

**HORT SCHOOL  
MODERNIZATION  
BAKERSFIELD CITY  
SCHOOL DISTRICT**

2301 PARK DRIVE  
BAKERSFIELD, CA 93306

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OCT 07 1997

SYMBOL	NAME	DESCRIPTION	ALARM SUPERVISORY LOAD
①	JUNCTION BOX - AS REQUIRED	45 BOX & FLUSH PLATE MINIMUM	
②	TERMINAL CABINET	FCI #MS-2	
③	FIRE ALARM PULL STATION +48" MAX.	FCI #750-0694/107	
④	SMOKE DETECTOR PHOTOELECTRIC	FCI #SS-1201 CSFM #7272-0694/144	0.0012
⑤	STROBE 15 CANDLEA	WHELOCK #RS-2415W-FR CSFM #7125-0785/141	0.50A
⑥	STROBE SYNCRONIZED	WHELOCK #RS-2415W-FR CSFM #7125-0785/141	0.50A
⑦	STROBE SYNCRONIZED	WHELOCK #RS-2415W-FR CSFM #7125-0785/141	0.50A
⑧	STROBE SYNCRONIZED	WHELOCK #RS-2415W-FR CSFM #7125-0785/141	0.50A
⑨	HORN/STROBE SYNCRONIZED	WHELOCK #AS-24110W-FR CSFM #7125-0785/131	1.56A
⑩	HORN/STROBE SYNCRONIZED	WHELOCK #AS-24110W-FR CSFM #7125-0785/131	1.89A
⑪	MINI HORN ONLY	WHELOCK #AH-24-R CSFM #7125-0785/131	0.24A
⑫	HORN ONLY	WHELOCK #M-24-R CSFM #7125-0785/118	0.40A
⑬	FIRE ALARM CONTROL PANEL	FCI #72-24 CSFM #7165-0694/001	3.70A
⑭	SYNCRONIZE MODULE	WHELOCK #SM-12/24-R CSFM #7300-0785/132	0.25A
<b>TOTALS</b>			<b>0.633A</b>

QTY.	DESCRIPTION	EQUIPMENT	CURRENT DRAIN EXCH	SUPERVISORY CURRENT	ALARM CURRENT	
26	PULL STATION	FCI #MS-2	-	-	-	
1	SMOKE DETECTOR	FCI #SS-1201	0.0012	0.0012	0.0012	
10	STROBE 15 CANDLEA	WHELOCK #RS-2415W-FR	0.50	-	5.00	
6	STROBE SYNCRONIZED	WHELOCK #RS-2415W-FR	0.50	-	3.00	
15	STROBE SYNCRONIZED	WHELOCK #RS-2415W-FR	0.50	-	1.33	
5	HORN/STROBE SYNCRONIZED	WHELOCK #AS-24110W-FR	1.83	-	7.80	
4	HORN/STROBE SYNCRONIZED	WHELOCK #AS-24110W-FR	1.83	-	7.32	
17	MINI HORNS	WHELOCK #AH-24-R	0.24	-	4.08	
15	HORN	WHELOCK #M-24-R	0.40	-	6.00	
1	FIRE ALARM CONTROL PANEL	WHELOCK #SM-12/24-R	3.70	0.63	3.70	
2	SYNCRONIZE MODULE	WHELOCK #SM-12/24-R	0.25	-	0.50	
<b>TOTALS</b>					<b>0.6332</b>	<b>3.8731</b>

TOTAL ALARM CURRENT OF 3.8731 X 1 (6 MINUTES) = .1 OF AN HOUR = .3873 AMP HOUR  
TOTAL SUPERVISORY CURRENT OF 0.6312 X 24 HOURS = 1.514 AMP HOUR  
TOTAL AMP HOUR REQUIRED: 1.9013 AMP HOUR  
BATTERIES \_\_\_\_\_ 6 \_\_\_\_\_ AMP HOUR, FCI #B-6R

