

VOLTAGE DROP CALCULATIONS

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| <p>VOLTAGE DROP = 2 (DC RESISTANCE AT 75°C) (LENGTH OF CIRCUIT) (CURRENT) FROM TABLE B, C.E.C. (LENGTH OF CIRCUIT) (CURRENT) PERCENT VOLTAGE DROP = $\frac{VOLTAGE DROP}{NOMINAL VOLTAGE} \times 100$</p> | |
| 1. NOTIFICATION APPLIANCE CIRCUIT "N1", BUILDING A (F.A.X.P. #1) | <p>VOLTAGE DROP = 2 (1.148) $\left(\frac{250}{1000}\right)$ (1.0713) = 0.61 VD. PERCENT VOLTAGE DROP = $\frac{0.61}{2.4} \times 100 = 25.4\%$</p> |
| 2. NOTIFICATION APPLIANCE CIRCUIT "N2", BUILDING B (F.A.X.P. #1) | <p>VOLTAGE DROP = 2 (1.148) $\left(\frac{250}{1000}\right)$ (1.0713) = 0.61 VD. PERCENT VOLTAGE DROP = $\frac{0.61}{2.4} \times 100 = 25.4\%$</p> |
| 3. NOTIFICATION APPLIANCE CIRCUIT "N3", BUILDING C (F.A.X.P. #1) | <p>VOLTAGE DROP = 2 (1.148) $\left(\frac{250}{1000}\right)$ (1.0713) = 0.61 VD. PERCENT VOLTAGE DROP = $\frac{0.61}{2.4} \times 100 = 25.4\%$</p> |
| 4. NOTIFICATION APPLIANCE CIRCUIT "N4", BUILDING R-1 (F.A.X.P. #2) | <p>VOLTAGE DROP = 2 (1.148) $\left(\frac{250}{1000}\right)$ (1.0713) = 0.61 VD. PERCENT VOLTAGE DROP = $\frac{0.61}{2.4} \times 100 = 25.4\%$</p> |
| 5. NOTIFICATION APPLIANCE CIRCUIT "N5", BUILDING R-5 (F.A.X.P. #2) | <p>VOLTAGE DROP = 2 (1.148) $\left(\frac{250}{1000}\right)$ (1.0713) = 0.61 VD. PERCENT VOLTAGE DROP = $\frac{0.61}{2.4} \times 100 = 25.4\%$</p> |
| 6. NOTIFICATION APPLIANCE CIRCUIT "N6", LIBRARY (F.A.X.P. #3) | <p>VOLTAGE DROP = 2 (1.148) $\left(\frac{250}{1000}\right)$ (1.0713) = 0.61 VD. PERCENT VOLTAGE DROP = $\frac{0.61}{2.4} \times 100 = 25.4\%$</p> |
| 7. NOTIFICATION APPLIANCE CIRCUIT "N7", BUILDING E (F.A.X.P. #4) | <p>VOLTAGE DROP = 2 (1.148) $\left(\frac{250}{1000}\right)$ (1.0713) = 0.61 VD. PERCENT VOLTAGE DROP = $\frac{0.61}{2.4} \times 100 = 25.4\%$</p> |
| 8. NOTIFICATION APPLIANCE CIRCUIT "N8", BUILDING D (F.A.X.P. #4) | <p>VOLTAGE DROP = 2 (1.148) $\left(\frac{250}{1000}\right)$ (1.0713) = 0.61 VD. PERCENT VOLTAGE DROP = $\frac{0.61}{2.4} \times 100 = 25.4\%$</p> |

FIRE ALARM CONTROL PANEL "T.A.C.P."

