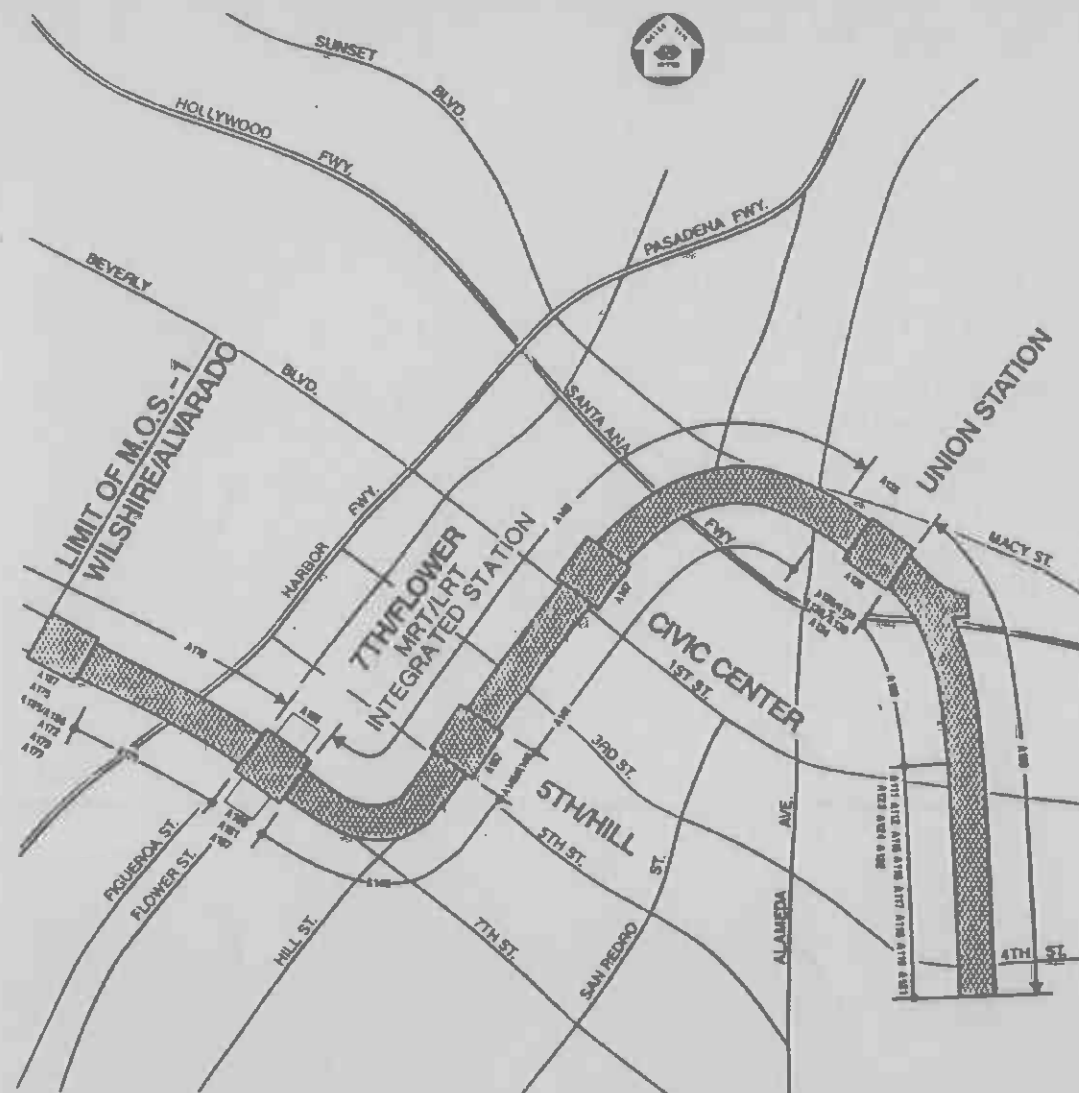


SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT

LOS ANGELES CENTRAL BUSINESS DISTRICT TO NORTH HOLLYWOOD



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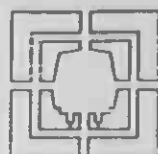
VII. COMMUNICATIONS SYSTEMS CONTRACT DRAWINGS CONTRACT A640 FEB. 1987

LEGAL/TECHNICAL
SUBMITTAL

SPEC. COLL.

OVERSIZE

SCRTD
1987
.C6
C64



GENERAL CONSULTANT:

METRO RAIL TRANSIT CONSULTANTS
DMJM/PBCD/KE/HWA

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SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT

LOS ANGELES CENTRAL BUSINESS DISTRICT TO NORTH HOLLYWOOD



VII. COMMUNICATIONS SYSTEMS CONTRACT DRAWINGS CONTRACT A640 FEB. 1987

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RTD
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

APPROVED: _____ DATE: _____
PROJECT DIRECTOR

APPROVED: _____ DATE: _____
ASSISTANT GENERAL MANAGER
TRANSIT SYSTEMS DEVELOPMENT

INDEX OF DRAWINGS

SHEET NO.	DRAWING NO.	DRAWING TITLE / DESCRIPTION	SHEET NO.	DRAWING NO.	DRAWING TITLE / DESCRIPTION	SHEET NO.	DRAWING NO.	DRAWING TITLE / DESCRIPTION
1	N-001 C	INDEX SHEET 1						
2	N-002 B	INDEX SHEET 2	35	N-083 B	FACILITIES ELECTRICAL INTERFACES, PASSENGER VEHICLE	62	N-096 B	TRACTION POWER INTERFACE, YARD SUBSTATION
			36	N-084 B	FACILITIES ELECTRICAL INTERFACES, FIRE PUMP, CROSS PASSAGE	63	N-097 B	TRACTION POWER INTERFACE, YARD SUBSTATION
3	NS-001 C	RADIO DISTRIBUTED ANTENNA MOUNTING DETAILS	37	N-086 C	FACILITIES ELECTRICAL INTERFACES, ELEVATOR EQUIPMENT & MISC.	64	N-098 B	TRACTION POWER INTERFACE, MAIN SHOP
4	NS-005 D	PA SPEAKER MOUNTING DETAIL	38	N-086 C	FACILITIES ELECTRICAL INTERFACES, CHILLER ROOM, EMERGENCY FAN ROOM	65	N-277 B	TRACTION POWER INTERFACE, 7TH/FLOWER LRT, DC METERING
5	NS-006 C	CCTV MOUNTING DETAIL						
6	NS-007 B	INTERPOSING RELAY INTERFACES	39	N-087 A	FACILITIES ELECTRICAL INTERFACES, ANCILLARY ROOM, GAS MITIGATION (NOT USED)	66	N-071 A	INTERFACE CABINET, SHEET 1 OF 2
7	N-004 B	MOUNTING DETAILS, FTCL JACK BOX	40	N-088 A	FACILITIES ELECTRICAL INTERFACES, GEN. SUPPLY AND EXHAUST (NOT USED)	67	N-072 A	INTERFACE CABINET, SHEET 2 OF 2
8	N-010 C	STATION CONDUIT REQUIREMENTS, SHEET 1 OF 3	41	N-089 A	FACILITIES ELECTRICAL INTERFACES, INCOMING ELECTRICAL SERVICE ROOM (NOT USED)			
9	N-011 C	STATION CONDUIT REQUIREMENTS, SHEET 2 OF 3						
10	N-012 C	STATION CONDUIT REQUIREMENTS, SHEET 3 OF 3	42	N-092 A	FACILITIES ELECTRICAL INTERFACES, ELECTRICAL ROOM AND CORRIDORS (NOT USED)	68	N-135 B	AUTOMATIC TRAIN CONTROL INTERFACES, CIVIC CENTER, 5TH/HILL, 7TH/FLOWER
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14	N-025 A	COMMAND POST - DETAILS AND ASSEMBLY	43	N-115 A	FACILITIES ELECTRICAL INTERFACES, EMERGENCY VENT & SUBWAY VENT FANS (NOT USED)	70	N-137 B	AUTOMATIC TRAIN CONTROL INTERFACES, WILSHIRE/ALVARADO, SHEET 2 OF 2
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17	N-111 A	CTS BLOCK DIAGRAM	46	N-118 A	FACILITIES ELECTRICAL INTERFACES, 7TH & FLOWER STATION AIR & UPE (NOT USED)	73	N-140 B	AUTOMATIC TRAIN CONTROL INTERFACES, UNION STATION, SHEET 3 OF 3
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20	N-047 B	FARE COLLECTION INTERFACE	48	N-120 A	FACILITIES ELECTRICAL INTERFACES, 7TH & FLOWER TPSS & MAIN BREAKERS (NOT USED)	74	N-050 B	EMERGENCY MANAGEMENT PANEL (EMP)
21	N-264 B	TRANSFER TRIP SCHEMATIC	49	N-121 A	FACILITIES ELECTRICAL INTERFACES, TC & C ROOM & SMOKE EXHAUST (NOT USED)	75	N-099 A	EMP ALARM MAP TYPICAL
22	N-049 B	CORROSION CONTROL SCHEMATIC	50	N-122 A	FACILITIES ELECTRICAL INTERFACES, ELEVATORS & ESCALATORS (NOT USED)	76	N-051 B	AUXILIARY EMERGENCY MANAGEMENT PANEL
23	N-112 A	SEISMIC DETECTOR LOCATIONS	51	N-123 A	FACILITIES ELECTRICAL INTERFACES, EMERGENCY FAN AUX. CIRCUITS (NOT USED)	77	N-052 A	COMMAND POST
24			52	N-124 A	FACILITIES ELECTRICAL INTERFACES, 7TH & FLOWER, GEN. SUPPLY & EXHAUST, CHILLER ROOM (NOT USED)	78	N-053 D	TELEPHONE PANEL
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26	N-037 C	FACILITIES ELECTRICAL INTERFACES, EMERGENCY FANS	54	N-127 A	FACILITIES ELECTRICAL INTERFACES, 7TH & FLOWER, OTE FANS (NOT USED)	80	N-254 A	PANEL ACCESS CONTROLS, 7TH & FLOWER
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29	N-040 B	FACILITIES ELECTRICAL INTERFACES, ROLL-UP DOORS, DUPLEX SUMP PUMP				83	N-057 C	EMP CONTROL PANEL FOR STATION AIR (SA), EXHAUST (SE) AND UPE
30	N-041 C	FACILITIES ELECTRICAL INTERFACES, TRACTION POWER SUPPLY FANS 480 MAIN BREAKERS				84	N-257 C	CONTROL PANEL FOR SA, SE & OVER TRACK EXHAUST (OTE) ON 7TH & FLOWER, EMP
31	N-042 C	FACILITIES ELECTRICAL INTERFACES, SMOKE AND HEAT EXHAUST TC & C ROOM VENTILATION				85	N-058 C	PA CONTROL PANEL
32	N-043 B	FACILITIES ELECTRICAL INTERFACES, ELEVATORS AND ESCALATORS				86	N-258 A	PA CONTROL PANEL, 7TH & FLOWER
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			56	N-076 B	TRACTION POWER INTERFACE, MAIN LINE, TYPE II AC	89	N-062 D	EMERGENCY FAN CONTROL PANEL, CONF. 4
			57	N-077 B	TRACTION POWER INTERFACE, MAIN LINE, DC METERING	90	N-063 D	EMERGENCY FAN CONTROL PANEL, CONF. 5
			58	N-078 B	TRACTION POWER INTERFACE, MAIN LINE, TYPE IV AC			
			59	N-079 B	TRACTION POWER INTERFACE, MAIN LINE, TYPE I AC			
			60	N-080 B	TRACTION POWER INTERFACE, MAIN LINE, TYPE I AC			
			61	N-082 B	TRACTION POWER INTERFACE, DISCONNECT SWITCHES			



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REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

INDEX OF DRAWINGS

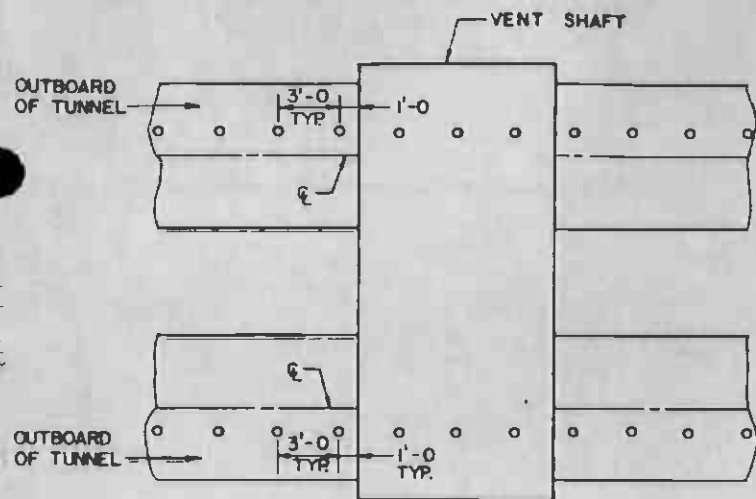
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91	N-064B	EMERGENCY TRIP SWITCH SCHEMATIC	122	N-107A	OPERATIONS CONTROL ROOM			
92	N-065B	BLUE LIGHT STATION (BLS), SHEET 1 OF 6	123	N-207A	DATA PROCESSING ROOM			
93	N-066B	BLUE LIGHT STATION (BLS), SHEET 2 OF 6	124	N-209A	COMMUNICATIONS EQUIPMENT ROOM			
94	N-067C	BLUE LIGHT STATION (BLS), SHEET 3 OF 6	125	N-034A	CCTV ROOM			
95	N-068B	BLUE LIGHT STATION (BLS), SHEET 4 OF 6						
96	N-069B	BLUE LIGHT STATION (BLS), SHEET 5 OF 6						
97	N-070B	BLUE LIGHT STATION (BLS), SHEET 6 OF 6	126	N-103B	SYSTEM COMMUNICATIONS CONSOLE/FIRE DEPARTMENT LIAISON POST			
			127	N-032A	CCTV OBSERVERS CONSOLE			
			128	N-204A	RAIL DISPATCHER CONSOLE			
			129	N-203A	RAIL OPERATIONS SUPERVISOR CONSOLE			
98	N-273B	TC B C AND RADIO STATION LOCATION	130	N-033A	CCTV WORKSTATION			
99	N-074A	TRAIN IDENTIFICATION CONTROL PANEL	131	N-108A	YARD DISPATCHER CONSOLE			
100	N-095A	PASSENGER VEHICLE MECHANICAL INTERFACES						
101	N-100A	CCTV MECHANICAL INTERFACES	132	N-113B	CHECKLIST OF CPUC REQUIREMENTS, SHEET 1 OF 2			
102	N-101A	PA SPEAKER MECHANICAL INTERFACE, SHEET 1 OF 2	133	N-213B	CHECKLIST OF CPUC REQUIREMENTS, SHEET 2 OF 2			
103	N-102A	PA SPEAKER MECHANICAL INTERFACE, SHEET 2 OF 2	134	N-048B	FACILITIES ELECTRICAL INTERFACES, UPS AND SMOKE DAMPERS			
104	N-150B	GAS MONITORING, MOS-1 TUNNEL, PROBE LOCATIONS	135	N-284A	TRACTION POWER INTERFACE, DISCONNECT SWITCHES			
105	N-151B	GAS MONITORING, UNION STATION PROBE LOCATIONS, SHEET 1	136	N-282A	TRACTION POWER INTERFACE, YARD DISCONNECT SWITCHES			
106	N-152A	GAS MONITORING, UNION STATION PROBE LOCATIONS, SHEET 2	137	N-283A	TRACTION POWER INTERFACE, YARD DISCONNECT SWITCHES			
107	N-153B	GAS MONITORING, UNION STATION PROBE SCHEDULE						
108	N-154B	GAS MONITORING, CIVIC CENTER PROBE LOCATIONS, SHEET 1						
109	N-155B	GAS MONITORING, CIVIC CENTER PROBE LOCATIONS, SHEET 2						
110	N-156B	GAS MONITORING, CIVIC CENTER PROBE SCHEDULE						
111	N-157A	GAS MONITORING, 5TH/HILL PROBE LOCATIONS, SHEET 1						
112	N-158A	GAS MONITORING, 5TH/HILL PROBE LOCATIONS, SHEET 2						
113	N-159B	GAS MONITORING, 5TH/HILL PROBE SCHEDULE						
114	N-160B	GAS MONITORING, 7TH/FLOWER PROBE LOCATIONS, SHEET 1						
115	N-161A	GAS MONITORING, 7TH/FLOWER PROBE LOCATIONS, SHEET 2						
116	N-162B	GAS MONITORING, 7TH/FLOWER PROBE LOCATIONS, SHEET 3						
117	N-163B	GAS MONITORING, 7TH/FLOWER PROBE LOCATION SCHEDULE						
118	N-164B	GAS MONITORING, WILSHIRE/ALVARADO PROBE LOCATIONS, SHEET 1						
119	N-165A	GAS MONITORING, WILSHIRE/ALVARADO PROBE LOCATIONS, SHEET 2						
120	N-166B	GAS MONITORING, WILSHIRE/ALVARADO PROBE LOCATION SCHEDULE						
121	N-167B	GAS MONITORING, PROBE LOCATION DETAILS						

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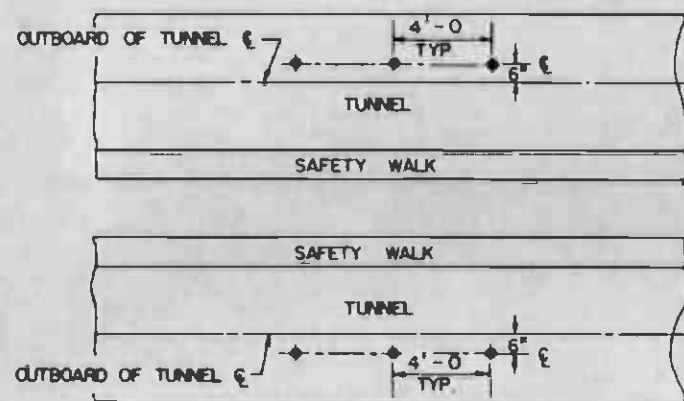
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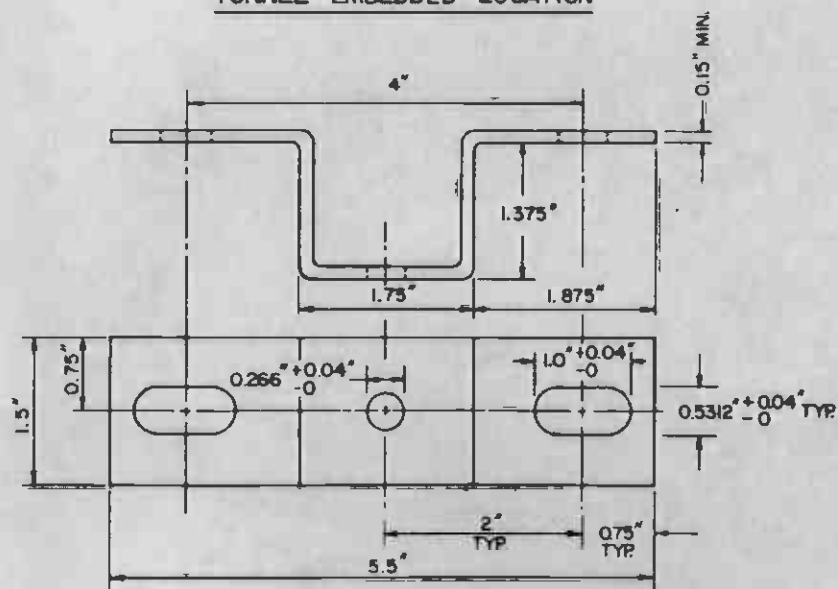
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REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE		INDEX SHEET		



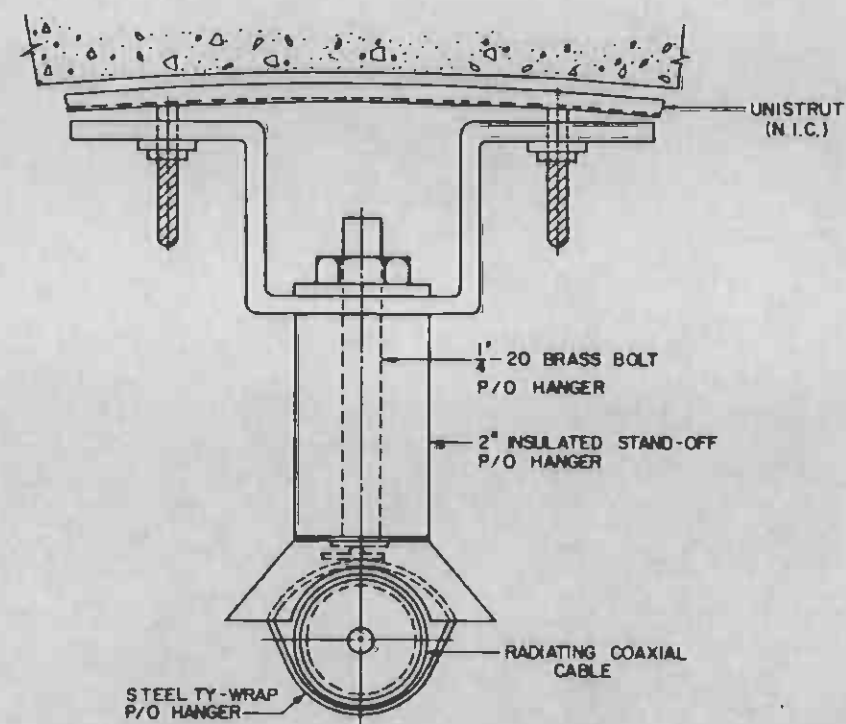
VENT SHAFT EMBEDDED LOCATIONS



TUNNEL EMBEDDED LOCATION



COAXIAL ANTENNA MOUNT BRACKET DETAIL



DISTRIBUTED ANTENNA MOUNTING DETAIL

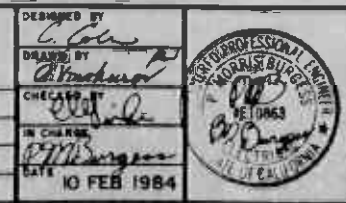
NOTES:

1. BRACKETS, HANGERS AND COAXIAL CABLE SUPPLIED AND INSTALLED BY COMMUNICATIONS CONTRACT.
2. HANGER ANDREW TYPE 43042 OR EQUIV.



REV.	DATE	BY	SUB.	APP.	DESCRIPTION

DESIGNED BY <i>[Signature]</i>	CHECKED BY <i>[Signature]</i>	IN CHARGE <i>[Signature]</i>	DATE 10 FEB 1984
GENERAL REVISION	GENERAL REVISION	SIGNATURE	ISSUE



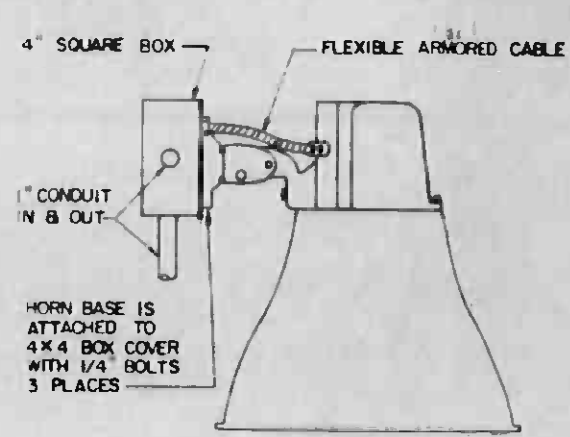
**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**

FTD

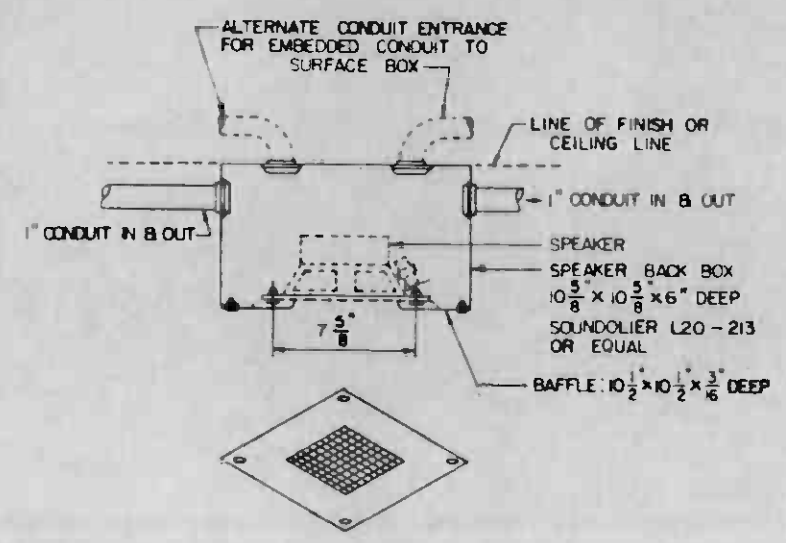
DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

APPROVED *[Signature]*

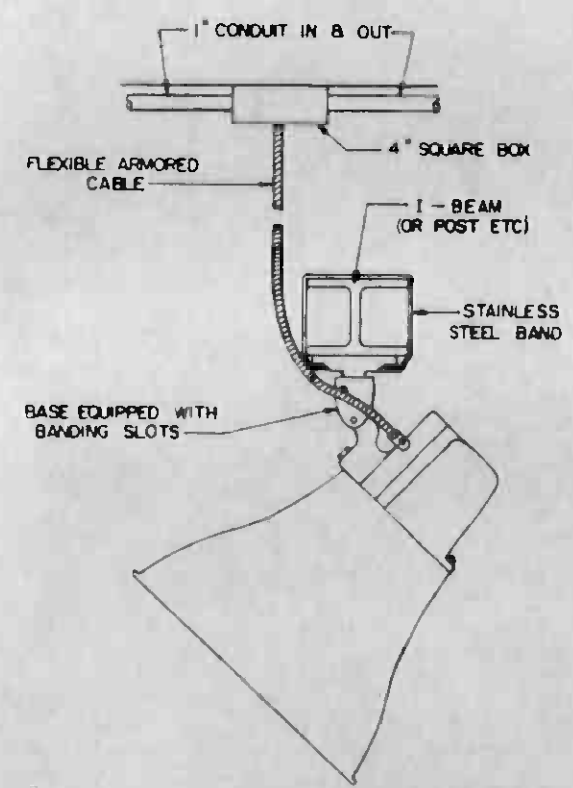
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RADIO DISTRIBUTED ANTENNA MOUNTING DETAILS	
CONTRACT NO. A640	REV. 0
DRAWING NO. NS-001 C	SCALE NO SCALE
SHEET NO. 3	



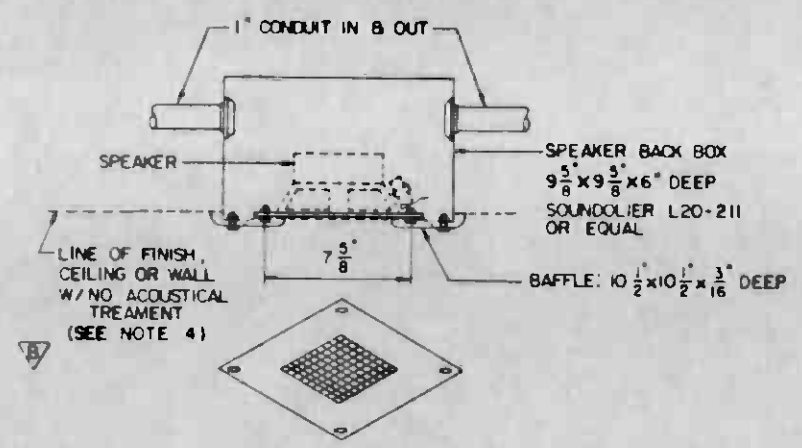
HORN MOUNT



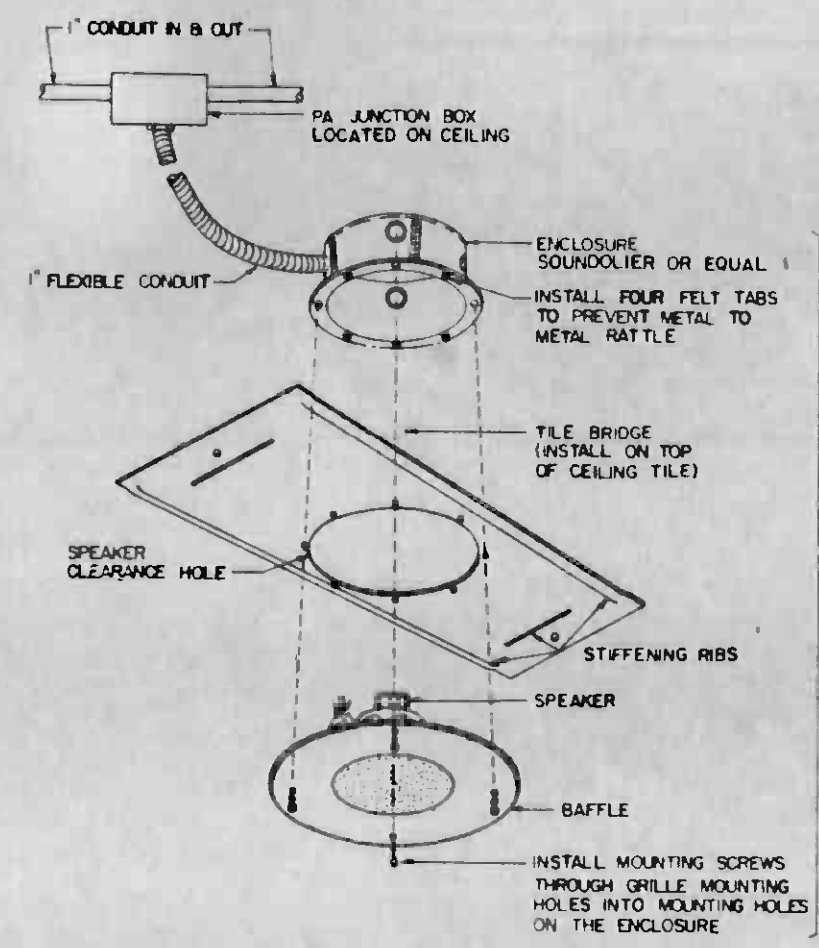
SURFACE MOUNT SQUARE BAFFLE
(SEE NOTES)



ALTERNATE HORN MOUNT



RECESSED MOUNT SQUARE BAFFLE
(SEE NOTES)



SUSPENDED CEILING MOUNT

NOTES:

1. SPEAKERS, BAFFLES AND WIRING FURNISHED AND INSTALLED BY COMMUNICATIONS CONTRACTOR.
2. BACKBOXES, JUNCTION BOXES AND CONDUIT FURNISHED AND INSTALLED BY THE DISTRICT.

EMBEDMENT DEPTH WILL DEPEND ON TYPE OF ACOUSTICAL TREATMENT TO BE APPLIED TO CEILING. STATION CONTRACTOR TO CONTACT THE DISTRICT FOR GUIDANCE.

(BY COMMUNICATIONS CONTRACTOR)



REV	DATE	BY	SUB	APP	DESCRIPTION

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DESIGNED BY <i>C. Adler</i>
DRAWN BY <i>O. Wood</i>
CHECKED BY <i>[Signature]</i>
DATE 17 FEB 1984

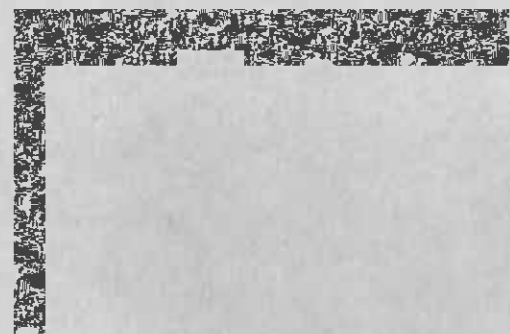
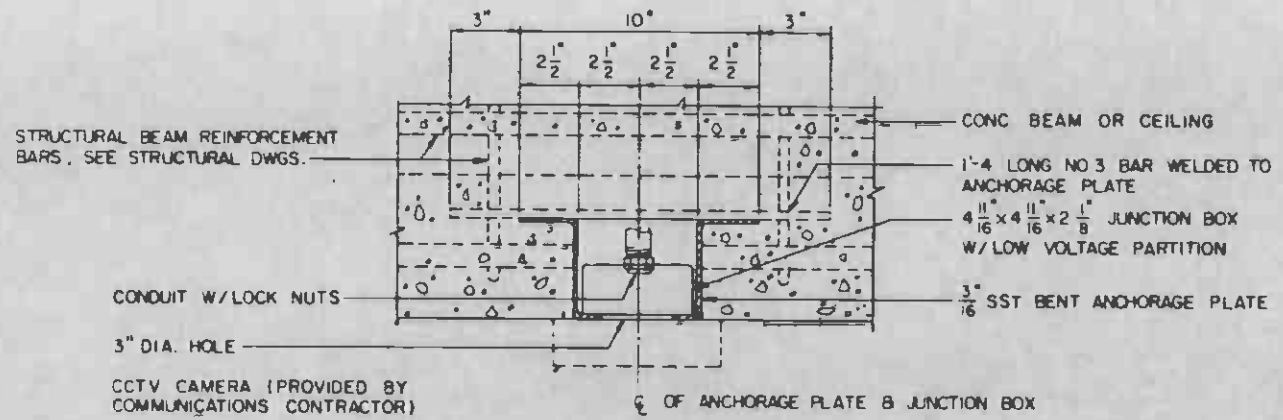
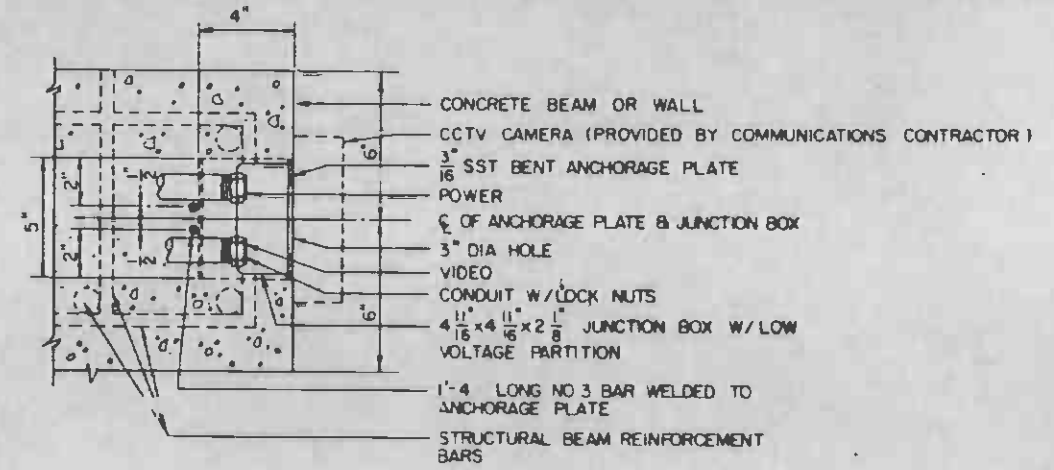
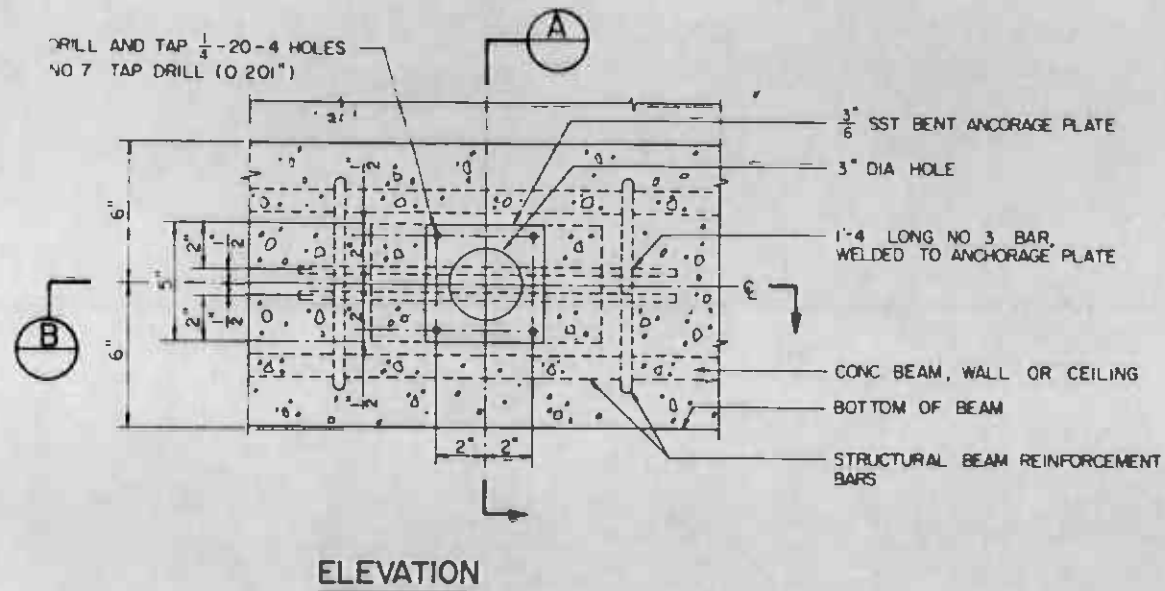
**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**

DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

APPROVED: *[Signature]*

**COMMUNICATIONS
STANDARD
PA SPEAKER
MOUNTING DETAIL**

CONTRACT NO. A640
DRAWING NO. NS-005 D
SCALE NO SCALE
SHEET NO. 4



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION UNDER THE MASS TRANSIT CLASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.										DESIGNED BY <i>[Signature]</i> DRAWN BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> DATE 17 FEB 1984		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 		DMJM/PBQD/KE/HWA GENERAL CONSULTANTS APPROVED <i>[Signature]</i>		COMMUNICATIONS STANDARD DRAWING CCTV MOUNTING DETAIL		CONTRACT NO. A640 DRAWING NO. NS-006C SCALE $\frac{1}{8}$ " = 1'-0" SHEET NO. 5	
REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	TOR	APP	DESCRIPTION	GENERAL REVISION REVISED AS NOTED CRT4-Q33 SIGNATURE ISSUE							

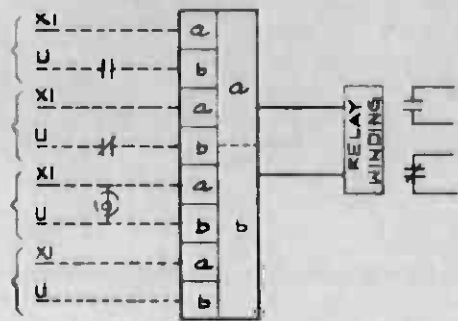


FIG. 1 (A THRU F)

FIG.	XI VOLTS
A	2 Vdc
B	24 Vac
C	48 Vac
D	120 Vac
E	240 Vac
F	FUTURE

NOTE:
RELAY FURNISHED BY CONTRACT
A 640

TYPICAL INTERPOSING RELAY MONITORING CONNECTION

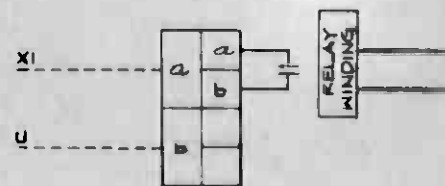


FIG. 2 (A THRU F)

FIG.	XI VOLTS	a/b AMP RATING
A	12 Vdc	
B	24 Vdc	
C	48 Vdc	
D	120 Vac	
E	120 Vac	
F	125 Vdc	

1.5 A (INDUCTIVE)

NOTE:
RELAY FURNISHED BY CONTRACT
A 640

TYPICAL INTERPOSING RELAY SIGNALLING CONNECTION
NORMALLY OPEN CONTACT

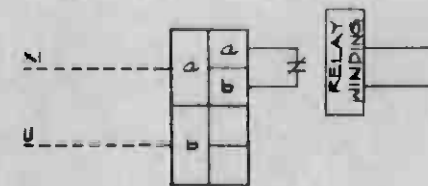


FIG. 3 (A THRU F)

FIG.	XI VOLTS	a/b AMP RATING
A	12 Vdc	
B	24 Vdc	
C	48 Vdc	
D	120 Vac	
E	120 Vac	
F	FUTURE	

NOTE:
RELAY FURNISHED BY CONTRACT
A 640

TYPICAL INTERPOSING RELAY SIGNALLING CONNECTION
NORMALLY CLOSED CONTACT



FIG. 4 (A AND B)

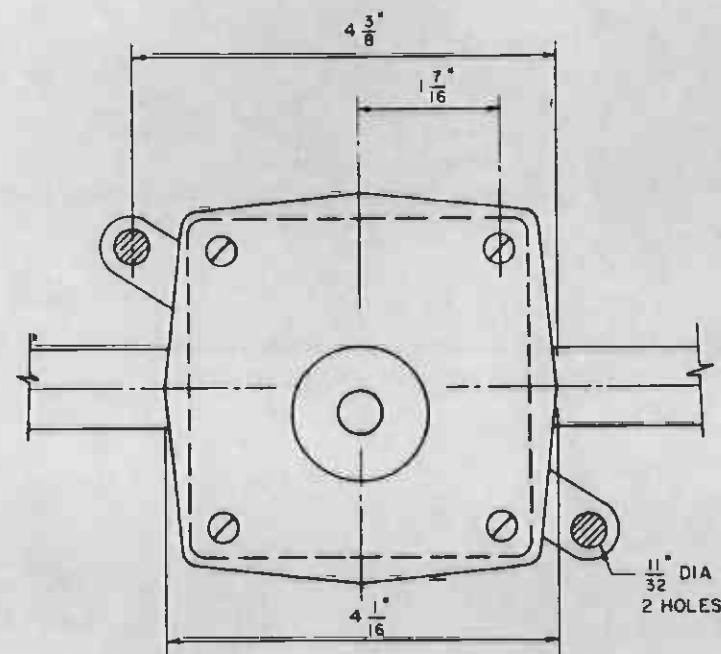
FIG.	DESCRIPTION
A	EXTERNAL CONTACTS NORMALLY CLOSED
B	EXTERNAL CONTACTS NORMALLY OPEN

TYPICAL DRY CONTACT SIGNALLING
TOWARD COMMUNICATIONS (SCADA)

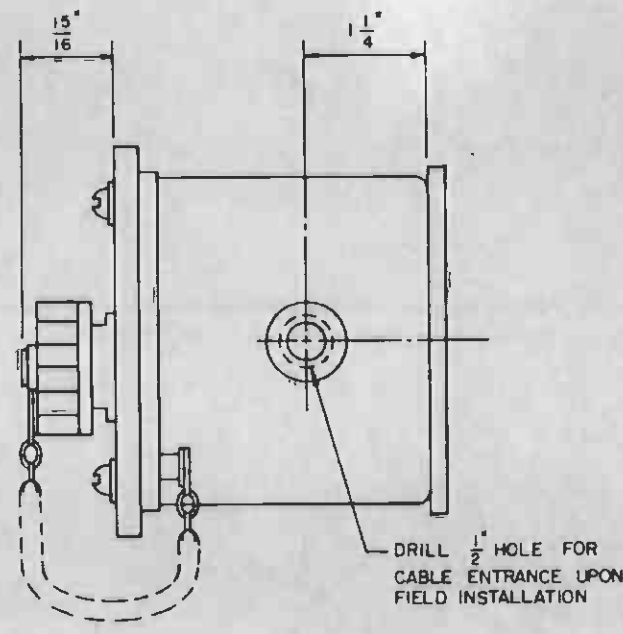
THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY <i>K. ILASZ</i> DRAWN BY <i>K. ILASZ</i> CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 10 NOV 85	REGISTERED PROFESSIONAL ENGINEER No. 001100 1-1-80-91 STATE OF CALIFORNIA	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT		DMJM/PSOD/KE/HWA GENERAL CONSULTANTS	COMMUNICATIONS STANDARD INTERPOSING RELAY INTERFACES	CONTRACT NO. A640 DRAWING NO. NS-007 B SCALE NO SCALE SHEET NO. 6
REV. DATE BY SWS APP DESCRIPTION	REV. DATE BY SWS APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSU'G		APPROVED: <i>[Signature]</i>		APPROVED: _____		REV. 0

NOTE:

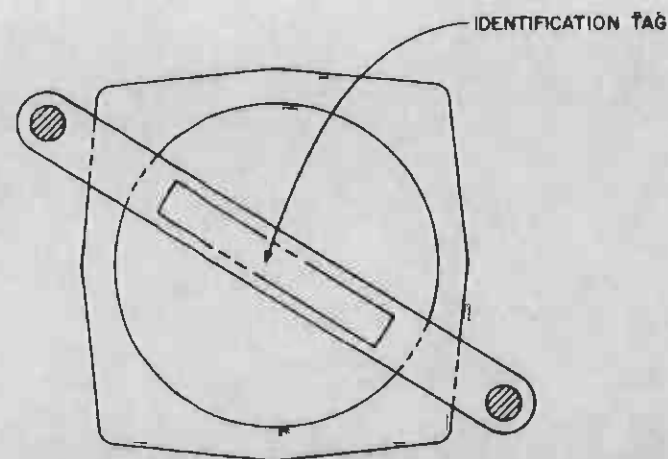
ACTUAL LOCATION OF HOLE IN SIDE OF JACK BOX TO BE DETERMINED IN THE FIELD BY EXISTING CONDITIONS



JACK BOX W/COVER PLATE



SIDE VIEW



REAR VIEW



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DESIGNED BY
MRTC
DRAWN BY
A. Hachem
CHECKED BY
P. Blakely
IN CHARGE
P. Burgess
DATE
24 OCT 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PROB/KEZHW
GENERAL CONSULTANTS

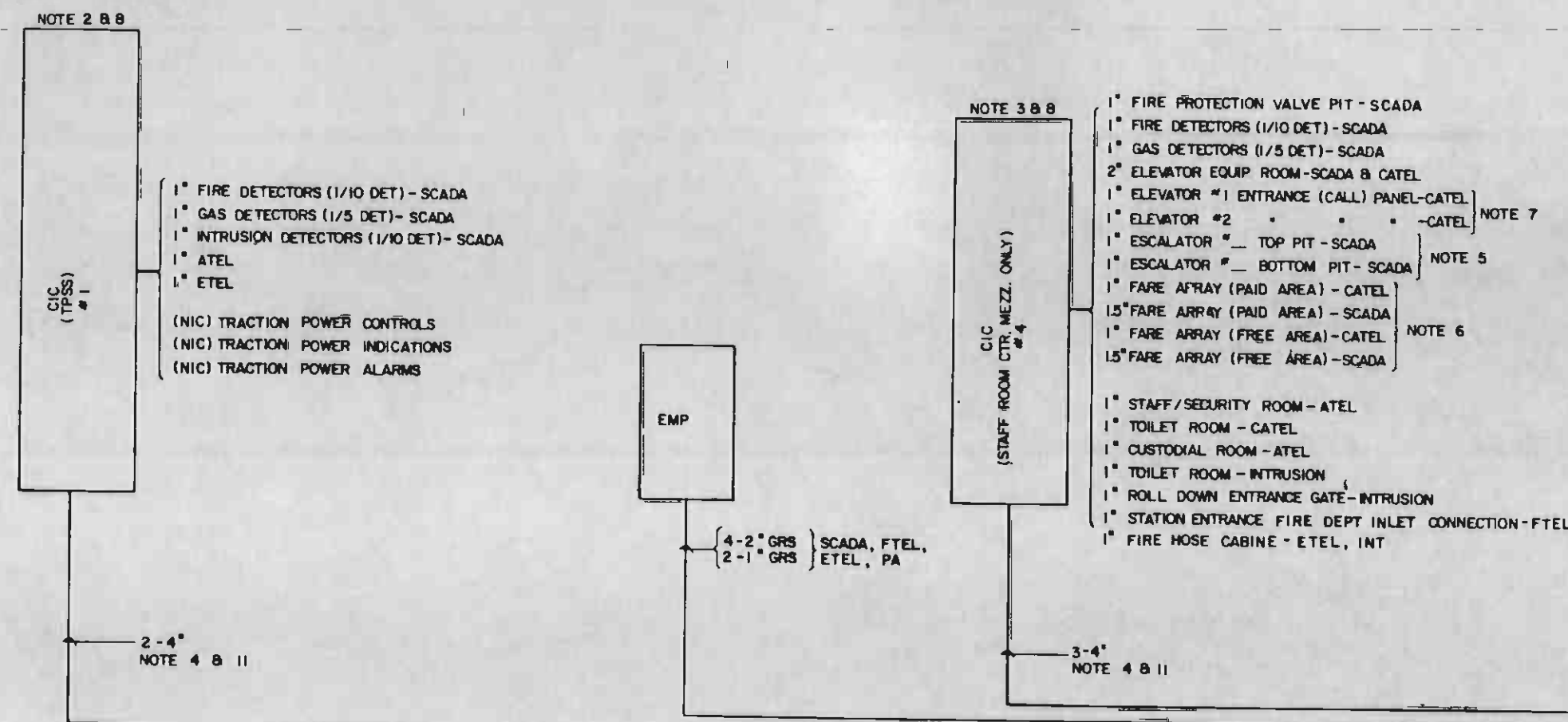
COMMUNICATIONS
SOUND-POWERED FTTEL JACK BOX

CONTRACT NO A640	
DRAWING NO N-004 B	REV 0
SCALE FULL SIZE	
SHEET NO 7	

NO.	DATE	BY	SUB	APP	DESCRIPTION
1	9/24/86				SIGNATURE ISSUE

APPROVED
SUBMITTED *ewh*

APPROVED



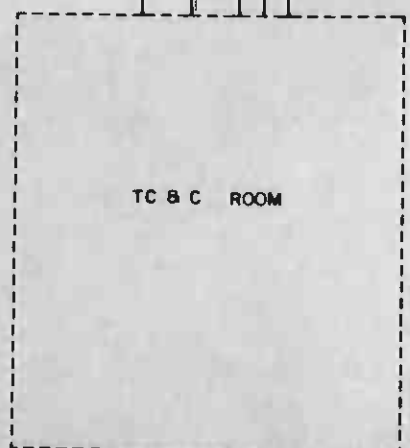
- GENERAL:**
- THIS DRAWING IS ONLY A SCHEMATIC REPRESENTATION OF THE PROJECT RACEWAY SYSTEM AND DOES NOT ASSIGN RESPONSIBILITY FOR INSTALLATION OR PROVISION OF MATERIALS.
- NEAR END / FAR END WITH REFERENCE TO AT&C ROOM.
 - CIC 1, 2 B 3 - HOFFMAN A60H36FLP OR EQUIV. W/O CLAMPS & HASP, W/3 POINT LATCH & PADLOCK HANDLE. SURFACE MOUNT ϕ 48" AFF
 - CIC 4 - HOFFMAN A30H24DLP OR EQUIV. W/D CLAMPS & HASP, W/3 POINT LATCH & PADLOCK HANDLE. SURFACE MOUNT ϕ 48" AFF.
 - HOME RUN TO ATC B C ROOM
 - A. 90° BENDS SHALL BE NOT LESS THAN 2-45° ELBOWS.
 - B. TOTAL OF ALL BENDS SHALL NOT EXCEED 180°.
 - C. RUNS IN EXCESS OF 800 FEET SHALL CONTAIN A PULL BOX AT MIDPOINT OR EVERY 800 FEET, WHICHEVER IS LESS.
 - REQUIRED FOR EACH ESCALATOR.
 - REQUIRED FOR EACH SEPARATE GROUP OF MACHINES. TERMINATE CONDUIT IN FLOOR TRENCH SERVING ARRAYS & GATES.
 - "DAISEY CHAIN" TO NEXT LEVEL ENTRANCE UP AND/OR DOWN.
 - REFER TO DWG. N-017 FOR CONDUIT ENTRY PLAN TO CIC.
 - POWER SUPPLY CONDUITS ARE NOT SHOWN.
 - ALL CONDUITS TO BE GRS UNLESS OTHERWISE NOTED.
 - A METALLIC CABLE TRAY, ENCLOSED TYPE WITH BOLT DOWN COVER MAY BE SUBSTITUTED FOR THESE CONDUITS.
 - A FIRE COMMAND POST IS REQUIRED AT STATION PUBLIC ENTRANCE WHERE AN EMERGENCY MANAGEMENT PANEL IS NOT PROVIDED.
 - PROVIDE 3-4" GRS CONDUITS TO CIC FROM TC B C ROOM WHEN CIC IS SERVING EMERGENCY MANAGEMENT PANEL.

- ALL STATIONS**
- 1" FIRE PROTECTION VALVE PIT - SCADA
 - 1" MECH. EQUIP. ROOM - ATEL
 - 2" MECH. EQUIP. ROOM - SCADA
 - 1" ELEC. EQUIP. ROOM - ATEL
 - 1" ELEC. EQUIP. ROOM - SCADA
 - 1" AUX POWER ROOM - ATEL
 - 2" AUX POWER ROOM - SCADA
 - 1" FIRE DETECTORS (1/10 DET) - SCADA
 - 1" GAS DETECTORS (1/5 DET) - SCADA
 - 1" INTRUSION DETECTORS (1/10 DET) - SCADA
 - 1" SPRINKLER VALVE ROOM - SCADA
 - 1" SPRINKLER VALVE ROOM - FTTEL
 - 1" CHILLER ROOM - ATEL
 - 1" CHILLER ROOM - SCADA
 - 1" EMERGENCY EQUIP. ROOM - ETEL
 - 1" BATTERY ROOM - SCADA
 - 1" CUSTODIAL ROOM - ATEL
 - 1" FIRE HOSE CAB. (MEZZ.) - ETEL & INT
 - 1" FIRE HOSE CAB. (CTR. PLAT.) - ETEL & INT
 - 1" FIRE HOSE CAB. (END PLAT.) - ETEL & INT
 - 1" EMERGENCY FAN ROOM - SCADA
 - 1.5" EMERGENCY TRIP STATION (PLAT. END INBOUND) ETEL, FTTEL, ETS.
 - 1.5" EMERGENCY TRIP STATION (PLAT. END OUTBOUND) - ETEL, FTTEL, ETS.
 - 1" SUMP PUMP ROOM - SCADA

- END MEZZ. STATIONS**
- 1" ELEVATOR PIT - CATEL, MTEL
 - 2" ELEVATOR EQUIP. ROOM - SCADA
 - 1" ELEVATOR #1 CALL PANEL - CATEL
 - 1" ELEVATOR #2 CALL PANEL - CATEL
 - 1" ESCALATOR # TOP PIT - SCADA
 - 1" ESCALATOR # BOTTOM PIT - SCADA
 - 1" FARE ARRAY (PAID AREA) - PAI
 - 1.5" FARE ARRAY (PAID AREA) - SCADA
 - 1" FARE ARRAY (FREE AREA) - CATEL
 - 1.5" FARE ARRAY (FREE AREA) - SCADA
 - 3-2" EMERGENCY MANAGEMENT PANEL - SCADA, FTTEL, ETEL
 - 1" STAFF / SECURITY ROOM - ATEL
 - 1" TOILET ROOM - PAI
 - 1" TOILET ROOM - INTRUSION
 - 1" ROLL DOWN ENTRANCE GATE - INTRUSION
 - 1" STATION ENTRANCE FIRE DEPT INLET CONNECTION - FTTEL
 - 2-1" FIRE COMMAND POST - NOTE 12

- END MEZZ. STATIONS**
- 1" ELEVATOR PIT - MTEL
 - 2" ELEVATOR EQUIP. ROOM - SCADA (AS REQ'D - INCLUDING FUTURE)
 - 1" ELEVATOR # CALL PANEL - CATEL (AS REQ'D - INCLUDING FUTURE) - NOTE 7
 - 1" ESCALATOR # TOP PIT - SCADA
 - 1" ESCALATOR # BOTTOM PIT - SCADA
 - 1" FARE ARRAY (PAID AREA) - PAI
 - 1.5" FARE ARRAY (PAID AREA) - SCADA
 - 1" FARE ARRAY (FREE AREA) - PAI
 - 1.5" FARE ARRAY (FREE AREA) - SCADA
 - 1" ROLL DOWN ENTRANCE GATE - INTRUSION
 - 1" STATION ENTRANCE FIRE DEPT INLET CONNECTION
 - 3-2" EMERGENCY MANAGEMENT PANEL - SCADA, FTTEL & ETEL
 - 2-1" FIRE COMMAND POST - NOTE 12

- ALL STATIONS**
- 1" FIRE PROTECTION VALVE PIT - SCADA
 - 1" MECH. EQUIP. ROOM - ATEL
 - 2" MECH. EQUIP. ROOM - SCADA
 - 1" AUX PWR ROOM - ATEL
 - 2" AUX PWR ROOM - SCADA
 - 1" FIRE DETECTORS (1/10 DET) - SCADA
 - 1" GAS DETECTORS (1/5 DET) - SCADA
 - 1" INTRUSION DETECTORS (1/10 DET) - SCADA
 - 1" SPRINKLER VALVE ROOM - SCADA
 - 1" SPRINKLER VALVE ROOM - FTTEL
 - 1" EMERGENCY EQUIP. ROOM - ETEL
 - 1" BATTERY ROOM - SCADA
 - 1" ELECTRICAL EQUIP. ROOM - ATEL
 - 1" ELECTRICAL EQUIP. ROOM - SCADA
 - 1" EMERGENCY FAN ROOM - SCADA
 - 1" SUMP PUMP ROOM - SCADA
 - 1" FIRE HOSE CAB. (MEZZ.) - ETEL, INT
 - 1" FIRE HOSE CAB. (CTR. PLAT.) - ETEL, INT
 - 1" FIRE HOSE CAB. (END PLAT.) - ETEL, INT
 - 1.5" EMERGENCY TRIP STATION (PLAT. END INBOUND) ETEL, FTTEL, ETS
 - 1.5" EMERGENCY TRIP STATION (PLAT. END OUTBOUND) ETEL, FTTEL, ETS



REV.	DATE	BY	SUB.	APP.	DESCRIPTION

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DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE 17 FEB 1984

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

APPROVED: *[Signature]*

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

AT&C

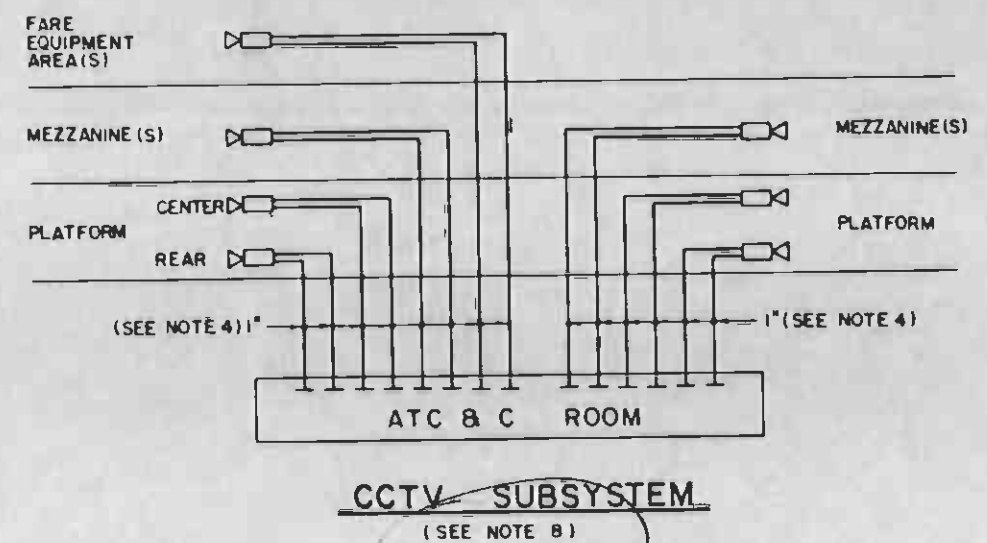
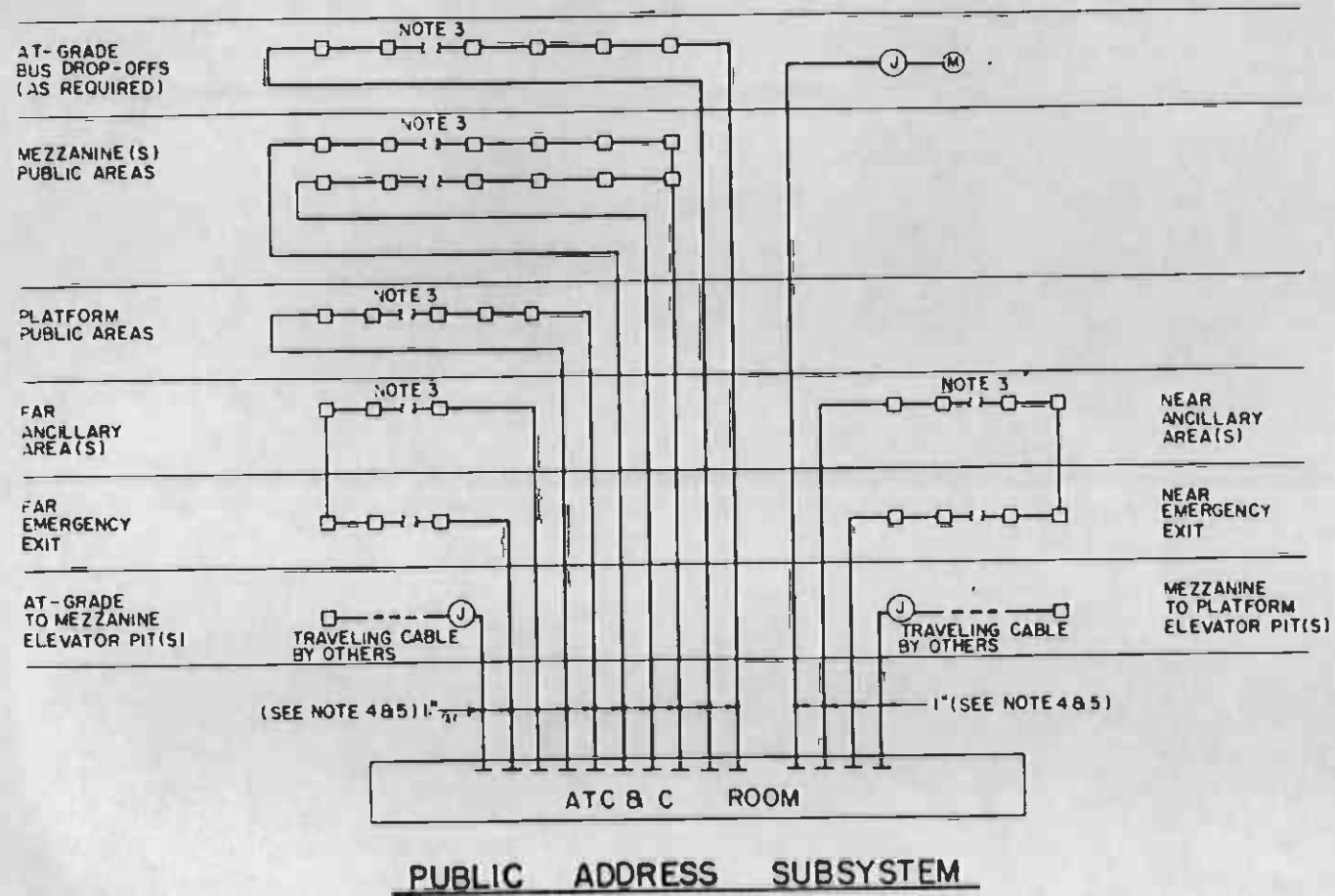
CONTRACT NO. A 640

DRAWING NO. JAN - 010 C

SCALE: NO SCALE

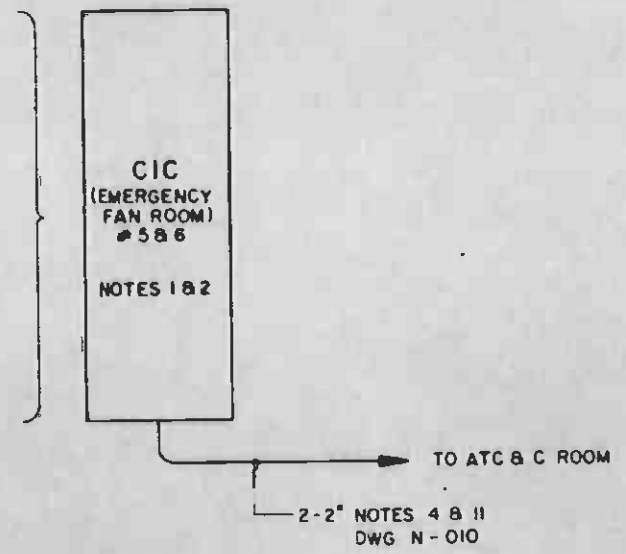
SHEET NO. 8

COMMUNICATIONS
STATION CONDUIT REQUIREMENTS
SHEET 1 OF 3



- NOTES:**
1. CIC #5 - HOFFMAN A30H24DLP OR EQUIVALENT W/O CLAMPS & HASP. W/ 3 POINT LATCH & PADLOCK HANDLE. SURFACE MOUNT & 48" AFF. LOCATED IN EMERGENCY FAN ROOM AT FAR END OF CROSSOVER FROM PLATFORM END.
 2. CIC #6 - SAME AS CIC #5. LOCATE IN EMERGENCY FAN ROOM AT FAR END OF CROSSOVER FROM PLATFORM END WHEN STATION HAS CROSSOVER AT BOTH ENDS OF PLATFORM.
 3. THE MAXIMUM NUMBER OF SPEAKERS TO BE "DAISEY-CHAINED" PER SET OF CONDUITS IS 16.
 4. THESE CONDUITS ARE "HOME RUNS" TO THE ATC & C ROOM, NOT TO THE CIC.
 5. THESE CONDUITS SHOULD STUB UP 18" ABOVE THE FLOOR OR STUB DOWN 6" FROM THE CEILING IN A SEPERATE AREA AWAY FROM THE CONDUITS FROM THE CIC'S.
 6. ALL CONDUITS TO BE GRS UNLESS OTHERWISE NOTED.
 7. REFER TO STATION MAKE-UPS FOR DETAILED LOCATION OF CAMERAS.

- 1" EMERGENCY FAN ROOM-ATEL
- 1" EMERGENCY FAN ROOM-SCADA
- 1" FIRE DETECTORS (1/10)-SCADA
- 1" GAS DETECTORS (1/5)-SCADA
- 1" ELEC. EQUIP. ROOM-ATEL
- 1" ELEC. EQUIP. ROOM-SCADA



- LEGENDS:**
- CCTV CAMERA
 - PA SPEAKER
 - ATC & C AUTOMATIC TRAIN CONTROL AND COMMUNICATIONS
 - CIC COMMUNICATIONS INTERFACE CABINET
 - JUNCTION BOX
 - MICROPHONE



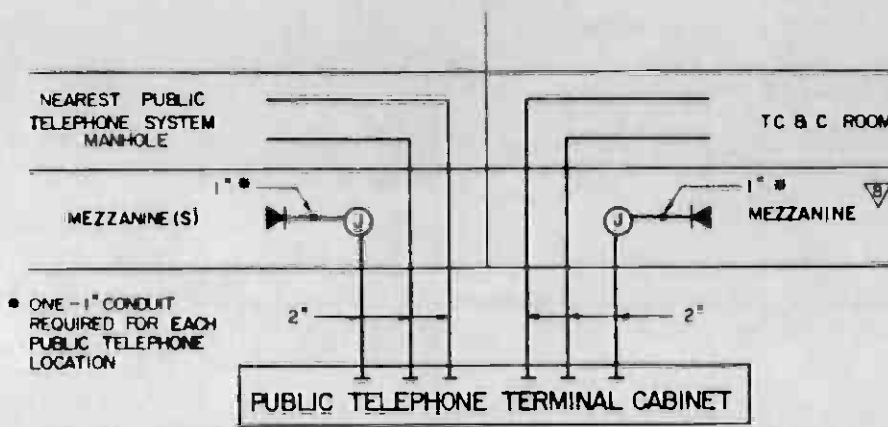
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REV. DATE BY SUB APP DESCRIPTION	GENERAL REVISIONS REVISED AS NOTED CR4.033 SIGNATURE ISSUE	SUBMITTED <i>[Signature]</i>		APPROVED <i>[Signature]</i>			REV. DATE BY SUB APP DESCRIPTION

NOTES:

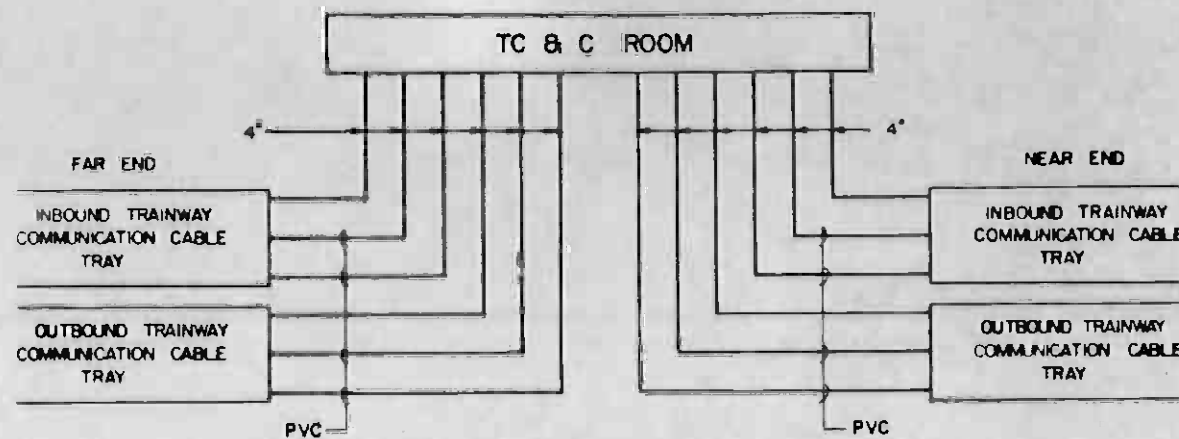
1. ALL CONDUITS TO BE GALVANIZED RIGID STEEL UNLESS OTHERWISE NOTED.
2. ROUTE TO NEAREST POINT OF ACCESS TO TRAINWAY AND CAP.
3. USE 2" CONDUIT OR 2" SLEEVES AS APPLICABLE.
4. ROUTING TO PLAT AND MEZZ TO BE COORDINATED WITH THE DISTRICT.

LEGENDS:

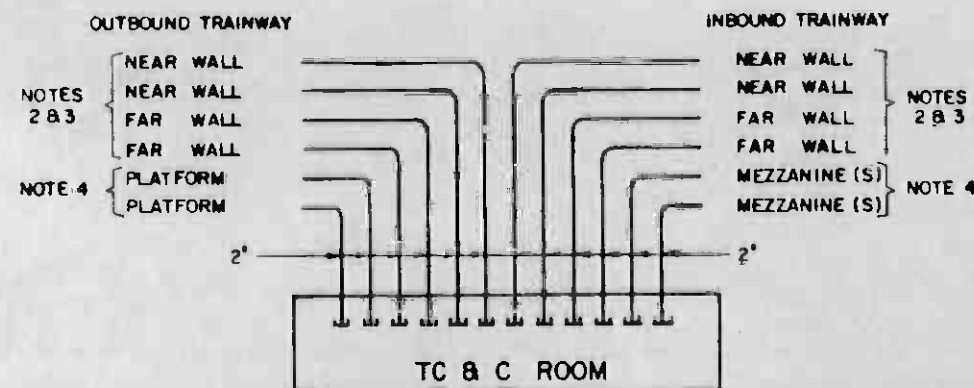
- ◀ PUBLIC TELEPHONE
- ⊙ JUNCTION BOX
- TC & C TRAIN CONTROL AND COMMUNICATIONS



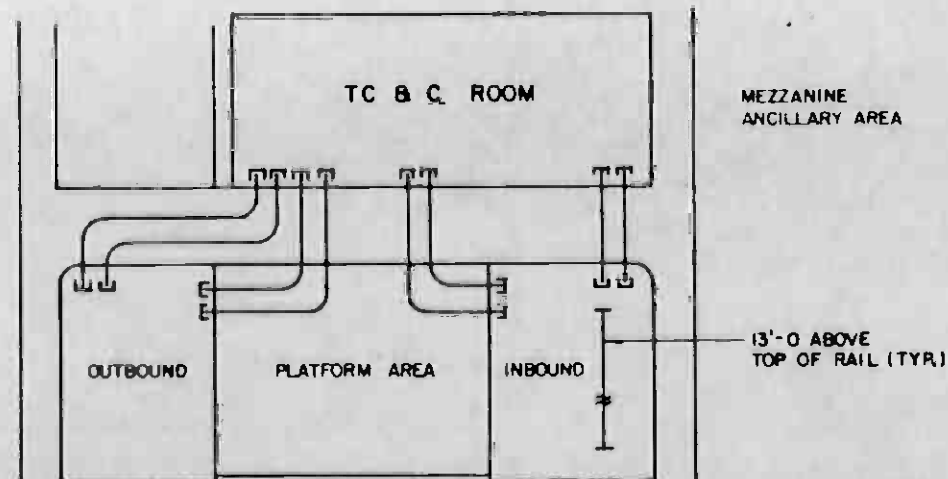
PAY (PUBLIC) TELEPHONE



CABLE TRANSMISSION SUBSYSTEM



RADIO SUBSYSTEM



TYPICAL RADIO CONDUIT LOCATIONS

NOTES 2 & 3



REV	DATE	BY	SUB	APP	DESCRIPTION

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DESIGNED BY
C. Miller

DRAWN BY
Michael

CHECKED BY
P. B. ...

IN CHARGE
W. M. ...

DATE
17 FEB 1984

REGISTERED PROFESSIONAL ELECTRICIAN
No. 68119008
EXPIRES 1-30-81
STATE OF CALIFORNIA

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

APPROVED *W. S. ...*

COMMUNICATIONS
STATION CONDUIT REQUIREMENTS
SHEET 3 OF 3

CONTRACT NO.	A640
DRAWING NO.	N - 012 C
SCALE	NO SCALE
SHEET NO.	10

SYMBOLS

ABBREVIATIONS

CONDUCTORS AND RACEWAY

	EMPTY CONDUIT
	CONDUIT CONCEALED IN FLOOR SLAB OR UNDERGROUND (SHOWN HEAVY)
	CONDUIT CONCEALED IN CEILING OR WALL
	CONDUIT EXPOSED
	PA - RACEWAY IDENTIFICATION BETWEEN OUTLETS PA100 - RACEWAY IDENTIFICATION BETWEEN OUTLET AND TERMINATION POINT (IE FINAL STUB-UP TO TERMINAL CABINET, PANEL BOARD, SWITCHBOARD...)
	TO TERMINATION POINT
	SYSTEMS IDENTIFICATION ABBREVIATIONS SHALL BE:
	CA - ADMINISTRATIVE TELEPHONE (ATEL)
	CC - CUSTOMER ASSISTANCE TELEPHONE
	CE - EMERGENCY TELEPHONE (ETEL)
	CF - FIRE TELEPHONE (FTEL)
	CT - CABLE TRANSMISSION SYSTEM
	CX - TELEPHONE COMPANY
	F - POWER FEEDER (480/277V OR 208/120V)
	FA - FIRE DETECTOR OR ALARM
	FC - FARE COLLECTION
	FG - GAS DETECTOR
	FS - SEISMIC DETECTOR
	HC - COMMUNICATIONS TIE CABLE (CIC TO ATC & C ROOM)
	IA - INTRUSION DETECTOR OR ALARM
	PA - PUBLIC ADDRESS
	SC - SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)
	TV - CLOSED CIRCUIT TELEVISION
	JUNCTION BOX
	HANDHOLE
	MANHOLE
	TRENCH DUCT
	UNDERGROUND DUCT BANK
	FLEXIBLE RACEWAY CONNECTION
	BARE GROUNDING CONDUCTOR
	EXOTHERMIC WELD CONNECTION
	INSULATED GROUNDING CONDUCTOR
	GROUND ROD WITH EXOTHERMIC WELD CONNECTION
	LIGHTING PROTECTION SYSTEM ROOF CONDUCTOR
	CONDUIT TURNED UP OR TOWARDS VIEWER
	CONDUIT TURNED DOWN OR AWAY FROM VIEWER
	CONDUIT CAPPED

MISCELLANEOUS

	CCTV CAMERA OUTLET
	CCTV MONITOR
	BUZZER
	INTRUSION SENSOR
	PHOTO CELL
	CLOCK OUTLET
	TRACTION POWER EMERGENCY TRIP STATION (ETS)
	CABLEWAY
	TERMINAL CABINET, TYPE AS FOLLOWS: TTC - TELEPHONE TERMINAL CABINET FTC - FACILITIES TERMINAL CABINET CIC - COMMUNICATIONS INTERFACE CABINET

TELEPHONE

	MAINTENANCE TELEPHONE JACK (MTEL)
	FIRE TELEPHONE JACK (FTEL)
	EMERGENCY TELEPHONE OUTLET (ETEL)
	CUSTOMER ASSISTANCE TELEPHONE
	ADMINISTRATIVE TELEPHONE OUTLET (ATEL)
	PUBLIC PAY TELEPHONE OUTLET
	TELEPHONE BACK BOARD
	WEATHERPROOF TELEPHONE

ALL TELEPHONE OUTLETS SHALL BE MOUNTED 12" AFF UNLESS OTHERWISE NOTED I.E. 48 F TELEPHONE OUTLET (48" AFF - FLUSH MOUNT)

PUBLIC ADDRESS

	MICROPHONE
	AMPLIFIER
	INTERIOR SPEAKER BACKBOX PER LETTER AS FOLLOWS: F-FLUSH MTD, S-SURFACE MTD, SC-SUSPENDED CEILING
	EXTERIOR SPEAKER BACKBOX
	HORN TYPE SPEAKER OUTLET
	NOISE MONITOR
	MONITOR SPEAKER

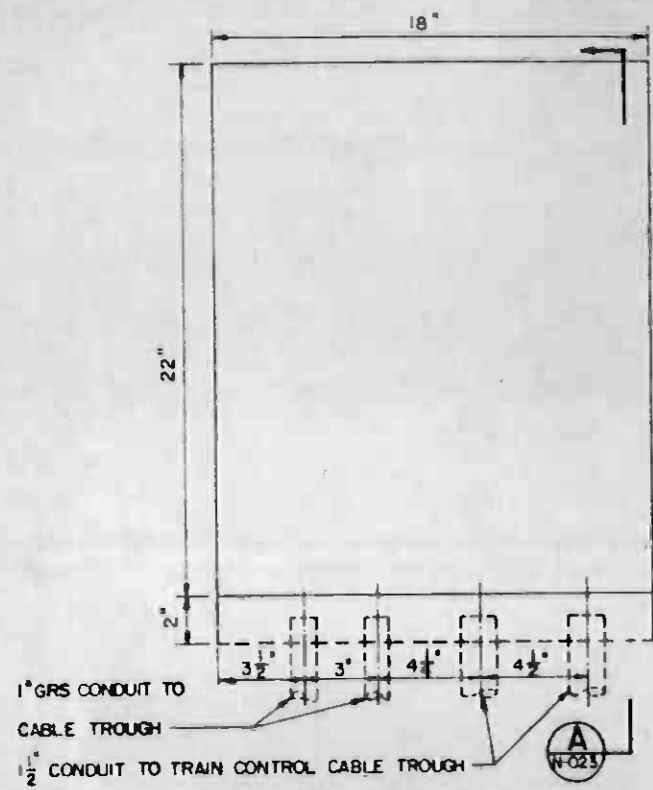
FIRE AND INTRUSION

	PULL STATION FIRE ALARM
	PUSH BUTTON FIRE ALARM
	BELL
	HORN
	STANDPIPE FLOW MONITOR
	FIRE HOSE CABINET MONITOR
	DETECTOR, TYPE PER LETTER AS FOLLOWS: L - HEAT, LINE TYPE S - SMOKE - IONIZATION R - THERMAL RATE OF RISE AND FIXED TEMPERATURE P - SMOKE PHOTO-ELECTRIC D - DUCT TYPE SMOKE DETECTOR E - SEISMIC Q - SEISMIC EVENT RECORDER X - GAS-METHANE Y - GAS-HYDROGEN SULFIDE VALVE POSITION MONITOR
	ADD 'F' FOR FIRE ALARM SYSTEM I.E. FOR FIRE HORN
	DETECTOR, TYPE PER LETTER AS FOLLOWS: H - HINGE DETECTOR E - ELECTRIC DOOR LOCK M - MAGNETIC SWITCH DETECTOR P - PLUNGER SWITCH (FLUSH IN DOOR JAM) DETECTOR L - DOOR LATCH DETECTOR K - KEY BYPASS SWITCH C - CARD OR BADGE READER
	HALON DISCHARGE PANEL
	HALON ABORT SWITCH

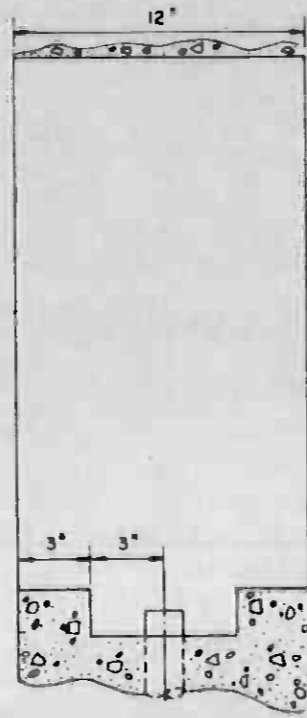
A/D	ANALOG TO DIGITAL
ACD	AUTOMATIC CALL DISTRIBUTOR
AFF	ABOVE FINISHED FLOOR
ATEL	ADMINISTRATIVE TELEPHONE
BCD	BINARY CODED DECIMAL
CA	CABLE
CCU	COMMUNICATIONS CONTROL UNIT
CCTV	CLOSED CIRCUIT TELEVISION
CIC	COMMUNICATIONS INTERFACE CABINET
C/P	FIRE COMMAND POST
CPU	CENTRAL PROCESSING UNIT
CRT	CATHODE RAY TUBE
CYS	CABLE TRANSMISSION SUBSYSTEM
D/A	DIGITAL TO ANALOG
DID	DIRECT INWARD DIALING
DOD	DIRECT OUTWARD DIALING
DTMF	DUAL TONE MULTI-FREQUENCY
EMP	EMERGENCY MANAGEMENT PANEL
ETEL	EMERGENCY TELEPHONE
ETS	EMERGENCY TRIP STATION - TRACTION POWER
FSCP	FIRE/SECURITY CONTROL PANEL
FTEL	FIRE TELEPHONE
FXO	FOREIGN EXCHANGE OFFICE
FXS	FOREIGN EXCHANGE SUBSCRIBER
GRS	GALVANIZED RIGID STEEL
HH	HANDHOLE
HSM	HYDROGEN SULFIDE MONITOR
INT	INTRUSION
I/O	INPUT/OUTPUT
JB	JUNCTION BOX
MDF	MAIN DISTRIBUTION FRAME
MD	METHANE DETECTOR
MH	MANHOLE
MTEL	MAINTENANCE TELEPHONE
NIC	NOT IN CONTRACT
PA	PUBLIC ADDRESS
PABX	PRIVATE AUTOMATIC BRANCH EXCHANGE
PAI	PASSENGER ASSISTANCE INTERCOM
PCM	PULSE CODED MODULATION
PR	PAIR
PROT	PROTECTOR TERMINAL
REA	RURAL ELECTRIFICATION ADMINISTRATION
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SEI	SEISMIC EVENT RECORDER
SCRTO	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
SPL	SOUND PRESSURE LEVEL
S/S	SEISMIC SWITCH
SST	SPECIAL SERVICES TELEPHONE
TB	TERMINAL BOARD
TBK	TERMINAL BLOCK
ATC & C	AUTOMATIC TRAIN CONTROL & COMMUNICATIONS
TERM	TERMINAL
TPSS	TRACTION POWER SUBSTATION
TTC	TELEPHONE TERMINAL CABINET
UPS	UNINTERRUPTIBLE POWER SUPPLY
VTR	VIDEO TAPE RECORDER



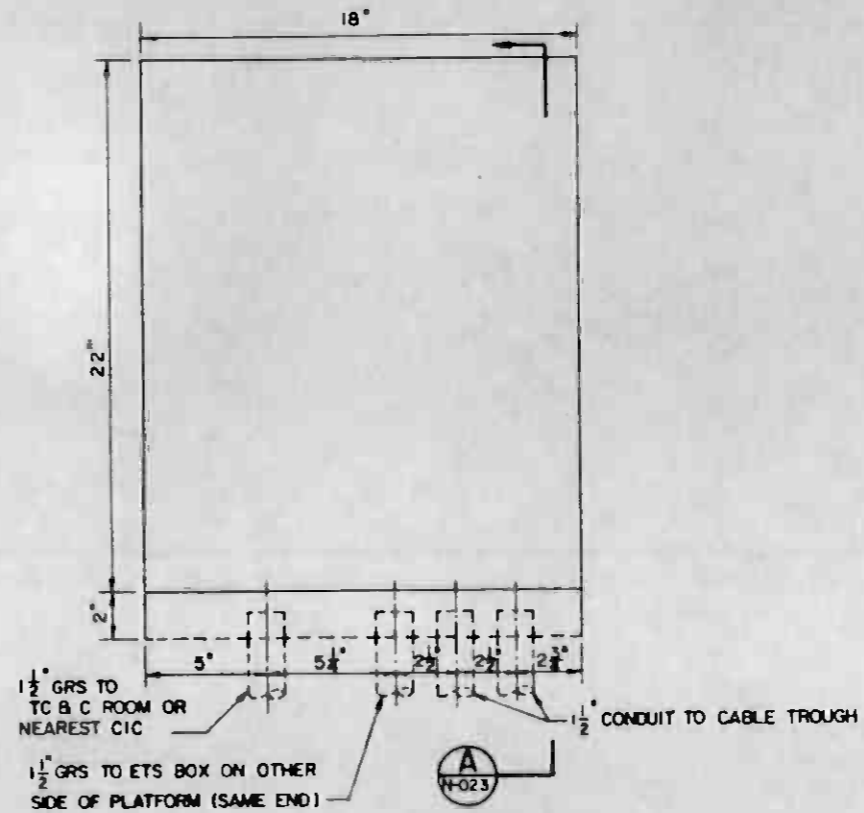
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REV	DATE	BY	SUB.	APP.	DESCRIPTION	REV.	DATE	BY	SUB.	APP.	DESCRIPTION
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					REVISED AS NOTED CR 4-093						
					REVISED AS NOTED CR 4-033						
					SIGNATURE ISSUE						



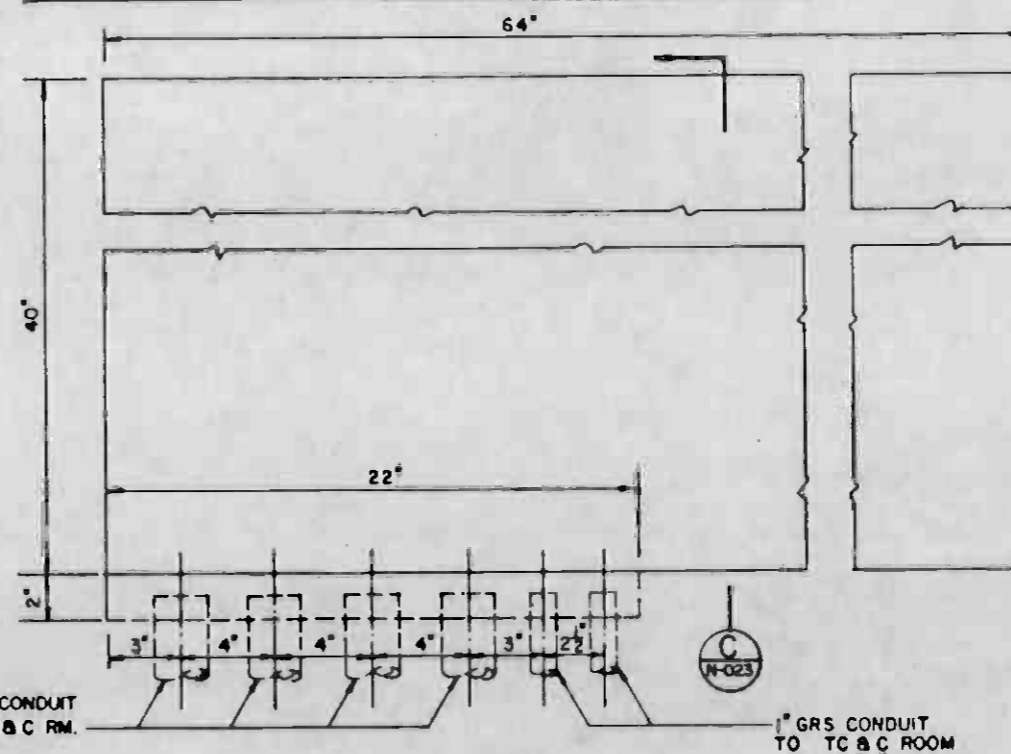
BLOCK OUT FOR BLS TUNNEL ENTRANCE AT PORTAL



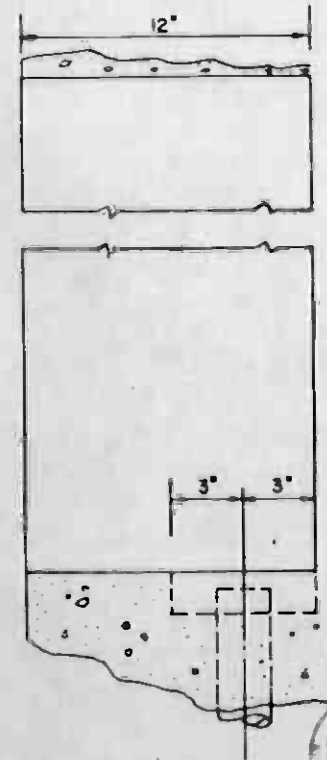
SECTION A (SIMILAR)



BLOCK OUT FOR BLS AT END OF STATION PLATFORM

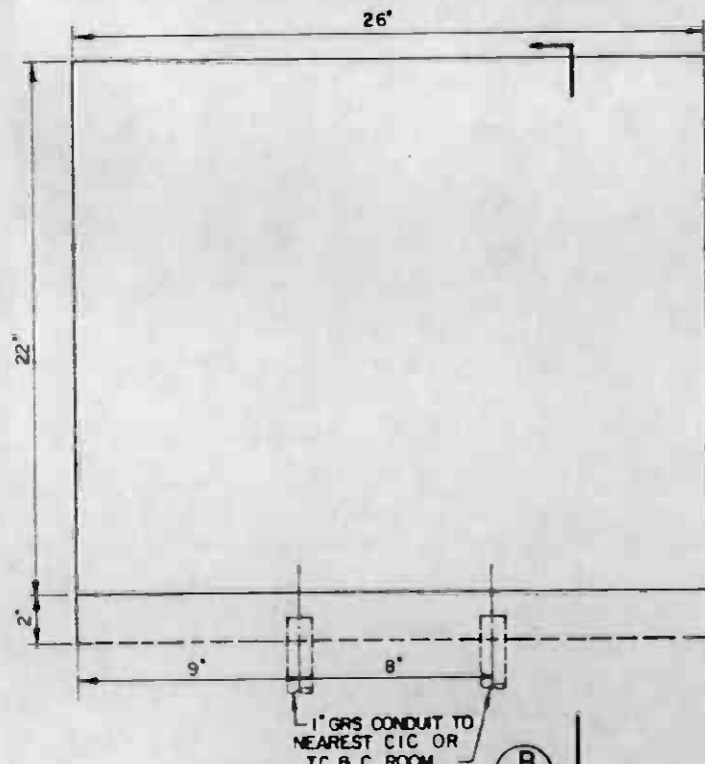


EMERGENCY MANAGEMENT PANEL

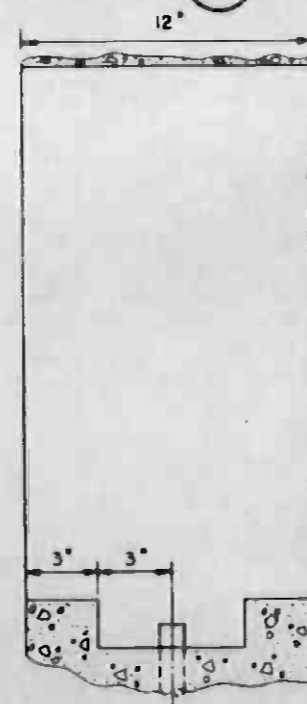


SECTION C

- NOTES:**
1. BLOCK-OUT SIZES APPLICABLE WHEN SURFACE MOUNTING IS NOT POSSIBLE DUE TO PERSONNEL CIRCULATION CLEARANCE BOXES MUST BE ENCASED TO PRESERVE THE WALL FIRE RATING.
 2. WHERE SURFACE MOUNTING CLEARANCE EXISTS, PROVIDE CONDUITS SPACED AS SHOWN. STUB UP 6" FROM WALL AND 18" ABOVE FINISH FLOOR OR 6" FROM WALL AND 18" DOWN FROM CEILING.
 3. CONDUITS TO BE THREADED, CAPPED, TAGGED & PULL-WIRE INSTALLED
 4. BLOCK OUTS SHALL BE CENTERED 54" ABOVE FINISHED FLOOR.