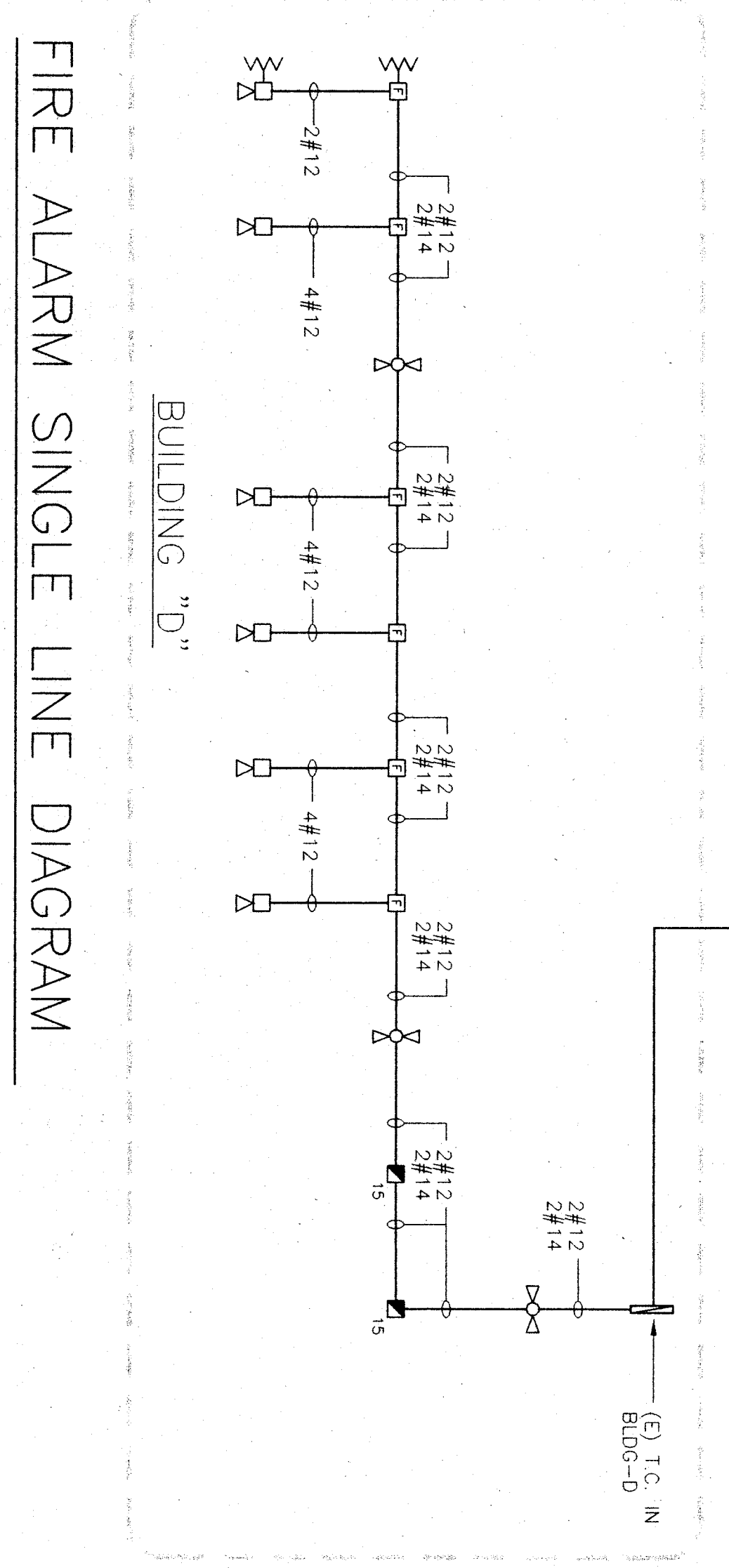
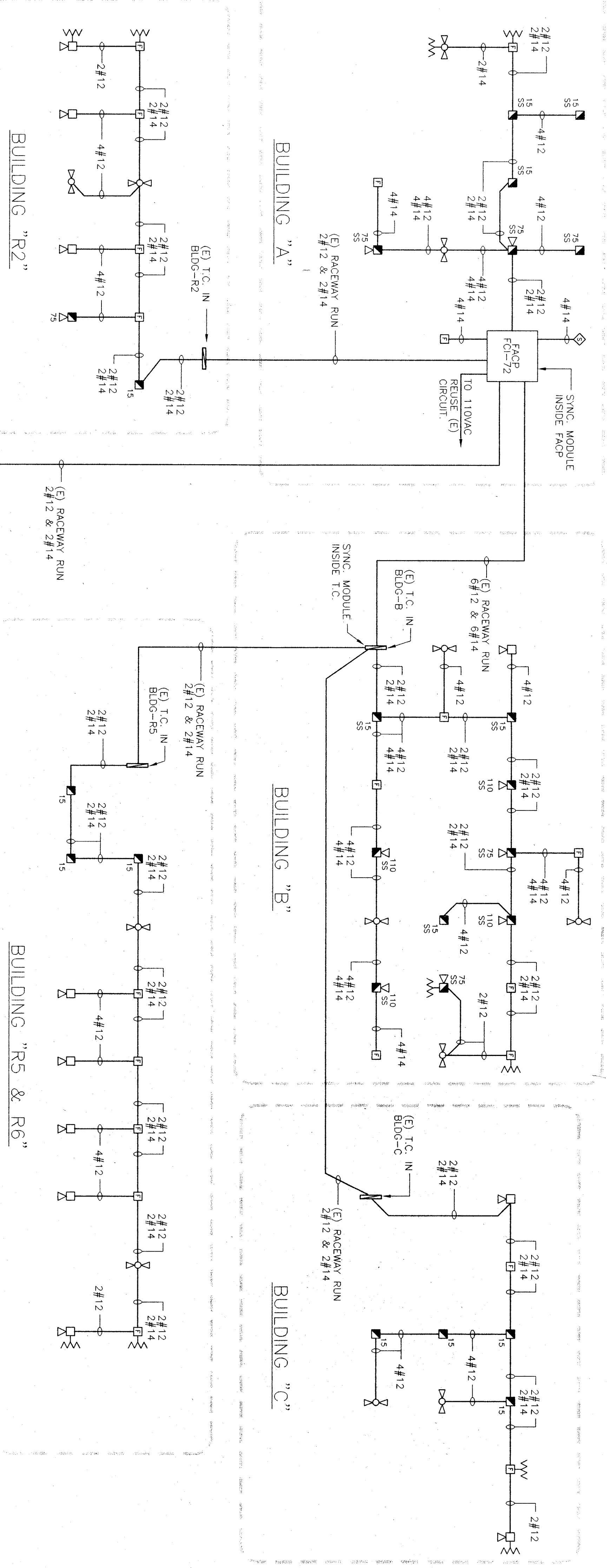
**FIRE ALARM SYSTEM NOTES:**

