

PROJECT MANAGEMENT OVERSIGHT KICKOFF MEETING

OCTOBER 29, 1986

AGENDA

PROJECT MANAGEMENT OVERSIGHT KICK-OFF MEETING

Wednesday, October 29, 1986

Presenter

GENERAL OVERVIEW OF PMO FUNCTION

Brigid Hynes-Cherin

OVERVIEW OF METRO RAIL PROJECT

- | | |
|-----------------------------------------------------------------------|-------------------------------------|
| I. INTRODUCTION | John A. Dyer |
| II. DESIGN STATUS REPORT | |
| A. FACILITIES | James E. Crawley |
| B. SYSTEMS | James E. Crawley |
| C. REAL ESTATE | Jeffrey Lyon |
| III. PROGRAM CONTROL REPORT | |
| A. CONTRACT UNIT DESCRIPTIONS | Jeffrey C. Christiansen |
| B. FINANCIAL PLAN | Jeffrey C. Christiansen |
| C. PROJECT SCHEDULE | Jeffrey C. Christiansen |
| IV. CONSTRUCTION READINESS | |
| A. RESPONSE TO THE CITY INDEPENDENT TECHNICAL REVIEW COMMITTEE REPORT | James E. Crawley |
| B. CONSTRUCTION MANAGEMENT STATUS | Robert J. Murray |
| C. OWNER-CONTROLLED INSURANCE PROGRAM | Robert J. Murray |
| <u>SCHEDULE FOR QUARTERLY REVIEW MEETING</u> | Brigid Hynes-Cherin |
| <u>GENERAL DISCUSSION</u> | Brigid Hynes-Cherin
John A. Dyer |



U.S. Department
of Transportation

Urban Mass
Transportation
Administration

REGION IX
Arizona, California,
Hawaii, Nevada, Guam

211 Main Street
Room 1160
San Francisco, California 94105

R. Murray

OCT 20 1986

al
① RJM - FYA 10-311
② JW - CLE UMTA-PMO

Mr. John A. Dyer
General Manager
Southern California Rapid Transit District
425 South Main Street
Los Angeles, California 90013

RECEIVED
OCT 22 1986
GENERAL MANAGER

Re: Project Management Oversight, Kick Off Meeting
on Oct. 29 and 30.

Dear Mr. Dyer:

This is a follow up to a recent telephone conversation between James Collins of my staff and Robert Murray to confirm the schedule for the kick-off meeting of the Project Management Oversight for Metrorail. As you are probably aware Hill International has been selected as the PMO contractor for the Metrorail project. An agenda for the kick-off is attached. The meeting will give SCRTD an opportunity to meet with the representatives of Hill who will be involved in the contract and discuss in general the project and Hill's role in it.

We feel confident that SCRTD and Hill will be able to establish a cooperative relationship that is beneficial to the Metrorail project. We have worked with Hill in the past and have been impressed with both their expertise and their ability to form a mutually beneficial partnership.

If you have any additional questions please contact me at (415) 974-7313.

Sincerely,

Brigid Hynes-Cherín
Brigid Hynes-Cherín
Regional Administrator

PROJECT MANAGEMENT OVERSIGHT
L A METRORAIL

KICK OFF MEETING AGENDA
OCTOBER 29 AND 30

October 29

9:00 AM - Meeting between Hill International and UMTA at Hill offices in Century City.

1:00 PM - Meeting between SCRTD, Hill International, and UMTA at SCRTD Headquarters. Topics to include:

- o General overview of PMO function.
- o Overview of Metrorail Project.
- o Schedule for quarterly review meetings.

October 30

9:00 AM - Metrorail Project Site review

1:00 PM - Lunch and wrap up.

I. INTRODUCTION/PURPOSE OF REVIEW

II. DESIGN STATUS REPORT

A. FACILITIES

DESIGN STATUS REPORT

II.A. FACILITIES

STATUS DATE
10/27/86

UNIT NO.	DESCRIPTION	TOTAL % COMPLETE	DESIGN COMPLETE DATE
A149	5TH/Hill Utility Reloc.	100%	**
A123	Demolition of Structure Parcel Al-009	100%	*
A121	MOW Shop Bldg	100%	*
A172	Demolition of Structure Parcel Al-208	100%	*
A173	Demolition of Structure Parcels Al-221, Al-222	100%	*
A171	Wilshire/Alvarado Line	100%	*
A141	Line Union Station to 5th/Hill, & Civic Ctr. Stage I	99% 100%	9/22/86
A161	7th/Flower Utility Rearrangement	99%	9/22/86
A135	Union Station Stage I	95%	12/03/86
A130	Yard Leads & Transfer Zone	99%	10/06/86
A132	Demolition of Structure Parcel Al-024	100%	-
A112	Main Shop Building	85%	01/27/87
A175	Wilshire/Alvarado Stage I	95%	10/29/86
A134	Demolition of Structure - Parcel Al-032	99%	10/01/86
A145	5th/Hill Stage I	95%	04/06/87
A165	7th/Flower Stage I	85%	01/23/87
A146	Line 5th/Hill to 7th/ Flower	95%	01/27/87
A115	Yard Storage Area	99%	03/25/87

*Contract has been advertised

**Contract Combined with A145

DESIGN STATUS REPORT

II.A. FACILITIES

UNIT NO.	DESCRIPTION	TOTAL % COMPLETE	STATUS DATE
			<u>10/27/86</u>
			DESIGN COMPLETE DATE
A133	Baggage Handling	100%	--
A117	Yard Site Lighting	80%	**
A116	Yard Site Security		
	Fencing	90%	**
A167	7th/Flower Stage II	70%	**
A136	Union Station Stage II	95%	**
A187	Wilshire/Alvarado		
	Stage II	95%	**
A157	5th/Hill Stage II	95%	**
A118	Yard Site Landscaping	90%	**
A147	Civic Center Stage II	95%	**
A111	Santa Fe Av. Restoration	90%	**
A185	Wilshire/Alvarado Site-		
	work	95%	**
A186	Wilshire/Alvarado Land-		
	scaping	95%	**
A138	Union station Sitework	85%	**
A139	Union Station Land-		
	scaping	85%	**

** Design Completion of Stage II - Station Finish and Station Landscaping Contracts are placed on hold at the percent complete indicated pending additional information regarding State I completion.

