

EXISTING FIRE ALARM PANEL MXL-IQ BATTERY CALCULATIONS

| DESCRIPTION | QTY. | MODULE CURRENT | EOL CURRENT | DEVICE CURRENT | TOTAL ROW CURRENT |
|------------------------------|------|----------------|-------------|----------------|-------------------|
| SMB-1 MAIN CONTROL BOARD | 1 | 0.175X1 | | | 0.175 AMPS |
| ALARM INITIATING LOOP 1 & 2 | 2 | | | 0.030X2 | 0.060 AMPS |
| ALARM INDICATING CKT V1 & V2 | 2 | | 0.012X2 | | 0.024 AMPS |
| MKB-4 DISPLAY/KEYBOARD | 1 | 0.500X1 | | | 0.005 AMPS |
| BCC-1 REMOTE COMMAND CENTER | 1 | 0.300X1 | | | 0.300 AMPS |
| TOTAL SUPERVISORY CURRENT | | | | | 0.564 AMPS |

| CKT | DEVICE DESCRIPTION | DEVICE QTY | DEVICE CURRENT RATING | TOTAL ROW CURRENT | TOTAL CKT CURRENT LOAD |
|---------------------|--|-------------|---------------------------------------|-------------------------------------|------------------------|
| V1 | STROBE 15 CANDELA STROBE 75 CANDELA | 6 1+3 | .050 AMPS 0.133 AMPS | .300 AMPS .532 AMPS | 0.832 AMPS |
| V2 | STROBE 15 CANDELA STROBE 75 CANDELA STROBE 110 CANDELA | 8 1 1 | .050 AMPS 0.133 AMPS 0.161 AMPS | .400 AMPS .133 AMPS .161 AMPS | 0.694 AMPS |
| TOTAL ALARM CURRENT | | | | | 1.526 AMPS |

| SUMMARY | |
|--|--|
| A=TOTAL SUPERVISORY CURRENT X SUPERVISORY TIME REQUIRED = 564 AMPS X 24 HOURS = 13.5 AMP/HOUR | SUPERVISORY TIME REQUIRED-----24 HOURS ALARM TIME REQUIRED-----5 MINUTES OR 0.83 HOUR |
| B=TOTAL ALARM CURRENT X ALARM TIME REQUIRED = 1.526 AMPS X .038 HOUR = .057 AMPS/HOUR | BATTERY PROVIDED-----PS-1270(2) BATTERY SIZE-----17 AMP/HOUR |
| C=A+B = 13.5 Amps/Hour + 0.057 Amps/Hour = 13.55 Amp/Hour | TOTAL SYSTEM CURRENT REQ'D-----13.55AMP/HOUR BATTERY RESERVE AFTER 24 HOURS SUPERVISORY & 5 MINUTES ALARM-----3.42 AMP/HOUR |

EXISTING PAD-2#3 BATTERY CALCULATION SUPERVISORY CURRENT

| DESCRIPTION | QTY. | MODULE CURRENT | EOL CURRENT | DEVICE CURRENT | TOTAL ROW CURRENT |
|---------------------|------|----------------|-------------|----------------|-------------------|
| SUPERVISORY CURRENT | | | | | 0.075 |
| ALARM CURRENT | | | | | 0.1 |

| CKT | DEVICE | DESCRIPTION | QTY. | DEVICE CURRENT RATING | TOTAL CKT CURRENT LOAD |
|---------------------------|-----------------------|---------------|------|-----------------------|------------------------|
| 2K5 | NS4-241575W-FR | (STROBE ONLY) | 1 | 0.068 | 0.068 |
| 2K5 | NS4-2475W-FR | (STROBE ONLY) | 1 | 0.133 | 0.133 |
| 2K5 | RSS-2415W-FR | (STROBE) | 4 | 0.05 | 0.2 |
| 2K5 | RSS-2475W-FR | (STROBE) | 1 | 0.133 | 0.133 |
| 2K6 | NS4-241575W-FR | (STROBE ONLY) | 1 | 0.068 | 0.068 |
| 2K6 | NS4-2475W-FR | (STROBE ONLY) | 3 | 0.133 | 0.399 |
| 2K6 | RSS-2415W-FR | (STROBE) | 1 | 0.05 | 0.05 |
| 2K6 | RSS-24110W-FR | (STROBE) | 1 | 0.161 | 0.161 |
| 2K7 | RSS-2475W-FR | (STROBE) | 4 | 0.133 | 0.532 |
| 2K7 | RSS-2430W-FR | (STROBE) | 2 | 0.081 | 0.162 |
| 2K7 | NS4-2415W-FR | (STROBE ONLY) | 1 | 0.055 | 0.055 |
| 2K7 | NS4-2430W-FR | (STROBE ONLY) | 1 | 0.081 | 0.081 |
| 2K7 | NS24-2475W-FR | (STROBE ONLY) | 1 | 0.133 | 0.133 |
| 2VP3A | TO PAD-2 #3A ACTATION | | 1 | 0.1 | 0.1 |
| TOTAL ALARM CURRENT(AMPS) | | | | | 0.33 |