COMMAND POST AT STATION



SECTION B

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

DESIGNED BY
Asst. Manager
 CHECKED BY
Paul S. ...
 IN CHARGE
M. ...
 DATE
 14 JUL 86

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
 GENERAL CONSULTANTS

APPROVED
[Signature]

COMMUNICATIONS
 BLS & COMMAND POST BLOCK OUT

CONTRACT NO.
 A640

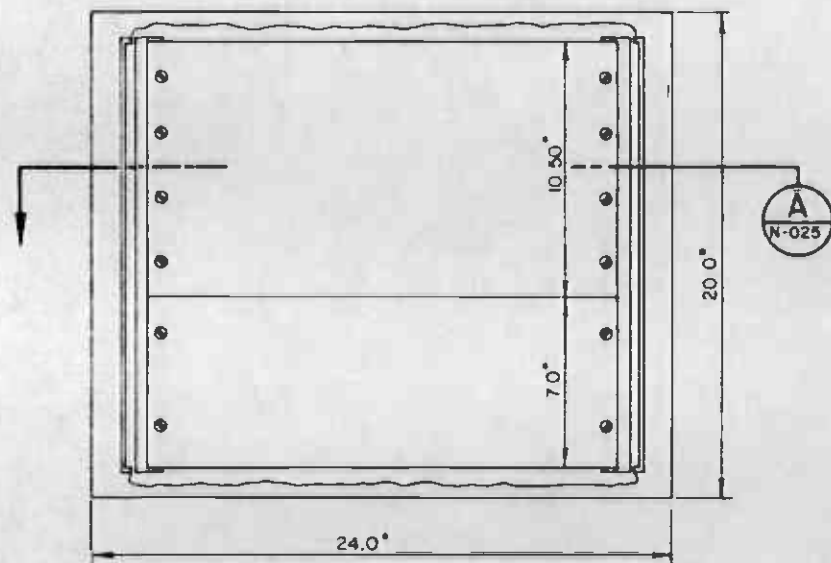
DRAWING NO.
 N-023 B

SCALE
 1/4" = 1' - 0"

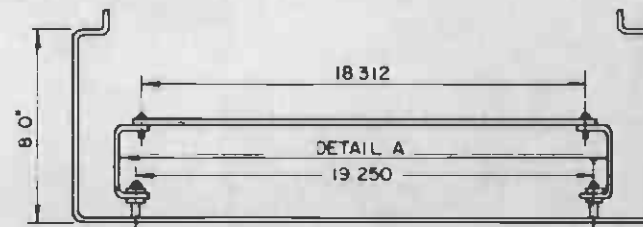
SHEET NO.
 13

NOTES:

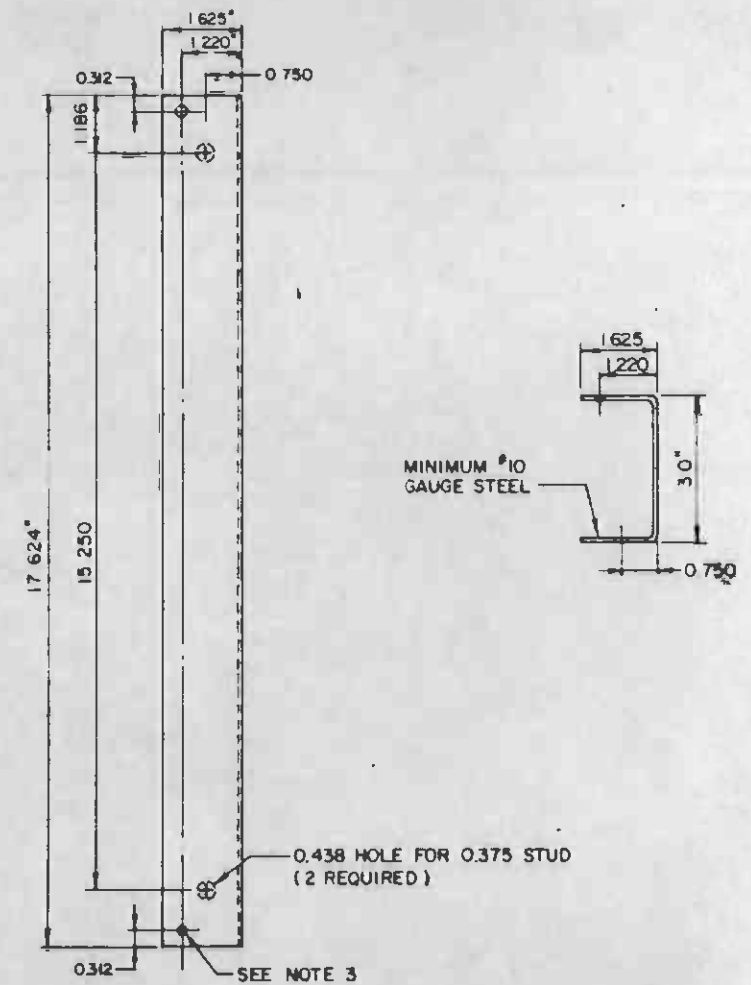
1. COMMAND POST BOX SHALL BE HOFFMAN A-20H 24 BLP OR EQUIVALENT
2. DRILL AND TAP FOR NO. 6-20 SCREWS USING EIA RS-310-8 UNIVERSAL SPACING STANDARD 30 HOLES REQUIRED



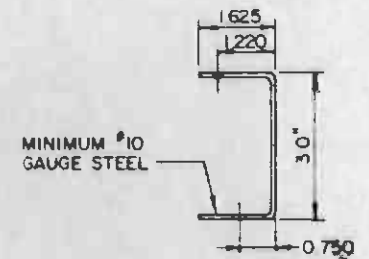
COMMAND POST BOX
SEE NOTE 1 1/2" = 1'-0"



VIEW A
1/2" = 1'-0"



DETAIL A
1/2" = 1'-0" N-025



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSIT ADMINISTRATION UNDER THE URBAN MASS TRANSIT ASSISTANCE ACT, AS AMENDED, AND IN PART BY THE SALES OF THE CLIMATE OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE 10 SEP 84



**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**



DMJM/P800/KE/HWA
GENERAL CONSULTANTS

**COMMUNICATIONS
COMMAND POST
DETAILS AND ASSEMBLY**

CONTRACT NO. A640
DRAWING NO. N-025 A
SCALE AS NOTED
SHEET NO. 14

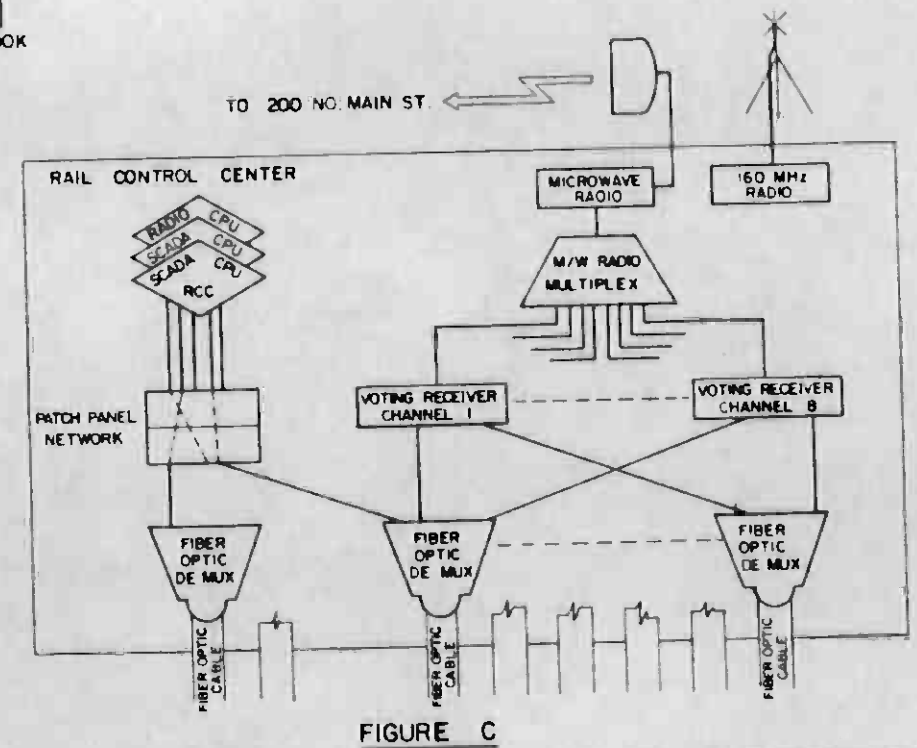
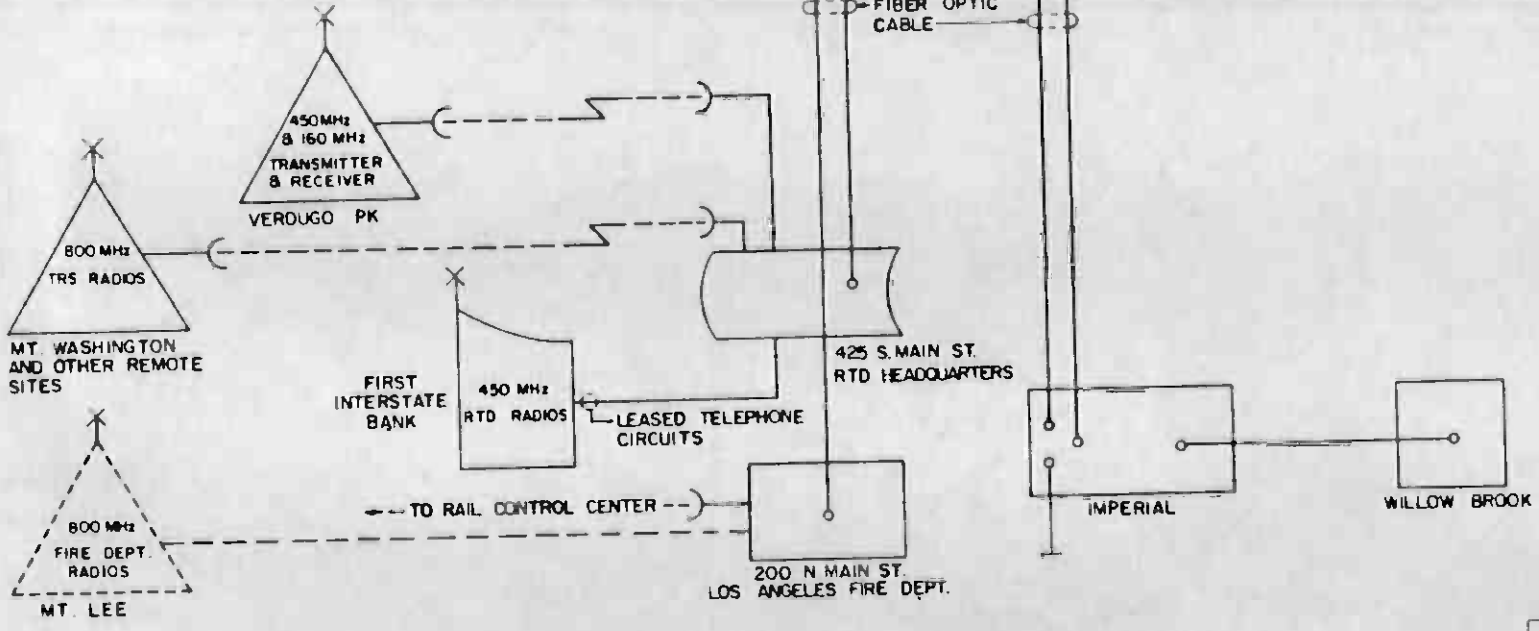
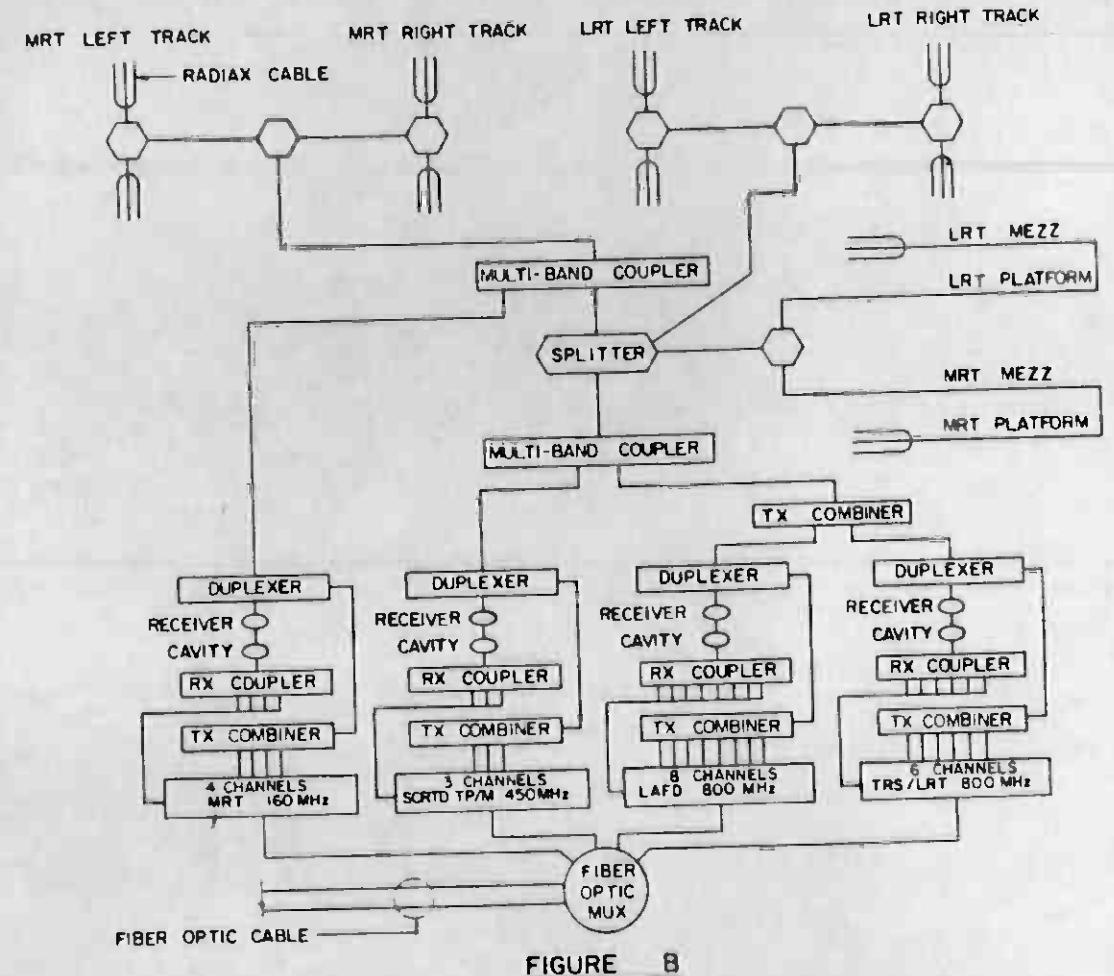
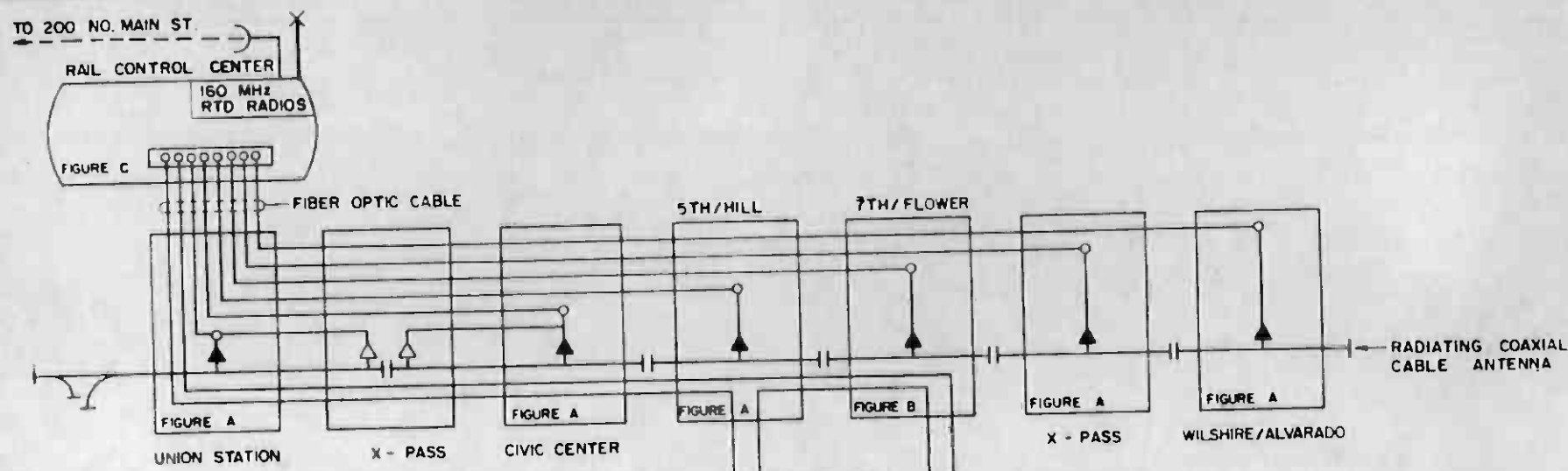
REV.	DATE	BY	CHK.	APP.	DESCRIPTION

REV.	DATE	BY	CHK.	APP.	DESCRIPTION

SIGNATURE ISSUE

SUBMITTED *C. M. ...*

APPROVED



SYMBOLS:

- TWO WAY POWER SPLITTER
- COAXIAL CABLE MANUFACTURED TO FUNCTION AS AN ANTENNA THROUGH-OUT ITS LENGTH - (RADIAX RADIATING TRANSMISSION LINE)



REV	DATE	BY	SUB	APP	DESCRIPTION

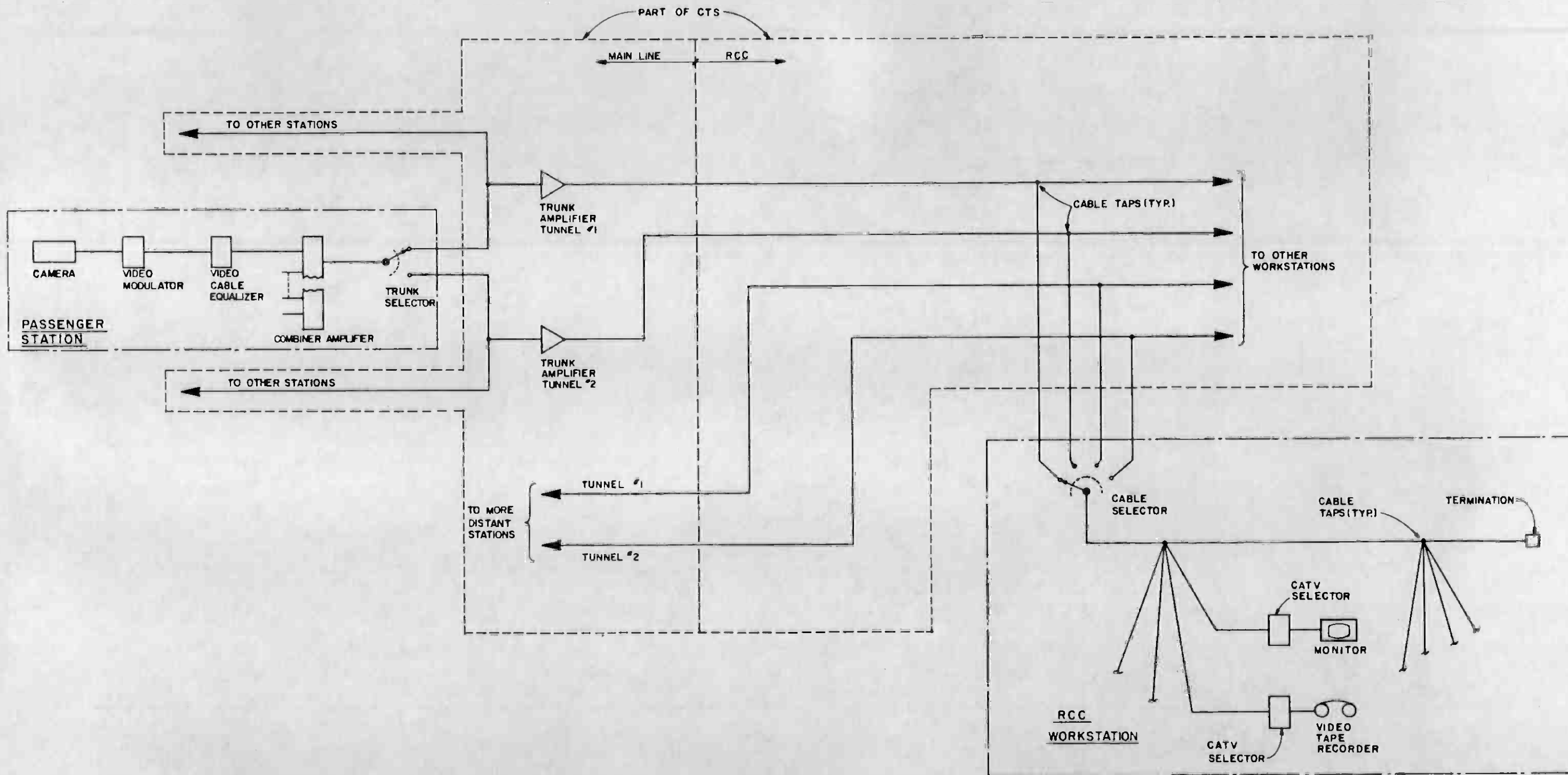
DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE 5 FEB 87

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

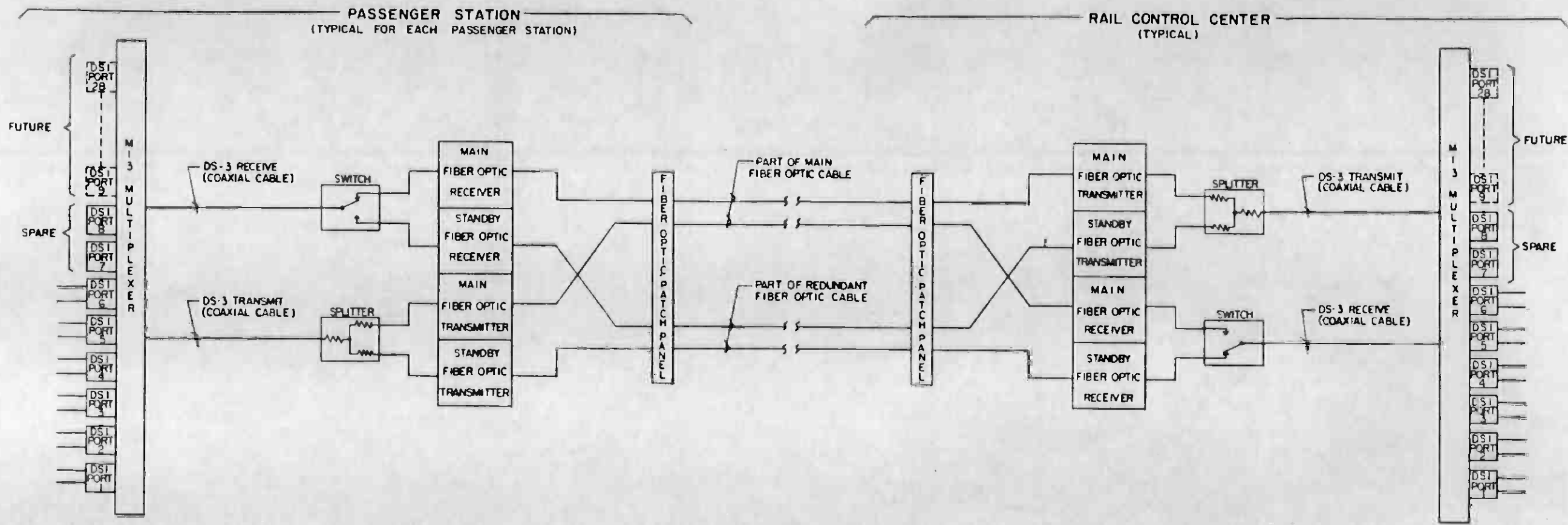
COMMUNICATIONS
RADIO SYSTEM BLOCK DIAGRAM

CONTRACT NO. A640
DRAWING NO. N-006 A 0
SCALE NONE
SHEET NO. 15



HALF SIZE

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M.R.T.C. <i>Edwin Acosta</i> DRAWN BY <i>B. Blakely</i> IN CHARGE <i>AM Burgess</i> DATE 24 OCT 86	REGISTERED PROFESSIONAL ENGINEER NO. 001100 193-3304 STATE OF CALIFORNIA	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT DMJM/PBQD/KE/HWA GENERAL CONSULTANTS	CONTRACT NO. A640 DRAWING NO. N-008 B 0 SCALE NO SCALE SHEET NO. 17
REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE EA	SUBMITTED: <i>EM</i>	APPROVED:	COMMUNICATIONS CCTV BLOCK DIAGRAM



REV	DATE	BY	SUB	APP	DESCRIPTION

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DESIGNED BY
M.R.T.C.

DRAWN BY
Charles Arada

CHECKED BY
B. Blahutsky

IN CHARGE
P. M. Burgess

DATE
20 AUG 86

SIGNATURE ISSUE

REGISTERED PROFESSIONAL ENGINEER
No. 88119.0
1-3-86
STATE OF CALIFORNIA

**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**

RTD

DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

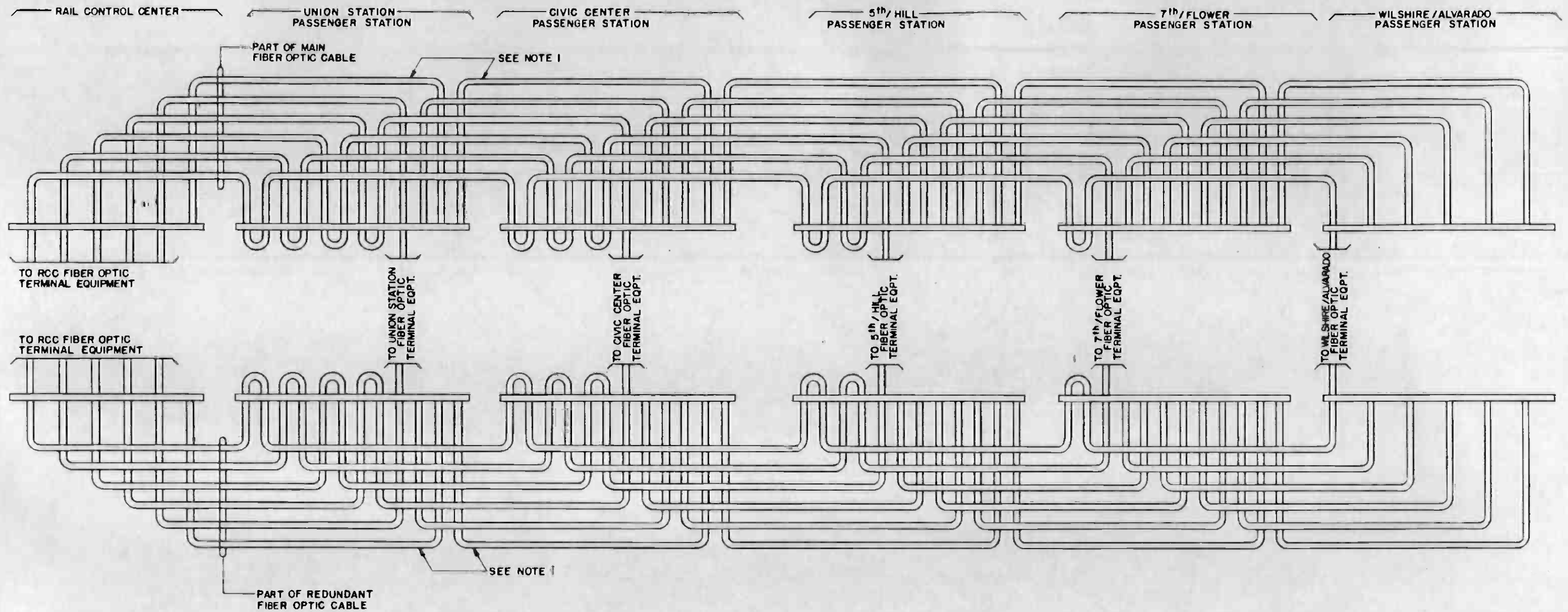
SUBMITTED *C. R. [Signature]*

APPROVED

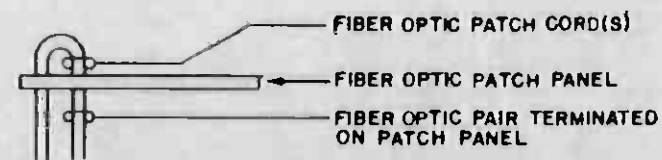
**COMMUNICATIONS
CTS
BLOCK DIAGRAM
FIBER OPTIC AND MULTIPLEX EQPT.**

CONTRACT NO.	A640
DRAWING NO.	N-111A 0
SCALE	NO SCALE
SHEET NO.	18





LEGEND:



NOTES:

1. TYPICAL CONNECTIONS FOR FIBER PAIRS PROVIDED FOR FUTURE EXTENSIONS AND SPARE. FIBER PAIRS FOR FUTURE EXTENSIONS AND SPARES ARE NOT SHOWN FOR CLARITY.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
M.R.T.C.
DRAWN BY
Edmund A. ...
CHECKED BY
B. Blakely
IN CHARGE
P.M. ...
DATE
19 AUG 86



**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**



DMJM/PROB/KE/HWA
GENERAL CONSULTANTS

**COMMUNICATIONS
INTERCONNECTION OF CTS
FIBER OPTIC CABLE**

CONTRACT NO
A640
DRAWING NO
N-211A 0
SCALE
NO SCALE
SHEET NO
19

REV	DATE	BY	SUB	APP	DESCRIPTION

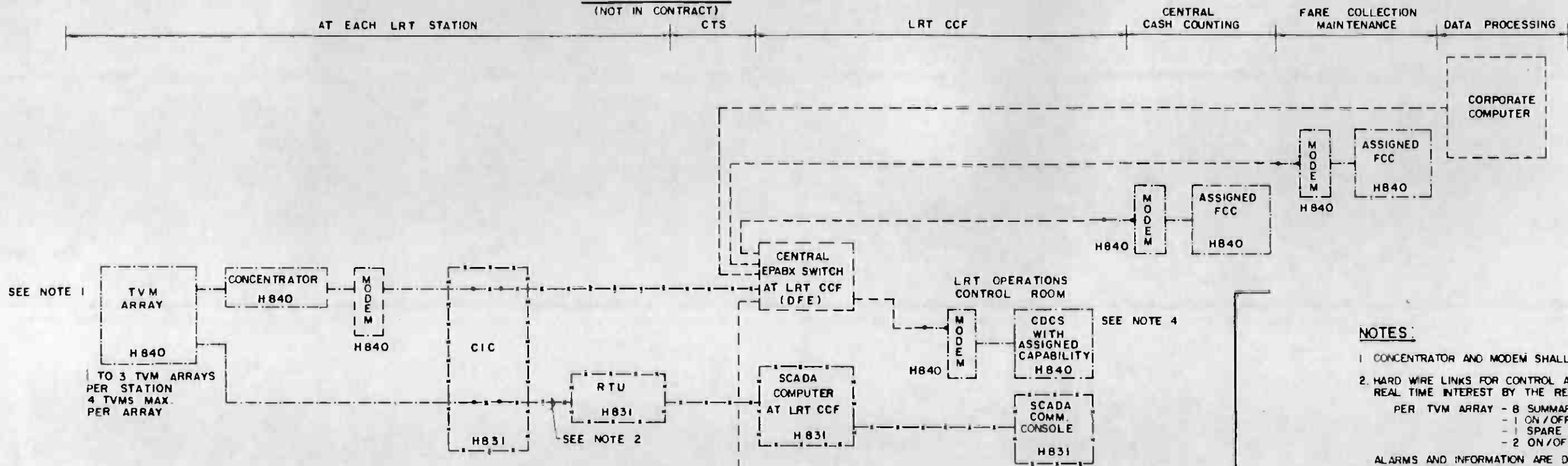
3 4 86
SIGNATURE ISSUE

SUBMITTED *C. ...*

APPROVED

LIGHT RAIL

(NOT IN CONTRACT)



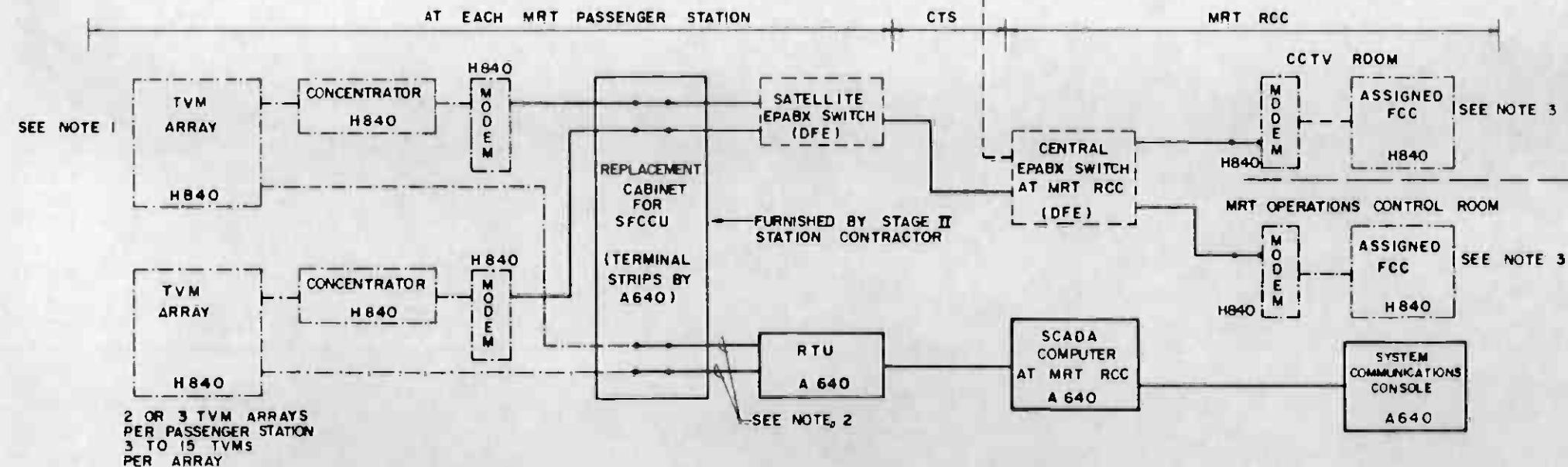
SEE NOTE 1

TO 3 TVM ARRAYS PER STATION
4 TVMS MAX. PER ARRAY

SEE NOTE 2

SEE NOTE 4

METRO RAIL



SEE NOTE 1

2 OR 3 TVM ARRAYS PER PASSENGER STATION
3 TO 15 TVMS PER ARRAY

SEE NOTE 2

SEE NOTE 3

NOTES:

- CONCENTRATOR AND MODEM SHALL BE MOUNTED WITHIN TVM ARRAY.
- HARD WIRE LINKS FOR CONTROL AND MONITORING OF ACTIVITIES OF REAL TIME INTEREST BY THE RESPECTIVE SCADA SUBSYSTEM
 - PER TVM ARRAY - 8 SUMMARY MONITORING POINTS.
 - 1 ON/OFF MONITORING POINT
 - 1 SPARE MONITORING POINT
 - 2 ON/OFF CONTROL POINTS

ALARMS AND INFORMATION ARE DISPLAYED AT THE RESPECTIVE SCADA COMM CONSOLE
A640 OR H831 CONTRACTOR, AS APPROPRIATE, TO PROVIDE INTERPOSING DRY RELAY CONTACTS FOR CONTROL FUNCTIONS
H840 CONTRACTOR TO PROVIDE INTERPOSING DRY RELAY CONTACTS FOR MONITORING FUNCTIONS.
- ASSIGNED FCC COMPRISES - MICROCOMPUTER WITH KEYBOARD, DISPLAY, AND PRINTER TO STORE DATA COLLECTED DURING ROUTINE POLLING OF TVMS.
CDCS CAN ALSO DOWNLOAD DATA VIA A MODEM TO TVMS AND THE CORPORATE COMPUTER. INTERFACE DETAILS TO THE CORPORATE COMPUTER TO BE PROVIDED BY H840 CONTRACTOR.
- CDCS COMPRISES MICROCOMPUTER - WITH KEYBOARD, DISPLAY, PRINTER AND ADDITIONAL STORAGE TO STORE DATA COLLECTED DURING ROUTINE POLLING OF TVMS.

ABBREVIATIONS:

- TVM TICKET VENDING MACHINE
- CIC COMMUNICATIONS INTERFACE CABINET
- RTU REMOTE TERMINAL UNIT
- LRT LIGHT RAIL TRANSIT
- MRT METRO RAIL TRANSIT
- CCF CENTRAL CONTROL FACILITY AT WILLOWBROOK JUNCTION
- RCC RAIL CONTROL CENTER AT MRT YARD
- FCC FARE COLLECTION COMPUTER
- CDCS CENTRAL DATA COLLECTION SYSTEM
- SFCCU STATION FARE COLLECTION CONTROL UNIT (NOT USED IN PRESENT DESIGN)
- SCADA SUPERVISORY CONTROL AND DATA ACQUISITION
- DFE DISTRICT FURNISHED EQUIPMENT

KEY:

- FURNISHED & INSTALLED BY CONTRACT H840
- - - FURNISHED & INSTALLED BY CONTRACT H831
- FURNISHED & INSTALLED BY CONTRACT A640
- - - - RTD FURNISHED VOICE GRADE DATA LINKS & TELEPHONE SWITCHES



REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY
MRTC

DRAWN BY
A. V. Anderson

CHECKED BY
B. Blahut

IN CHARGE

DATE
11 FEB 87

REDRAWN - NEW SIGNATURE

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

APPROVED
J. N. Brown

COMMUNICATIONS
FARE COLLECTION SYSTEM
INTERFACE BLOCK DIAGRAM

CONTRACT NO.
A640

DRAWING NO.
N-0818

SCALE
NO SCALE

SHEET NO.
20

(REFERENCE A660 TP⁰B)

CIC TERMINAL STRIP

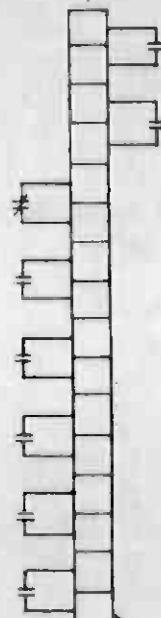
(SEE INTERFACE
DWG. NS-007)

LEAD
DESIGNATION

MONITORING
CONNECTIONS CONTROL
CONNECTIONS

FIGURE TERMINAL

OPEN EXIT
LOCK ENTRY
INTRUSION
REVENUE SERVICE REQUIRED
DOOR OPEN
REVENUE SERVICE REQUIRED
(NOT IN SERVICE)
MAINTENANCE SERVICE REQUIRED
JAM



SEE NOTE 1

COMMUNICATIONS / FARE COLLECTION

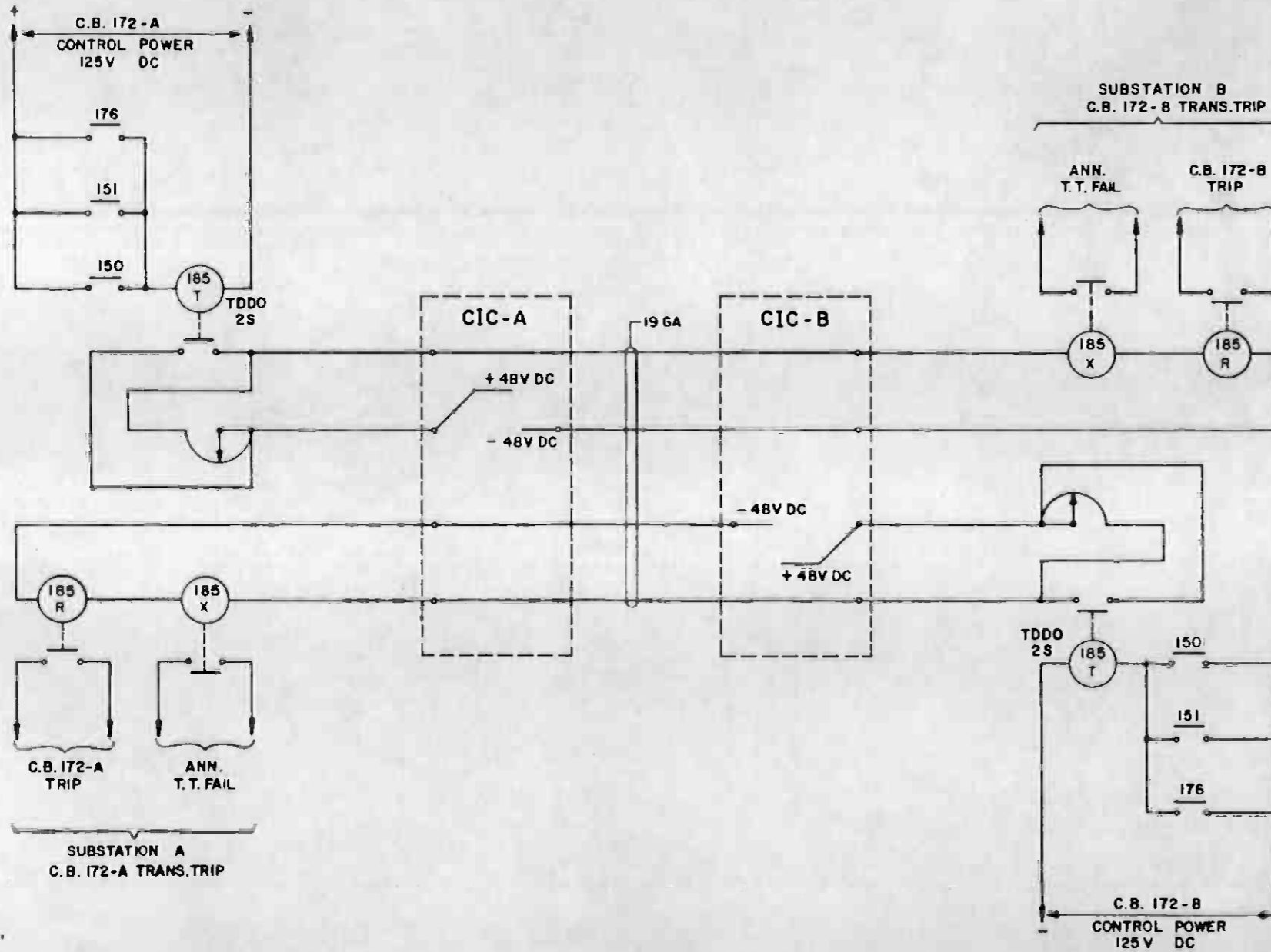
NOTE

1. SEE DWG. N-036 FOR NOTES.



<p>THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.</p>		<p>DESIGNED BY <i>D. Blahnik</i></p> <p>DRAWN BY <i>E. Acosta</i></p> <p>CHECKED BY <i>Ellis</i></p> <p>IN CHARGE <i>MB</i></p> <p>DATE 10 NOV 85</p>	<p>SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT</p> <p>DMJM/PBOD/KE/HWA GENERAL CONSULTANTS</p> <p>APPROVED <i>P. N. Jones</i></p>	<p>COMMUNICATIONS FARE COLLECTION INTERFACES</p>	<p>CONTRACT NO. A640</p> <p>DRAWING NO. REV. N-047B 0</p> <p>SCALE NO SCALE</p> <p>SHEET NO. 21</p>						
REV.	DATE	BY	SUB.	APP.	DESCRIPTION	REV.	DATE	BY	SUB.	APP.	DESCRIPTION
B											
W	11-0-85				SIGNATURE ISSUE						

NOTE:
 1. PROVIDE FOUR CABLE PAIRS BETWEEN CIC IN ADJACENT TRACTION POWER SUBSTATIONS
 ALL OTHER CABLES AND DEVICES SHOWN HEREIN ARE N.I.C.



REV.	DATE	BY	SUB	APP	DESCRIPTION

REV.	DATE	BY	SUB	APP	DESCRIPTION
B					GENERAL REVISION
					SIGNATURE ISSUE

DESIGNED BY
G.W. PENNEY
 DRAWN BY
E.S. ACOSTA
 CHECKED BY
[Signature]
 IN CHARGE
[Signature]
 DATE
24 SEP 86

**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT**

REGISTERED PROFESSIONAL ENGINEER
 G. W. PENNEY & COMPANY
 No. ED11980
 1-8-20-85
 ELECTRICAL
 STATE OF CALIFORNIA

SUBMITTED *enval*

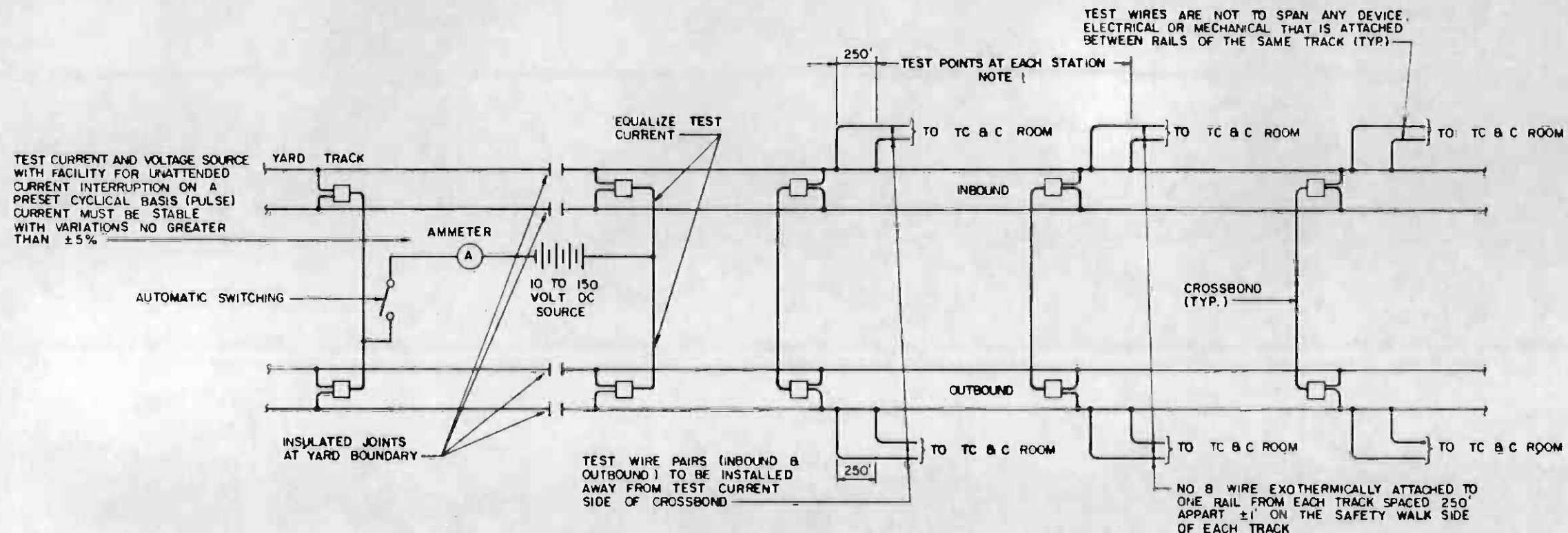
RTD

DMJM/PBOD/KE/HWA
 GENERAL CONSULTANTS

APPROVED

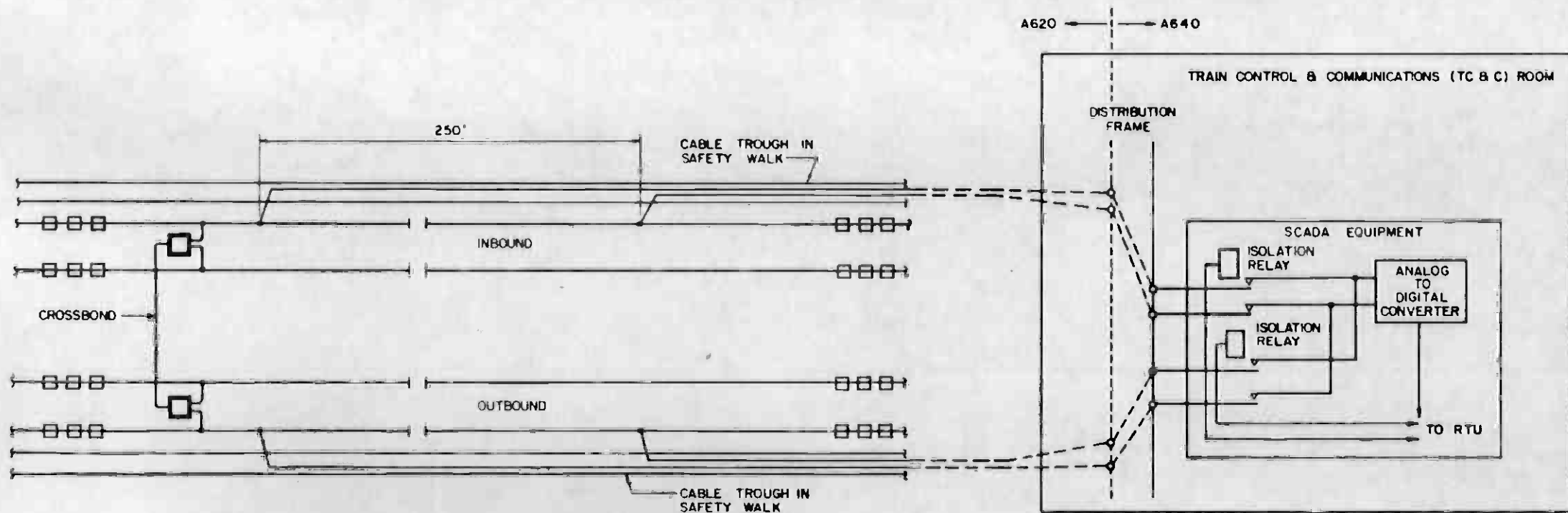
**COMMUNICATIONS
 TRANSFER TRIP SCHEMATIC**

CONTRACT NO	A64D	
DRAWING NO	N-264 B	REV 0
SCALE	NO SCALE	
SHEET NO	22	



DETAIL 26

NOTE:
 1. AT STATIONS WITH ASSOCIATED INTERLOCKINGS INSTALL TWO ADDITIONAL SETS OF TEST POINTS. ONE SET TO BE INSTALLED BEYOND END OF INTERLOCKING AWAY FROM STATION AND THE OTHER SET TO BE INSTALLED BEYOND END OF PLATFORM AT THE OPPOSITE END OF STATION (STUB TERMINALS DO NOT NEED TEST POINTS AT THE STUB END OF THE PLATFORM).



DETAIL 27

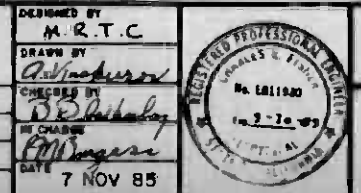


REV.	DATE	BY	SUB.	APP.	DESCRIPTION

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DESIGNED BY	M. R. T. C.
DRAWN BY	<i>Archie</i>
CHECKED BY	<i>D. D. ...</i>
IN CHARGE	<i>...</i>
DATE	7 NOV 85

GENERAL REVISION	
SIGNATURE ISSUE	



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DAJ/M/PBOD/KE/HWA
 GENERAL CONSULTANTS

APPROVED: *C. J. ...*

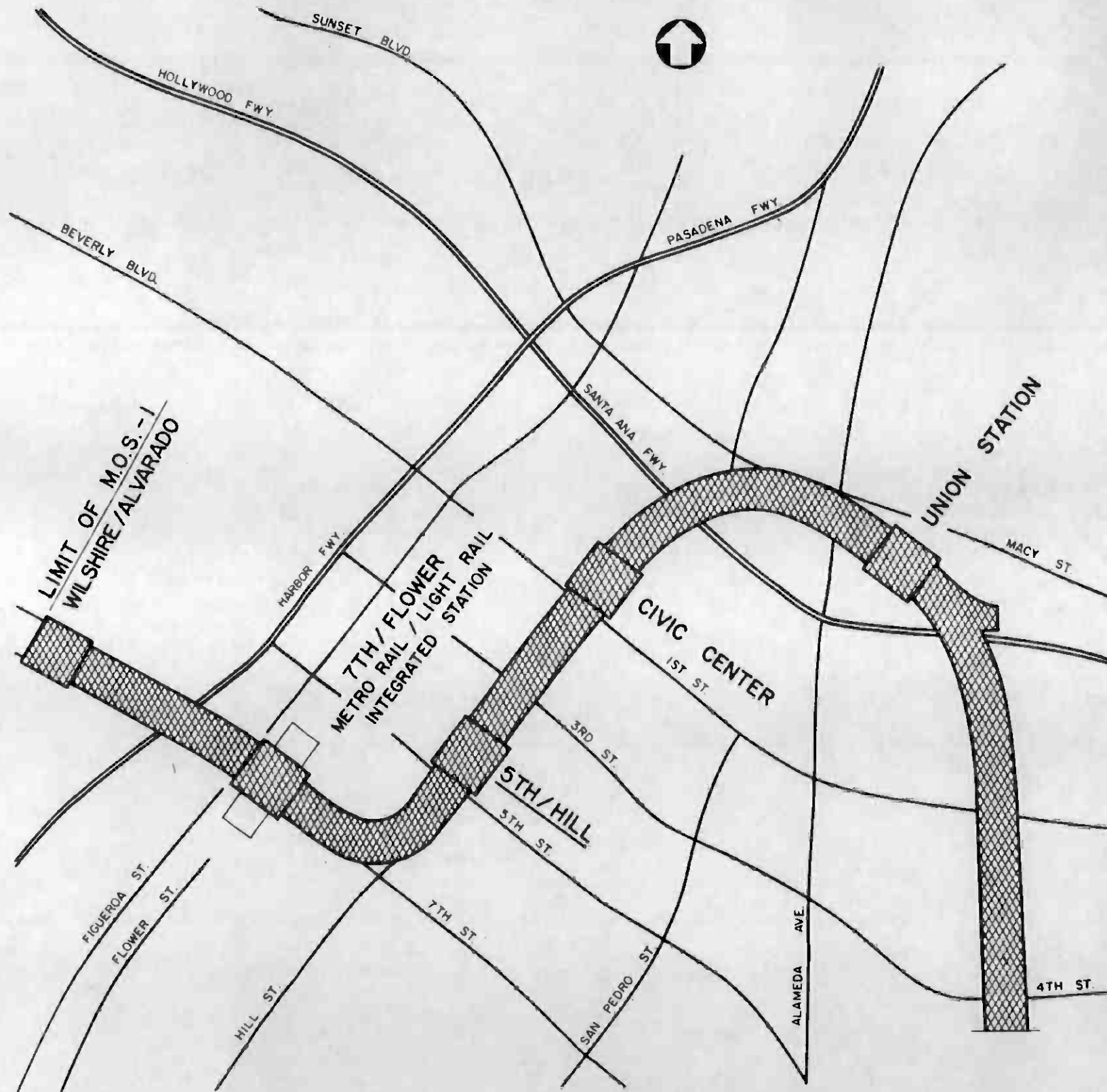
CONTRACT NO. A640

DRAWING NO. N-049 B 0

SCALE: NO SCALE

SHEET NO. 23

COMMUNICATIONS
 CORROSION CONTROL SCHEMATIC



STATION	SEISMIC RECORDER	SEISMIC SWITCHES	LOCATION
UNION	NO	YES	TC & C ROOM
CIVIC CENTER	YES	YES	EMERGENCY EQUIPMENT ROOM
5TH / HILL	NO	NO	---
7TH / FLOWER	NO	NO	---
WILSHIRE / ALVARADO	NO	YES	EMERGENCY EQUIPMENT ROOM



REV	DATE	BY	SUB	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
T.K. McCRANIE
CHECKED BY
[Signature]
IN CHARGE
[Signature]
DATE
26 SEP 86



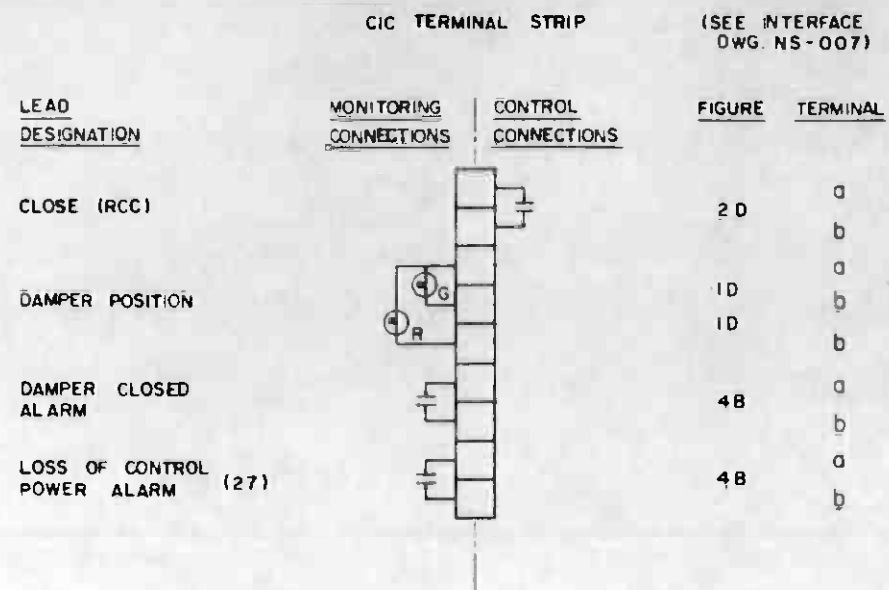
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



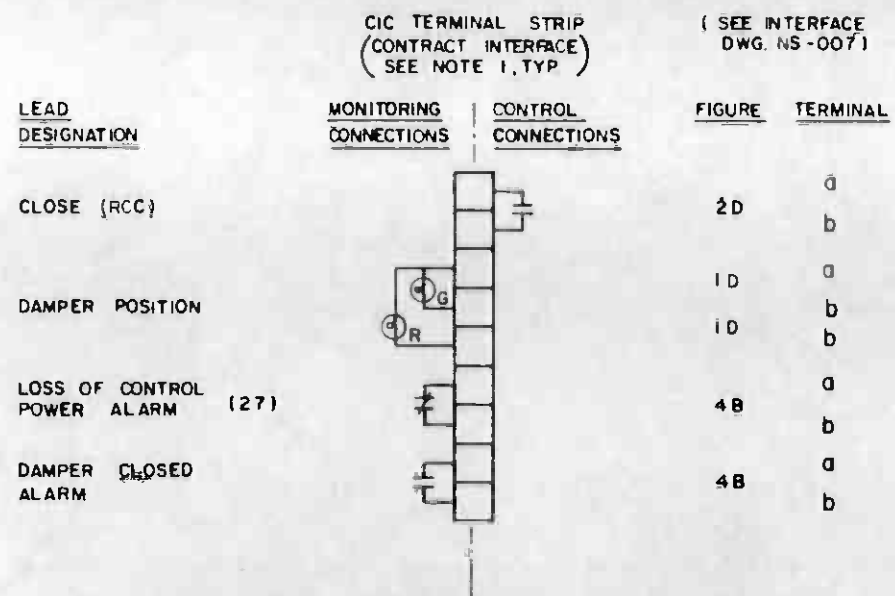
DMJM/PBOD/KE HWA
GENERAL CONSULTANTS
APPROVED

COMMUNICATIONS
SEISMIC DETECTION
SEISMIC RECORDER AND
SWITCH LOCATION SCHEMATIC

CONTRACT NO.	A640
DRAWING NO.	N-112 A
SCALE	NO SCALE
SHEET NO.	24



EMERGENCY FAN FAN DAMPERS



EMERGENCY FAN TRACK DAMPERS

NOTES:

THE UNNUMBERED TERMINAL STRIPS ARE SYMBOLIC REPRESENTATIONS OF CIC, CIR OR MDF TERMINALS THAT ARE THE INTERFACES BETWEEN CONTRACT A640 AND OTHER PROJECT CONTRACTS

RELAY CONTACTS AND LIGHT SYMBOLS ON THE LEFT SIDE OF THE STRIP REPRESENT EQUIPMENT AND CONTROL SYSTEM MONITORING INPUTS FROM THE INTERFACING CONTRACT TO SCADA.

RELAY CONTACT SYMBOLS ON THE RIGHT SIDE OF THE STRIP REPRESENT CONTROL OUTPUTS FROM SCADA TO THE INTERFACING CONTRACT EQUIPMENT.

ACTUAL TERMINAL STRIPS AND TERMINAL NUMBERS ARE DESIGNATED IN THE ELECTRICAL CONNECTION DIAGRAMS OR WIRE CONNECTION SCHEDULES OF EACH INTERFACING CONTRACT

ABBREVIATIONS:

- G - GREEN
- R - RED
- W - WHITE
- B - BLUE
- C - CLEAR
- TS - TERMINAL STRIP
- LCS - LOCAL CONTROL STATION
- MCC - MOTOR CONTROL CENTER
- EMP - EMERGENCY MANAGEMENT PANEL
- CIC - COMMUNICATIONS INTERFACE CABINET
- CIR - COMMUNICATIONS INTERFACE RACK
- MDF - MAIN DISTRIBUTION FRAME



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, UNDER MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.				DESIGNED BY DRAWN BY <i>AV...</i> CHECKED BY IN CHARGE DATE 29 OCT 85	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	COMMUNICATIONS SCADA / FACILITIES ELECTRICAL INTERFACES	CONTRACT NO A640 DRAWING NO N-036 C SCALE NO SCALE SHEET NO 25
REV. DATE BY SUB. APP. DESCRIPTION	REV. DATE BY SUB. APP. DESCRIPTION	GENERAL REVISION GENERAL REVISION SIGNATURE ISSUE	DATE 29 OCT 85	SUBMITTED APPROVED	GENERAL CONSULTANTS		

CIC TERMINAL STRIP (SEE INTERFACE DWG NS-007)

LEAD DESIGNATION	MONITORING CONNECTIONS	CONTROL CONNECTIONS	FIGURE	TERMINAL
ON (GROUP FAN START)			20	a
STATION HI TEMP ALARM			48	a
TROUBLE ALARM (HI BEARING TEMP, HI FAN VIBRATN, CONTROL PWR LOSS)			48	a
FAN #1 MOTOR OVERLOAD ALARM (49)			48	b
FAN #2 MOTOR OVERLOAD ALARM (49)			48	a
#1 LOSS OF EXHAUST AIR FLOW ALARM (FS)			48	b
#1 LOSS OF SUPPLY AIR FLOW ALARM (FS)			48	a
#2 LOSS OF EXHAUST AIR FLOW ALARM (FS)			48	b
#2 LOSS OF SUPPLY AIR FLOW ALARM (FS)			48	a

CIC TERMINAL STRIP (CONTRACT INTERFACE) (SEE NOTE 1, TYR) (SEE INTERFACE DWG NS-007)

LEAD DESIGNATION	MONITORING CONNECTIONS	CONTROL CONNECTIONS	FIGURE	TERMINAL
ON (RCC)			20	a
CS / EXHAUST DIRECTION			20	a
CS / SUPPLY DIRECTION			20	b
IN LOCAL CONTROL (69)			48	a
EXHAUST SUPPLY			10	b
STAND-BY TROUBLE (HI BEARING TEMP, HI FAN VIBRATN, CONTROL PWR LOSS)			10	b
CONTROL POWER AVAILABLE			10	b
MRT HI TEMP			10	b

NOTE:
1. SEE DWG NS-036 FOR NOTES.

EMERGENCY FANS #1, #2 & #3

EMERGENCY FAN AUXILIARY CIRCUITS
FANS #1 & #2



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
DRAWN BY *D. Vasquez*
CHECKED BY
IN CHARGE
DATE 17 OCT 85

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

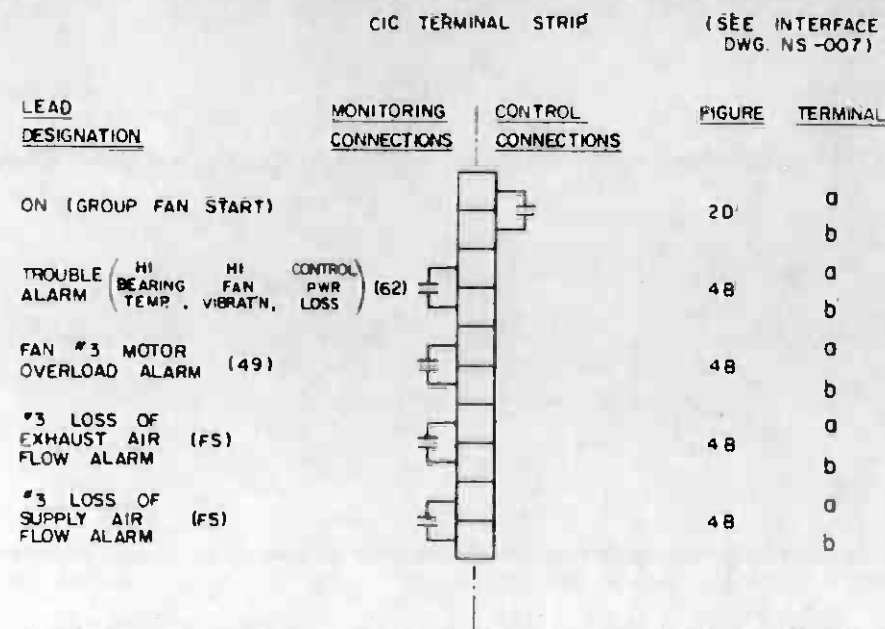


DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

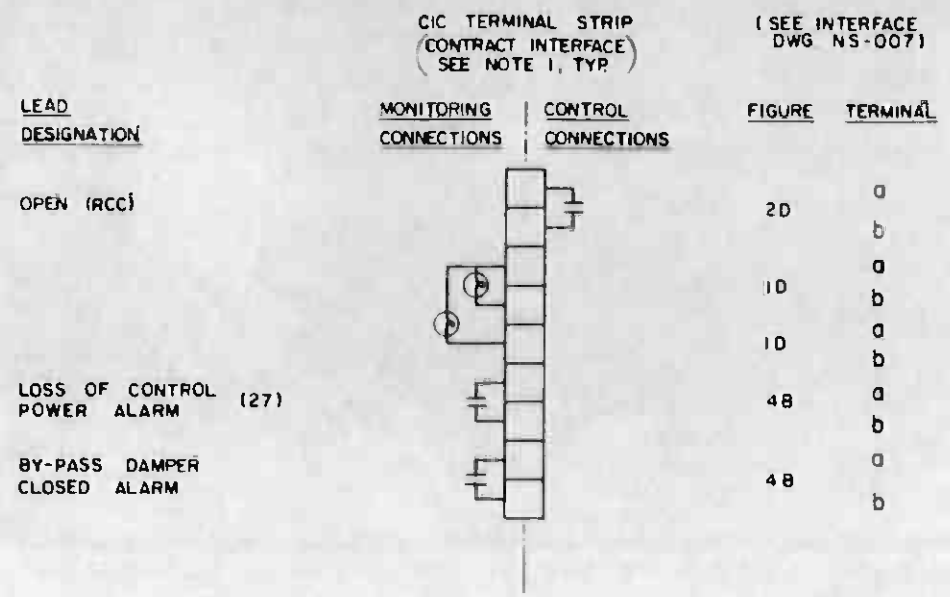
COMMUNICATIONS
SCADA / FACILITIES ELECTRICAL
INTERFACES

CONTRACT NO A640
DRAWING NO N-037 C
SCALE NO SCALE
SHEET NO 26

REV	DATE	BY	SUB	APP	DESCRIPTION



EMERGENCY FAN AUXILIARY CIRCUITS
(FAN #3)

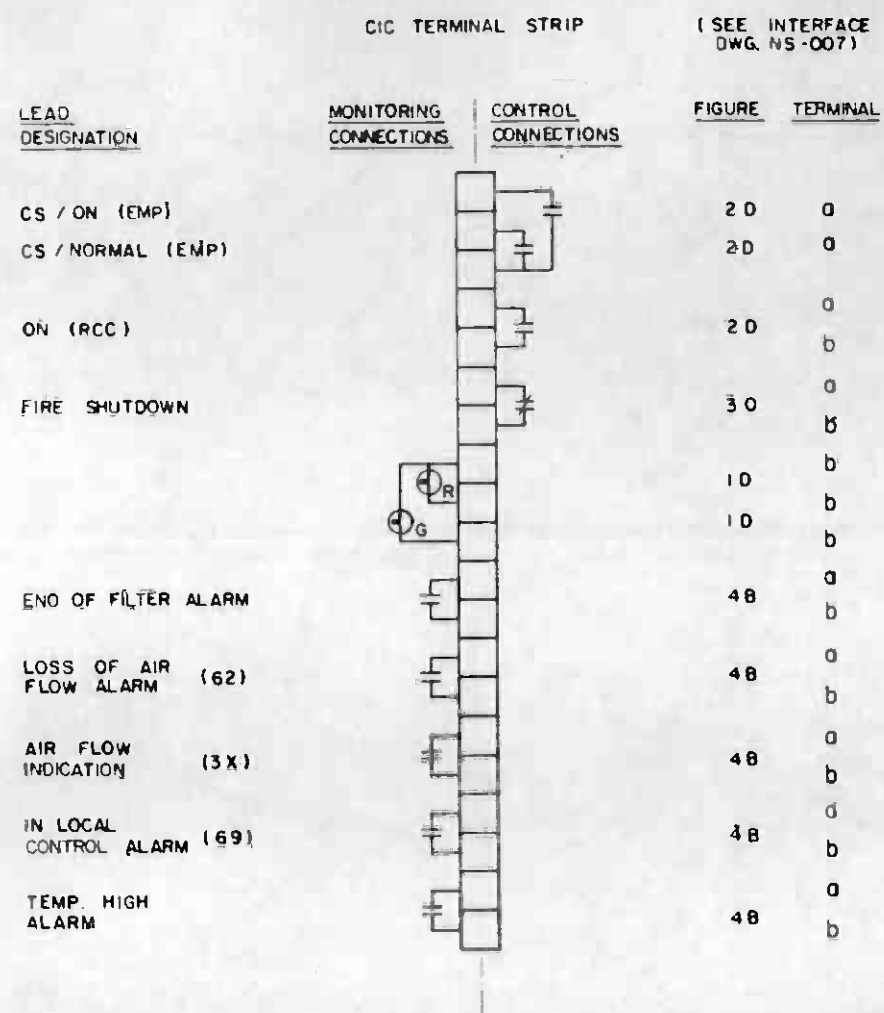


EMERGENCY FAN BYPASS DAMPERS

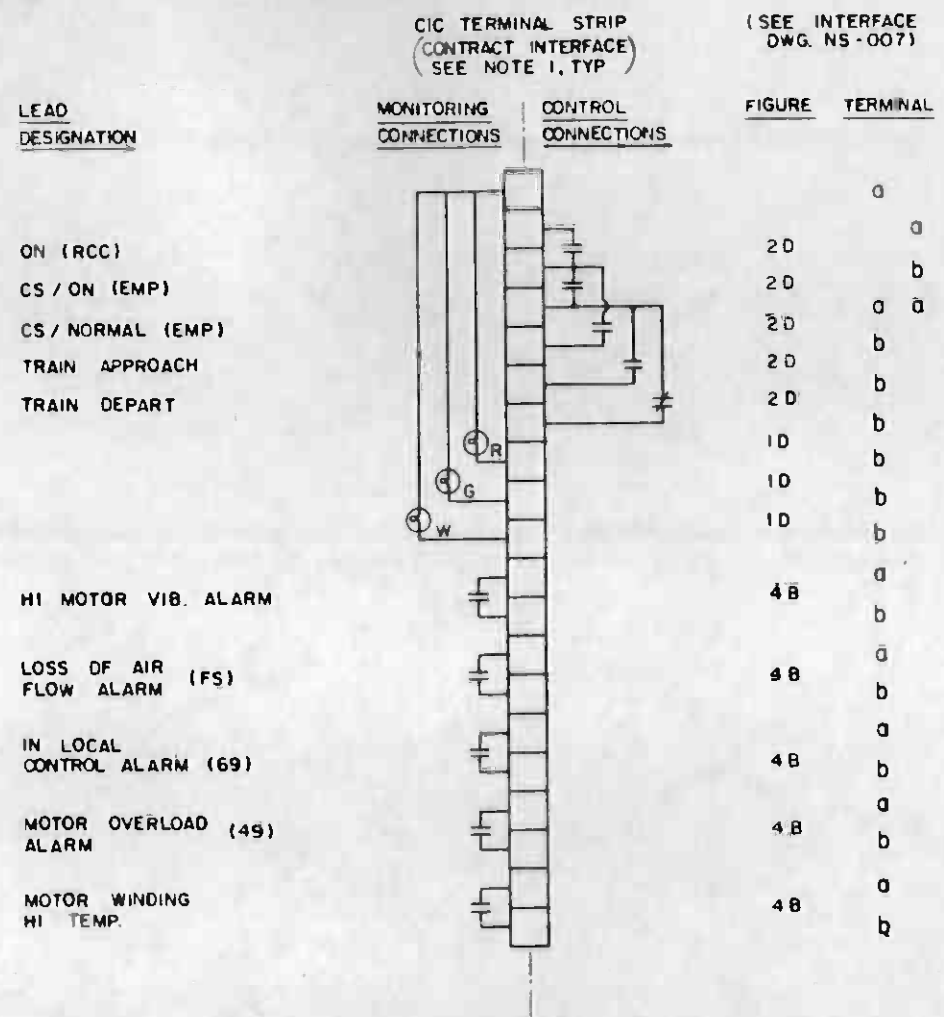
NOTE:
SEE DWG N-036 FOR NOTES.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.										DESIGNED BY DRAWN BY <i>A. V. ...</i> CHECKED BY IN CHARGE DATE 16 OCT 85		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 			COMMUNICATIONS SCADA / FACILITIES ELECTRICAL INTERFACES			CONTRACT NO. A640 DRAWING NO. N-038 C 0 SCALE NO SCALE SHEET NO. 27	
REV.	DATE	BY	SUB	APP	DESCRIPTION	REV.	DATE	BY	SUB	APP	DESCRIPTION	SUBMITTED	APPROVED						
					GENERAL REVISION														
					GENERAL REVISION														
					SIGNATURE ISSUE														



STATION VENTILATION SYSTEM



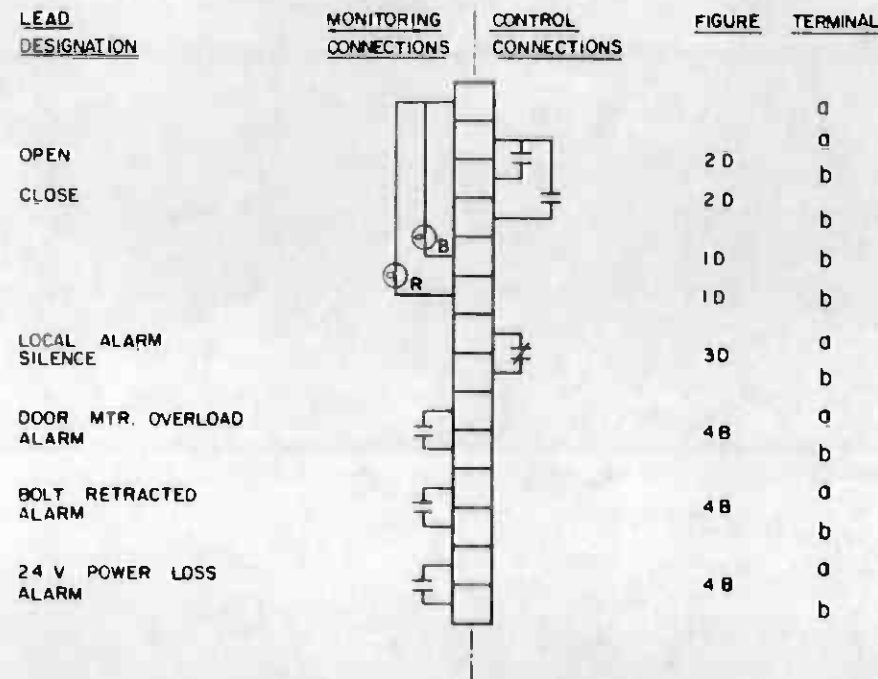
UNDERPLATFORM EXHAUST FANS

NOTE:
1. SEE DWG N-036 FOR NOTES.