DESIGN STATUS REPORT

II.A. FACILITIES

(SYSTEMWIDE)

<u>UNIT NO.</u>	<u>DESCRIPTION</u>	<u>TOTAL % COMPLETE</u>	<u>STATUS DATE</u> <u>10/27/86</u> <u>DESIGN COMPLETE</u> <u>DATE</u>
A745	TPSS - Air Handling Equipment	95%	5/11/87
A740	Fans	95%	5/22/87
A610	Trackwork Installation	95%	6/13/87
A710	Escalators	95%	9/26/87
A720	Elevators	95%	2/21/88
A760	Signs and Graphics	85%	4/13/87

B. SYSTEMS

DESIGN STATUS REPORT

II. B. SYSTEMS

STATUS DATE
10/24/86

UNIT NO.	DESCRIPTION	TOTAL % COMPLETE	DESIGN COMPLETE DATE
A612	CONTACT RAIL	100	--
A615	PROTECTIVE COVERBOARD	100	--
A630	TRACTION POWER PROCUREMENT	100	--
A620	AUTOMATIC TRAIN CONTROL	100	--
A631	TRACTION POWER INSTALLATION	100	6/19/86
A640	COMMUNICATION	85	10/31/86
A650	PASSENGER VEHICLES	100	--
A660	FARE COLLECTION	85	11/12/86
A670	AUXILIARY VEHICLES	--	--
A795	UNINTERRUPTIBLE POWER SUPPLY	100	--

C. REAL ESTATE

DESIGN STATUS REPORT

II.C. REAL ESTATE STATUS

1. There are no situations at this time which would prevent timely access to parcels for construction.
2. Until the project was funded there was a widespread reluctance on the part of owners to enter into transactions affecting their property. As a result there is a major effort at this time to complete the acquisition of parcels.
3. To ensure timely acquisition we are intensively negotiating necessary acquisitions and rights of entry. This is our primary thrust, and condemnation is a last resort. At the same time, we are:
 - o Tracking required dates of possession
 - o Establishing the latest dates for condemnation action based upon required dates of possession.
 - o Updating parcel data in order to be prepared for condemnation.
4. The date in each case to begin the condemnation process is six months prior to the notice to proceed date. As we negotiate we are also making sure that we are in a position to condemn if required to do so by:
 - o Reviewing certifications and incorporating updated data.
 - o Reviewing and updating appraisals.
 - o Preparing the necessary Board and condemnation actions.
5. Some of the major parcels currently in negotiation are:
 - o Union Station - negotiating to acquire right of entry which will preserve the ability to negotiate a future joint development agreement.
 - o County Parcels at Civic Center - completing negotiations.
 - o Underground easements and rights of entry between 5th and Hill and 7th and Flower - Basement rights of entry for compaction grouting operations are key requirements. Each owner is unique, e.g., Jewelry Mart is concerned about security; Clifton's Cafeteria loss of business, and so forth.

6. Condemnation cases -

- o Five parcels between the yard and Union Station - well along.
- We have right of possession on all parcels
- o Five parcels in the Alvarado area - well along
- We have rights of possession on all parcels
and have set dates for vacation.
- o Southeast corner of 5th and Hill - Will have right of possession well before the notice to proceed date.
Parking lot - there are no significant relocation issues.

7. Parcel acquired - Some key parcels, in addition to numerous smaller parcels, are:

- o Vault areas along Hill Street - needed for early utility contracts.
- o Home Savings - major joint development agreement.
- o Santa Fe Yard - largest acquisition in MOS-1.

III. PROGRAM CONTROL REPORT

A. CONTRACT UNIT DESCRIPTIONS

See Attachment

B. FINANCIAL PLAN

METRO RAIL PROJECT MCS-1
 DESIGN/PROCUREMENT/CONSTRUCTION - SCHEDULE & FINANCIAL PLAN

7/15/96

CONTRACT	CONTRACT DESCRIPTION	SCHEDULED				CONTRACT		ESCAL. FACTOR	ESCAL. COSTS '000
		DEC. 1995 BASE \$ (000)	ADVERTISE DATE	NTP DATE	COMPLETION DATE	DURATION (MONTHS)	CONTRACT MIDPOINT (MONTHS)		
A111	SANTA FE AVE. RESTORATION	145	04/19/89	08/25/89	02/02/90	5	47	1.167	169
A112	MAIN SHOP BUILDING	20953	02/02/87	06/09/87	11/02/88	17	26	1.089	22827
A115	YARD STORAGE AREA	7563	04/01/87	06/06/87	12/19/88	16	27	1.093	8267
A116	YARD SITE SECURITY FENCING	237	05/09/88	09/15/88	05/10/89	8	76	1.126	217
A117	YARD SITE LIGHTING	658	02/08/88	06/14/88	06/01/89	12	35	1.122	738
A118	YARD SITE LANDSCAPING	368	01/25/89	06/01/89	08/25/89	3	43	1.152	424
A119	TRACK RELOCATION, 1st ST. & HOBART YARD		INCLUDED IN R/W						
A121	MAINTENANCE-OF-WAY SHOP BUILDING	1537	08/04/86	12/11/86	07/21/87	8	15	1.051	1615
A123	DEMOLITION OF STRUCTURE ON PARCEL A1-009	265	08/20/86	11/21/86	02/19/87	3	13	1.044	277
A124	DUCOMMUN ST. & JACKSON ST. RESTORATION	35	06/23/88	10/31/88	02/03/89	3	76	1.123	39
A130	YARD LEADS AND TRANSFER ZONE	64102	08/06/86	12/15/86	08/30/89	33	28	1.097	70297
MA-007	YARD/SHOPS TELEPHONE RELOCATION	94	N/A	04/01/87	03/30/89	29	70	1.104	104
MA-093	YARD/SHOPS GAS RELOCATION	470	N/A	06/24/88	08/31/89	14	37	1.130	531
MA-A09	YARD/SHOPS WATER RELOCATION	225	N/A	04/15/87	08/30/89	28	29	1.100	249
MA-009	YARD/SHOPS POWER RELOCATION	121	N/A	03/11/87	08/30/89	56	29	1.100	133
MA-545	YARD/SHOPS CHEVRON RELOCATION	80	N/A	06/24/88	08/30/89	14	37	1.130	90
MA-002	YARD/SHOPS CITY OF LOS ANGELES	360	N/A	01/14/87	08/30/89	32	28	1.097	395
MA-056	YARD/SHOPS CALTRANS	111	N/A	01/14/87	08/30/89	32	28	1.097	122
MA-094	YARD/SHOPS COUNTY OF LOS ANGELES	12	N/A	01/14/87	08/30/89	32	28	1.097	13
MA-008	YARD/SHOPS WESTERN UNION REPLACEMENT	5	N/A	02/18/88	08/30/89	18	35	1.122	9
A132	DEMOLITION OF STRUCTURE ON PARCEL A1-024	22	08/13/86	11/13/86	12/01/86	1	11	1.037	23
A133	UNION STATION BAGGAGE HANDLING FACILITY	1282	12/07/87	04/13/88	11/21/88	8	31	1.108	1420
A134	DEMOLITION OF STRUCTURE ON PARCEL A1-032	99	12/04/86	03/09/87	04/13/87	1	15	1.051	104
A135	UNION STATION - STAGE I	43792	07/28/86	12/04/86	02/05/90	38	30	1.104	48541
MA-007	UNION STATION TELEPHONE RELOCATION	12	N/A	01/05/87	02/05/90	37	31	1.108	13
MA-A09	UNION STATION WATER RELOCATION	42	N/A	01/05/87	02/05/90	37	31	1.108	47
MA-009	UNION STATION POWER RELOCATION	22	N/A	01/05/87	02/05/90	37	31	1.108	24
MA-008	UNION STATION WESTERN UNION REPLACEMENT	20	N/A	01/05/87	02/05/90	37	31	1.108	22
MA-002	UNION STATION CITY OF LOS ANGELES	199	N/A	12/20/88	02/05/90	14	45	1.152	229
MA-056	UNION STATION CALTRANS	50	N/A	01/05/87	02/05/90	37	31	1.108	55
A136	UNION STATION - STAGE II	11428	09/23/88	02/02/89	10/09/90	20	47	1.167	13342
A138	UNION STATION SITEWORK	794	12/29/89	05/07/90	05/30/91	13	59	1.215	964
A139	UNION STATION SITE LANDSCAPING	194	01/23/91	05/30/91	10/21/91	5	68	1.251	245
A141	LINE-UNION STATION TO 5th/HILL STATION CIVIC CENTER STATION - STAGE I	81280	09/04/86	01/14/87	05/23/90	41	33	1.115	90615