| SUMMARY | |
|---|--|
| A=TOTAL SUPERVISORY CURRENT X SUPERVISORY TIME REQUIRED = 0.075 AMPS X 24HR = 1.8 (AMP/HR) | SUPERVISORY TIME REQUIRED-----24HR ALARM TIME REQUIRED-----5MINS. OR 0.83HR |
| B=TOTAL ALARM CURRENT X ALARM TIME REQUIRED = 1.412 AMPS X 0.083 HR = 0.117196 (AMP/HR) | BATTERY PROVIDED-----PS-1270 (2) BATTERY SIZE-----7 (AMP/HR) |
| C = A+B = 1.917196 (AMP/HR) | TOTAL SYSTEM REQUIRED (A/H) = 1.917196 AMP/HOUR BATTERY RESERVE AFTER 24 HOURS SUPERVISORY & 5 MINUTES ALARM (AMP/HOUR) = 5.082804 AMP/HOUR |

EXISTING PAD-2#3A BATTERY CALCULATION (HORN CIRCUITS) SUPERVISORY CURRENT

| DESCRIPTION | QTY. | MODULE CURRENT | EOL CURRENT | DEVICE CURRENT | TOTAL ROW CURRENT |
|---------------------|------|----------------|-------------|----------------|-------------------|
| SUPERVISORY CURRENT | | | | | 0.075 |
| ALARM CURRENT | | | | | 0.1 |

| CKT | DEVICE | DESCRIPTION | QTY. | DEVICE CURRENT RATING | TOTAL CKT CURRENT LOAD |
|---------------------------|----------------|-------------|------|-----------------------|------------------------|
| 2A1 | NS4-241575W-FR | (HORN ONLY) | 5 | 0.021 | 0.105 |
| 2A1 | NS4-24110W-FR | (HORN ONLY) | 1 | 0.021 | 0.021 |
| 2A2 | NS4-241575W-FR | (HORN ONLY) | 7 | 0.021 | 0.147 |
| 2A2 | NS4-2475W-FR | (HORN ONLY) | 6 | 0.021 | 0.126 |
| 2A2 | NS4-241575W-FR | (HORN ONLY) | 6 | 0.021 | 0.126 |
| 2A3 | NS4-2415W-FR | (HORN ONLY) | 1 | 0.021 | 0.021 |
| 2A3 | NS4-2430W-FR | (HORN ONLY) | 1 | 0.021 | 0.021 |
| 2A3 | NS4-2475W-FR | (HORN ONLY) | 1 | 0.021 | 0.021 |
| 2A4 | SPARE | | 0 | 0 | 0 |
| TOTAL ALARM CURRENT(AMPS) | | | | | 0.688 |

| SUMMARY | |
|---|--|
| A=TOTAL SUPERVISORY CURRENT X SUPERVISORY TIME REQUIRED = 0.075 AMPS X 24HR = 1.8 (AMP/HR) | SUPERVISORY TIME REQUIRED-----24HR ALARM TIME REQUIRED-----5MINS. OR 0.83HR |
| B=TOTAL ALARM CURRENT X ALARM TIME REQUIRED = 1.412 AMPS X 0.083 HR = 0.117196 (AMP/HR) | BATTERY PROVIDED-----PS-1270 (2) BATTERY SIZE-----7 (AMP/HR) |
| C = A+B = 1.851875 (AMP/HR) | TOTAL SYSTEM REQUIRED (A/H) = 1.851875 AMP/HOUR BATTERY RESERVE AFTER 24 HOURS SUPERVISORY & 5 MINUTES ALARM (AMP/HOUR) = 5.148125 AMP/HOUR |