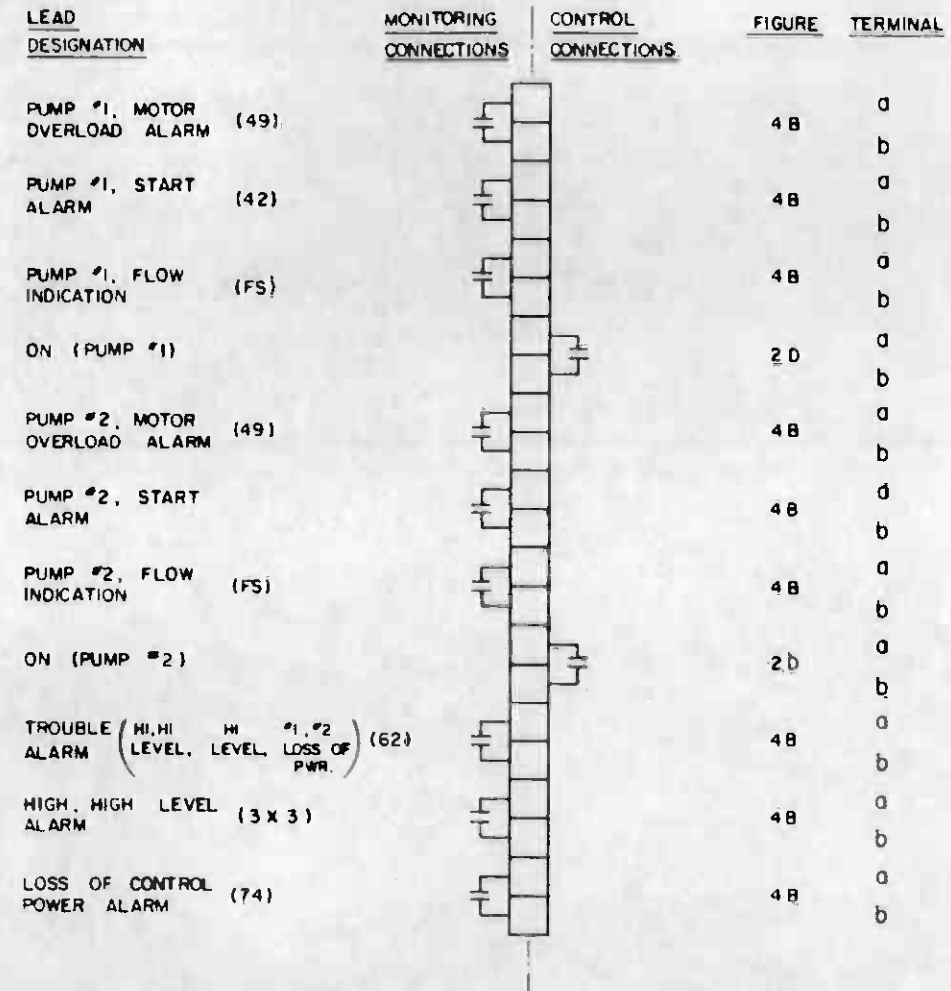
THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY DRAWN BY <i>A. H. ...</i> CHECKED BY IN CHARGE DATE 29 OCT 85	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT	COMMUNICATIONS SCADA / FACILITIES ELECTRICAL INTERFACES	CONTRACT NO A640 DRAWING NO N-039 C REV 0 SCALE NO SCALE SHEET NO 28
REV DATE BY SUB APP DESCRIPTION	REV DATE BY SUB APP DESCRIPTION	GENERAL REVISION GENERAL REVISION SIGNATURE ISSUE	SUPPLIED	APPROVED	

CIC TERMINAL STRIP (SEE INTERFACE DWG. NS-007)



ROLL-UP DOORS AT STATION ENTRANCE

CIC TERMINAL STRIP (CONTRACT INTERFACE) (SEE NOTE 1, TYP) (SEE INTERFACE DWG. NS-007)



DUPLEX SUMP PUMP WITH CONTROL SWITCHES

NOTE:

SEE DWG. N-036 FOR NOTES.



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REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE	SUBMITTED APPROVED	DMJM/PBOD/KE/HWA GENERAL CONSULTANTS	

CIC TERMINAL STRIP (SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION	MONITORING CONNECTIONS	CONTROL CONNECTIONS	FIGURE	TERMINAL
FIRE SHUTDOWN			3 D	a b
IN LOCAL CONTROL			4 B	a b
ON (RCC)			2 D	a b
SUPPLY FAN			1 D	a
			1 D	b
			1 D	b
CS/ON (EMP)			2 D	a b
C/S NORMAL (EMP)			2 D	a b
AUXILIARY CIRCUITS				
AIR FLOW ALARM			4 B	a b
HIGH TEMP. ALARM			4 B	a b
END OF FILTER ALARM			4 B	a b
TROUBLE ALARM			4 B	a b

TRACTION POWER ROOM SUPPLY FANS

CIC TERMINAL STRIP (CONTRACT INTERFACE) (SEE NOTE 1, TYP) (SEE INTERFACE DWG NS-007)

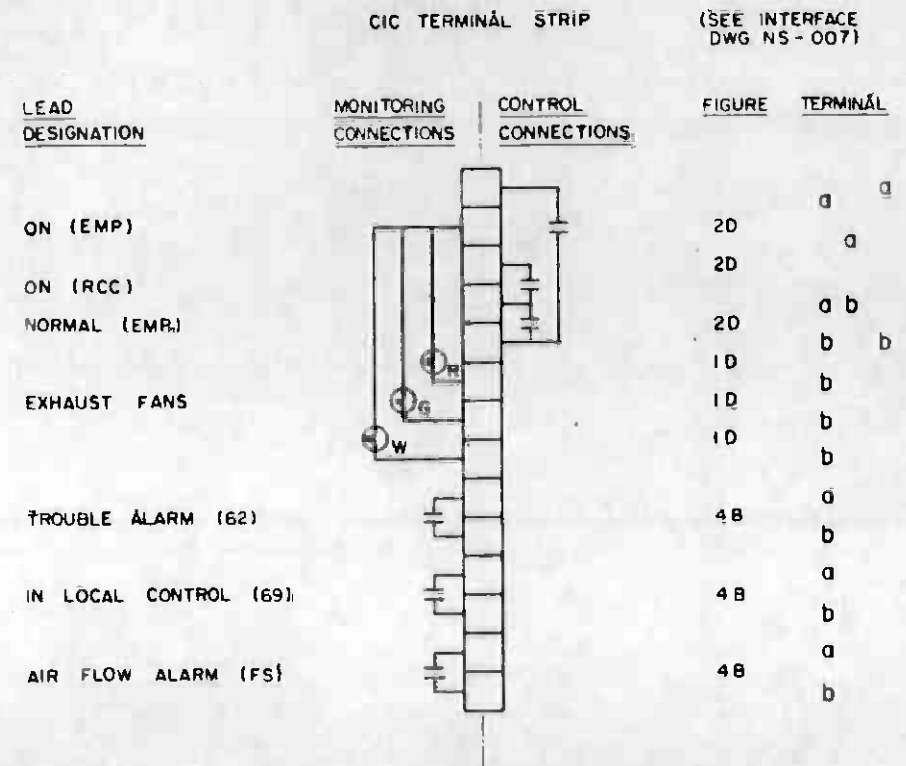
LEAD DESIGNATION	MONITORING CONNECTIONS	CONTROL CONNECTIONS	FIGURE	TERMINAL
CLOSE			2 D	a b
TRIP			2 D	a b
(TRIP)			1 D	a
(NORMAL AFTER CLOSE)			1 D	b
CLOSE IN LOCAL CONTROL (69)			1 D	b
			1 D	b
BREAKER TRIP ALARM (74)			4 B	a b
LOCKOUT ALARM (86)			4 B	a b
TRIP IN LOCAL CONTROL (69)			4 B	a b

480V MAIN BREAKERS AT MAIN SWBD IN AUX. PWR. ROOM

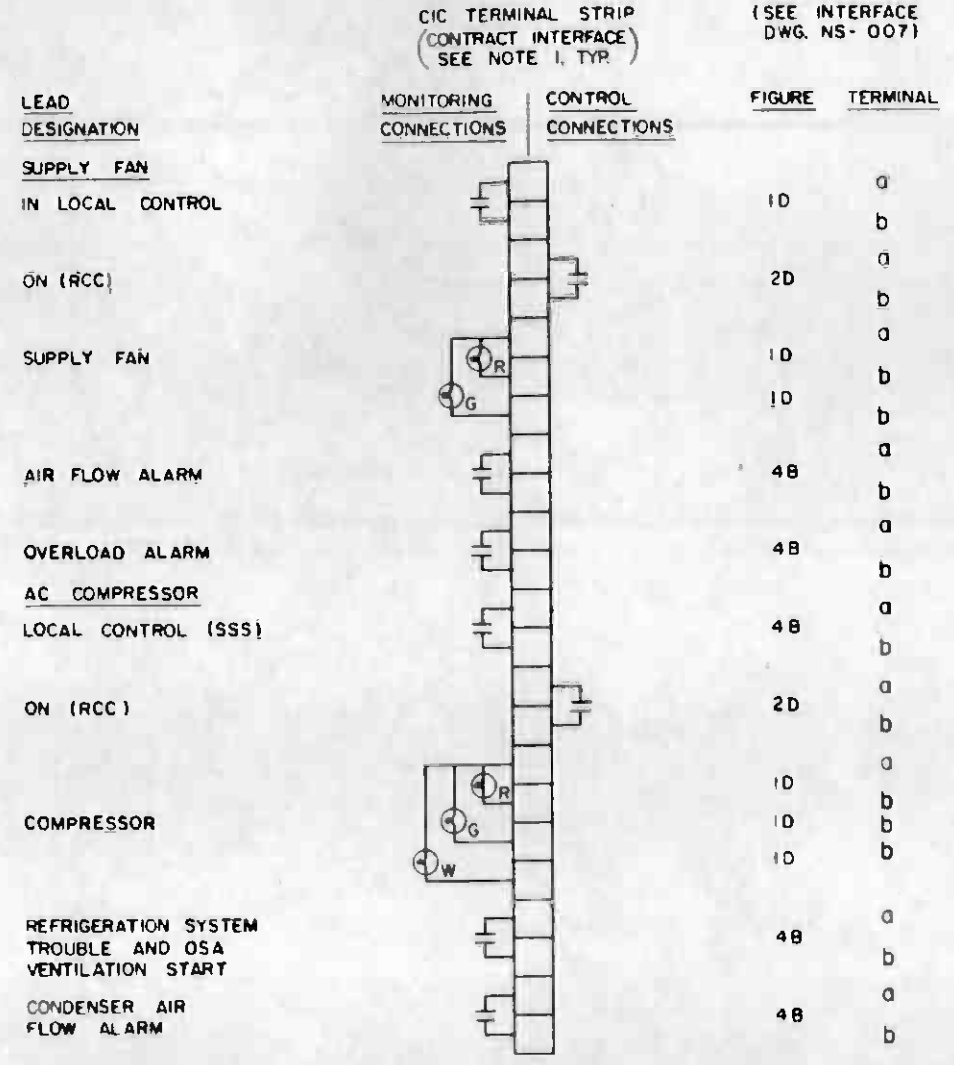
NOTE:
1. SEE DWG. N-036 FOR NOTES.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION. URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY DRAWN BY <i>A. Anderson</i> CHECKED BY IN CHARGE DATE 29 OCT 85	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	COMMUNICATIONS SCADA / FACILITIES ELECTRICAL INTERFACES	CONTRACT NO. A640 DRAWING NO. N-041 C 0 SCALE NO SCALE SHEET NO. 30
REV. DATE BY SUB APP. DESCRIPTION	REV. DATE BY SUB APP. DESCRIPTION	GENERAL REVISION GENERAL REVISION SIGNATURE ISSUE	DMJM/PROG/KE/HWA GENERAL CONSULTANTS	APPROVED	APPROVED



SMOKE AND HEAT EXHAUST FANS

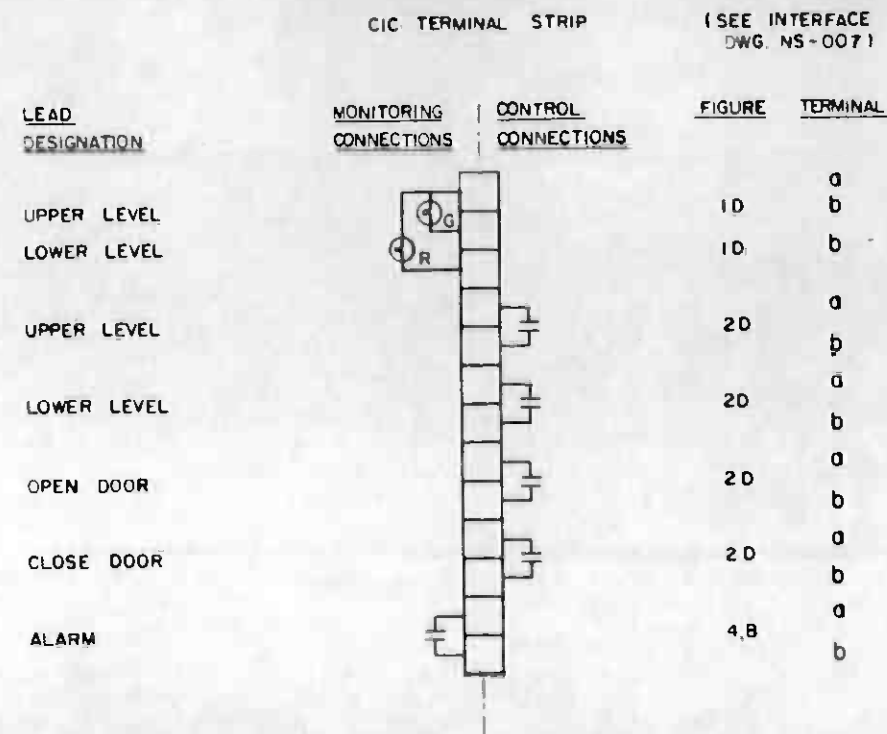


NOTE:
1. SEE DWG. N-036 FOR NOTES.

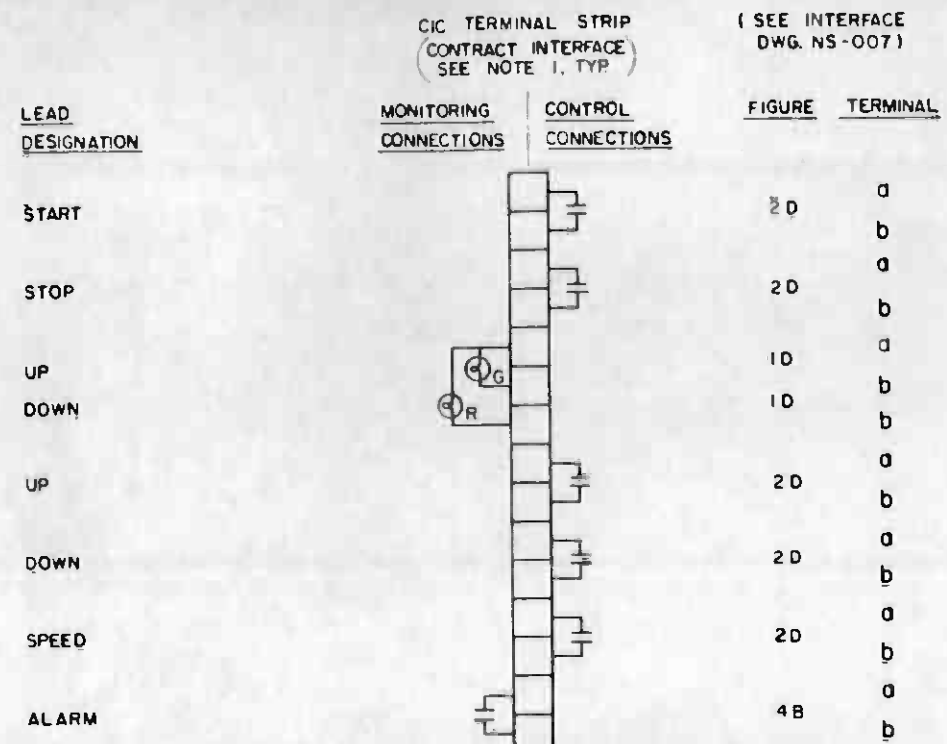
TRAIN CONTROL & COMMUNICATIONS ROOM AIR CONDITIONING



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY DRAWN BY <i>A. V. ...</i> CHECKED BY IN CHARGE DATE 29 OCT 85	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	DMJM/PBOD/KE/HWA GENERAL CONSULTANTS APPROVED:	COMMUNICATIONS SCADA / FACILITIES ELECTRICAL INTERFACES	CONTRACT NO. A640 DRAWING NO. N-042 C O SCALE NO SCALE SHEET NO. 31
REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	GENERAL REVISION GENERAL REVISION SIGNATURE ISSUE				



ELEVATOR CONTROLS AND INDICATIONS
(ELEVATORS)



ESCALATOR CONTROLS AND INDICATIONS
(ESCALATORS)

NOTE:

1. SEE DWG. N-036 FOR NOTES.



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REV DATE BY SUB APP DESCRIPTION	REV DATE BY SUB APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE	SUBMITTED APPROVED		

CIC TERMINAL STRIP (SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION	MONITORING CONNECTIONS	CONTROL CONNECTIONS	FIGURE	TERMINAL
SUPPLY FAN			30	a
FIRE SHUTDOWN				b
ON (RCC)			20	a
				b
IN LOCAL CONTROL (69)			4B	a
				b
			10	a
				b
AIR FLOW ALARM (FS)			10	a
EXHAUST FAN				b
FIRE SHUTDOWN			30	a
				b
			10	a
				b
AIR FLOW ALARM (FS)			10	b
				b
TROUBLE ALARM (62)			4B	a
				b
ROOM HI TEMP (TS)			4B	a
				b

AUXILIARY POWER ROOM

CIC TERMINAL STRIP (CONTRACT INTERFACE) (SEE NOTE 1, TYP.) (SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION	MONITORING CONNECTIONS	CONTROL CONNECTIONS	FIGURE	TERMINAL
EXHAUST FAN			30	a
FSCT CONTROL				b
			10	a
				b
			10	b
				b
IN LOCAL CONTROL (69)			4B	a
				b
TROUBLE ALARM (62)			4B	a
				b
SUPPLY FAN			20	a
FSCT CONTROL				b
			10	a
				b
			10	b
				b
IN LOCAL CONTROL (69)			4B	a
				b
AIR FLOW ALARM (FS)			4B	a
				b

AUXILIARY POWER BATTERY ROOM

NOTE:
1. SEE DWG. N-036 FOR NOTES.



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DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE
29 OCT 85

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
SCADA / FACILITIES ELECTRICAL
INTERFACES

CONTRACT NO
A640
DRAWING NO
N-044 C 0
SCALE
NO SCALE
SHEET NO
33

REV DATE BY SUB APP

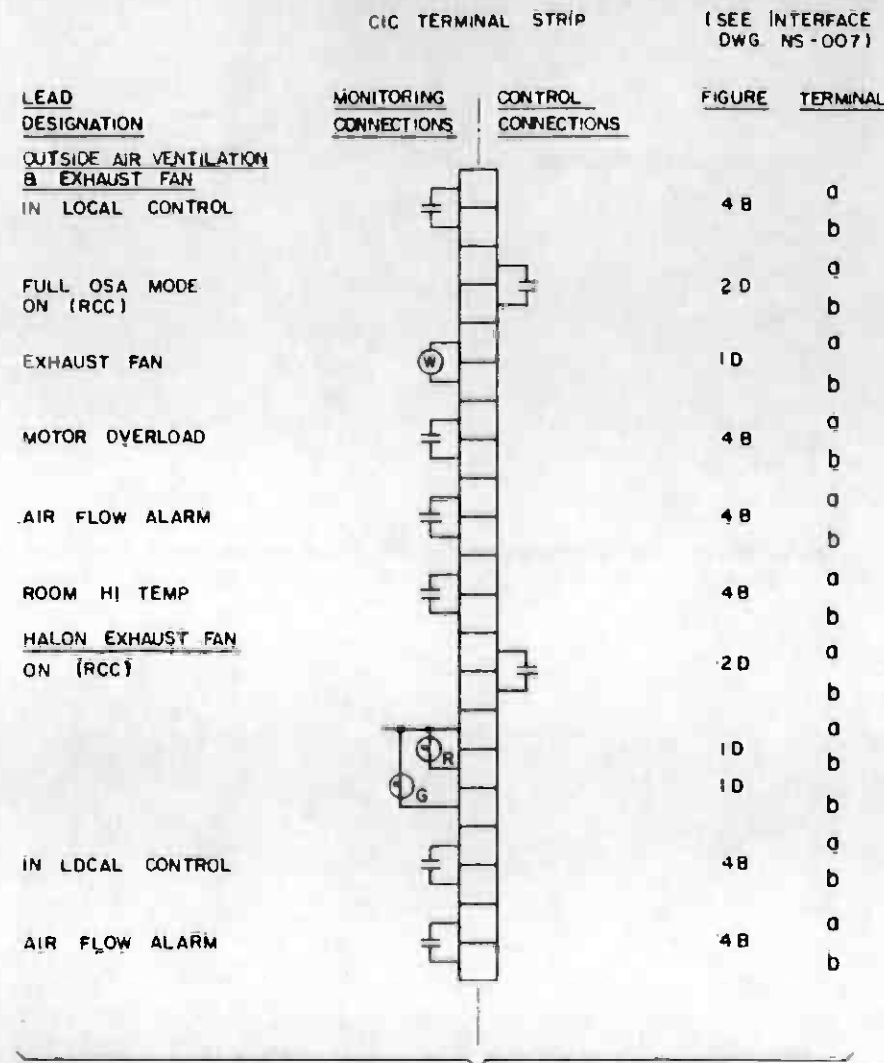
DESCRIPTION

REV DATE BY SUB APP

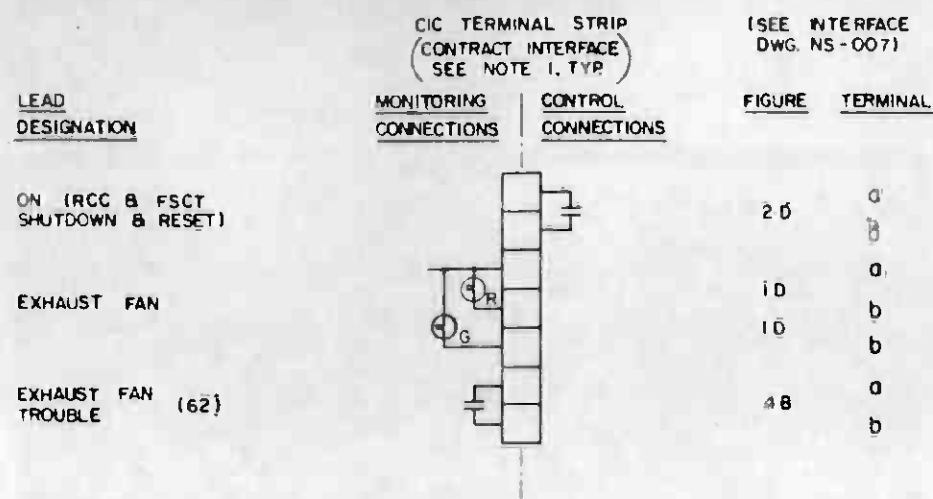
DESCRIPTION

SUBMITTER

APPROVED



TRAIN CONTROL & COMMUNICATIONS ROOM EXHAUST FANS



TRAIN CONTROL & COMMUNICATIONS BATTERY ROOM EXHAUST FAN

NOTE:
1. SEE DWG. N-036 FOR NOTES.



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GENERAL REVISION GENERAL REVISION SIGNATURE ISSUE				CHECKED BY IN CHARGE DATE 29 OCT 85		DMJM/PBOD/KE/HWA GENERAL CONSULTANTS		COMMUNICATIONS SCADA / FACILITIES ELECTRICAL INTERFACES		DRAWING NO. N-045 C	
REV. DATE BY SUB APP DESCRIPTION				DATE 29 OCT 85		APPROVED		SCALE NO SCALE		REV. 0 SHEET NO. 34	

LEAD DESIGNATION

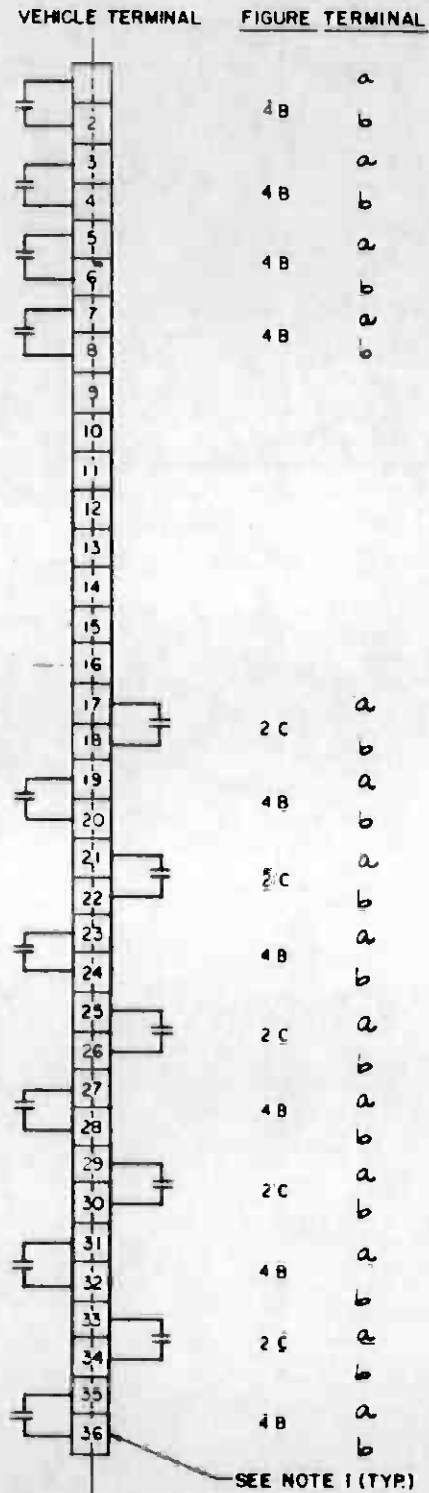
OPERATING MODE

ATO
 MTO
MTO SUBMODE
 EMO
 RESTRICTED MANUAL

PERFORMANCE LEVEL

PL-1 COMMAND
 PL-1 INDICATION
 PL-2 COMMAND
 PL-2 INDICATION
 PL-3 COMMAND
 PL-3 INDICATION
 PL-4 COMMAND
 PL-4 INDICATION
 PL-5 COMMAND
 PL-5 INDICATION

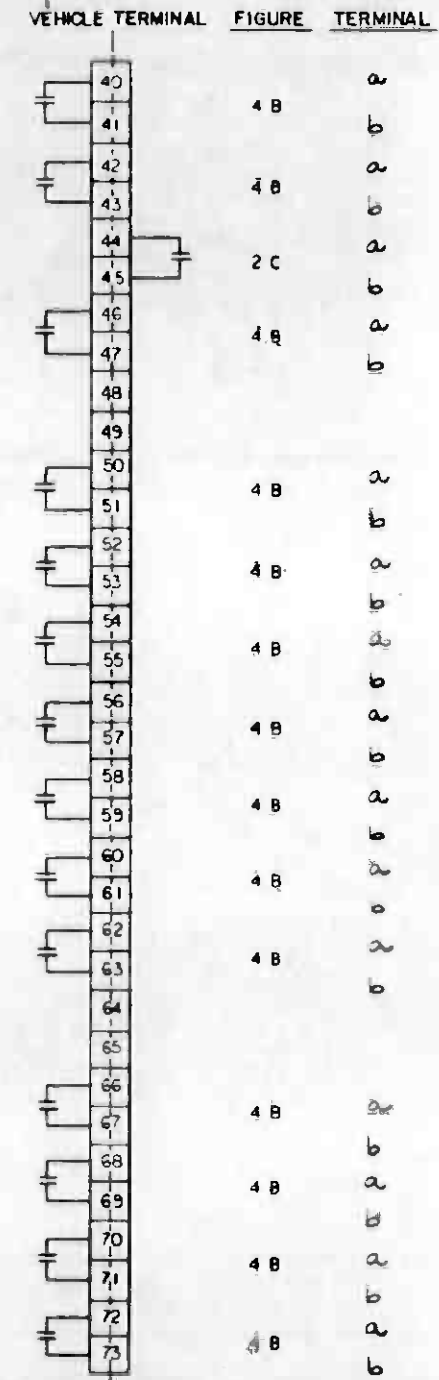
(SEE INTERFACE DWG.
 NS-007)



LEAD DESIGNATION

SIDE DOOR OPEN
 SIDE DOOR CLOSED
 BELL EXPIRED
 DOORS CLOSED BYPASS
 PROPULSION FAILURE
 PROPULSION CUTOUT
 SERVICE BRAKE FAILURE
 PARKING BRAKE ON
 FRICTION BRAKE CUTOUT
 ELECTRIC BRAKE CUTOUT
 EMERGENCY BRAKE ON
 AUXILIARY POWER FAILURE
 AIR COMPRESSOR CUTOUT
 UNINTENTIONAL MOVEMENT
 DETECTION BYPASS
 ZERO SPEED BYPASS

(SEE INTERFACE DWG.
 NS-007)



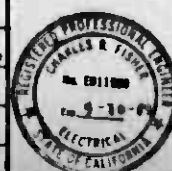
NOTE:

1. SEE DWG. N-036 FOR NOTES.



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DESIGNED BY
R. Houlton
 DRAWN BY
Elvando Arce
 CHECKED BY
B. B. Blahnsky
 IN CHARGE
Am... ..
 DATE
 18 FEB 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT



DMJM/PBQO/KE/HWA
 GENERAL CONSULTANTS

COMMUNICATIONS
 TICU / PASSENGER VEHICLE
 INTERFACES

CONTRACT NO.
 A 640
 DRAWING NO.
 N-083B 0
 SCALE
 NO SCALE
 SHEET NO.
 35

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

GENERAL REVISION
 SIGNATURE ISSUE

SUBMITTED *3/24/86*

APPROVED

CIC TERMINAL STRIP (SEE INTERFACE DWG NS-007)

CIC TERMINAL STRIP (CONTRACT INTERFACE) (SEE NOTE 1, TYP.) (SEE INTERFACE DWG NS-007)

NOTE:
1. SEE DWG. N-036 FOR NOTES.

LEAD DESIGNATION

MONITORING CONNECTIONS CONTROL CONNECTIONS

FIGURE TERMINAL

LEAD DESIGNATION

MONITORING CONNECTIONS CONTROL CONNECTIONS

FIGURE TERMINAL

IN LOCAL CONTROL (69)

DELUGE SYSTEM START REMOTE / ON (EMP)

(TROUBLE)

(LOW PRESS)

(VALVE CLOSED)

(VALVE CLOSED)

(OVERLOAD)

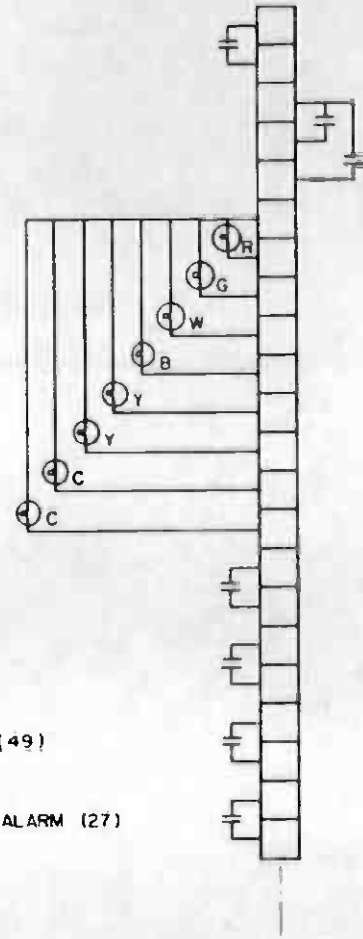
(LOSS OF CONTROL POWER)

TROUBLE ALARM (62)

WATER FLOWING (FL)

MOTOR OVERLOAD ALARM (49)

LOSS OF CONTROL POWER ALARM (27)



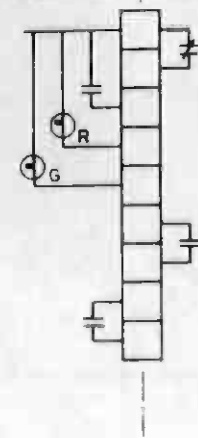
FIRE PUMPS

4B a
b
2D a
b
2D b
1D d
1D b
1D b
1D b
1D b
1D b
1D b
4B a
b
4B a
b
4B a
b

FIRE SHUTDOWN
CS / LOCAL CONTROL

ON (RCC)

TROUBLE ALARM



3D a a
b
2D b
1D b
1D b
2D a
b
a
b

CROSS PASSAGE VENTILATION



<p>THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.</p>				<p>DESIGNED BY</p> <p>DRAWN BY <i>A. V. ...</i></p> <p>CHECKED BY</p> <p>IN CHARGE</p> <p>DATE 17 FEB 86</p>	<p>SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT</p> <p>METRO RAIL PROJECT</p> <p>RTD</p> <p>DMJM/PBQD/KE/HWA</p> <p>GENERAL CONSULTANTS</p>	<p>COMMUNICATIONS</p> <p>SCADA / FACILITIES ELECTRICAL INTERFACES</p>	<p>CONTRACT NO. A640</p> <p>DRAWING NO. N-084 B 0</p> <p>SCALE NO SCALE</p> <p>SHEET NO 36</p>				
REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION
					GENERAL REVISION						
					SIGNATURE ISSUE						

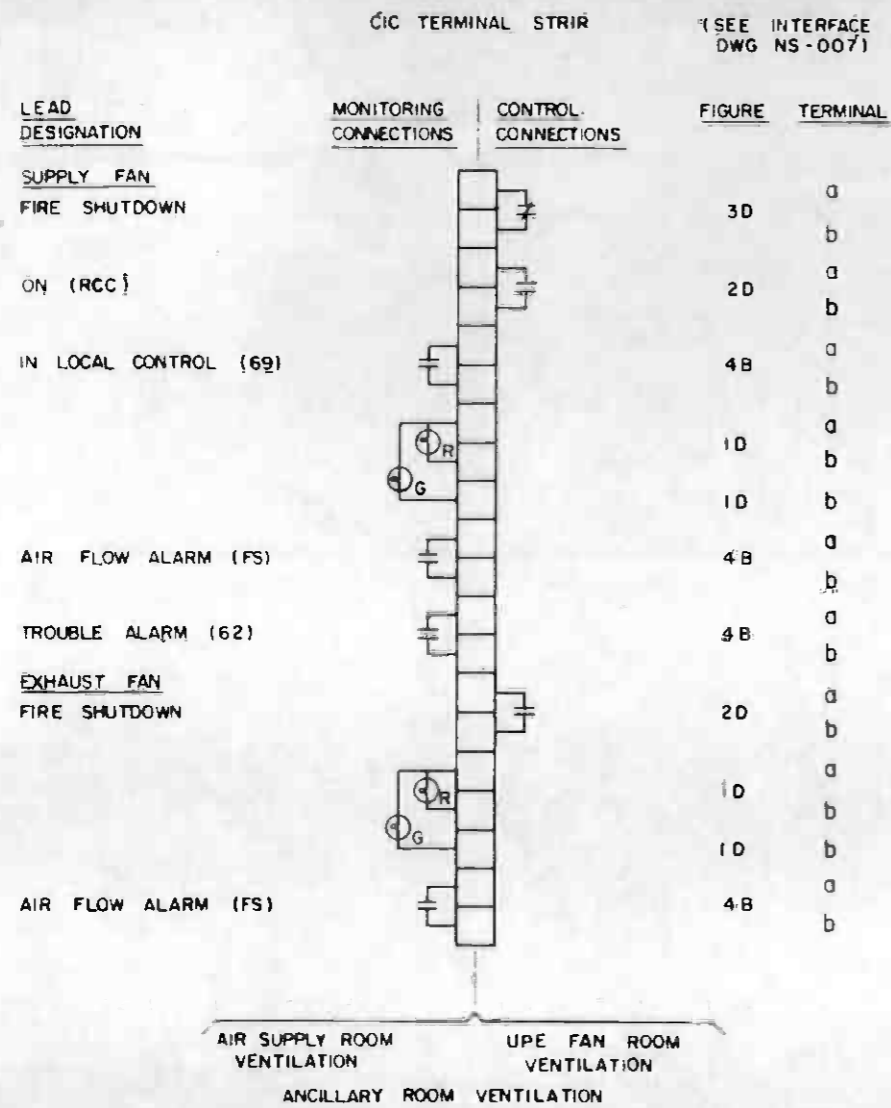


FIGURE #1

MISCELLANEOUS ANCILLARY ROOM VENTILATION

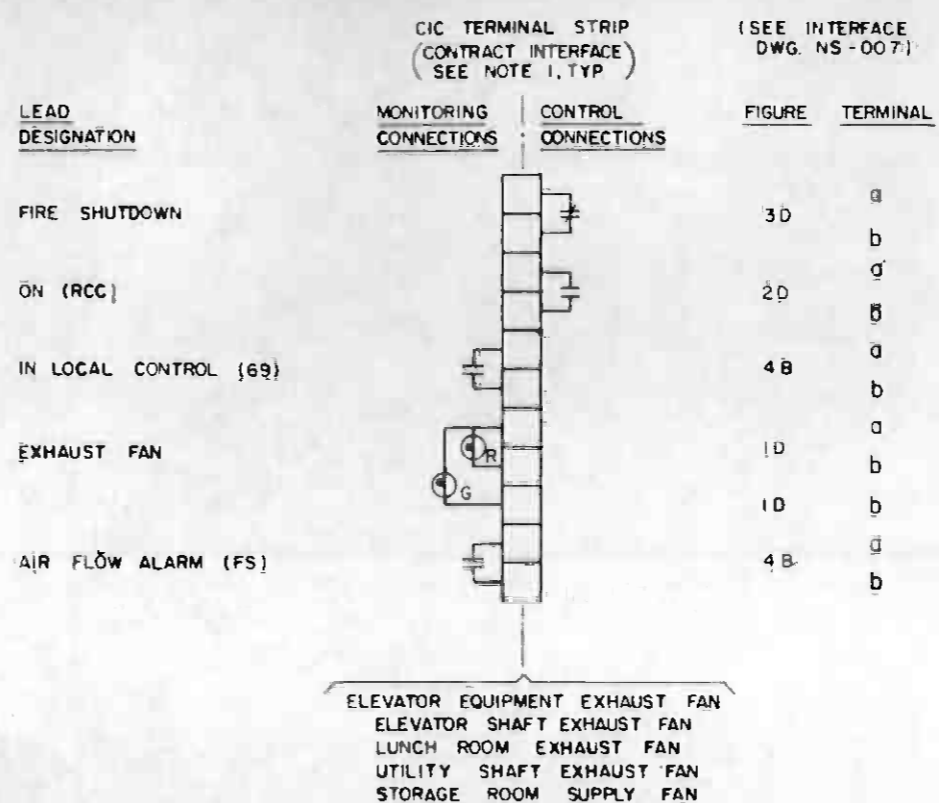


FIGURE #2

NOTE:

1. SEE DWG. N-036 FOR NOTES.

EXCEPTIONS TO SCADA POINT ASSIGNMENTS

CONTRACT	FIGURE #1 FANS	EXCEPTION
A136	AIR SUPPLY ROOM, UPE FAN ROOM	NO AIR FLOW ALARM
CONTRACT	FIGURE #2 FAN	EXCEPTION
A136	ELEVATOR EQUIPMENT ROOM	NO AIR FLOW ALARM



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DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE
29 OCT 85

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
SCADA / FACILITIES ELECTRICAL
INTERFACES

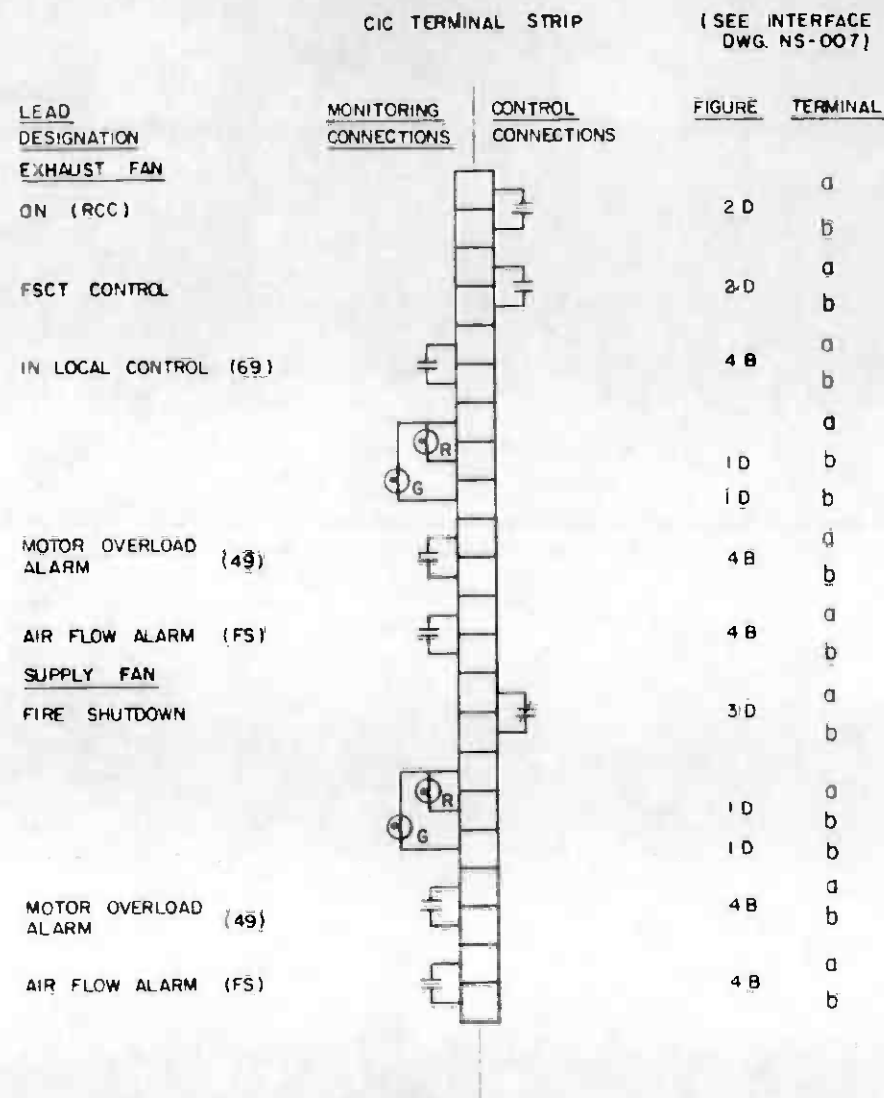
CONTRACT NO
A640
DRAWING NO
N-085 C
REV
0
SCALE
NO SCALE
SHEET NO
37

REV DATE BY SUB APP DESCRIPTION

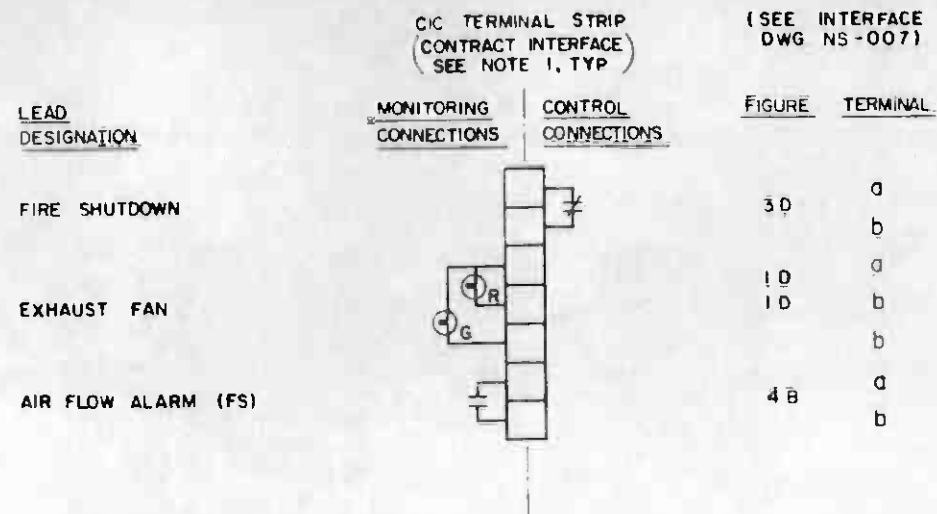
REV DATE BY SUB APP DESCRIPTION

SUBMITTED

APPROVED



CHILLER ROOM VENTILATION



EMERGENCY FAN ROOM VENTILATION

NOTE:
1. SEE DWG N-036 FOR NOTES.



	THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.	DESIGNED BY DRAWN BY <i>A. V. ...</i> CHECKED BY IN CHARGE DATE 29 OCT 85	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	DMJM/PBDD/KE/HWA <small>GENERAL CONSULTANTS</small>	CONTRACT NO A 640 DRAWING NO N-086 C REV 0 SCALE NO SCALE SHEET NO. 38
REV DATE BY SUB APP DESCRIPTION	GENERAL REVISION GENERAL REVISION SIGNATURE ISSUE	SUBMITTED APPROVED	COMMUNICATIONS SCADA / FACILITIES ELECTRICAL INTERFACES		

(SEE INTERFACE DWG. NS-007)

(SEE INTERFACE DWG. NS-007)

(SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION

TPSS C/C FIGURE TERMINAL

LEAD DESIGNATION

TPSS C/C FIGURE TERMINAL

LEAD DESIGNATION

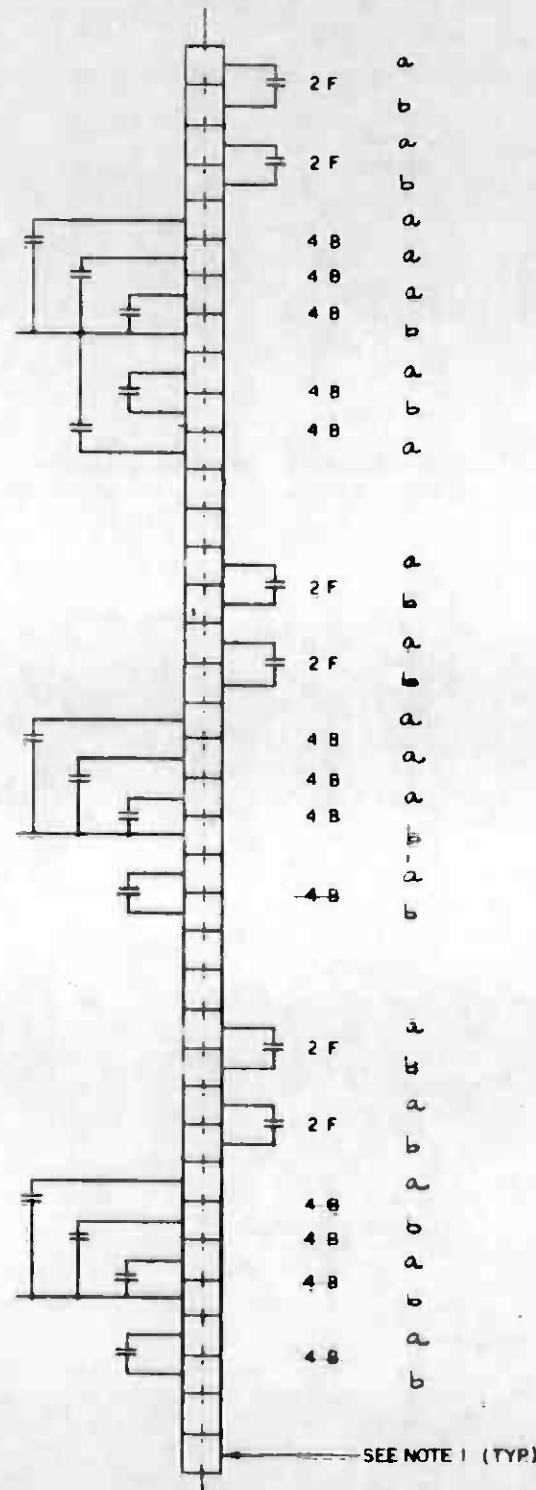
TPSS C/C FIGURE TERMINAL

34.5 KV SERVICE FEEDER BREAKER (H1)

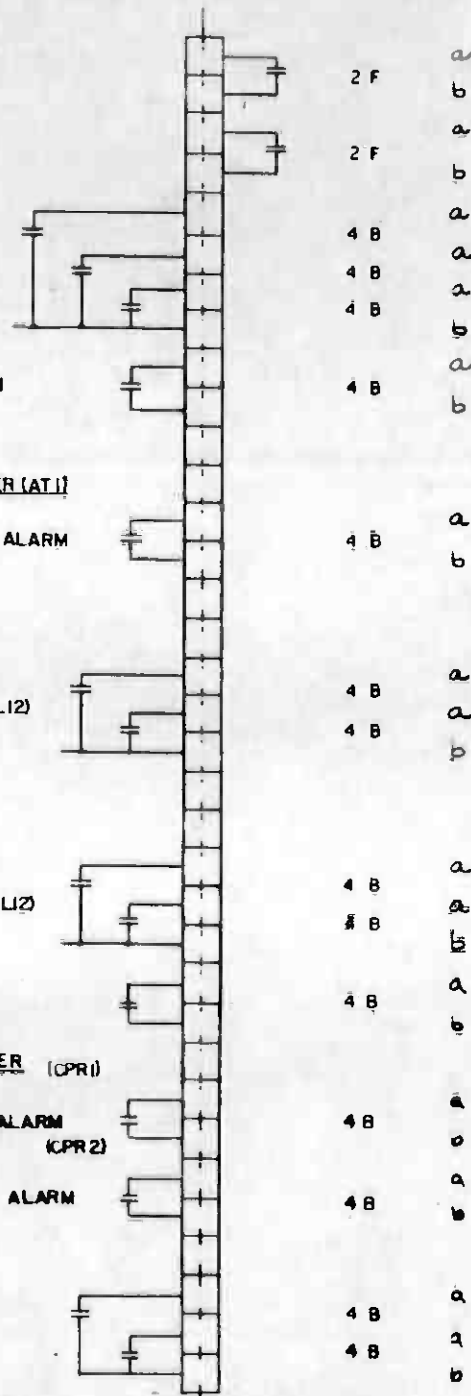
(H1) (289-3)

BUS #2 TRAWWAY FDR SW (H2) (289-5)

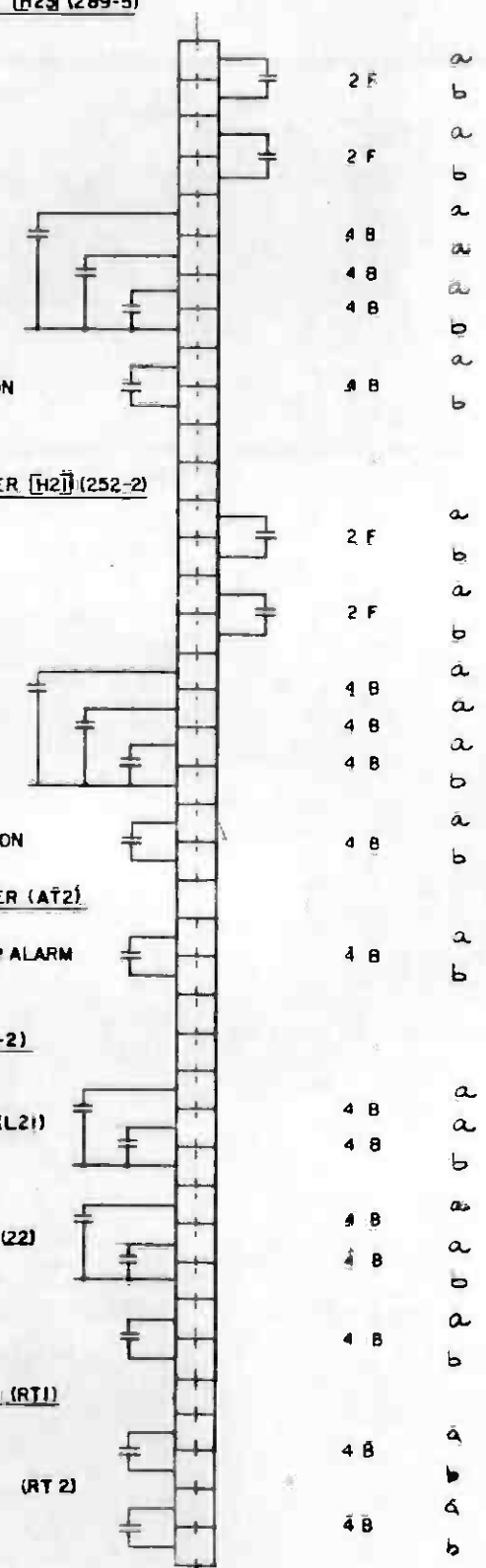
CLOSE CONTROL
OPEN CONTROL
CLOSE INDICATION
OPEN INDICATION
LOCKOUT TRIP INDICATION
LOCAL CONTROL INDICATION
RECLOSING INDICATION



CLOSE CONTROL
OPEN CONTROL
CLOSE INDICATION
OPEN INDICATION
LOCKOUT TRIP INDICATION
LOCAL CONTROL INDICATION

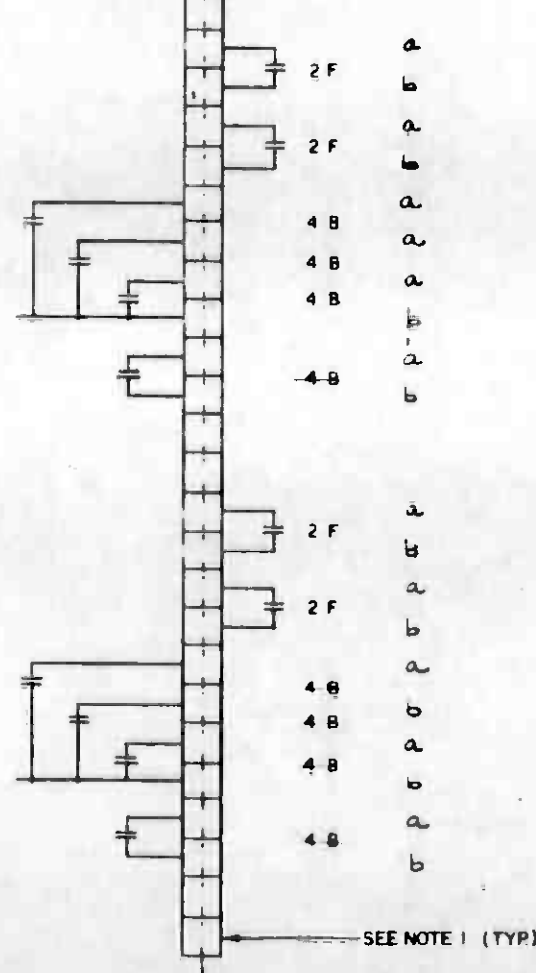


CLOSE CONTROL
OPEN CONTROL
CLOSE INDICATION
OPEN INDICATION
OVERCURRENT INDICATION
LOCAL CONTROL INDICATION



BUS #1 AUX PWR DISCONNECT SW (H1) (289-1)

CLOSE CONTROL
OPEN CONTROL
CLOSE INDICATION
OPEN INDICATION
LOCKOUT TRIP INDICATION



AUX POWER TRANSFORMER (AT1)
TRANSFORMER HIGH TEMP ALARM

480 V. SWGR BUS #1

CLOSE INDICATION } CB #1 (L12)
OPEN INDICATION }

CLOSE INDICATION } CB #2 (L12)
OPEN INDICATION }

LOW VOLTAGE ALARM

CONTROL POWER RECTIFIER (CPR1)

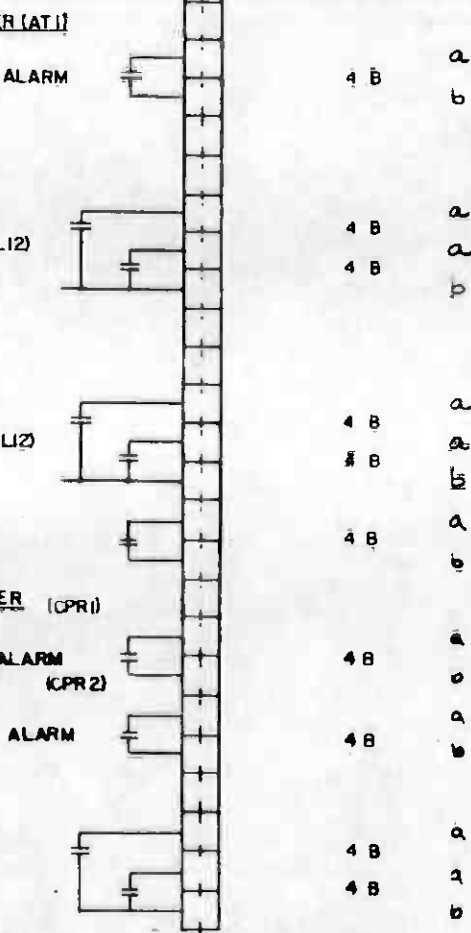
CONTROL POWER FAILURE ALARM (CPR2)

CONTROL POWER FAILURE ALARM

UTILITY INDICATIONS

FEEDER #1 ENERGIZED

FEEDER #2 ENERGIZED



BUS #2 AUX PWR BREAKER (H2) (252-2)

CLOSE CONTROL
OPEN CONTROL
CLOSE INDICATION
OPEN INDICATION
LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

AUX POWER TRANSFORMER (AT2)

TRANSFORMER HIGH TEMP ALARM

480 V. SWGR. BUS #2 (52-2)

CLOSE INDICATION } CB #1 (L21)
OPEN INDICATION }

CLOSE INDICATION } CB #2 (22)
OPEN INDICATION }

LOW VOLTAGE ALARM

RECTIFIER TRANSFORMER (RT1)

TROUBLE INDICATION

(RT 2)

TROUBLE INDICATION

SEE NOTE 1 (TYP)

MAIN LINE SUBSTATION (TYPE II)-AC METERING & CONTROL



SEE DWG. N-036 FOR NOTES

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA

DESIGNED BY R. H. ...
DRAWN BY ...
CHECKED BY ...
IN CHARGE ...
DATE 10 JAN 85



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

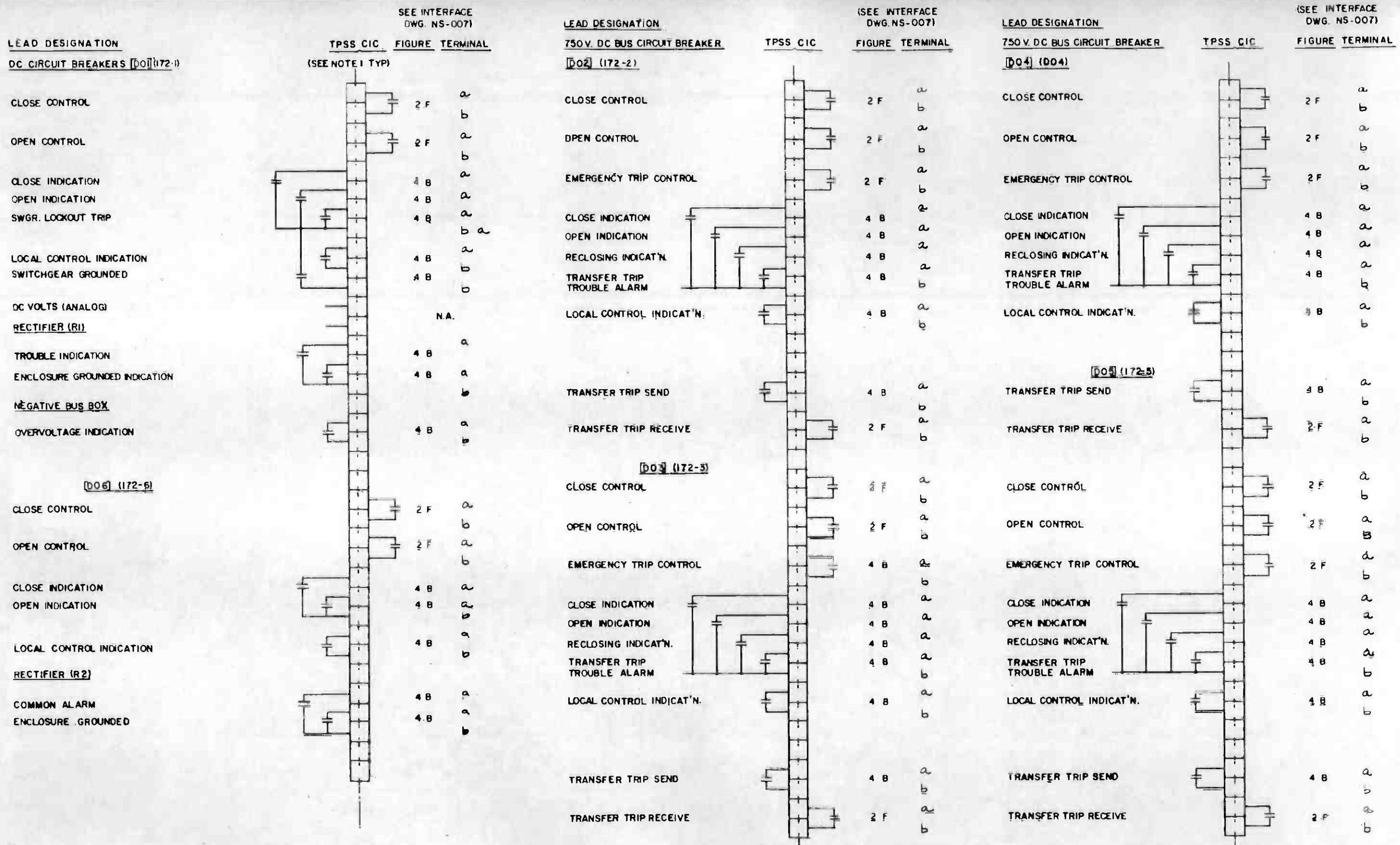


DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
SCADA / TRACTION POWER
INTERFACES

CONTRACT NO. A640
DRAWING NO. N-076B
SCALE NO SCALE
SHEET NO 56

Table with columns: REV, DATE, BY, SUB, APP, DESCRIPTION



MAIN LINE SUBSTATION - DC METERING & CONTROL

NOTE:
1. SEE DWG. N-036 FOR NOTES.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.				DESIGNED BY <i>R. [Signature]</i> DRAWN BY <i>Edmund [Signature]</i> CHECKED BY <i>B. [Signature]</i> IN CHARGE <i>[Signature]</i> DATE 13 JAN 86		REGISTERED ELECTRICIAN STATE OF CALIFORNIA No. 691188 Exp. 1-30-99		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 		COMMUNICATIONS SCADA / TRACTION POWER INTERFACES		CONTRACT NO. A 640 DRAWING NO. N-077 B 0 SCALE NO SCALE SHEET NO. 57	
REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION		
					GENERAL REVISION								
					SIGNATURE ISSUE								

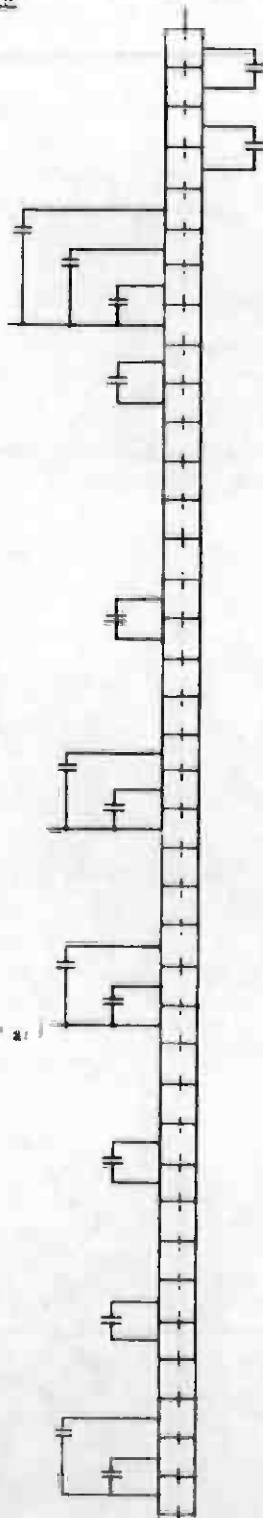
(SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION
34.5 KV. SERVICE FEEDER BREAKER [H11] (252-1)

TPSS CIC
(SEE NOTE 1 TYP.)

FIGURE TERMINAL

CLOSE CONTROL
OPEN CONTROL
CLOSE INDICATION
OPEN INDICATION
LOCKOUT TRIP INDICATION
LOCAL CONTROL INDICATION



2F a
2F b
2F a
4B a
4B a
4B a
4B b
4B a
4B b
4B a
4B a
4B b
4B a
4B a
4B b
4B a
4B b
4B a
4B b
4B a
4B a

AUX. POWER TRANSFORMER (AT1)
TRANSFORMER HIGH TEMPERATURE ALARM

480 V. SWGR. BUS #1 (52-1)

CLOSE INDICATION } CB #1 (L11)
OPEN INDICATION }

CLOSE INDICATION } CB #2 (L12)
OPEN INDICATION }

LOW VOLTAGE ALARM

CONTROL POWER RECTIFIER (CPR1)

CONTROL POWER FAILURE ALARM

UTILITY INDICATIONS

FEEDER #1 ENERGIZED

FEEDER #2 ENERGIZED

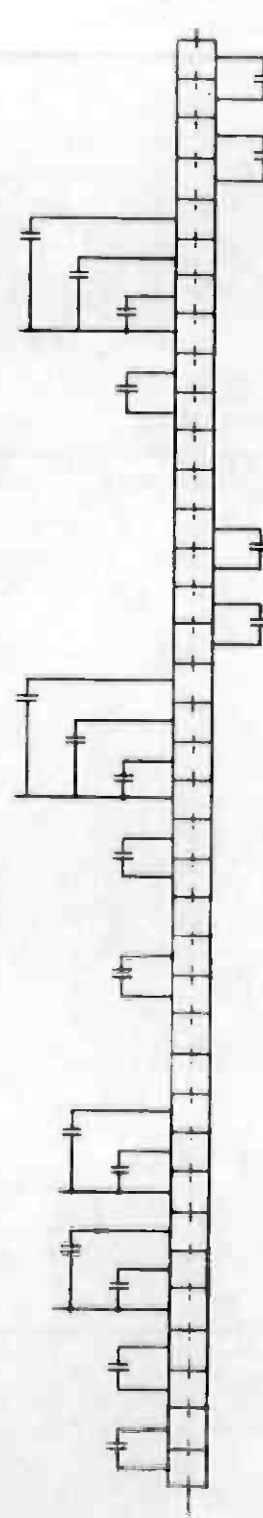
(SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION
BUS #2 TRAINWAY FDR. SW. [H23] (289-5)

TPSS CIC

FIGURE TERMINAL

CLOSE CONTROL
OPEN CONTROL
CLOSE INDICATION
OPEN INDICATION
OVERCURRENT INDICATION
LOCAL CONTROL INDICATION



2F a
2F b
2F a
4B a
4B a
4B a
4B b
4B a
4B b
4B a
4B a
4B b
4B a
4B a
4B b
4B a
4B b
4B a
4B a

BUS #2 AUX. PWR. BREAKER [H21] (252-2)

CLOSE CONTROL
OPEN CONTROL

CLOSE INDICATION
OPEN INDICATION
LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

AUX. POWER TRANSFORMER (AT2)

TRANSFORMER HIGH TEMPERATURE ALARM

480 V. SWGR. BUS #2 (52-2)

CLOSE INDICATION } CB #1 (L21)
OPEN INDICATION }

CLOSE INDICATION } CB #2 (L22)
OPEN INDICATION }

LOW VOLTAGE ALARM

CONTROL POWER RECTIFICATION (CPR2)

CONTROL POWER FAILURE ALARM

NOTE:
1. SEE DWG. N-036 FOR NOTES.

MAIN LINE SUBSTATION (TYPE IV) - AC METERING & CONTROL



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DESIGNED BY
R. Harkin
DRAWN BY
Blanche Acosta
CHECKED BY
B. E. Padbury
IN CHARGE
P. B. Burgess
DATE
15 JAN 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PB00/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
SCADA / TRACTION POWER
INTERFACES

CONTRACT NO
A640
DRAWING NO
N-078 B 0
SCALE
NO SCALE
SHEET NO
58

REV	DATE	BY	SUB	APP	DESCRIPTION

GENERAL REVISION
SIGNATURE ISSUE

SUBMITTED *ellin*

APPROVED

(SEE INTERFACE DWG. NS-007)

(SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION

TPSS C/C (SEE NOTE 1 TYP)

FIGURE TERMINAL

34.5 KV. SERVICE FEEDER BREAKER [H1] (252-1)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

RECLOSING INDICATION

BUS #1 AUX. PWR. DISCONNECT SWITCH [H12] (289-1)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

[H13] (298-2)

CLOSE CONTROL

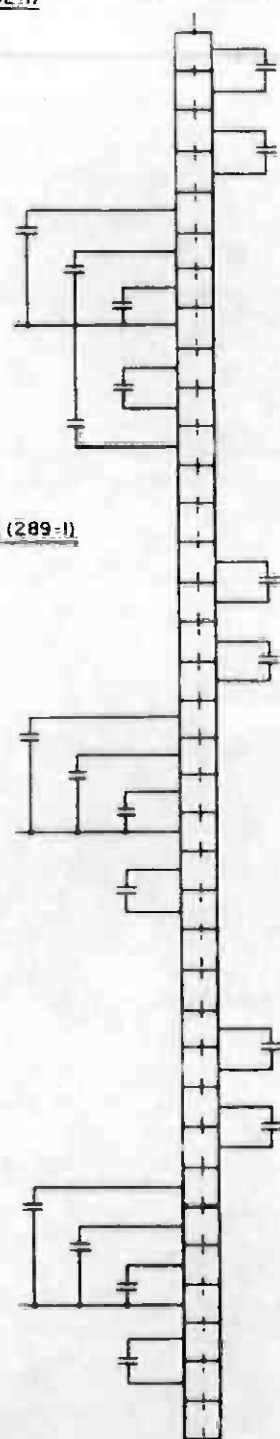
OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION



LEAD DESIGNATION

TPSS C/C

FIGURE TERMINAL

AUX POWER TRANSFORMER (AT1)

TRANSFORMER HIGH TEMP. ALARM

480 V. SWITCHGEAR BUS #1 (52-1)

CLOSE INDICATION } CB #1 (L1)
OPEN INDICATION }

CLOSE INDICATION } CB #2 (L12)
OPEN INDICATION }

CLOSE INDICATION } CB #3 (L13)
OPEN INDICATION }

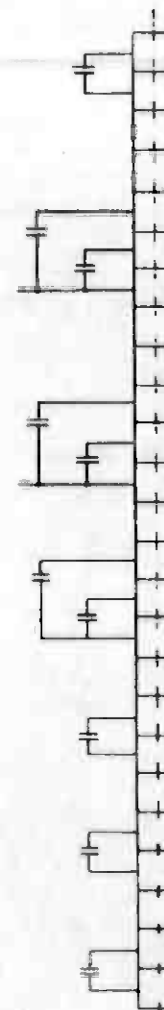
LOW VOLTAGE ALARM

125 VDC RECTIFIER (CPR 1)

CONTROL POWER FAILURE ALARM

RECTIFIER TRANSFORMER (RT1)

TROUBLE INDICATIONS



NOTE:
1. SEE DWG. N-036 FOR NOTES.

MAIN LINE SUBSTATION (TYPE I) - AC METERING & CONTROL



REV	DATE	BY	SUB	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.					
DESIGNED BY	R. H. ...				
DRAWN BY	Edmund ...				
CHECKED BY	B. B. ...				
IN CHARGE	B. M. ...				
DATE	16 JAN 86				
REV	DATE	BY	SUB	APP	DESCRIPTION
2	4-87				GENERAL REVISION
1	1-86				SIGNATURE ISSUE

REGISTERED PROFESSIONAL ENGINEER
 CHARLES R. FISHBEIN
 No. ED11800
 State of California
 1-10-87

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT

DMJM/PBQD/KE/HWA
 GENERAL CONSULTANTS

APPROVED: *Ed ...*

COMMUNICATIONS
 SCADA / TRACTION POWER
 INTERFACES

CONTRACT NO.	A 640	
DRAWING NO.	N-079 B	REV 0
SCALE	NO SCALE	
SHEET NO.	59	

(SEE INTERFACE DWG. NS-007)

(SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION

TPSS_CIC
(SEE NOTE 1 TYE)

FIGURE TERMINAL

BUS#2 TRAINWAY FDR SW. (289-5)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

OVERCURRENT INDICATION

LOCAL CONTROL INDICATION

BUS#2 AUX. PWR BREAKER [H2] (252-2)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

[H2] (252-3)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

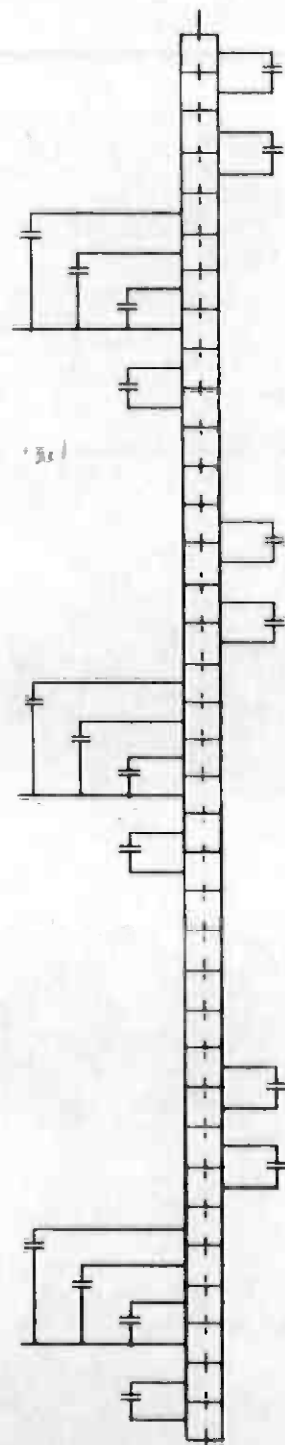


FIGURE	TERMINAL
2F	a
2F	b
4B	a
4B	a
4B	b
4B	a
4B	b
2F	a
2F	b
4B	a
4B	a
4B	b
4B	a
4B	b
2F	a
2F	a
4B	a
4B	a
4B	a
4B	b
4B	a
4B	b

LEAD DESIGNATION

TPSS_CIC

FIGURE TERMINAL

AUX POWER TRANSFORMER (AT 2)

TRANSFORMER HIGH TEMPERATURE

480 V. SWGR. BUS#2 (52-2)

CLOSE INDICATION

OPEN INDICATION

CLOSE INDICATION

OPEN INDICATION

CLOSE INDICATION

OPEN INDICATION

LOW VOLTAGE ALARM

RECTIFIER TRANSFORMER (RT 2)

TROUBLE INDICATION

UTILITY INDICATION

FEEDEER #1 ENERGIZED

FEEDEER #2 ENERGIZED

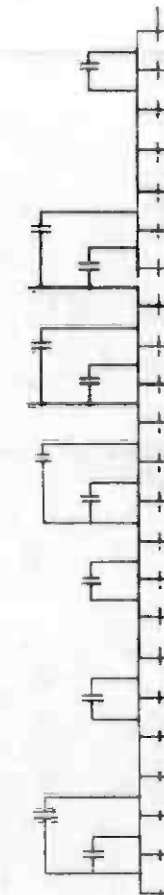


FIGURE	TERMINAL
4B	a
4B	b
4B	a
4B	a
4B	b
4B	a
4B	b
4B	a
4B	b
4B	a
4B	b
4B	a
4B	b
4B	a
4B	b

NOTE:
1. SEE DWG. N-036 FOR NOTES.