| DESCRIPTION | QUANTITY | SEPV CURRENT EACH | 96B-TOTAL EACH | ALARM CURRENT EACH | 96B-TOTAL EACH |
|--------------------------|----------|-------------------|----------------|--------------------|----------------|
| CONTROL PANEL | 1 | 0.410 | 0.410 | 0.524 | 0.524 |
| SMOKE DETECTORS | 206 | 0.00036 | 0.0718 | 0.0005 | 0.194 |
| HEAT DETECTORS | 56 | 0.00036 | 0.0202 | 0.0005 | 0.254 |
| FULL STATIONS | 5 | 0.00030 | 0.0015 | 0.00030 | 0.0015 |
| MONITOR MODULES | 6 | 0.00030 | 0.0018 | 0.00030 | 0.0018 |
| RELAY MODULES | 7 | 0.00030 | 0.0021 | 0.00030 | 0.0021 |
| 5 D STROBE | 12 | 0.00030 | 0.0036 | 0.00030 | 0.0036 |
| 30 D STROBE | 2 | 0.00030 | 0.0006 | 0.00030 | 0.0006 |
| HORN/SD STROBE | 1 | 0.00030 | 0.0003 | 0.00030 | 0.0003 |
| HORN/SD STROBE (CEILING) | 3 | 0.00030 | 0.0009 | 0.00030 | 0.0009 |
| HORN/SD STROBE (CEILING) | 3 | 0.00030 | 0.0009 | 0.00030 | 0.0009 |
| HORN/SD STROBE (CEILING) | 3 | 0.00030 | 0.0009 | 0.00030 | 0.0009 |
| EXTERIOR HORN | 6 | 0.00030 | 0.0018 | 0.00030 | 0.0018 |
| TOTALS | | | 0.5607 | | 1.1662 |

TOTAL ALARM CURRENT OF 1.1662 X 0.0285 (5 MINUTES) = 0.331 A.H.
 TOTAL SUPERVISORY CURRENT OF 0.5607 X 24 HOURS = 13.256 A.H.
 TOTAL AMP HOURS REQUIRED = 13.587 A.H.
 PROVIDE TO AMP HOUR BATTERIES

FIRE ALARM POWER EXPANDER PANEL #4

| DESCRIPTION | QUANTITY | SEPV CURRENT EACH | 96B-TOTAL EACH | ALARM CURRENT EACH | 96B-TOTAL EACH |
|----------------|----------|-------------------|----------------|--------------------|----------------|
| EXPANDER PANEL | 1 | 0.065 | 0.065 | 0.145 | 0.145 |
| 5 D STROBE | 1 | 0.00030 | 0.0003 | 0.00030 | 0.0003 |
| HORN/SD STROBE | 2 | 0.00030 | 0.0006 | 0.00030 | 0.0006 |
| HORN/SD STROBE | 1 | 0.00030 | 0.0003 | 0.00030 | 0.0003 |
| HORN/SD STROBE | 4 | 0.00030 | 0.0012 | 0.00030 | 0.0012 |
| EXTERIOR HORN | 2 | 0.00030 | 0.0006 | 0.00030 | 0.0006 |
| TOTALS | | | 0.065 | | 0.206 |

TOTAL ALARM CURRENT OF 2.06 X 0.0285 (5 MINUTES) = 0.110 A.H.
 TOTAL SUPERVISORY CURRENT OF 0.065 X 24 HOURS = 1.560 A.H.
 TOTAL AMP HOURS REQUIRED = 1.670 A.H.
 PROVIDE TO AMP HOUR BATTERIES

