS | 0 | x 0.040000 | + | | | 0 x 0.045000 | + | | |
| **Addressible Devices** | | | | | | | | | |
| SEAM200 | 0 | x 0.000200 | + | | | | | | |
| CPW-W-Wing | 0 | x 0.000000 | + | | | | | | |
| CPW5 | 0 | x 0.000000 | + | | | | | | |
| SD355CO | 0 | x 0.000000 | + | | | | | | |
| SD355 | 21 | x 0.000000 | + | 0.000000 | | | | | |
| SD365 | 0 | x 0.000000 | + | | | | | | |
| SD355T | 0 | x 0.000000 | + | | | | | | |
| SD365T | 0 | x 0.000000 | + | | | | | | |
| HD1 | 1 | x 0.000000 | + | 0.000000 | | | | | |
| HD65 | 0 | x 0.000000 | + | | | | | | |
| HD35HT | 0 | x 0.000000 | + | | | | | | |
| HD65HT | 0 | x 0.000000 | + | | | | | | |
| HD35R | 0 | x 0.000200 | + | | | | | | |
| HD65R | 0 | x 0.000200 | + | | | | | | |
| HM200 | 0 | x 0.000200 | + | | | | | | |
| CO250PL | 0 | x 0.000200 | + | | | | | | |
| CO250R | 0 | x 0.000200 | + | 0.002400 | | | | | |
| MMF-300 | 2 | x 0.000400 | + | 0.000800 | | | | | |
| MMF-300-10 | 0 | x 0.001000 | + | | | | | | |
| MDF-300 | 0 | x 0.000750 | + | | | | | | |
| MMF-301 | 0 | x 0.000375 | + | | | | | | |
| MMF-302 | 0 | x 0.000375 | + | | | | | | |
| MMF-302-6 | 0 | x 0.000000 | + | | | | | | |
| BG-10LK | 14 | x 0.000250 | + | 0.003200 | | | | | |
| CMF-300 | 0 | x 0.000180 | + | | | | | | |
| CMF-300-6 | 0 | x 0.000250 | + | | | | | | |
| CRF-300 | 12 | x 0.000270 | + | 0.003240 | | | | | |
| CRF-300-6 | 0 | x 0.001450 | + | | | | | | |
| CDM4-300 | 0 | x 0.001500 | + | | | | | | |
| I300 | 0 | x 0.000450 | + | | | | | | |
| I300-6 | 0 | x 0.002700 | + | | | | | | |
| ISO7BH-2 | 0 | x 0.067000 | + | | | | | | |
| ISO7BH-2 | 0 | x 0.067000 | + | | | | | | |
| ISO4B | 0 | x 0.000450 | + | | | | | | |
| ISO4B-6 | 0 | x 0.000450 | + | | | | | | |
| W-GATE | 0 | x 0.040000 | + | | | | | | |
| Maximum alarm draw for all Addressable devices ——> | | | | | | | | 0.20000 | |
| **Resettable Power** | | | | | | | | | |
| 4 Wire Smoke Detectors | 0 | x 0.000000 | + | | | 0 x 0.000000 | + | | |
| **SWIFT Wireless** | | | | | | | | | |
| W-GATE | 0 | x 0.040000 | + | | | 0 x 0.040000 | + | | |
| **Auxiliary Power** | | | | | | | | | |
| CMF-300 (Aux. Power) | 0 | x 0.061700 | + | | | 0 x 0.007000 | + | | |
| CMF-300-6 (Aux. Power) | 0 | x 0.000000 | + | | | 0 x 0.020000 | + | | |
| MMF-302 (Aux. Power) | 0 | x 0.012000 | + | | | 0 x 0.090000 | + | | |
| MMF-302-6 (Aux. Power) | 0 | x 0.000000 | + | | | 0 x 0.270000 | + | | |
| ISO5RR (Aux. Power) | 0 | x 0.080500 | + | | | 0 x 0.035000 | + | | |
| ISO5RR-LT (Aux. Power) | 0 | x 0.061500 | + | | | 0 x 0.125000 | + | | |
| **Miscellaneous Devices** | | | | | | | | | |
| | 0 | x 0.000000 | + | | | 0 x 0.000000 | + | | |
| | 0 | x 0.000000 | + | | | 0 x 0.000000 | + | | |
| | 0 | x 0.000000 | + | | | 0 x 0.000000 | + | | |
| | 0 | x 0.000000 | + | | | 0 x 0.000000 | + | | |
| | 0 | x 0.000000 | + | | | 0 x 0.000000 | + | | |
| **Output Circuits** | | | | | | | | | |
| NAC-Output #1 | | 0.000000 | + | | | 1.504000 | + | 1.504000 | |
| NAC-Output #2 | | 0.000000 | + | | | 0.000000 | + | | |
| FCPS (remote Sync) | 0 | x 0.000000 | + | | | 0 x 0.027500 | + | | |
| **Total Standby Load** | | **0.212260** | | | | **Total Alarm Load** | | **2.042000** | |