MAIN LINE SUBSTATION (TYPE I) - AC METERING & CONTROL



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.				DESIGNED BY <i>[Signature]</i> DRAWN BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 17 JAN 86		REGISTERED PROFESSIONAL ENGINEER CHARLES R. FISHER No. 6811980 10-10-84 ELECTRICAL		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 		DMJM/PBQD/KE/HWA GENERAL CONSULTANTS APPROVED <i>[Signature]</i>		COMMUNICATIONS SCADA / TRACTION POWER INTERFACES		CONTRACT NO. A640 DRAWING NO. N-080 B 0 SCALE NO SCALE SHEET NO. 60	
REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION				
						B	1/17/86				GENERAL REVISION				
											SIGNATURE ISSUE				

LEAD DESIGNATION

CIC #4 UNION STATION
TERMINAL STRIP

LEAD DESIGNATION

CIC #4 UNION STATION
TERMINAL STRIP

OIS 1

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

MDS-01

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

CONTACT RAIL
DE-ENERGIZE CONTROL

MDS-02

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

MONITORING CONNECTIONS

CONTROL CONNECTIONS

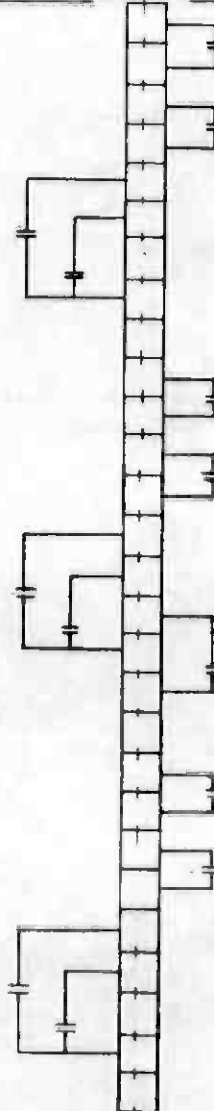


FIGURE	TERMINAL
2 F	a
	b
2 F	a
	b
4 B	a
4 B	b
2 F	a
	b
2 F	a
	b
4 B	a
4 B	b
2 F	a
	b
2 F	a
	b
4 B	a
4 B	b

SEE NOTE 1 (TYP)

MDS-03

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

CONTACT RAIL
DE-ENERGIZE CONTROL

MDS-04

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

MDS-05

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

MONITORING CONNECTIONS

CONTROL CONNECTIONS

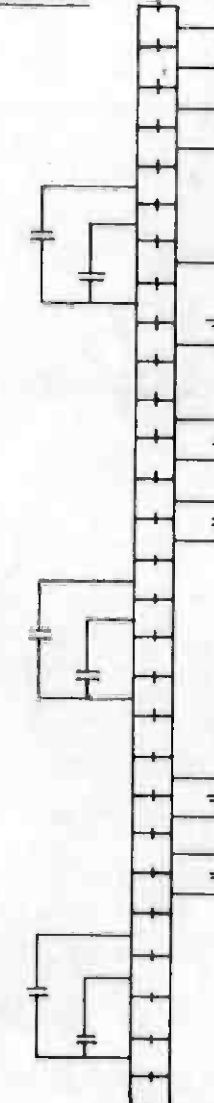


FIGURE	TERMINAL
2 F	a
	b
2 F	a
	b
4 B	a
4 B	b
2 F	a
	b
2 F	a
	b
2 F	a
	b
4 B	a
4 B	b
2 F	a
	b
2 F	a
	b
4 B	a
4 B	b

NOTE:

1. SEE DWG. N-036 FOR NOTES.

UNION STATION DISCONNECT SWITCHES METERING AND CONTROL



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
R. Harkin
DRAWN BY
Acerra/Whitney
CHECKED BY
B. Blakely
IN CHARGE
PM Duggan
DATE
10 JUL 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

SUBMITTED *Cellin*

APPROVED

COMMUNICATIONS
SCADA/TRACTION POWER
INTERFACES

CONTRACT NO	A640
DRAWING NO	N-082 B
REV	0
SCALE	NO SCALE
SHEET NO	61

REV	DATE	BY	SUB	APP	DESCRIPTION
B	2-6-87				GENERAL REVISION
V	7-10-86				SIGNATURE ISSUE

LEAD DESIGNATION

(SEE INTERFACE DWG. NS-007)

34.5 KV DISCONNECT SWITCHES
[H02] (298-2)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

[H03] (298-3)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

[H04] (298-4)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

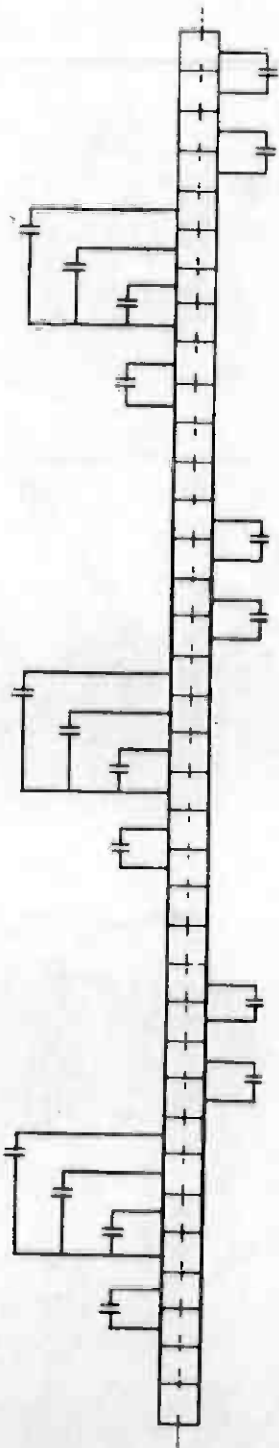
LOCAL CONTROL INDICATION

YARD TPSS CIC

(SEE NOTE 1 TYP)

FIGURE

TERMINAL



[H05] (298)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

[H06] (298-6)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

LOCAL CONTROL INDICATION

34.5 KV SERVICE FEEDER BREAKERS

[H07] (298-7)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCKOUT TRIP INDICATION

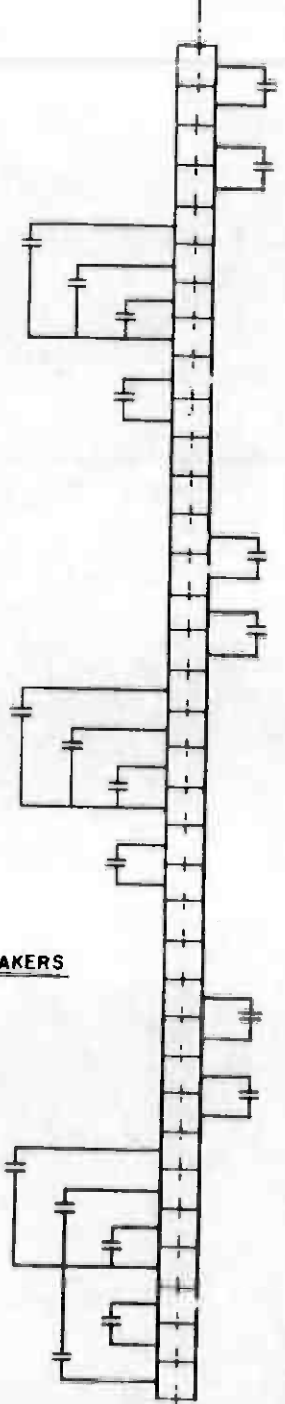
LOCAL CONTROL

RECLOSE INDICATION

YARD TPSS CIC

FIGURE

TERMINAL



[H09] (252)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCAL CONTROL INDICATION

D.C. CIRCUIT BREAKERS

[D02] (172-1)

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

SWGR LOCKOUT TRIP

LOCAL CONTROL INDICATION

SWITCHGEAR GROUNDED

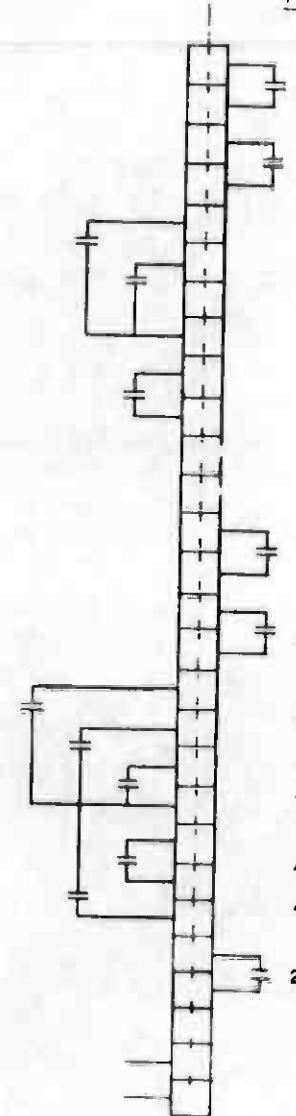
EMERGENCY TRIP CONTROL

DC BUSS VOLTAGE (ANALOG)

YARD TPSS CIC

FIGURE

TERMINAL



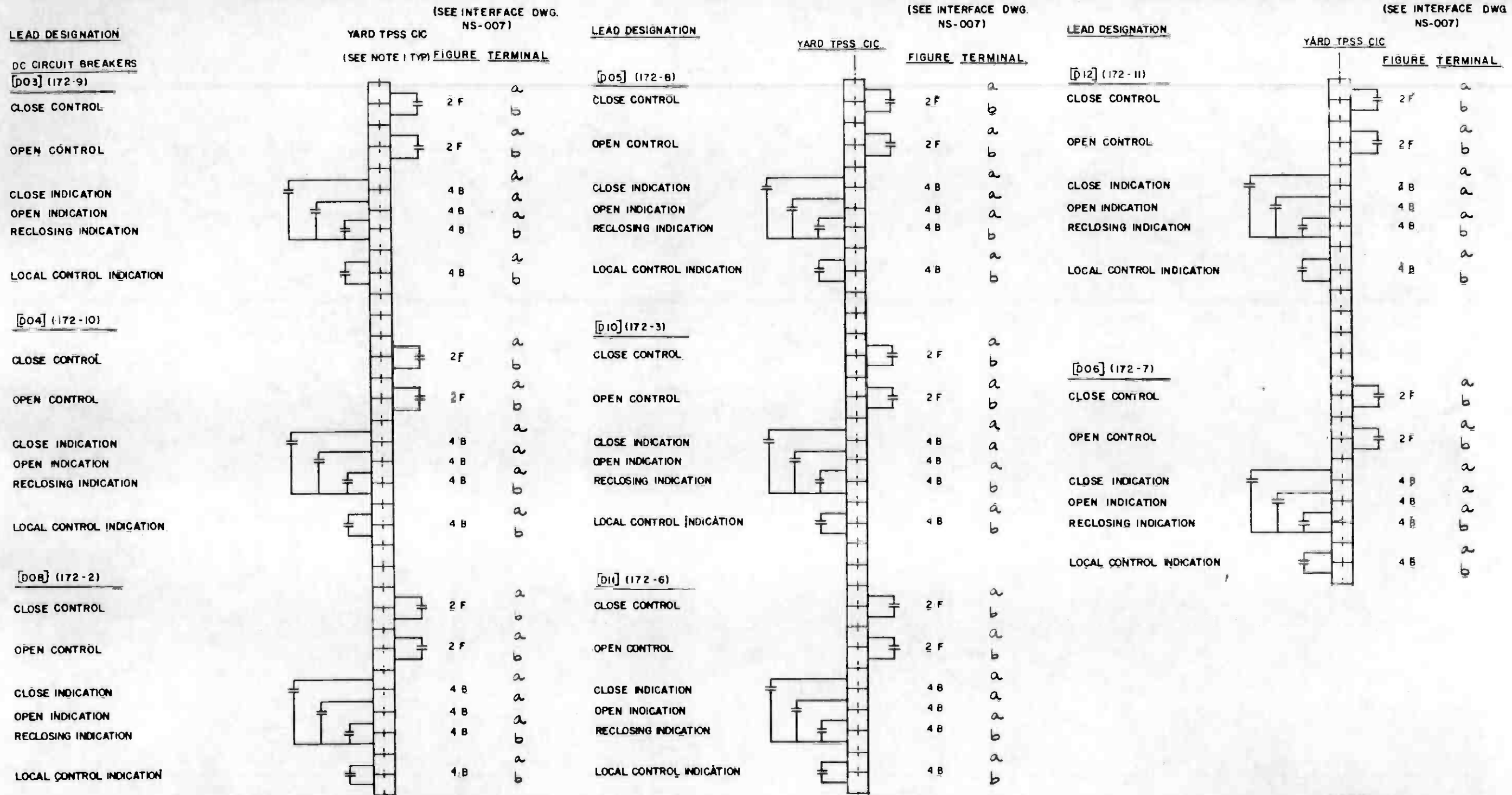
NOTE:

1. SEE DWG. N-036 FOR NOTES.

YARD SUBSTATION - METERING AND CONTROL

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY <i>R. Kohn</i> DRAWN BY <i>Edmund Proch</i> CHECKED BY <i>P. Blakely</i> IN CHARGE <i>Am. Dungen</i> DATE 20 FEB 86	REGISTERED PROFESSIONAL ENGINEER NO. 4811980 EXPIRES 12-31-87 STATE OF CALIFORNIA	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT DMJM/PBOD/KE/HWA GENERAL CONSULTANTS SUBMITTED <i>Cellink</i> APPROVED	CONTRACT NO. A640 DRAWING NO. N-096 B 0 SCALE NO SCALE SHEET NO. 62
REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE		COMMUNICATIONS SCADA / TRACTION POWER INTERFACES	





NOTE:
1. SEE DWG. N-036 FOR NOTES.

YARD SUBSTATION - METERING AND CONTROL



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.				DESIGNED BY <i>R. Harkin</i> DRAWN BY <i>Shirley Smith</i> CHECKED BY <i>B. Blahutsky</i> IN CHARGE <i>P. Bergman</i> DATE 24 FEB 86		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 		CONTRACT NO. A640 DRAWING NO. N-097 B SCALE NO SCALE SHEET NO. 63		
GENERAL REVISION SIGNATURE ISSUE				DMJM/PBOD/KE/HWA GENERAL CONSULTANTS		COMMUNICATIONS SCADA / TRACTION POWER INTERFACES		REV. 0 NO SCALE 63		
REV.	DATE	BY	SUB.	APP.	DESCRIPTION	REV.	DATE	BY	APP.	DESCRIPTION

(SEE INTERFACE DWG. NS-007)

YARD TPSS CIC

SHOP TPSS CIC (SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION

RECTIFIER TRANSFORMER RT-1

TROUBLE ALARM

RECTIFIER R-1

TROUBLE ALARM

ENCLOSURE GROUNDED ALARM

AUX POWER TRANSFORMER (AT1)

HIGH TEMPERATURE ALARM

480V SWGR

CLOSE INDICATION [L1] (52-1)

OPEN INDICATION

[L12] (52-2)

CLOSE INDICATION

OPEN INDICATION

[L10]

LOW BUS VOLTAGE

CONTROL POWER RECTIFIER (CPR1)

CONTROL POWER FAILURE ALARM

[CPR 2]

CONTROL POWER FAILURE ALARM

UTILITY INDICATIONS

FEEDER #1 ENERGIZED

FEEDER #2 ENERGIZED

FAN CONTROL PANEL

FIRE DETECTION

PRE-ENG. BUILDING FAN TROUBLE

NEGATIVE BUS BOX

OVER VOLTAGE ALARM

YARD SUBSTATION
METERING & CONTROL

LEAD DESIGNATION

D.C. CIRCUIT BREAKER DO1172-11

CLOSE CONTROL

OPEN CONTROL

CLOSE INDICATION

OPEN INDICATION

LOCAL CONTROL INDICATION

D.C. SWITCHBOARD (D53A)

EMERGENCY TRIP INDICATION

SWGR. LOCKOUT TRIP

SWGR. GROUNDED

RECTIFIER TRANSFORMER RT-1

TROUBLE INDICATION

RECTIFIER R-1

INDICATION

ENCLOSURE GROUNDED

AUX POWER TRANSFORMER AT1

HIGH TEMPERATURE ALARM

AUX POWER TRANSFORMER AT2

HIGH TEMPERATURE ALARM

CONTROL POWER RECTIFIER (CPR-1)

CONTROL POWER FAILURE ALARM

MAIN SHOP
METERING & CONTROL

SEE NOTE 1 (TYP.)

NOTE:

1. SEE DWG. N-036 FOR NOTES.



REV	DATE	BY	SUB	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.					
DESIGNED BY	R. Harker				
DRAWN BY	Eduardo Acosta				
CHECKED BY	S. S. S. S.				
IN CHARGE	M. B. B. B.				
DATE	26 FEB 86				

REGISTERED PROFESSIONAL ENGINEER
No. 181190
ELECTRICAL
STATE OF CALIFORNIA

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

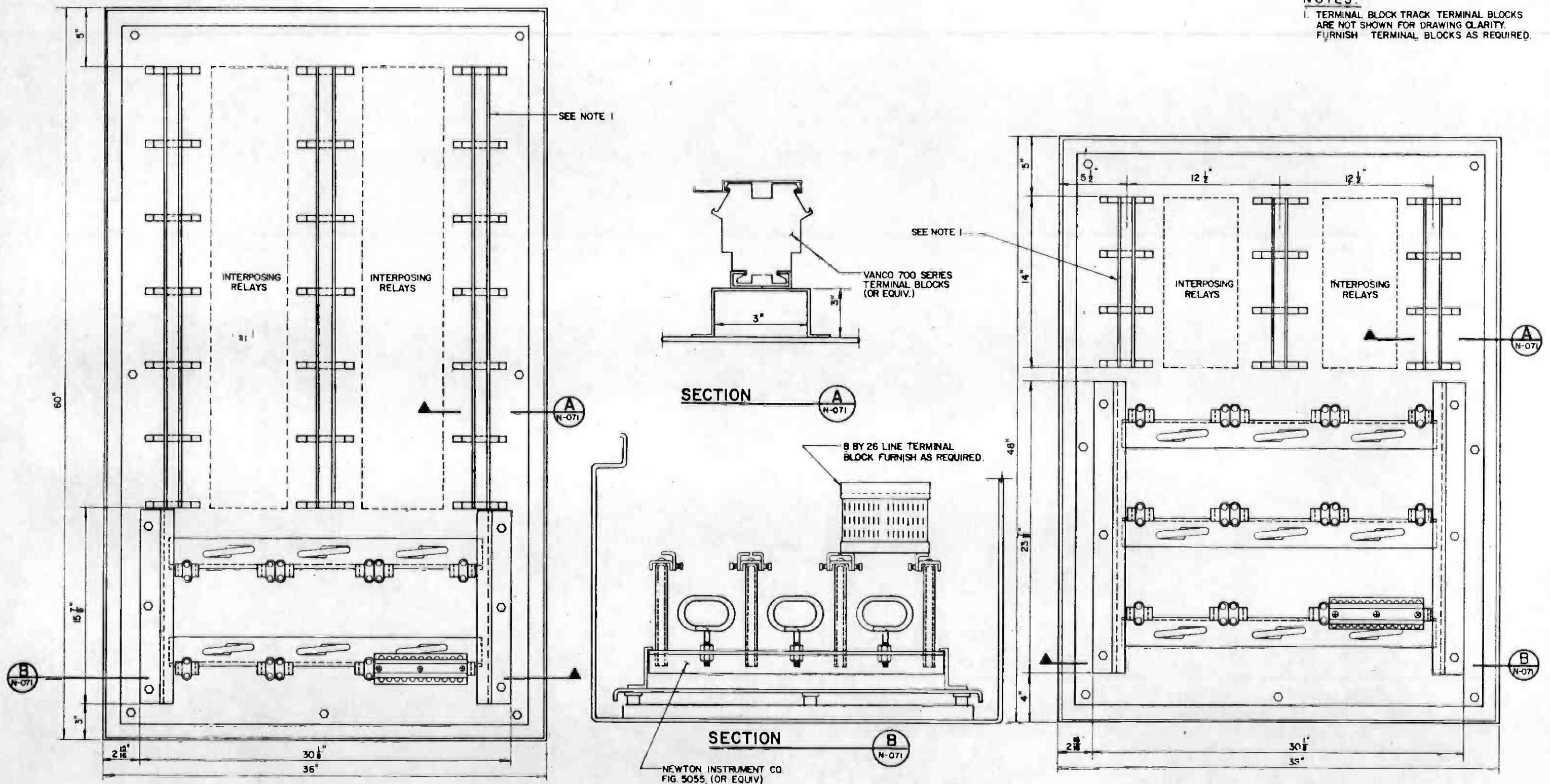
DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

APPROVED: *ers*

COMMUNICATIONS
SCADA / TRACTION POWER
INTERFACES

CONTRACT NO.	A 640	
DRAWING NO.	N-098 B	REV. 0
SCALE	NO SCALE	
SHEET NO.	64	

NOTES:
 1. TERMINAL BLOCK TRACK TERMINAL BLOCKS ARE NOT SHOWN FOR DRAWING CLARITY. FURNISH TERMINAL BLOCKS AS REQUIRED.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
M.R.T.C.
 DRAWN BY
M. Wilson
 CHECKED BY
S. Johnson
 IN CHARGE
P. Brown
 DATE
6 NOV 85



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



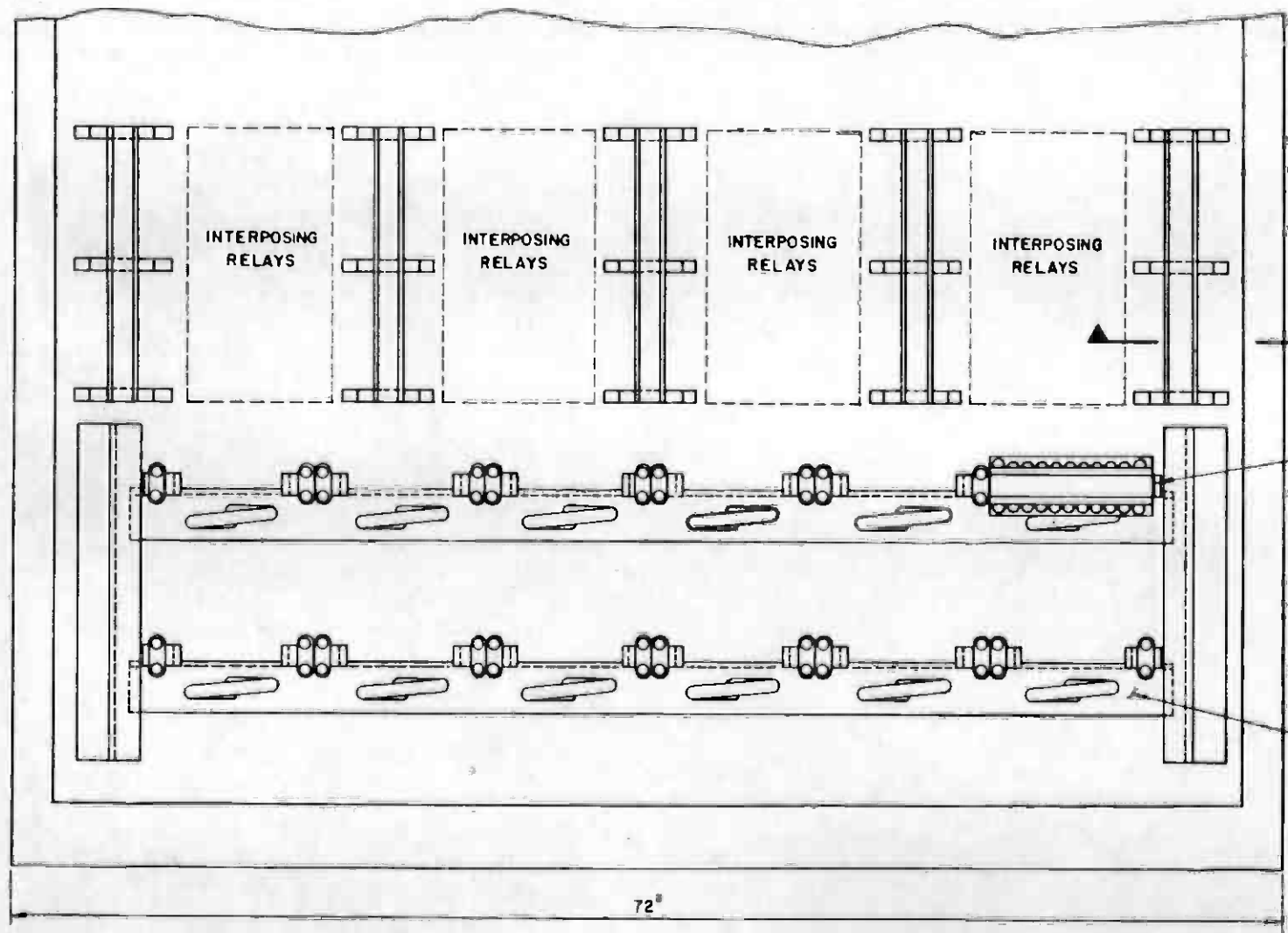
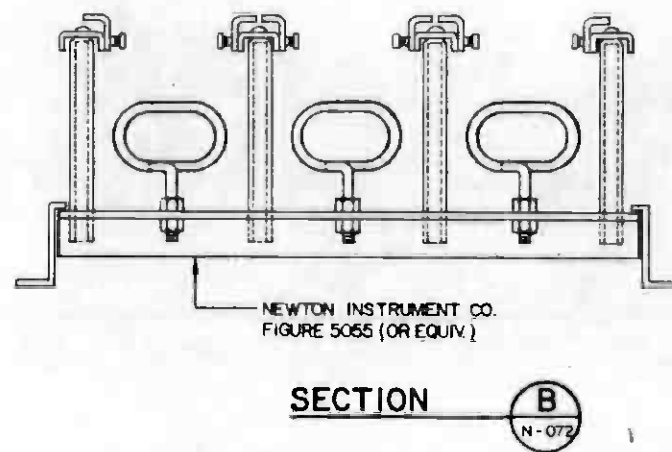
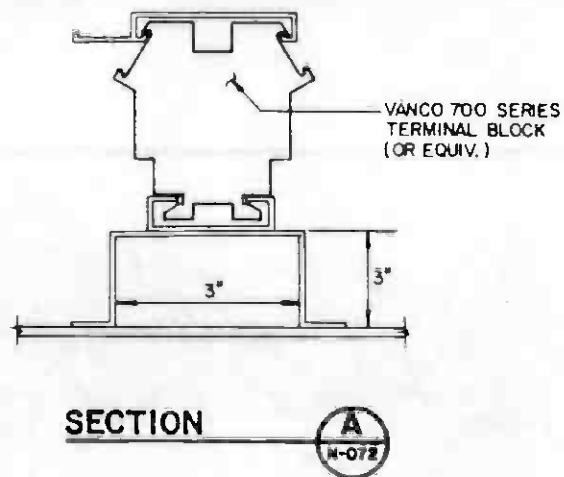
DMJM/PBQD/KE/HWA
 GENERAL MANAGERS
 APPROVED

COMMUNICATIONS
 INTERFACE CABINET
 SHEET 1 OF 2

CONTRACT NO.
A640
 DRAWING NO.
N-071 A
 SCALE
1/4" = 1"
 SHEET NO.
66

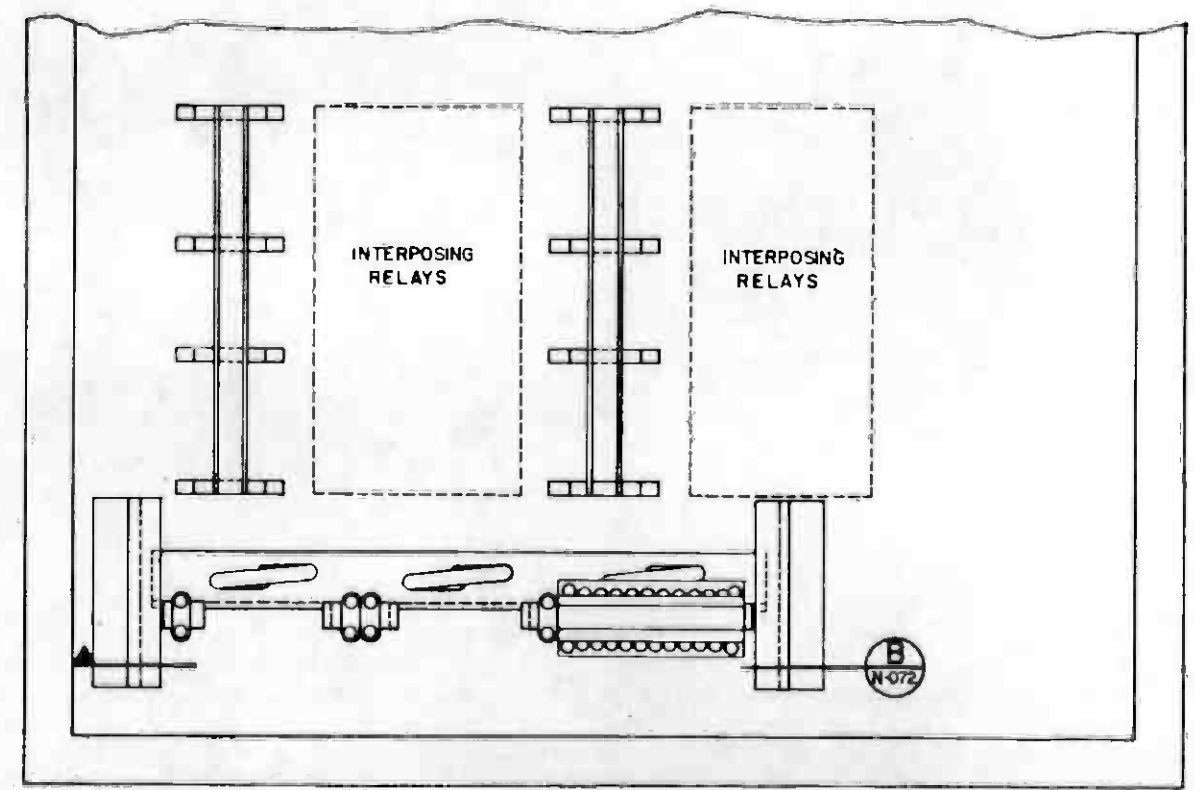
REV.	DATE	BY	SUB.	APP.	DESCRIPTION

11-85
 SIGNATURE ISSUE



8" X 26" LINE TERMINAL
BLOCK FURNISHED AS
REQUIRED.

NEWTON INSTRUMENT CO.
FIG. 5055 (OR EQUIV.)



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M.R.T.C. DRAWN BY <i>A. Vachon</i> CHECKED BY <i>B. Blalock</i> IN CHARGE <i>P. M. Berger</i> DATE 5 NOV 85		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	DMJM/PBOD/KE/HWA GENERAL CONSULTANTS APPROVED <i>ellid</i>	COMMUNICATIONS INTERFACE CABINET SHEET 2 OF 2	CONTRACT NO. A640 DRAWING NO. N-072 A 0 SCALE 1/4" = 1' SHEET NO. 67				
REV.	DATE	BY	SUB	APP	DESCRIPTION	REV.	DATE	BY	SUB	APP	DESCRIPTION

(SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION

TC/C CIR
TERMINAL STRIP

FIGURE TERMINAL

- TRAFFIC NORMAL - AR TRACK INDICATION
- TRAFFIC REVERSE - AR TRACK INDICATION
- TRAFFIC NORMAL - AL TRACK INDICATION
- TRAFFIC REVERSE - AL INDICATION
- AC POWER FAILURE INDICATION
- DC POWER FAILURE INDICATION
- CONTACT RAIL DE-ENERGIZED AR TRACK EASTBOUND INDICATION
- CONTACT RAIL DE-ENERGIZED AR TRACK WESTBOUND INDICATION
- CONTACT RAIL DE-ENERGIZED AL TRACK EASTBOUND INDICATION
- CONTACT RAIL DE-ENERGIZED AL TRACK WESTBOUND INDICATION
- ALARM ACKNOWLEDGE
- ALARM ACKNOWLEDGE INDICATION
- BLOWN FUSE INDICATION
- GROUND FAULT INDICATION
- TRACK OCCUPIED INDICATION

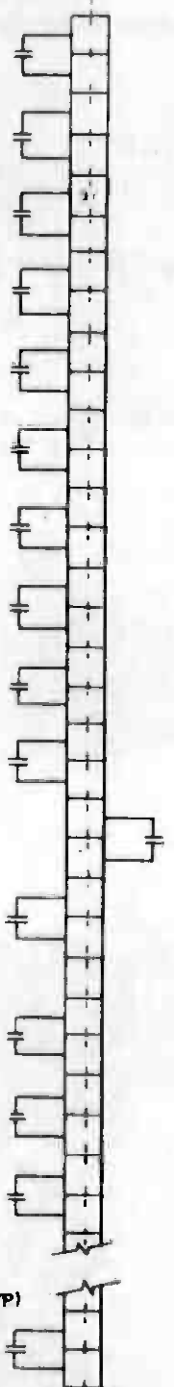


FIGURE	TERMINAL
4 B	a b
4 B	a b
4 B	a b
4 B	a b
3 B	a b
4 B	a b
4 B	a b
4 B	a b
4 B	a b
4 B	a b
2 B	a b
4 B	a b
4 B	a b
4 B	a b
4 B	a b

(20 INDICATIONS)

SEE NOTE 1 (TYP)

NOTE:
1. SEE DWG. N-036 FOR NOTES.

CIVIC CENTER, 5 TH./HILL, 7 TH./FLOWER STATIONS



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DESIGNED BY
R. K. ...
DRAWN BY
Acosta / V...
CHECKED BY
B. Bl...
IN CHARGE
M. B...
DATE
14 MAY 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
AUTOMATIC TRAIN CONTROL
INTERFACES

CONTRACT NO	A640
DRAWING NO	N-135 B
SCALE	NO SCALE
SHEET NO	68

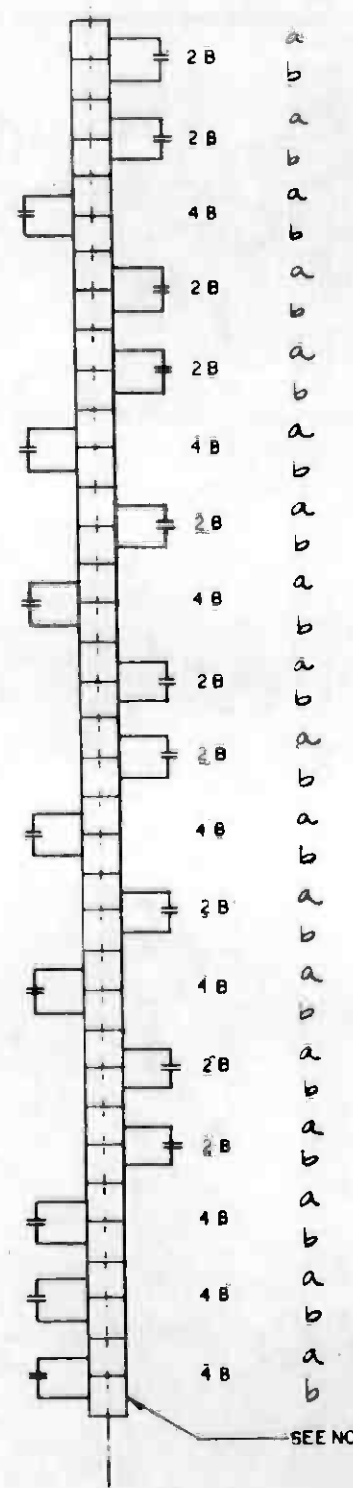
REV	DATE	BY	SUB	APP	DESCRIPTION
B	2-6-87				GENERAL REVISIONS
A	5-4-86				SIGNATURE ISSUE

(SEE INTERFACE
DWG. NS-0071

LEAD DESIGNATION

SIGNAL # 2 CLEAR REQUEST
SIGNAL # 2 CANCEL REQUEST
SIGNAL # 2 CLEAR INDICATION
SIGNAL # 4 CLEAR REQUEST
SIGNAL # 4 CANCEL REQUEST
SIGNAL # 4 CLEAR INDICATION
SIGNAL # 4 CALL-ON REQUEST
SIGNAL # 4 CALL-ON INDICATION
SIGNAL # 6 CLEAR REQUEST
SIGNAL # 6 CANCEL REQUEST
SIGNAL # 6 CLEAR INDICATION
SIGNAL # 6 CALL-ON REQUEST
SIGNAL # 6 CALL-ON INDICATION
SIGNAL # 8 CLEAR REQUEST
SIGNAL # 8 CANCEL REQUEST
SIGNAL # 8 CLEAR INDICATION
A5 SIGNAL OVERRUN AR TRACK INDICATION
A5 SIGNAL OVERRUN AL TRACK INDICATION

TC/C CIR
TERMINAL STRIP



SEE NOTE 1 (TYP.)

LEAD DESIGNATION

A1 - A5 TRAFFIC NORMAL AR TRACK INDICATION
A1 - A5 TRAFFIC REVERSE AR TRACK INDICATION
A1 - A5 TRAFFIC NORMAL AL TRACK INDICATION
A1 - A5 TRAFFIC REVERSE AL TRACK INDICATION
A5 - TRAFFIC NORMAL AR TRACK (FUT) INDICATION
A5 - TRAFFIC REVERSE AR TRACK INDICATION
A5 - TRAFFIC NORMAL AL TRACK INDICATION
A5 - TRAFFIC REVERSE AL TRACK INDICATION
SWITCHES #1A & B NORMAL REQUEST
SWITCHES #1A & B NORMAL CORRESPONDENCE INDICATION
SWITCHES #1A & B REVERSE REQUEST
SWITCHES #1A & B REVERSE CORRESPONDENCE INDICATION
SWITCHES #1A & B LOCK INDICATION
SWITCHES #3A & B NORMAL REQUEST
SWITCHES #3A & B NORMAL CORRESPONDENCE INDICATION
SWITCHES #3A & B REVERSE REQUEST
SWITCHES #3A & B REVERSE CORRESPONDENCE INDICATION
SWITCHES #3A & B LOCK INDICATION

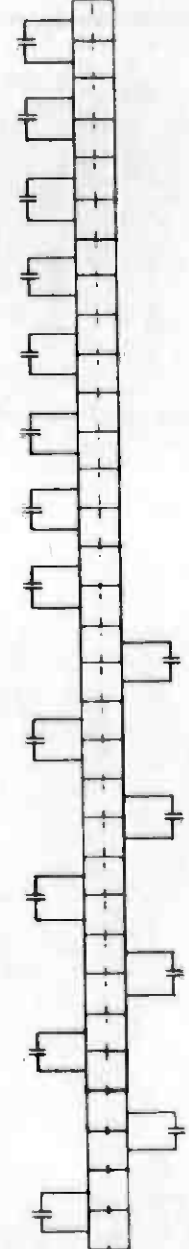
TC/C CIR
TERMINAL STRIP



LEAD DESIGNATION

A5 ROUTE LOCKING AR EAST INDICATION
A5 ROUTE LOCKING AR WEST INDICATION
A5 ROUTE LOCKING AL EAST INDICATION
A5 ROUTE LOCKING AL WEST INDICATION
A5 PLATFORM ROUTE LOCKING AR EAST INDICATION
A5 PLATFORM ROUTE LOCKING AR WEST INDICATION
A5 PLATFORM ROUTE LOCKING AL EAST INDICATION
A5 PLATFORM ROUTE LOCKING AL WEST INDICATION
AUTOMATIC TERMINAL MODE #1 REQUEST
AUTOMATIC TERMINAL MODE #1 INDICATION
AUTOMATIC TERMINAL MODE #2 REQUEST
AUTOMATIC TERMINAL MODE #2 INDICATION
AUTOMATIC TERMINAL MODE #3 INDICATION
AUTOMATIC TERMINAL MODE #3 INDICATION
MANUAL TERMINAL MODE REQUEST
MANUAL TERMINAL MODE INDICATION

TC/C CIR
TERMINAL STRIP



WILSHIRE / ALVARADO STATION

NOTE:
1. SEE DWG. N-036 FOR NOTES



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DESIGNED BY
R. Aronson
CHECKED BY
Patricia Chase
DATE
15 MAY 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT
DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS
APPROVED
ell...



COMMUNICATIONS
AUTOMATIC TRAN CONTROL
INTERFACES

CONTRACT NO.	A640
DRAWING NO.	N-136B 0
SCALE	NO SCALE
SHEET NO.	69

(SEE INTERFACE
DWG. NS-007)

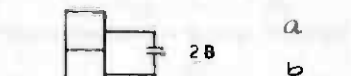
LEAD DESIGNATION

TC/C CIR
TERMINAL STRIP

LEAD DESIGNATION

TC/C CIR
TERMINAL STRIP

LOCAL PANEL CONTROL ENABLE



CONTACT RAIL DE-ENERGIZED
AR TRACK EASTBOUND INDICATION



LOCAL CONTROL REQUEST
INDICATION



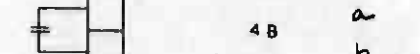
CONTACT RAIL DE-ENERGIZED
AR TRACK WESTBOUND INDICATION



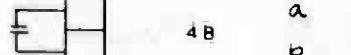
LOCAL CONTROL INDICATION



CONTACT RAIL DE-ENERGIZED
AL TRACK EASTBOUND INDICATION



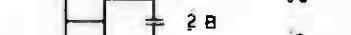
EMERGENCY LOCAL CONTROL
INDICATION



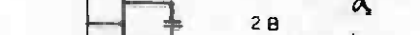
CONTACT RAIL DE-ENERGIZED
AL TRACK WESTBOUND INDICATION



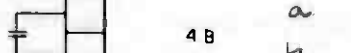
RCC CONTRQL



ALARM ACKNOWLEDGE



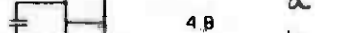
RCC CONTROL REQUEST
INDICATION



ALARM ACKNOWLEDGE
INDICATION



RCC CONTROL INDICATION



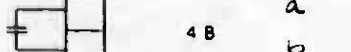
TRACK OCCUPIED
INDICATION



TRAIN STOP NORMAL - AR
INDICATION



TRAIN STOP REVERSE - AR
INDICATION



TRAIN STOP NORMAL - AL
INDICATION



TRAIN STOP REVERSE - AL
INDICATION

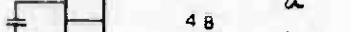


(42 INDICATIONS)

AC POWER FAILURE INDICATION



DC POWER FAILURE INDICATION



BLOWN FUSE INDICATION



GROUND FAULT INDICATION



SEE NOTE 1 (TYP)

NOTE

1. SEE DWG. N-036 FOR NOTES

WILSHIRE / ALVARADO STATION



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA

DESIGNED BY
R. Harkin
DRAWN BY
Acosta/Vinogradov
CHECKED BY
G. Blodgett
IN CHARGE
M. Burgess
DATE
14 MAY 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
AUTOMATIC TRAIN CONTROL
INTERFACES

CONTRACT NO
A640
DRAWING NO
N-137 B
SCALE
NO SCALE
SHEET NO
70

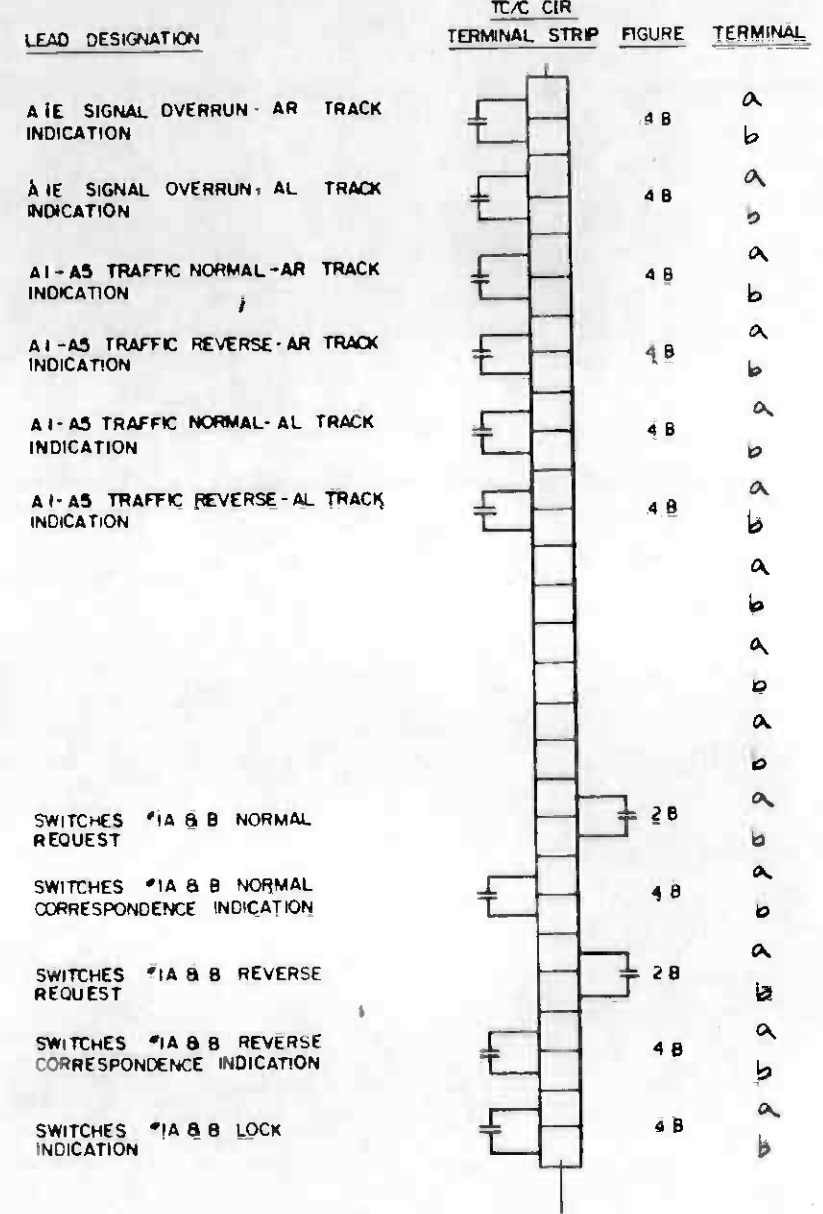
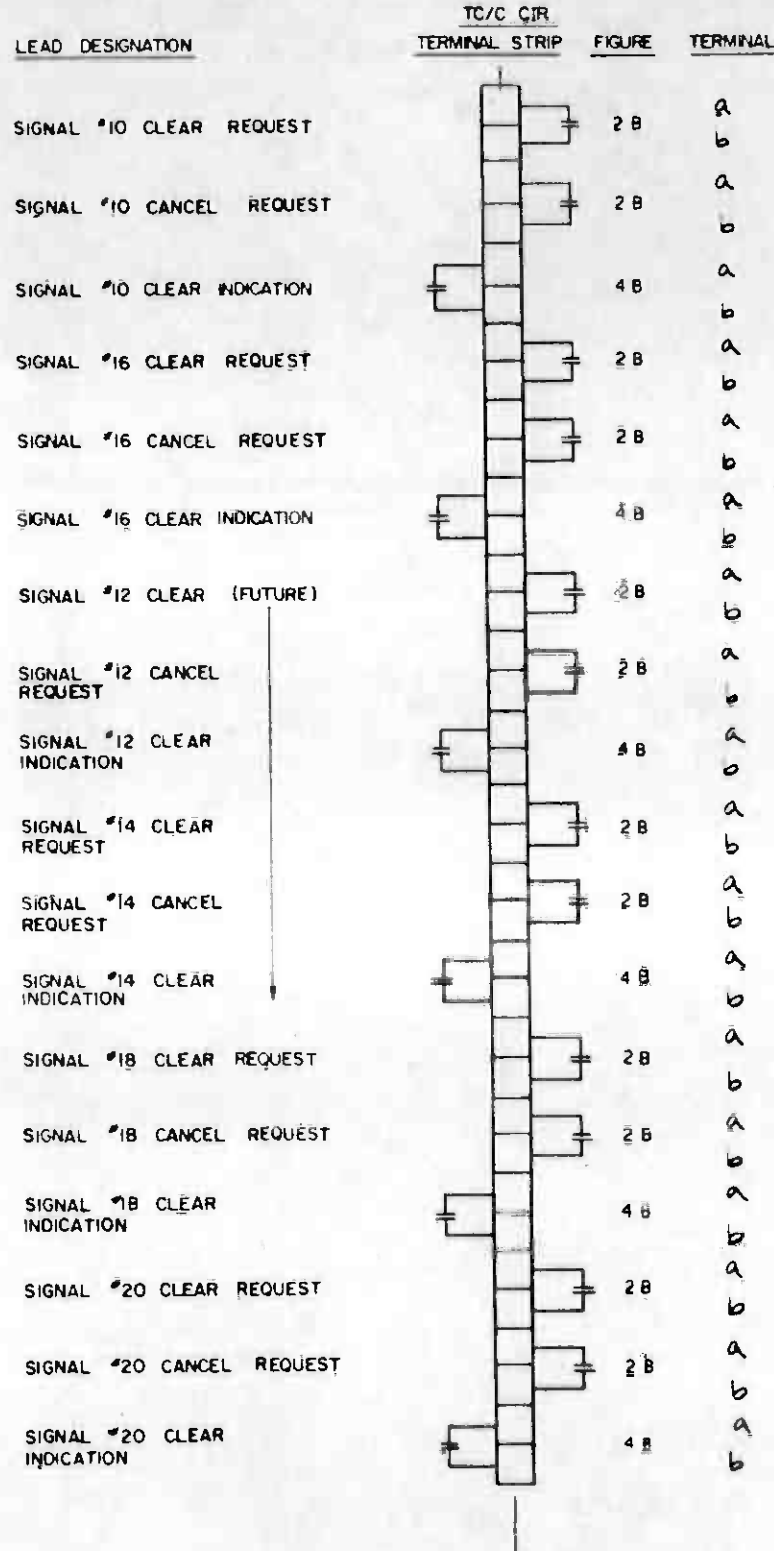
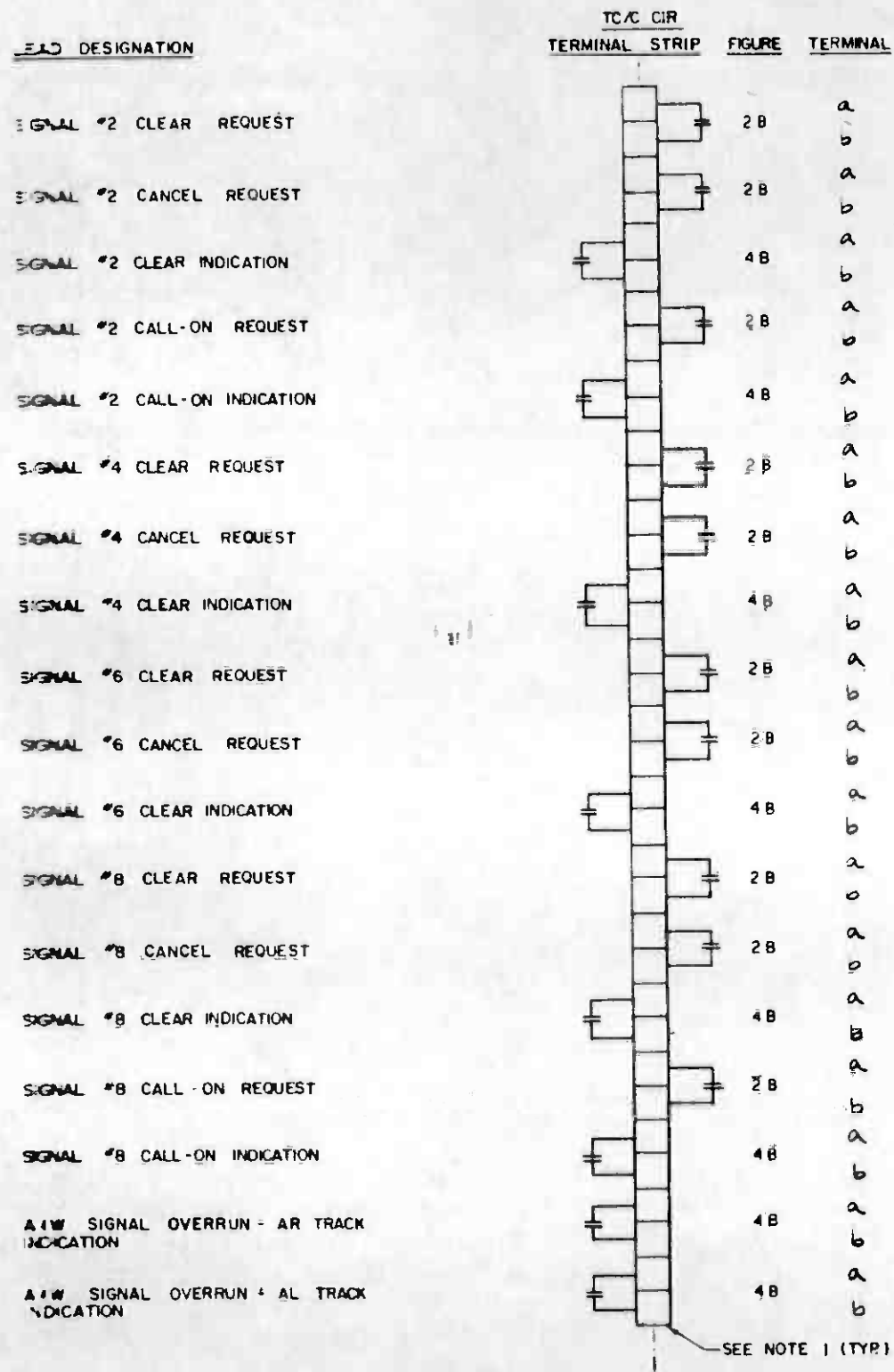
REV DATE BY SUB APP DESCRIPTION

REV DATE BY SUB APP DESCRIPTION

SUBMITTED *Cell in line*

APPROVED

(SEE INTERFACE DWG. NS-007)



NOTE:
1. SEE DWG. N-036 FOR NOTES.

U N I O N S T A T I O N



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

REV	DATE	BY	SUB	APP	DESCRIPTION
					GENERAL REVISION
					SIGNATURE ISSUE

DESIGNED BY
R. Berlin

DRAWN BY
ACOSTA/VINIKUROV

CHECKED BY
B. Blakely

IN CHARGE
W. B. Bunker

DATE
16 MAY 86

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
GENERAL CONSULTANT

APPROVED
ellin

COMMUNICATIONS
AUTOMATIC TRAIN CONTROL
INTERFACES

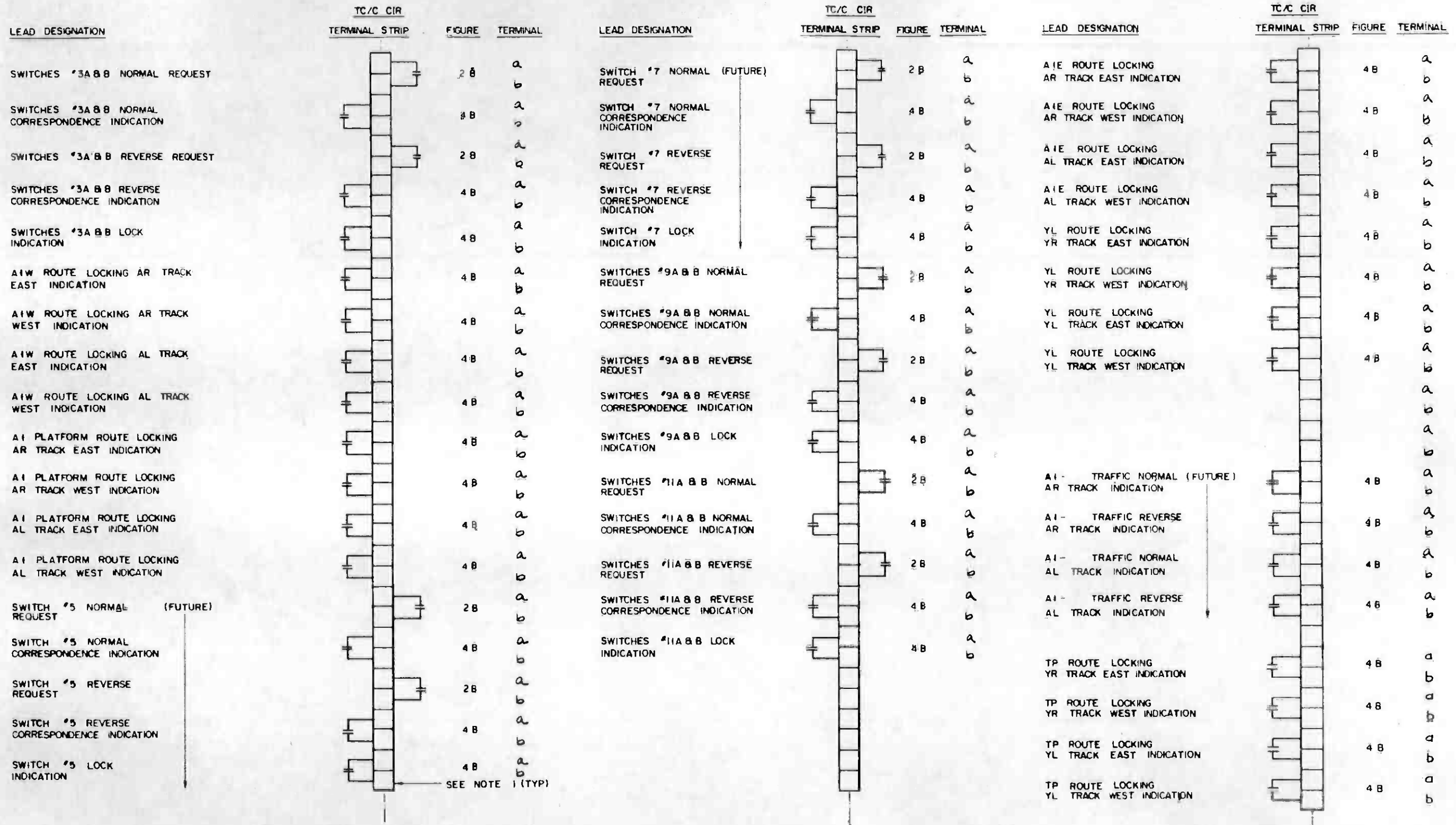
CONTRACT NO
A640

DRAWING NO
N-138 B

SCALE
NO SCALE

SHEET NO
71

(SEE INTERFACE
DWG. NS-007)



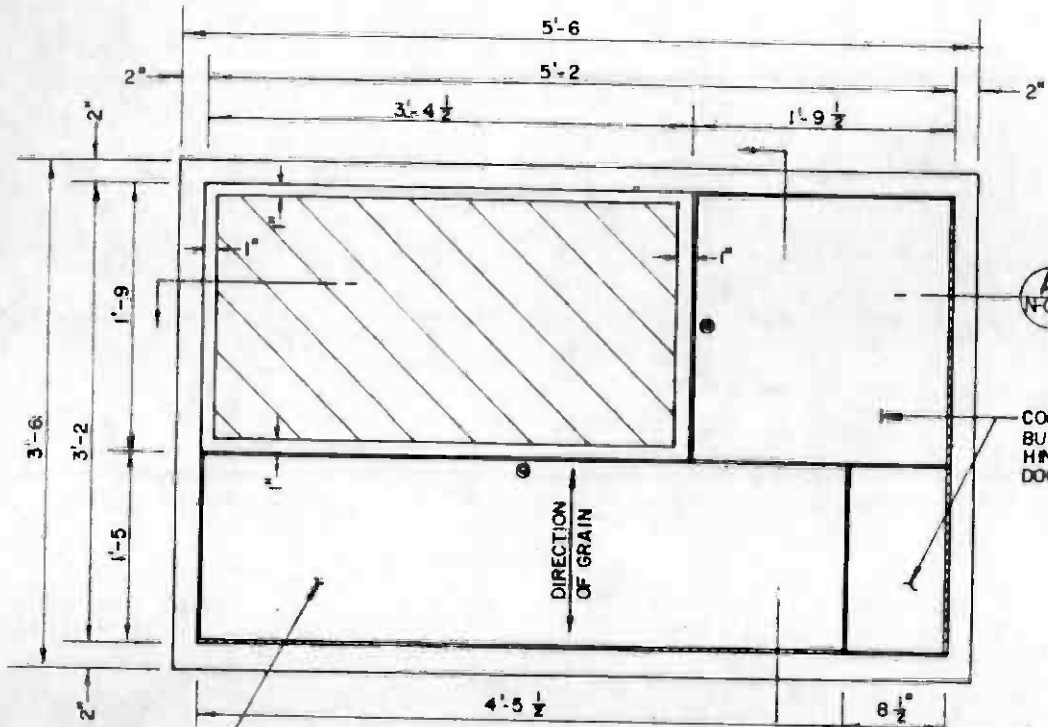
SEE NOTE 1 (TYP)

NOTE:
1. SEE DWG. N-036 FOR NOTES.

U N I O N S T A T I O N



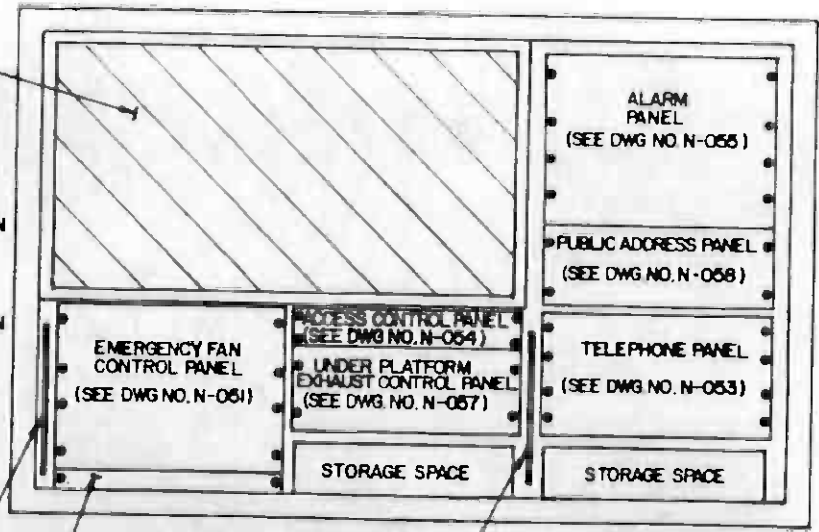
THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY <i>R. H. H. H.</i> DRAWN BY <i>ACOSTA/VINOCURIO</i> CHECKED BY <i>B. J. ...</i> IN CHARGE <i>B. J. ...</i> DATE 15 MAY 86	REGISTERED PROFESSIONAL ENGINEER CHARLES A. FISHER No. 0011900 ELECTRICAL STATE OF CALIFORNIA	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT SUBMITTED <i>R. H. H. H.</i>		OMJM/PBOD/KE/HWA GENERAL CONSULTANTS APPROVED _____	COMMUNICATIONS AUTOMATIC TRAIN CONTROL INTERFACES	CONTRACT NO. A640 DRAWING NO. N-139 B SCALE NO SCALE SHEET NO. 72
REV. DATE BY SUB APP. DESCRIPTION	REV. DATE BY SUB APP. DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE	5/26/86	15 MAY 86	APPROVED _____	APPROVED _____	SHEET NO. 72	



FRONT VIEW

WHEN HINGED DOWN TO HORIZONTAL POSITION, DOOR SHALL ACT AS A WRITING SURFACE. INSIDE FACE OF DOOR SHALL BE SUITABLE FOR THIS PURPOSE. DOOR SUPPORTS SHALL INCORPORATE A SHOCK ABSORBING MECHANISM TO PREVENT DAMAGE IF DOOR IS ABRUPTLY HINGED DOWN.

STATION DIAGRAM PANEL-SHALL BE MOUNTED BEHIND GLASS, EXPOSED TO PUBLIC VIEW. DIAGRAM SHALL DISPLAY ALL LEVELS OF STATION. TECHNIQUE SHALL BE TWO OR THREE COLOR SILKSCREEN ON 12 GA. COLD ROLLED STEEL PANEL, MATCHING OR COMPATIBLE WITH STATION MAP GRAPHICS IN COLORS, TYPOGRAPHY AND FINISH. LIGHT EMITTING DIODES (LED'S) SHALL BE INSTALLED IN THE PANEL IN KEY LOCATIONS TO INDICATE WHEN WHEN LIGHTED, A ZONE FAULT. DETAILS OF FAULT LOCATION WITHIN THE ZONE SHALL BE DISPLAYED ON ALARM PANEL (SEE DWG. NO. N-056) BEHIND LOCKED DOOR.

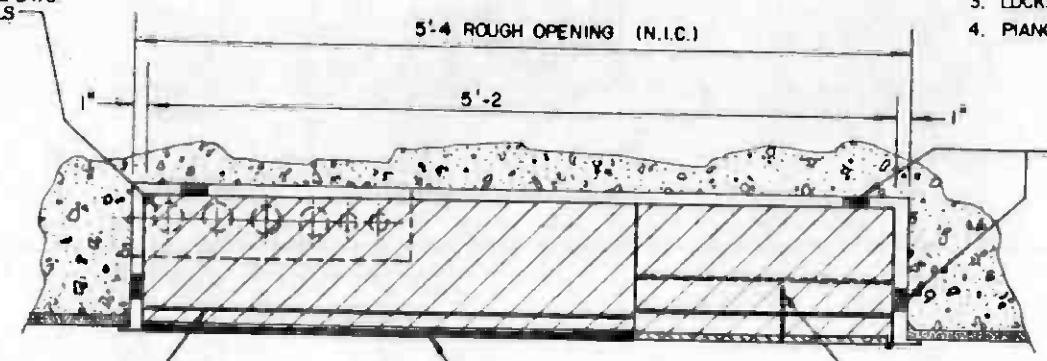


FRONT VIEW WITH DOORS REMOVED

REQUIRED CONDUITS - SEE DWG NO. ND-023D FOR DETAILS

A
N-050

CONSTRUCT AS TWO DOORS BUT FASTEN TOGETHER AND HINGE TO OPERATE AS ONE DOOR.

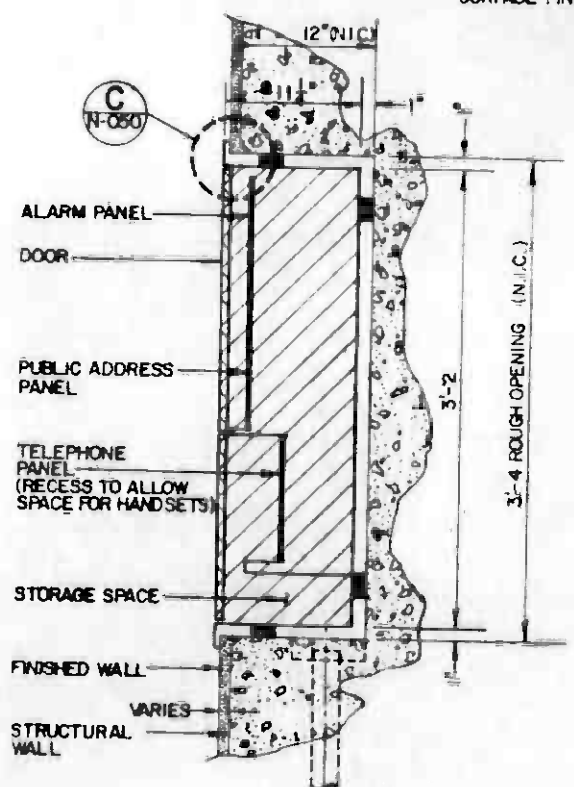


SECTION A
N-050

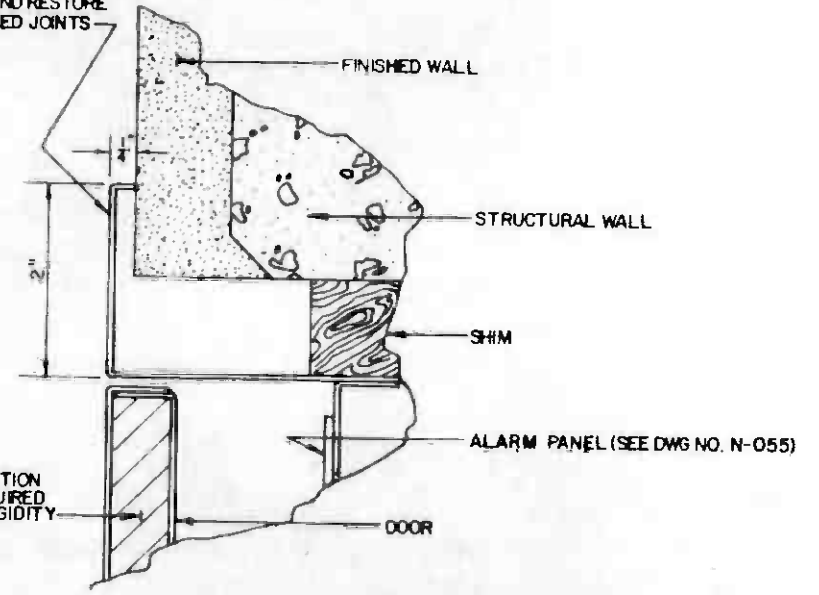
NOTES

1. ALL SURFACES OF EMP EXPOSED TO PUBLIC VIEW SHALL BE TYPE 304 STAINLESS STEEL-NO. 4 FINISH.
2. BODY OF CABINET INSTALLED IN WALL, NOT EXPOSED TO PUBLIC VIEW, MAY BE INTEGRAL WITH FRONT OUTER FRAME, OR MAY BE A SEPERATE CABINET OF HIGH CORROSION RESISTANT STAINLESS STEEL WITH A NO. 2B OR 2D FINISH, ASSEMBLED TO THE OUTER FRAME.
3. LOCKS ON DOORS SHALL BE KEYED DIFFERENTLY
4. PIANO HINGES SHALL BE USED ON DOORS
5. BODY ON CABINET SHALL BE SET INTO WALL ROUGH OPENING, SHIMMED TO BE PLUMB AND SQUARE, TO BE CORRECT HEIGHT AFF AND TO RELATE CORRECTLY WITH CONDUITS LOCATED IN STRUCTURAL WALL BELOW EMP LOCATION. CABINET SHALL BE ATTACHED TO STRUCTURAL WALL WITH EXPANSION BOLTS.

16 GA. FRONT OUTER FRAME - FORMED EDGES TO BE SQUARE WITH MINIMUM PRACTICAL RADIUS. MITER, WELD, GRIND AND RESTORE SURFACE FINISH AT ALL EXPOSED JOINTS



SECTION B
N-050



DETAIL C
FULL SIZE
N-050 N-052

REV	DATE	BY	SUB	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA

DESIGNED BY
[Signature]
DRAWN BY
[Signature]
CHECKED BY
[Signature]
IN CHARGE
[Signature]
DATE
11 NOV 85

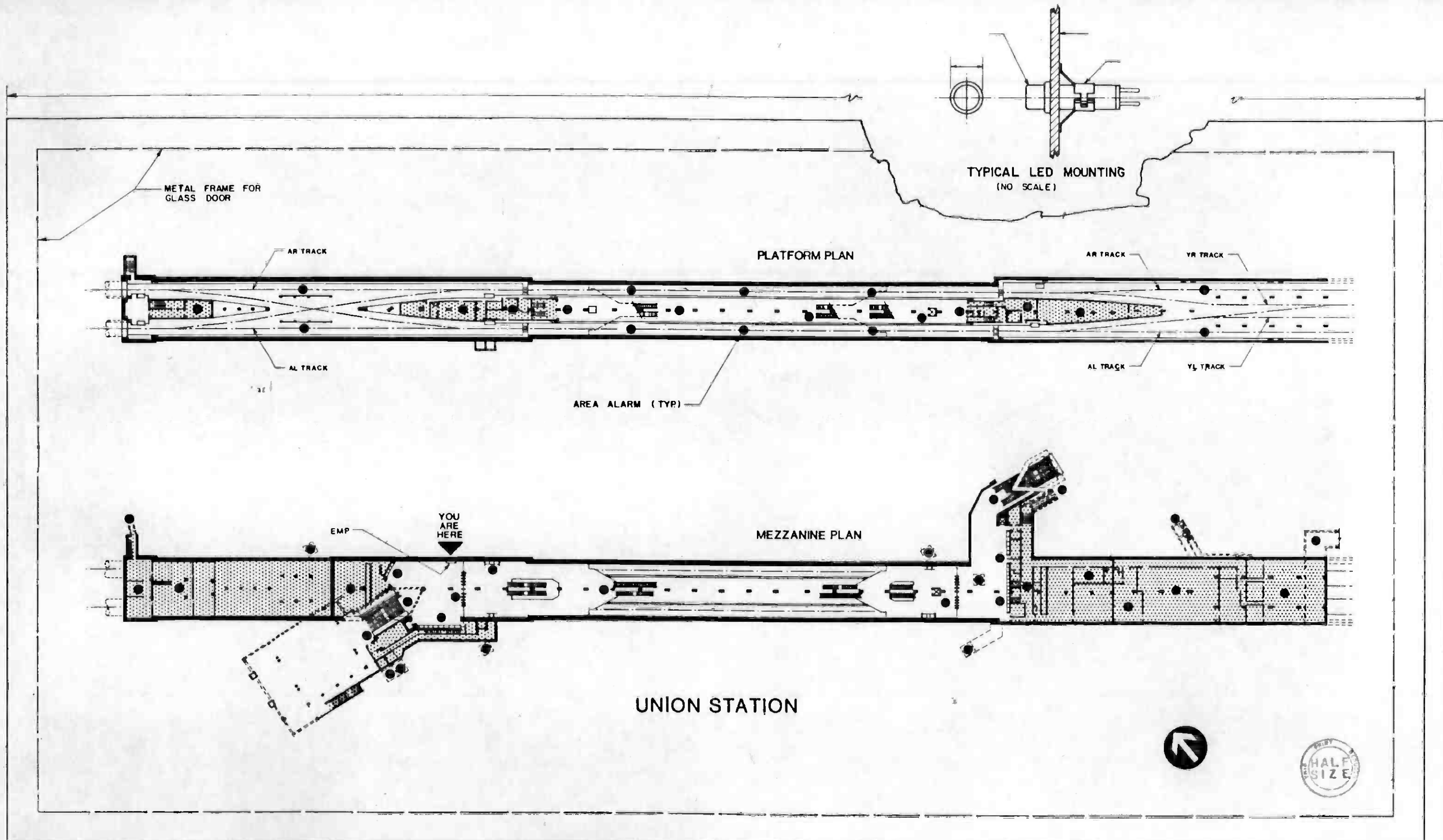
**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**

DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

APPROVED
[Signature]

**COMMUNICATIONS
EMERGENCY MANAGEMENT PANEL
(EMP)**

PROJECT NO. A640
DRAWING NO. N-050 B 0
SCALE 1/8" = 1'-0" AND FULL SIZE
SHEET NO. 74



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, UNDER MASS TRANSPORTATION ADMINISTRATION, UNDER THE MASS TRANSIT ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA

DESIGNED BY
P. Karlin
DRAWN BY
P. Karlin
CHECKED BY
B. Blahutsky
IN CHARGE
P. M. Burgess
DATE
24 OCT 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

SUBMITTED *ellishin*

APPROVED

COMMUNICATIONS
EMP ALARM SUMMARY MAP
(TYPICAL)

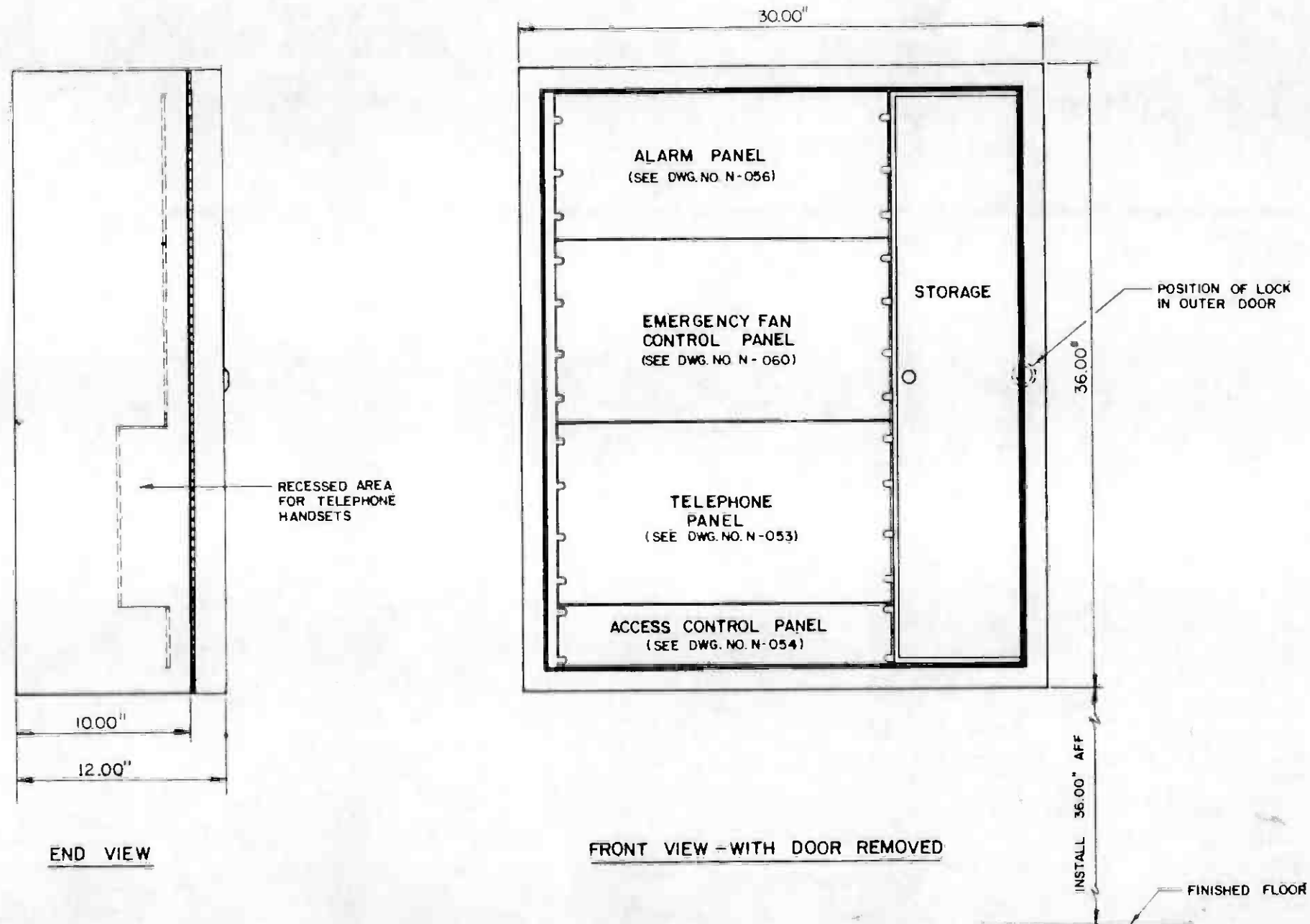
CONTRACT NO	A640
DRAWING NO	N-099 A
REV	0
SCALE	3/4" = 1'
SHEET NO	75

REV	DATE	BY	SUB	APP	DESCRIPTION

REV	DATE	BY	SUB	APP	SIGNATURE	ISSUE

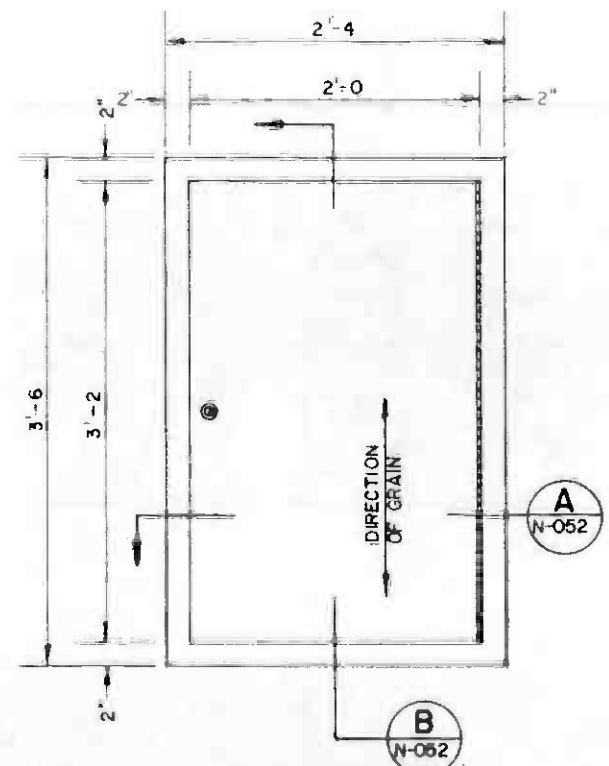
NOTES:

1. AUXILIARY EMERGENCY MANAGEMENT PANELS ARE LOCATED AT ALL NON-STATION VENT SHAFTS.
2. MATERIAL MAY BE STAINLESS STEEL OR EPOXY COATED STEEL.
3. HOFFMAN, OR EQUIVALENT NEMA TYPE 4X ENCLOSURES WHICH ARE IN CONFORMANCE WITH THE TECHNICAL PROVISIONS MAY BE PROPOSED, FOR APPROVAL BY THE DISTRICT.
4. PANEL SHALL BE INSTALLED ON STRUCTURAL WALLS WITH EXPANSION BOLTS.

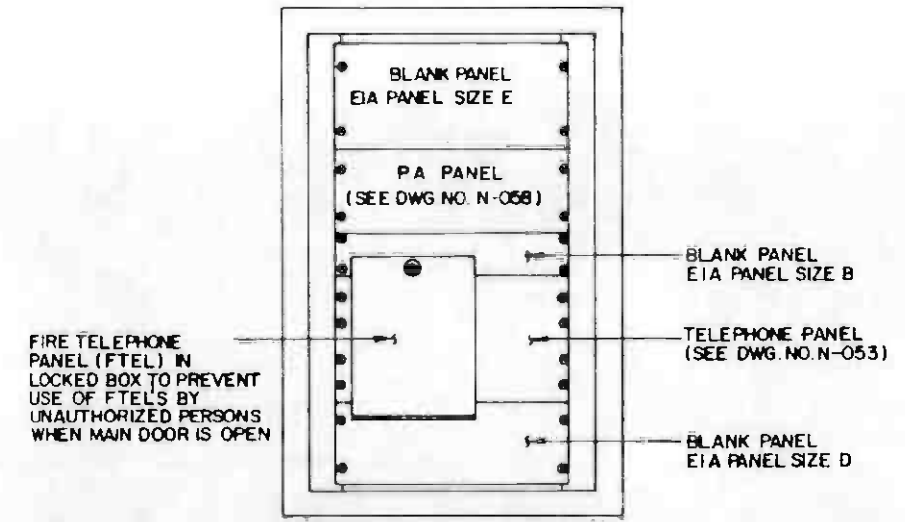
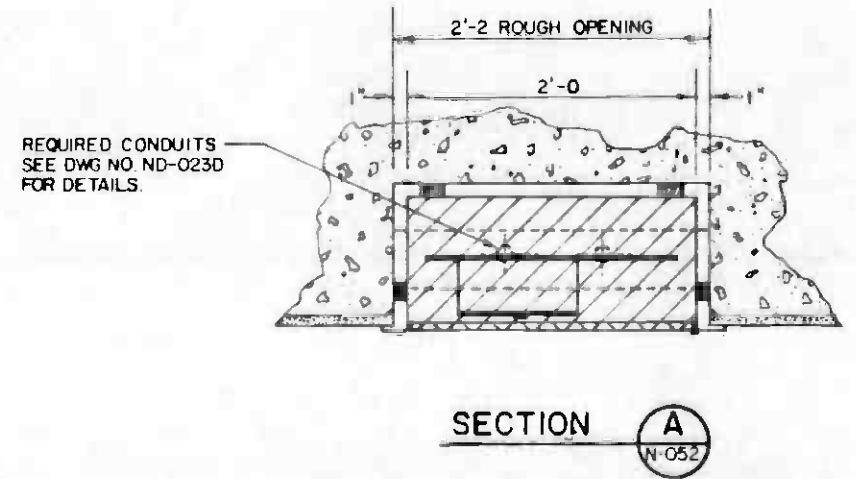


		THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY <i>[Signature]</i> DRAWN BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 7 NOV 85		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 		COMMUNICATIONS AUXILIARY EMERGENCY MANAGEMENT PANEL (AEMP)		CONTRACT NO. A640 DRAWING NO. N-051 B SCALE 1/4" = 1'-0" SHEET NO. 76	
REV. DATE BY DES APP DESCRIPTION	REV. DATE BY DES APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE		APPROVED <i>[Signature]</i>							

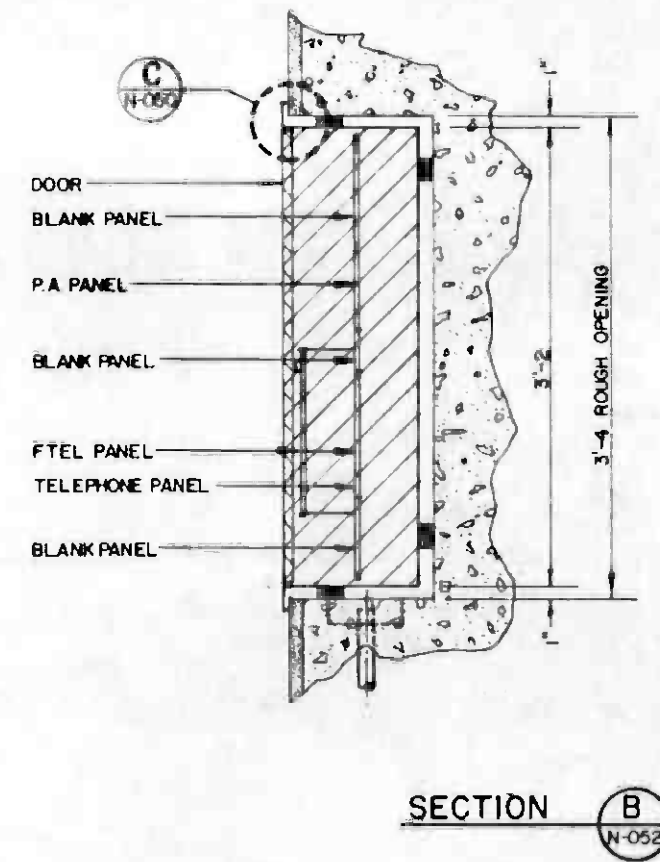
NOTES:
 1. NOTES 1, 2, 3, 4 AND 5 ON DRAWING NO. N-050 RELATE TO THIS DRAWING AS WELL.