- ALL WIRING IS SHOWN DIAGONALLY. CONTRACTOR MAY VARY SEQUENCE OR CIRCUITRY, HOWEVER, ALL CIRCUITS SHALL BE CONTINUOUS AND SUPERVISED FROM DEVICE OR DEVICE OR FAT TO DEVICE OR FAT OR FAT TO FAT. NO PARALLEL BRANCHING AT TERMINAL CONNECTION AT A DEVICE OR AT A FAT ONLY. IN ANY CONDUIT, BRANCHING BY TERMINAL CONNECTION AT A DEVICE OR AT A FAT ONLY.
- ALL CONNECTIONS SHALL BE PROPERLY LABELED BY CONDUCTOR AND SHALL HAVE STAKE-ON USG CONDUCTORS.
- FIRE ALARM TERMINAL CABINETS SHALL HAVE SUFFICIENT SPACE, TERMINAL BOARDS, AND WIRING SHALL BE PROTECTED FROM MECHANICAL DAMAGE. WIRING SHALL BE PROTECTED FROM MECHANICAL DAMAGE AND OTHER SHOP DRAWINGS SHALL BE DRAWINGS OF HIS PROPOSED CONNECTIONS AT EACH FIRE ALARM TERMINAL CABINET PRIOR TO COMMENCING ANY WORK.
- ALL CONDUCTORS SHOWN SHALL BE #12 & #14 AWG, SOLID COPPER, UNLESS OTHERWISE NOTED (THIN/THICK) - BELOW GRADE), 18/12 TSP-WEST PENN 97% USE WPAQC-293 BELOW GRADE.
- WRITTEN CERTIFICATION BY THE FIRE ALARM EQUIPMENT DISTRIBUTOR (OR VENDOR OR MANUFACTURER) SHALL BE SUBMITTED TO THE ARCHITECT WITH COPIES TO THE ELECTRICAL ENGINEER AND THE STATE ARCHITECT AND THAT THE INSTALLATION INCLUDES THE TITLE 19 OF THE CALIFORNIA CODE OF REGULATIONS AND PART 19.270 OF TITLE 24 OF THE C.C.R. AND C.B.C. SECTION 305-9. THE CONTRACTOR SHALL COMPLETE A FIRE ALARM SYSTEM CERTIFICATION AND DESCRIPTION FORM AND SUBMIT TO THE OFFICE OF REGULATION SERVICES.
- INSTALLATION OF THE FIRE ALARM SYSTEMS SHALL NOT BE STARTED UNTIL STATE FIRE MARSHAL LISTING NUMBERS OF ALL FIRE ALARM COMPONENTS, ARE SUBMITTED TO AND APPROVED BY THE OFFICE OF REGULATION SERVICES.
- UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A SATISFACTORY TEST OF THE ENTIRE SYSTEM IN ACCORDANCE WITH NFPA 72: 1993 EDITION SHALL BE MADE IN THE PRESENCE OF THE ENVIRONMENTAL AGENT.