METRO RAIL PROJECT MGS-1
 DESIGN/PROCUREMENT/CONSTRUCTION - SCHEDULE & FINANCIAL PLAN

7/02/96

CONTRACT	CONTRACT DESCRIPTION	SCHEDULED				CONTRACT		ESCALATION	
		DEC. 1995 BASE \$ (000)	ADVERTISE DATE	NTP DATE	COMPLETION DATE	DURATION (MONTHS)	MIDPOINT (MONTHS)	ESCAL. FACTOR	ESCAL COSTS (000)
MA-008	CIVIC CENTER WESTERN UNION REPLACEMENT	15	N/A	08/18/86	05/23/90	47	31	1.106	17
MA-A09	CIVIC CENTER WATER RELOCATION	520	N/A	10/14/86	05/23/90	45	31	1.108	578
MA-009	CIVIC CENTER POWER RELOCATION	240	N/A	08/18/86	05/23/90	45	31	1.108	260
MA-007	CIVIC CENTER TELEPHONE RELOCATION	1145	N/A	08/18/86	05/23/90	45	31	1.108	1263
MA-093	CIVIC CENTER GAS RELOCATION	60	N/A	10/14/86	05/23/90	43	31	1.106	60
MA-S33	CIVIC CENTER CABLE TV RELOCATION	10	N/A	09/16/86	05/23/90	44	31	1.108	11
MA-002	CIVIC CENTER CITY OF LOS ANGELES	1070	N/A	09/16/86	05/23/90	44	31	1.108	1195
MA-094	CIVIC CENTER COUNTY OF LOS ANGELES	263	N/A	01/14/87	05/23/90	41	33	1.115	293
MA-056	CIVIC CENTER CALTRANS	45	N/A	01/14/87	05/23/90	41	33	1.115	56
A145	5th/HILL STATION - STAGE I	36579	01/21/87	05/28/87	11/09/89	30	32	1.111	40346
MA-008	5th/HILL WESTERN UNION REPLACEMENT	50	N/A	07/21/86	11/09/89	40	27	1.095	55
MA-A09	5th/HILL WATER RELOCATION	105	N/A	11/25/86	11/09/89	36	29	1.100	115
MA-009	5th/HILL POWER RELOCATION	1580	N/A	07/21/86	11/09/89	40	27	1.095	1727
MA-007	5th/HILL TELEPHONE RELOCATION	263	N/A	07/21/86	11/09/89	40	27	1.095	287
MA-093	5th/HILL GAS RELOCATION	130	N/A	12/11/86	11/09/89	35	29	1.100	145
MA-002	5th/HILL CITY OF LOS ANGELES	1230	N/A	10/14/86	11/09/89	77	28	1.097	1349
MA-S33	5th/HILL CABLE TV REPLACEMENT	25	N/A	07/21/86	11/09/89	40	27	1.095	27
A146	LINE-5th/HILL STA. TO 7th/FLOWER STA.	22105	02/03/87	06/10/87	08/02/89	26	70	1.104	24401
A147	CIVIC CENTER STATION - STAGE II	10787	03/13/89	07/19/89	01/18/91	19	55	1.191	12845
A157	5th/HILL STATION - STAGE II	11132	12/08/88	04/17/89	01/04/91	21	51	1.163	13169
A161	7th/FLOWER UTILITY REARRANGEMENT	1900	09/23/86	12/18/86	09/09/87	9	17	1.058	2010
A149	UTILITY RELOCATION & VAULT MODIFICATIONS	3440	07/21/86	10/14/86	05/28/87	8	15	1.044	3591
A165	7th/FLOWER STATION - STAGE I	29071	01/30/87	06/08/87	12/07/89	30	32	1.111	31192
MA-008	7th/FLOWER WESTERN UNION REPLACEMENT	105	N/A	11/18/86	12/07/89	36	29	1.108	116
MA-A09	7th/FLOWER WATER RELOCATION	825	N/A	11/18/86	12/07/89	36	29	1.108	914
MA-009	7th/FLOWER POWER RELOCATION	520	N/A	11/18/86	12/07/89	36	29	1.108	576
MA-007	7th/FLOWER TELEPHONE RELOCATION	94	N/A	11/18/86	12/07/89	36	29	1.108	104
MA-093	7th/FLOWER GAS RELOCATION	90	N/A	11/18/86	12/07/89	36	29	1.108	100
MA-S33	7th/FLOWER CABLE TV RELOCATION	121	N/A	11/18/86	12/07/89	36	29	1.108	134
MA-002	7th/FLOWER CITY OF LOS ANGELES	1125	N/A	11/18/86	12/07/89	36	29	1.108	1246
A167	7th/FLOWER STATION - STAGE II	6732	05/31/88	10/06/88	11/19/90	26	46	1.164	7834
A171	LINE-7th/FLOWER STATION TO WILSHIRE/ALVARADO STATION	42761	10/01/86	02/10/87	11/01/89	33	30	1.104	47203
A172	DEMOLITION OF STRUCTURE ON PARCEL A1-208	87	09/11/86	12/15/86	01/28/87	2	12	1.040	91
A173	DEMOLITION OF STRUCTURES ON PARCELS A1-221, A1-222, A1-224, AND A1-225	175	09/11/86	12/15/86	01/16/87	1	12	1.040	182
A175	WILSHIRE/ALVARADO STATION - STAGE I	26938	10/29/86	03/10/87	02/15/90	35	32	1.111	29933
MA-A09	WILSHIRE/ALVARADO WATER RELOCATION	60	N/A	02/17/87	02/13/90	36	32	1.111	67
MA-009	WILSHIRE/ALVARADO POWER RELOCATION	22	N/A	02/17/87	02/13/90	36	32	1.111	24
MA-007	WILSHIRE/ALVARADO TELEPHONE RELOCATION	72	N/A	02/17/87	02/13/90	36	32	1.111	80
MA-093	WILSHIRE/ALVARADO GAS RELOCATION	45	N/A	02/17/87	02/13/90	36	32	1.111	50
MA-056	WILSHIRE/ALVARADO CALTRANS	54	N/A	02/17/87	02/13/90	36	32	1.111	60
MA-002	WILSHIRE/ALVARADO CITY OF LOS ANGELES	117	N/A	02/17/87	02/13/90	36	32	1.111	130
A177	DEMOLITION OF STRUCTURE ON PARCEL A1-209	121	10/08/86	01/13/87	02/10/87	1	13	1.044	126
A185	WILSHIRE/ALVARADO STATION RESTORATION	651	10/05/89	02/14/90	10/01/90	8	53	1.191	775
A186	WILSHIRE/ALVARADO STA. SITE LANDSCAPING	96	10/05/89	02/14/90	10/01/90	8	53	1.191	114
A187	WILSHIRE/ALVARADO STATION - STAGE II	7550	11/07/88	03/17/89	09/07/90	17	48	1.171	8844