FIRE ALARM SYSTEM EQUIPMENT SPECIFICATIONS

| SYMBOL | DESCRIPTION | MODEL # | SEPV LISTING # | BACKBOX REQUIREMENTS | HOANGING HEIGHT (TO CENTER DOWN) |
|--------|--|-------------------|----------------|---|----------------------------------|
| (N1) | FIRE ALARM CONTROL PANEL | NOTIFIER NFS-2440 | 7165-0028-243 | INCLUDED | 4'-0" |
| (N2) | UNIVERSAL DIGITAL ALARM COMMUNICATIONS/BATTER | NOTIFIER NFS-2440 | 1300-0028-214 | NOMMED INSIDE F.A.C.P. | |
| (N3) | FIRE ALARM POWER EXPANDER PANEL | NOTIFIER NFS-2440 | 135-0028-225 | INCLUDED | |
| (N4) | ADDRESSABLE SMOKE DETECTOR | NOTIFIER NFS-2440 | 1713-0028-236 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N5) | ADDRESSABLE MANUAL PULL STATION (DOUBLE ACTION) | NOTIFIER NFS-121X | 1300-0028-213 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N6) | ADDRESSABLE HEAT DETECTOR | NOTIFIER NFS-2440 | 1710-0028-216 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N7) | ADDRESSABLE E MONITOR MODULE | NOTIFIER NFS-121X | 1300-0028-202 | 4" 5.0 x 2.18" PR. OULET BOX | |
| (N8) | ADDRESSABLE CONTROL MODULE | NOTIFIER NFS-121X | 1300-0028-202 | 4" 5.0 x 2.18" PR. OULET BOX | |
| (N9) | ADDRESSABLE RELAY MODULE | NOTIFIER NFS-121X | 1300-0028-202 | 4" 5.0 x 2.18" PR. OULET BOX | |
| (N10) | ADDRESSABLE WALL MOUNTED (CAMERA RATING AS NOTED) | SYSTEM SENSOR #58 | 1725-4653-186 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N11) | ADDRESSABLE WALL MOUNTED (CAMERA RATING AS NOTED) | SYSTEM SENSOR #28 | 1725-4653-186 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N12) | ADDRESSABLE CEILING MOUNTED (CAMERA RATING AS NOTED) | SYSTEM SENSOR #28 | 1725-4653-186 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N13) | ADDRESSABLE CEILING MOUNTED (CAMERA RATING AS NOTED) | SYSTEM SENSOR #28 | 1725-4653-186 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N14) | EXTERIOR HORN | SYSTEM SENSOR #28 | 1725-4653-186 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N15) | END OF LINE RESISTOR | NOTIFIER NFS-121X | 1725-4653-186 | 4" 5.0 x 2.18" PR. OULET BOX WITH 5.6 RAISED RING | PER DETAIL #E-146 |
| (N16) | ADDRESSABLE FIRE ALARM CABLE (NON-FLAME) | WESTERN #40225 | 716-0591-101 | | |

(A) 6MMBETHULCUT 1/2" SERIES CONTROL PANEL IS AN EQUAL TO THE SPECIFIED.
 (B) END OF LINE RESISTORS SHALL BE A.T.K. FOR NOTIFICATION APPLIANCE CIRCUITS FEEDING FROM FIRE ALARM CONTROL PANEL NFS-2440.

FIRE ALARM SYSTEM EQUIPMENT SPECIFICATION NOTES:

FIRE ALARM POWER EXPANDER PANEL #6

| DESCRIPTION | QUANTITY | SEPV CURRENT EACH | 96B-TOTAL EACH | ALARM CURRENT EACH | 96B-TOTAL EACH |
|--------------------------|----------|-------------------|----------------|--------------------|----------------|
| EXPANDER PANEL | 1 | 0.065 | 0.065 | 0.145 | 0.145 |
| HORN/SD STROBE (CEILING) | 1 | 0.00030 | 0.0003 | 0.00030 | 0.0003 |
| EXTERIOR HORN | 3 | 0.00030 | 0.0009 | 0.00030 | 0.0009 |
| TOTALS | | | 0.065 | | 0.194 |

TOTAL ALARM CURRENT OF 1.94 X 0.0285 (5 MINUTES) = 0.191 A.H.
 TOTAL SUPERVISORY CURRENT OF 0.065 X 24 HOURS = 1.560 A.H.
 TOTAL AMP HOURS REQUIRED = 1.751 A.H.
 PROVIDE TO AMP HOUR BATTERIES

FIRE ALARM POWER EXPANDER PANEL #2

| DESCRIPTION | QUANTITY | SEPV CURRENT EACH | 96B-TOTAL EACH | ALARM CURRENT EACH | 96B-TOTAL EACH |
|--------------------------|----------|-------------------|----------------|--------------------|----------------|
| EXPANDER PANEL | 1 | 0.065 | 0.065 | 0.145 | 0.145 |
| HORN/SD STROBE (CEILING) | 6 | 0.00030 | 0.0018 | 0.00030 | 0.0018 |
| EXTERIOR HORN | 2 | 0.00030 | 0.0006 | 0.00030 | 0.0006 |
| TOTALS | | | 0.065 | | 0.194 |

TOTAL ALARM CURRENT OF 1.94 X 0.0285 (5 MINUTES) = 0.191 A.H.
 TOTAL SUPERVISORY CURRENT OF 0.065 X 24 HOURS = 1.560 A.H.
 TOTAL AMP HOURS REQUIRED = 1.751 A.H.
 PROVIDE TO AMP HOUR BATTERIES