FIRE-LITE ALARMS by Honeywell — **ES-50X Battery Calculation**

**Calculation in Total Sheet**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | **Required Standby Time in Hours** 24 Hours | | | |
| **Total Standby Current** | **0.2123 Amps** | x | 24 | = | 5.094 AH | | |
| | | | | **Required Alarm Time in Minutes** 5 Minutes | | | |
| **Total Alarm Load** | **2.0420 Amps** | x | 0.084 | = | 0.172 AH | | |
| | | | | **Total Current Load** | | **5.266 AH** | |
| | | | | Multiply by the Derating Factor | 1.2 | x | 6.32 AH |
| | | | | **Total Ampere Hours Required** | | | **6.32 AH** |
| **Recommended Batteries:** | | | | BA1-1270 - 7AH Batteries | | | |

This calculator provided voltage drop calculations in three formats (Point to Point, End of Line, and Load Centering).
**Make sure that you know what method is accepted by, and the results do not exceed the limits set by the respective jurisdiction**

| Project Name | GCC |
|---|---|
| Date | 10.19.18 |
| Circuit Number | FACP-NAC-2 |
| Area Covered | OFFICE AREA |
| Nominal System Voltage | 20.4 |
| Minimum Device Voltage | 16 |
| Total Circuit Current | 0.476 |

| | Point to Point Method — CIRCUIT IS WITHIN LIMITS | | | End of Line Method — CIRCUIT IS WITHIN LIMITS | | | Load Centering Method — CIRCUIT IS WITHIN LIMITS | | |
|---|---|---|---|---|---|---|---|---|---|
| Totals | Current | Distance | Voltage Drop | Current | Distance | Voltage Drop | Current | Distance | Voltage Drop |
| | 0.476 | 165 | **0.34** | 0.476 | 165 | **0.482** | 0.476 | 165 | **0.241** |
| | End of Line Voltage | | **20.06** | End of Line Voltage | | **19.92** | End of Line Voltage | | **20.16** |
| | Percent Drop | | 1.65% | Percent Drop | | 2.36% | Percent Drop | | 1.18% |

End of Line and Load Centering Methods use only the wire guage for the first device to source

| Distance from source to 1st device | 65 | Wire Gauge | Ohm's Per 1000 |
|---|---|---|---|
| Wire Gauge for balance of circuit | | 14 | 3.07 |
| | | 18 | 3.07 |

Standard Wire Resistance in Ohms per 1000 feet.
18=7.77 16=4.89 14=3.07 12=1.98 10=1.24
18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors

Enter current in amps. 150 = 150 ma

| Device Number | Device Current | Distance from previous device | At Device | Voltage Drop from source | Percent Drop |
|---|---|---|---|---|---|
| Device 1 | 0.238 | 65 | 20.21 | 0.190 | 0.93% |
| Device 2 | 0.238 | 100 | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| END | | | 20.06 | 0.336 | 1.65% |
| Totals | 0.476 | 165 | End of Line Voltage | | **20.06** |

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative)
The voltage calculated to the last device in any method must not be lower then
the manufactures listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).

Device Manufacturer: System Sensor

| Horn Strobes Model # | Candela | Current @Rated Voltage |
|---|---|---|
| P2R | 15 | 0.079 |
| P2R | 30 | 0.107 |
| P2R | 75 | 0.176 |
| P2R | 95 | 0.194 |
| P2R | 110 | 0.212 |
| P2R | 135 | 0.238 |

