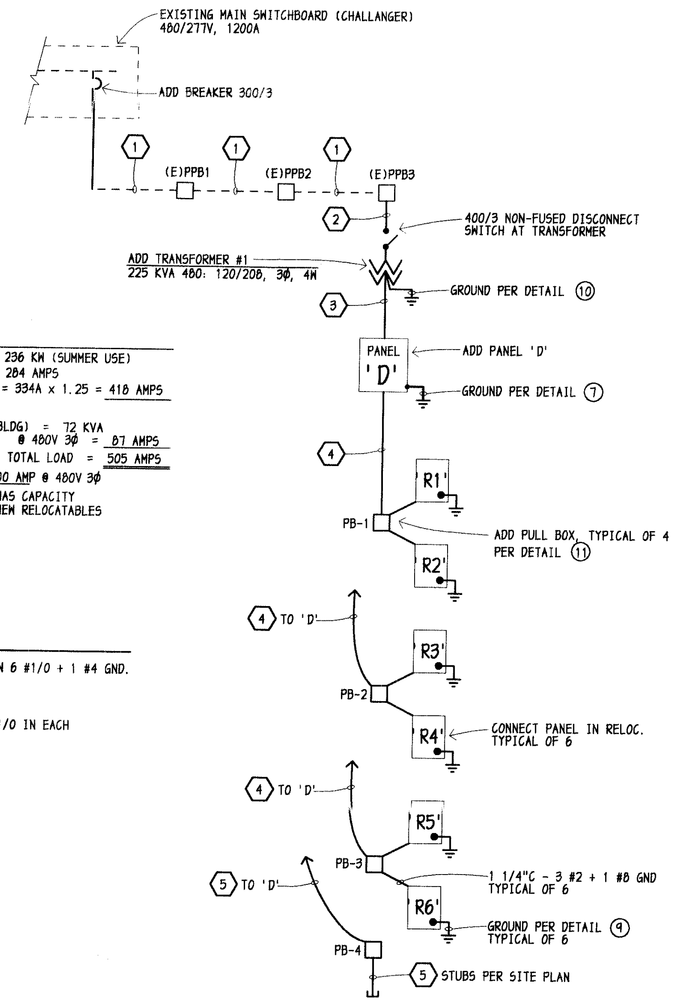


LOAD CALCULATIONS

EXISTING MAXIUM DEMAND = 236 KW (SUMMER USE)
@ 480V 3ϕ = 284 AMPS
@ .85 PF = 334A x 1.25 = 418 AMPS

ADDED LOAD = 6 x 12 KVA (EA BLDG) = 72 KVA
@ 480V 3ϕ = 87 AMPS
TOTAL LOAD = 505 AMPS

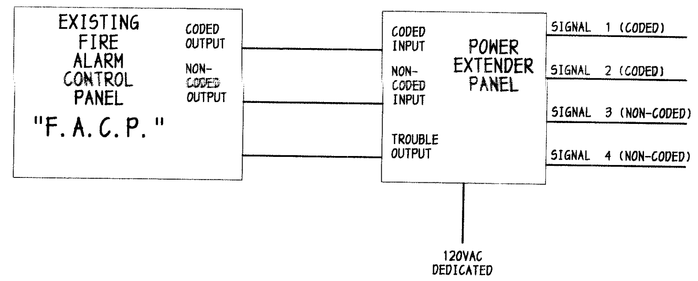
EXISTING MAIN SWBD RATING = 1200 AMP @ 480V 3ϕ
THEREFOR THE EXISTING SERVICE HAS CAPACITY FOR THE ADDED LOAD OF THE SIX NEW RELOCATABLES

FEEDERS:

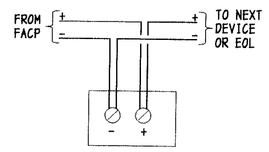
1. EXISTING 3 1/2"C - PULL IN 6 #1/0 + 1 #4 GND.
2. 4"C - 6 #1/0 + 1 #4 GND.
3. TWO 3"C - 4 #400 MCM, 1 #1/0 IN EACH
4. 2"C - 6 #1 + 1 #8 GND.
5. FOUR 2"C SPARES