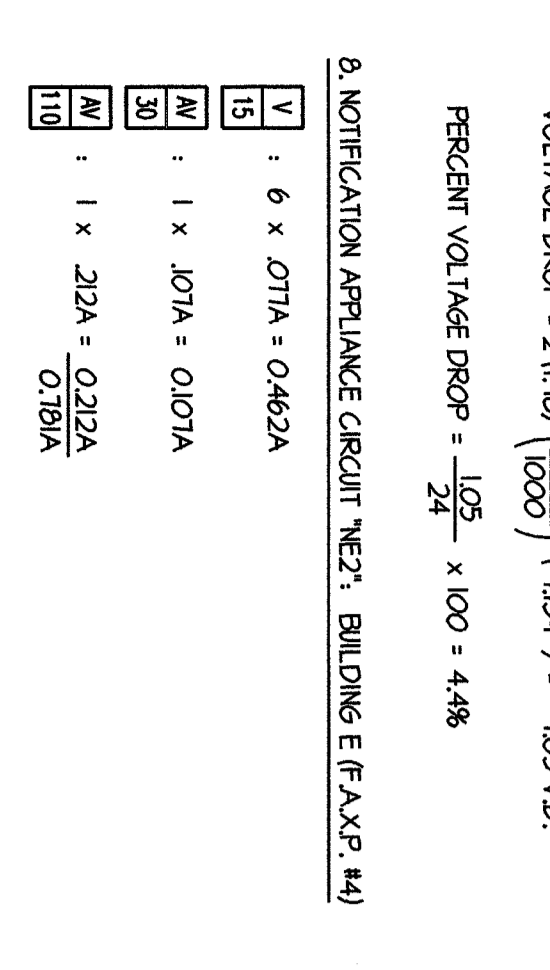
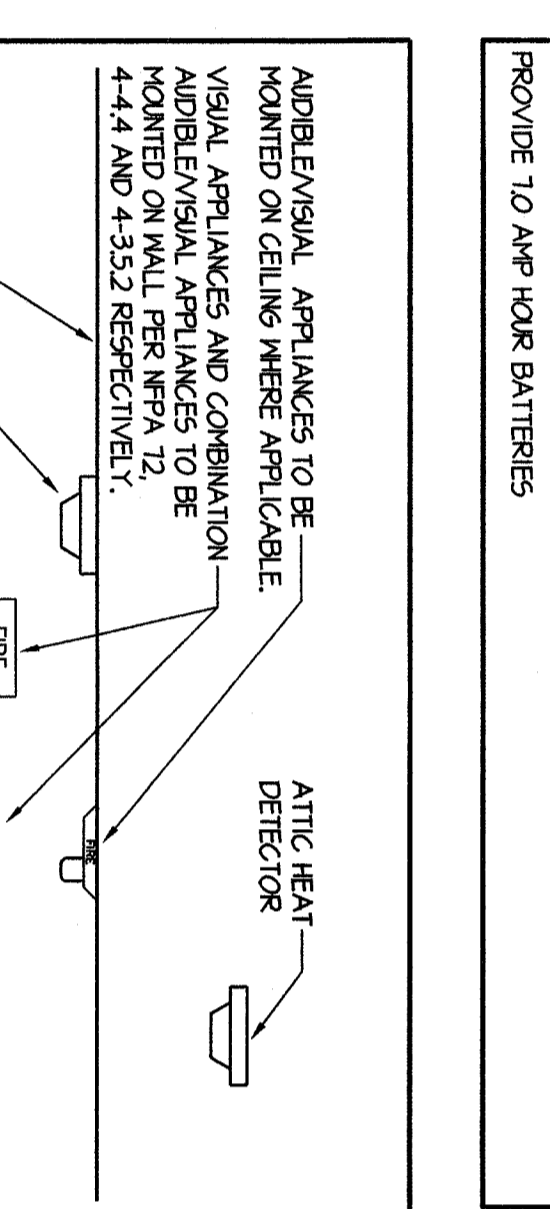