Device Manufacturer

| Model # | Candela | Current @Rated Voltage |
|---|---|---|
| | | |

This calculator provided voltage drop calculations in three formats (Point to Point, End of Line, and Load Centering).
**Make sure that you know what method is accepted by, and the results do not exceed the limits set by the respective jurisdiction**

| Project Name | GCC |
|---|---|
| Date | 10.19.18 |
| Circuit Number | FACP-NAC-1 |
| Area Covered | OFFICE AREA |
| Nominal System Voltage | 20.4 |
| Minimum Device Voltage | 16 |
| Total Circuit Current | 1.504 |

| | Point to Point Method — CIRCUIT IS WITHIN LIMITS | | | End of Line Method — CIRCUIT IS WITHIN LIMITS | | | Load Centering Method — CIRCUIT IS WITHIN LIMITS | | |
|---|---|---|---|---|---|---|---|---|---|
| Totals | Current | Distance | Voltage Drop | Current | Distance | Voltage Drop | Current | Distance | Voltage Drop |
| | 1.504 | 435 | **2.13** | 1.504 | 435 | **4.017** | 1.504 | 435 | **2.009** |
| | End of Line Voltage | | **18.27** | End of Line Voltage | | **16.38** | End of Line Voltage | | **18.39** |
| | Percent Drop | | 10.43% | Percent Drop | | 19.66% | Percent Drop | | 9.85% |

End of Line and Load Centering Methods use only the wire guage for the first device to source

| Distance from source to 1st device | 60 | Wire Gauge | Ohm's Per 1000 |
|---|---|---|---|
| Wire Gauge for balance of circuit | | 14 | 3.07 |
| | | 18 | 3.07 |

Standard Wire Resistance in Ohms per 1000 feet.
18=7.77 16=4.89 14=3.07 12=1.98 10=1.24
18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors

Enter current in amps. 150 = 150 ma

| Device Number | Device Current | Distance from previous device | At Device | Voltage Drop from source | Percent Drop |
|---|---|---|---|---|---|
| Device 1 | 0.212 | 60 | 19.85 | 0.554 | 2.72% |
| Device 2 | 0.079 | 35 | 19.57 | 0.832 | 4.08% |
| Device 3 | 0.079 | 15 | 19.46 | 0.943 | 4.62% |
| Device 4 | 0.079 | 30 | 19.25 | 1.152 | 5.65% |
| Device 5 | 0.079 | 35 | 19.02 | 1.379 | 6.76% |
| Device 6 | 0.079 | 15 | 18.93 | 1.469 | 7.20% |
| Device 7 | 0.079 | 15 | 18.85 | 1.552 | 7.61% |
| Device 8 | 0.079 | 15 | 18.77 | 1.627 | 7.97% |
| Device 9 | 0.079 | 20 | 18.68 | 1.718 | 8.42% |
| Device 10 | 0.079 | 15 | 18.62 | 1.778 | 8.72% |
| Device 11 | 0.079 | 20 | 18.55 | 1.850 | 9.07% |
| Device 12 | 0.079 | 15 | 18.50 | 1.896 | 9.29% |
| Device 13 | 0.079 | 25 | 18.44 | 1.961 | 9.61% |
| Device 14 | 0.079 | 30 | 18.38 | 2.024 | 9.92% |
| Device 15 | 0.079 | 30 | 18.33 | 2.073 | 10.16% |
| Device 16 | 0.079 | 30 | 18.29 | 2.107 | 10.33% |
| Device 17 | 0.107 | 30 | 18.27 | 2.127 | 10.43% |
| END | | | 18.27 | 2.127 | 10.43% |
| END | | | 18.27 | 2.127 | 10.43% |
| END | | | 18.27 | 2.127 | 10.43% |
| Totals | 1.504 | 435 | End of Line Voltage | | **18.27** |

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative)
The voltage calculated to the last device in any method must not be lower then
the manufactures listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).

Device Manufacturer: System Sensor

| Horn Strobes Model # | Candela | Current @Rated Voltage |
|---|---|---|
| P2R | 15 | 0.079 |
| P2R | 30 | 0.107 |
| P2R | 75 | 0.176 |
| P2R | 95 | 0.194 |
| P2R | 110 | 0.212 |
| P2R | 135 | 0.259 |

Device Manufacturer

| Model # | Candela | Current @Rated Voltage |
|---|---|---|
| | | |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ProServe Fire Protection, Inc.


GRACE COMMUNITY CHURCH
2160 HARNETT CENTRAL RD.
ANGIER, NORTH CAROLINA

PROSERVE FIRE ALARM

DAVID BENZO
NICET LEVEL III
CERTN. # 129340

REVISIONS

JOB #
N/A

DATE
10-18-2018

DRAWN BY
DB

PROJECT N0
002

SHEET TITLE
SHOP DRAWINGS

CREDITS
DB

SHEET
F-1
1 OF 1 SHEETS