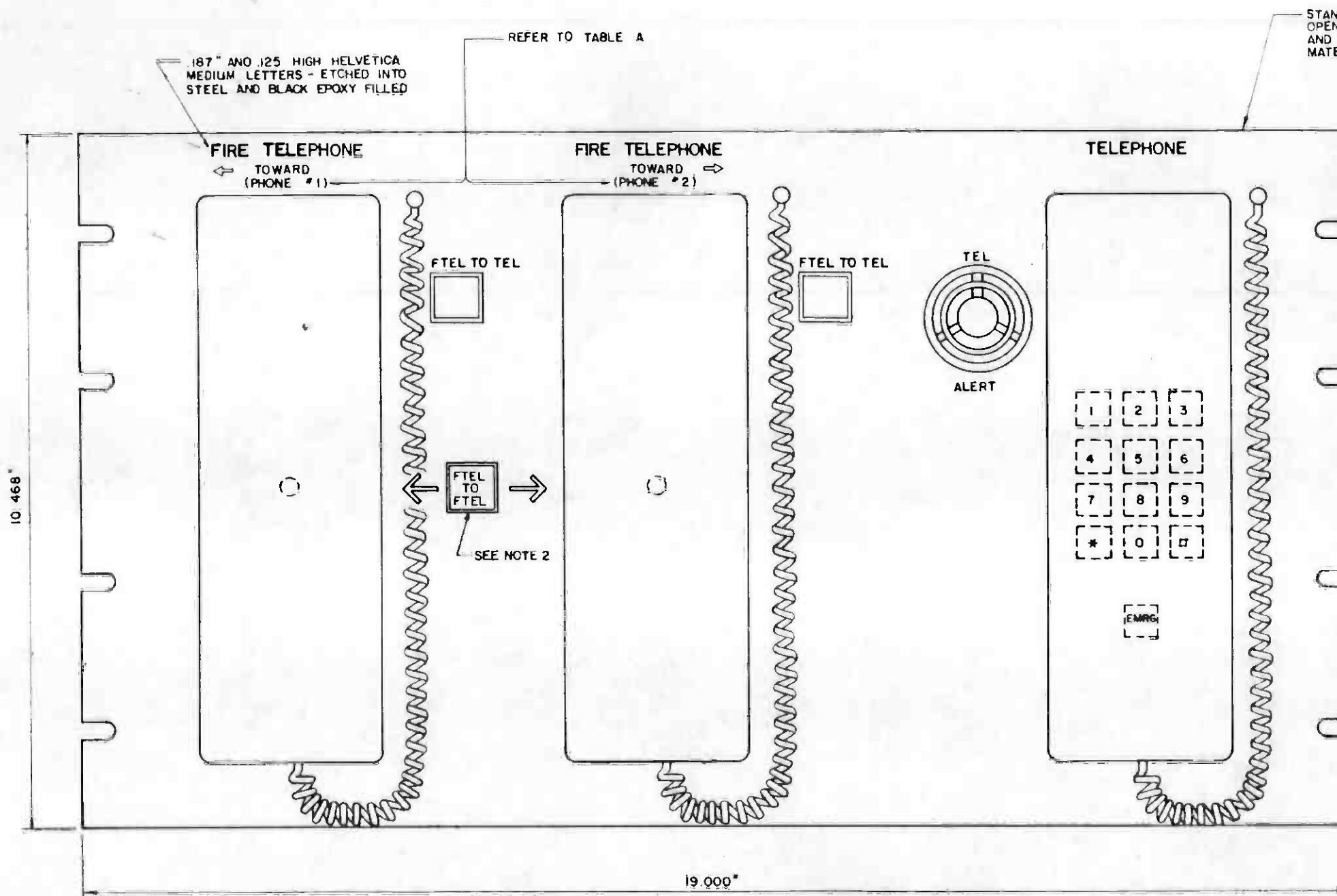
FRONT VIEW



FRONT VIEW WITH DOOR OFF



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY <i>[Signature]</i> DRAWN BY PK & MH CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 8 NOV 85	PROFESSIONAL ENGINEER No. 4011960 -1-31-85 STATE OF CALIFORNIA	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT DMJM/PBQD/KE/HWA GENERAL CONSULTANTS APPROVED <i>[Signature]</i>	CONTRACT NO. A640 DRAWING NO. N-052 A 0 SCALE $\frac{1}{8}'' = 1'-0''$ SHEET NO. 77
REV. DATE BY S.W. APP. DESCRIPTION	W 11/3/85 SIGNATURE ISSUE				



STANDARD EIA SIZE F PANEL - WITH OPEN SLOTS ACCORDING TO EIA SIZE AND LOCATION STANDARDS MATERIAL - 0.188 ALUMINUM

TABLE A

FIRE TELEPHONE DESTINATION ENGRAVING DESIGNATION FOR FTEL

CABINET	LOCATION	PHONE 1	PHONE 2	NOTE
EMP	UNION STATION	CIVIC CENTER	PORTAL	
EMP	CIVIC CENTER	5TH & HILL	UNION STATION	
EMP	5TH & HILL	7TH & FLOWER	CIVIC CENTER	
EMP	7TH & FLOWER	WILSHIRE/ALVARADO	5TH & HILL	2
EMP	WILSHIRE/ALVARADO	WILSHIRE/VERMONT	7TH & FLOWER	3
CP	PORTAL	UNION STATION		
CP	RAMIREZ ST. VENT SHAFT	PORTAL TO UNION STATION		
CP	UNION STATION	CIVIC CENTER	PORTAL	
CP	CIVIC CENTER	5TH & HILL	UNION STATION	
CP	5TH & HILL	7TH & FLOWER	CIVIC CENTER	
CP	7TH & FLOWER	WILSHIRE/ALVARADO	5TH & HILL	2
CP	WILSHIRE/ALVARADO TAIL TRACK	WILSHIRE/ALVARADO		4

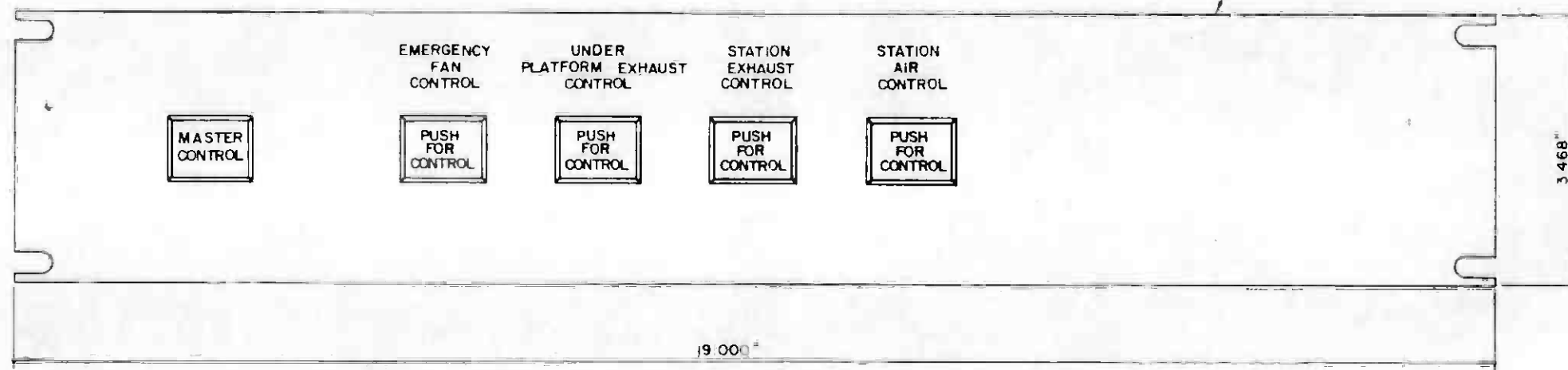
NOTES:

- FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S).
- AT 7TH FLOWER EMP AND CP THIS SWITCH CONNECTS MRT AND LRT TUNNEL FTEL CIRCUITS TOGETHER.
- PHONE 1 TO BE EQUIPPED WITH DURABLE TEMPORARY LABEL READING "TAIL TRACK". PERMANENT ENGRAVING TO BE AS INDICATED.
- VALID FOR MOS-1 ONLY. TO BE REMOVED WHEN METRO RAIL SYSTEM IS EXTENDED BEYOND WILSHIRE/ALVARADO.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M. R. T. C. DRAWN BY A. VINDOROV CHECKED BY B. B. [Signature] IN CHARGE R. B. [Signature] DATE 4 APR 85	REGISTERED PROFESSIONAL ENGINEER No. 4211006 STATE OF CALIFORNIA	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT		CONTRACT NO. A640 DRAWING NO. N-053 D SCALE FULL SIZE SHEET NO. 78
REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	APPROVED [Signature]		COMMUNICATIONS TELEPHONE PANEL		APPROVED [Signature]

STANDARD EIA SIZE B PANEL - WITH
OPEN SLOTS ACCORDING TO EIA SIZE
AND LOCATION STANDARDS
MATERIAL - 0.188 ALUMINUM
FINISH - PHOTO-ETCHED



FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S)

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
M.R.T.C.
DRAWN BY
Michael V. Johnson
CHECKED BY
B.B. Carls
IN CHARGE
P. J. Morgan
DATE
3 APR 85



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
PANEL ACCESS CONTROLS

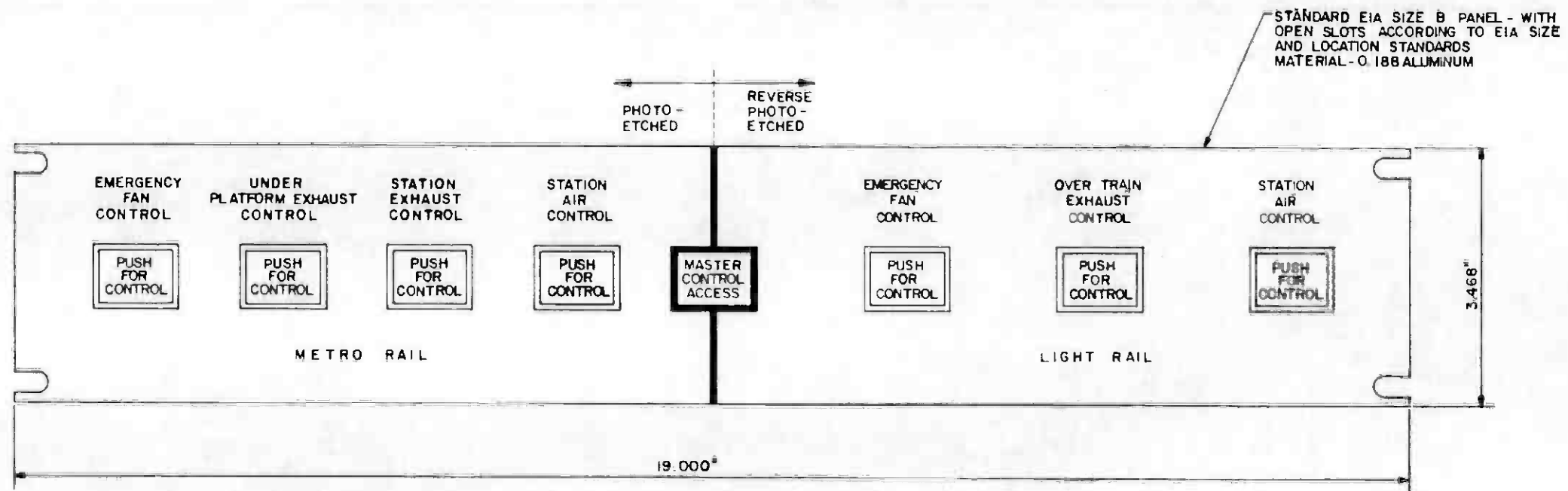
CONTRACT NO.
A640
DRAWING NO.
N-054 A
SCALE
FULL SIZE
SHEET NO.
79

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

W 11-85
SIGNATURE ISSUE

SUBMITTED

APPROVED

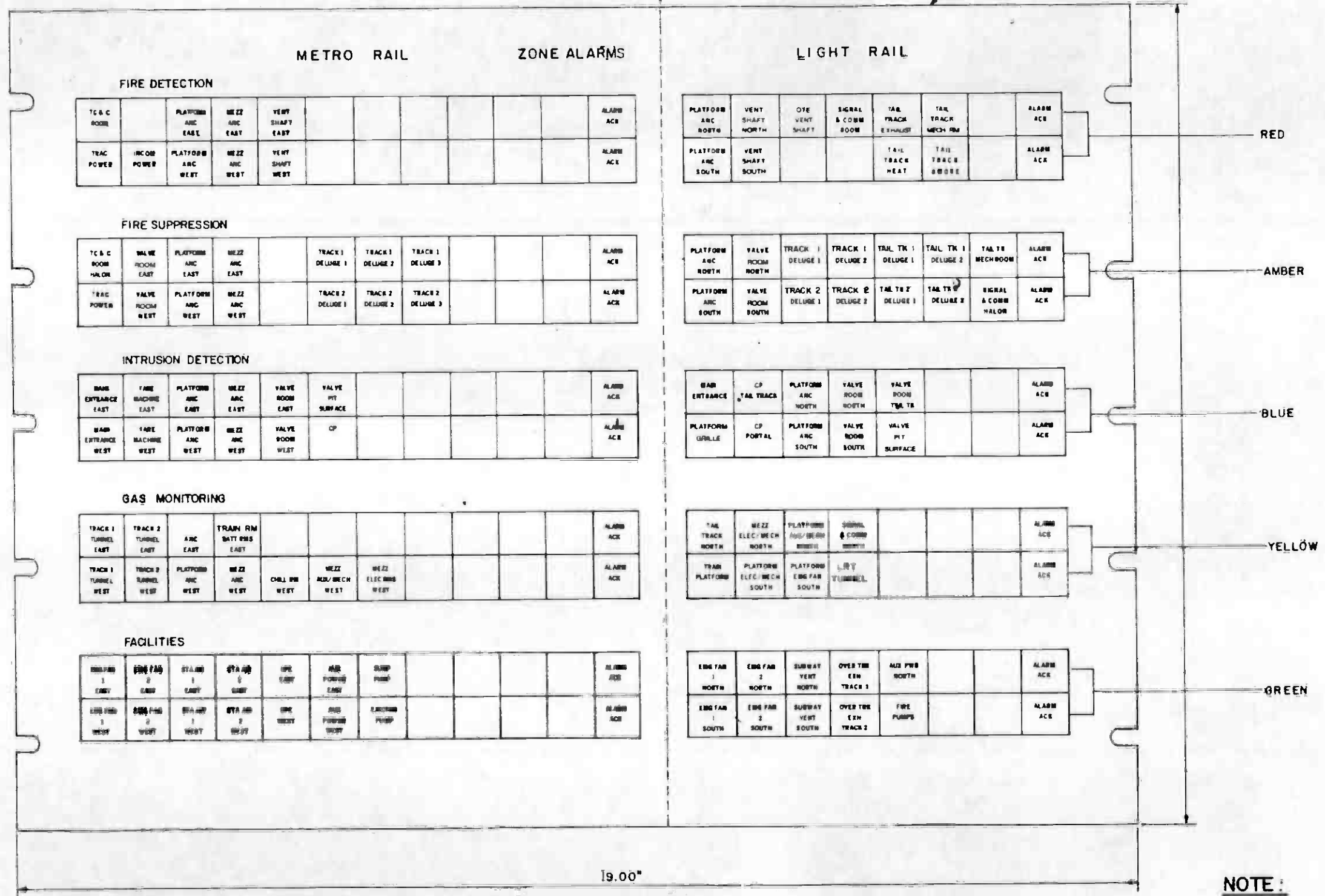


NOTE:
FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S) AT
7th / FLOWER STATION.

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M.R.T.C. DRAWN BY <i>Eduardo Acosta</i> CHECKED BY <i>D. Elabed</i> IN CHARGE <i>P.M. Burgon</i> DATE 2 OCT 86	REGISTERED PROFESSIONAL ENGINEER No. 821190 1-3-89 STATE OF CALIFORNIA	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	DMJM/PBOD KE/HWA GENERAL CONSULTANTS APPROVED <i>elabed</i>	COMMUNICATIONS PANEL ACCESS CONTROLS	CONTRACT NO. A640 DRAWING NO. N-254 A 0 SCALE FULL SIZE SHEET NO. 80				
REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	TITLE	APP	DESCRIPTION
					SIGNATURE ISSUE						

STANDARD EIA SIZE H PANEL-WITH OPEN SLOTS
 ACCORDING TO EIA SIZE AND LOCATION STANDARDS
 MATERIAL- 0.188 ALUMINUM

PHOTO-ETCHED REVERSE PHOTO-ETCHED

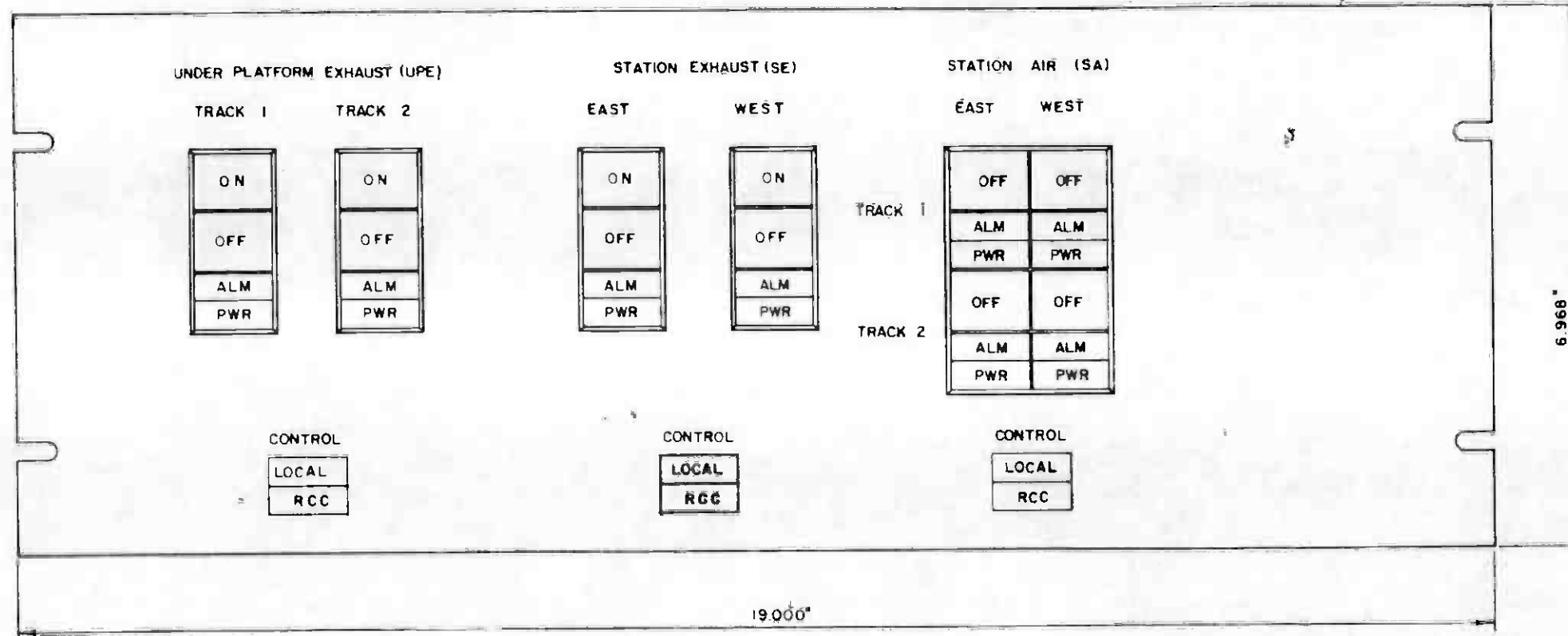


NOTE:
 FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S) AT
 71ST FLOWER STATION.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY E. ACOSTA DRAWN BY <i>Ed Acosta</i> CHECKED BY <i>B. Blahut</i> IN CHARGE <i>M. Morgan</i> DATE 30 SEP 86	REGISTERED PROFESSIONAL ENGINEER No. 6011980 Exp. 7-30-87 ELECTRICAL STATE OF CALIFORNIA	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT		COMMUNICATIONS EMERGENCY MANAGEMENT PANEL ALARM PANEL	CONTRACT NO. A-640 DRAWING NO. N-255 B SCALE FULL SIZE SHEET NO. 82
REV. DATE BY SUB APP DESCRIPTION	B 11/14/86 EA GENERAL REVISION SIGNATURE ISSUE	SUBMITTED <i>Ed Acosta</i>	APPROVED DMJM PBQD/KE/HWA GENERAL CONSULTANTS	NOTE: FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S) AT 71 ST FLOWER STATION.			CONTRACT NO. A-640 DRAWING NO. N-255 B SCALE FULL SIZE SHEET NO. 82

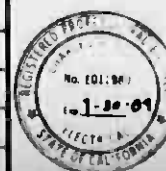
STANDARD EIA SIZE D PANEL - WITH
OPEN SLOTS ACCORDING TO EIA SIZE
AND LOCATION STANDARDS
MATERIAL - 0.188 ALUMINUM
FINISH - PHOTO ETCHED



FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S)

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA

DESIGNED BY
M. E. T. C.
DRAWN BY
Y. G. OH
CHECKED BY
332
IN CHARGE
1 NOV 85



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



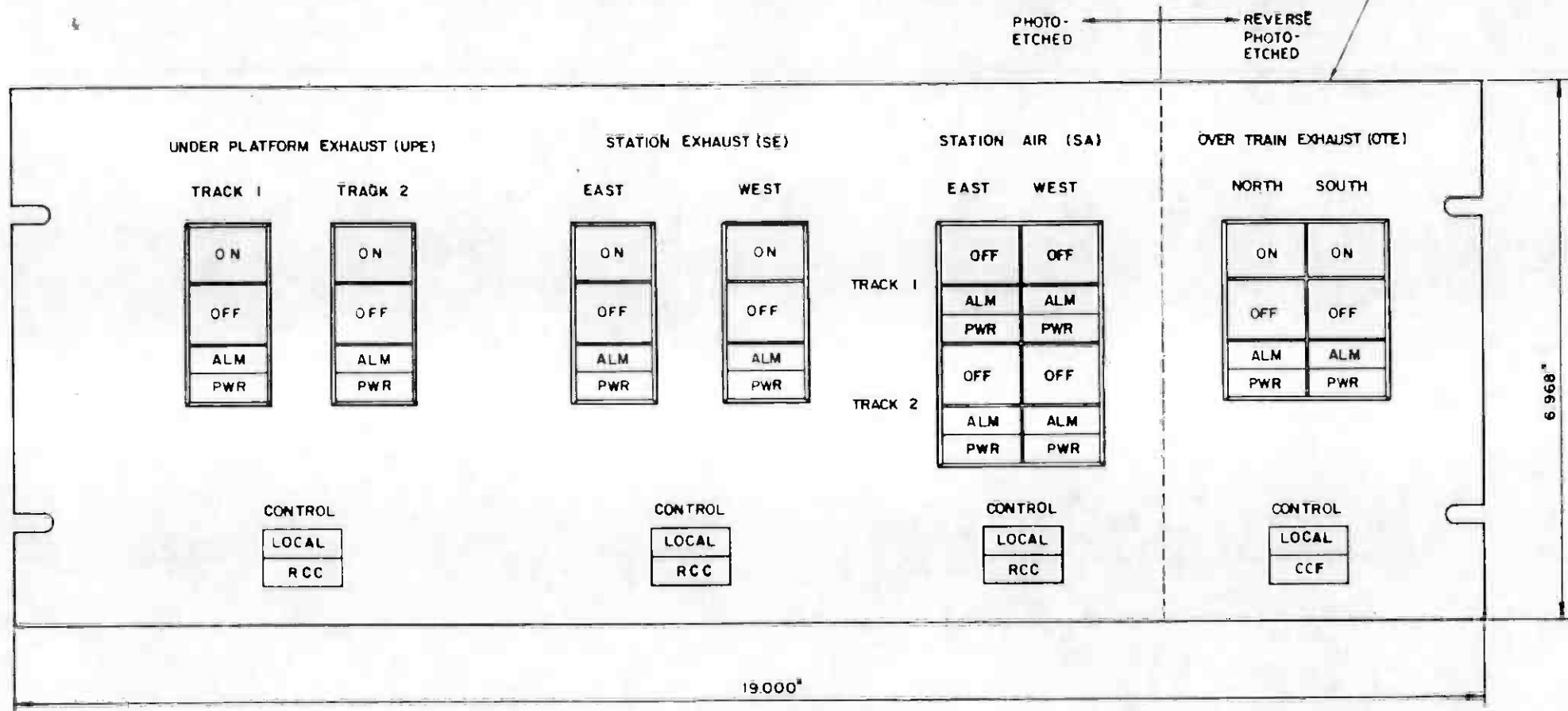
DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
UNDER PLATFORM EXHAUST (UPE),
STATION EXHAUST (SE) AND
STATION AIR (SA) CONTROL PANEL

CONTRACT NO.	A640
DRAWING NO.	N-057 C
REV.	0
SCALE	FULL SIZE
SHEET NO.	83

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

STANDARD EIA SIZE D PANEL - WITH
OPEN SLOTS ACCORDING TO EIA SIZE
AND LOCATION STANDARDS
MATERIAL - 0.188 ALUMINUM

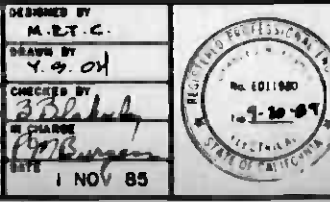


FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S)
AT 7TH / FLOWER STATION.

REV	DATE	BY	CHK	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY	M.E.T.C.
DRAWN BY	Y.G.OH
CHECKED BY	<i>[Signature]</i>
IN CHARGE	<i>[Signature]</i>
DATE	1 NOV 85



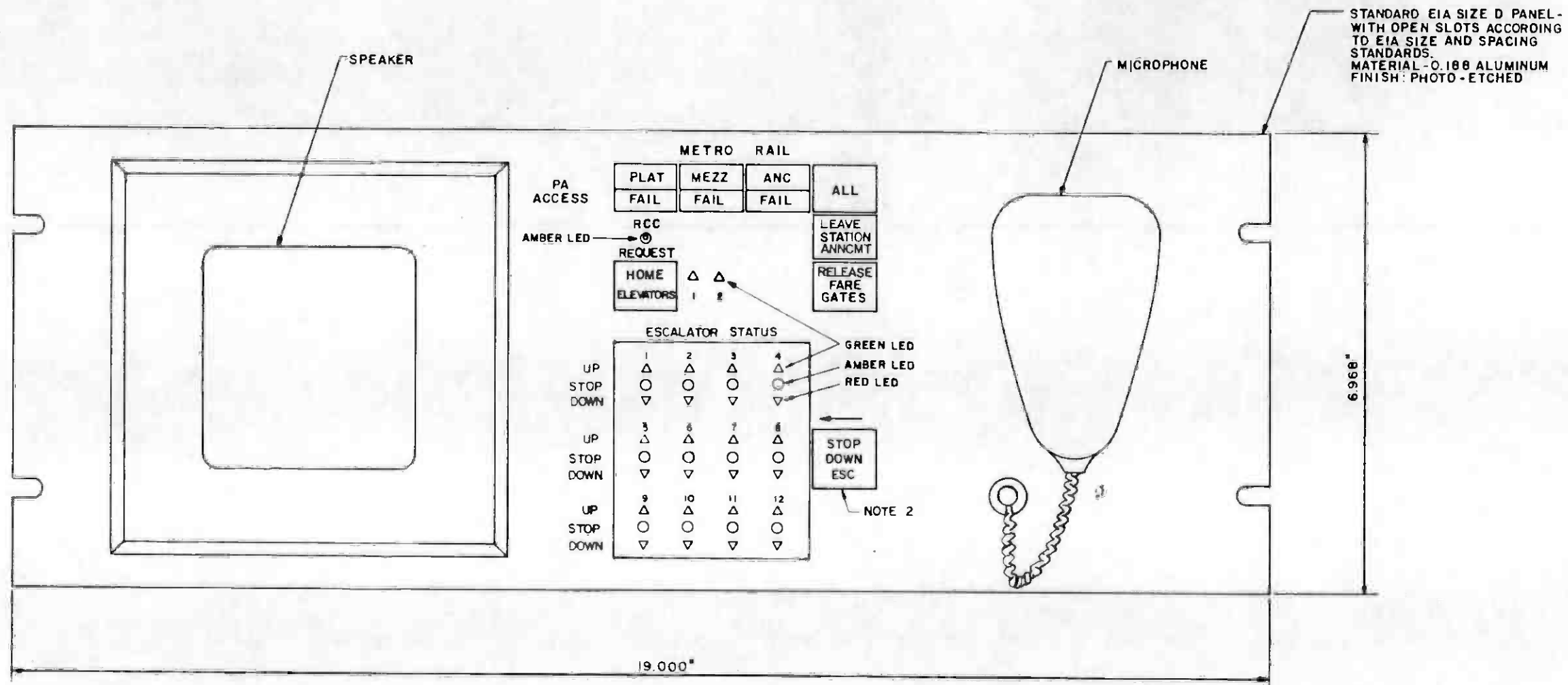
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

APPROVED: *[Signature]*

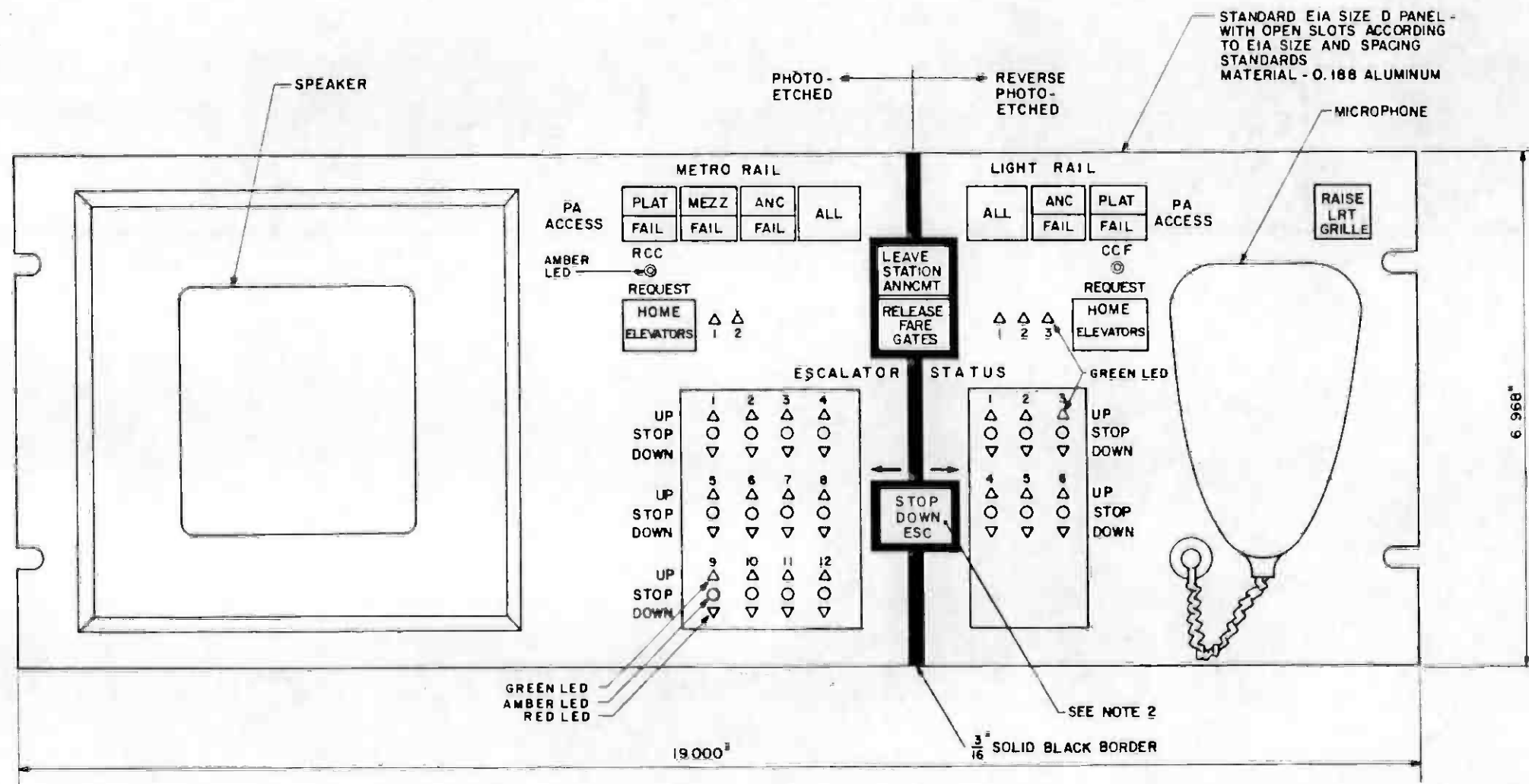
COMMUNICATIONS
UNDER PLATFORM EXHAUST (UPE),
STATION EXHAUST (SE) AND
STATION AIR (SA) CONTROL PANEL

CONTRACT NO.	A640
DRAWING NO.	N-257 C
SCALE	FULL SIZE
SHEET NO.	84



- NOTES:**
1. FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S) AND COMMAND POSTS (CP'S)
 2. "STOP DOWN ESC" ALSO ACTIVATES P.A. ANNOUNCEMENT.

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M.R.T.C.	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT		CONTRACT NO. A640	
GENERAL REVISION GENERAL REVISION SIGNATURE ISSUE		DRAWN BY <i>Eduardo Avenda</i> IN CHARGE <i>B. Blakely</i> DATE 29 SEP 86			DNJM/PBQD/KE/HWA GENERAL CONSULTANTS	DRAWING NO. N-058 C
REV. DATE BY SUB APP DESCRIPTION		SUBMITTED <i>Elfish</i>		COMMUNICATIONS PA CONTROL PANEL		SCALE FULL SIZE
		REGISTERED PROFESSIONAL ENGINEER No. 101190 1-12-84 ELECTRICAL STATE OF CALIFORNIA		APPROVED		SHEET NO. 85



NOTES:

- FOR USE IN EMERGENCY MANAGEMENT PANELS (EMP'S) AND COMMAND POSTS (CP'S) AT 7^{1/2} FLOWER STATION.
- "STOP DOWN ESC" ALSO ACTIVATES PA ANNOUNCEMENT.



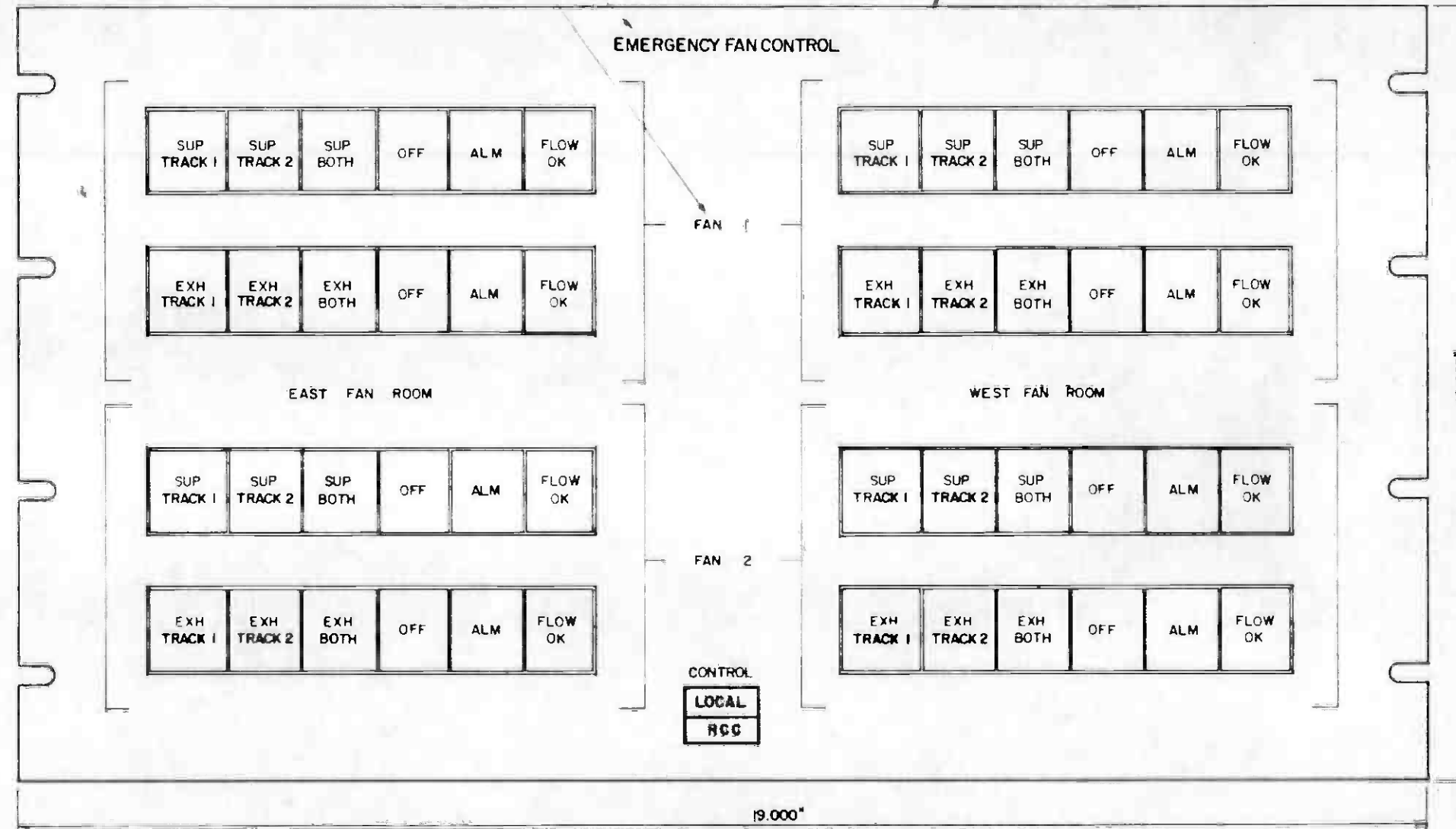
<p>THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.</p>	<p>DESIGNED BY MRTC</p> <p>DRAWN BY <i>Edwards Acosta</i></p> <p>CHECKED BY <i>B. B. [unclear]</i></p> <p>DATE 14 OCT 86</p>	<p>SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT</p> <p>METRO RAIL PROJECT</p> <p><i>Edwards Acosta</i></p>		<p>DMJM PBOD/KE/HWA</p> <p>GENERAL CONSULTANTS</p> <p>APPROVED</p>	<p>COMMUNICATIONS</p> <p>PA CONTROL PANEL</p>	<p>CONTRACT NO A640</p> <p>DRAWING NO N-258 A</p> <p>SCALE FULL SIZE</p> <p>SHEET NO 86</p>																								
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>REV</th> <th>DATE</th> <th>BY</th> <th>SUB</th> <th>APP</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	REV	DATE	BY	SUB	APP	DESCRIPTION							<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>REV</th> <th>DATE</th> <th>BY</th> <th>SUB</th> <th>APP</th> <th>DESCRIPTION</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	REV	DATE	BY	SUB	APP	DESCRIPTION							<p>SIGNATURE ISSUE</p>		<p>REVISIONS</p>		<p>APPROVED</p>
REV	DATE	BY	SUB	APP	DESCRIPTION																									
REV	DATE	BY	SUB	APP	DESCRIPTION																									

NOTES:

1. THIS LAYOUT APPLIES TO THE FOLLOWING EMP'S:
 CIVIC CENTER
 5TH & HILL
 7TH & FLOWER

187 AND 125" HIGH HELVETICA
 MEDIUM LETTERS - ETCHED INTO
 STEEL AND BLACK EPOXY FILLED.

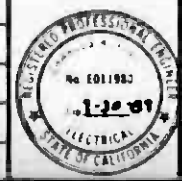
STANDARD EJA SIZE F PANEL - WITH OPEN SLOTS
 ACCORDING TO EIA SIZE AND LOCATION STANDARDS
 MATERIAL - 12 GA (1.04") COLD ROLLED STEEL
 FINISH - ENAMEL COATING TO MATCH FEDERAL STANDARD 596d COLOR NO 27722



REV	DATE	BY	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA

DESIGNED BY
A.R.T.C.
 DRAWN BY
[Signature]
 CHECKED BY
[Signature]
 IN CHARGE
[Signature]
 DATE
 24 OCT 85



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
 GENERAL CONSULTANTS

APPROVES
[Signature]

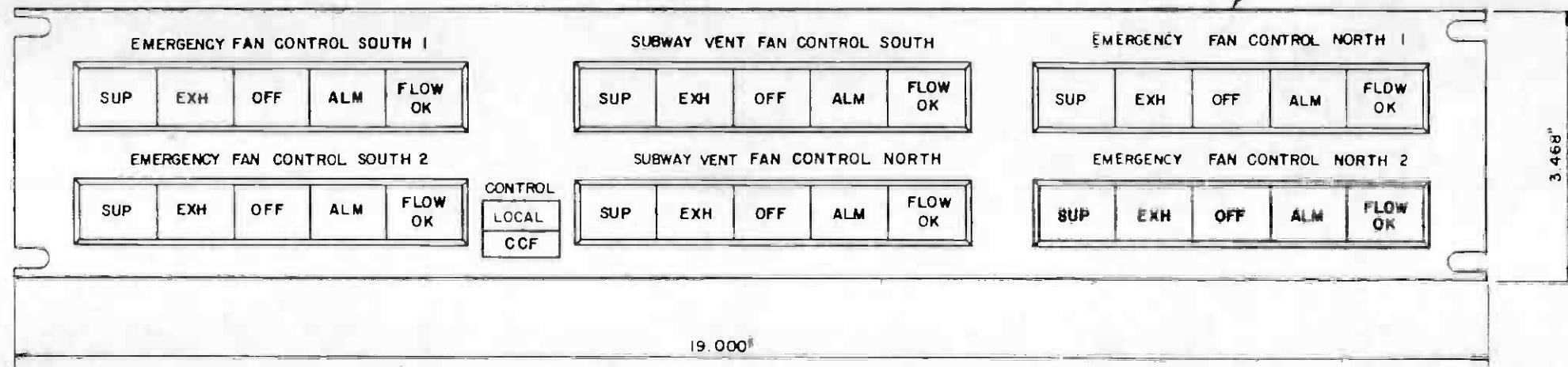
COMMUNICATIONS
EMERGENCY FAN CONTROL PANEL
CONFIGURATION 1

CONTRACT NO.	A640
DRAWING NO.	N-059 D
SCALE	FULL SIZE
SHEET NO.	87

NOTE :

1. THIS LAYOUT APPLIES TO THE FOLLOWING LOCATIONS:
7TH AND FLOWER.

STANDARD SIZE B PANEL WITH OPEN SLOTS
ACCORDING TO EIA SIZE AND LOCATION STANDARD
MATERIAL: 0.188 ALUMINUM.
FINISH - PHOTO-ETCHED

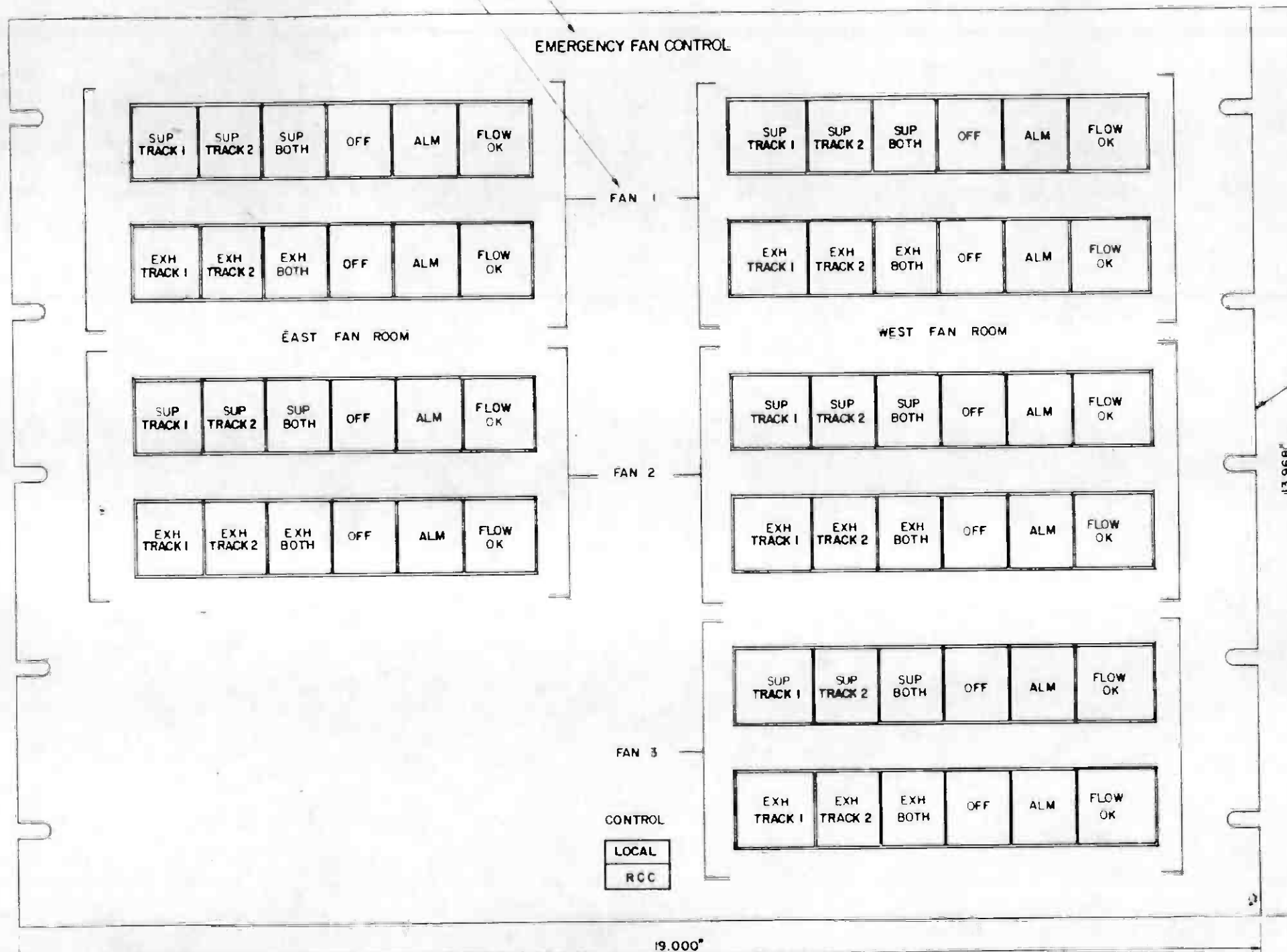


<p>THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TALENT OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.</p>										<p>DESIGNED BY MRTC</p>				<p>SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT</p>		<p>COMMUNICATIONS EMERGENCY FAN CONTROL PANEL LIGHT RAIL CONFIGURATION</p>		<p>CONTRACT NO. A640</p>	
										<p>DRAWING NO. N-259 A</p>		<p>REV. 0</p>							
										<p>SCALE FULL SIZE</p>		<p>SHEET NO. 88</p>							
<p>DESIGNED BY: <i>Edwards</i></p> <p>CHECKED BY: <i>B. Blakely</i></p> <p>IN CHARGE: <i>M. Burgin</i></p> <p>DATE: 5 AUG 86</p>										<p>DMJM, PBOD/KE/HWA GENERAL CONSULTANTS</p>		<p>APPROVED</p>		<p>SUBMITTED: <i>Edwards</i></p>					
REV	DATE	BY	TAG	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION								

.187" AND .125" HIGH HELVETICA MEDIUM LETTERS - ETCHED INTO STEEL AND BLACK EPOXY FILL

NOTES:

1. THIS LAYOUT APPLIES TO THE FOLLOWING EMP'S:
WILSHIRE / ALVARADO

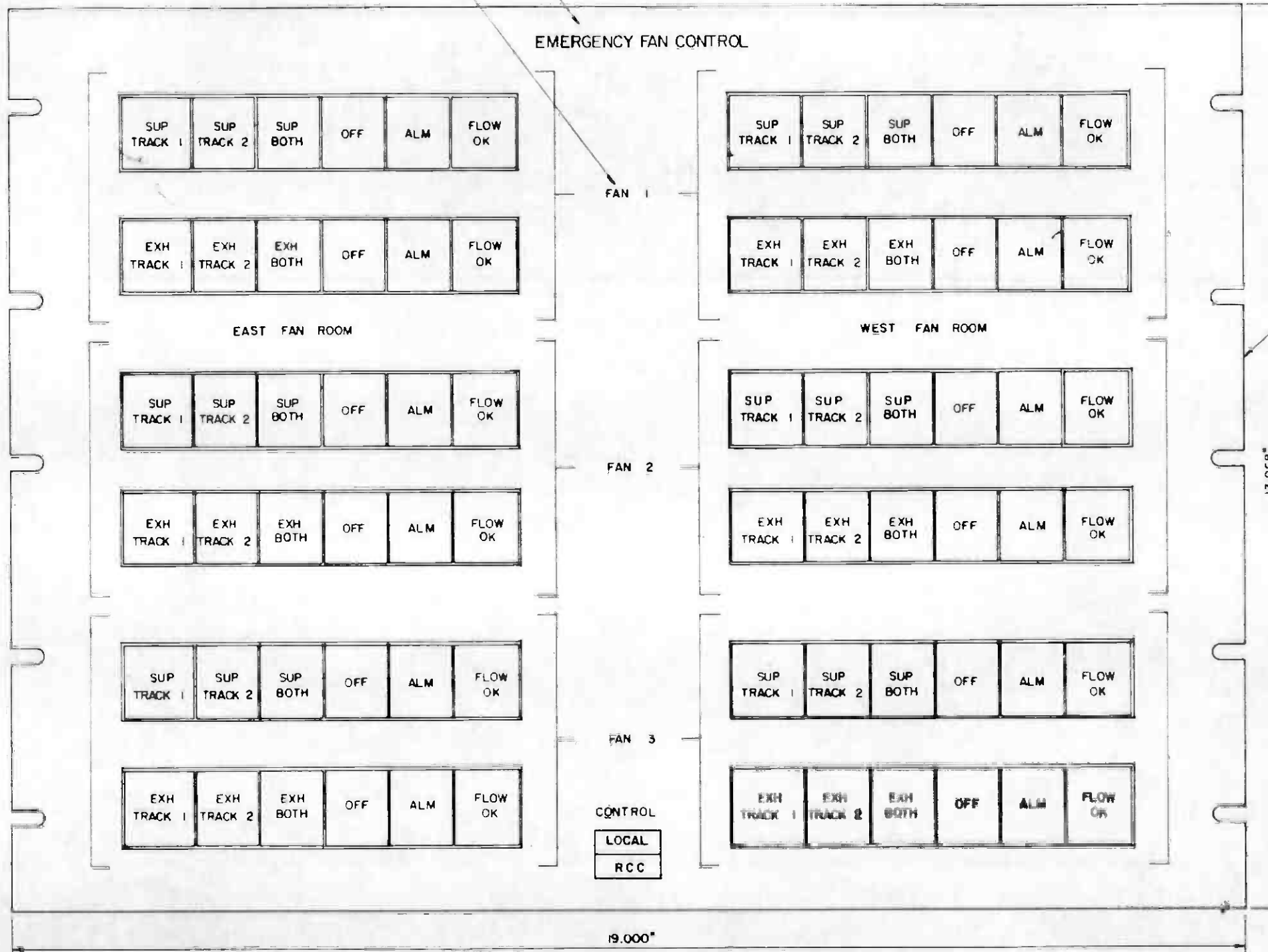


	THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.	DESIGNED BY M.E.T.C. DRAWN BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 2 OCT 85		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT	COMMUNICATIONS EMERGENCY FAN CONTROL PANEL CONFIGURATION 4	CONTRACT NO. A640 DRAWING NO. N-062 D REV. 0 SCALE FULL SIZE SHEET NO. 89																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>REV.</th> <th>DATE</th> <th>BY</th> <th>SUB.</th> <th>APP.</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REV.	DATE	BY	SUB.	APP.	DESCRIPTION													<table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>																			GENERAL REVISION GENERAL REVISION SIGNATURE ISSUE	SUBMITTED <i>[Signature]</i> APPROVED _____	DMJM/PBOD/KE/HWA GENERAL CONSULTANTS
REV.	DATE	BY	SUB.	APP.	DESCRIPTION																																			

.187" AND 125" HIGH HELVETICA
MEDIUM LETTERS - ETCHED
INTO STEEL AND BLACK
EPOXY FILLED

NOTES:

1. THIS LAYOUT APPLIES TO THE FOLLOWING EMP'S:
UNION STATION



STANDARD EIA SIZE H PANEL - WITH SLOTS
ACCORDING TO EIA SIZE AND LOCATION
STANDARDS. MATERIAL - 12 GA (.104")
COLD ROLLED STEEL, FINISH - ENAMEL
COATING TO MATCH FEDERAL STANDARD
595a COLOR NO. 27722.

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

DESIGNED BY
M.R.T.C.

DRAWN BY
[Signature]

CHECKED BY
[Signature]

IN CHARGE
[Signature]

DATE
23 OCT 85

REGISTERED PROFESSIONAL
No. 001190
10-9-80-87
ELECTRICAL
STATE OF CALIFORNIA

**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**

DMJM/PBOD/KE/HWA
GENERAL CONTRACTOR

APPROVED
[Signature]

**COMMUNICATIONS
EMERGENCY FAN CONTROL PANEL
CONFIGURATION 5**

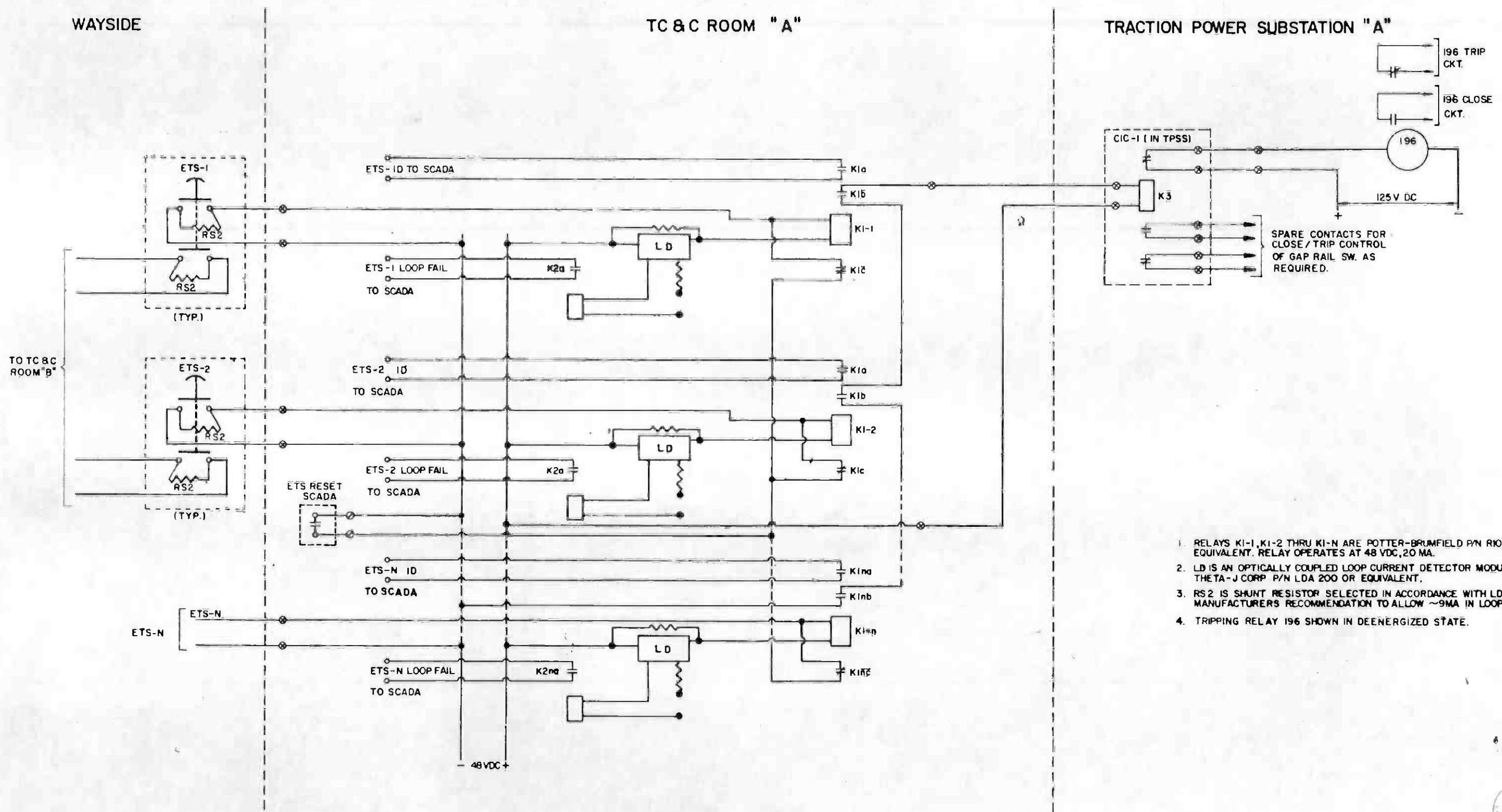
CONTRACT NO. A640
DRAWING NO. N-063 D
SCALE FULL SIZE
SHEET NO. 90



WAYSIDE

TC & C ROOM "A"

TRACTION POWER SUBSTATION "A"



1. RELAYS K1-1, K1-2 THRU K1-N ARE POTTER-BRUMFIELD P/N R10E1ZV25K OR EQUIVALENT. RELAY OPERATES AT 48 VDC, 20 MA.
2. LD IS AN OPTICALLY COUPLED LOOP CURRENT DETECTOR MODULE 1/2 OF THE TA-J CORP P/N LDA 200 OR EQUIVALENT.
3. RS2 IS SHUNT RESISTOR SELECTED IN ACCORDANCE WITH LD DEVICE MANUFACTURERS RECOMMENDATION TO ALLOW ~9MA IN LOOP TO OPERATE
4. TRIPPING RELAY 196 SHOWN IN DEENERGIZED STATE.



REV	DATE	BY	CHK	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY: M. R. T. C.
 CHECKED BY: [Signature]
 IN CHARGE: [Signature]
 DATE: 5 NOV 85

GENERAL REVISION
 SIGNATURE ISSUE

REGISTERED PROFESSIONAL ENGINEER
 M. R. T. C.
 No. 121180
 9-22-87
 STATE OF CALIFORNIA

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
 GENERAL COMBATANTS

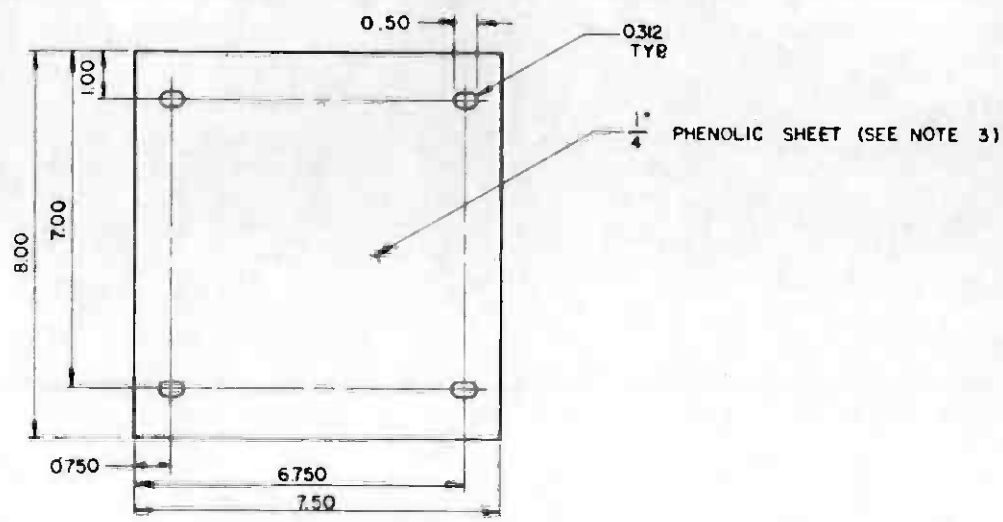
APPROVED: [Signature]

COMMUNICATIONS
 EMERGENCY TRIP SWITCH
 SCHEMATIC DIAGRAM

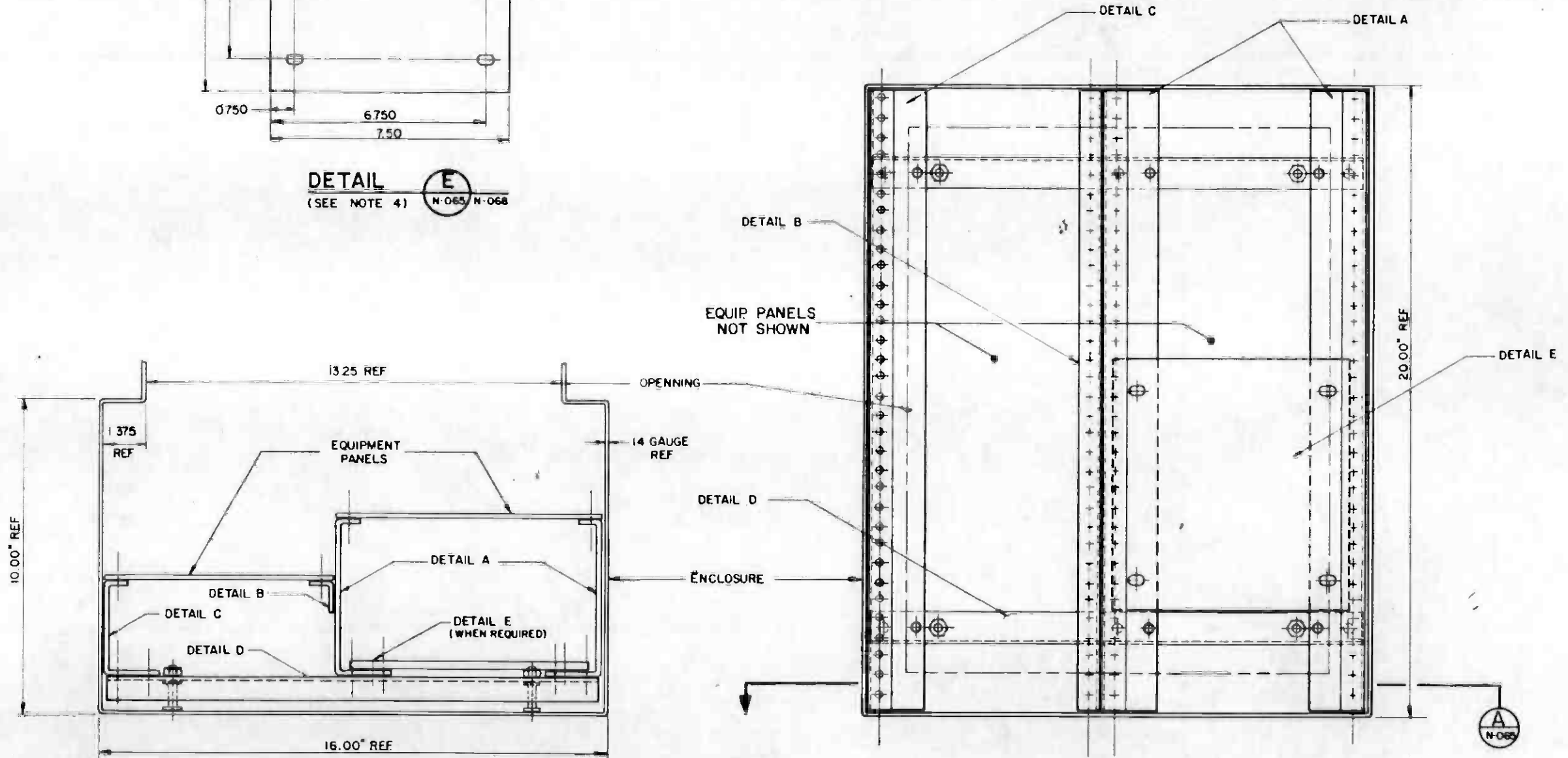
CONTRACT NO. A640
 DRAWING NO. N-064 B
 SCALE: NO SCALE
 SHEET NO. 91

NOTES:

1. DRILL AND TAP FOR NO 6-20 SCREWS USING EIA RS-310-B UNIVERSAL SPACING STANDARD.
2. PANEL MOUNTING HOLES AND/OR SLOTS SHALL BE SPACED PER EIA RS-310-B UNIVERSAL SPACING STANDARD.
3. WHEN ONLY ONE FIGURE C IS PROVIDED, THE PANEL SHALL BE DESIGNATED "DELUGE", WHEN TWO FIGURE C'S ARE PROVIDED, THE TOP FIGURE C SHALL BE DESIGNATED "DELUGE" AND THE BOTTOM FIGURE C SHALL BE DESIGNATED "OVERCAR DELUGE".
4. DETAIL E IS DESIGNED TO PROVIDE A MOUNTING FIXTURE FOR CONTRACTOR PROVIDED GAS TUBE PROTECTOR MODULES AND PROTECTORS, AND SHALL BE PROVIDED AT ALL BLUE LIGHT STATIONS (BLS) EXCEPT THOSE LOCATED IN A CROSSPASSAGE OR AT THE END OF A STATION PLATFORM.
5. SHEET SHALL BE GLASS EPOXY GRADE G-10.



DETAIL E
(SEE NOTE 4) N-065 N-068

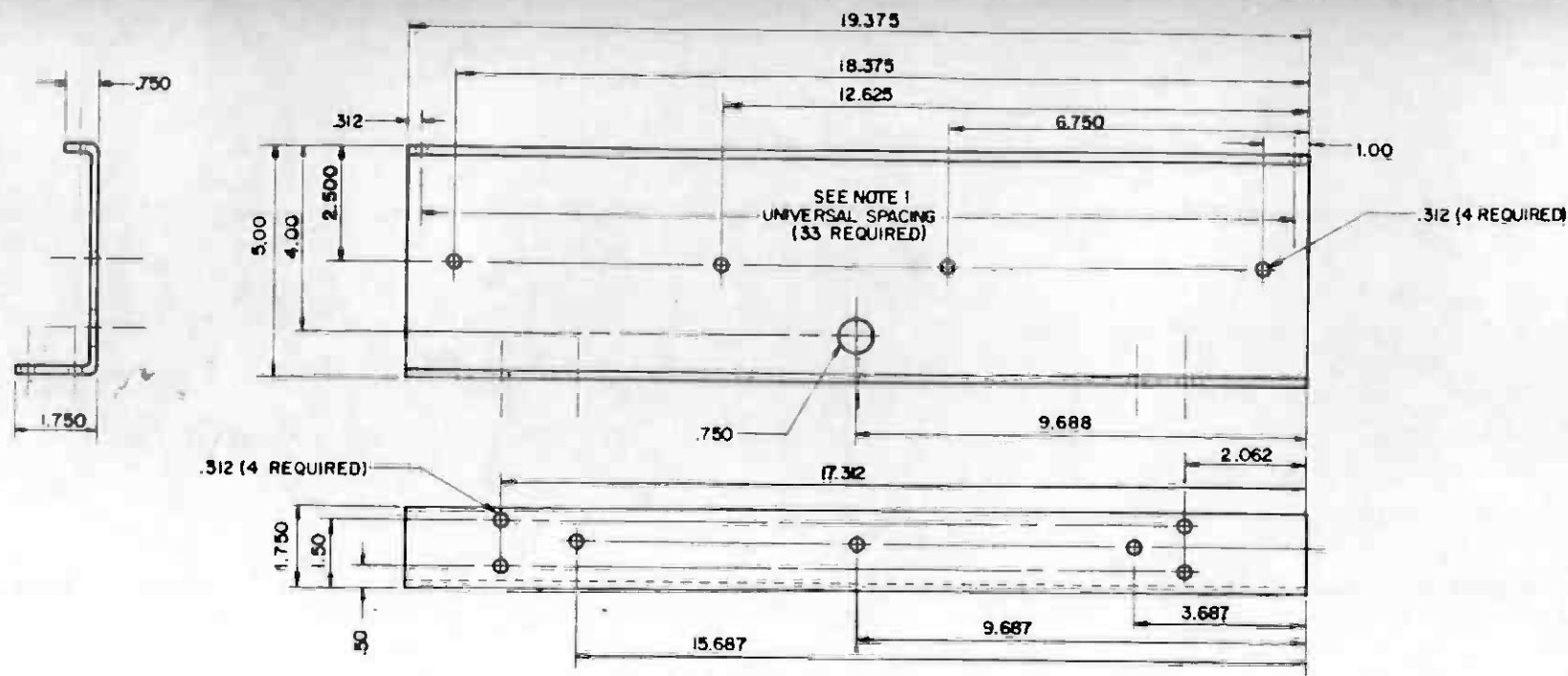


SECTION A
N-065

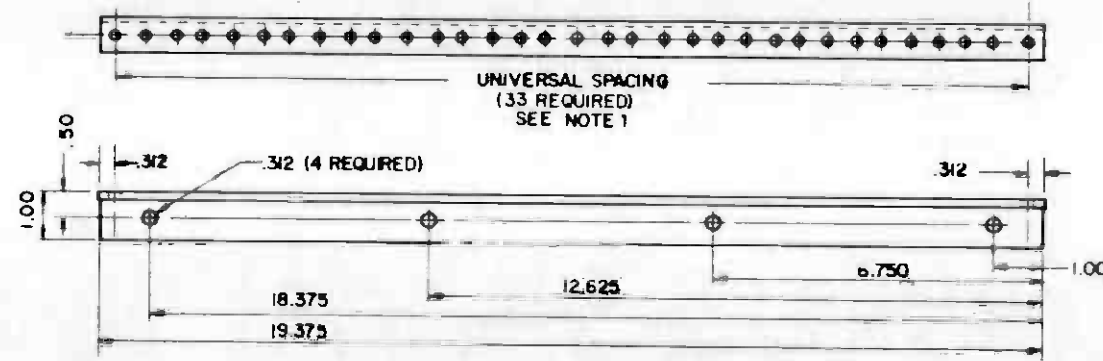
BLS CABINET



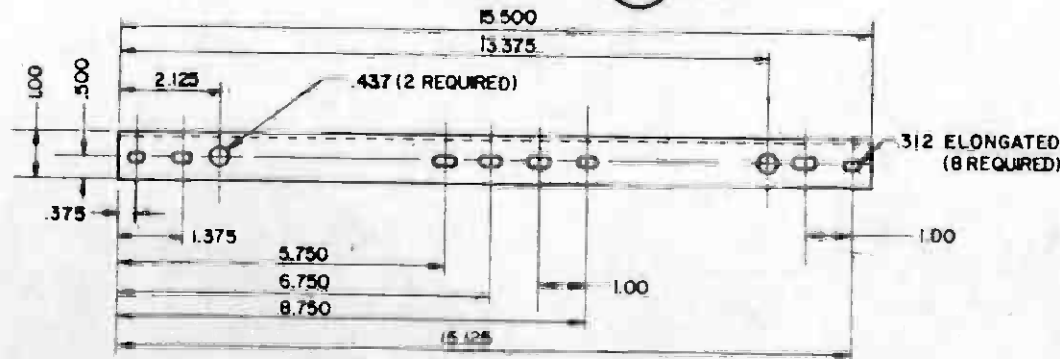
THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M.E.T.C. DRAWN BY C.E. Davel CHECKED BY B.B. Babuly DATE 20 NOV 85		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	COMMUNICATIONS BLUE LIGHT STATIONS (BLS) SHEET 1 OF 6	CONTRACT NO. A640 DRAWING NO. N-065 B 0 SCALE NO SCALE SHEET NO. 92
REV. DATE BY SUB. APP. DESCRIPTION	REV. DATE BY SUB. APP. DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE		DMJM/PBDD/KE/HWA GENERAL CONSULTANTS	APPROVED: <i>[Signature]</i>	



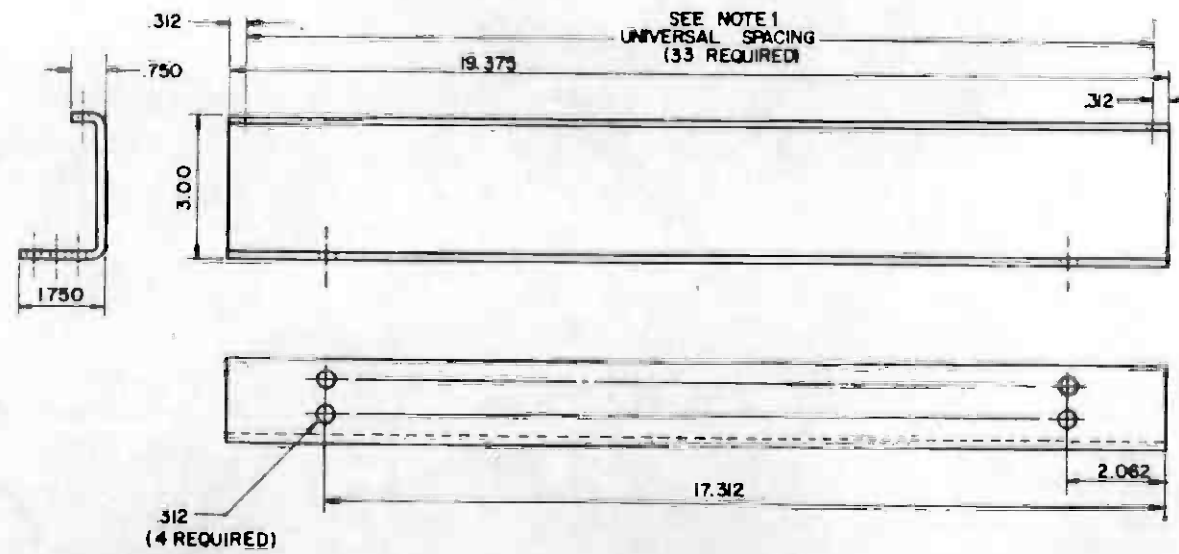
DETAIL A
N-066 N-065



DETAIL B
N-066 N-065



DETAIL D
N-066 N-065



DETAIL C
N-066 N-065



REV.	DATE	BY	CHK.	APP.	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.					

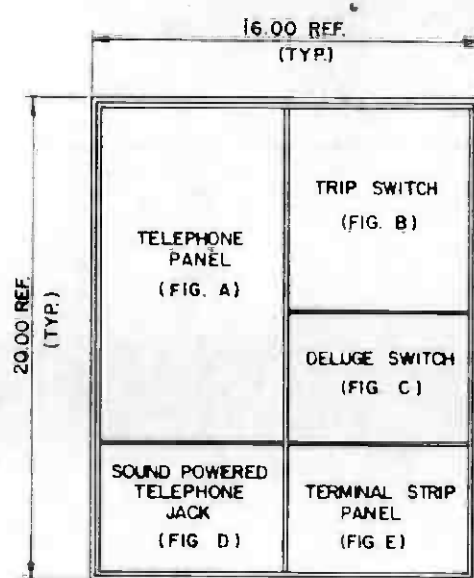
DESIGNED BY M. G. T. C.	
DRAWN BY M. J. H.	
CHECKED BY S. S.	
DATE 20 NOV 85	

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

SUBMITTED *enid*

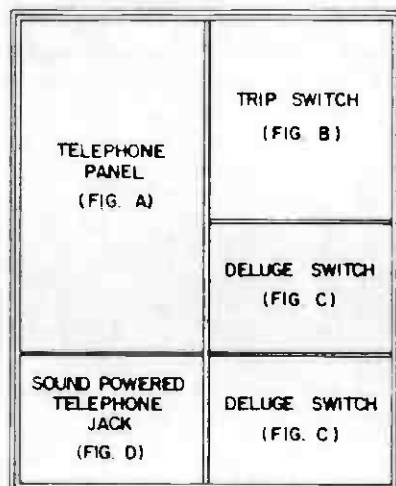
COMMUNICATIONS
BLUE LIGHT STATIONS (BLS)
 SHEET 2 OF 6

CONTRACT NO.	A640
DRAWING NO.	N-066 B 0
SCALE	1/2" = 1"
SHEET NO.	93

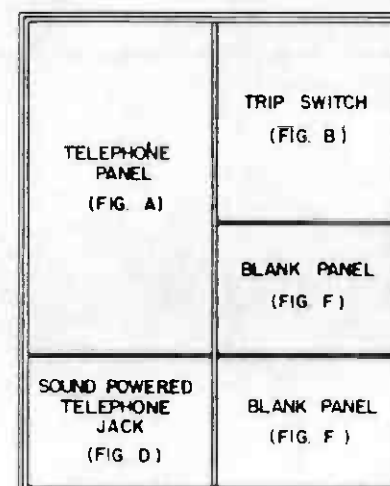


CONFIGURATION 1
BLS LOCATED AT STATION
END OF PLATFORM

SEE NOTE 3



CONFIGURATION 2
BLS LOCATED AT STATION
END OF PLATFORM AT
TWO LEVEL STATION
(OVER - UNDER)



CONFIGURATION 3
BLS LOCATED IN CROSS-PASSAGES

REFER TO DWG. N-065 FOR NOTES.
REFER TO DWGS N-065 AND N-066
FOR FIGURE DETAILS.



REV	DATE	BY	CHK	APP	DESCRIPTION

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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
M. R. T. C.
DRAWN BY
[Signature]
CHECKED BY
[Signature]
IN CHARGE
[Signature]
DATE
20 NOV 85



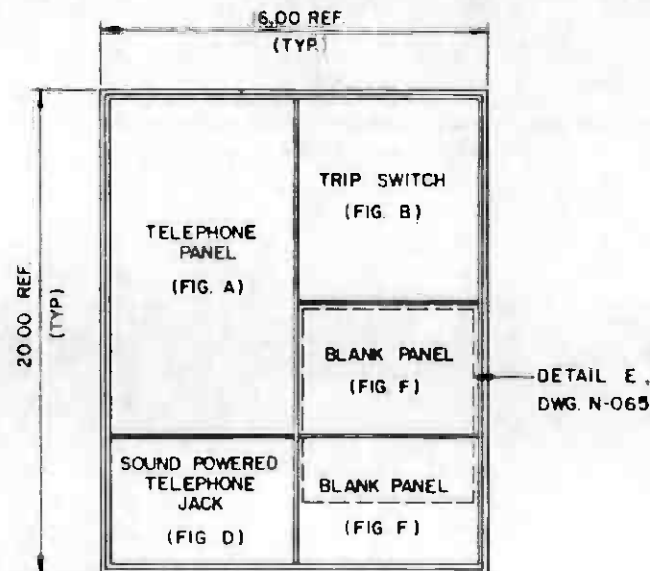
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

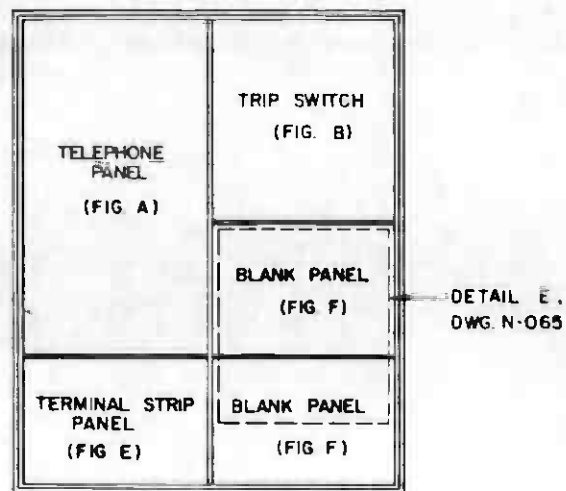
SUBMITTED *[Signature]* APPROVED _____

COMMUNICATIONS
BLUE LIGHT STATIONS (BLS)
SHEET 3 OF 6

CONTRACT NO.	A640
DRAWING NO.	N-067C
REV.	0
SCALE	1/4" = 1'-0"
SHEET NO.	94



CONFIGURATION 4
BLS LOCATED IN TUNNEL THAT
IS NOT INSIDE A CROSS-PASSAGE



CONFIGURATION 5
BLS LOCATED IN YARD AREA

REFER TO DWG. N-065 FOR NOTES.
REFER TO DWGS. N-065 AND N-066
FOR FIGURE DETAILS.



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				GENERAL REVISION SIGNATURE ISSUE	DMJM/PBOD/KE/HWA GENERAL CONSULTANT APPROVED: <i>Clb ...</i>																									

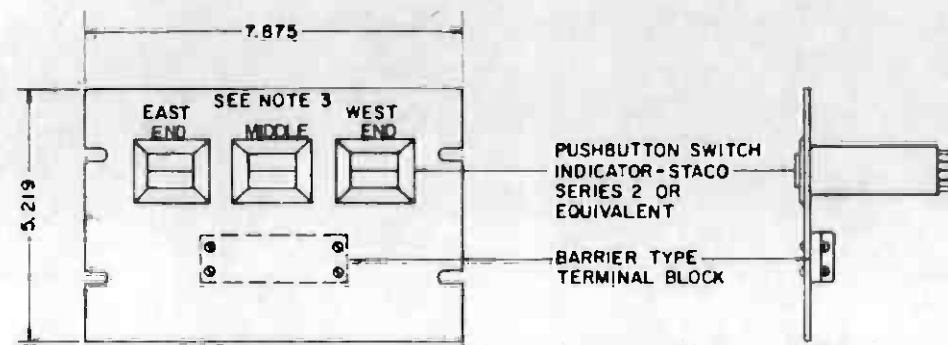


FIGURE C
(SEE NOTE 2)

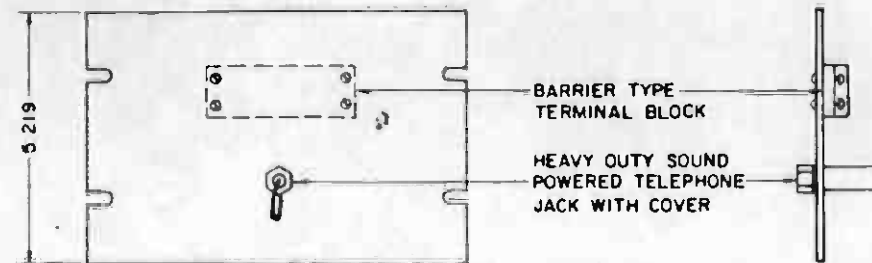


FIGURE D
(SEE NOTE 2)

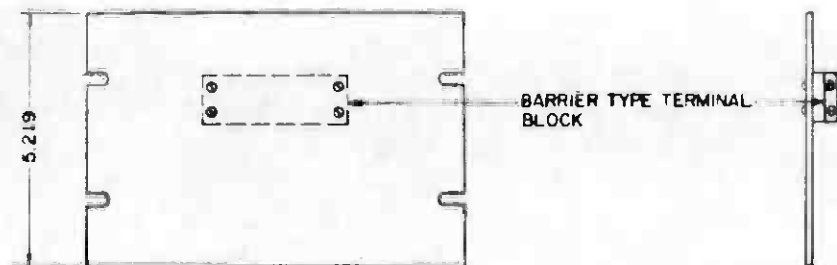


FIGURE E
(SEE NOTE 2)

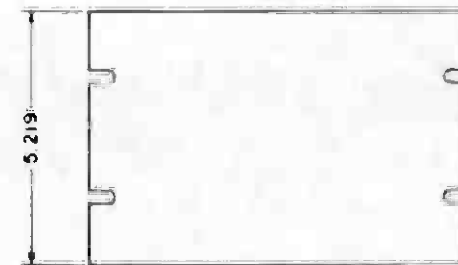


FIGURE F
(SEE NOTE 2)

REFER TO DWG. N-065 FOR NOTES.
REFER TO DWGS. N-065 AND N-066
FOR FIGURE DETAILS.



REV.	DATE	BY	CHK	APP	DESCRIPTION

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DESIGNED BY
M. R. T. C.

DRAWN BY
C. S. D.

CHECKED BY
B. Blahut

IN CHARGE
R. M. D.

DATE
20 NOV 85

GENERAL REVISION

SIGNATURE ISSUE

REV.	DATE	BY	CHK.	APP.	DESCRIPTION

DESIGNED BY
M. R. T. C.

DRAWN BY
C. S. D.

CHECKED BY
B. Blahut

IN CHARGE
R. M. D.

DATE
20 NOV 85



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBOD/KE/HWA
GENERAL CONTRACTORS

APPROVES

COMMUNICATIONS
BLUE LIGHT STATIONS (BLS)
SHEET 5 OF 6

CONTRACT NO.	A640
DRAWING NO.	N-069 B 0
SCALE	HALF SIZE
SHEET NO.	96

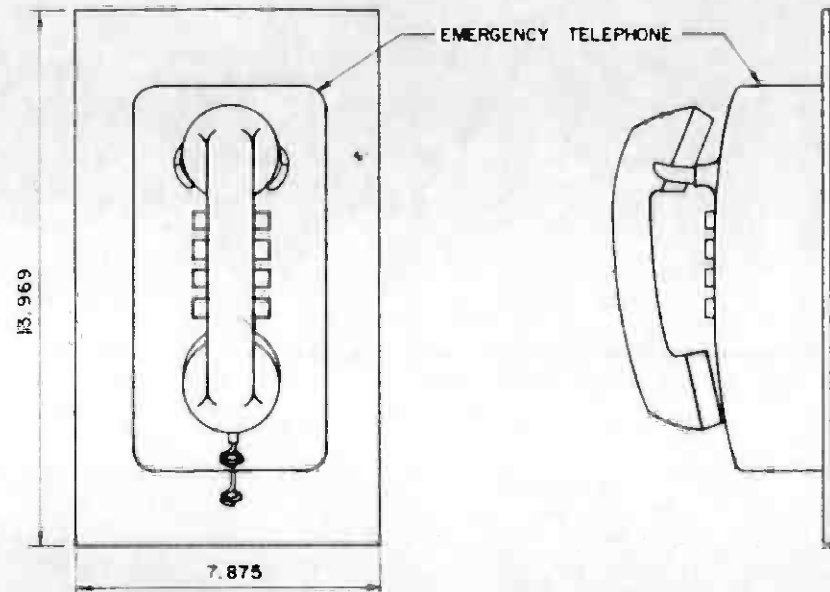


FIGURE A
(SEE NOTE 2)

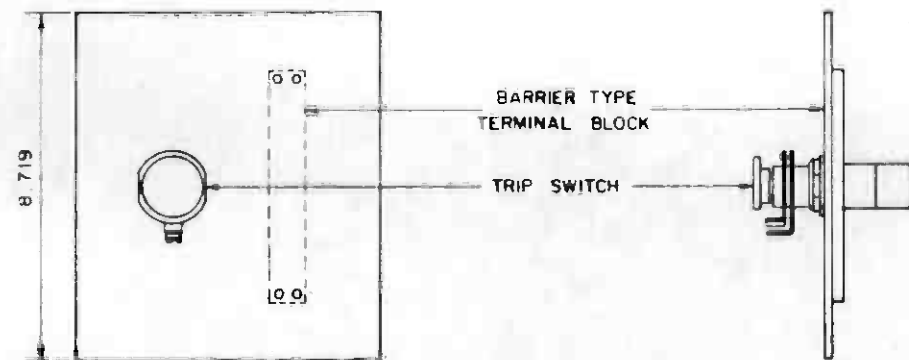


FIGURE B
(SEE NOTE 2)

REFER TO DWG N-065 FOR NOTES.
REFER TO DWGS. N-065 AND N-066
FOR FIGURE DETAILS.