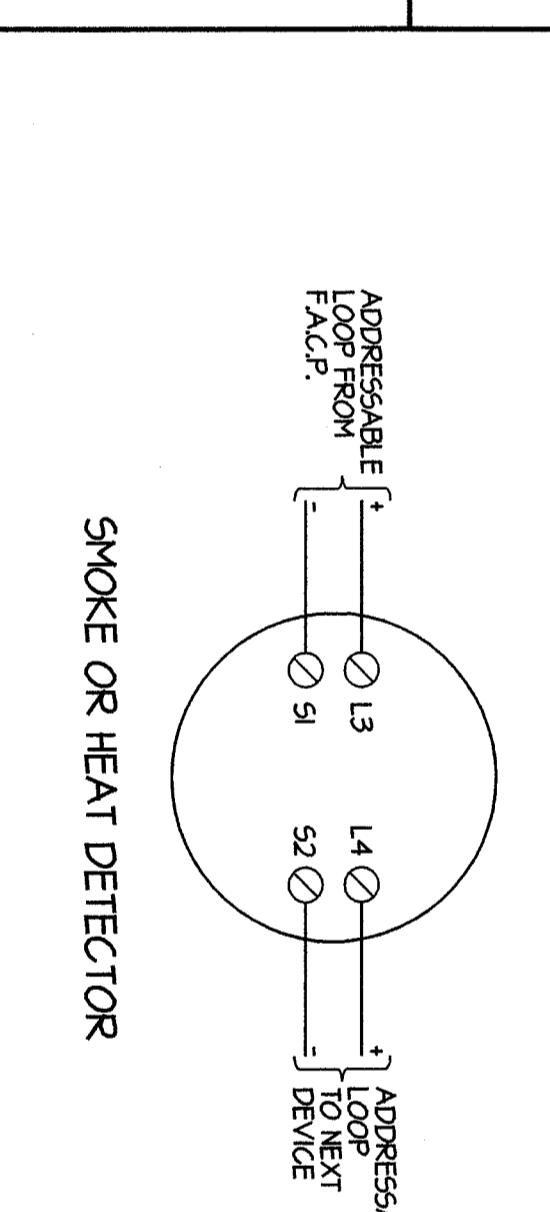
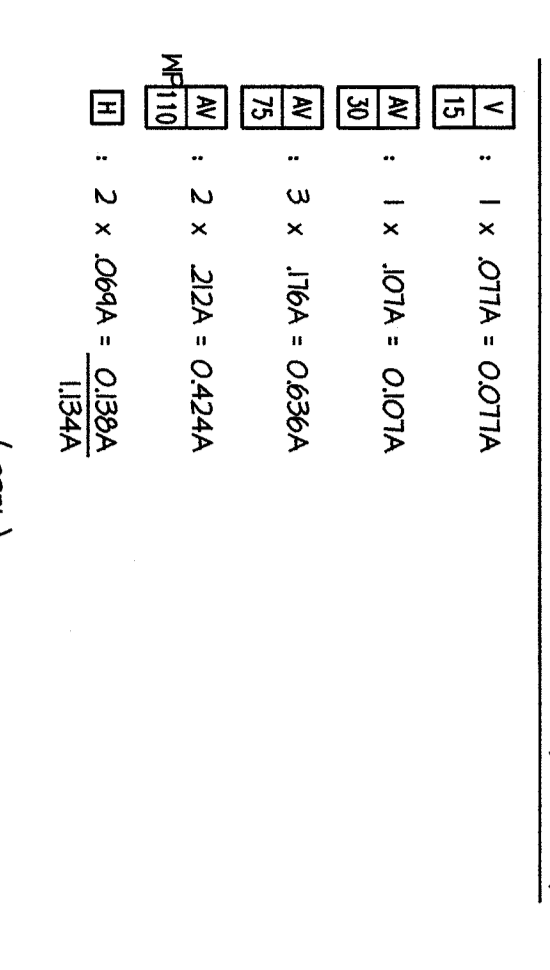
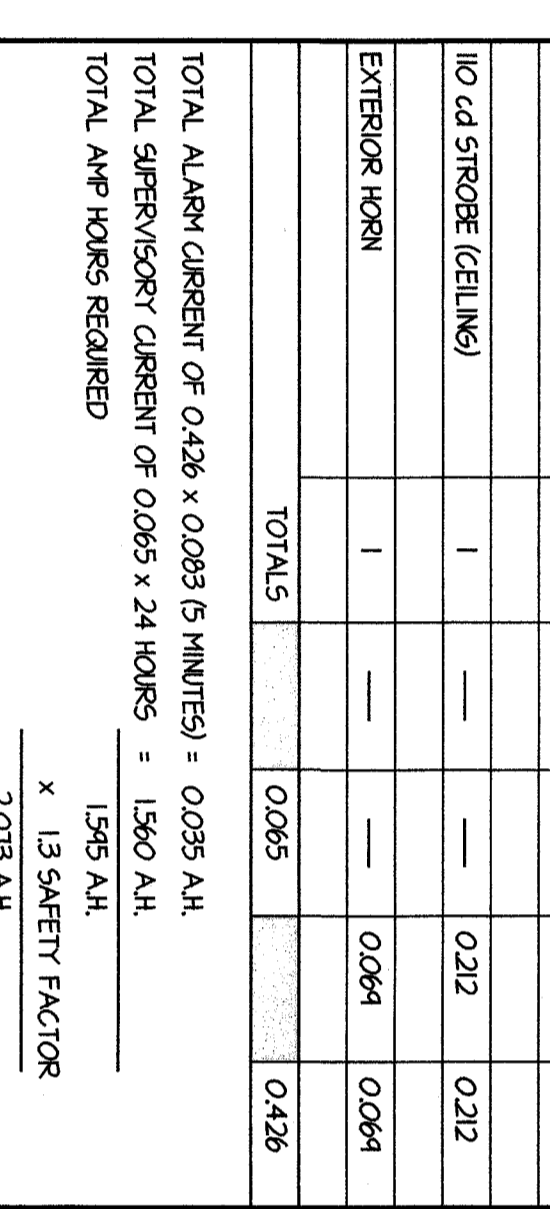