METRO RAIL PROJECT M05-1
 DESIGN/PROCUREMENT/CONSTRUCTION - SCHEDULE & FINANCIAL PLAN

7/01/90

CONTRACT	CONTRACT DESCRIPTION	-----SCHEDULED-----					FISCAL YEAR		FISCAL FACTOR	FISCAL COSTS
		DEC. 1985 BASE \$ (000)	ADVERTISE DATE	NTP DATE	COMPLETION DATE	CONTRACT DURATION (MONTHS)	CONTRACT MIDPOINT (MONTHS)	FISCAL		
A610	TRACKWORK INSTALLATION	12966	08/13/87	12/22/87	08/23/90	32	40	1.141	14702	
A612	CONTACT RAIL PROCUREMENT	1596	04/18/88	06/24/88	02/23/90	18	41	1.145	1107	
A615	PROTECTIVE COVERBOARD PROCUREMENT	1012	04/18/88	08/24/88	02/23/90	18	41	1.145	1199	
A620	AUTOMATIC TRAIN CONTROL PROCURE/INSTALL	19313	04/01/87	12/30/87	12/30/91	48	43	1.171	20822	
A630	TRACTION POWER EQUIPMENT PROCUREMENT	5373	01/04/88	05/09/88	02/21/90	22	39	1.157	6110	
A631	TRACTION POWER EQUIPMENT INSTALLATION	4564	06/06/88	10/13/88	10/17/90	24	45	1.160	5997	
A640	COMMUNICATIONS PROCURE/INSTALL	16107	02/03/87	02/03/88	07/26/91	42	46	1.164	18740	
A650	PASSENGER VEHICLES PROCUREMENT	44048	02/23/87	01/19/88	11/21/91	46	48	1.171	51595	
A660	FARE COLLECTION PROCURE/INSTALL	7593	06/30/87	03/29/88	11/26/90	32	47	1.152	8719	
A671	LOCOMOTIVE PROCUREMENT	522	12/16/88	04/25/89	10/23/90	18	49	1.175	613	
A672	FLAT CAR PROCUREMENT	47	06/21/89	10/27/89	10/23/90	12	52	1.187	56	
A675	CRANE PROCUREMENT (FOR FLAT CAR)	21	06/21/89	10/27/89	10/23/90	12	52	1.187	25	
A680	OPERATIONAL GRAPHICS PROCUREMENT	105	03/27/89	08/02/89	02/07/90	6	46	1.164	102	
A710	ESCALATORS PROCURE/INSTALL	10304	10/26/87	03/04/88	10/22/90	32	42	1.140	11633	
A720	ELEVATORS PROCURE/INSTALL	1129	03/21/88	07/27/88	05/01/90	31	42	1.148	1297	
A730	FIXED SHOP EQUIPMENT PROCURE/INSTALL	25	06/07/89	10/13/89	10/23/90	12	51	1.163	30	
A735	FREE STANDING SHOP EQUIPMENT PROCUREMENT	294	06/07/89	10/13/89	10/23/90	12	51	1.163	348	
A740	VENTILATION EQUIPMENT PROCUREMENT	7447	06/22/87	10/27/87	11/29/89	25	75	1.122	9251	
A745	TPSS-AIR HANDLING EQUIPMENT PROCUREMENT	193	06/11/87	10/16/87	12/10/89	26	35	1.120	217	
A760	SIGNS & GRAPHICS PROCUREMENT	1170	03/10/89	07/18/89	06/27/90	11	49	1.175	1375	
A770	RUBBER-TIRED VEHICLES PROCUREMENT	329	06/21/89	10/27/89	10/23/90	12	52	1.167	390	
A775	MOBILE EMERGENCY & MAINT. EQUIP. PROCURE	322	12/11/89	04/18/90	10/22/90	6	55	1.199	36	
A780	FURNITURE PROCUREMENT	168	07/02/90	11/07/90	05/14/91	6	61	1.223	205	
A785	FIRE SUPPRESSION EQUIPMENT PROCUREMENT	14	01/09/90	05/15/90	10/22/90	5	55	1.199	17	
A790	FIRST STORES & CONSUMABLES PROCUREMENT	105	01/24/90	05/31/90	10/22/90	5	56	1.203	126	
A795	UNINTERRUPTIBLE POWER SUPPLIES PROCURE	918	10/21/88	03/02/89	12/27/90	22	49	1.175	1079	
	ART-N-TRANSIT	978	N/A	07/01/86	06/30/90	N/A	42	1.140	1123	
SUBTOTAL CONSTRUCTION/PROCUREMENT		582366							654404	