REV	DATE	BY	SUB	APP	DESCRIPTION

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DESIGNED BY
M.R.T.C.
DRAWN BY
[Signature]
CHECKED BY
[Signature]
IN CHARGE
[Signature]
DATE
20 NOV 85



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

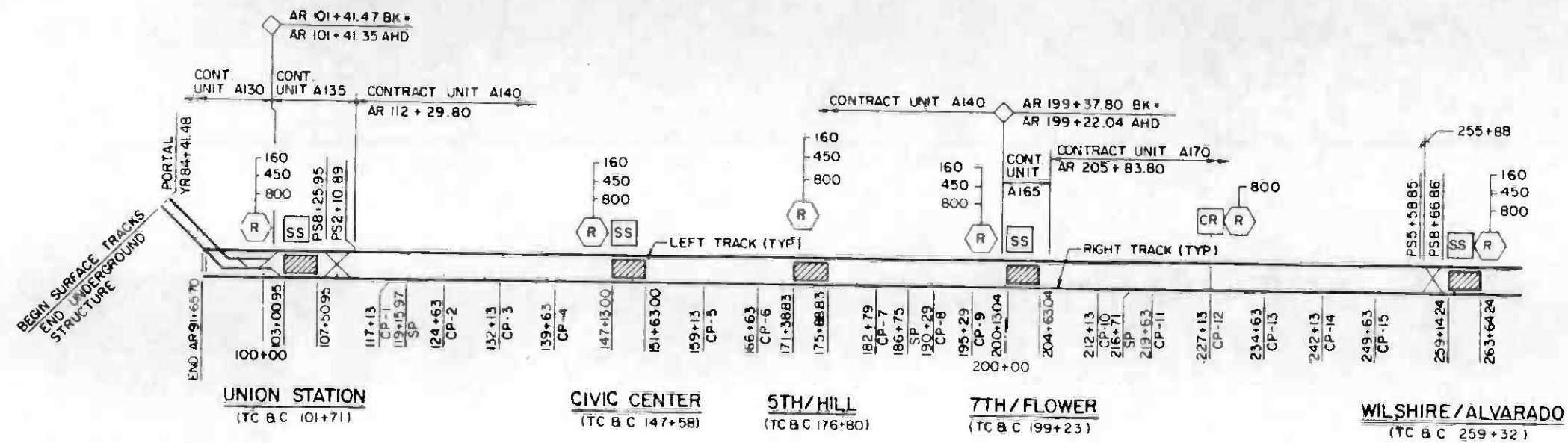
DMJM/PSOD/KE/HWA
GENERAL CONSULTANTS

APPROVED: *[Signature]*



COMMUNICATIONS
BLUE LIGHT STATIONS (BLS)
SHEET 6 OF 6

CONTRACT NO. A640	
DRAWING NO. N-070 B	REV. 0
SCALE AS NOTED	
SHEET NO. 97	



LEGEND:

- PLATFORM (TYP)
 - TRACTION POWER STATION
 - TRAIN CONTROL / COMM. FACILITIES WHEN COMBINED WITH MID TUNNEL VENTILATION STRUCTURES
 - CP CROSS PASSAGE
 - SP SUMP PUMP
 - COMM. ROOM LOCATED ADJACENT TO CP
 - RADIO BASE / REPEATER STATION LOCATION SHOWING FREQUENCIES
- XXX
- 160 • 160 - 174 MHZ
 - 450 • 450 - 512 MHZ
 - 800 • 800 - 860 MHZ



REV	DATE	BY	SUB.	APP.	DESCRIPTION

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REV	DATE	BY	SUB.	APP.	DESCRIPTION

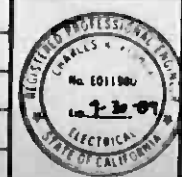
DESIGNED BY
MRTC

DRAWN BY
[Signature]

CHECKED BY
[Signature]

IN CHARGE
[Signature]

DATE
24 OCT 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

ATO

DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

SUBMITTED *[Signature]*

APPROVED

COMMUNICATIONS
TC & C ROOM AND RADIO BASE STATION
LOCATIONS

CONTRACT NO	A640	
DRAWING NO	N-273 B	REV 0
SCALE	1" = 1000'	
SHEET NO	98	

IDENTIFICATION CONTROL PANEL

RUN NUMBER	DESTINATION CODE	
0468	NORTH HOLLYWOOD	
07122	4	3
SADGE NUMBER	TRAIN LENGTH	PERFORMANCE LEVEL

1	2	3
4	5	6
7	8	9
ENT	0	CL



REV.	DATE	BY	CHK.	APP.	DESCRIPTION

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DESIGNED BY <i>Prater</i>		DRAWN BY <i>Prater</i>
CHECKED BY <i>B. Blaney</i>		
IN CHARGE <i>Blaney</i>		
DATE 13 FEB 85		

SIGNATURE ISSUE

REV.	DATE	BY	CHK.	APP.	DESCRIPTION
A	11/96				

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

SUBMITTED *Cliff*

DMJM/PBQD/KE/HWA
A JOINT VENTURE
 GENERAL CONSULTANTS
 APPROVED _____

COMMUNICATIONS
TRAIN IDENTIFICATION
CONTROL PANEL

CONTRACT NO. A640	
DRAWING NO. N-074 A	REV. 0
SCALE FULL SIZE	
SHEET NO. 99	

NOTE:

1. ALL VEHICLE BORNE EQUIPMENT SHALL BE INSTALLED BY CONTRACT A650.

CONTRACT A640
INCLUDES WIRING TO RADIO AND WIRING CONNECTIONS.

CONTRACT DEMARCATION LINE

CONTRACT A650

RADIO ANTENNA RADOME

RADIO ANTENNA

FUTURE RADOME

FUTURE ANTENNA

TOP OF VEHICLE ROOF

CONTRACT A650

CONTRACT DEMARCATION LINE

CONTRACT A640
INCLUDES WIRING TO ANTENNA, TO CCU AND WIRING CONNECTIONS.

STANDARD EIA HOLE DIAMETER AND HOLE SPACING

19" WIDE

10" HIGH (MIN.) - SPACE FOR TWO RADIOS

13" DEEP (MAX.)

RADIO ANTENNA MOUNT

RADIO

FUTURE RADIO

RADIO MOUNT

INSIDE FACE OF OUTSIDE WALL OF VEHICLE

CONTRACT A650

CONTRACT DEMARCATION LINE

CONTRACT A640
INCLUDES WIRING TO CCU AND ELSEWHERE AND CONNECTIONS.

TICU MOUNTED IN VEHICLE SIDE WALL, ABOVE AND TO THE LEFT OF CONSOLE, BUT WITHIN EASY REACH OF SEATED OPERATOR.

TRAIN IDENTIFICATION CONTROL UNIT MOUNT



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
[Signature]
DRAWN BY
[Signature]
CHECKED BY
[Signature]
IN CHARGE
[Signature]
DATE
21 JAN 85



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
PASSENGER VEHICLE
MECHANICAL INTERFACE

CONTRACT NO
A640
DRAWING NO
N-095 A REV
0
SCALE
NO SCALE
SHEET NO
100

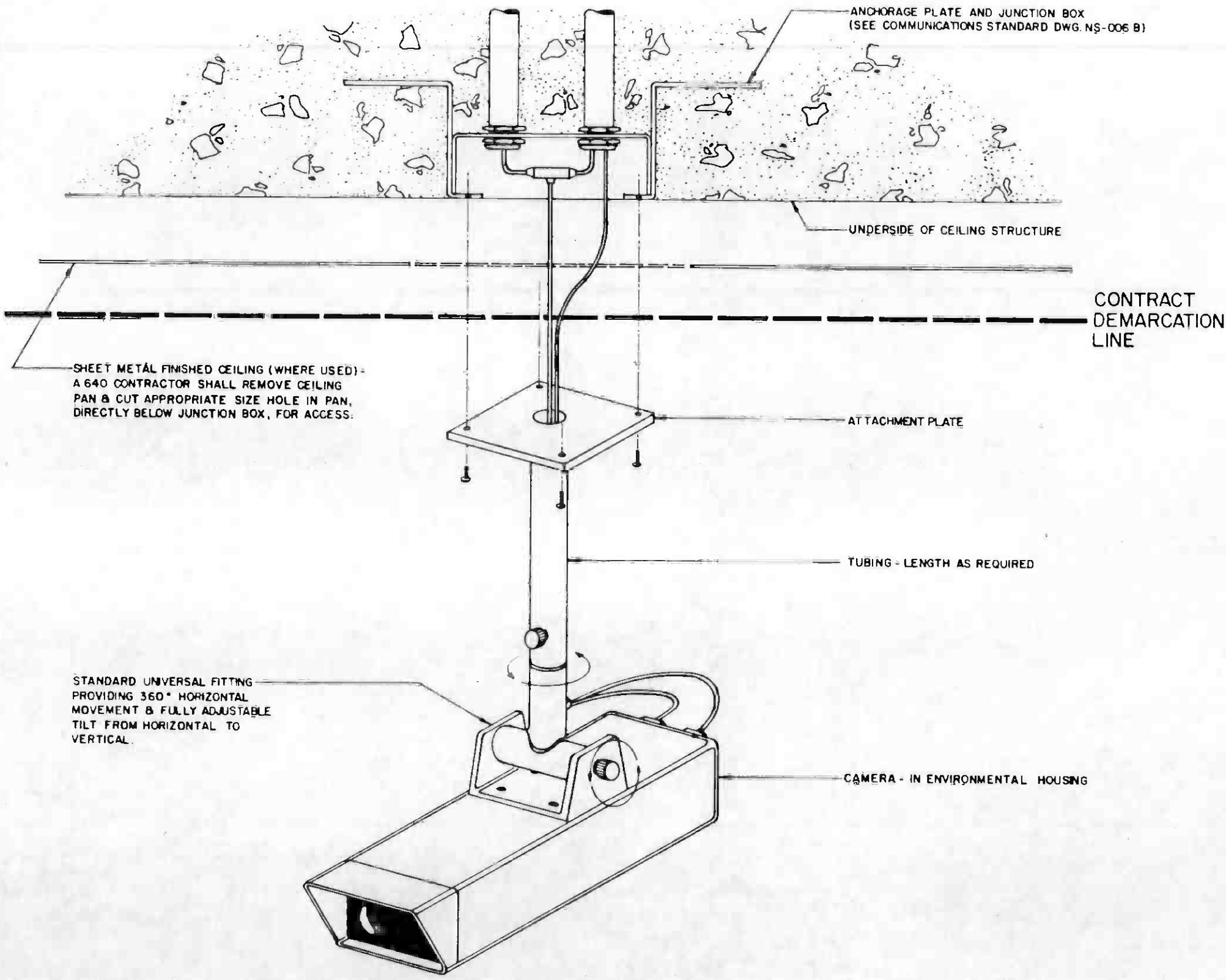
REV	DATE	BY	SUB	APP	DESCRIPTION

SUBMITTED *[Signature]* APPROVED

FACILITIES
CONTRACT
A 000

CONTRACT
A 640

INCLUDES COAXIAL
CABLE, OTHER WIRES
IN CONDUIT AND
CONNECTIONS



HALF
SIZE

REV.	DATE	BY	SUB	APP	DESCRIPTION

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DESIGNED BY
[Signature]

DRAWN BY
[Signature]

CHECKED BY
[Signature]

IN CHARGE
[Signature]

DATE
30 DEC 85

SIGNATURE ISSUE

REGISTERED PROFESSIONAL ENGINEER
No. 80119D
10.1.85-89
ELECTRICAL
STATE OF CALIFORNIA

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

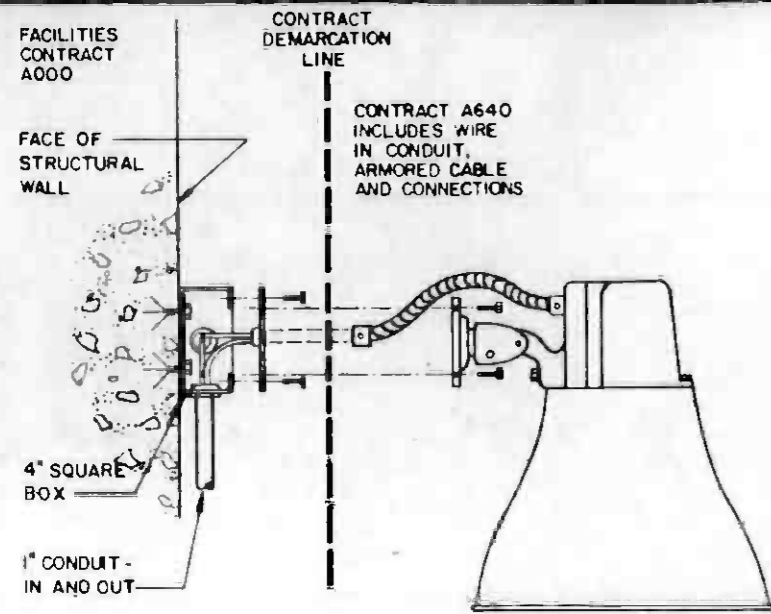
DMJM/PBDD/KE/HWA
GENERAL CONSULTANTS

SUBMITTED *[Signature]*

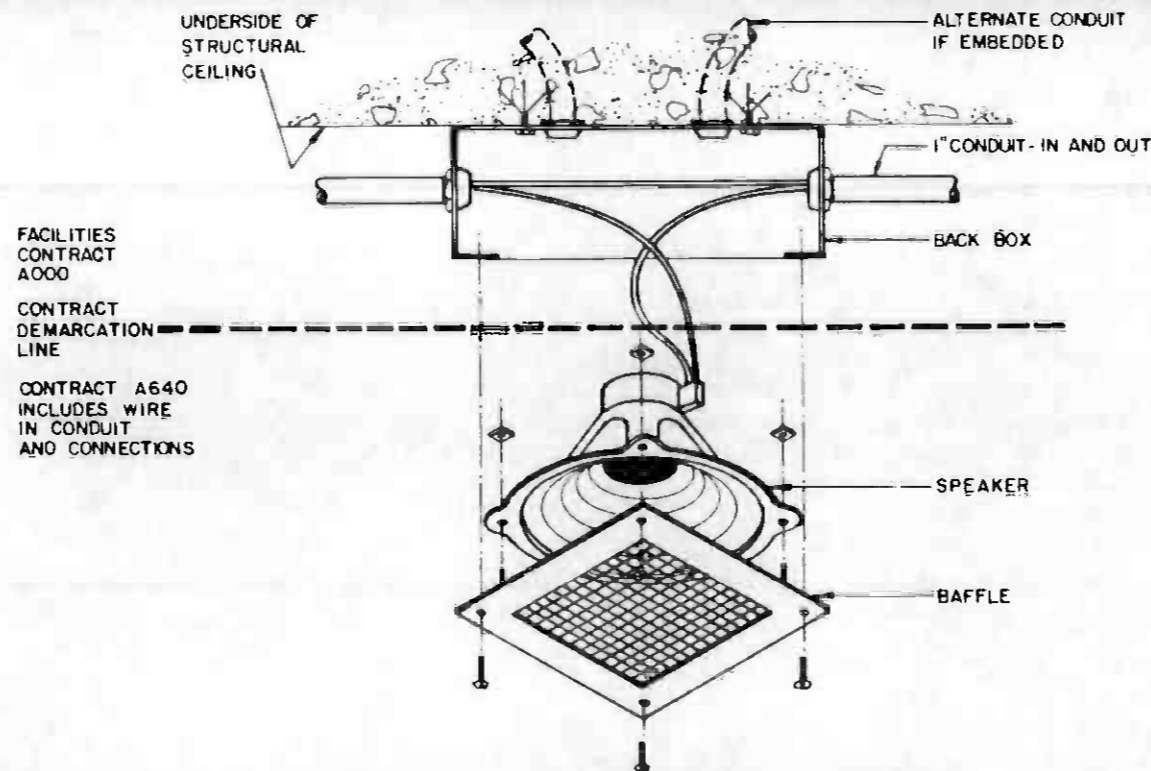
APPROVED

COMMUNICATIONS
CLOSED CIRCUIT TELEVISION (CCTV)
CAMERA INTERFACE

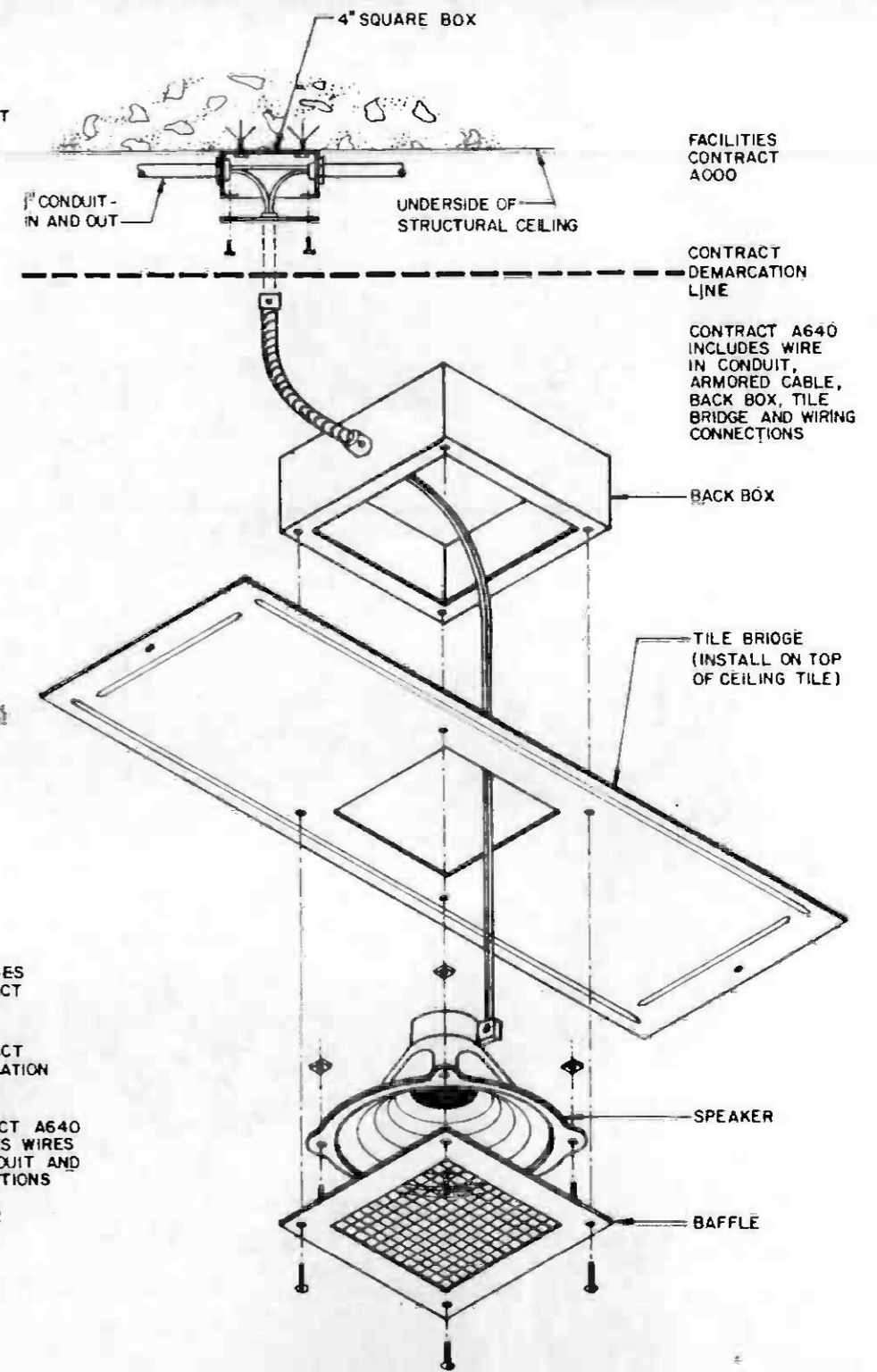
CONTRACT NO A640	REV 0
DRAWING NO N-100 A	
SCALE NO SCALE	
SHEET NO 101	



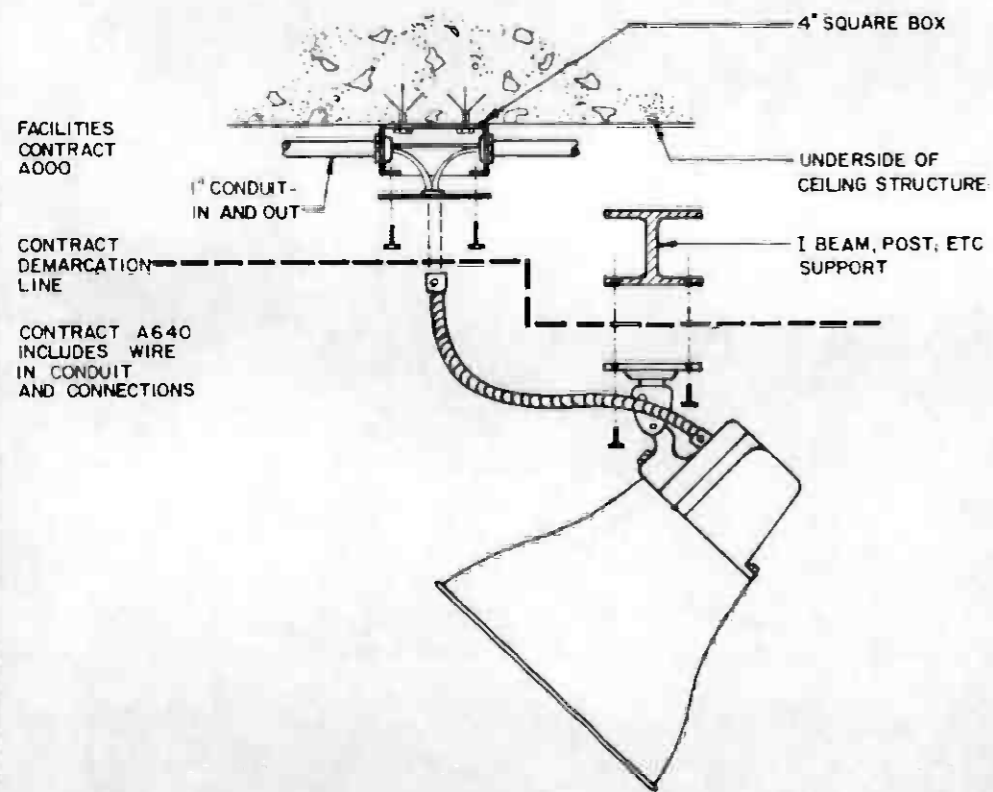
HORN MOUNT
FIGURE 1



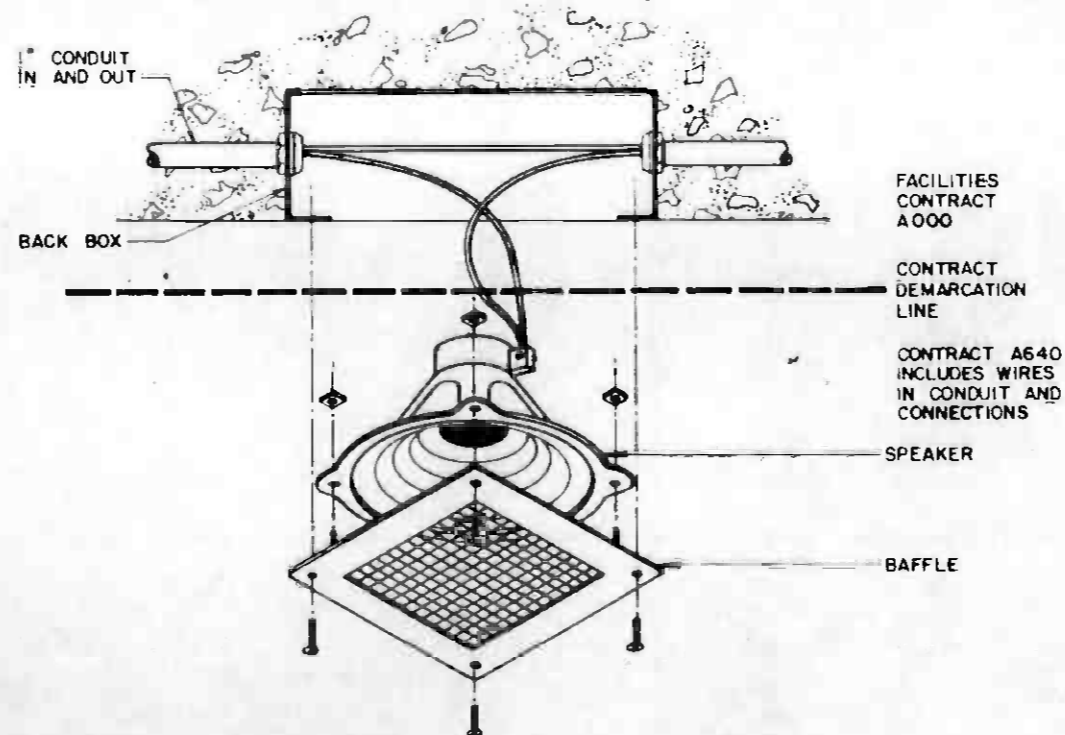
SURFACE MOUNT - SQUARE BAFFLE
FIGURE 3



SUSPENDED CEILING MOUNT
FIGURE 5



ALTERNATE HORN MOUNT
FIGURE 2



RECESSED MOUNT - SQUARE BAFFLE
FIGURE 4

REV. DATE BY SUB. APP. DESCRIPTION		REV. DATE BY SUB. APP. DESCRIPTION	

DESIGNED BY
Tralen

DRAWN BY
Tralen

CHECKED BY
Tralen

IN CHARGE
Tralen

DATE
6 JAN 86

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

APPROVED
Tralen

COMMUNICATIONS
PUBLIC ADDRESS SPEAKER
INTERFACE
SHEET 1 OF 2

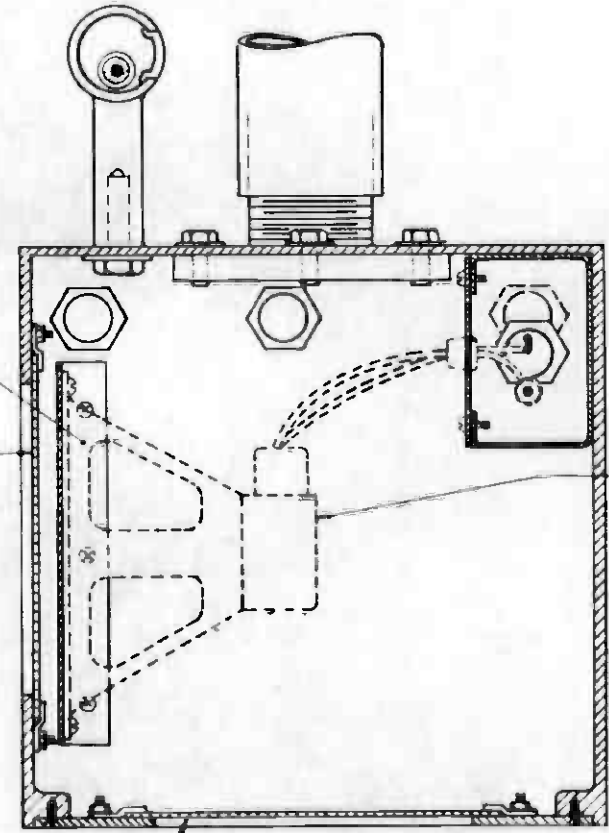
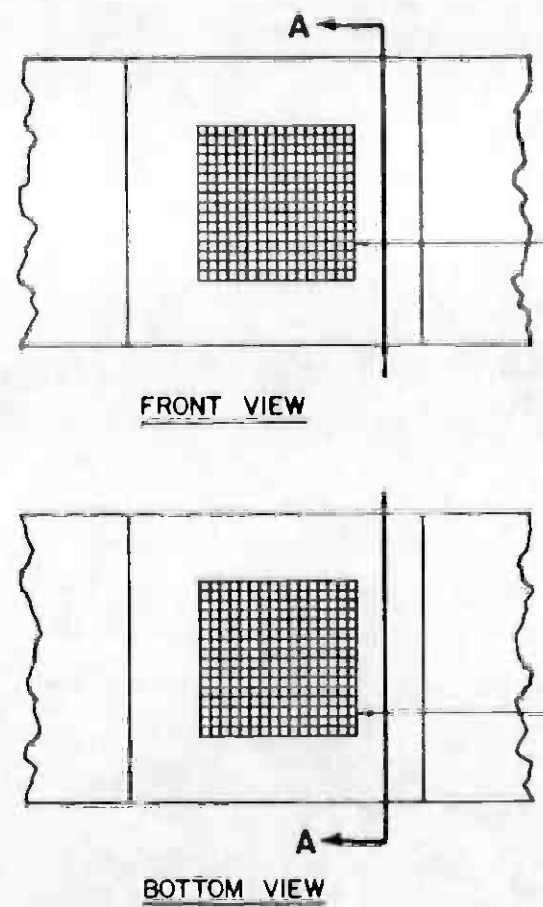
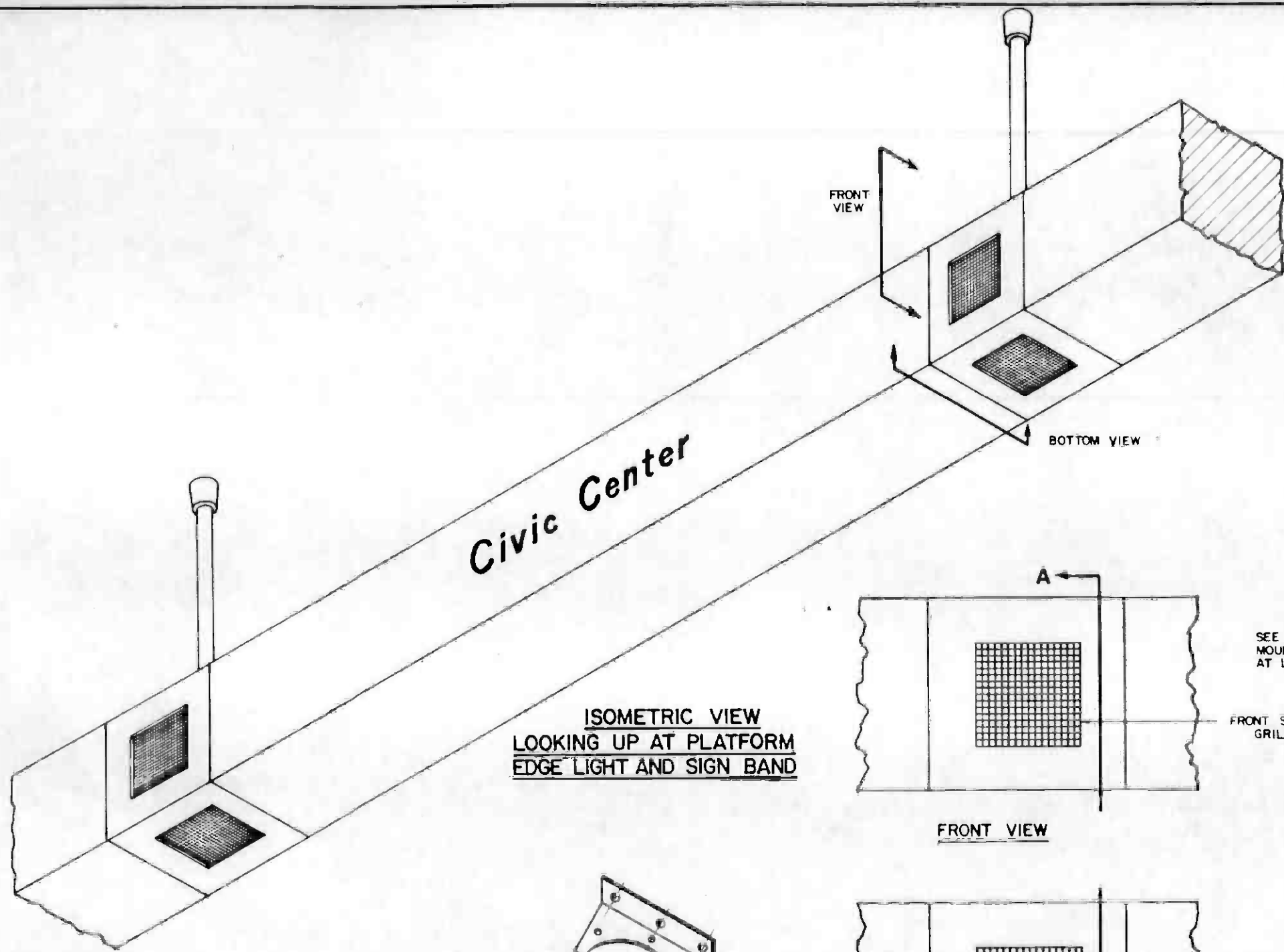
CONTRACT NO.
A640

DRAWING NO.
N-101 A

SCALE
NO SCALE

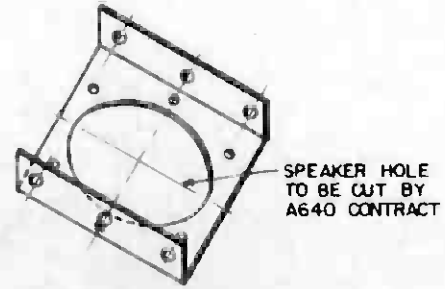
SHEET NO.
102





EQUIPMENT IN DOTTED LINES PROVIDED BY A640 CONTRACT, INCLUDING WIRES AND CONNECTIONS.

ALL OTHER COMPONENTS OF PLATFORM EDGE LIGHT AND SIGN BAND, INCLUDING SPEAKER GRILLES, PROVIDED BY SIGNING AND EDGE LIGHT CONTRACT A760



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE 7 JAN 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
PUBLIC ADDRESS SPEAKER
INTERFACE
SHEET 2 OF 2

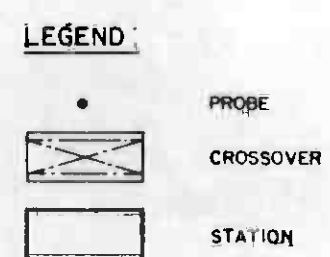
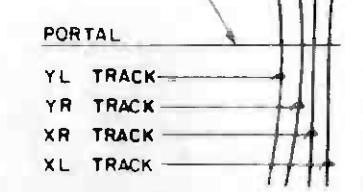
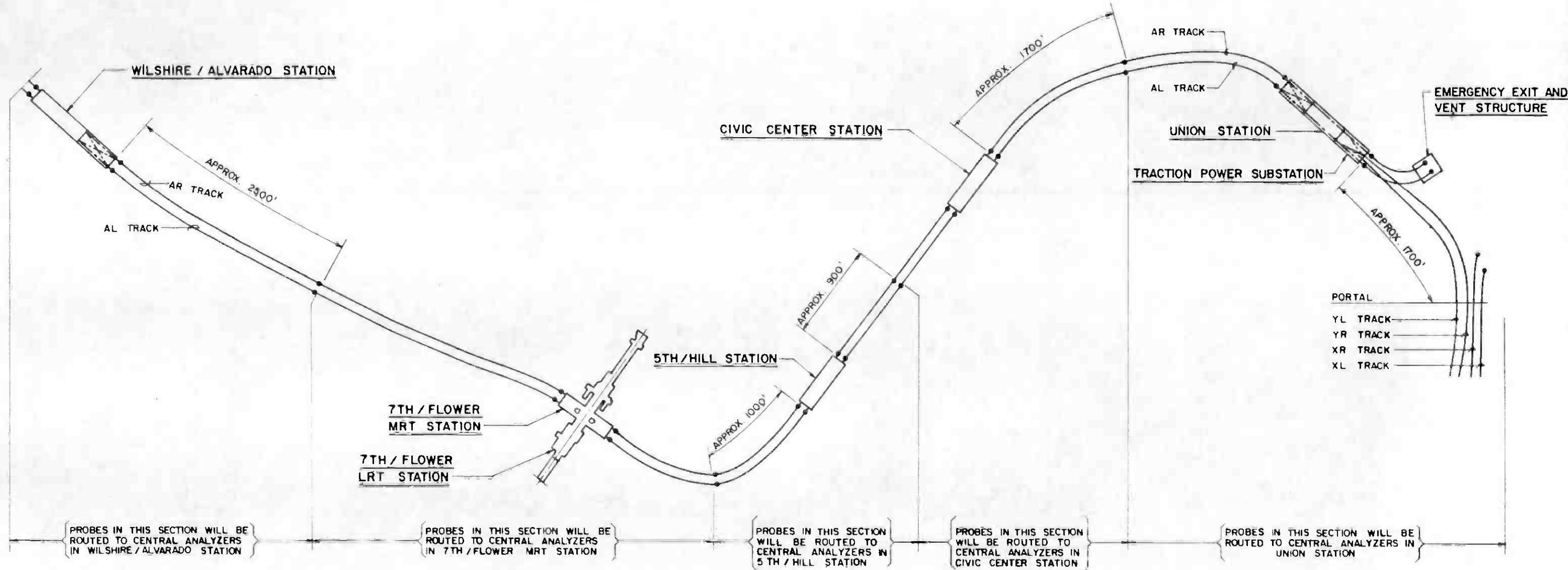
CONTRACT NO. A640
DRAWING NO. N-102 A
SCALE NO SCALE
SHEET NO. 103

REV	DATE	BY	SUB	APP	DESCRIPTION

7-86
SIGNATURE ISSUE

SUBMITTED *[Signature]*

APPROVED



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
T. MCCRANIE
DRAWN BY
A. Vukobratovic
CHECKED BY
J. H. ...
DATE
18 AUG 88



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

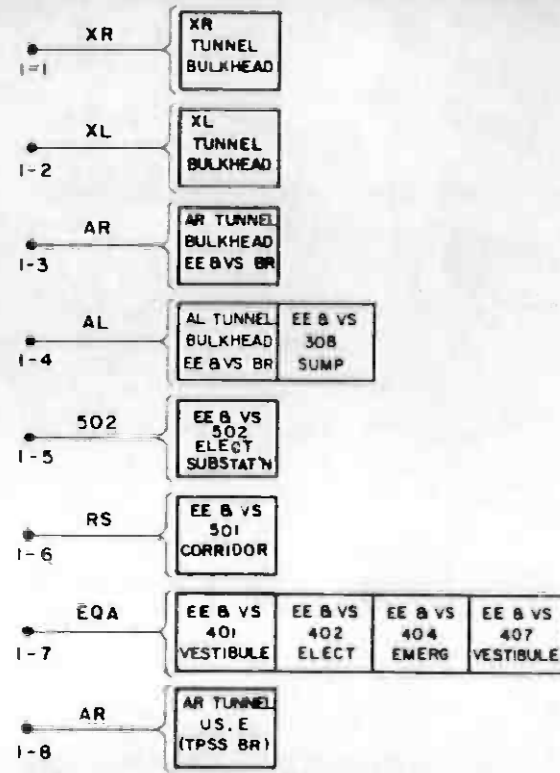
DMJM/PBQD/KE/HWA
GENERAL CONSULTANTS

APPROVED *[Signature]*

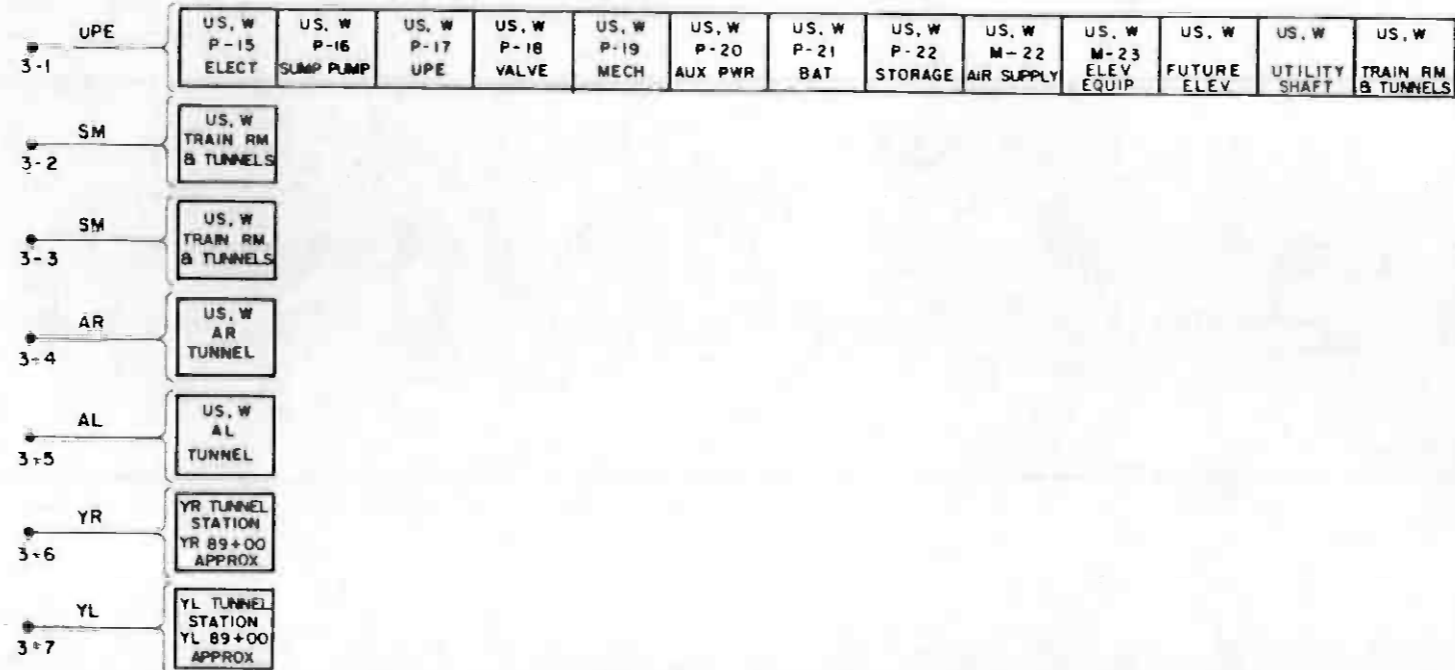
COMMUNICATIONS
GAS MONITORING
MOS - 1
TUNNEL PROBE LOCATION DIAGRAM

CONTRACT NO. **A640**
DRAWING NO. **N-150 B** REV **0**
SCALE **NO SCALE**
SHEET NO. **104**

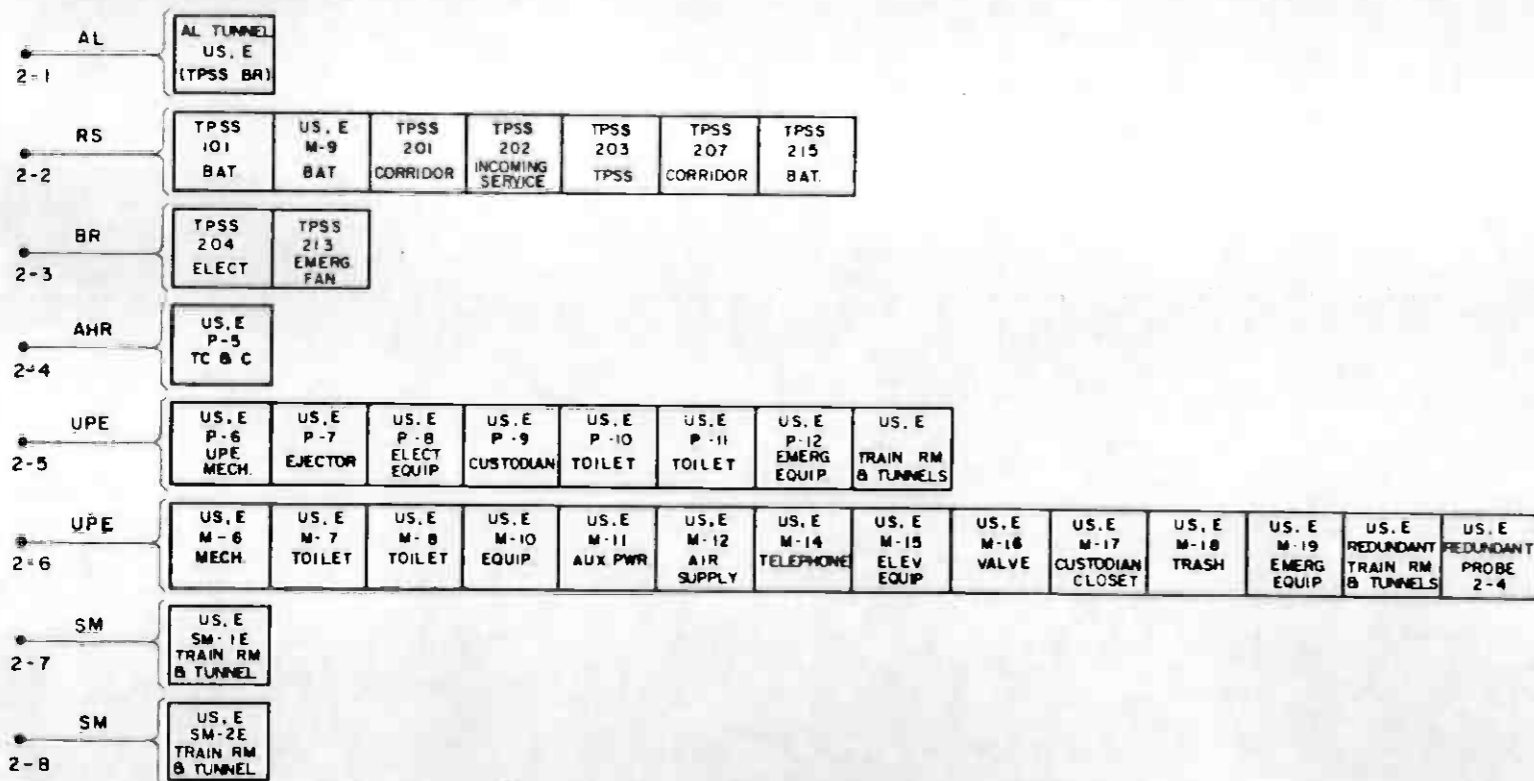
REV	DATE	BY	SUB	APP	DESCRIPTION
1	8/18/88	T. McCranie			GENERAL REVISION
2	8/18/88	T. McCranie			SIGNATURE ISSUE



CENTRAL ANALYZER UNIT NO. 1

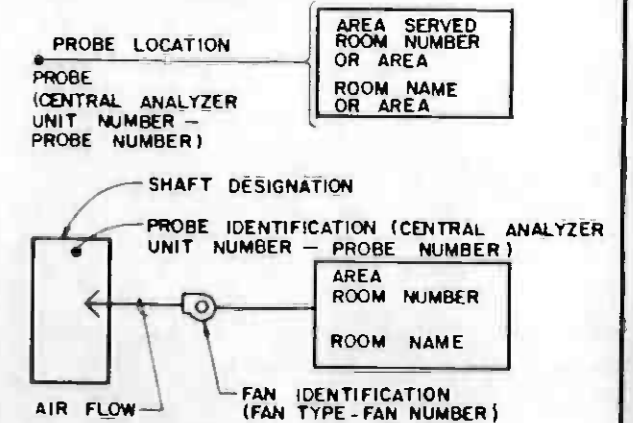


CENTRAL ANALYZER UNIT NO. 3



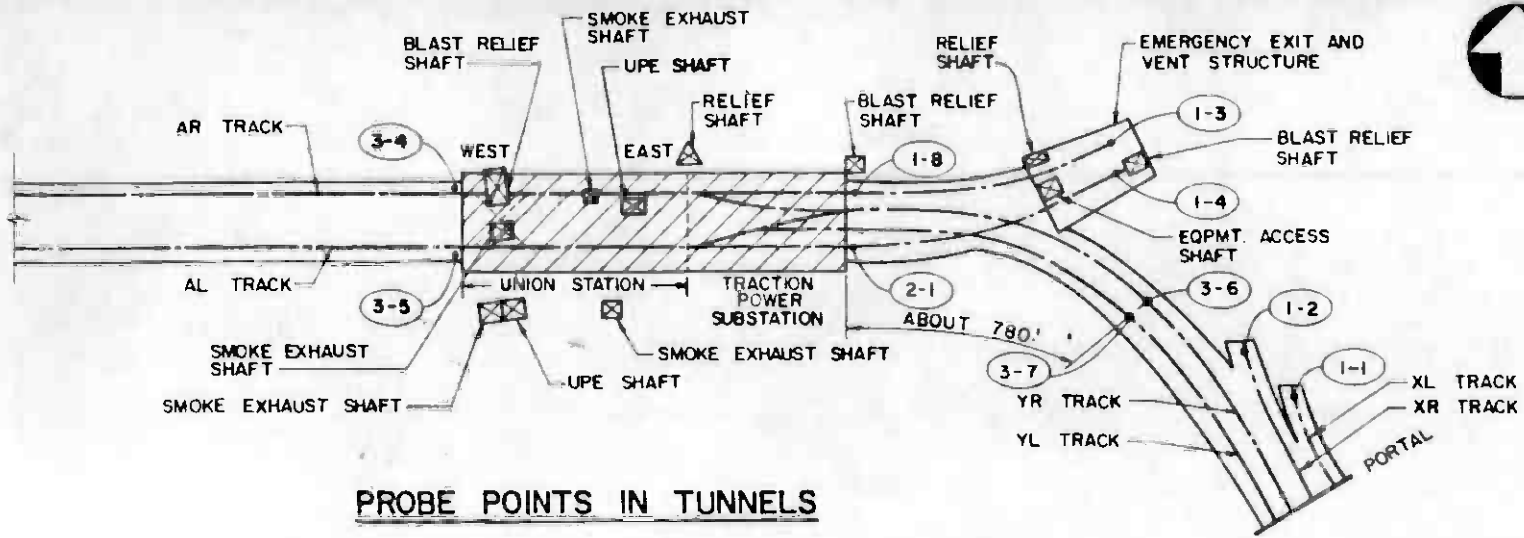
CENTRAL ANALYZER UNIT NO. 2

SYMBOL	DESCRIPTION
AHR	AIR HANDLING UNIT RETURN AIR DUCT
AHU	AIR HANDLING UNIT
AL	MAIN LINE, LEFT TRACK
AR	MAIN LINE, RIGHT TRACK
AUX	AUXILIARY
BAT	BATTERY
BR	BLAST RELIEF
E	EAST
EE & VS	EMERGENCY EXIT & VENT STRUCTURE
EF	EXHAUST FAN
ELECT	ELECTRICAL
ELEV	ELEVATOR
EMERG	EMERGENCY
EQA	EQUIPMENT ACCESS SHAFT
EQUIP	EQUIPMENT
M	IN ROOM NUMBER DESIGNATION, MEZZANINE
MECH	MECHANICAL
P	IN ROOM NUMBER DESIGNATION, PLATFORM
PWR	POWER
RS	RELIEF SHAFT
SF	SUPPLY FAN
SM	SMOKE EXHAUST FAN
SSF	TPSS ROOM SUPPLY FAN
TC & C	TRAIN CONTROL & COMMUNICATIONS ROOM
TPSS	TRACTION POWER SUBSTATION
UPE	UNDERPLATFORM EXHAUST FAN
US	UNION STATION
US. E	EASTERN PART OF UNION STATION
US. W	WESTERN PART OF UNION STATION
W	WEST
XL	YARD LEAD, LEFT TRACK
XR	YARD LEAD, RIGHT TRACK
YL	YARD LEAD, LEFT TRACK
YR	YARD LEAD, RIGHT TRACK
•	PROBE
○	FAN
---	ALTERNATE AIR FLOW

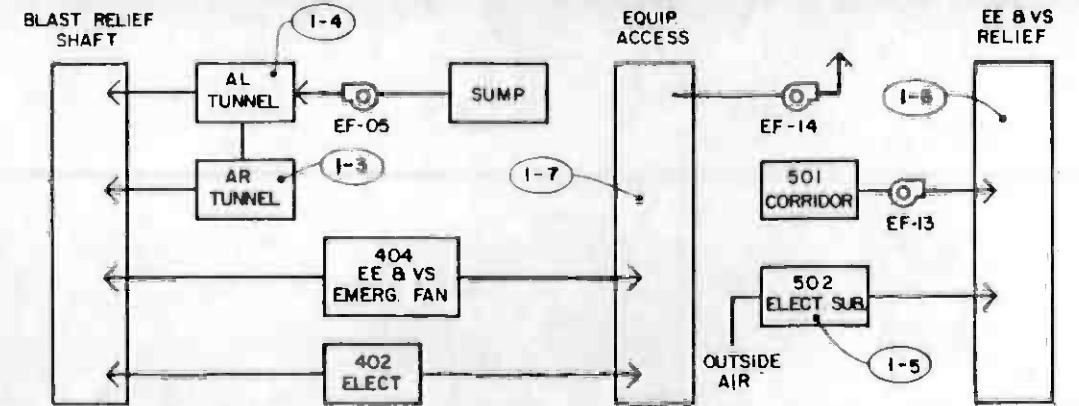


LEGEND

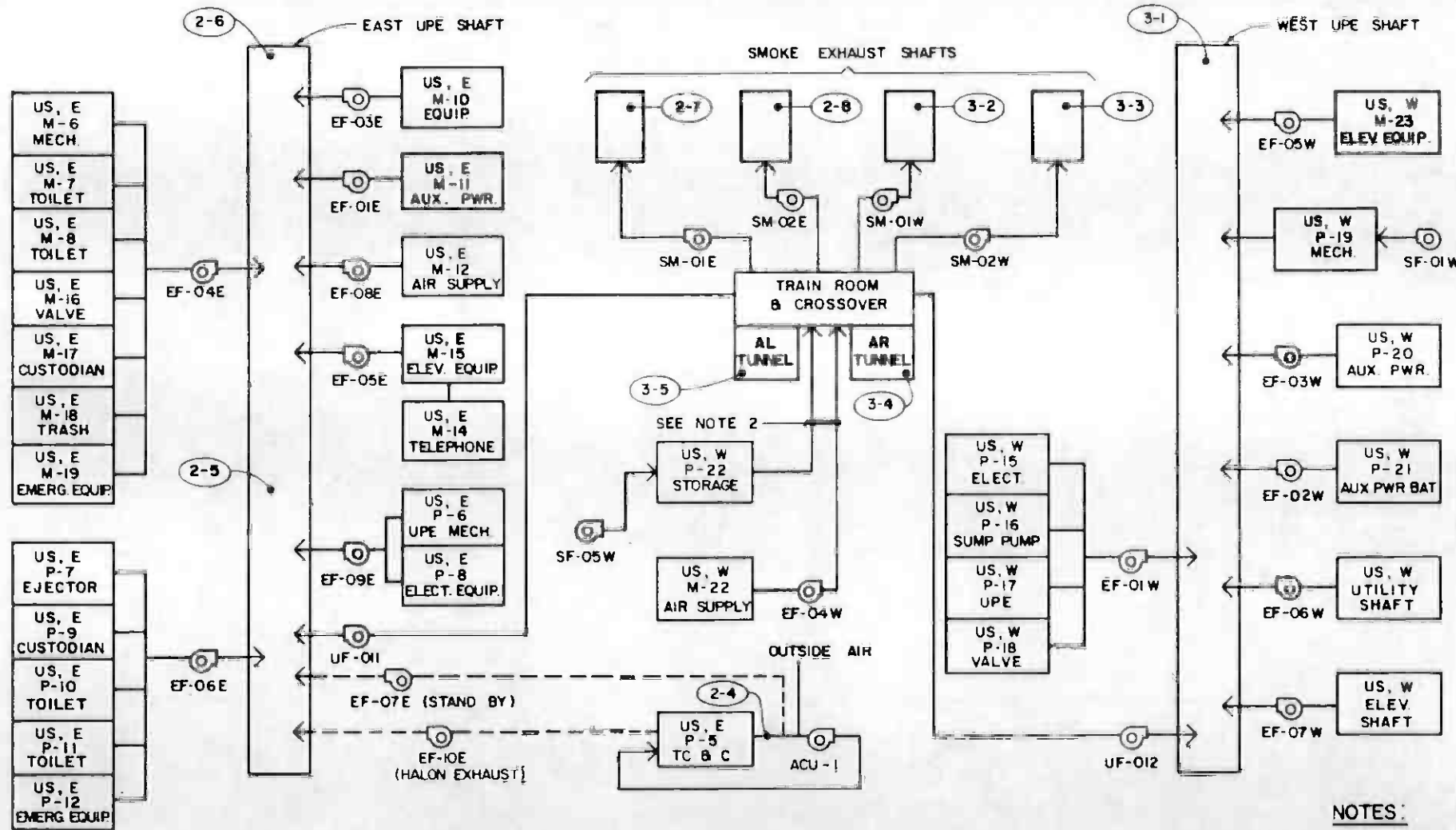
THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY T.K. MCCRAINE DRAWN BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 8 AUG 86	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	CONTRACT NO A640 DRAWING NO N-151 B SCALE NO SCALE SHEET NO 105
REV. DATE BY SUB APP DESCRIPTION 1 11-85 2 12-85 3 12-85	RELOCATED PROBES 3-6 & 3-7 SIGNATURE ISSUE	DMJM/PBOD/KE/HWA GENERAL CONSULTANTS	COMMUNICATIONS GAS MONITORING UNION STATION PROBE LOCATION SCHEMATIC SHEET 1 OF 2	SUBMITTED <i>[Signature]</i> APPROVED



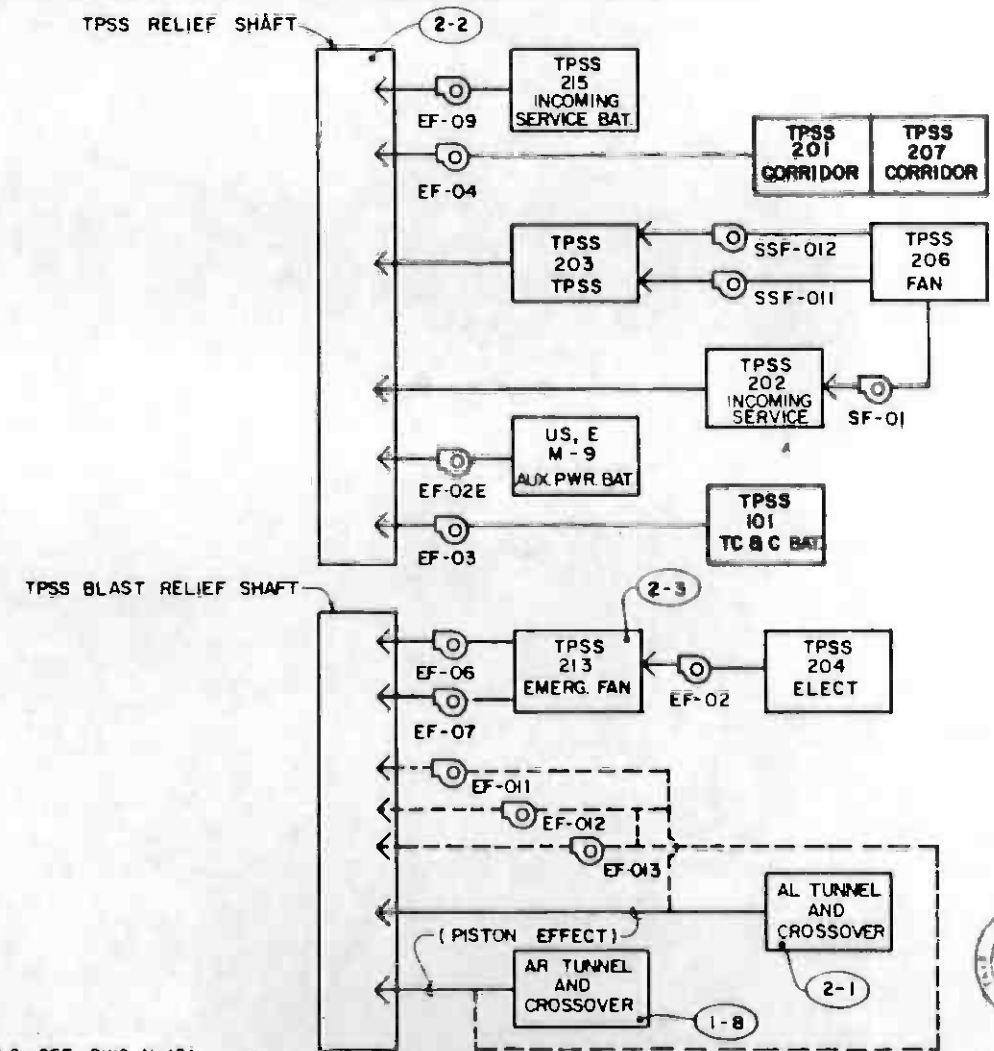
PROBE POINTS IN TUNNELS



PROBE POINTS IN EMERGENCY EXIT & VENT STRUCTURE



PROBE POINTS IN UNION STATION



PROBE POINTS IN TRACTION POWER SUBSTATION

NOTES:
1. FOR LEGEND AND SYMBOLS SEE DWG. N-151.

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY T. K. MCCRANIE DRAWN BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> DATE 7 AUG 86	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	COMMUNICATIONS GAS MONITORING UNION STATION PROBE LOCATION SCHEMATIC SHEET 2 OF 2	CONTRACT NO. A640 DRAWING NO. N-152 B SCALE NO SCALE SHEET NO. 108
RELOCATED PROBES 3-6 & 3-7 SIGNATURE ISSUE DATE 7 AUG 86	SUBMITTED <i>[Signature]</i>		DMJM/PBQD/KE/HWA GENERAL CONSULTANTS APPROVED _____ 		

CENTRAL ANALYZER UNIT NO.1
(SEE NOTES 1 & 2)

CENTRAL ANALYZER UNIT NO.2
(SEE NOTES 1 & 2)

CENTRAL ANALYZER UNIT NO.3
(SEE NOTES 1 & 2)

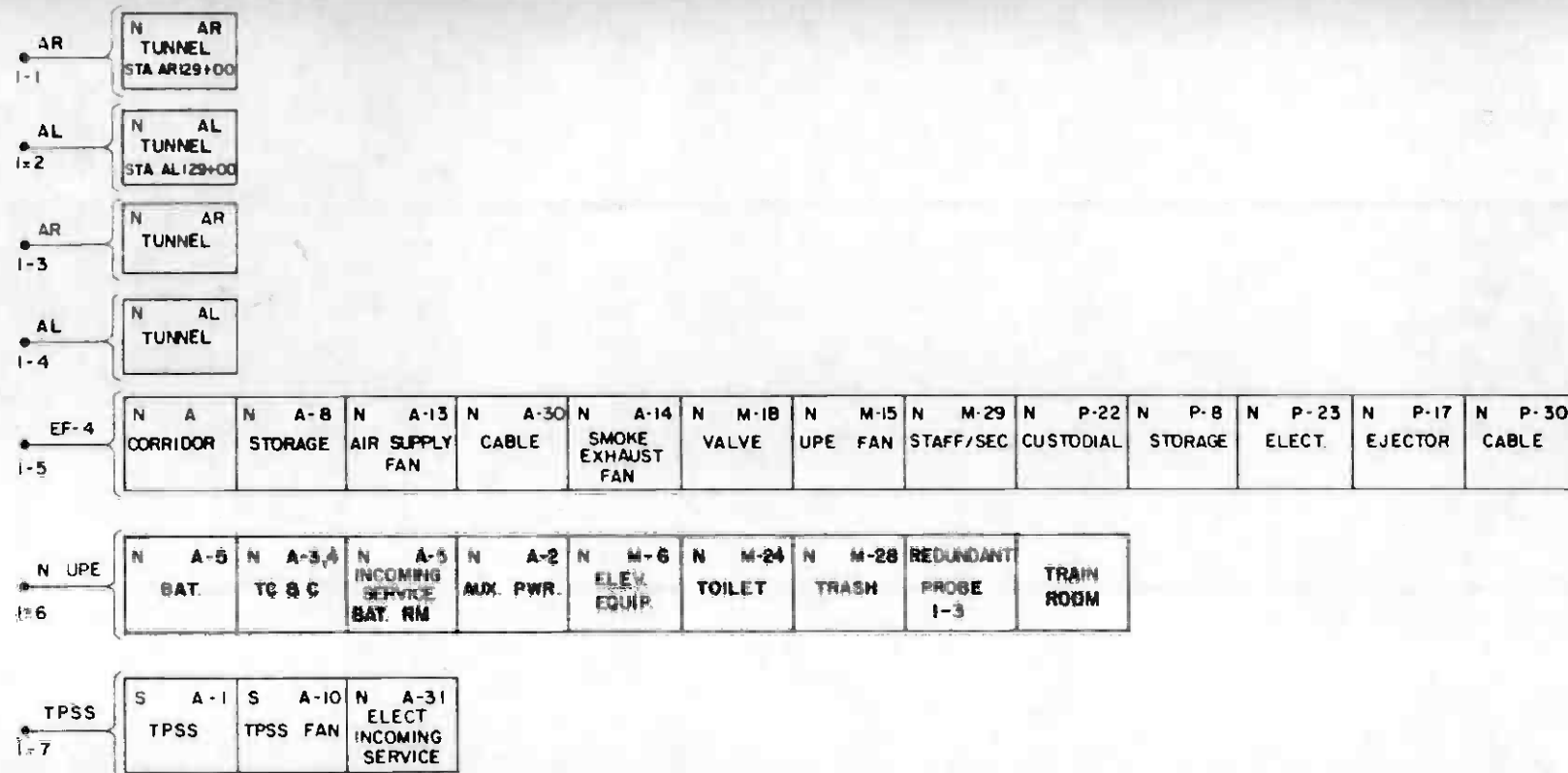
PROBE NO.	LOCATION SEE DWG. N-152	TYPE OF CONN. (NOTE 3)	CONDUIT USED FROM TC & C RM (NOTE 4)	TUBING LENGTH (NOTE 5)	REMARKS	PROBE NO.	LOCATION SEE DWG. N-152	TYPE OF CONN. (NOTE 3)	CONDUIT USED FROM TC & C RM (NOTE 4)	TUBING LENGTH (NOTE 5)	REMARKS	PROBE NO.	LOCATION SEE DWG. N-152	TYPE OF CONN. (NOTE 3)	CONDUIT USED FROM TC & C RM (NOTE 4)	TUBING LENGTH (NOTE 5)	REMARKS
1-1	TOP OF CEILING, AT C OF TRACK	3	1-4" Ø CONDUIT, CABLE TRENCH	2000'	A640 CONTRACTOR TO PROVIDE APPROX. 30' OF 1" Ø CONDUIT IN TUNNEL	2-1	TOP OF TUNNEL AT C OF AL TRACK	3	1-4" Ø CONDUIT TO CIC 2, 1" Ø CONDUIT TO PROBE	500'	A640 CONTRACTOR TO PROVIDE APPROX. 20' OF 1" Ø COND. IN TUNNEL	3-1	2'-0" BELOW TOP OF GRATING	AS APPROVED	CT 18 TO CIC 2, FG 18 TO PROBE	1100'	
1-2	SAME AS 1-1	3	SAME AS 1-1	2000'	SAME AS 1-1	2-2	2'-0" BELOW TOP OF GRATING	AS APPROVED	1-4" Ø CONDUIT TO CIC 1, 1" Ø CONDUIT TO PROBE	300'		3-2	SAME AS 3-1	AS APPROVED	A457 TO A471	1000'	
1-3	TOP OF CEILING	3	1-4" Ø CONDUIT, CABLE TRENCH, 1-2" Ø CONDUIT TO CIC 3, 1" Ø COND TO PROBE	1100'		2-3	1'-0" BELOW TOP OF CEILING	AS APPROVED	SAME AS 2-1	300'		3-3	SAME AS 3-1	AS APPROVED	A459 TO A470	1000'	
1-4	SAME AS 1-3	3	SAME AS 1-3	1100'	EXCEPT USE SEPARATE 1" Ø CONDUIT FROM CIC 3	2-4	AT DUCT C 2'-0" ABOVE FIN. FLR.	1	FG 10 TO CIC 3, FG 1 TO PROBE	100'		3-4	TOP OF TUNNEL, 4'-0" FROM EDGE, AT C OF TRACK	AS APPROVED	CT 20 TO CIC 4 1" Ø CONDUIT TO PROBE	1400'	A640 CONTRACTOR TO PROVIDE APPROX. 30' OF 1" Ø CONDUIT IN TUNNEL
1-5	TOP OF CEILING	AS APPROVED	1-4" Ø CONDUIT CABLE TRENCH 1-2" Ø CONDUIT TO CIC 1, 1" Ø CONDUIT TO PROBE	1300'		2-5	7'-0" ABOVE FIN. FLOOR	2	FG 10 TO CIC 3, FG 2 TO PROBE	200'		3-5	SAME AS 3-4	AS APPROVED	CT 20 TO CIC 4 1" Ø CONDUIT TO PROBE	1400'	SAME AS 3-4
1-6	2'-0" BELOW TOP OF GRATING	AS APPROVED	SAME AS 1-5	1300'	EXCEPT USE SEPARATE 1" Ø CONDUIT FROM CIC 1	2-6	2'-0" BELOW TOP OF GRATING	AS APPROVED	SAME AS 2-5	200'		3-6	TOP OF TUNNEL, AT STA YR 92 + 20 (APPROX.), AT C OF TRACK	AS APPROVED	1-4" Ø CONDUIT TO CABLE TRENCH TO STUB-UP AT STA. YR 92 + 20. APPROX.	1900'	A640 CONTRACTOR TO PROVIDE APPROX. 30' OF 1" Ø CONDUIT IN TUNNEL
1-7	EL. 252.50'	AS APPROVED	SAME AS 1-5	1100'	EXCEPT USE SEPARATE 1" Ø CONDUIT FROM CIC 1	2-7	AT END OF DUCTWORK	1	FG 10 TO CIC 3 A455 TO PROBE	300'		3-7	SAME AS 3-6	AS APPROVED	SAME AS 3-6	1900'	SAME AS 3-6
1-8	TOP OF TUNNEL, AT C OF AR TRACK	3	1-4" Ø CONDUIT, CABLE TRENCH	400'	A640 CONTRACTOR TO PROVIDE APPROX. 30' OF 1" Ø CONDUIT IN TUNNEL	2-8	SAME AS 2-7	1	FG 10 TO CIC 3, A451 TO PROBE	300'							

NOTES:

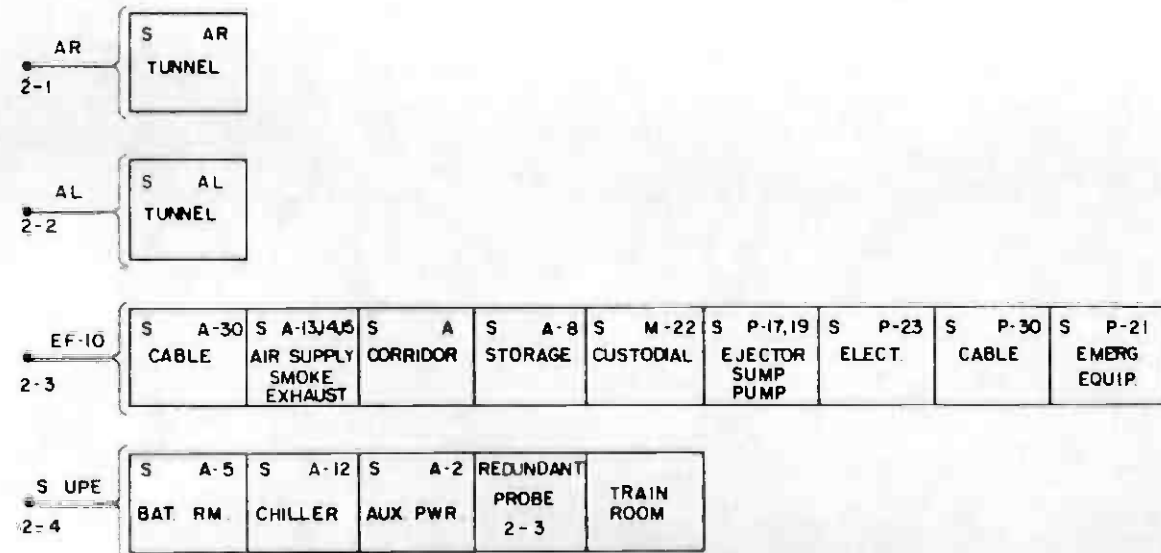
- CENTRAL ANALYZER VENT SHALL BE ROUTED TO EXHAUST DUCT OF UNDERPLATFORM EXHAUST FAN UF-011 (TYPICAL).
- CENTRAL ANALYZER CONDENSATE DRAIN SHALL BE ROUTED TO NEAREST FLOOR DRAIN (TYPICAL).
- FOR PROBE CONNECTION DETAILS, SEE DWG. N-157.
- FOR LEGEND AND SYMBOLS SEE DWG. N-151.
- TUBING LENGTHS SHOWN ARE APPROXIMATE.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY BILL HOWING DRAWN BY <i>A. V. ...</i> CHECKED BY <i>J. ...</i> IN CHARGE <i>P. ...</i> DATE 4 AUG 86	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT	DMJM PROD KE/HWA GENERAL CONSULTANTS	CONTRACT NO. A640 DRAWING NO. N-153B SCALE NO SCALE SHEET NO. 107
REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE	SUBMITTED <i>ell...</i>	APPROVED	

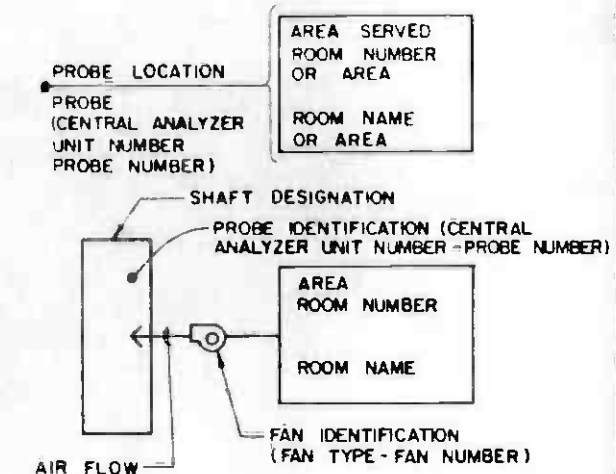


CENTRAL ANALYZER UNIT NO. 1



CENTRAL ANALYZER UNIT NO. 2

SYMBOL	DESCRIPTION
A	IN ROOM NUMBER DESIGNATION, ANCILLARY LEVEL
ACU	AIR CONDITIONING UNIT
AL	MAIN LINE, LEFT TRACK
AR	MAIN LINE, RIGHT TRACK
AUX	AUXILIARY
BAT	BATTERY
EF	EXHAUST FAN
ELECT	ELECTRICAL
ELEV	ELEVATOR
EMERG	EMERGENCY
EQUIP	EQUIPMENT
M	IN ROOM NUMBER DESIGNATION, MEZZANINE LEVEL
N	NORTHERN PART OF CIVIC CENTER STATION
P	IN ROOM NUMBER DESIGNATION, PLATFORM LEVEL
PWR	POWER
S	SOUTHERN PART OF CIVIC CENTER STATION
SF	SUPPLY FAN
TC & C	TRAIN CONTROL AND COMMUNICATIONS
TPSS	TRACTION POWER SUBSTATION
UPE	UNDER PLATFORM EXHAUST
•	PROBE
○	FAN
---	ALTERNATE AIR FLOW

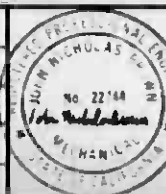


LEGEND



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
S. GOLDSMITH
DRAWN BY
[Signature]
CHECKED BY
[Signature]
IN CHARGE
[Signature]
DATE
19 AUG 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM PBOD/KE HWA
GENERAL CONSULTANTS
APPROVED

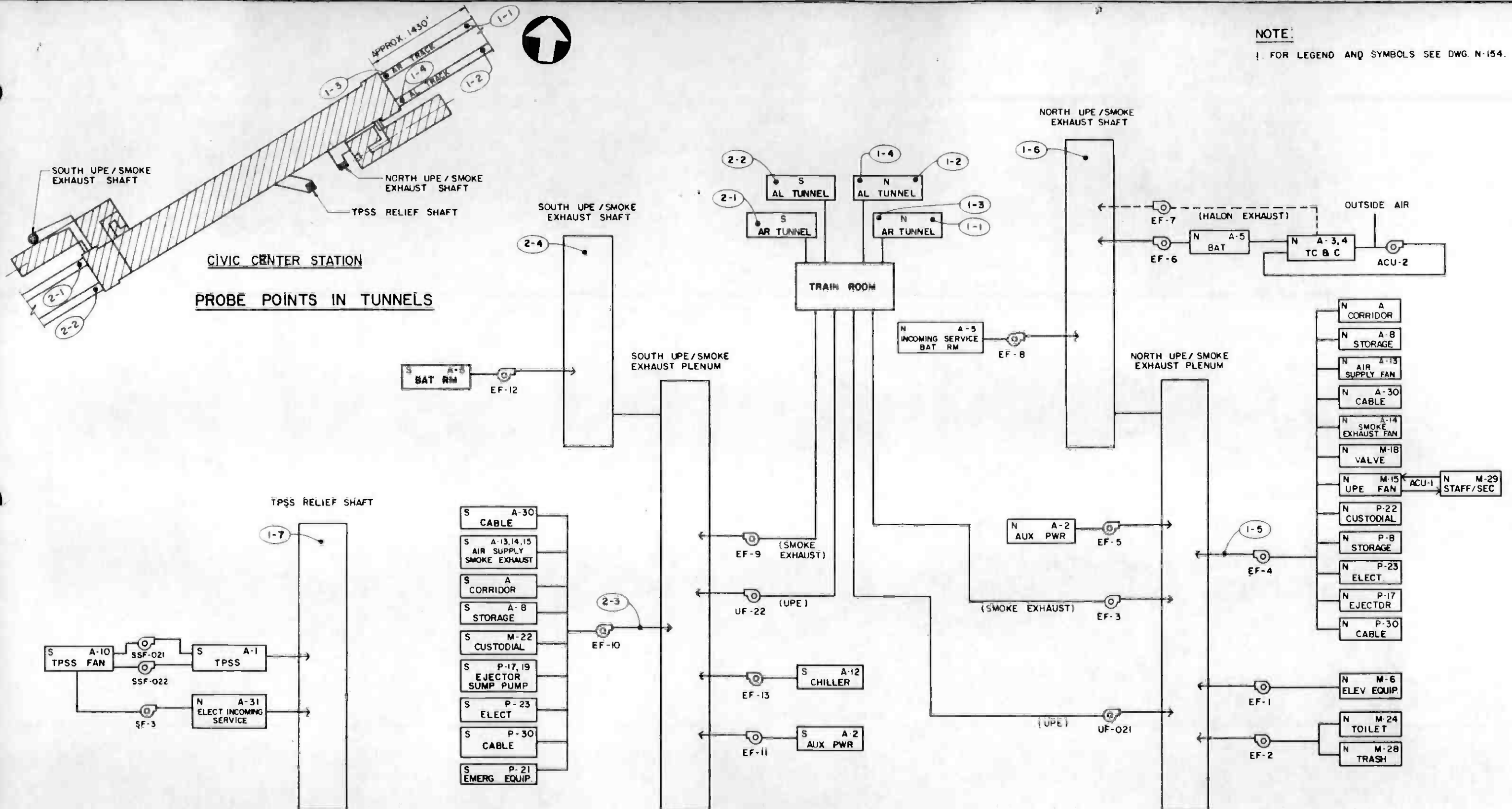
SUBMITTED *[Signature]*

COMMUNICATIONS
GAS MONITORING
CIVIC CENTER STATION
PROBE LOCATION SCHEMATIC
SHEET 1 OF 2

CONTRACT NO	A640
DRAWING NO	N-154B
REV	0
SCALE	NO SCALE
SHEET NO	108

REV	DATE	BY	SUB	APP	DESCRIPTION
2	8-6-86				ADDED PROBES 1-1 & 1-2
1	8-7-86				SIGNATURE ISSUE

NOTE:
1. FOR LEGEND AND SYMBOLS SEE DWG. N-154.



CIVIC CENTER STATION
PROBE POINTS IN TUNNELS

PROBE POINTS IN CIVIC CENTER STATION



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REV. DATE BY SUB APP DESCRIPTION	2-6-87 8-20-86	ADDED PROBES 1-1 & 1-2 SIGNATURE ISSUE	SUBMITTED <i>[Signature]</i> APPROVED	DMJM/PBOD/KE/HWA GENERAL CONSULTANT	REV. 0

CENTRAL ANALYZER UNIT NO. 1

CENTRAL ANALYZER UNIT NO. 2

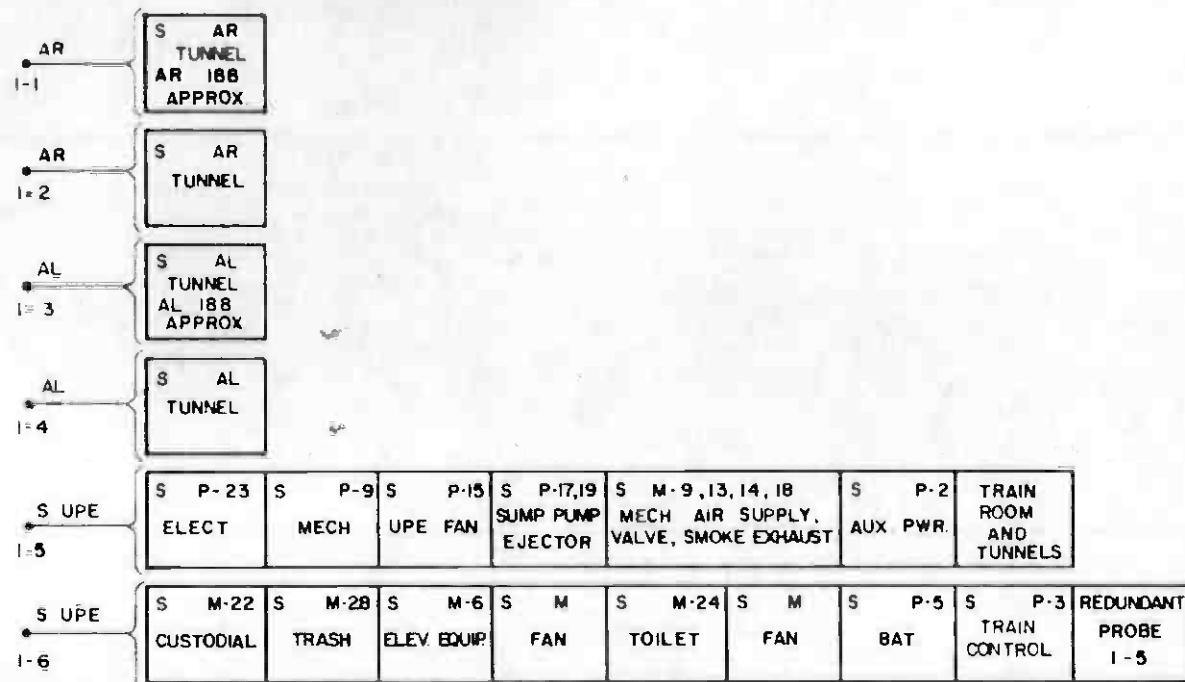
PROBE NO.	LOCATION SEE DWG. N-155	TYPE OF CONN. (NOTE 1)	CONDUIT USED FROM TC&C ROOM (NOTE 2)	TUBING LENGTH (NOTE 3)	REMARKS	PROBE NO.	LOCATION SEE DWG. N-155	TYPE OF CONN. (NOTE 1)	CONDUIT USED FROM TC&C ROOM (NOTE 2)	TUBING LENGTH (NOTE 3)	REMARKS
1-1	TOP OF TUNNEL, STA AR 129+00 (APPROX) AT ϕ OF TRACK	3	TC001 TO CABLE TRENCH TO CIC IN CROSS-PASSAGE AT STA AR 132+13	2300'	A640 CONTRACTOR TO FURNISH APPROX. 400' OF 1" ϕ CONDUIT FROM CIC IN CROSS-PASSAGE TO PROBE LOCATION	2-1	TOP OF TUNNEL, AT ϕ OF TRACK, 4'-0" FROM EDGE	3	HC-003 FX-028	600'	A640 CONTRACTOR TO PROVIDE APPROX. 30' OF 1" ϕ CONDUIT IN TUNNEL
1-2	SAME AS 1-1	3	SAME AS 1-1	2300'	SAME AS 1-1	2-2	SAME AS 2-1	3	HC-003 FX-028	600'	SAME AS 2-1
1-3	TOP OF TUNNEL, AT ϕ OF TRACK, 4'-0" FROM EDGE	3	HC-008 FX-030	300'	A640 CONTRACTOR TO PROVIDE APPROX. 30' OF 1" ϕ CONDUIT IN TUNNEL	2-3	AT EF-10 DUCT ϕ , 6'-0" FROM ϕ OF DISCH. ELBOW	1	HC-003 FX-015	500'	
1-4	SAME AS 1-3	3	HC-008 FX-029	300'	SAME AS 1-3	2-4	2'-0" BELOW TOP OF GRATING AT ϕ OF VERT. SHAFT	AS APPROVED	HC-003 FX-015	700'	
1-5	AT EF-4 DUCT ϕ , 8'-0" FROM COL. C	1	HC-008 FX-009	400'							
1-6	2'-0" BELOW TOP OF GRATING	AS APPROVED	EXPOSED CONDUIT IN TC&C TO CONDUIT AT WALL, RUN NEW CONDUIT IN SHAFT TO PROBE	200'	A640 CONTRACTOR TO PROVIDE EXPOSED CONDUIT IN TC&C AND NEW CONDUIT IN SHAFT						
1-7	4'-6" ABOVE FINISHED FLOOR, 10'-0" FROM ϕ OF VERTICAL SHAFT	AS APPROVED	HC-008 FX-010	300'							

NOTES:

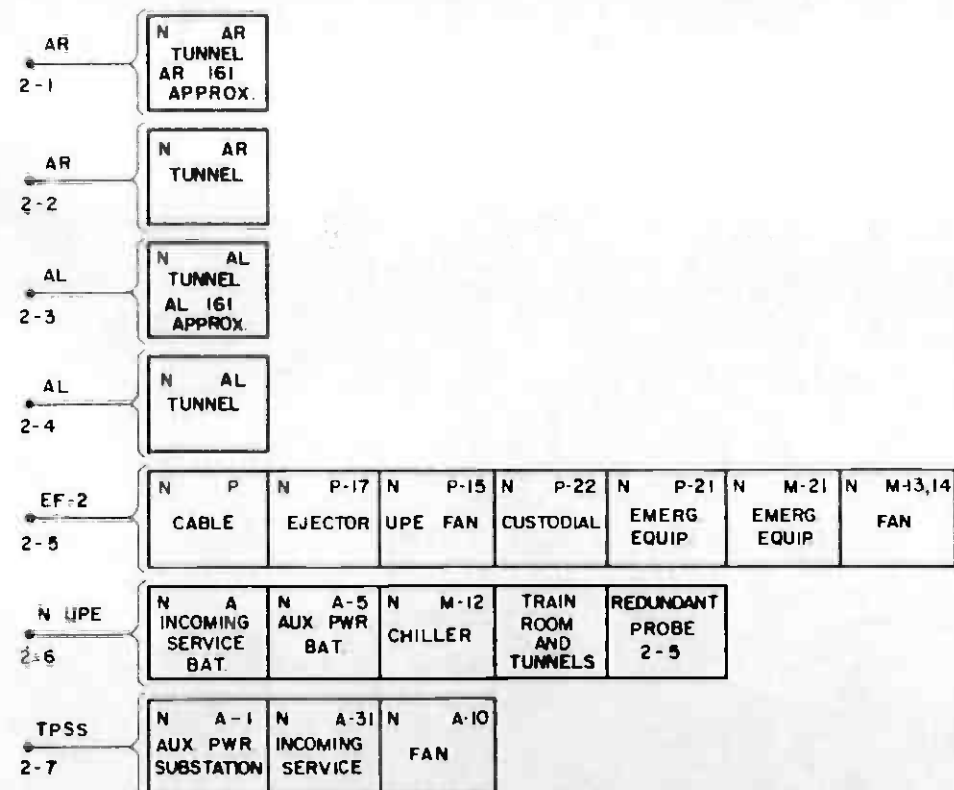
- FOR PROBE CONNECTION DETAILS, SEE DWG. N-157.
- FOR LEGEND AND SYMBOLS SEE DWG. N-154.
- TUBING LENGTHS SHOWN ARE APPROXIMATE.