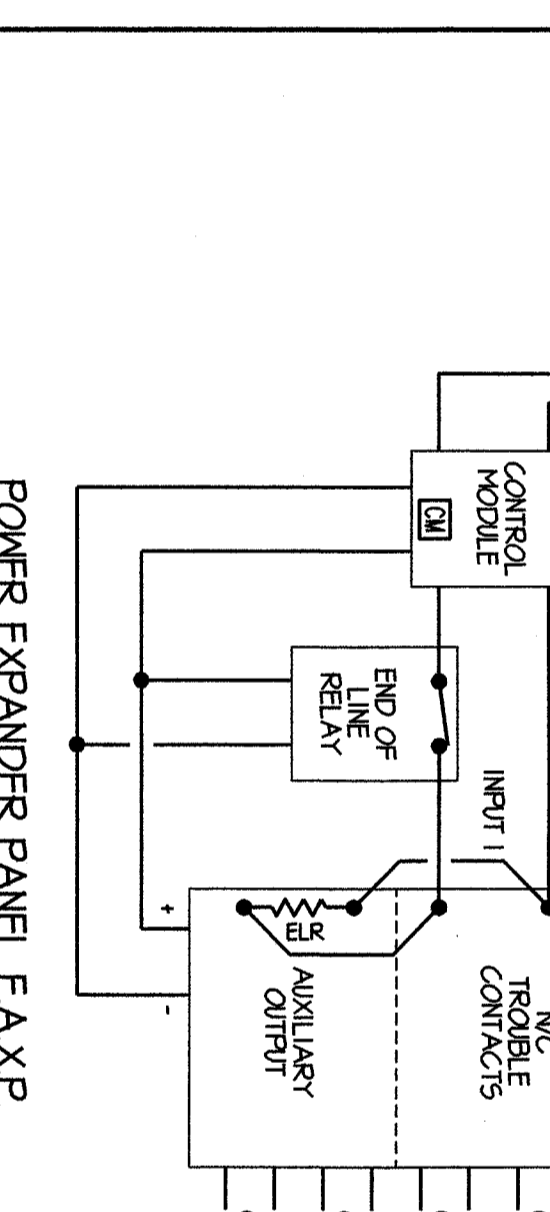
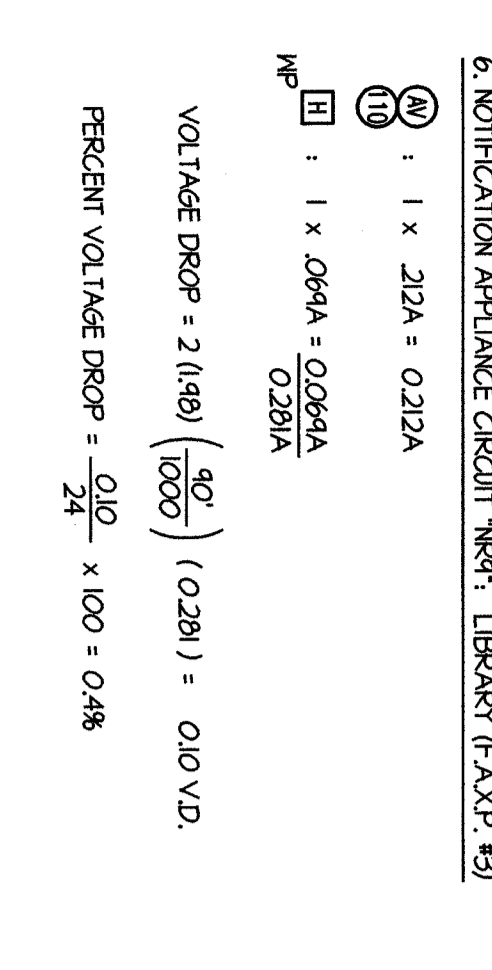