1 ONE LINE DIAGRAM

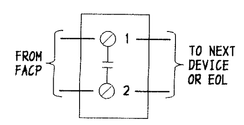
NTS



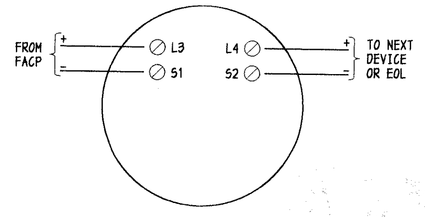
POWER EXTENDER PANEL INTERCONNECT



HORNS



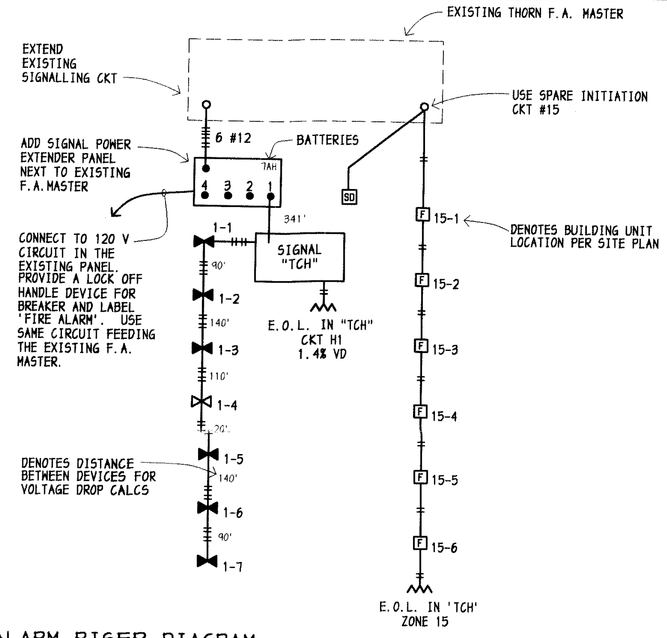
MANUAL PULL STATION



SMOKE DETECTOR

4 FIRE ALARM EQUIPMENT WIRING DIAGRAMS

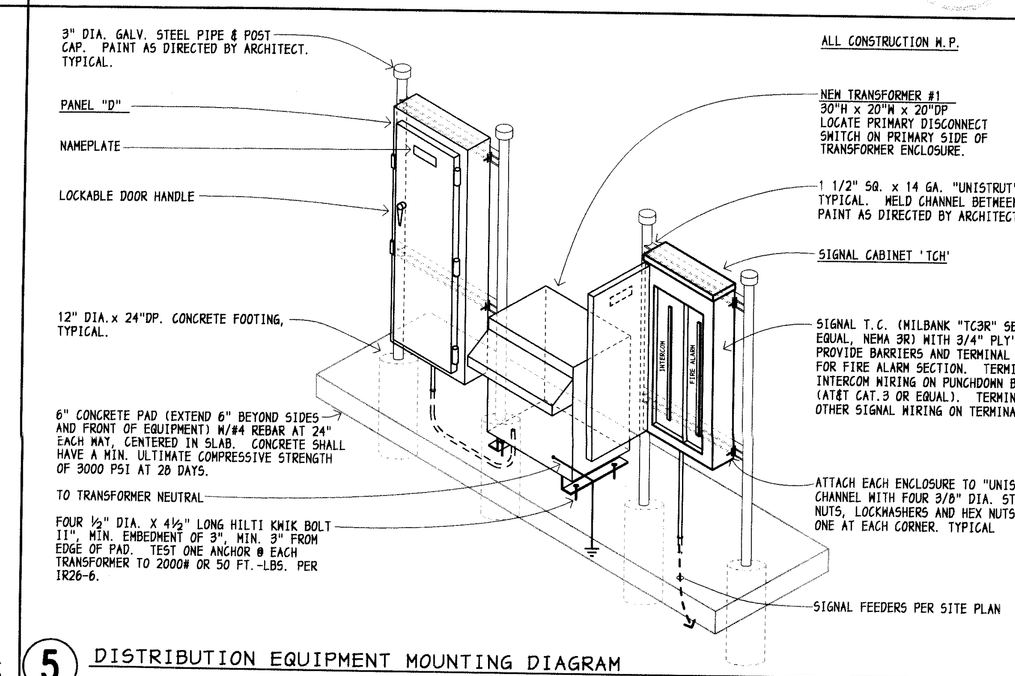
NTS



2 FIRE ALARM RISER DIAGRAM

SEE NOTE 'A' SHEET E1

NTS



5 DISTRIBUTION EQUIPMENT MOUNTING DIAGRAM

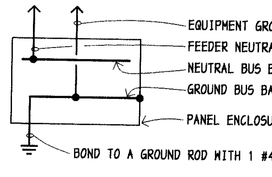
NTS

120/208 VOLTS 3 ϕ 4 WIRE	M.P. CONSTRUCTION	10,000 BREAKER A.I.C.
800 A. BUSSING 100 A. MAIN BKR.		6" MAX. ENCL. DEPTH
30 CIRCUIT		PER DETAIL 5 MOUNTING
PANELBOARD		

PANEL 'D'