METRO RAIL PROJECT MOS-1
 DESIGN/PROCUREMENT/CONSTRUCTION - SCHEDULE & FINANCIAL PLAN

7/9/75

CONTRACT	CONTRACT DESCRIPTION	-----SCHEDULED-----				CONTRACT DURATION (MONTHS)	ESCAL TO		ESCAL COSTS (000)
		DEC. 1985 BASE \$ (000)	ADVERTISE DATE	NTP DATE	COMPLETION DATE		CONTRACT MIDPOINT (MONTHS)	ESCAL. FACTOR	
GENERAL CONSULTANT		136309	N/A	N/A	N/A	N/A	N/A	N/A	137600
CONSTRUCTION MANAGER		63607	N/A	N/A	N/A	N/A	N/A	N/A	69970
CONSTR. RELATED PROF. SERVS.		14239	N/A	N/A	N/A	N/A	N/A	N/A	16300
DES. RELATED PROF. SERVS.		31166	N/A	N/A	N/A	N/A	N/A	N/A	31042
AGENCY		99996	N/A	N/A	N/A	N/A	N/A	N/A	111001
RIGHT OF WAY		92363	N/A	N/A	N/A	N/A	N/A	N/A	92363
OCIF		49109	N/A	N/A	N/A	N/A	N/A	N/A	54521
PRELIMINARY ENGINEERING		32813	N/A	N/A	N/A	N/A	N/A	N/A	32813
CONTINGENCY (CONSTRUCTION/PROCUREMENT ONLY)		47974	N/A	N/A	N/A	N/A	N/A	N/A	47974
TOTAL MOS - 1		1149102	N/A	N/A	N/A	N/A	N/A	N/A	1249900

C. PROJECT SCHEDULE

YARD, SHOPS, & TRANSFER ZONE

A111 SANTA FE AVE RESTORATION BID PROCESS

A111 SANTA FE AVE RESTORATION

EF 2FEB89

A112 MAIN SHOP BUILDING BID PROCESS

8JUN87

A112 MAIN SHOP BUILDING CONSTRUCTION

A113 YARD STORAGE AREA BID PROCESS

1APR87 EF

A113 YARD STORAGE AREA CONSTRUCTION

ES 6AUG87 EF 19DEC88

A116 SITE SECURITY FENCING BID PROCESS

14SEP88

A116 SITE SECURITY FENCING INSTALL

A117 SITE LIGHTING BID PROCESS

A117 SITE LIGHTING INSTALL

1JUN89

A118 SITE LANDSCAPING BID PROCESS

EF 31MAY89

A118 SITE LANDSCAPING

A121 MAIN SHOP BUILDING BID PROCESS

A121 MAIN SHOP BUILDING CONSTRUCTION

A123 DEMOLITION BID PROCESS

A123 DEMOLITION OF UN PARCEL A1-009

ES 26NOV86 EF 24FEB87

A124 DUCOMMUN/JACKSON ST RESTORATION BID PROCESS

ES 6JUL88 EF 9NOV88

A124 DUCOMMUN ST & JACKSON ST RESTORATION

ES 10NOV88 EF 15FEB89

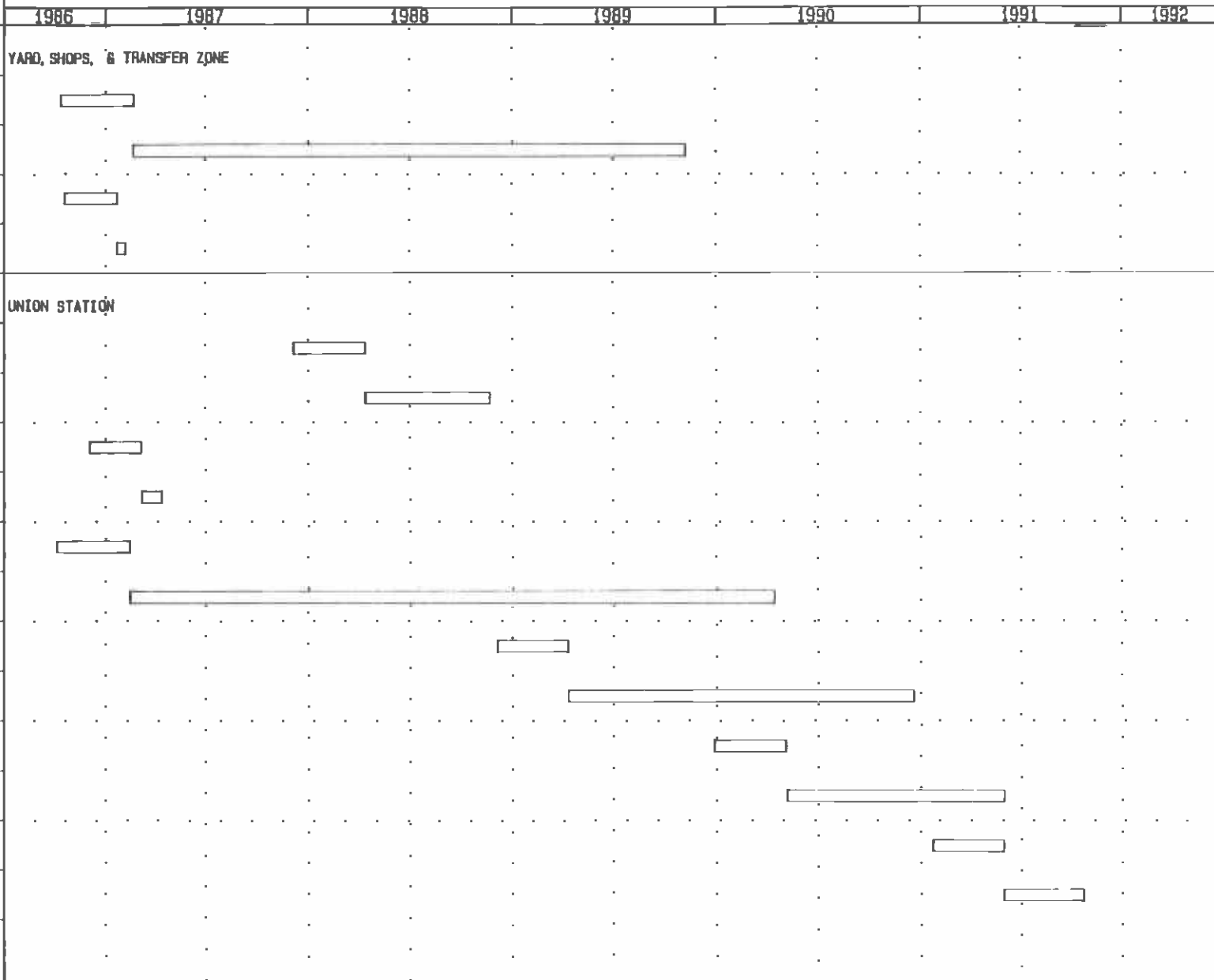
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 [] Critical Activity
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SOUTHERN CAL RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT
 LEVEL I CONTRACT SCHEDULE