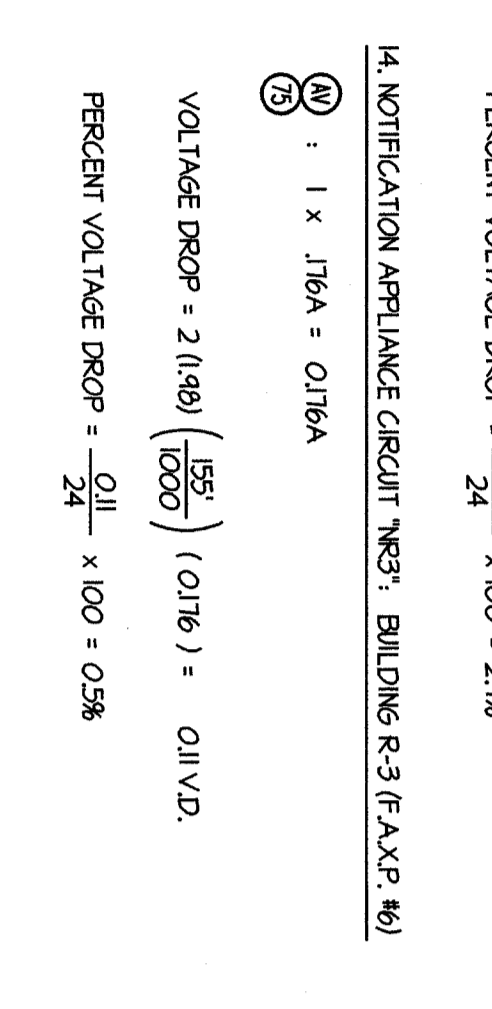
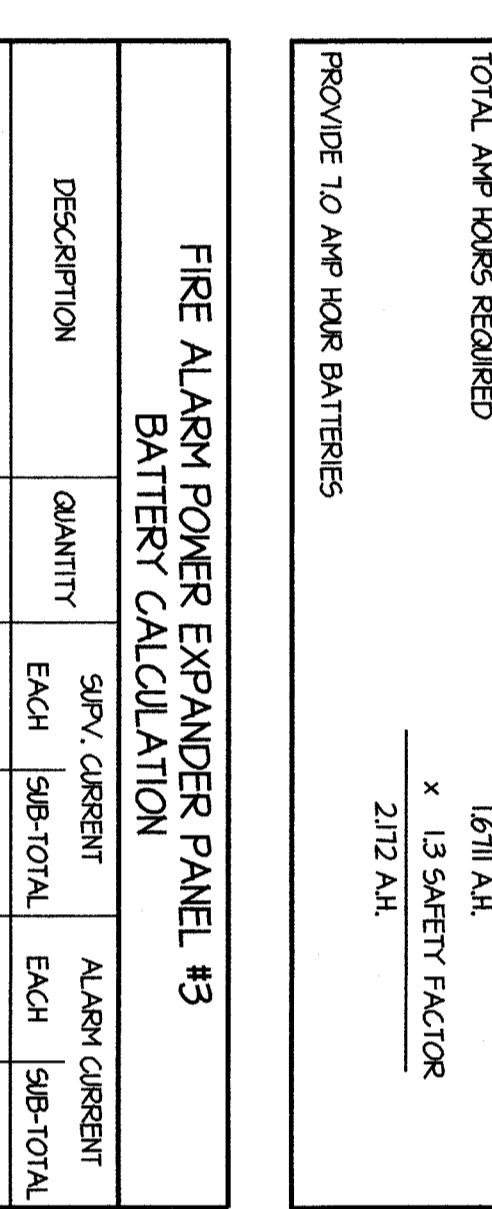
FIRE ALARM POWER EXPANDER PANEL #3