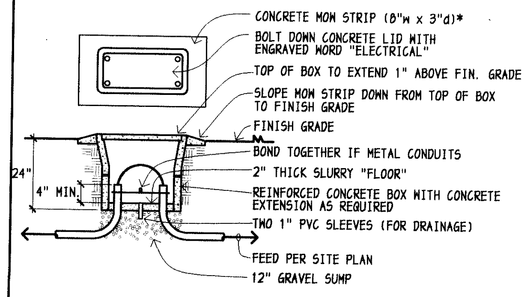
CIR.	BKR.	LOAD V.A. ϕA	ϕB	ϕC	DESCRIPTION	DESCRIPTION	LOAD V.A. ϕC	ϕB	ϕA	BKR.	CIR.
1	100/2	6000			RELOCATABLE "R1"	RELOCATABLE "R4"			6000	100/2	2
3			6000		——	——		6000			4
5	100/2			6000	RELOCATABLE "R2"	RELOCATABLE "R5"	6000			100/2	6
7		6000			——	——			6000		8
9	100/2		6000		RELOCATABLE "R3"	RELOCATABLE "R6"		6000		100/2	10
11				6000	——	——	6000				12
13	100/2				SPARE						14
15											16
17	100/2				SPARE						18
19											20

TOTAL LOADS: ϕA: 24,000 W 200 A ϕB: 24,000 W 200 A ϕC: 24,000 W 200 A



7 GROUNDING ELECTRODE SYSTEM FOR REMOTE DISTRIBUTION PANELS

NTS

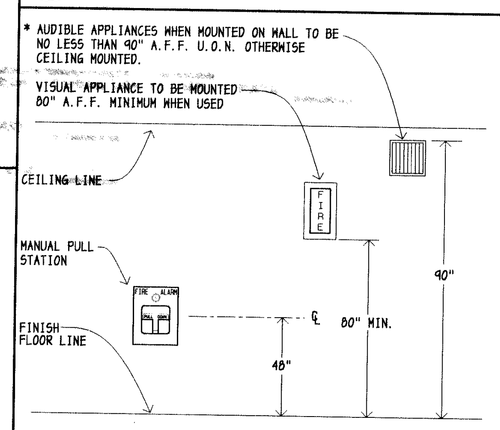


* NOTE: WHERE PULLBOX IS ADJACENT TO CONCRETE WALK, EXTEND WOWSTRIP TO CONNECT WITH WALK.

11 POWER SIGNAL PULLBOXES

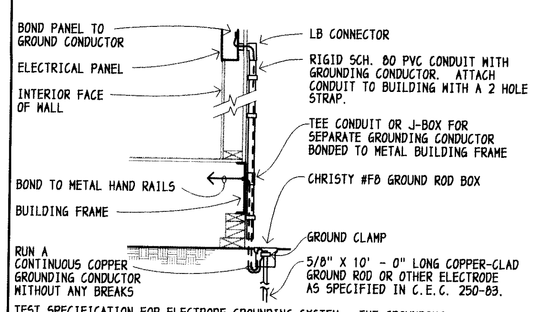
CHRISTY SIGNAL BOX N36

NTS



8 FIRE ALARM DEVICES ELEVATION

NTS

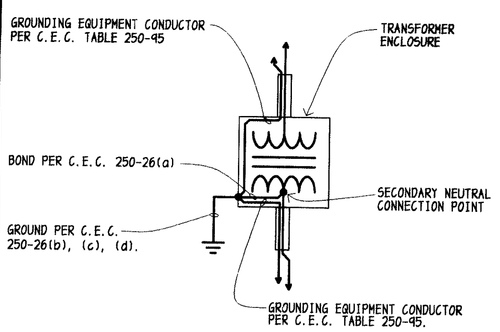


TEST SPECIFICATION FOR ELECTRODE GROUNDING SYSTEM - THE GROUNDING ELECTRODE(S) SHALL BE TESTED BY THE FALL OF POTENTIAL METHOD AS SPECIFIED IN IEEE STD. 81-1983 & SHOWN TO BE 25 OHMS OR LESS. A COPY OF THE TEST REPORT SHALL BE SUBMITTED TO THE ARCHITECT. PROJECT INSPECTOR SHALL WITNESS TEST.

9 PORTABLE BLDG. GROUNDING SYSTEM

BOND BUILDINGS TOGETHER WITH 1 #6 CU WHEN PORTABLES ARE LOCATED SIDE BY SIDE.