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REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	ADDITIONAL NOTES ADDED PROBES 1-1 & 1-2 SIGNATURE ISSUE	SUBMITTED <i>[Signature]</i>	APPROVED DMJM/PBOD/KE/HWA GENERAL CONSULTANTS	

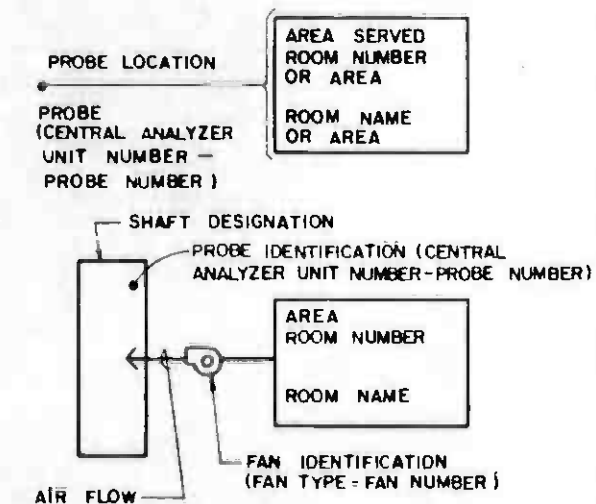


CENTRAL ANALYZER UNIT NO. 1



CENTRAL ANALYZER UNIT NO. 2

SYMBOL	DESCRIPTION
A	IN ROOM NUMBER DESIGNATION ANCILLARY LEVEL
ACU	AIR CONDITIONING UNIT
AL	MAIN LINE, LEFT TRACK
AR	MAIN LINE, RIGHT TRACK
AUX	AUXILIARY
BAT	BATTERY
EF	EXHAUST FAN
ELECT	ELECTRICAL
ELEV	ELEVATOR
EMERG	EMERGENCY
EQUIP	EQUIPMENT
M	IN ROOM NUMBER DESIGNATION, MEZZANINE LEVEL
MECH	MECHANICAL
N	NORTHERN PART OF 5TH/HILL STATION
P	IN ROOM NUMBER DESIGNATION, PLATFORM LEVEL
PWR	POWER
S	SOUTHERN PART OF 5TH/HILL STATION
SF	SUPPLY FAN
SSF	SUPPLY FAN
TC	TRAIN CONTROL ROOM
TPSS	TRACTION POWER SUBSTATION
UPE	UNDER PLATFORM EXHAUST
•	PROBE
⊙	FAN
---	ALTERNATE AIR FLOW

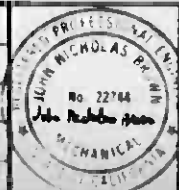


LEGEND



PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
S GOLDSMITH
DRAWN BY
A. V. ...
CHECKED BY
J. ...
DATE
22 AUG 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

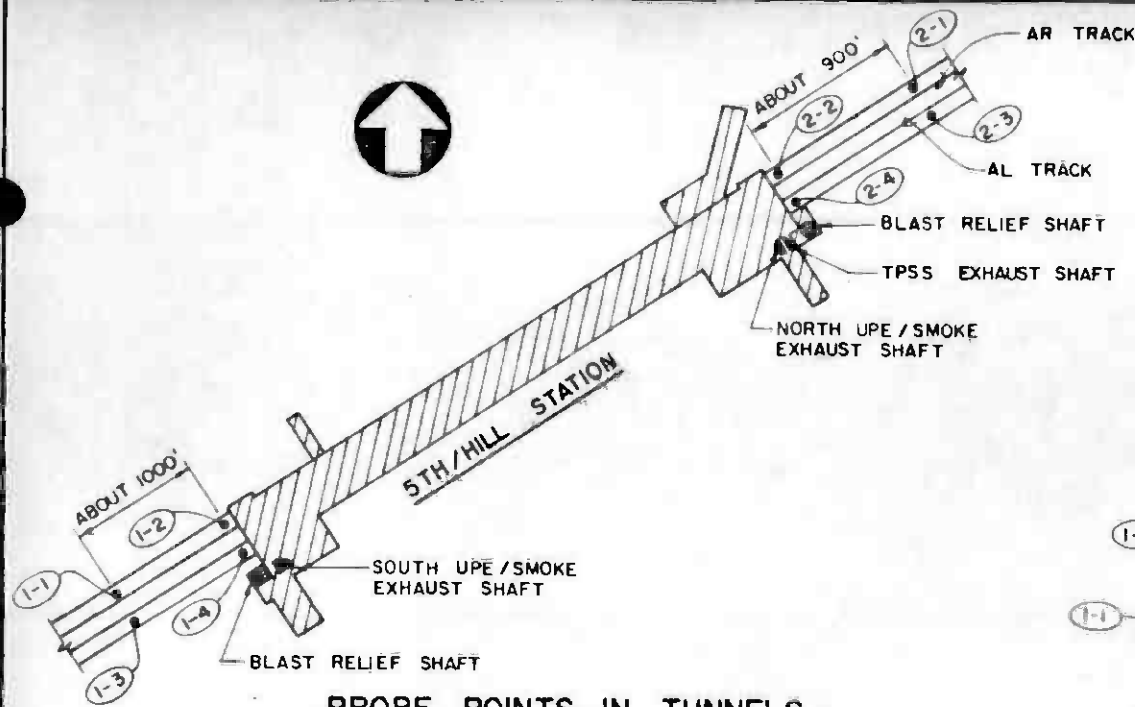
SUBMITTED *Cellin*

APPROVED

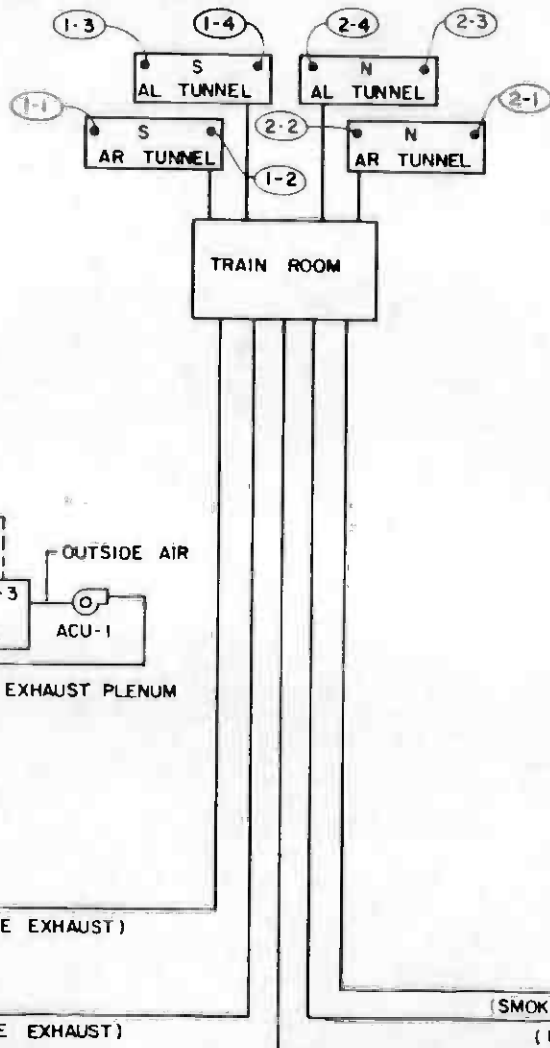
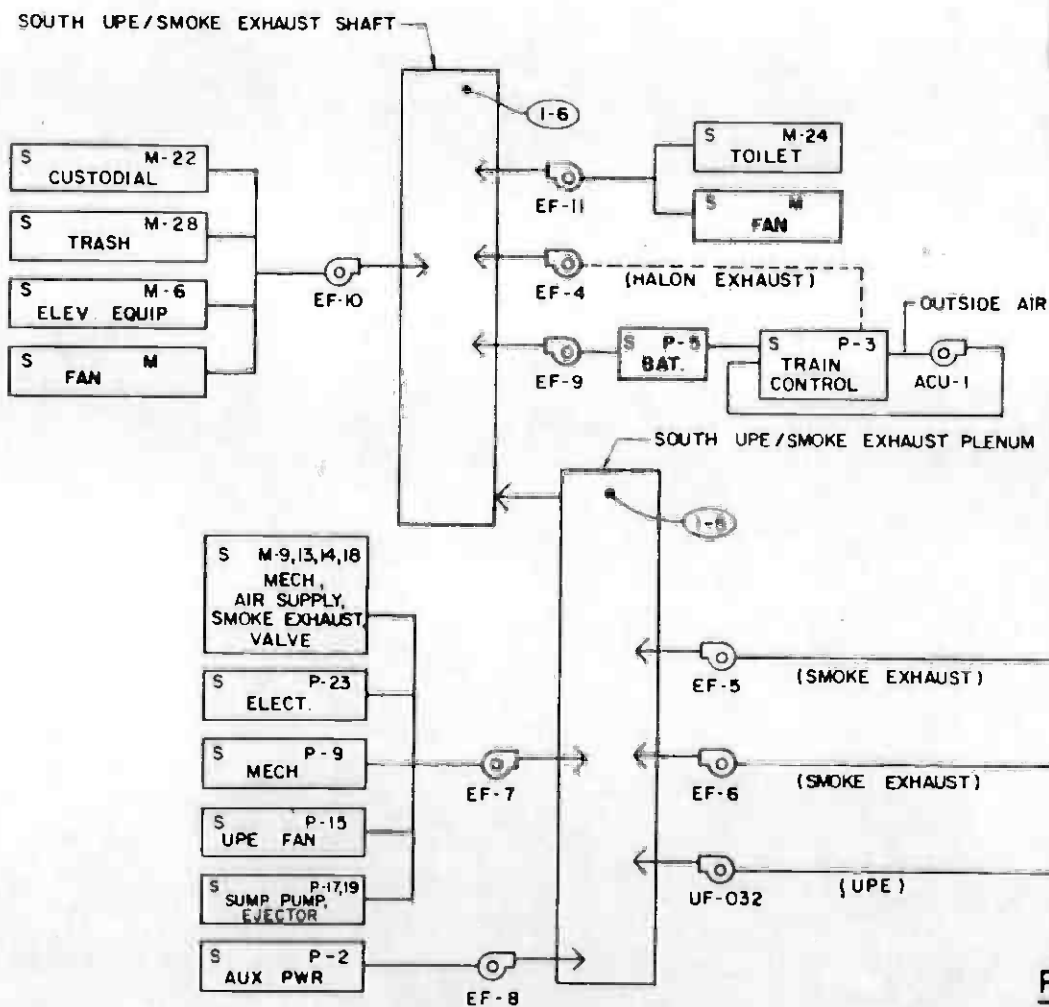
COMMUNICATIONS
GAS MONITORING
5TH/HILL STATION
PROBE LOCATION SCHEMATIC
SHEET 1 OF 2

CONTRACT NO	A640
DRAWING NO	N-157 A
REV	0
SCALE	NO SCALE
SHEET NO	111

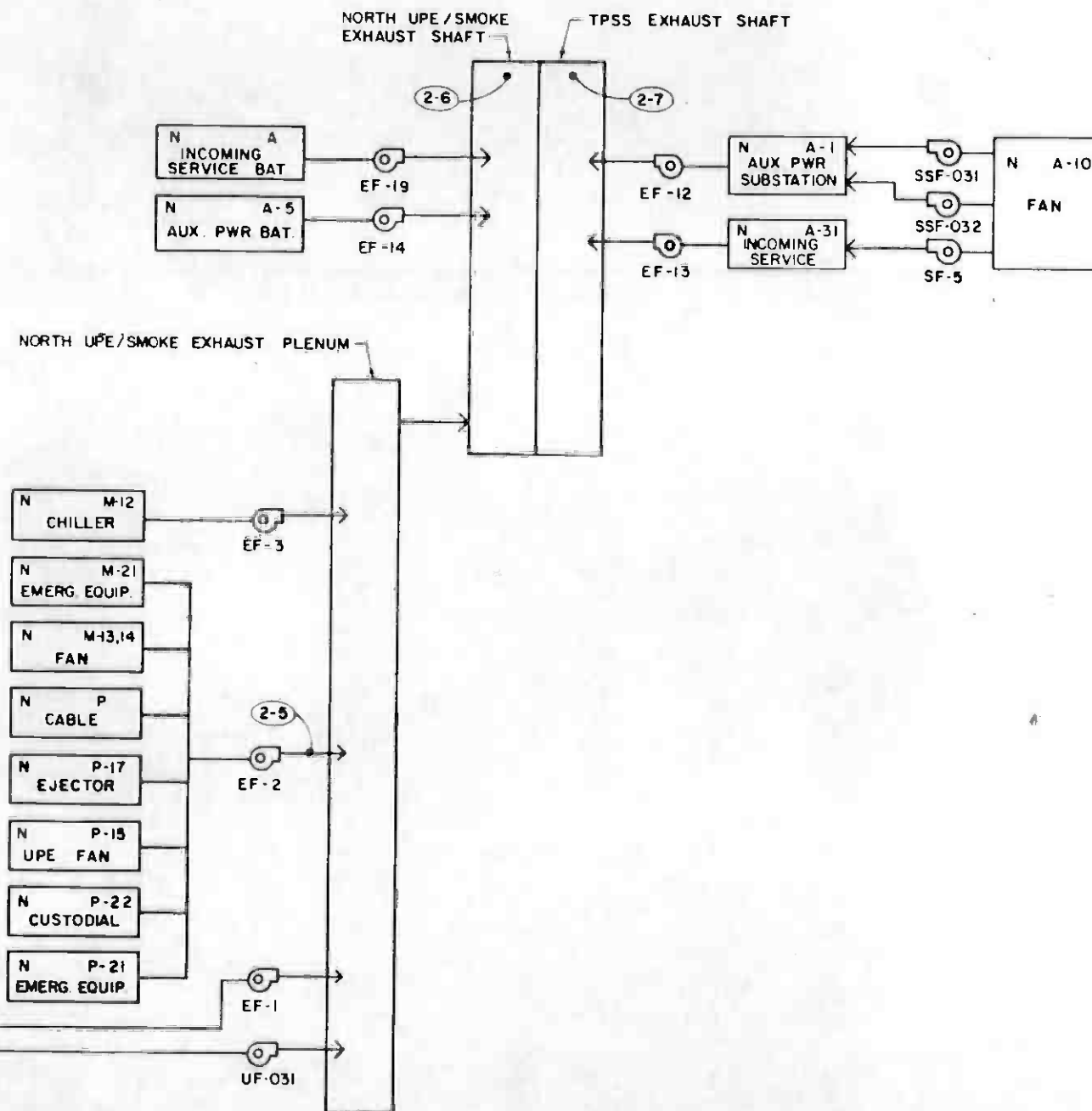
REV	DATE	BY	SUB	APP	DESCRIPTION



PROBE POINTS IN TUNNELS



PROBE POINTS IN 5TH/HILL STATION



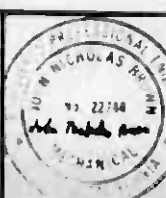
NOTE:
1. FOR LEGEND AND SYMBOLS, SEE DWG. N-157.



REV	DATE	BY	SUB	APP	DESCRIPTION

REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY
S. GOLDSMITH
DRAWN BY
[Signature]
CHECKED BY
[Signature]
IN CHARGE
[Signature]
DATE
25 AUG 86



**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**

DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

APPROVED: *[Signature]*

**COMMUNICATIONS
GAS MONITORING
5TH/HILL STATION
PROBE LOCATION SCHEMATIC
SHEET 2 OF 2**

CONTRACT NO.	A640
DRAWING NO.	N-158 A
SCALE	NO SCALE
SHEET NO.	112

CENTRAL ANALYZER UNIT NO. 1
(NOTES 1 & 2)

CENTRAL ANALYZER UNIT NO. 2
(NOTES 1 & 2)

PROBE NO	LOCATION SEE DWG. N-158	TYPE OF CONN. (NOTE 3)	CONDUIT USED FROM TC & C RM (NOTE 4)	TUBING LENGTH (NOTE 5)	REMARKS	PROBE NO	LOCATION SEE DWG. N-158	TYPE OF CONN. (NOTE 3)	CONDUIT USED FROM TC & C RM (NOTE 4)	TUBING LENGTH (NOTE 5)	REMARKS
1-1	TOP OF TUNNEL, STA AR 185 + 88.83 (APPROX) AT C OF TRACK	3	CT-011 TO CABLE TRENCH, GA-71	1500'	A640 CONTRACTOR TO PROVIDE APPROX 310' OF 1" Ø CONDUIT IN TUNNEL FROM GA-71 TO PROBE	2-1	TOP OF TUNNEL, STA AR 162 + 38.83 (APPROX) AT C OF TRACK	3	CT-002 TO CABLE TRENCH, GA-62	2000'	A640 CONTRACTOR TO PROVIDE APPROX 450' OF 1" Ø CONDUIT IN TUNNEL FROM GA-62 TO PROBE
1-2	TOP OF TUNNEL, AT C OF TRACK, 4'-0" FROM EDGE	3	HC-006 FX-010	300'	A640 CONTRACTOR TO PROVIDE APPROX 30' OF 1" Ø CONDUIT IN TUNNEL	2-2	TOP OF TUNNEL, AT C OF TRACK, 4'-0" FROM EDGE	3	HC-003 FX-001	1000'	A640 CONTRACTOR TO PROVIDE APPROX 30' OF 1" Ø CONDUIT IN TUNNEL
1-3	SAME AS 1-1	3	CT-008 TO CABLE TRENCH, GA-72	1500'	SAME AS 1-1	2-3	SAME AS 2-1	3	CT-005 TO CABLE TRENCH, GA-61	2000'	SAME AS 2-1
1-4	SAME AS 1-2	3	HC-006 FX-010	300'	SAME AS 1-2	2-4	SAME AS 2-2	3	HC-003 FX-	1000'	SAME AS 2-2
1-5	1'-0" BELOW TOP OF OPENING	AS APPROVED	HC-006 FX-013	300'		2-5	AT DUST C, 2'-0" FROM MD-12	1	HC-003 FX-012	1000'	
1-6	2'-0" BELOW TOP OF GRATING	AS APPROVED	HC-006 FX-013	300'		2-6	14'-0" ABOVE FINISHED FLOOR	2	HC-003 FX-015	1100'	
						2-7	SAME AS 2-6	AS APPROVED	HC-003 FX-015	1100'	

NOTES:

- CENTRAL ANALYZER VENT SHALL BE ROUTED TO BATTERY ROOM (TYPICAL).
- CENTRAL ANALYZER CONDENSATE DRAIN SHALL BE ROUTED TO NEAREST FLOOR DRAIN (TYPICAL)
- FOR PROBE CONNECTION DETAILS, SEE DWG. N-167.
- FOR LEGEND AND SYMBOLS SEE DWG. N-157.
- TUBING LENGTHS SHOWN ARE APPROXIMATE.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
S. GOLDSMITH
DRAWN BY
J. [Signature]
CHECKED BY
[Signature]
IN CHARGE
[Signature]
DATE
26 AUG 86



**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**

DMJM PBOD/KE/HWA
GENERAL CONSULTANT

SUBMITTED *[Signature]*

APPROVED

**COMMUNICATIONS
GAS MONITORING
5TH/HILL STATION
PROBE SCHEDULE**

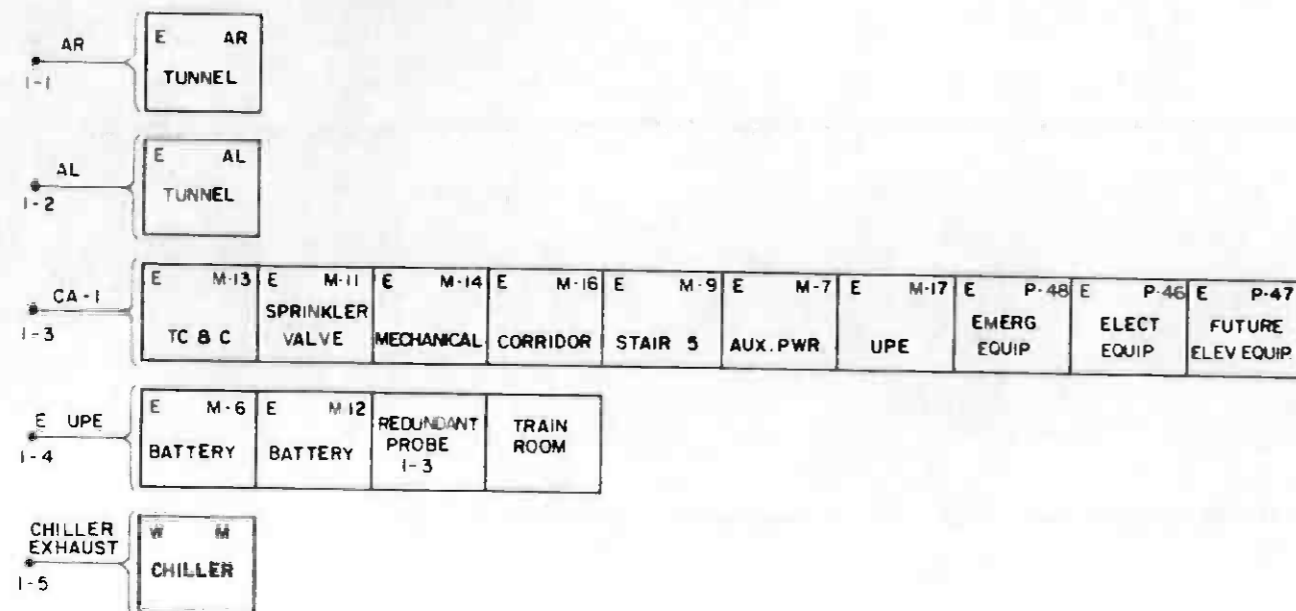
CONTRACT NO
A640

DRAWING NO
N-159 B

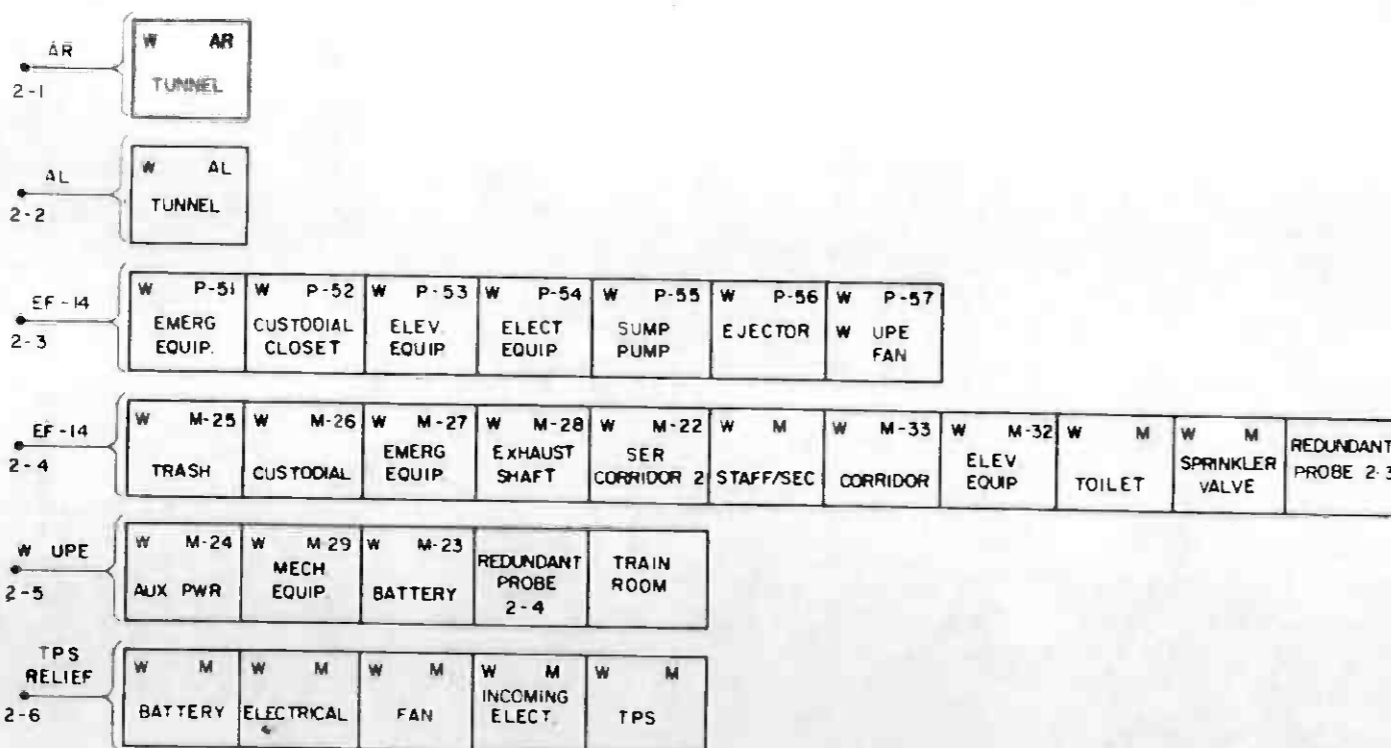
SCALE
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SHEET NO
113

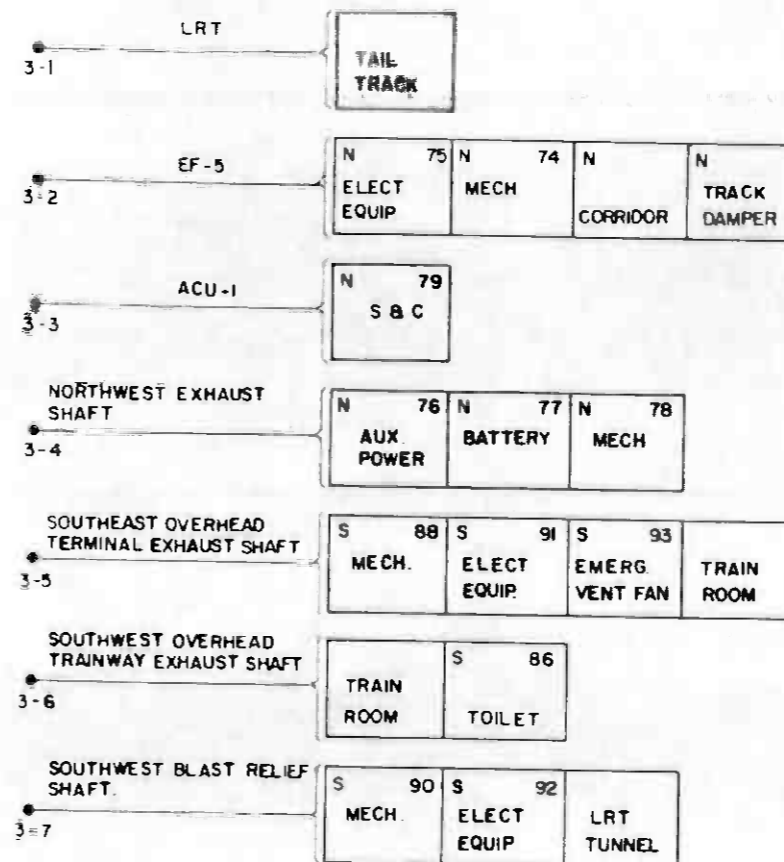
REV. DATE BY SUB LPP DESCRIPTION



CENTRAL ANALYZER UNIT NO. 1

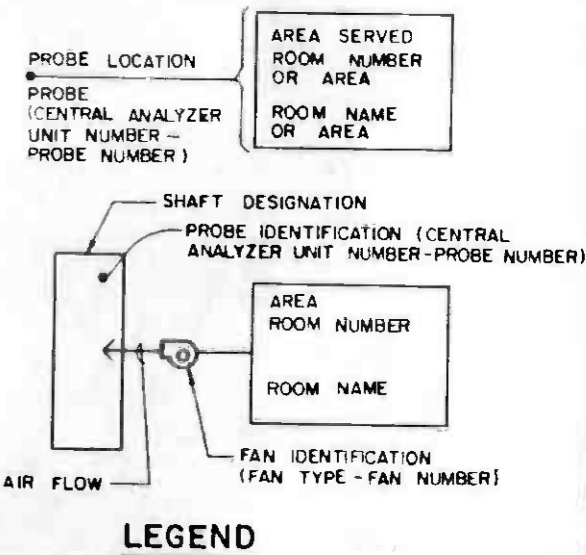


CENTRAL ANALYZER UNIT NO. 2



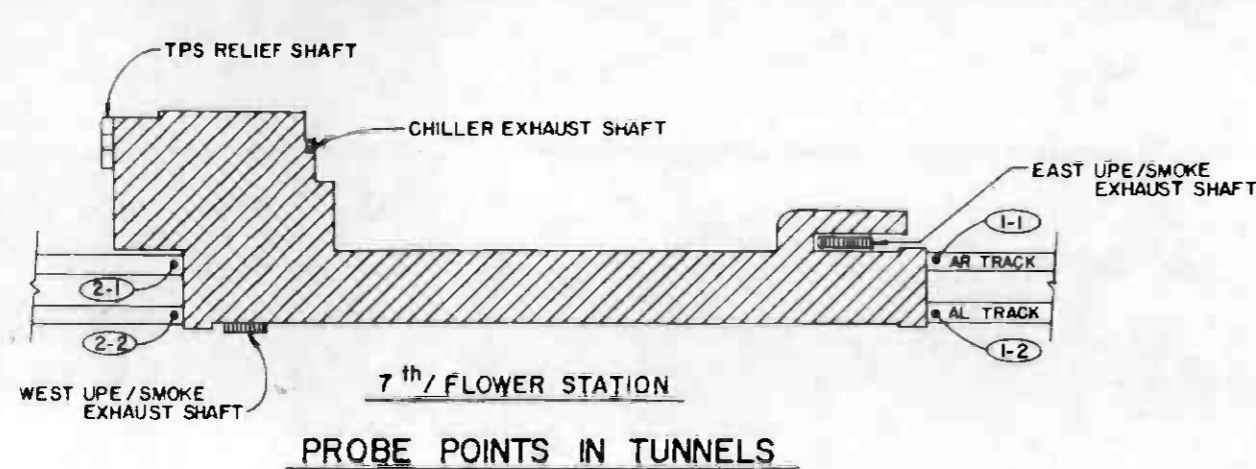
CENTRAL ANALYZER UNIT NO. 3

SYMBOL	DESCRIPTION
ACU	AIR CONDITIONING UNIT
AL	MAIN LINE, LEFT TRACK
AR	MAIN LINE, RIGHT TRACK
AUX	AUXILIARY
CA	AIR COOLED CONDENSER
E	EAST PART OF 7TH / FLOWER STATION
EF	EXHAUST FAN
ELECT	ELECTRICAL
EMERG	EMERGENCY
ELEV	ELEVATOR
EQUIP	EQUIPMENT
M	IN ROOM NUMBER DESIGNATION, MEZZANINE LEVEL
MECH	MECHANICAL
P	IN ROOM NUMBER DESIGNATION, PLATFORM LEVEL
PWR	POWER
SEC	SECURITY
SER	SERVICE
SF	SUPPLY FAN
SSF	SUPPLY FAN
TC & C	TRAIN CONTROL AND COMMUNICATIONS
TPS	TRACTION POWER SUBSTATION
UPE	UNDER PLATFORM EXHAUST
W	WEST PART OF 7TH / FLOWER STATION
PROBE	PROBE
FAN	FAN
---	ALTERNATE AIR FLOW

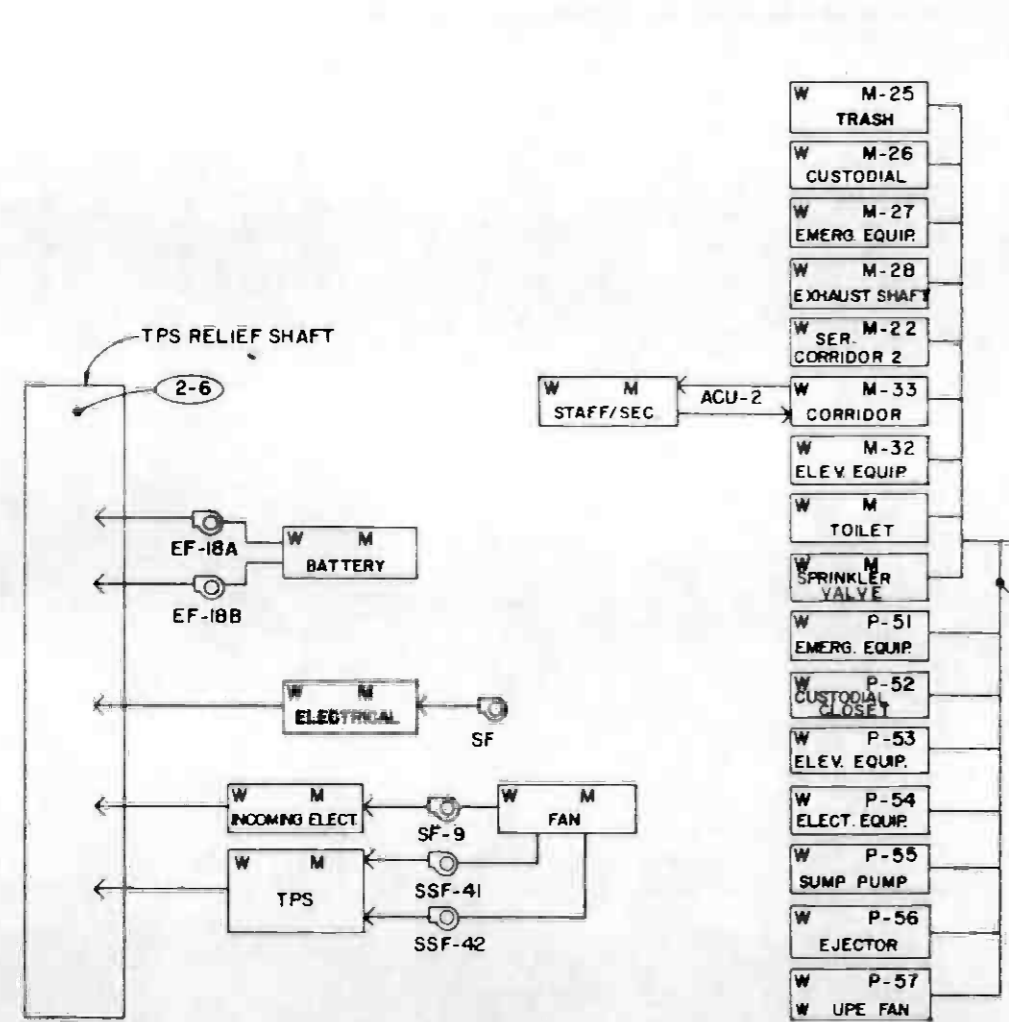


LEGEND

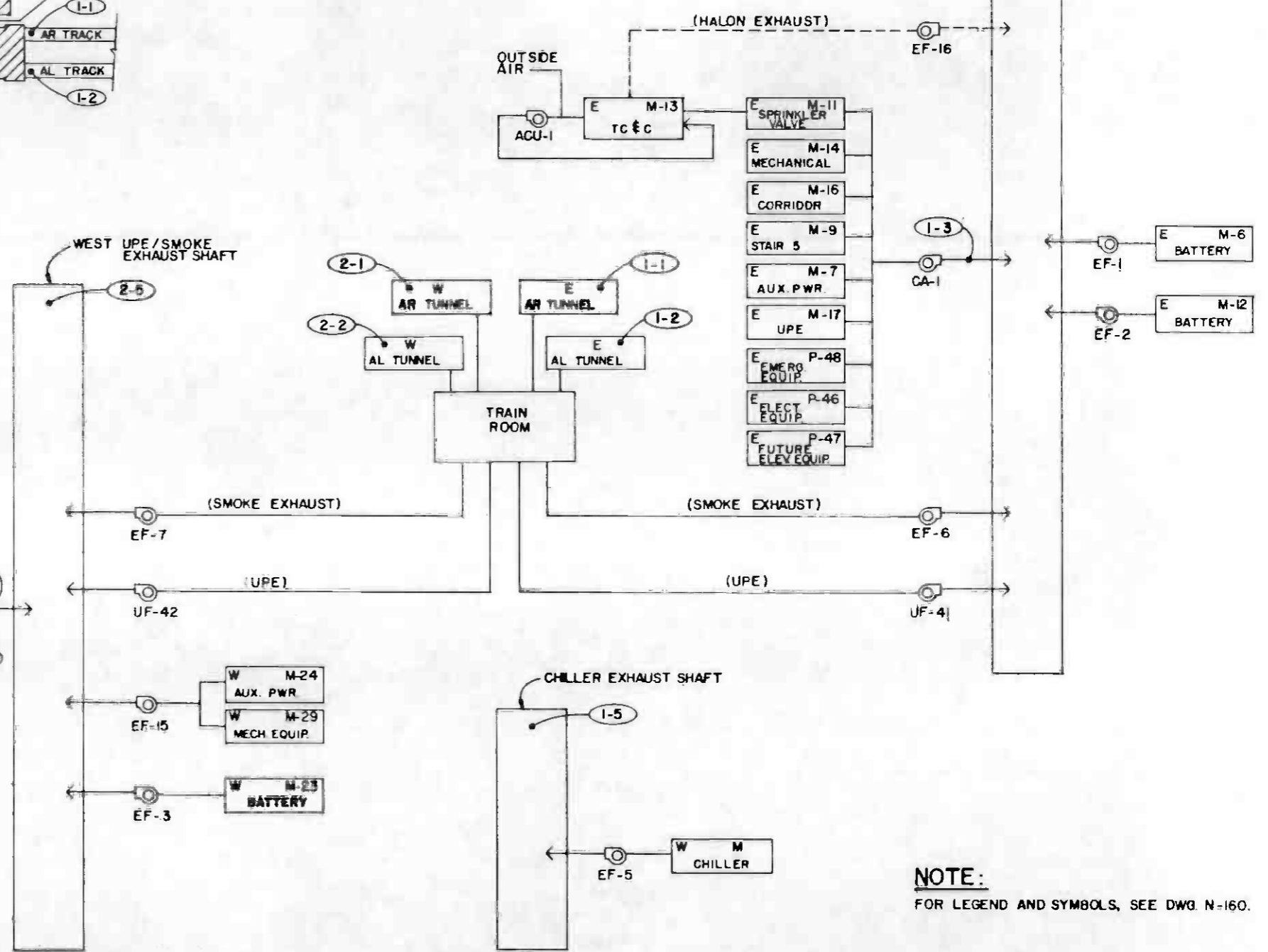
THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY S. GOLDSMITH DRAWN BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 26 SEP 86	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	COMMUNICATIONS GAS MONITORING 7TH / FLOWER STATION PROBE LOCATION SCHEMATIC	CONTRACT NO A640 DRAWING NO N-160 B SCALE NO SCALE SHEET NO 114
REV DATE BY SUB APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE	APPROVED <i>[Signature]</i>	DMJM PBOD KE HWA GENERAL CONSULTANTS		



7th/FLOWER STATION
PROBE POINTS IN TUNNELS

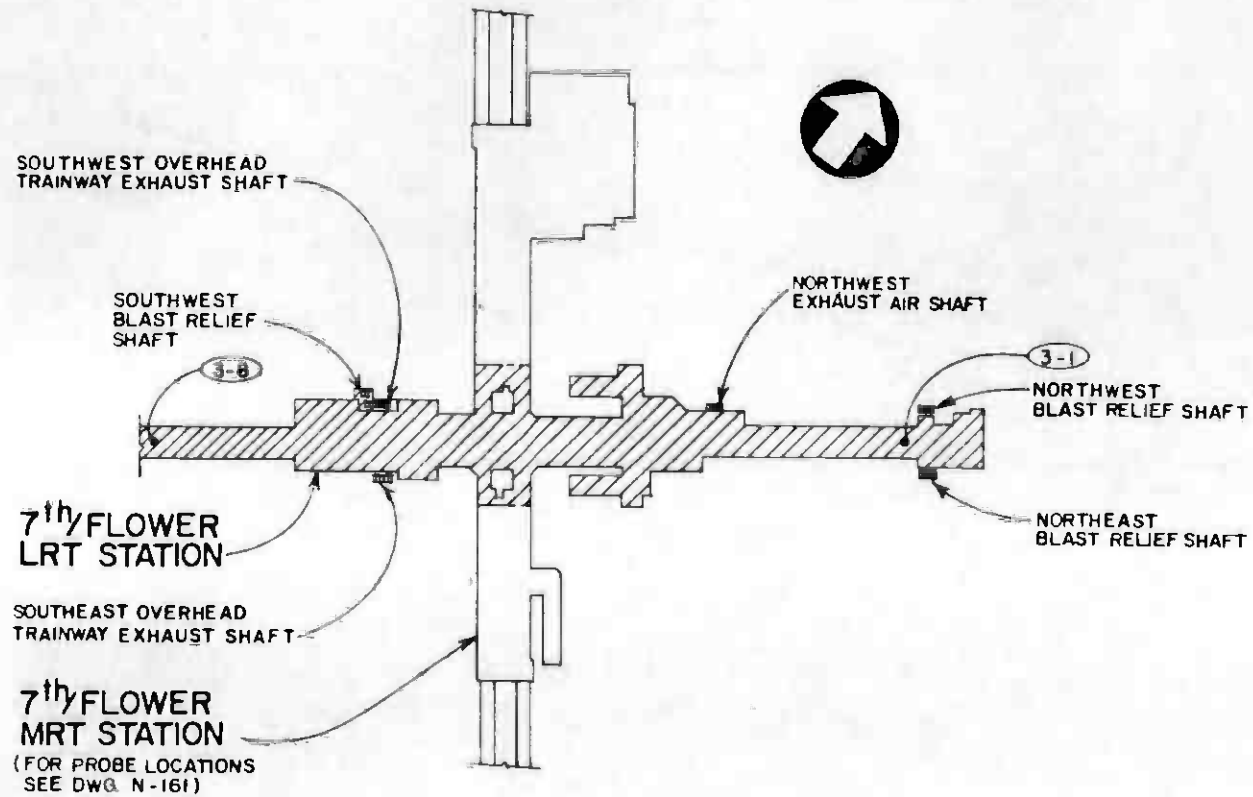


PROBE POINTS IN 7th/FLOWER STATION

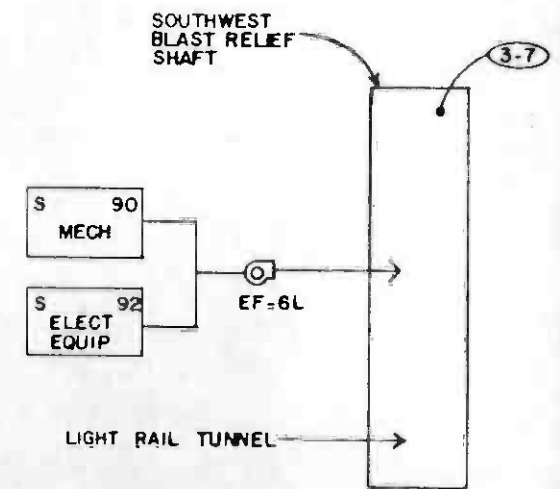
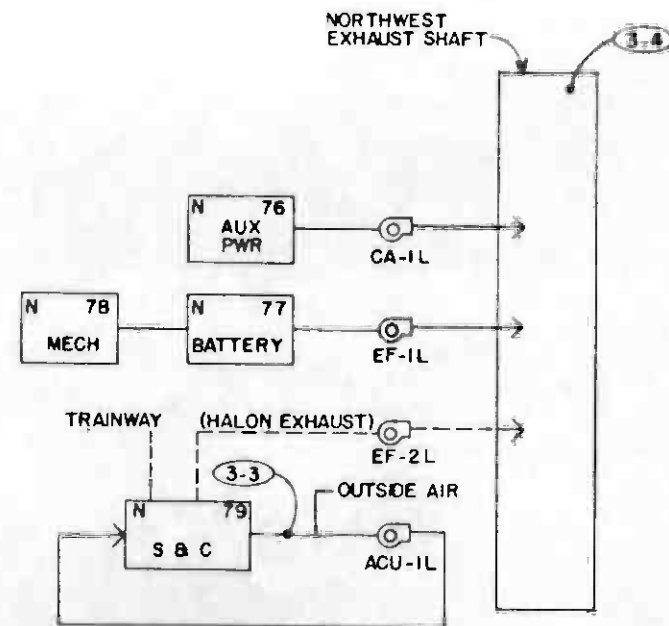
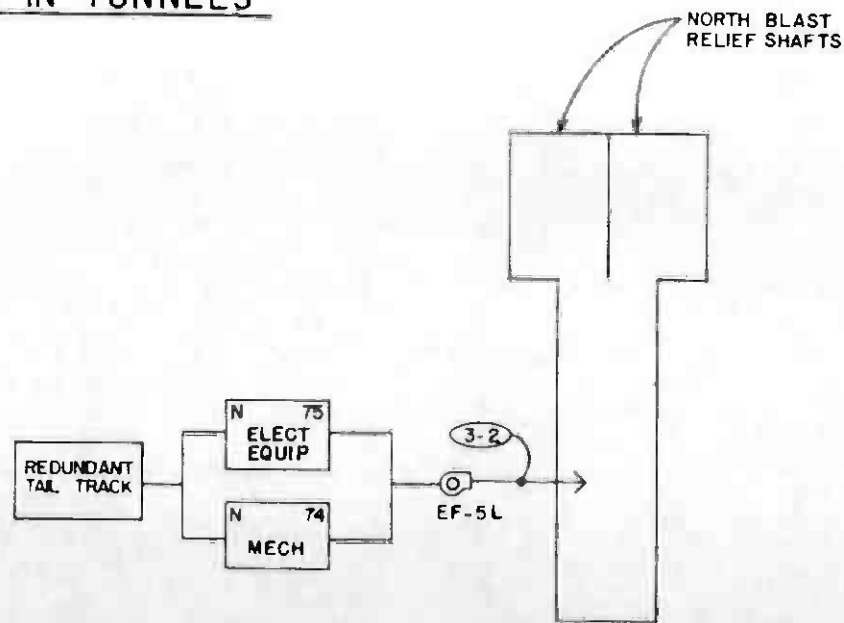
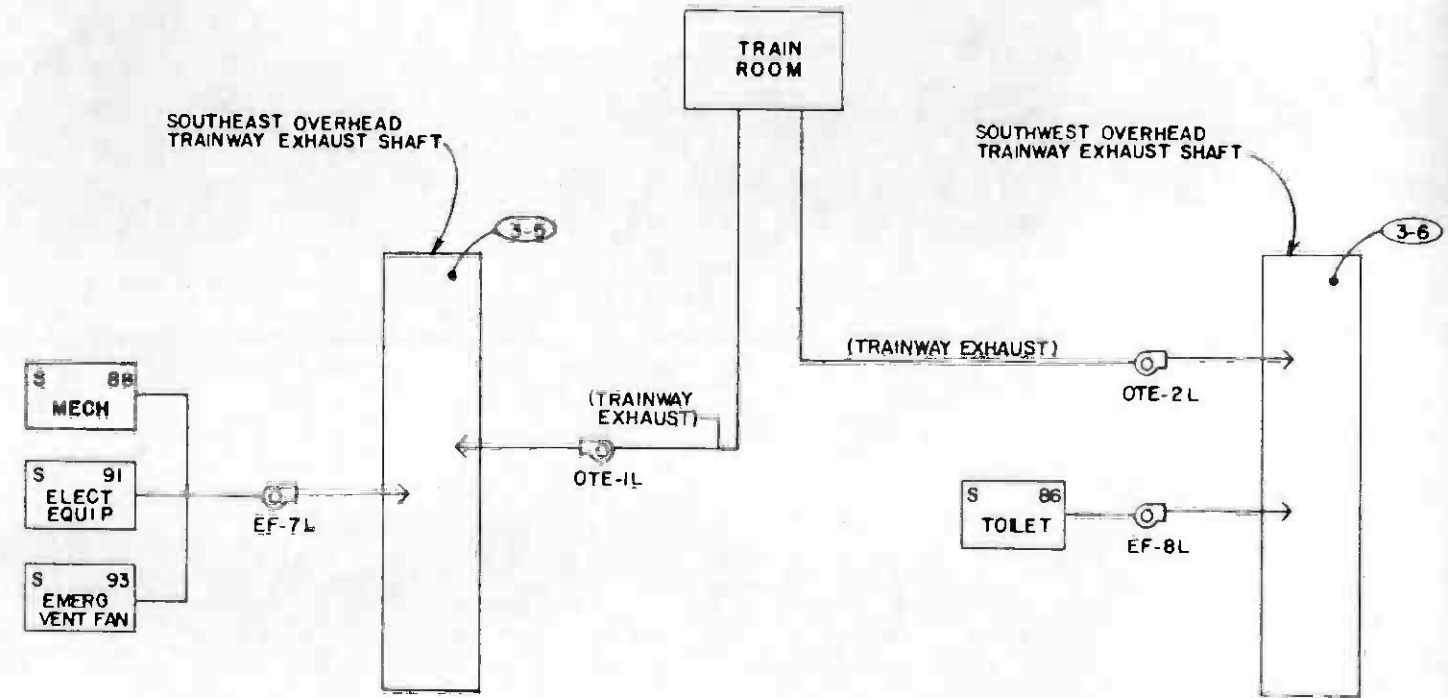


NOTE:
FOR LEGEND AND SYMBOLS, SEE DWG. N-160.

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY <i>John Colborn</i> DRAWN BY <i>Edw. Hooper</i> CHECKED BY <i>John Colborn</i> IN CHARGE <i>Edw. Hooper</i> DATE 11 AUG 88	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	DMJM PBQD/KE/HWA GENERAL CONSULTANTS APPROVED: <i>Elb...</i>	COMMUNICATIONS GAS MONITORING 7TH/FLOWER METRO RAIL STATION PROBE LOCATION SCHEMATIC	CONTRACT NO. A640 DRAWING NO. N-161 A SCALE NO SCALE SHEET NO. 115
REV. DATE BY SUB APP DESCRIPTION	11 88 SIGNATURE ISSUE	11 AUG 88	APPROVED: <i>Elb...</i>	APPROVED:	SHEET NO. 115	SHEET NO. 115



PROBE POINTS IN TUNNELS



NOTE:
FOR LEGEND AND SYMBOLS, SEE DWG. N-160.

PROBE POINTS IN 7th/FLOWER LRT STATION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.				DESIGNED BY S. GOLDSMITH DRAWN BY E. ACOSTA		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 		COMMUNICATIONS GAS MONITORING 7TH/FLOWER LIGHT RAIL STATION PROBE LOCATION SCHEMATIC		CONTRACT NO. A 640	
REVISIONS: 1. 2/27/86 2. 8/15/86				CHECKED BY <i>[Signature]</i> DATE 25 AUG 86						DMJM/PBOD/KE/HWA GENERAL CONSULTANTS	
GENERAL REVISION SIGNATURE ISSUE				APPROVED <i>[Signature]</i>		APPROVED		SCALE NO SCALE		SHEET NO. 116	



CENTRAL ANALYZER UNIT NO. 1 (SEE NOTES 1 & 2)						CENTRAL ANALYZER UNIT NO. 2 (SEE NOTES 1 & 2)						CENTRAL ANALYZER UNIT NO. 3 (SEE NOTES 1 & 2)					
PROBE NO	LOCATION	TYPE OF CONN. ³	CONDUIT USED	TUBING LENGTH ⁵	REMARKS	PROBE NO	LOCATION	TYPE OF CONN. ³	CONDUIT USED	TUBING LENGTH ⁵	REMARKS	PROBE NO	LOCATION	TYPE OF CONN. ³	CONDUIT USED	TUBING LENGTH ⁵	REMARKS
	SEE DWG. N-161		FROM TC & C ⁴ RM				SEE DWG. N-161		FROM TC & C ⁴ RM				SEE DWG. N-162		FROM TC & C ⁴ RM		
1-1	TOP OF TUNNEL, AT ϕ OF TRACK, 4'-0" FROM EDGE	3	RUN EXPOSED TO MDF, CT-003 TO CIG 3, FG 401 TO PROBE	300'	A640 CONTRACTOR TO PROVIDE APPROX. 30' OF 1" ϕ CONDUIT IN TUNNEL	2-1	TOP OF TUNNEL, AT ϕ OF TRACK, 4'-0" FROM EDGE	3	RUN EXPOSED TO MDF, CT-002 TO CIG 2, FG 606 TO PROBE	800'	A640 CONTRACTOR TO PROVIDE APPROX. 30' OF 1" ϕ CONDUIT IN TUNNEL	3-1	TOP OF TAIL-TRACK CEILING AT ϕ OF STATION, STA 4 + 70 APPROX	AS APPROVED		1000'	
1-2	SAME AS 1-1	3	SAME AS 1-1	400'	SAME AS 1-1	2-2	SAME AS 2-1	3	SAME AS 2-1	800'	SAME AS 2-1	3-2	AT DUCT ϕ , 2'-0" FROM ϕ RS WALL	1		1000'	
1-3	AT DUCT ϕ , 8'-0" FROM DISCH. FLANGE	1	RUN EXPOSED TO MDF, CT-003 TO CIG 3, FG 101 TO PROBE	200'		2-3	AT DUCT ϕ , 4'-0" ABOVE FINISH FLR.	1	RUN EXPOSED TO MDF, CT-002 TO CIG 2, FG 301 TO PROBE	700'		3-3	AT DUCT ϕ , 3'-0" ABOVE FINISH FLR.	1		700'	
1-4	2'-0" BELOW TOP OF ACCESS GRATING	AS APPROVED	RUN EXPOSED TO MDF, CT-003 TO CIG 3, FG 101 TO PROBE	300'		2-4	AT DUCT ϕ , BETWEEN TWO DISCH. ELBOWS	1	RUN EXPOSED TO MDF, CT-002 TO CIG 2, T8D TO PROBE	700'		3-4	2'-0" BELOW TOP OF GRATING	AS APPROVED		700'	
1-5	AT DUCT ϕ	1	RUN EXPOSED TO MDF, CT-001 TO CIG 1, T8D TO PROBE	900'		2-5	2'-0" BELOW TOP OF GRATING	AS APPROVED	SAME AS 2-3	700'		3-5	2'-0" BELOW TOP OF GRATING	AS APPROVED		600'	
						2-6	2'-0" BELOW TOP OF GRATING	AS APPROVED	RUN EXPOSED TO MDF, CT-001 TO CIG 1, T8D TO PROBE	900'		3-6	2'-0" BELOW TOP OF GRATING	AS APPROVED		500'	
												3-7	2'-0" BELOW TOP OF GRATING	AS APPROVED		600'	
												3-8	TOP OF TUNNEL AT ϕ OF STATION, STA 14 + 20 APPROX	3		1000'	

NOTES:

- CENTRAL ANALYZER VENT SHALL BE ROUTED TO TRANSFER GRILLE OF SPRINKLER VALVE ROOM (TYPICAL)
- CENTRAL ANALYZER CONDENSATE DRAIN SHALL BE ROUTED TO NEAREST FUNNEL DRAIN (TYPICAL)
- FOR PROBE CONNECTION DETAILS, SEE DRAWING N-167
- FOR LEGEND AND SYMBOLS SEE DWG. N-160.
- TUBING LENGTH SHOWN IS APPROXIMATE.

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA

DESIGNED BY
BILL HOWING
DRAWN BY
ED ACOSTA
CHECKED BY
[Signature]
DATE
22 AUG 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM, PBQD/KE/HWA
General Consultant

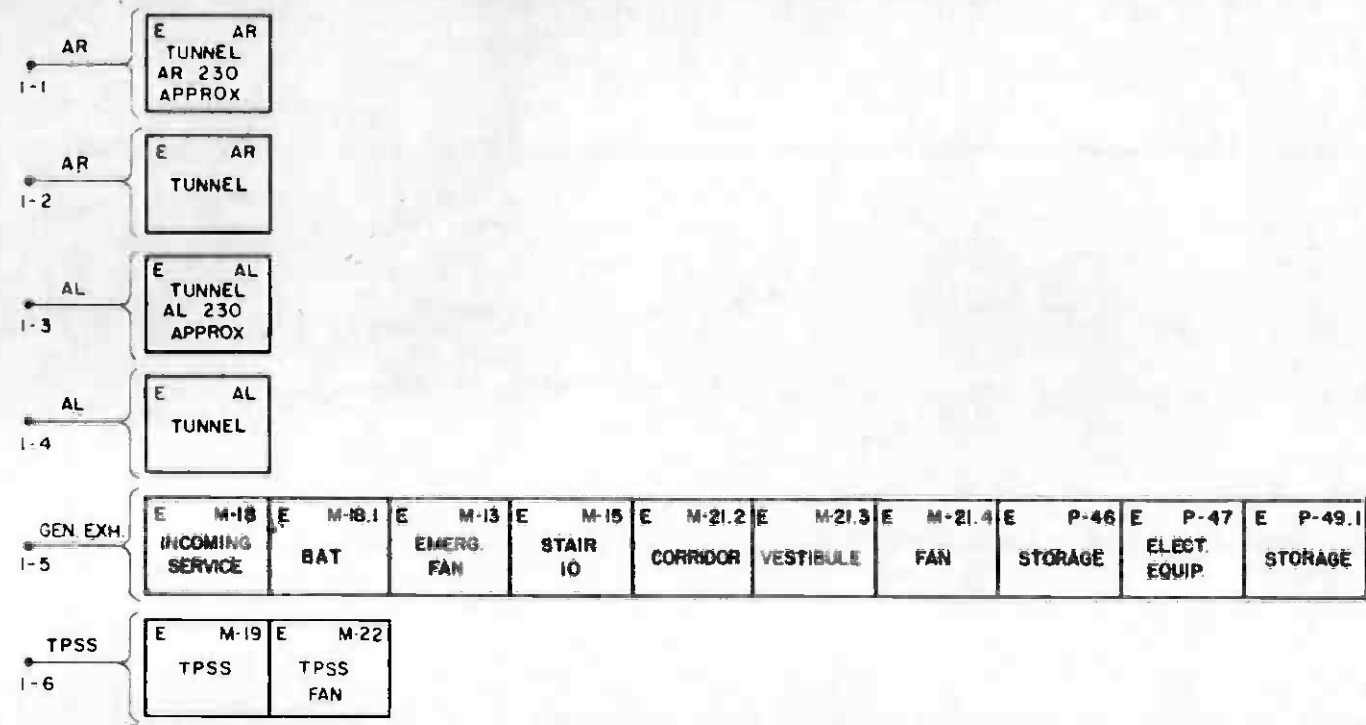
APPROVED *[Signature]*

COMMUNICATIONS
GAS MONITORING
PROBE SCHEDULE
7th/FLOWER STATION

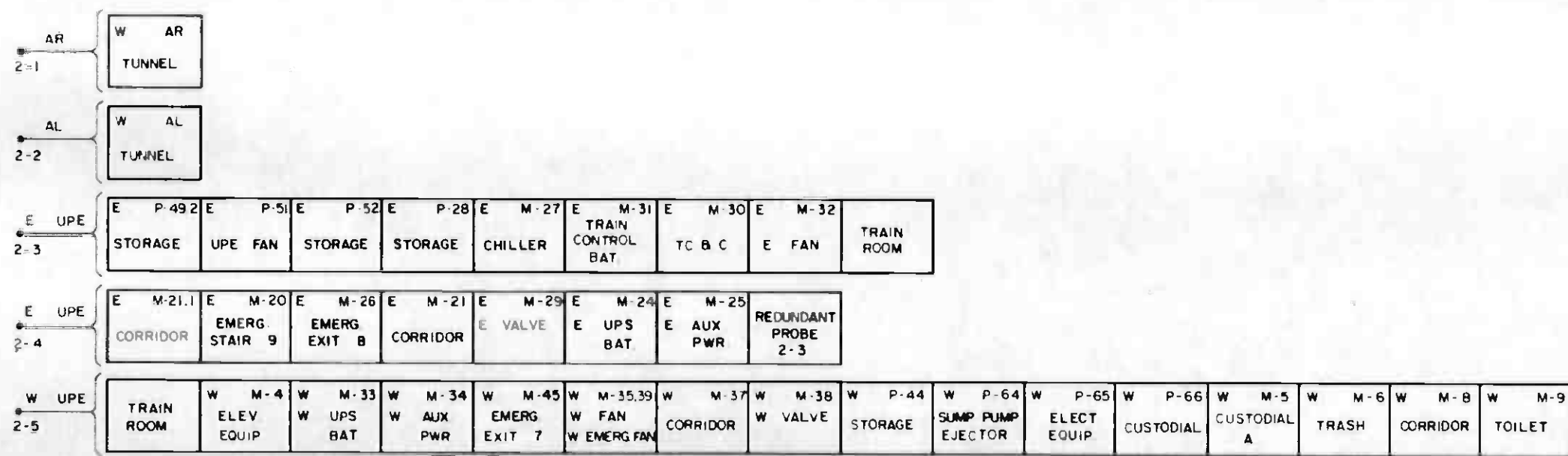


CONTRACT NO
A640
DRAWING NO
N-163 B
SCALE
NO SCALE
SHEET NO
117

REV	DATE	BY	SUB	APP	DESCRIPTION
1	8-27				GENERAL REVISION
2	7-22-86				SIGNATURE ISSUE

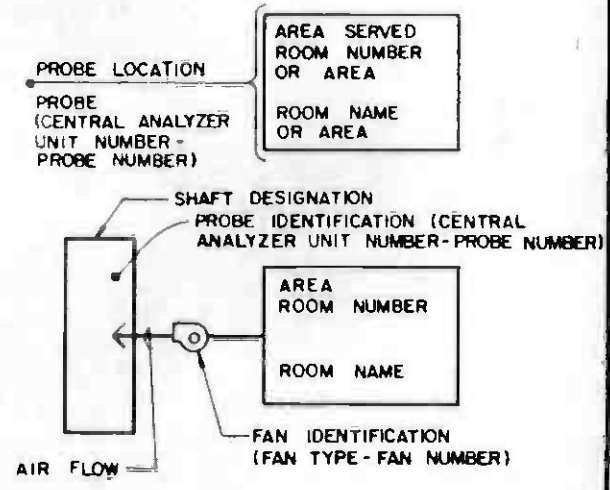


CENTRAL ANALYZER UNIT NO. 1



CENTRAL ANALYZER UNIT NO. 2

SYMBOL	DESCRIPTION
AHU	AIR HANDLING UNIT
AL	MAIN LINE, LEFT TRACK
AR	MAIN LINE, RIGHT TRACK
AUX	AUXILIARY
BAT	BATTERY
E	EASTERN PART OF WILSHIRE/ALVARADO STATION
EF	EXHAUST FAN
ELECT	ELECTRICAL
ELEV	ELEVATOR
EMERG	EMERGENCY
EQUIP	EQUIPMENT
GEN. EXH	GENERAL EXHAUST SHAFT
M	IN ROOM NUMBER DESIGNATION, MEZZANINE LEVEL
P	IN ROOM NUMBER DESIGNATION, PLATFORM LEVEL
PWR	POWER
SSF	SUPPLY FAN
TC & C	TRAIN CONTROL & COMMUNICATIONS
EIS	ELECTRIC INCOMING SERVICE
TPSS	TRACTION POWER SUBSTATION
UPE	UNDER PLATFORM EXHAUST
UPS	UNINTERRUPTIBLE POWER SUPPLY
W	WESTERN PART OF WILSHIRE/ALVARADO STATION
•	PROBE
○	FAN
---	ALTERNATE AIR FLOW

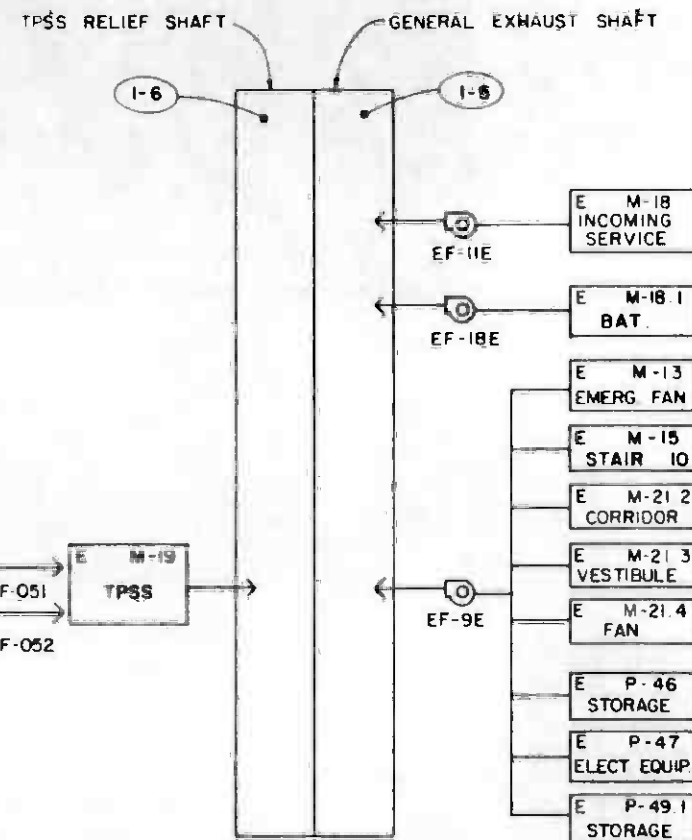
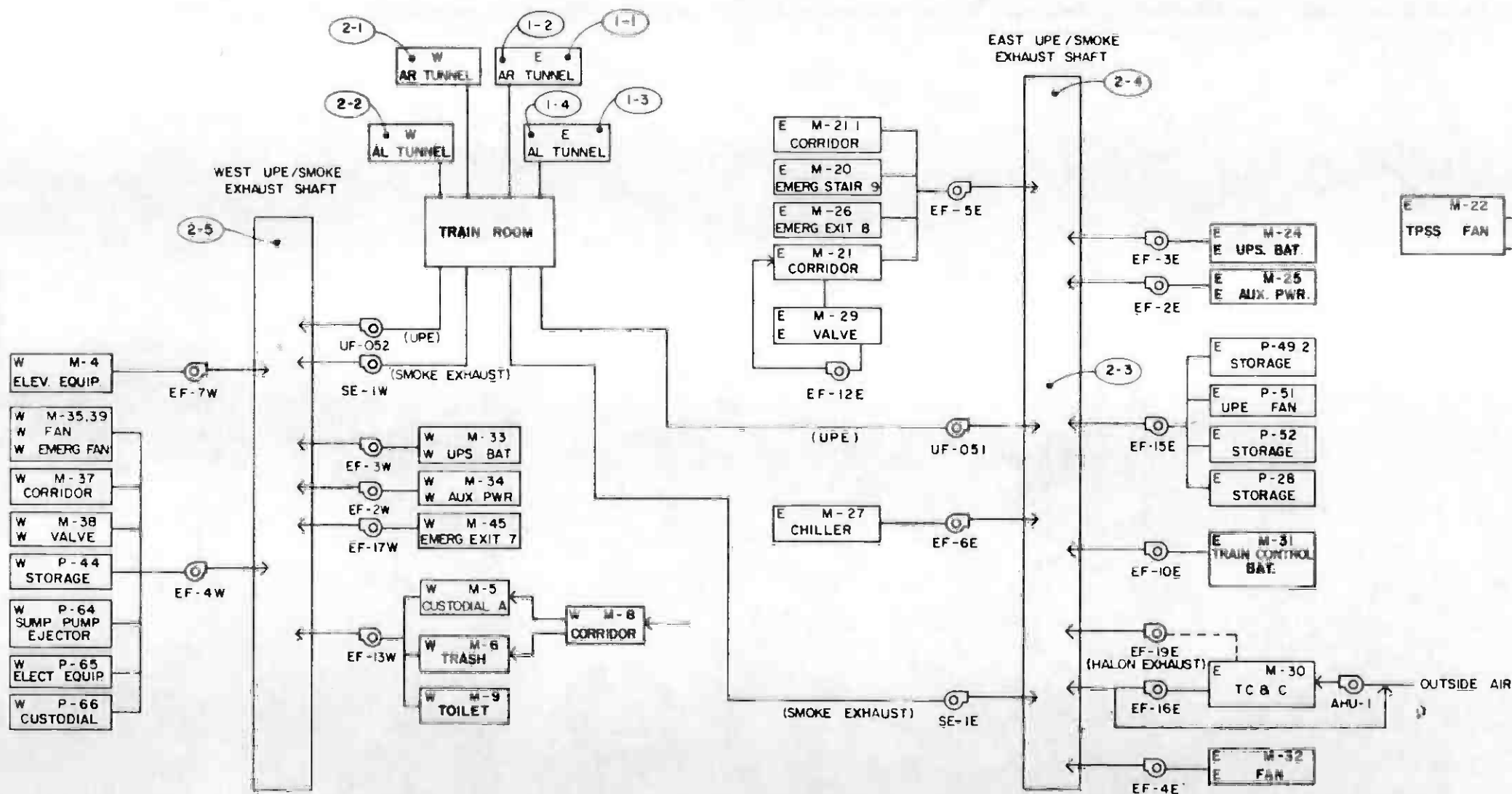


LEGEND

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY S. GOLDSMITH DRAWN BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 29 AUG 86		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 		COMMUNICATIONS GAS MONITORING WILSHIRE/ALVARADO STATION PROBE LOCATION SCHEMATIC		CONTRACT NO A640 DRAWING NO N-164 B SCALE NO SCALE SHEET NO 118					
REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION	APPROVED	DATE
					ADDED EIS							<i>[Signature]</i>	
					SIGNATURE ISSUE								



PROBE POINTS IN TUNNELS



NOTE:
1. FOR LEGEND AND SYMBOLS SEE DWG. N-164.

PROBE POINTS IN WILSHIRE / ALVARADO STATION



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY S. GOLDSMITH DRAWN BY P. HOOKER CHECKED BY J. R. GARDNER IN CHARGE P. M. DUNN DATE 22 SEP 86	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT DMJM, PBQD, KE/HWA GENERAL CONSULTANTS	CONTRACT NO. A640 DRAWING NO. N-165 A SCALE NO SCALE SHEET NO. 119
REV DATE BY SUB APP DESCRIPTION	1 11-86 SIGNATURE ISSUE	22 SEP 86	APPROVED: <i>[Signature]</i>	COMMUNICATIONS GAS MONITORING WILSHIRE / ALVARADO STATION PROBE LOCATION SCHEMATIC

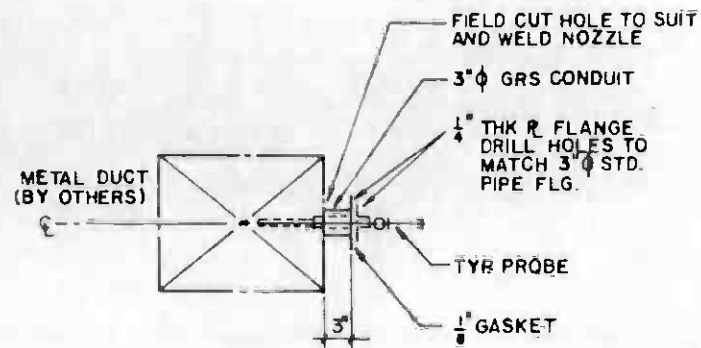
CENTRAL ANALYZER UNIT NO 1 (SEE NOTES 1 & 2)						CENTRAL ANALYZER UNIT NO 2 (SEE NOTES 1 & 2)					
PROBE NO.	LOCATION SEE DWG. N-165	TYPE OF CONN.	CONDUIT USED FROM TC & C RM	TUBING LENGTH	REMARKS	PROBE NO.	LOCATION SEE DWG. N-165	TYPE OF CONN.	CONDUIT USED FROM TC & C RM	TUBING LENGTH	REMARKS
1-1	1'-0" BELOW TOP OF TUNNEL AT C OF TRACK AT STA 230 + 00	3	C-006	3000'	A640 CONTRACTOR TO PROVIDE APPROX 400' OF 1" Ø CONDUIT FROM CROSSPASSAGE AT STA 233 + 65	2-1	1'-0" BELOW TOP OF TUNNEL AT C OF TRACK 4'-0" FROM EDGE	3	CONDUIT FG 375 TO J-BOX AT TUNNEL OPENING	700'	A640 CONTRACTOR TO PROVIDE APPROX 30' OF 1" Ø CONDUIT IN TUNNEL.
1-2	1'-0" BELOW TOP OF TUNNEL AT C OF TRACK 4'-0" FROM EDGE	3	CONDUIT FG 372 TO J-BOX AT TUNNEL OPENING	500'	A640 CONTRACTOR TO PROVIDE APPROX 30' OF 1" Ø CONDUIT IN TUNNEL	2-2	1'-0" BELOW TOP OF TUNNEL AT C OF TRACK 4'-0" FROM EDGE	3	CONDUIT FG 374 TO J-BOX AT TUNNEL OPENING	700'	A640 CONTRACTOR TO PROVIDE APPROX 30' OF 1" Ø CONDUIT IN TUNNEL
1-3	1'-0" BELOW TOP OF TUNNEL AT C OF TRACK AT STA 230 + 00	3	C-003	3000'	A640 CONTRACTOR TO PROVIDE APPROX 400' OF 1" Ø CONDUIT FROM CROSSPASSAGE AT STA 233 + 65	2-3	9'-0" ABOVE E.UPE SHAFT FLOOR AT STA GRID LINE 117	AS APPROVED	EMBEDDED CONDUIT THROUGH WALL FROM TC & C ROOM INTO E.UPE SHAFT	200'	A640 CONTRACTOR TO PROVIDE APPROX 150' OF 1" Ø CONDUIT FROM J-BOX TO PROBE LOCATION
1-4	1'-0" BELOW TOP OF TUNNEL AT C OF TRACK 4'-0" FROM EDGE.		CONDUIT FG 373 TO J-BOX AT TUNNEL OPENING	500'	A640 CONTRACTOR TO PROVIDE APPROX 30' OF 1" Ø CONDUIT IN TUNNEL	2-4	15'-0" FROM END OF E.UPE SHAFT AT 2'-0" BELOW GRATING	AS APPROVED	EMBEDDED CONDUIT THROUGH WALL FROM TC & C ROOM INTO E.UPE SHAFT	300'	A640 CONTRACTOR TO PROVIDE J-BOX AND APPROX 100' OF 1" Ø CONDUIT BEYOND PROBE 2-3
1-5	2'-0" BELOW GRATING AT C OF EIS EXHAUST SHAFT	2	CONDUIT FG 376 TO J-BOX IN TPSS EXHAUST SHAFT	400'	A640 CONTRACTOR TO MAKE CONNECTION FROM J-BOX TO PROBE LOCATION	2-5	4'-6" ABOVE FLOOR LEVEL IN W.UPE SHAFT AT MIDPOINT OF COMMON WALL BETWEEN UPE & BLAST RELIEF SHAFT	AS APPROVED	CONDUIT FG 377 TO J-BOX IN W.UPE SHAFT	600'	
1-6	2'-0" BELOW GRATING AT C OF TPSS EXHAUST SHAFT	AS APPROVED	CONDUIT FG 376 TO PROBE LOCATION	400'							

NOTES:

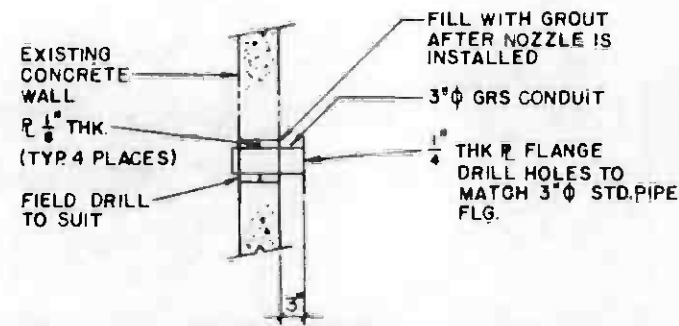
- CENTRAL ANALYZER VENT SHALL BE ROUTED TO 2" Ø VENT LINE IN BATTERY ROOM NO. 31 (TYP).
- FOR PROBE CONNECTION DETAILS, SEE DWG. N-167.
- FOR LEGEND AND SYMBOLS SEE DWG. N-164.
- TUBING LENGTHS SHOWN ARE APPROXIMATE.