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LEVEL I CONTRACT SCHEDULE

Date	Revision	Checked	Approved
7/25/86	5	AV	[Signature]



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 Primavera Systems, Inc. 1984, 1985

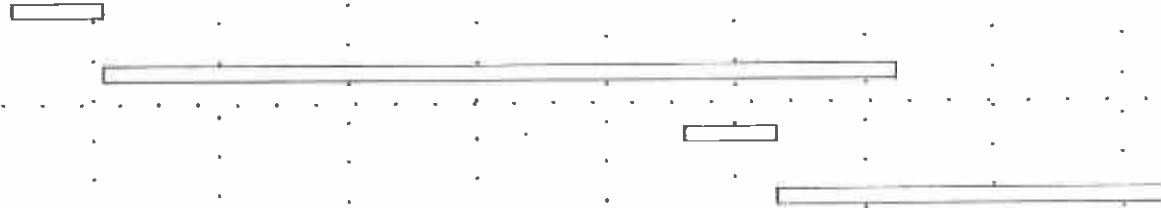
SOUTHERN CAL RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT
 LEVEL I CONTRACT SCHEDULE

LEVEL I CONTRACT SCHEDULE			
Date	Revision	Checked	Approved
9/25/86	5	AV	<i>[Signature]</i>

1986 1987 1988 1989 1990 1991 1992

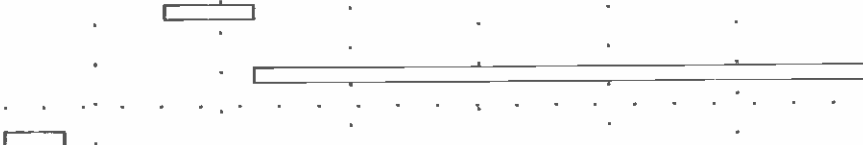
LINE SECTION-UNION STA TO 5TH/HILL, CIVIC CENTER

A141 LINE US TO 5H, CIVIC CENTER STG I BID PROC
 ES 09SEP86 EF 15JAN87
 A141 LINE US TO 5H, CIVIC CENTER STAGE I CONST
 ES 16JAN87 EF 13FEB90
 A147 CIVIC CENTER STAGE II BID PROCESS
 ES 21APR89 EF 28AUG89
 A147 CIVIC CENTER STAGE II CONSTRUCTION
 ES 29AUG89 EF 28FEB91

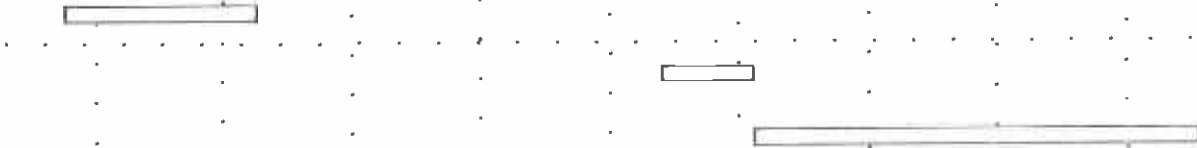


5TH & HILL

A145 5TH/HILL STAGE I BID PROCESS
 ES 13APR87 EF 17AUG87
 A145 5TH/HILL STAGE I CONSTRUCTION
 ES 18AUG87 EF 29DEC89
 A149 VAULT MODIF & UTILITY RELO BID PROCESS

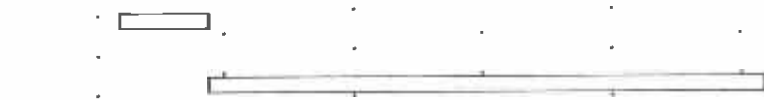


A149 VAULT MODIF & UTILITY RELOCATION
 A150 STAGE II BID PROCESS
 A150 STAGE II CONSTRUCTION



LINE SECTION-5TH/HILL TO 7TH/FLOWER

A140 LINE 5H TO 7F BID PROCESS
 A140 LINE 5H TO 7F CONSTRUCTION



7TH & FLOWER

A161 7TH/FLOWER UTILITY REARRANGEMENT BID PROC
 ES 29SEP86 EF 23DEC86
 A161 7TH/FLOWER UTILITY REARRANGEMENT
 ES 24DEC86 EF 6OCT87
 A165 7TH/FLOWER STAGE I BID PROCESS
 ES 30JAN87 EF 5JUN87



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SOUTHERN CAL RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT
 LEVEL I CONTRACT SCHEDULE

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LEVEL I CONTRACT SCHEDULE

Date	Revision	Checked	Approved
9/25/86	5	AV	[Signature]

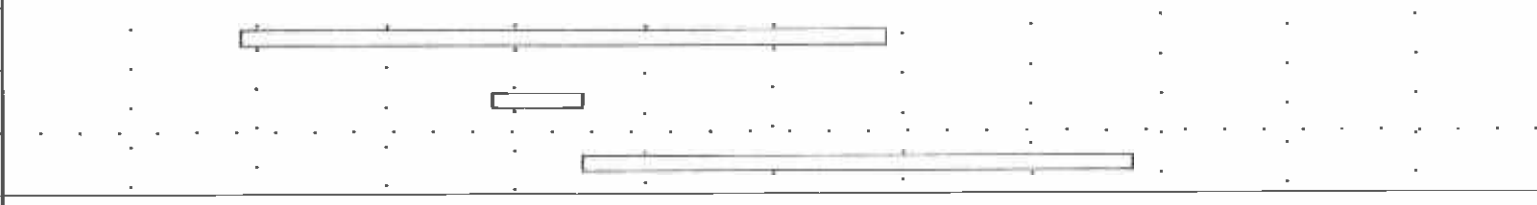
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7TH & FLOWER