NTS



10 TRANSFORMER GROUNDING & BONDING

NTS

SIGNAL SPECIFICATIONS

FIRE ALARM EQUIPMENT SEE NOTE 'A' ON E1

EXISTING FIRE ALARM MASTER CONTROL PANEL - THORN FIREQUEST 200 (C.S.F.M. #7165-1449:130)

SIGNAL EXTENDER PANEL (C.S.F.M. #7300-0054:123) SILENT KNIGHT #5345

F MANUAL FIRE ALARM PULL STATION @ +48" (U.O.N.) (C.S.F.M. #7150-1443:156) GRINNELL RM5

AUDIBLE MINI HORNS (C.S.F.M. #7135-0785:115) WHEELOCK MIZ-24R

AUDIBLE EXTERIOR HORN (C.S.F.M. #7135-0785:118) WHEELOCK MT-12/24R-10B MEATHERPROOF BACKBOX

SD SMOKE DETECTOR - MOUNT ON CEILING. GRINNELL 15C-3501/IBC-353 BASE (C.S.F.M. #7271-1449:154)

INTERCOM EQUIPMENT

S FLUSH CEILING SPEAKER - BY OWNER

▽ INTERCOM HANDSET - BY OWNER TC4312

INTERCOM CABLE - BY OWNER

VOLTAGE DROP CALCULATIONS

VOLTAGE DROP = $\frac{\text{CURRENT x WIRE LENGTH x 21.6}}{\text{CIRCULAR MILS}}$

VOLTAGE DROP PERCENT = $\frac{\text{VOLTAGE DROP (V)}}{\text{APPLIED VOLTAGE (24)}}$

VD = $\frac{0.112 \times 491' \times 21.6}{6530\ (\#12\ \text{AWG})} = 3.4\ \text{V}$

$\frac{3.4}{24V} \times 100 = 1.4\%$ VD HORN SIGNAL CIRCUIT #H1

CALCULATIONS ARE WORST CASE VOLTAGE DROP OCCURRING AT FURTHEST DISTANCE FROM THE FIRE ALARM EXPANDER PANEL TO THE HORN AT BLDG UNIT R6 WITH END OF LINE RESISTOR AT TH15 LAST HORN ON CIRCUIT.

FIRE ALARM EXTENDER PANEL BATTERY CALCULATION

DESCRIPTION	QUANTITY	SUPV. CURRENT EACH	SUPV. CURRENT SUB-TOTAL	ALARM CURRENT EACH	ALARM CURRENT SUB-TOTAL
EXTENDER PANEL	1	.	0.075	.	0.100
MINI HORNS	6	.	.000045	.	0.072
EXTERIOR HORNS	1	.		.	0.040
		.			
TOTALS			0.075		0.212

TOTAL ALARM CURRENT OF 0.212 x .083 (5 MINUTES) . . . = 0.0175 A.H.
TOTAL STANDBY CURRENT OF 0.075 x 24 HOURS . . . . . = 1.800 A.H.
TOTAL AMP HOURS REQUIRED . . . . . 1.8175 A.H.
x 1.1 SAFETY FACTOR
PROVIDE 7 AMP HOUR BATTERIES IN PANEL . . . . . 1.999 A.H.

SMOKE DETECTOR = .0006AMP x 24 HOURS = .0144AH
ADDED LOAD TO THE EXISTING THORN FA MASTER STANDBY CURRENT

EXPANDER PANEL IN ALARM = .015AMP x .083 = .00124AH
ADDEN LOAD TO THE EXISTING FA MASTER ALARM CURRENT

TOTAL CURRENT LOAD = .01564 AMP HOURS.

NO SIGNIFICANT LOAD INCREASE TO THE EXISTING FIRE ALARM CONTROL PANELS TAH BATTERIES

COMPLETE 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 RESUBMITTED TO THE DIVISION OF THE STATE ARCHITECT FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL PAY ANY ADDITIONAL FEES THAT ARE INCURRED DUE TO THIS SUBSTITUTION.

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(805) 327-1082

LICENSED ARCHITECT STEVEN J. COBB No C-16788 EXP. 11/30/98 STATE OF CALIFORNIA

SIGNATURE & SEAL REQUIRED ON FINAL MYLARS ONLY

REGISTERED PROFESSIONAL ENGINEER GERALD CORNELIUS No. 7158 Exp. 9/30/02 ELECTRICAL STATE OF CALIFORNIA

CORNELIUS CONSULTING GROUP, INC.
Consulting Electrical Engineers
918 W. Main St. - Ph.733-2671
Visalia, California 93291

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APPL: 101692
FILE: 15-6
AC
DATE: FEB 1 1999

RELOCATABLE CLASSROOMS AT HORACE MANN ELEMENTARY SCHOOL
2710 NILES STREET
BAKERSFIELD, CALIFORNIA
FOR
BAKERSFIELD CITY SCHOOL DISTRICT
BAKERSFIELD, KERN COUNTY, CALIFORNIA

CHECK AND VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT. ALL CONSTRUCTION SHALL CONFORM TO THE C.B.C.

MARK	DATE	REVISIONS
1		
2		
3		
4		
5		

JOB NO. 961
DRAWN: RTS
CHECKED: RPS
DATE: 12-10-98

2 OF SHEETS

REVISED: 12-10-98 BY: TM CCG JOB #: CORP98-194
X:\JOBS\SCHOOLS\BFIELD\DCSD\H-MANN\RELOCS\9894E2.ZD