VOLTAGE DROP(VD) CALCULATION

FIRST FLOOR

| PROJ. NAME | SIG. CKT # |
|-------------------------------|------------|
| SKYLINE COLLEGE BUILDING NO.2 | 2V7 |

| DEVICE # | 1ST | 1ST | 1ST | 1ST | 1ST | 1ST | 1ST | 1ST | 1ST |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| GAUGE WIRE | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| DISTANCE (FT) | 100 | 10 | 40 | 15 | 30 | 15 | 30 | 20 | 30 |
| AMPS @ DEVICE | 0.081 | 0.133 | 0.133 | 0.133 | 0.081 | 0.05 | 0.081 | 0.133 | 0.133 |
| AMPS DEVELOPED | 0.94 | 0.88 | 0.73 | 0.6 | 0.47 | 0.30 | 0.34 | 0.25 | 0.133 |
| VOLT. DROP | 0.31 | 0.028 | 0.096 | 0.028 | 0.046 | 0.019 | 0.038 | 0.017 | 0.013 |

| FORMULA |
|--------------------------------|
| 1X FEET X OHMS/FT |
| SIGNAL CIRCUIT # 2V7 |
| TOTAL CKT V.D. = 0.996 |
| CKT VOLTAGE = 24 |
| VOLTAGE AT FINAL DEVICE = 23.4 |
| %VOLTAGE DROP = 0.31 |

| WIRE SIZE | RESIS. /M FT. | CIRC. MLS. |
|-----------|---------------|------------|
| 12 | 1.59 | 6530 |
| 14 | 2.52 | 4110 |
| 16 | 4.02 | 2580 |
| 18 | 6.39 | 1620 |
| 20 | 10.1 | 1020 |
| 22 | 16.2 | 640 |
| 24 | 25.7 | 404 |

VOLTAGE DROP(VD) CALCULATION

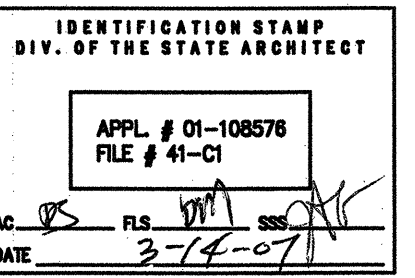
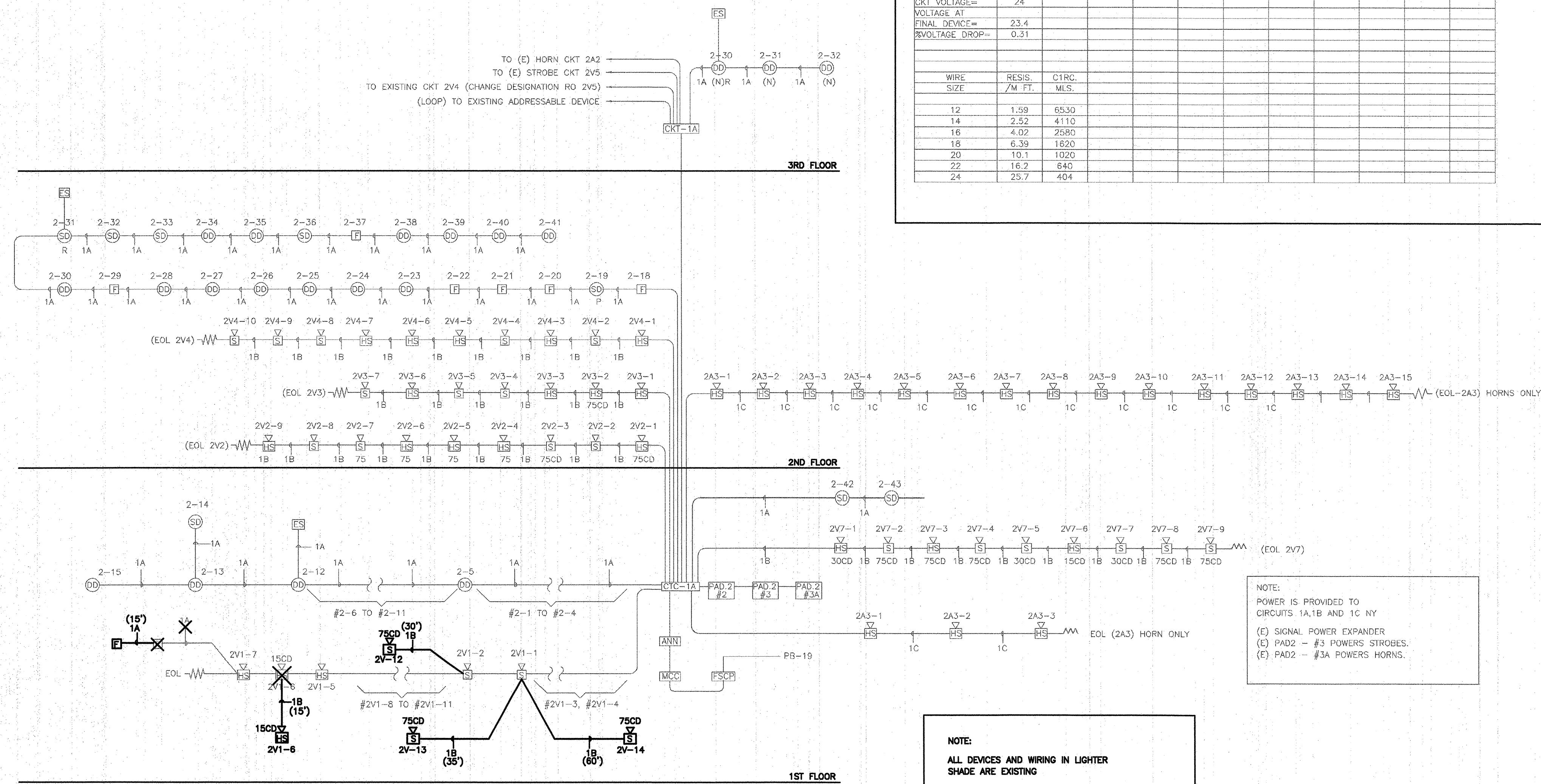
FIRST FLOOR