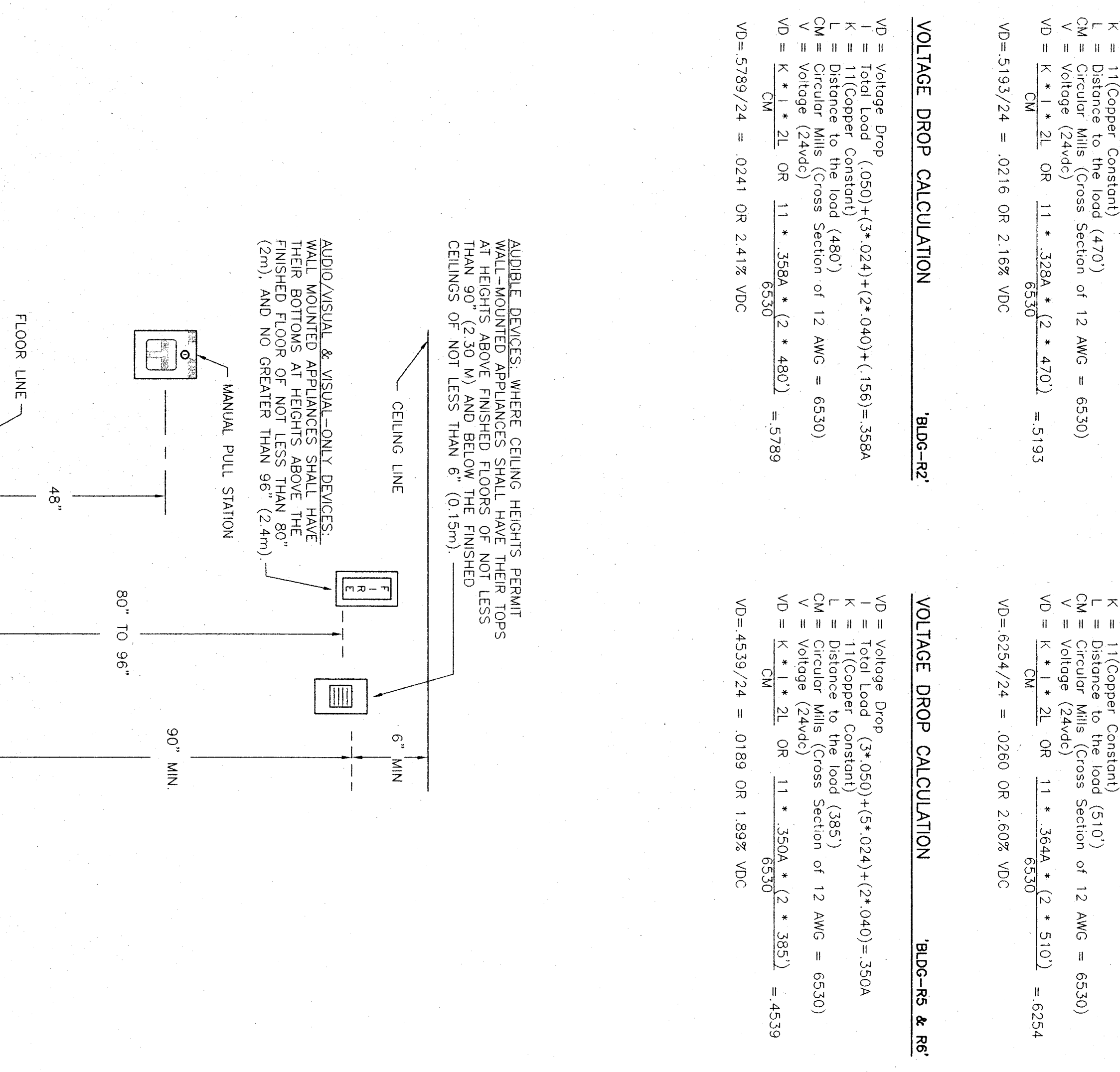