A165 7TH/FLOWER STAGE I CONSTRUCTION
 ES 8JUN87 EF 7DEC89

A167 7TH/FLOWER STAGE II BID PROCESS
 ES 31MAY88 EF 5OCT88

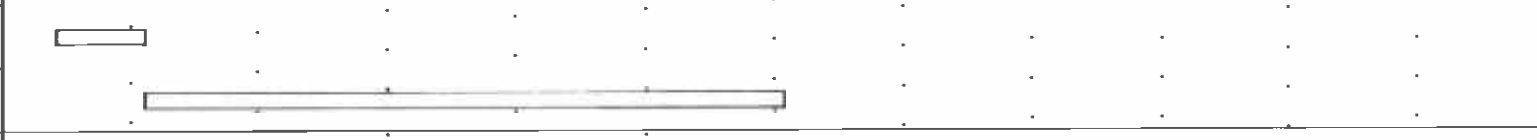
A167 7TH/FLOWER STAGE II CONSTRUCTION
 ES 6OCT88 EF 19NOV90



LINE SECTION-7TH/FLOWER TO WILSHIRE/ALVARADO

A171 LINE 7F TO WA BID PROCESS
 ES 15SEP86 EF 22JAN87

A171 LINE 7F TO WA CONSTRUCTION
 ES 23JAN87 EF 14JUL89



WILSHIRE/ALVARADO

A172 DEMOLITION BID PROCESS

A172 DEMOLITION OF STRUCT ON PANEL A1-208

A173 DEMOLITION BID PROCESS

A173 DEMO OF STRUCT ON PANEL A1-223, 224, 224, 225
 EF

A173 I ALVARADO STAGE I BID PROCESS
 ES 15DEC86 EF 21APR87

A175 WILSHIRE/ALVARADO STAGE I CONSTRUCTION

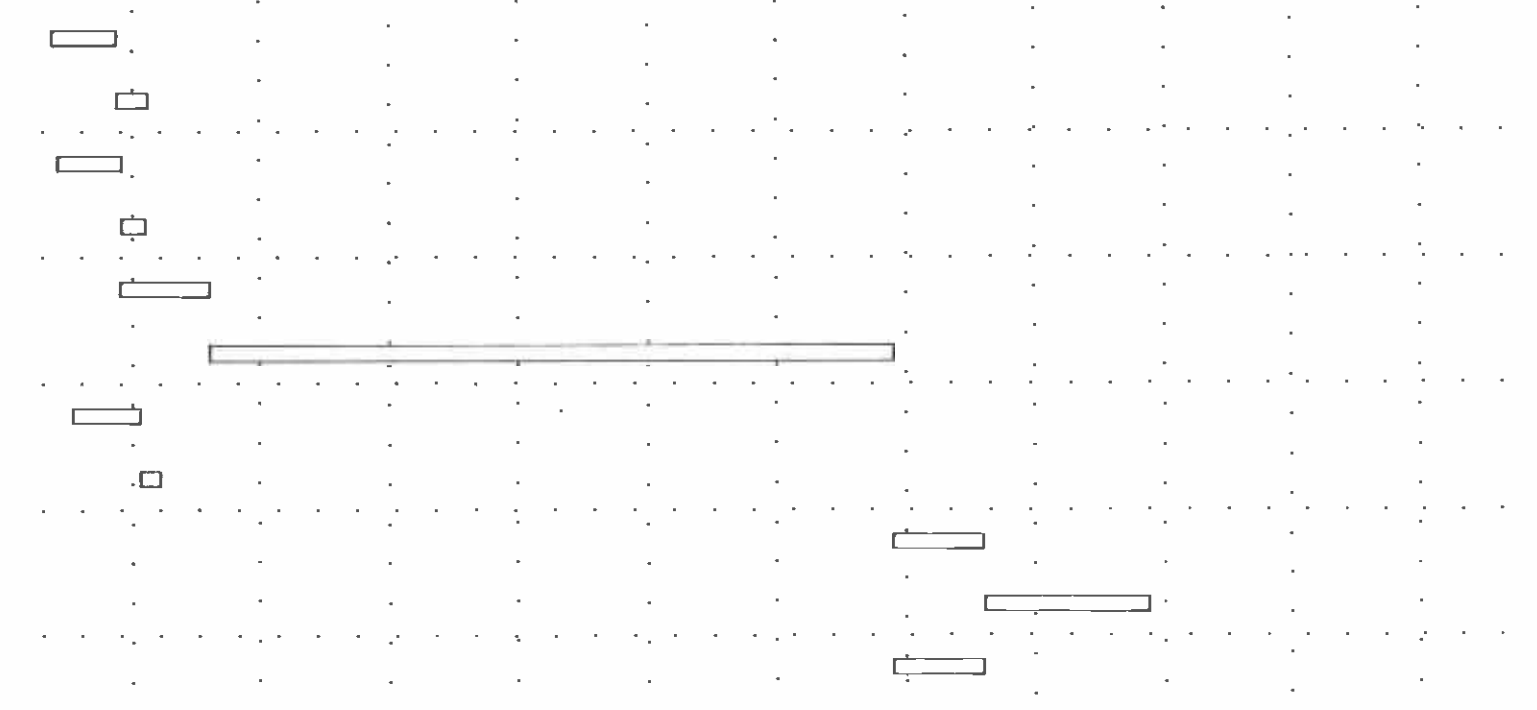
A177 DEMOLITION BID PROCESS

A177 DEMO ION OF STRUCT ON PANEL A1-209
 ES 13JAN87 EF 10FEB87

A185 RESTORATION BID PROCESS

A185 RESTORATION

A188 LANDSCAPING BID PROCESS
 ES 14DEC89 EF 20APR90



Activity Bar/Early Dates
 Critical Activity
 Progress Bar

SOUTHERN CAL RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT
 LEVEL I CONTRACT SCHEDULE