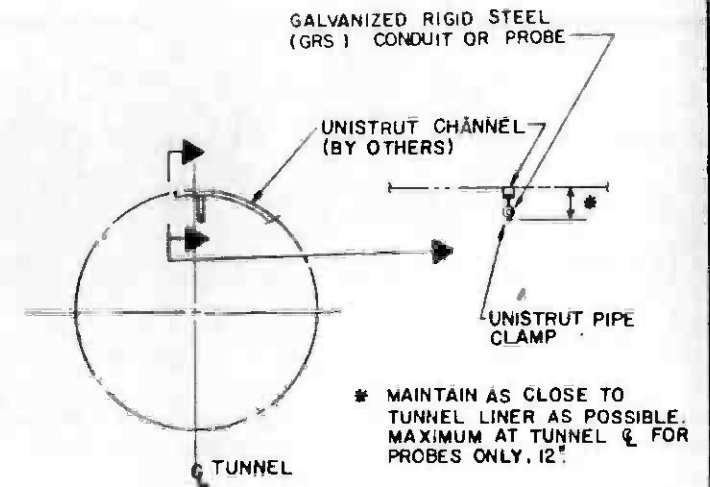
THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M.R.T.C. DRAWN BY MARTHA UDRESCU CHECKED BY <i>[Signature]</i> IN CHARGE <i>[Signature]</i> DATE 27 OCT 86		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	DMJM PBQD KE HWA GENERAL CONSULTANTS APPROVED <i>[Signature]</i>	COMMUNICATIONS GAS MONITORING WILSHIRE / ALVARADO STATION PROBE SCHEDULE	CONTRACT NO A 640 B DRAWING NO N-166 B SCALE NO SCALE SHEET NO 120
---	--	--	--	--	--	---	---



DETAIL 1
DUCT CONNECTION



DETAIL 2
WALL CONNECTION



DETAIL 3
TUNNEL CONNECTION

* MAINTAIN AS CLOSE TO TUNNEL LINER AS POSSIBLE. MAXIMUM AT TUNNEL ϕ FOR PROBES ONLY, 12"

NOTES

1. OTHER CONFIGURATIONS MAY BE SUBMITTED FOR APPROVAL OF THE DISTRICT.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964 AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
BILL HOWING

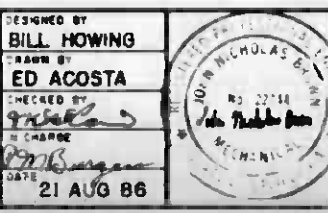
DRAWN BY
ED ACOSTA

CHECKED BY
[Signature]

IN CHARGE
[Signature]

DATE
21 AUG 86

ADDED NOTE 1 & CONDUIT TO
SIGNATURE ISSUE



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM PBOO KEI HWA
GENERAL CONSULTANTS

APPROVED
[Signature]

COMMUNICATIONS
GAS MONITORING
PROBE LOCATION DETAILS

CONTRACT NO
A640

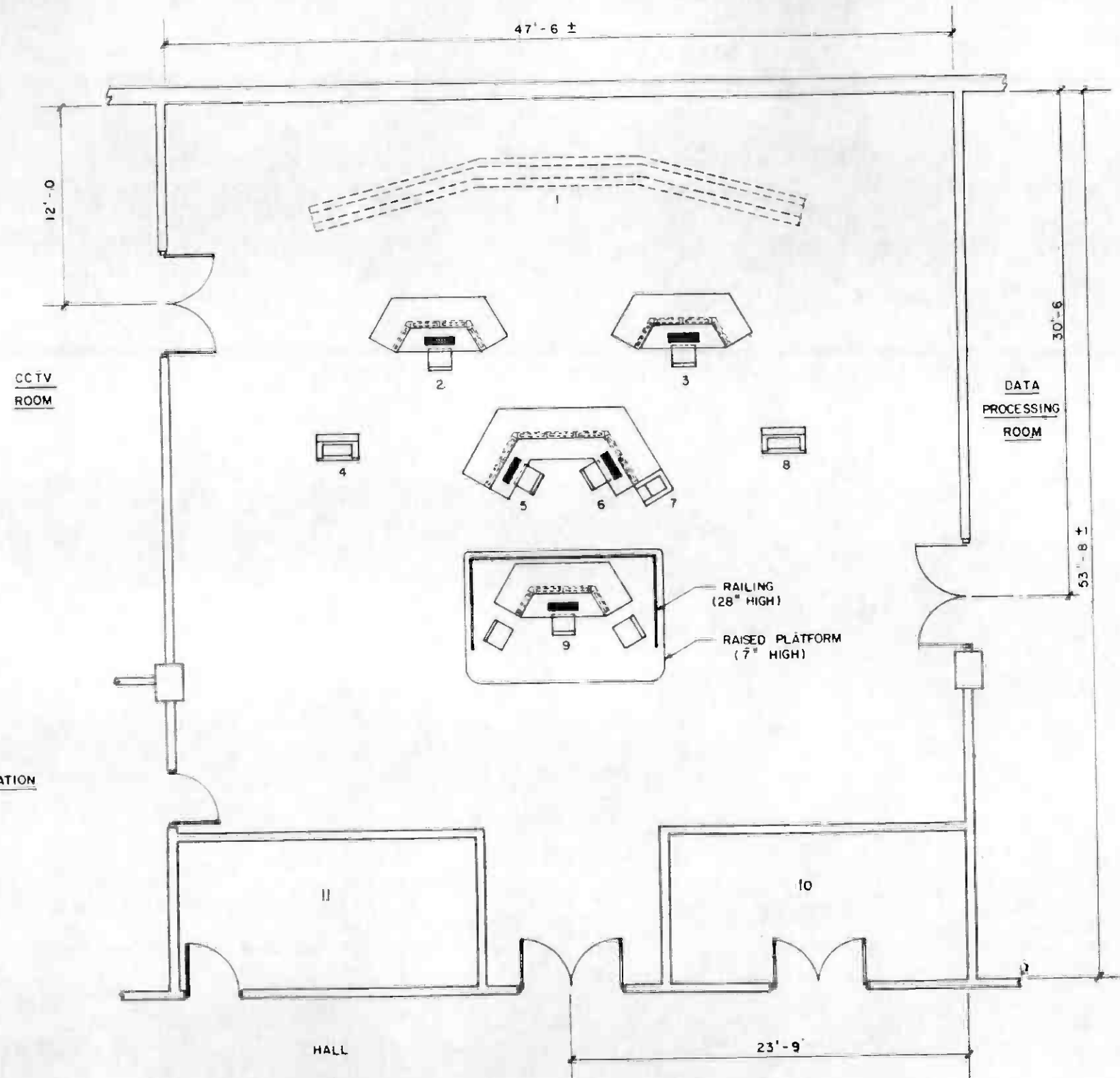
DRAWING NO
N-167 B

REV
0

SCALE
NO SCALE

SHEET NO
121

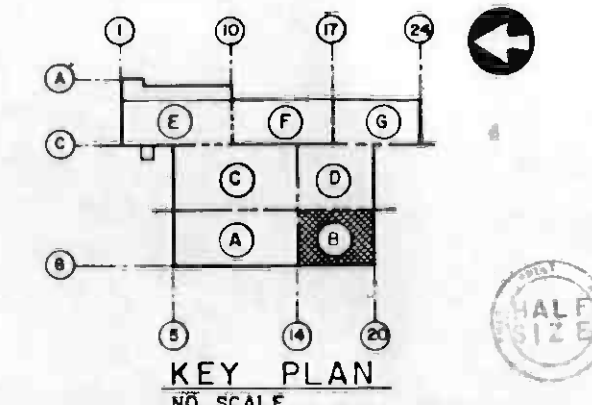
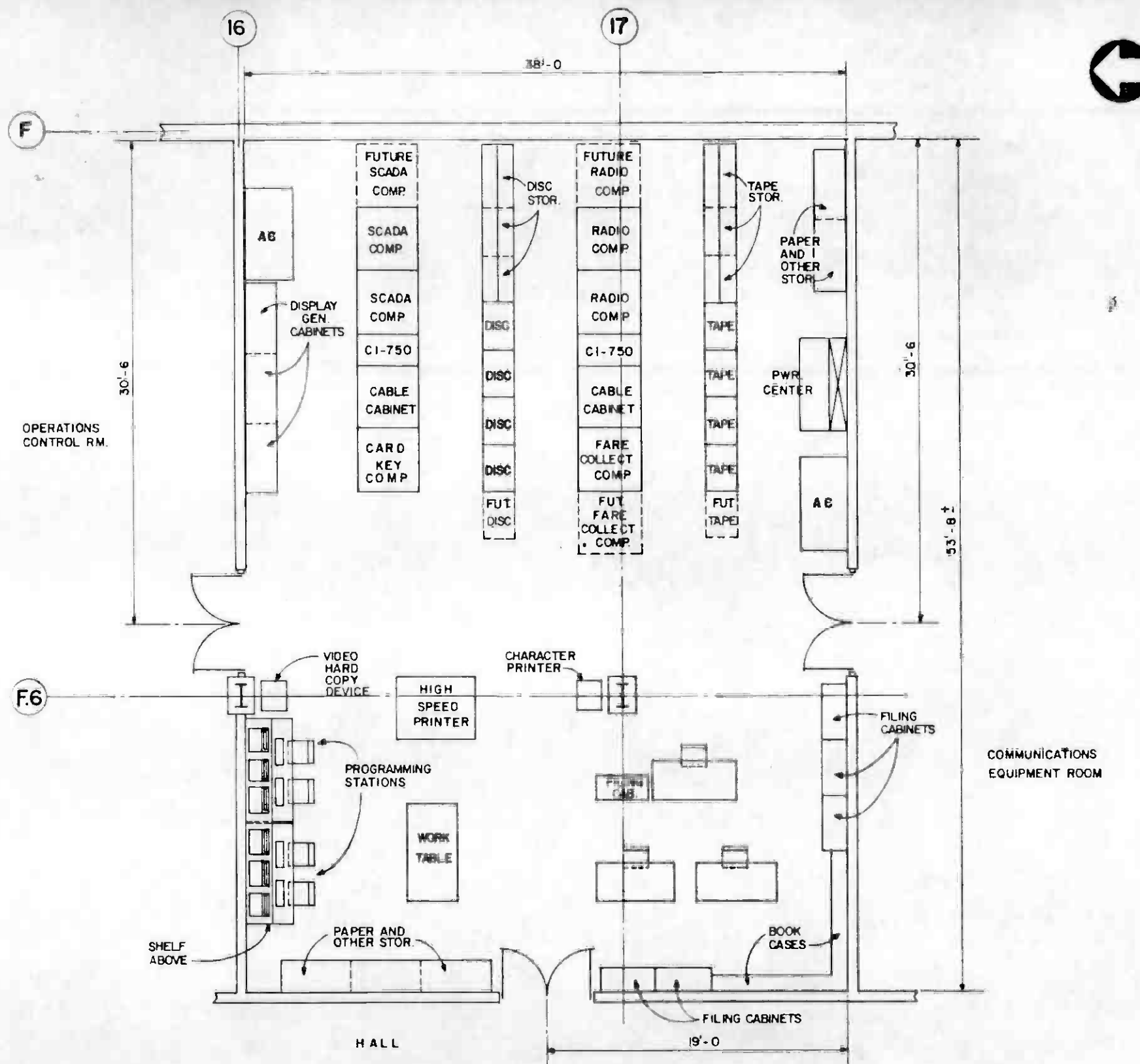
REV	DATE	BY	SUB	APP	DESCRIPTION
1	2-6-87				
2	8-21-86				



- EQUIPMENT :**
1. POSSIBLE FUTURE SYSTEM STATUS BOARD
 2. TRAIN DISPATCHER CONSOLE
 3. TRAIN DISPATCHER CONSOLE
 4. CHARACTER PRINTER (ALARMS / EVENTS)
 5. FIRE DEPARTMENT LIASON POST
 6. SYSTEM COMMUNICATIONS CONSOLE
 7. CRT VIDEO HARDCOPY DEVICE (HARDCOPY OUTPUTS OF CRT DISPLAYS)
 8. CHARACTER PRINTER (REPORTS)
 9. RAIL OPERATIONS SUPERVISOR CONSOLE
 10. AIR CONDITIONING
 11. STORAGE



<p>THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.</p>	<p>DESIGNED BY <i>[Signature]</i></p> <p>DRAWN BY <i>[Signature]</i></p> <p>CHECKED BY <i>[Signature]</i></p> <p>H. CHANG <i>[Signature]</i></p> <p>DATE 22 SEP 86</p>		<p>SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT</p> <p>METRO RAIL PROJECT</p> <p>DMJM PBOD KE HWA GENERAL CONSULTANTS</p> <p>APPROVED <i>[Signature]</i></p>	<p>COMMUNICATIONS</p> <p>RAIL CONTROL CENTER</p> <p>OPERATIONS CONTROL ROOM</p>	<p>CONTRACT NO A640</p> <p>DRAWING NO N-107 A</p> <p>SCALE 1/4" = 1'-0"</p> <p>SHEET NO 122</p>
<p>REV DATE BY SUB APP DESCRIPTION</p>	<p>REV DATE BY JOB APP DESCRIPTION</p>	<p>SIGNATURE ISSUE</p>			

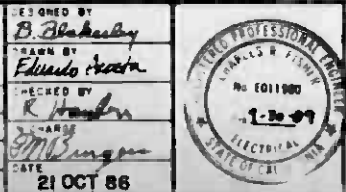


THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964 AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
B. Blakesley
DRAWN BY
Edwards
CHECKED BY
R. ...
DATE
21 OCT 86

REVISIONS
REV. DATE BY SUB APP DESCRIPTION

SIGNATURE ISSUE



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PROG/KE HWA
GENERAL CONSULTANTS

APPROVED

CONTRACT NO
A 64D

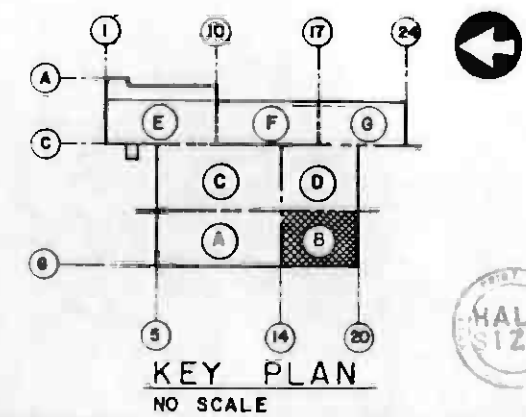
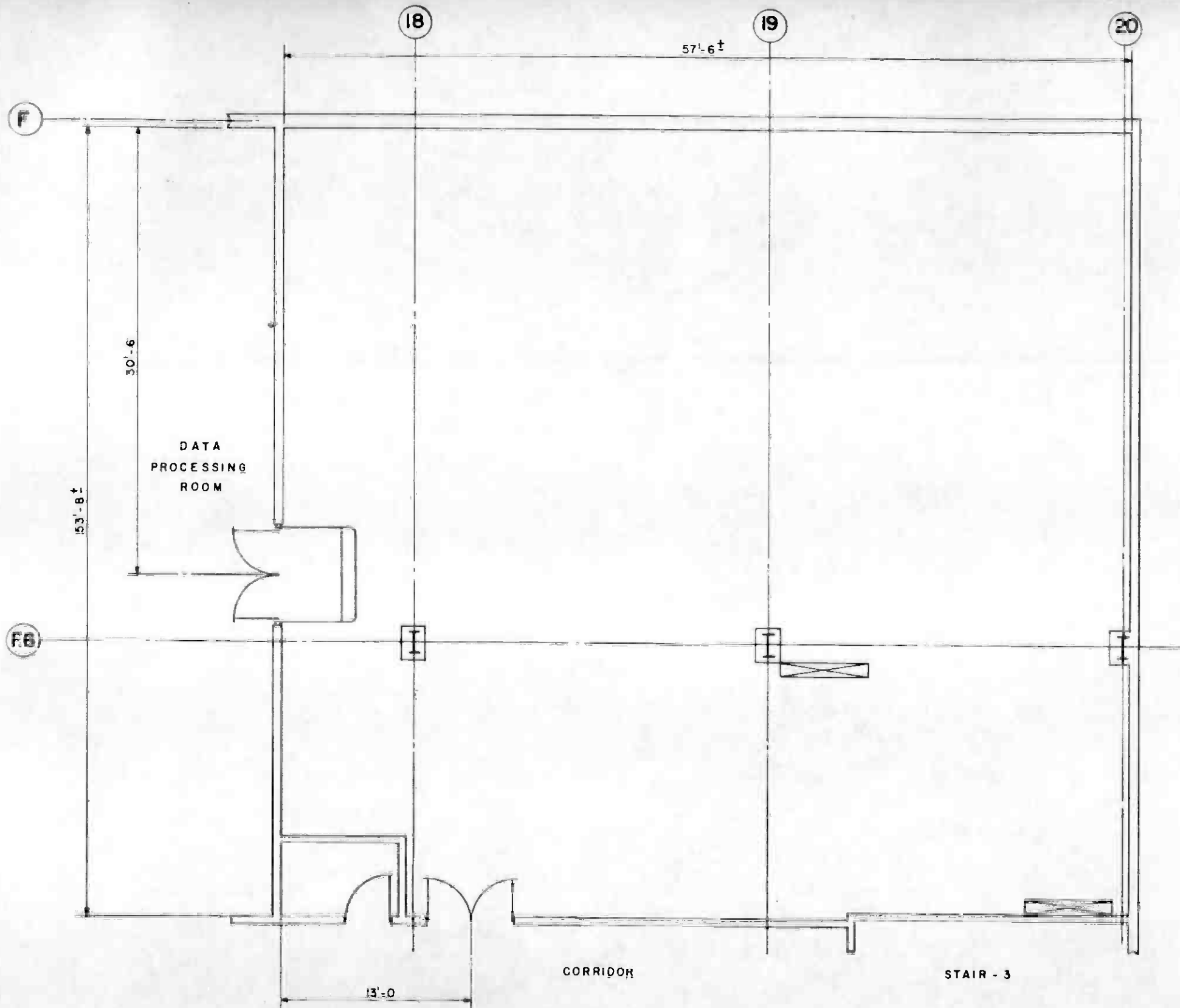
DRAWING NO
N-207 A

SCALE
1/4" = 1'-0"

SHEET NO
123

REVISIONS

REV. DATE BY SUB APP DESCRIPTION



REV	DATE	BY	SUB	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964 AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
MRTC

DRAWN BY
Edward Acosta

CHECKED BY
B. B. Bishop

IN CHARGE
P. M. Duggan

DATE
22 OCT 86

SIGNATURE ISSUE

REGISTERED PROFESSIONAL ENGINEER
No. 6011800
1-30-84
STATE OF CALIFORNIA

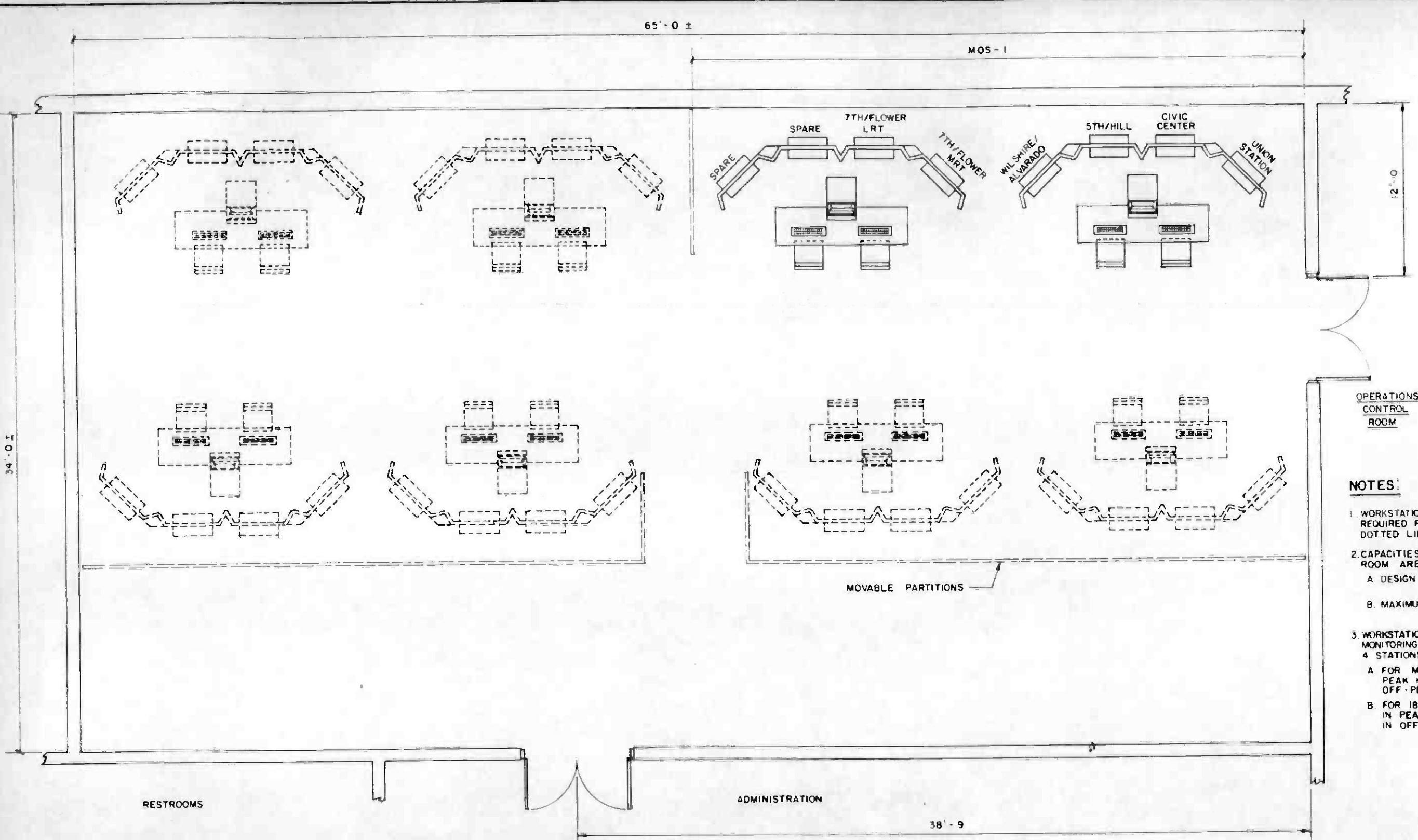
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM-PBOD/KE HWA
INTERNAL CONSULTANTS

APPROVED
Elbink

COMMUNICATIONS
EQUIPMENT ROOM

CONTRACT NO	A 640
DRAWING NO	N-209 A O
SCALE	1/4" = 1'-0"
SHEET NO	124



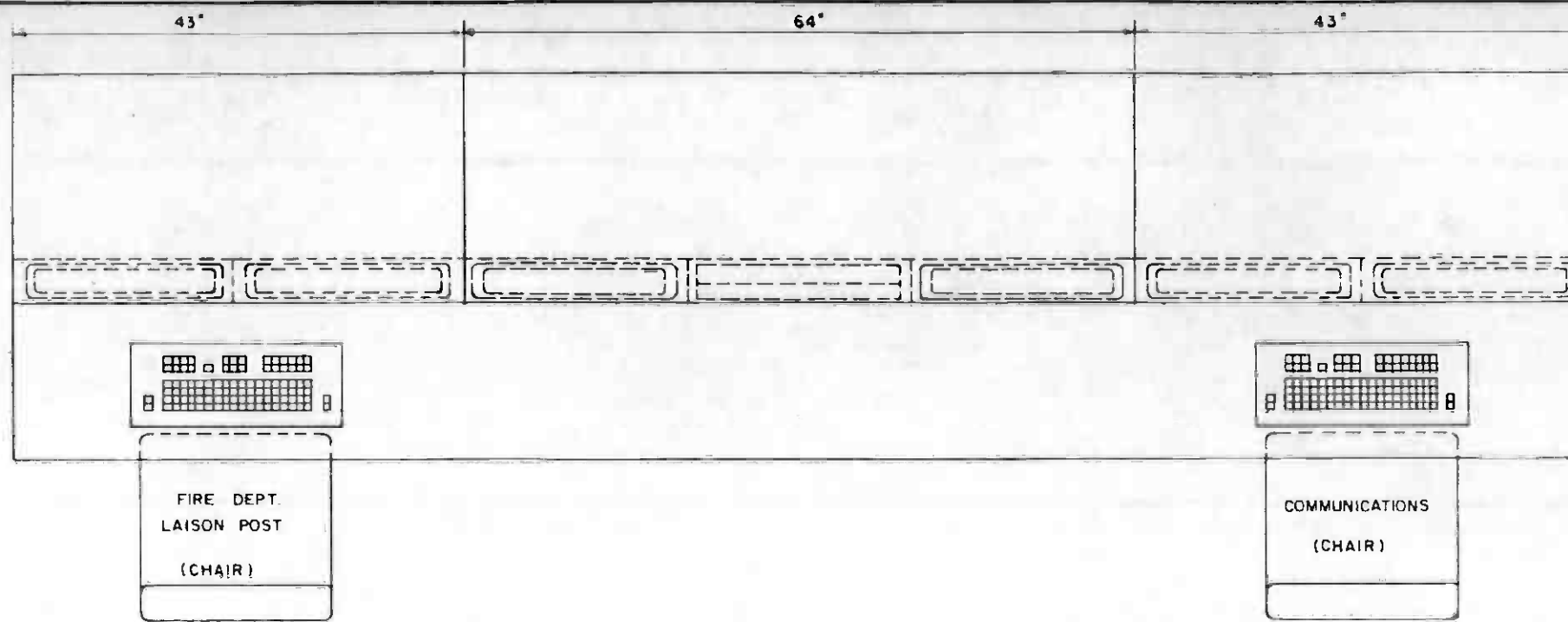
OPERATIONS CONTROL ROOM

NOTES:

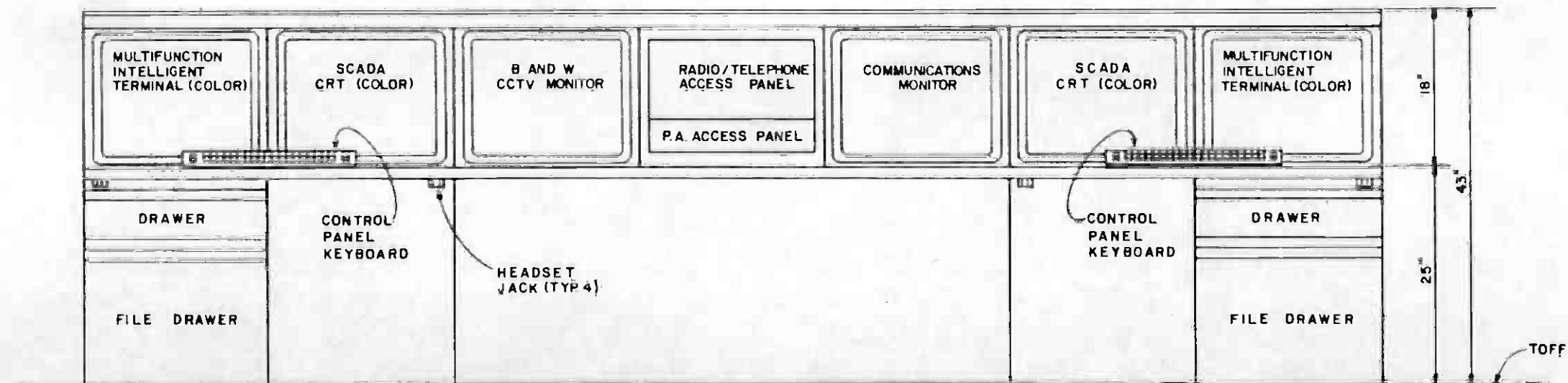
1. WORKSTATIONS SHOWN IN SOLID LINE ARE THOSE REQUIRED FOR MOS-1; WORKSTATIONS SHOWN IN DOTTED LINES ARE FOR FUTURE STATIONS.
2. CAPACITIES FOR 34' X 65' CCTV MONITORING ROOM ARE:
 - A. DESIGN CAPACITY: WORKSTATIONS FOR 32 STATIONS (AS SHOWN).
 - B. MAXIMUM CAPACITY: WORKSTATIONS FOR 44 STATIONS.
3. WORKSTATION DESIGN IS BASED ON EACH OBSERVER MONITORING 2 STATIONS IN PEAK HOURS AND 4 STATIONS IN OFF-PEAK HOURS, RESULTING IN:
 - A. FOR MOS-1, 3 OBSERVERS REQUIRED IN PEAK HOURS; 2 OBSERVERS REQUIRED IN OFF-PEAK HOURS.
 - B. FOR 18 STATIONS, 9 OBSERVERS REQUIRED IN PEAK HOURS; 5 OBSERVERS REQUIRED IN OFF-PEAK HOURS.



	THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.	DESIGNED BY <i>[Signature]</i> CHECKED BY <i>[Signature]</i> DATE 24 SEP 86		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	DMJM, PBD, KE HWA GENERAL CONSULTANTS APPROVED <i>[Signature]</i>	COMMUNICATIONS RAIL CONTROL CENTER CCTV ROOM	CONTRACT NO. A640 DRAWING NO. N-034 A SCALE 3/8" = 1'-0" SHEET NO. 125
REV DATE BY SUB APP DESCRIPTION	A 03/16/86 EA SIGNATURE ISSUE						



PLAN (UNFOLDED)

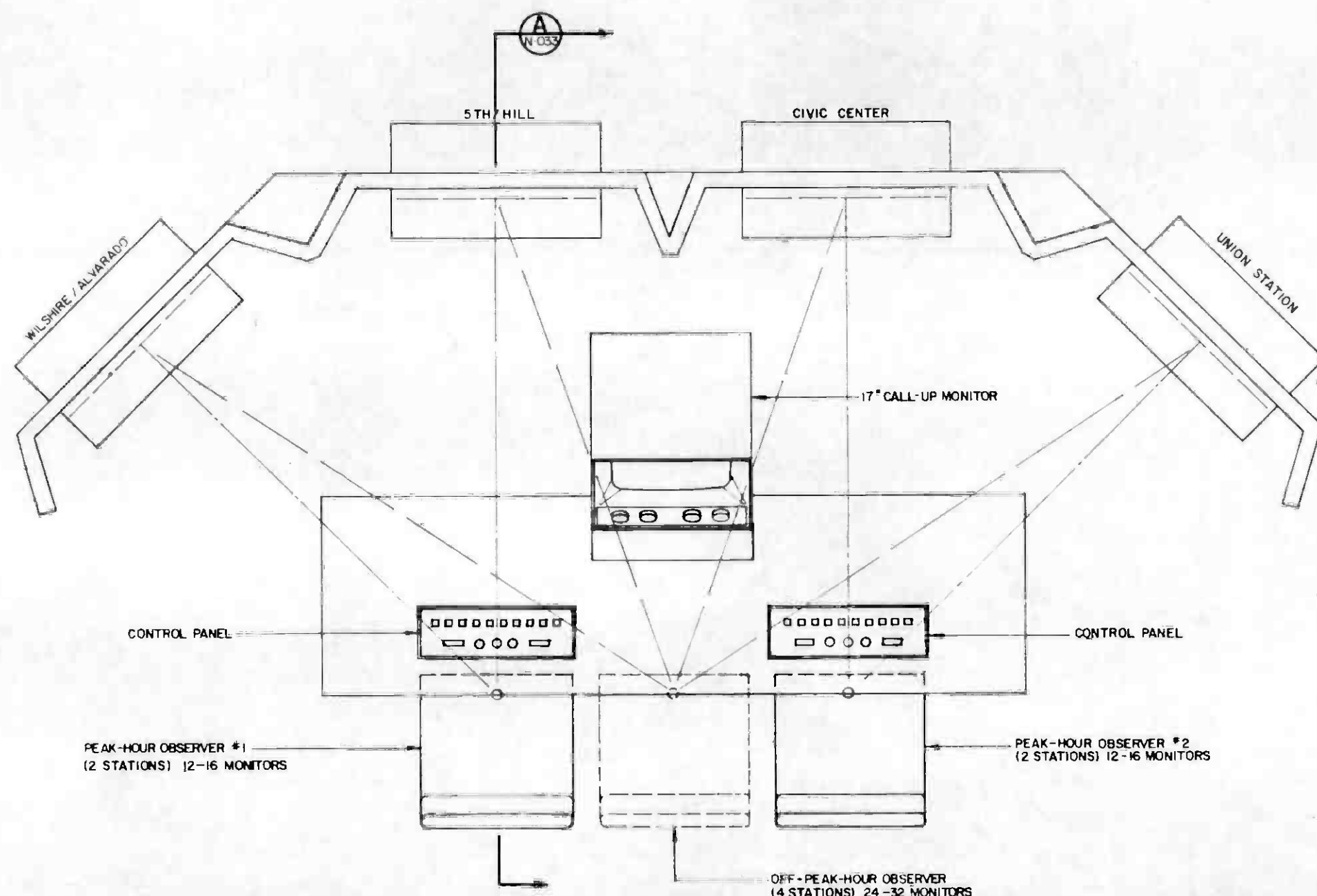


ELEVATION (UNFOLDED)

NOTE:
ALL EQUIPMENT BACK MOUNTED TO 19" EIA STANDARDS.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M.R.T.C. DRAWN BY <i>Edwards</i> CHECKED BY <i>S. Blahut</i> IN CHARGE <i>M. Burgess</i> DATE 24 OCT 86		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 	DMJM PROUD/KE/HWA GENERAL CONSULTANTS APPROVED <i>Edwards</i>	COMMUNICATIONS SYSTEM COMMUNICATIONS CONSOLE	CONTRACT NO. A 640 DRAWING NO. N-103 B SCALE 1/8" = 1" SHEET NO. 126
REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	GENERAL REVISION SIGNATURE ISSUE					



PLAN VIEW
4 STATION GROUPING



REV	DATE	BY	SUB	APP	DESCRIPTION

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DESIGNED BY
[Signature]

DRAWN BY
[Signature]

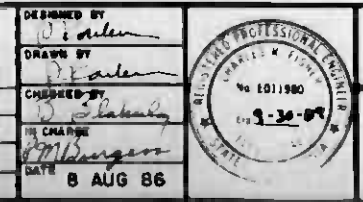
CHECKED BY
[Signature]

IN CHARGE
[Signature]

DATE
8 AUG 86

REVISIONS

A	8-11-86	EA			SIGNATURE ISSUE
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SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

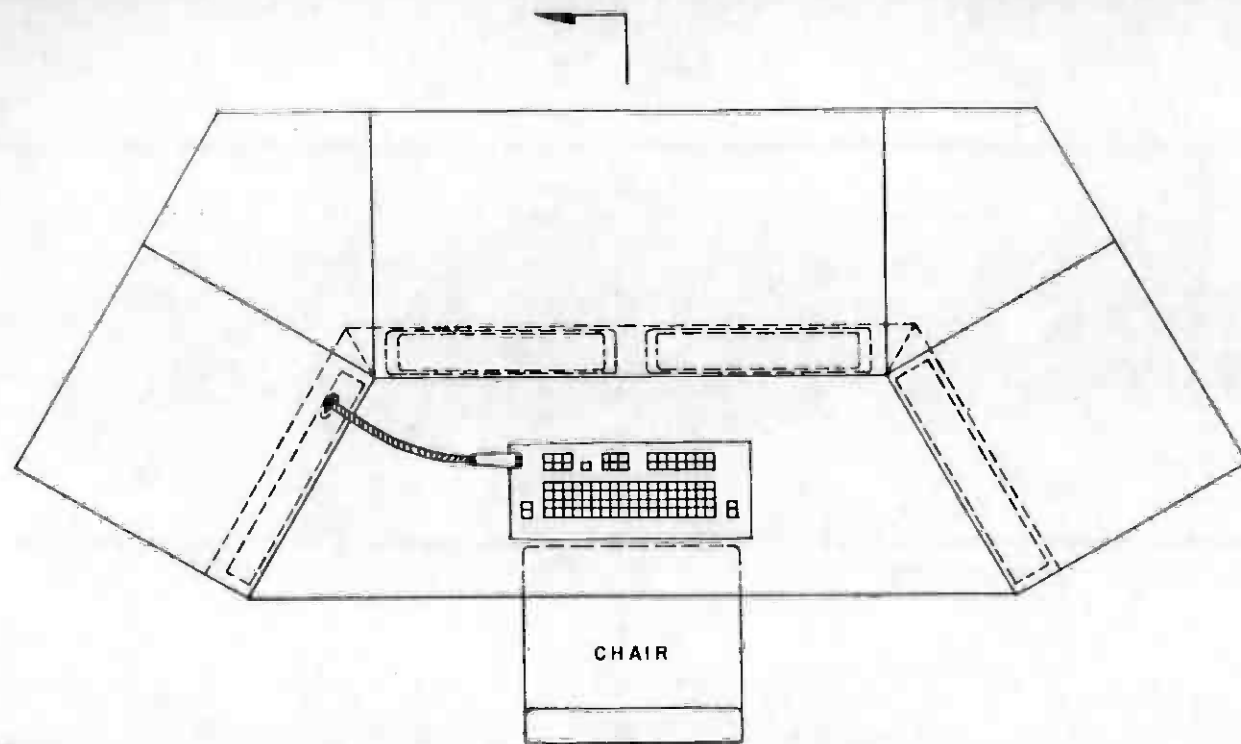
DMJM/PBOD/KE/HWA
GENERAL CONSULTANTS

SUBMITTED *[Signature]*

APPROVED _____

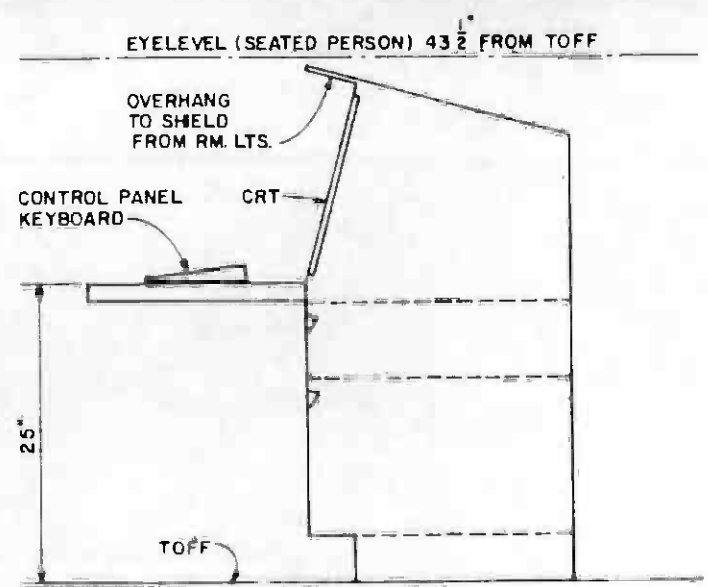
COMMUNICATIONS
RAIL CONTROL CENTER
PLAN - CCTV OBSERVER WORK STATION

CONTRACT NO.	A640
DRAWING NO.	N-032 A
REV.	0
SCALE	1/2" = 1'-0"
SHEET NO.	127

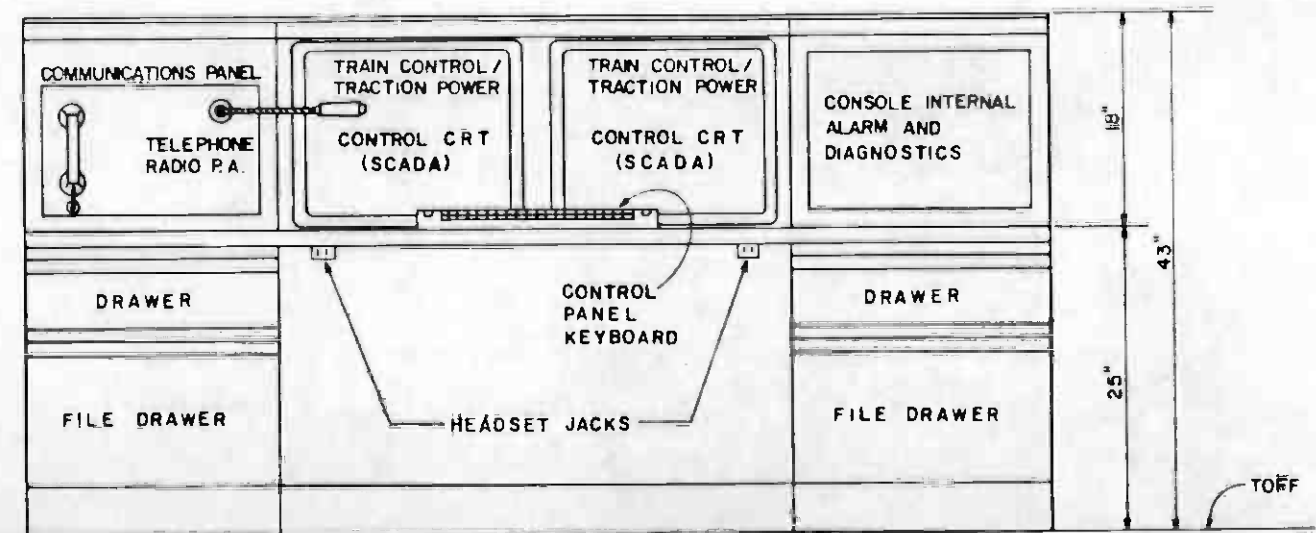


CHAIR

PLAN



SECTION A
N-204



ELEVATION (UNFOLDED)

NOTE:
ALL EQUIPMENT RACK MOUNTED 19" EIA STANDARDS.



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

DESIGNED BY
M.R.T.C.
DRAWN BY
Charles Koch
CHECKED BY
J. Williams
IN CHARGE
M. Burgess
DATE
23 OCT 86



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

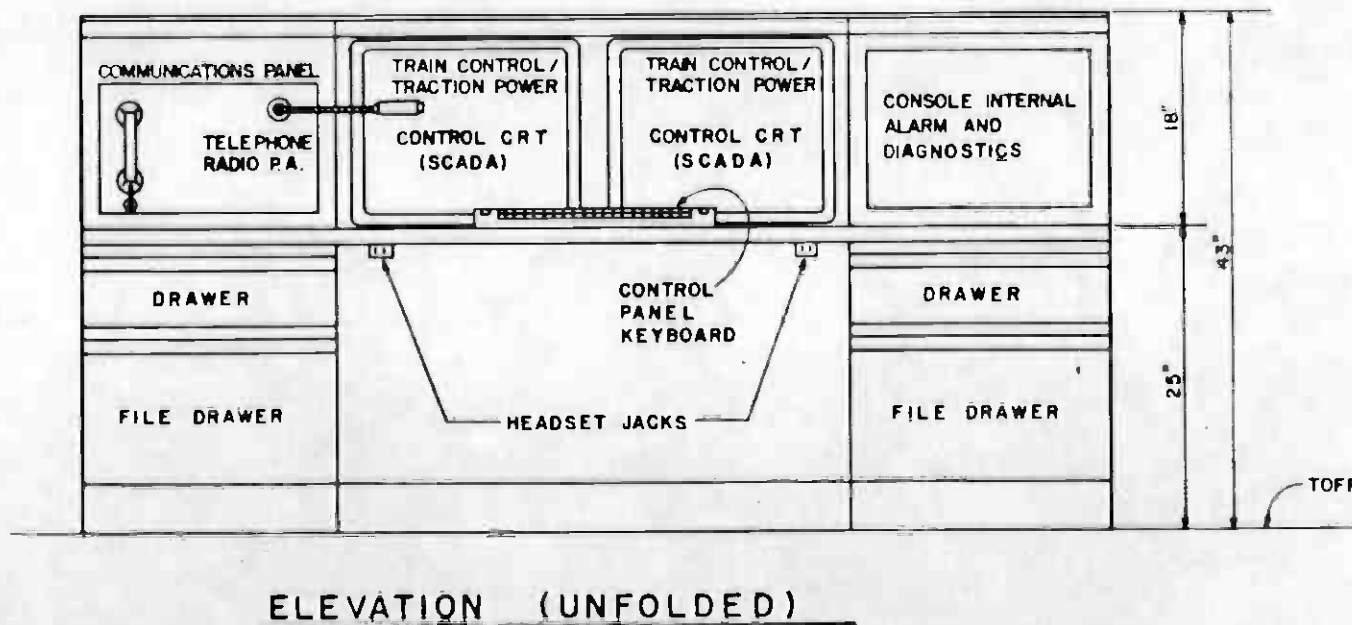
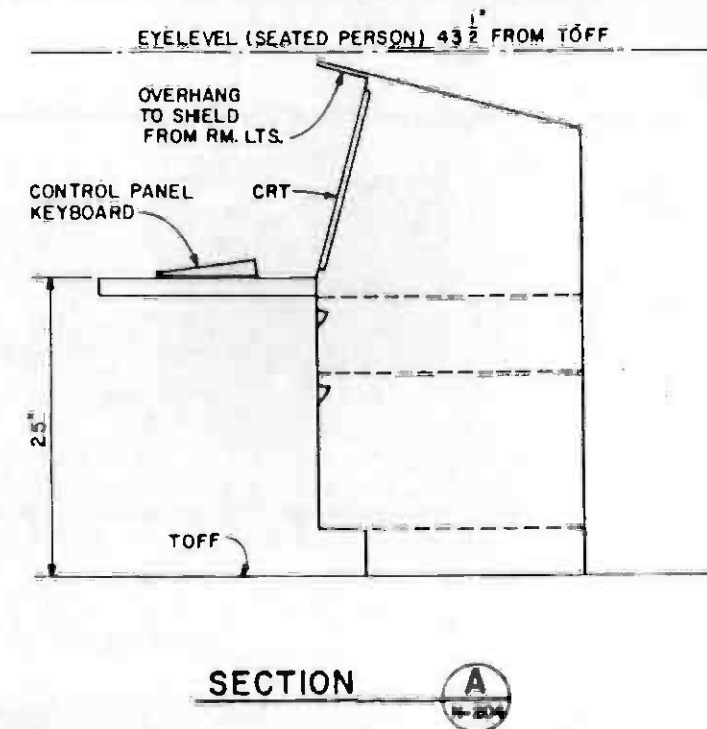
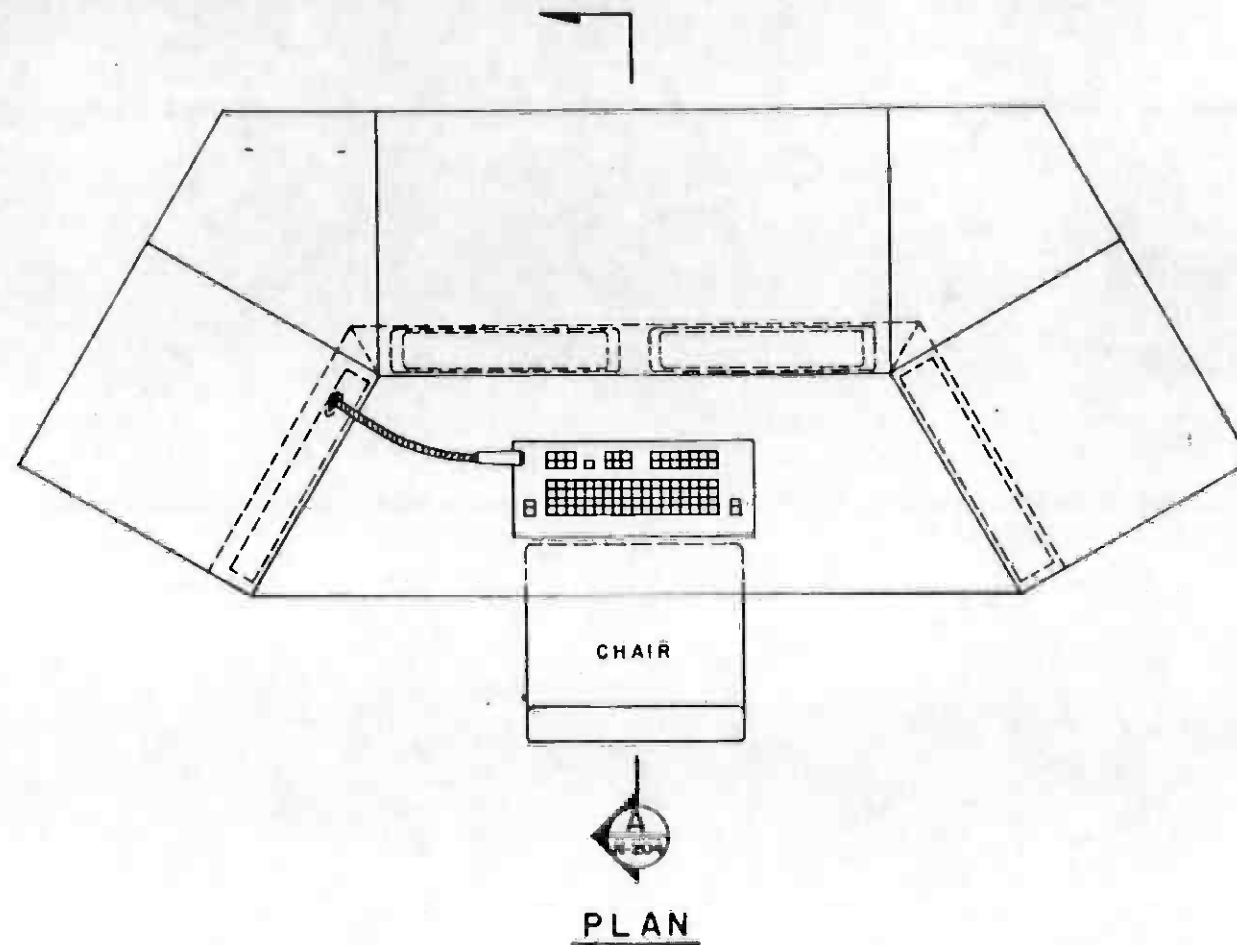


DMJM, PRD/KE/HWA
GENERAL CONSULTANTS
SUBMITTED *Cellul*
APPROVED

COMMUNICATIONS
TRAIN DISPATCHER CONSOLE

CONTRACT NO	A 640
DRAWING NO	N-204A 0
SCALE	1/8" = 1'
SHEET NO	128

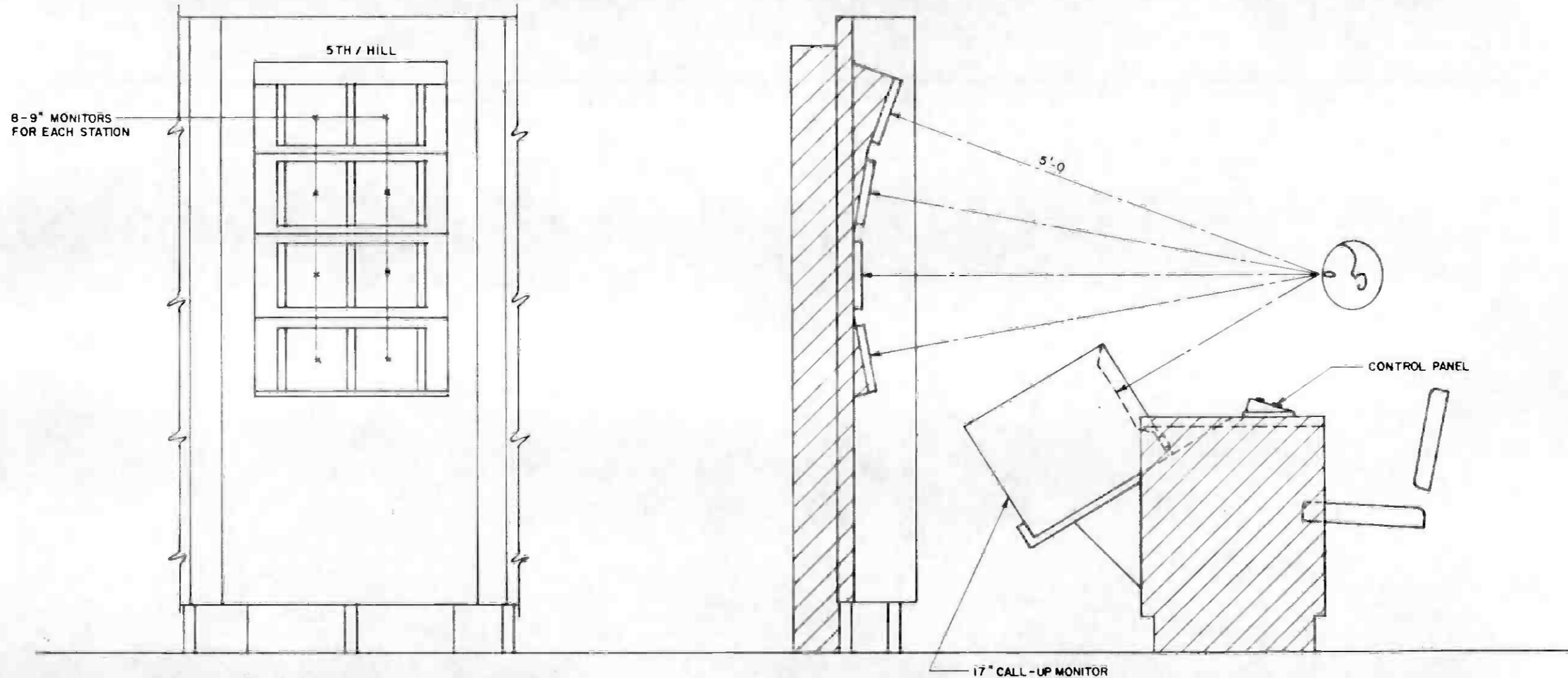
REV	DATE	BY	SUB	APP	DESCRIPTION
A	10/21/86	EA			SIGNATURE ISSUE



NOTE:
ALL EQUIPMENT RACK MOUNTED 19" EIA STANDARDS.

HALF SIZE

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.				DESIGNED BY M.R.T.C. <i>Edw. A. Smith</i>		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT				CONTRACT NO. A 640	
				DRAWN BY <i>Edw. A. Smith</i>		DMJM/PBOD/KE/HWA GENERAL CONSULTANTS		COMMUNICATIONS RAIL OPERATIONS SUPERVISOR CONSOLE		DRAWING NO. N-203A 0	
				CHECKED BY <i>Edw. A. Smith</i>		DATE 23 OCT 86		SCALE 1/8" = 1'		SHEET NO. 129	
				IN CHARGE <i>Edw. A. Smith</i>		APPROVED <i>Edw. A. Smith</i>		SIGNATURE ISSUE			
REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION



FRONT VIEW

SECTION A
N-032



REV	DATE	BY	SUB	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.					
DESIGNED BY	<i>[Signature]</i>				
DRAWN BY	<i>[Signature]</i>				
CHECKED BY	<i>[Signature]</i>				
IN CHARGE	<i>[Signature]</i>				
DATE	8 AUG 86				
A	9-21-86	EA	SIGNATURE ISSUE		
REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY
[Signature]

DRAWN BY
[Signature]

CHECKED BY
[Signature]

IN CHARGE
[Signature]

DATE
8 AUG 86

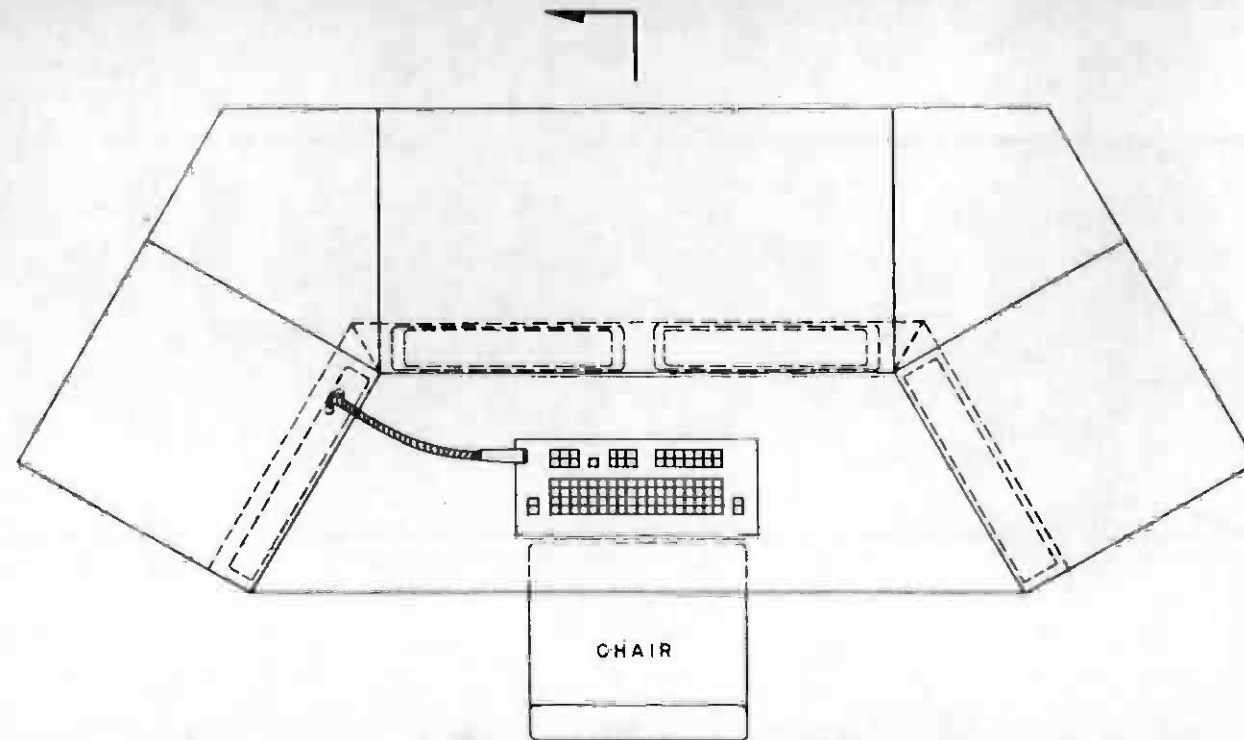
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

DMJM/PBDD/KE/HWA
GENERAL CONSULTANTS

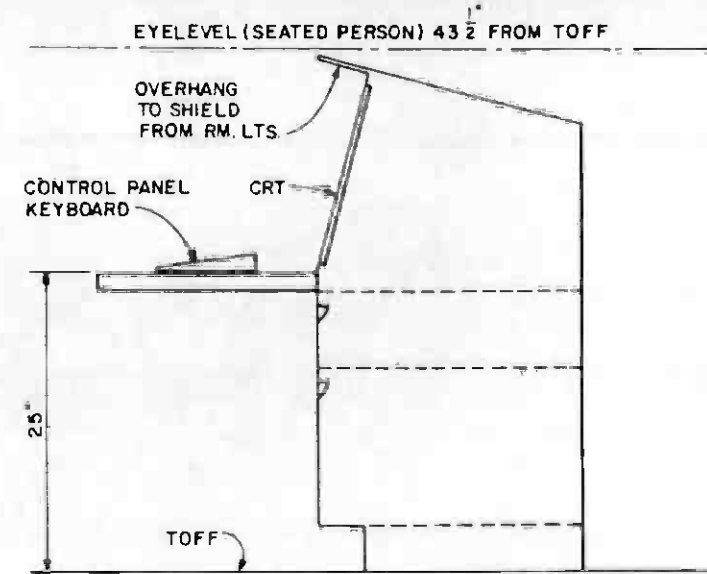
APPROVED
[Signature]

COMMUNICATIONS
RAIL CONTROL CENTER
CCTV OBSERVER WORK STATION

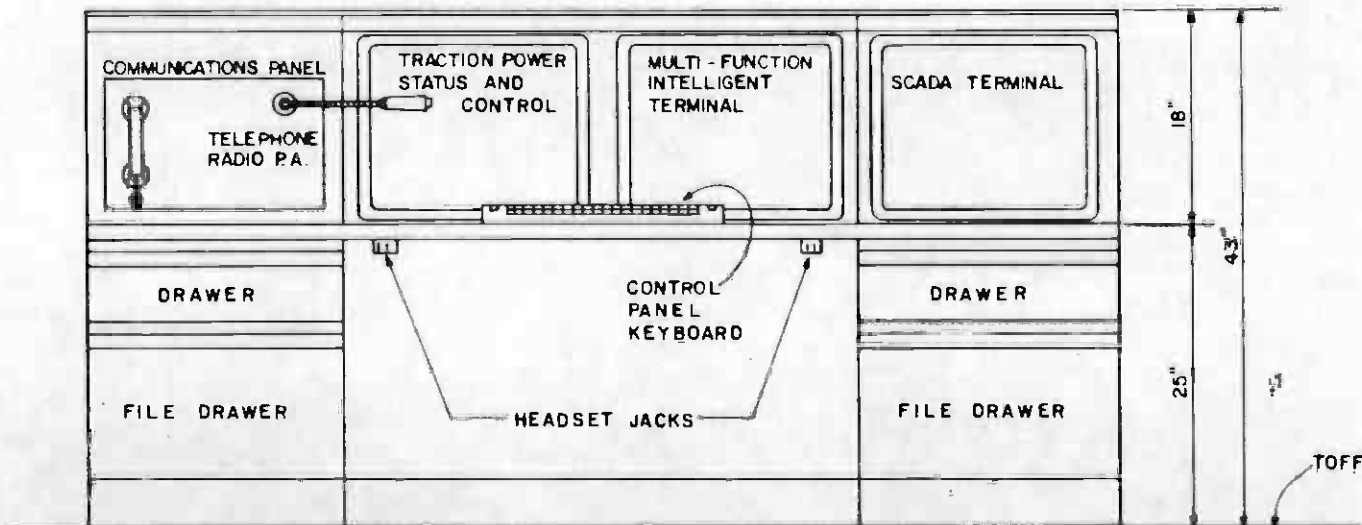
CONTRACT NO	A640	
DRAWING NO	N-033 A	REV 0
SCALE	1/2" = 1'-0"	
SHEET NO	130	



PLAN



SECTION



ELEVATION (UNFOLDED)

NOTE:

ALL EQUIPMENT RACK MOUNTED 19" EIA STANDARDS.



REV	DATE	BY	SUB	APP	DESCRIPTION

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964 AS AMENDED AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.					
DESIGNED BY M.R.T.C.					
DRAWN BY <i>Edwards</i>					
CHECKED BY <i>W. J. ...</i>					
DATE 23 OCT 86					
A	11/11/86	EA	SIGNATURE ISSUE		

REGISTERED PROFESSIONAL ENGINEER
 CARLOS R. TISDALE
 No. 011180
 10-1-30-81

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT

DMJM/PBOD KE/HWA
 GENERAL CONSULTANTS

SUBMITTED *Ellis*

COMMUNICATIONS
 YARD DISPATCHER CONSOLE

CONTRACT NO	A 640
DRAWING NO	N-108 A 0
SCALE	1" = 1'
SHEET NO	131

SCRTD METRO RAIL PROJECT

**CHECKLIST OF DESIGN PROVISIONS VERSUS CPUC REQUIREMENTS
CONTRACT A640 VERSUS GENERAL ORDER NO. 127**

G.O. NO.127 REQUIREMENT		A640 CONTRACT DOCUMENTS				* CONTRACTOR DESIGN DOCUMENTS
NO.	DESCRIPTION	TECHNICAL PROVISIONS		CONTRACT DRAWINGS		
		SECTION NO./TITLE	ARTICLE	NO	TITLE	
SECTION 2	GENERAL REQUIREMENTS					
2.2	PLANS TO BE FILED					
2.2(a)	FUNCTIONAL DESCRIPTION & BLOCK DIAGRAM OF ATP	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
2.2(b)	SCHEDULE OF WORK	MANAGEMENT PROGRAM	17.2	N/A	N/A	
		SEE ALSO A620 CONTRACT (ATC) AND A650 CONTRACT (PV) DOCUMENTS				
2.2(c)	SCHEMATIC DIAGRAMS OF ATP EQUIPMENT & CIRCUITS	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
		REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
2.2(d)	EQUIPMENT ARRANGEMENT DRAWINGS	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
		REFER TO A620 CONTRACT (ATC) DOCUMENTS				
2.2(e)	TRACK PLAN	REFER TO A620 CONTRACT (ATC) DOCUMENTS				
2.3	PREPARATION OF EXHIBITS- SYMBOLS	MANAGEMENT PROGRAM	17.6.5	N-0190	SYMBOLS & ABBREVIATIONS	
		SEE ALSO A620 CONTRACT (ATC) DOCUMENTS				
		SEE ALSO A650 CONTRACT (PV) DOCUMENTS				
2.5	REQUEST FOR INSPECTION					
2.5(b)	AS-BUILT PLANS REQUIRED FOR INSPECTION	INTERFACE REQUIREMENTS	14.2	N/A	N/A	
		MANAGEMENT PROGRAM CONFIGURATION	17.6.9	N/A	N/A	
		SEE ALSO A620 CONTRACT (ATC) AND A650 CONTRACT (PV) DOCUMENTS				
2.7	TEST AND INSPECTION RECORDS	TEST PROGRAM	16.2,16.4,16.10,16.12	N/A	N/A	
		SEE ALSO A620 CONTRACT (ATC) DOCUMENTS				
		SEE ALSO A650 CONTRACT (PV) DOCUMENTS				

® PV = PASSENGER VEHICLE

CONTINUES AT RIGHT

G.O. NO.127 REQUIREMENT		A640 CONTRACT DOCUMENTS				* CONTRACTOR DESIGN DOCUMENTS
NO.	DESCRIPTION	TECHNICAL PROVISIONS		CONTRACT DRAWINGS		
		SECTION NO./TITLE	ARTICLE	NO	TITLE	
SECTION 3	GENERAL SPECIFICATIONS					
3.1	AUTOMATIC PROTECTION AGAINST:					
3.1(a)	REAR END COLLISIONS	REFER TO A620 CONTRACT (ATC) AND A650 CONTRACT (PV) DOCUMENTS				
3.1(b)	HEAD-ON OR SIDESWIPE COLLISIONS	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.1(c)	DERAILMENT OR COLLISION RESULTING FROM MOVING TRACK SWITCH	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.1(g)	DETECTABLE RIGHT-OF-WAY HAZARDS	SUPERVISORY CONTROL AND DATA ACQUISITION	9	N/A	N/A	
		GAS MONITORING & SEISMIC EVENT DETECTION	9.2.6 9.2.7 9.2.8 9.2.13			
		GAS MONITORING & SEISMIC EVENT DETECTION	11			
		METHANE & HYDROGEN SULFIDE GAS SEISMIC EVENT	11.1.A 11.1.C			
SEE ALSO A620 CONTRACT (ATC) AND A650 CONTRACT (PV) DOCUMENTS						
3.2	SUBORDINATION OF OTHER ATC FUNCTIONS TO ATP	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.3	TRAIN DETECTION REQUIREMENTS	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.4	VEHICLE ATP BYPASS	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.5	SAFE BRAKING DISTANCES	REFER TO A620 CONTRACT (ATC) DOCUMENTS				
		REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.6	ROUTE INTERLOCKING REQUIREMENTS	REFER TO A620 CONTRACT (ATC) DOCUMENTS				
		REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.6(a)	INTERLOCKING CIRCUIT SEQUENCE	REFER TO A620 CONTRACT (ATC) DOCUMENTS				

* CONTRACTOR SHALL COMPLETE CHECKLIST, IDENTIFYING THE DOCUMENTS WHICH VERIFY CONFORMANCE TO EACH REQUIREMENT.

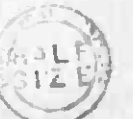
FOR CONTINUATION SEE DWG. N-213 A

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.		DESIGNED BY M.R.T.C. DRAWN BY <i>Edw. P. Costa</i> CHECKED BY <i>P. J. Stahel</i> IN CHARGE <i>P. J. Stahel</i> DATE 30 OCT 86	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT	DMJM, PBQD/KE/HWA GENERAL CONSULTANTS	CONTRACT NO. A640 DRAWING NO. N-113 B SCALE NONE SHEET NO. 132
GENERAL REVISION SIGNATURE ISSUE		APPROVED <i>[Signature]</i>	COMMUNICATIONS CHECKLIST OF REQUIREMENTS CPUC G.O. No.127 SHEET 1 OF 2	CONTRACT NO. A640 DRAWING NO. N-113 B SCALE NONE SHEET NO. 132	

G.O. NO.127 REQUIREMENT		A640 CONTRACT DOCUMENTS				* CONTRACTOR DESIGN DOCUMENTS
NO.	DESCRIPTION	TECHNICAL PROVISIONS		CONTRACT DRAWINGS		
		SECTION NO./TITLE	ARTICLE	NO.	TITLE	
SECTION 3.6(b)	SWITCH POINT DETECTION	REFER TO A620 CONTRACT (ATC) DOCUMENTS				
3.6(c)	TRAIN DETECTION IN INTERLOCKINGS	REFER TO A620 CONTRACT (ATC) DOCUMENTS				
3.6(d)	CONTROLLED INTERLOCKING APPROACH AND ENTRY	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.6(e)	TIME LOCKING	REFER TO A620 CONTRACT (ATC) DOCUMENTS				
3.6(f)	ROUTE LOCKING	REFER TO A620 CONTRACT (ATC) DOCUMENTS				
3.7	CIVIL SPEED LIMITS	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.8	SAFE SPEED - DISTANCE PROFILE	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.8(a)	REACTION TO OVERSPEED	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.8(b)	SAFE SPEED - DISTANCE PROFILE	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.8(c)	BRAKING WITH ZERO SPEED COMMANDED	REFER TO A650 CONTRACT (PASSENGER VEHICLE) DOCUMENTS				
3.8(d)	TRAIN SPEED DETECTION	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				
3.8(e)	ZERO SPEED DETECTION	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PASSENGER VEHICLE) DOCUMENTS				
3.8(f)	ROLL-BACK DETECTION AND REACTION	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PASSENGER VEHICLE) DOCUMENTS				
3.9	REACTION TO ABSENCE OF SPEED LIMIT SIGNALS	REFER TO A620 CONTRACT (ATC) DOCUMENTS REFER TO A650 CONTRACT (PV) DOCUMENTS				

G.O. NO.127 REQUIREMENT		A640 CONTRACT DOCUMENTS				* CONTRACTOR DESIGN DOCUMENTS
NO.	DESCRIPTION	TECHNICAL PROVISIONS		CONTRACT DRAWINGS		
		SECTION NO./TITLE	ARTICLE	NO.	TITLE	
3.10	RIGHT-OF-WAY HAZARD	GAS MONITORING ECS DEVICES SUMP PUMPS METHANE & HYDROGEN SULFIDE GAS SEISMIC EVENT	9.2.6 9.2.8 2.9.13 11.1.1A 11.1.1C	N/A	N/A	
SEE ALSO A620 CONTRACT (ATC) AND A650 CONTRACT (PV) DOCUMENTS						
3.12	SECURITY FOR EQUIPMENT	SUPERVISORY CONTROL AND DATA ACQUISITION GENERAL CONSTRUCTION REQUIREMENTS FIRE AND EMERGENCY MANAGEMENT INTRUSION DETECTION AND CONTROLLED ACCESS COMPONENT DESIGN AND FABRICATION CABINETS & RACKS CABINET DETAILS	9 9.6.11B 10 10.8 20 20.5 20.5.2D	N/A	N/A	
SEE ALSO A620 CONTRACT (ATC) AND A650 CONTRACT (PV) DOCUMENTS SEE ALSO A112 CONTRACT (YARD MAIN SHOP BUILDING CONSTRUCTION) DOCUMENTS SEE ALSO A136 CONTRACT (UNION STATION CONSTRUCTION, STAGE II) DOCUMENTS SEE ALSO A147 CONTRACT (CIVIC CENTER STATION CONSTRUCTION, STAGE II) DOCUMENTS SEE ALSO A157 CONTRACT (5TH/HILL STATION CONSTRUCTION, STAGE II) DOCUMENTS SEE ALSO A167 CONTRACT (7TH/FLOWER STATION CONSTRUCTION, STAGE II) DOCUMENTS SEE ALSO A187 CONTRACT (WILSHIRE/ALVARADO STATION CONSTRUCTION, STAGE II) DOCUMENTS						
3.13	CROSS & GROUND PROTECTION	SUPERVISORY CONTROL AND DATA ACQUISITION CONSTRUCTION REQUIREMENTS COMPONENT DESIGN AND FABRICATION POWER EQUIPMENT CABINET AND RACK GROUNDING DISTRIBUTION FRAME	9 9.6.11D 20 20.4 20.5.3 20.6	N/A	N/A	
SEE ALSO A620 CONTRACT (ATC) AND A650 CONTRACT (PV) DOCUMENTS						
3.15	MAINTENANCE & OPERATION	SYSTEMS ASSURANCE PROGRAM MAINTENABILITY PROGRAM	18 18.4	N/A	N/A	
SEE ALSO A620 CONTRACT (ATC) AND A650 CONTRACT (PV) DOCUMENTS						

* CONTRACTOR SHALL COMPLETE CHECKLIST, IDENTIFYING THE DOCUMENTS WHICH VERIFY CONFORMANCE TO EACH REQUIREMENT



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CIC TERMINAL STRIP (SEE INTERFACE DWG NS-007)

LEAD DESIGNATION	MONITORING CONNECTIONS	CONTROL CONNECTIONS	FIGURE	TERMINAL
FIRE SHUTDOWN			3D	a
				b
HALON EXHAUST AIR SUPPLY	R G		1D	a
			1D	b
OPEN (RCC)			2D	a
				b
FIRE SHUTDOWN			2D	a
				b
HALON EXHAUST DISCHARGE	R G		1D	a
			1D	b
OPEN (RCC)			2D	a
				b
FIRE SHUTDOWN			2D	a
				b
VENTILATION SUPPLY	R G		1D	a
			1D	b
OPEN (RCC)			2D	a
				b
FIRE SHUTDOWN			2D	a
				b
VENTILATION EXHAUST	R G		1D	a
			1D	b
OPEN (RCC)			2D	a
				b

CIC TERMINAL STRIP (CONTRACT INTERFACE SEE NOTE 1, TYP) (SEE INTERFACE DWG NS-007)

LEAD DESIGNATION	MONITORING CONNECTIONS	CONTROL CONNECTIONS	FIGURE	TERMINAL
ESSENTIAL SUMMARY ALARM			4B	a
				b
NON-ESSENTIAL SUMMARY ALARM			4B	a
				b
ESSENTIAL SUMMARY ALARM			4B	a
				b
NON-ESSENTIAL SUMMARY ALARM			4B	a
				b

NOTE:
1 SEE DWG N-036 FOR NOTES.

UNINTERRUPTIBLE POWER SUPPLY SYSTEM

TRAIN CONTROL & COMMUNICATIONS ROOM
FIRE SMOKE DETECTORS



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DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT
DMJM/PROD/KE HWA
GENERAL CONSULTANT

COMMUNICATIONS
SCADA / FACILITIES ELECTRICAL
INTERFACES

CONTRACT NO
A640
DRAWING NO
N-0488
REV
0
SCALE
NO SCALE
SHEET NO
134

REV	DATE	BY	SUB	APP	DESCRIPTION
1	5/28/85				GENERAL REVISION
2					SIGNATURE ISSUE

LEAD DESIGNATION	5 TH / HILL STATION CIC #2N (SEE INTERFACE DWG NS-007)		LEAD DESIGNATION	7 TH / FLOWER STATION CIC #1		LEAD DESIGNATION	WISHIRE / ALVARADO STATION CIC #5 (SEE INTERFACE DWG NS-007)	
	MONITORING CONNECTIONS	CONTROL CONNECTIONS		MONITORING CONNECTIONS	CONTROL CONNECTIONS		MONITORING CONNECTIONS	CONTROL CONNECTIONS
MDS - 01			DIS - 1			MDS - 01		
CLOSE CONTROL		2 F	CONTROL		2 F	CLOSE CONTROL		2 F
OPEN CONTROL		2 F	OPEN CONTROL		2 F	OPEN CONTROL		2 F
CLOSE INDICATION		4 B	CLOSE INDICATION		4 B	CLOSE INDICATION		4 B
OPEN INDICATION		4 B	OPEN INDICATION		4 B	OPEN INDICATION		4 B
CONTACT RAIL DE-ENERGIZE CONTROL		2 F				CONTACT RAIL DE-ENERGIZE CONTROL		2 F
MDS - 02						MDS - 02		
CLOSE CONTROL		2 F				CLOSE CONTROL		2 F
OPEN CONTROL		2 F				OPEN CONTROL		2 F
CLOSE INDICATION		4 B				CLOSE INDICATION		4 B
OPEN INDICATION		4 B				OPEN INDICATION		4 B
CONTACT RAIL DE-ENERGIZE CONTROL		2 B				CONTACT RAIL DE-ENERGIZE CONTROL		2 B
						DIS - 1		
						CLOSE CONTROL		2 F
						OPEN CONTROL		2 F
						CLOSE INDICATION		4 B
						OPEN INDICATION		4 B

SEE NOTE 1 (TYP)

NOTE:
1: SEE DWG. N - 036 FOR NOTES.

DISCONNECT SWITCHES METERING AND CONTROL



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DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE 10 JUL 86

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



DMJM/PBOD KE/HWA
GENERAL CONSULTANTS

COMMUNICATIONS
SCADA / TRACTION POWER
INTERFACES

CONTRACT NO
A-640
DRAWING NO
N-284A
SCALE
NO SCALE
SHEET NO
135

REV DATE BY SUB APP DESCRIPTION

REV DATE BY SUB APP DESCRIPTION

SUBMITTED

APPROVED

(SEE INTERFACE DWG. NS-007)

(SEE INTERFACE DWG. NS-007)

(SEE INTERFACE DWG. NS-007)

LEAD DESIGNATION

CJB-1 FIGURE TERMINAL
TERMINAL STRIP

LEAD DESIGNATION

CJB-2 FIGURE TERMINAL
TERMINAL STRIP

LEAD DESIGNATION

CJB-3 FIGURE TERMINAL
TERMINAL STRIP

YDS 33
OPEN CONTROL
CLOSE CONTROL
OPEN INDICATION
CLOSE INDICATION
YDS 33,34,42
SOLENOID CONTROL
YDS 36
OPEN CONTROL
CLOSE CONTROL
OPEN INDICATION
CLOSE INDICATION
YDS 36,39,41
SOLENOID CONTROL

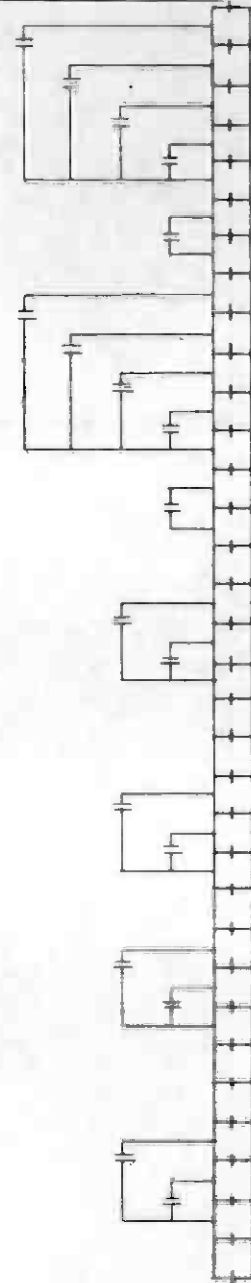
YDS 34
OPEN INDICATION
CLOSE INDICATION

YDS 42
OPEN INDICATION
CLOSE INDICATION

YDS 39
OPEN INDICATION
CLOSE INDICATION

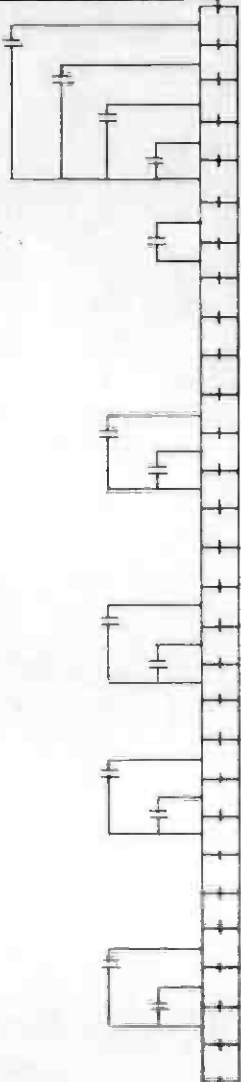
YDS 41
OPEN INDICATION
CLOSE INDICATION

MONITORING CONNECTIONS



4B a
4B a
4B a
4B a
4B b
4B b
4B a
4B a
4B a
4B b
4B a
4B a
4B b
4B a
4B a
4B a
4B a
4B a
4B a
4B a
4B a
4B a
4B a
4B a

MONITORING CONNECTIONS



YDS 01
OPEN CONTROL
CLOSE CONTROL
OPEN INDICATION
CLOSE INDICATION
YDS 01,02,03,04,06,07
SOLENOID CONTROL

YDS 02
OPEN INDICATION
CLOSE INDICATION

YDS 03
OPEN INDICATION
CLOSE INDICATION

YDS 06
OPEN INDICATION
CLOSE INDICATION

YDS 07
OPEN INDICATION
CLOSE INDICATION

4B a
4B a
4B a
4B a
4B b
4B b

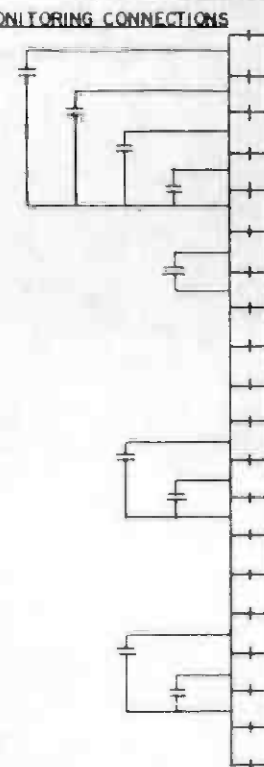
4B a
4B a
4B b

4B a
4B a
4B b
4B a
4B a
4B b
4B a
4B a
4B a
4B a
4B a
4B a

YDS 23
OPEN CONTROL
CLOSE CONTROL
OPEN INDICATION
CLOSE INDICATION
YDS 23,25,26
SOLENOID CONTROL

YDS 25
OPEN INDICATION
CLOSE INDICATION

YDS 26
OPEN INDICATION
CLOSE INDICATION




4B a
4B a
4B a
4B a
4B b
4B b

4B a
4B a
4B b

4B a
4B a
4B b
4B a
4B a
4B b
4B a
4B a
4B a
4B a
4B a
4B a

YARD DISCONNECT SWITCHES METERING AND CONTROL

NOTE:
SEE DWG N-036 FOR NOTES

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REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	SIGNATURE ISSUE <i>[Signature]</i>	SUBMITTED	APPROVED	SHEET NO 136

(SEE INTERFACE
DWG NS-007)

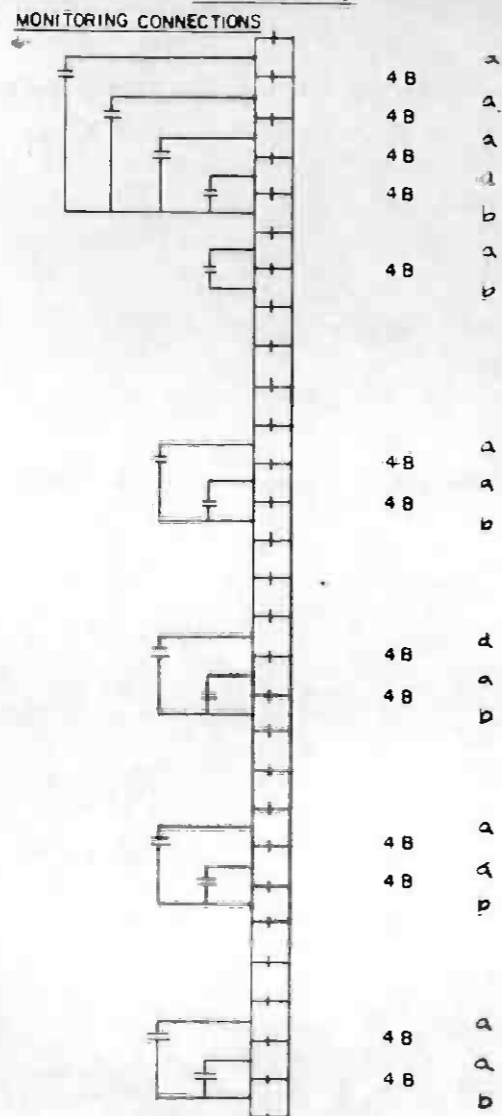
(SEE INTERFACE
DWG NS-007)

(SEE INTERFACE
DWG NS-007)

LEAD DESIGNATION

CJB-6 FIGURE TERMINAL
TERMINAL STRIP

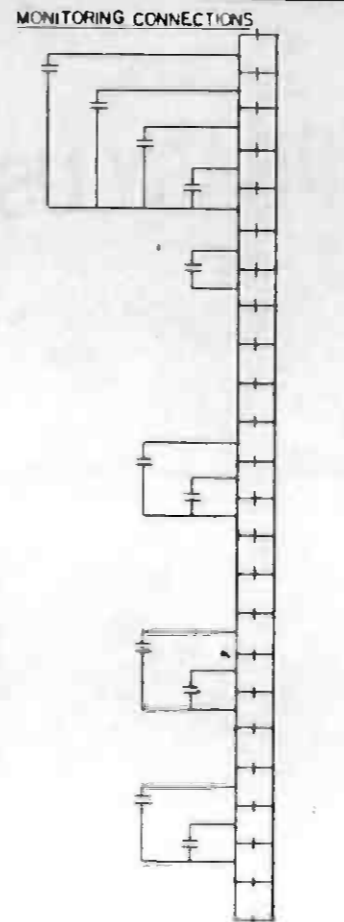
- YDS 28
- OPEN CONTROL
- CLOSE CONTROL
- OPEN INDICATION
- CLOSE INDICATION
- SOLENOID CONTROL
-
- YDS 29
- OPEN INDICATION
- CLOSE INDICATION
-
- YDS 30
- OPEN INDICATION
- CLOSE INDICATION
-
- YDS 31
- OPEN INDICATION
- CLOSE INDICATION
-
- YDS 32
- OPEN INDICATION
- CLOSE INDICATION



LEAD DESIGNATION

CJB-7 FIGURE TERMINAL
TERMINAL STRIP

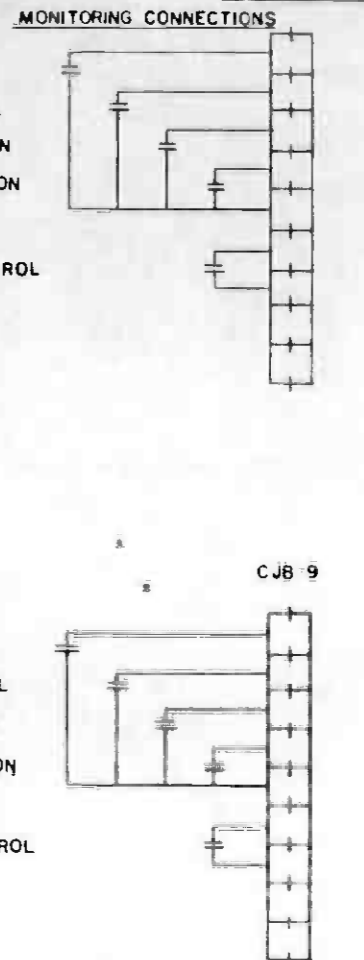
- YDS 08
- OPEN CONTROL
- CLOSE CONTROL
- OPEN INDICATION
- CLOSE INDICATION
- SOLENOID CONTROL
-
- YDS 09
- OPEN INDICATION
- CLOSE INDICATION
-
- YDS 10
- OPEN INDICATION
- CLOSE INDICATION
-
- YDS 11
- OPEN INDICATION
- CLOSE INDICATION



LEAD DESIGNATION

CJB-8 FIGURE TERMINAL
TERMINAL STRIP

- YDS 46
- OPEN CONTROL
- CLOSE CONTROL
- OPEN INDICATION
- CLOSE INDICATION
- SOLENOID CONTROL
-
- YDS 47
- OPEN CONTROL
- CLOSE CONTROL
- OPEN INDICATION
- CLOSE INDICATION
- SOLENOID CONTROL



YARD DISCONNECT SWITCHES METERING AND CONTROL



NOTE:
1 SEE DWG. N-036 FOR NOTES

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<p>REV DATE BY SUB APP</p>	<p>2.4.87 SIGNATURE ISSUE</p>	<p>04 FEB 87</p>	<p>DMJM/PBQD/KE HWA GENERAL CONSULTANTS</p>	<p>APPROVED</p>	