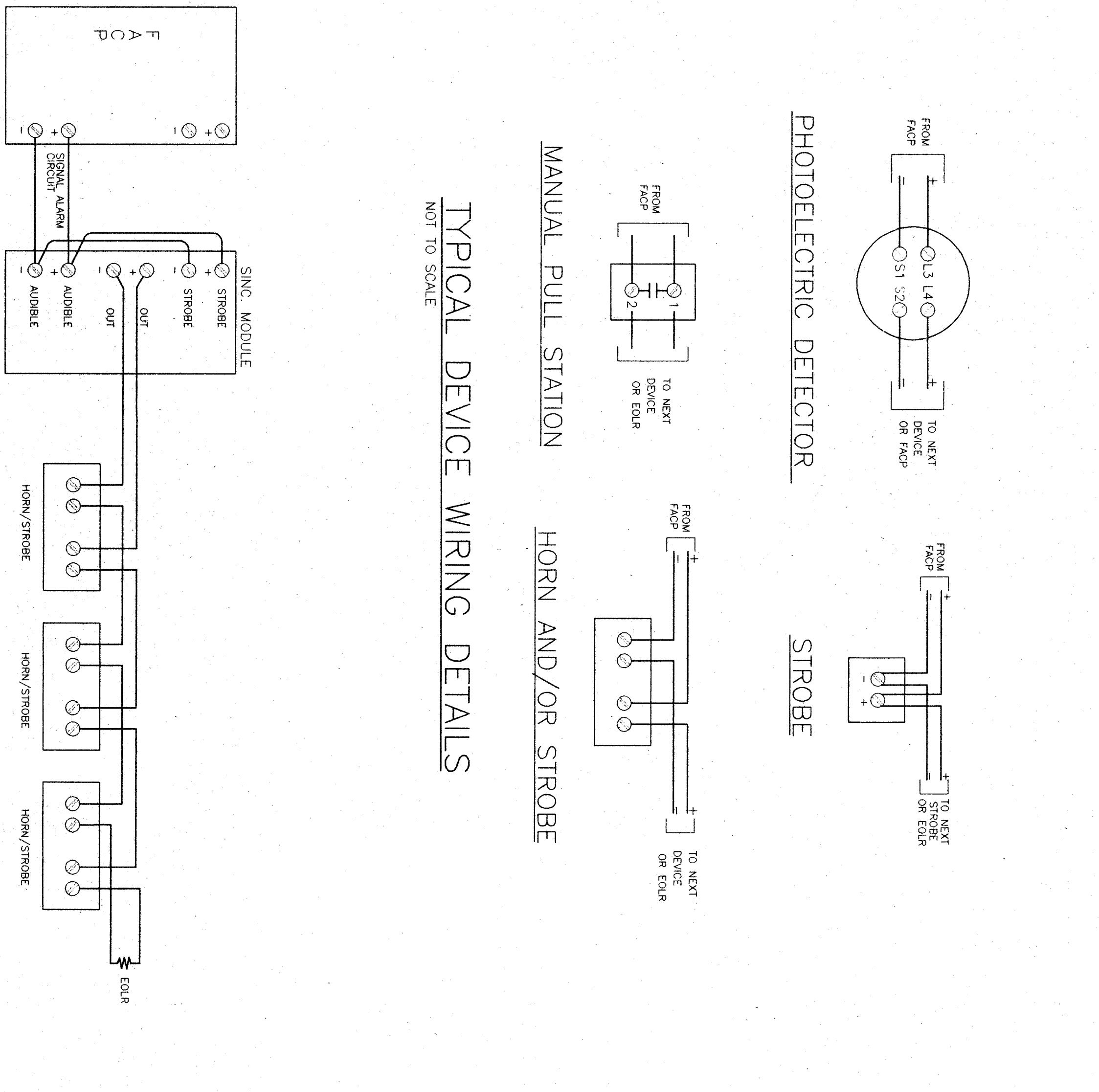
**SYSTEM OPERATION**