| PROJ. NAME | SIG. CKT # |
|-------------------------------|------------|
| SKYLINE COLLEGE BUILDING NO.2 | 2A3 |

| DEVICE # | 1ST | 2ND | 3RD |
|----------------|-------|---------|---------|
| GAUGE WIRE | 12 | 12 | 12 |
| DISTANCE (FT) | 100 | 50 | 70 |
| AMPS @ DEVICE | 0.021 | 0.021 | 0.021 |
| AMPS DEVELOPED | 0.063 | 0.042 | 0.021 |
| VOLT. DROP | 0.020 | 0.00894 | 0.00486 |

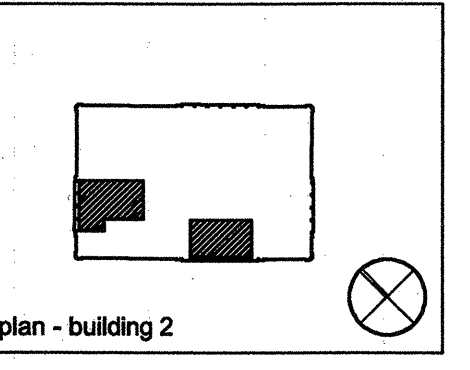
| FORMULA |
|---------------------------------|
| 1X FEET X OHMS/FT |
| SIGNAL CIRCUIT # 2A3 |
| TOTAL CKT V.D. = 0.0318 |
| CKT VOLTAGE = 24 |
| VOLTAGE AT FINAL DEVICE = 23.95 |
| %VOLTAGE DROP = 0.132 |

| WIRE SIZE | RESIS. /M FT. | CIRC. MLS. |
|-----------|---------------|------------|
| 12 | 1.59 | 6530 |
| 14 | 2.52 | 4110 |
| 16 | 4.02 | 2580 |
| 18 | 6.39 | 1620 |
| 20 | 10.1 | 1020 |
| 22 | 16.2 | 640 |
| 24 | 25.7 | 404 |



02.02.07 DSA SUBMITTAL
DSA BACKCHECK

rev. date issue



STEINBERG ARCHITECTS
project no: 06044 date: 03/15/07
drawn by: VB checked by: DL
scale: 1/4"=1'-0"

FIRE ALARM RISER DIAGRAM
AND BATTERY CALCULATIONS