| DESCRIPTION | QUANTITY | SEPV CURRENT EACH | 96B-TOTAL EACH | ALARM CURRENT EACH | 96B-TOTAL EACH |
|--------------------------|----------|-------------------|----------------|--------------------|----------------|
| EXPANDER PANEL | 1 | 0.065 | 0.065 | 0.145 | 0.145 |
| HORN/SD STROBE (CEILING) | 1 | 0.00030 | 0.0003 | 0.00030 | 0.0003 |
| EXTERIOR HORN | 1 | 0.00030 | 0.0003 | 0.00030 | 0.0003 |
| TOTALS | | | 0.065 | | 0.194 |

TOTAL ALARM CURRENT OF 0.426 X 0.0285 (5 MINUTES) = 0.035 A.H.
 TOTAL SUPERVISORY CURRENT OF 0.065 X 24 HOURS = 1.560 A.H.
 TOTAL AMP HOURS REQUIRED = 1.595 A.H.
 PROVIDE TO AMP HOUR BATTERIES

FIRE ALARM SYSTEM SEQUENCE OF OPERATIONS

| RESULT OF OPERATION | TYPE OF INITIATION | 59KRT CIRCUIT/ SIGNAL PANEL |
|---|--------------------|-----------------------------|
| ANNUNCIATE ALARM AT PANEL | YES | YES |
| ANNUNCIATE TROUBLE AT PANEL | YES | YES |
| ACTIVATE ALL AUDIBLE ALARMS | YES | YES |
| ACTIVATE ALL VISUAL ALARMS | YES | YES |
| TRANSFER TO BATTERY BACK-UP | YES | YES |
| RELEASE ELECTRICAL/MECHANICAL DOOR HOLDERS | YES | YES |
| SHUTDOWN A.C. UNITS | YES | YES |
| CLOSE FIRE RATED OVERHEAD DOOR | YES | YES |
| ATTEND TO LOCATION | YES | YES |
| CENTRAL STATION FOR FIRE ALARM SYSTEM (CONTROL ROOM/STATION FOR MONITORING TROUBLE) | YES | YES |
| CENTRAL STATION FOR FIRE ALARM SYSTEM (CONTROL ROOM/STATION FOR MONITORING TROUBLE) | YES | YES |



COMPLETE AUTOMATIC FIRE ALARM PLAN SUBMITTAL

THE FIRE ALARM SYSTEM SHOWN ON THESE PLANS HAS BEEN SUBMITTED AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT. ANY SUBSTITUTION OF THE FIRE ALARM SYSTEM SHALL BE RE-APPROVED TO THE ARCHITECT FOR REVIEW. THE DRAWINGS, NOTES AND SPECIFICATIONS SHALL BE IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE SUBMITTAL. THE ARCHITECT'S REVIEW SHALL BE AS DEFINED IN C.B.C. SECTION 1006.4(2)(21) AND 1006.4(2)(21.5).

FIRE ALARM SYSTEM EQUIP. SPECIFICATIONS, NOTES AND BATTERY CALCULATIONS
 SHEET IDENTIFICATION NUMBER
A-E-146
 SHEET OF

BAKERSFIELD CITY SCHOOL DISTRICT
 1116 LYNNIC WAY
 BAKERSFIELD CALIFORNIA 93309

ROSE SHING AND ASSOCIATES, INC.
 131 S. DUNDAS AVE. (559)733-2871
 VANUO, CALIFORNIA 93292-6705

BAKERSFIELD CITY SCHOOL DISTRICT
 1116 LYNNIC WAY
 BAKERSFIELD CALIFORNIA 93309

ORDIZ MELBY ARCHITECTS, INC.
 5500 KING AVENUE SUITE 200
 BAKERSFIELD, CALIFORNIA 93309
 TELEPHONE (805) 332-6258
 FACSIMILE (805) 332-4291

DMN ENGINEERS, INC.
 ARCHITECT #A-178
 WILLIAM MELBY, AIA
 ARCHITECT #A-635

REGISTERED ARCHITECT
 WILLIAM MELBY, AIA
 ARCHITECT #A-635

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