PULL STATION, SMOKE DETECTOR, STROBE DETECTOR SHALL CAUSE FIRE ALARM HORN TO SOUND. VISUAL ALARMS TO FLASH AND SOUND. HORN CONTINUOUSLY TO SOUND. HORN WHICH ZONE WAS ACTIVATED. THE FIRE ALARM SYSTEM WILL STAY ON ALARM UNTIL RESET. THE SYSTEM WILL NOT RESET IF THE ACTIVATED DEVICE IS NOT CLEAR. **Alarm Condition shall include Audible & Visual Systems & Batteries.**

**FIRE ALARM COMPLETE  
PLAN SUBMITTAL**



<b>VOLTAGE DROP CALCULATION</b>	<b>BUDG-A</b>	$VD = \text{Voltage Drop} (4 \times 0.50) + (2 \times 1.56) + (1.33) + (2 \times 0.40) = 6.754$ $L = 11(\text{Copper Constant})$ $I = \text{Distance to the load (175)}$ of 12 AWG = 6530 $V = \text{Voltage (240)}$ $VD = K \cdot I \cdot 2L \text{ OR } 11 \cdot 6.754 \cdot (2 \times 175) = 3979$ $CM = 6530$
<b>VOLTAGE DROP CALCULATION</b>	<b>BUDG-B</b>	$VD = \text{Voltage Drop} (4 \times 0.50) + (2 \times 1.56) + (1.33) + (2 \times 0.40) + (0.25) = 13.784$ $L = 11(\text{Copper Constant})$ $I = \text{Distance to the load (300)}$ $V = \text{Voltage (240)}$ $VD = K \cdot I \cdot 2L \text{ OR } 11 \cdot 13.784 \cdot (2 \times 300) = 181$ $CM = 6530$
<b>VOLTAGE DROP CALCULATION</b>	<b>BUDG-C</b>	$VD = \text{Voltage Drop} (4 \times 0.50) + (2 \times 0.24) + (2 \times 0.40) = 3.284$ $L = 11(\text{Copper Constant})$ $I = \text{Distance to the load (470)}$ $V = \text{Voltage (240)}$ $VD = K \cdot I \cdot 2L \text{ OR } 11 \cdot 3.284 \cdot (2 \times 470) = 5193$ $CM = 6530$
<b>VOLTAGE DROP CALCULATION</b>	<b>BUDG-D</b>	$VD = \text{Voltage Drop} (4 \times 0.50) + (2 \times 0.24) + (2 \times 0.40) = 3.284$ $L = 11(\text{Copper Constant})$ $I = \text{Distance to the load (510)}$ $V = \text{Voltage (240)}$ $VD = K \cdot I \cdot 2L \text{ OR } 11 \cdot 3.284 \cdot (2 \times 510) = 6254$ $CM = 6530$
<b>VOLTAGE DROP CALCULATION</b>	<b>BUDG-E</b>	$VD = \text{Voltage Drop} (4 \times 0.50) + (2 \times 0.24) + (2 \times 0.40) = 3.284$ $L = 11(\text{Copper Constant})$ $I = \text{Distance to the load (510)}$ $V = \text{Voltage (240)}$ $VD = K \cdot I \cdot 2L \text{ OR } 11 \cdot 3.284 \cdot (2 \times 510) = 6254$ $CM = 6530$
<b>VOLTAGE DROP CALCULATION</b>	<b>BUDG-F</b>	$VD = \text{Voltage Drop} (4 \times 0.50) + (2 \times 0.24) + (2 \times 0.40) = 3.284$ $L = 11(\text{Copper Constant})$ $I = \text{Distance to the load (510)}$ $V = \text{Voltage (240)}$ $VD = K \cdot I \cdot 2L \text{ OR } 11 \cdot 3.284 \cdot (2 \times 510) = 6254$ $CM = 6530$



**SYNCRONIZE MODULE WIRING DETAIL**  
NOT TO SCALE

**F.A. DEVICE ELEVATION**  
NO SCALE

job no. 97-276  
date MAY 12, 98  
drawn by C.A.  
chk'd by J.W.G.  
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**FIRE ALARM  
SINGLE LINE  
AND CALCULATIONS**