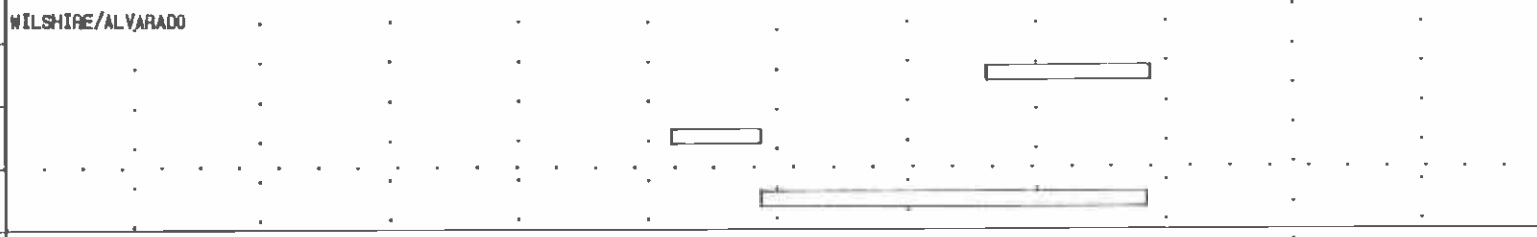
Sheet 4 of 8

LEVEL I CONTRACT SCHEDULE		
Date	Revision	Checked
5/1/88	5	1

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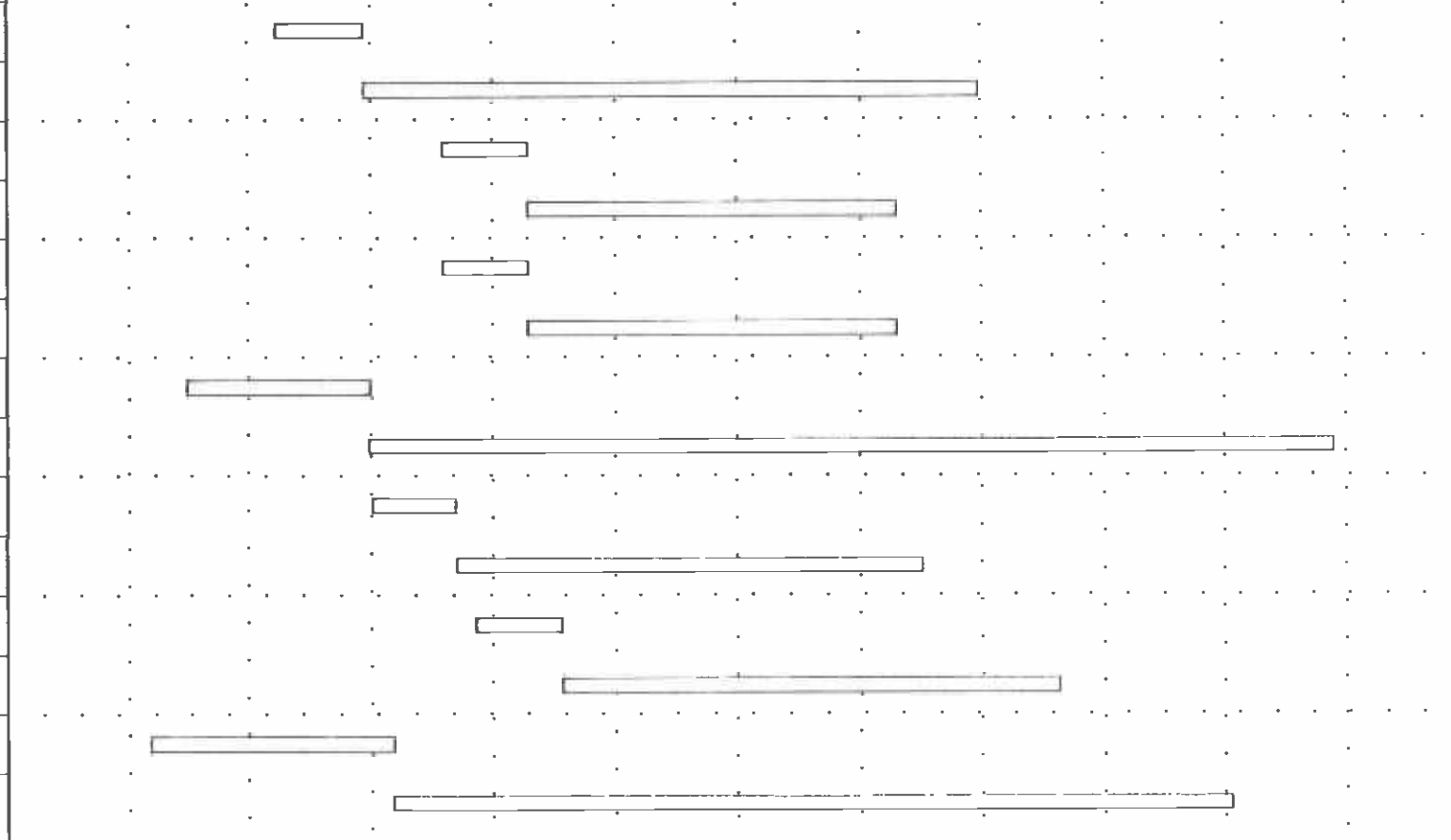
WILSHIRE/ALVARADO

A186 LANDSCAPING
 ES 23APR90 EF 10DEC90
 A187 WILSHIRE/ALVARADO STAGE II BID PROCESS
 ES 2FEB89 EF 8JUN89
 A187 WILSHIRE/ALVARADO STAGE II CONSTRUCTION
 ES 9JUN89 EF 30DEC90



SYSTEMS & SYSTEMWIDE CONTRACTS

A610 TRACKWORK BID PROCESS
 ES 13AUG87 EF 21DEC87
 A610 TRACKWORK PROCURE/INSTALL
 ES 22DEC87 EF 25JUN90
 A612 CONTACT RAIL BID PROCESS
 ES 18APR88 EF 23AUG88
 A612 CONTACT RAIL PROCURE
 ES 24AUG88 EF 23FEB90
 A615 PROTECTIVE COVERBOARD BID PROCESS
 ES 18APR88 EF 23AUG88
 A615 PROTECTIVE COVERBOARD PROCURE
 ES 24AUG88 EF 23FEB90
 A620 ATC BID PROCESS
 ES 1APR87 EF 29DEC87
 A620 ATC PROCURE/INSTALL
 ES 30DEC87 EF 13DEC91
 A630 TRACTION POWER EQUIPMENT BID PROCESS
 ES 4JAN88 EF 6MAY88
 A630 TRACTION POWER EQUIPMENT PROCURE
 ES 9MAY88 EF 3APR90
 A631 TRACTION POWER INSTALLATION BID PROCESS
 ES 6JUN88 EF 12OCT88
 A631 TRACTION POWER INSTALLATION
 ES 13OCT88 EF 24OCT90
 A640 COMMUNICATIONS BID PROCESS
 ES 3FEB87 EF 2FEB88
 A640 COMMUNICATIONS PROCURE/INSTALL
 ES 3FEB88 EF 10JUL91



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Primavera Systems, Inc. 1984, 1985

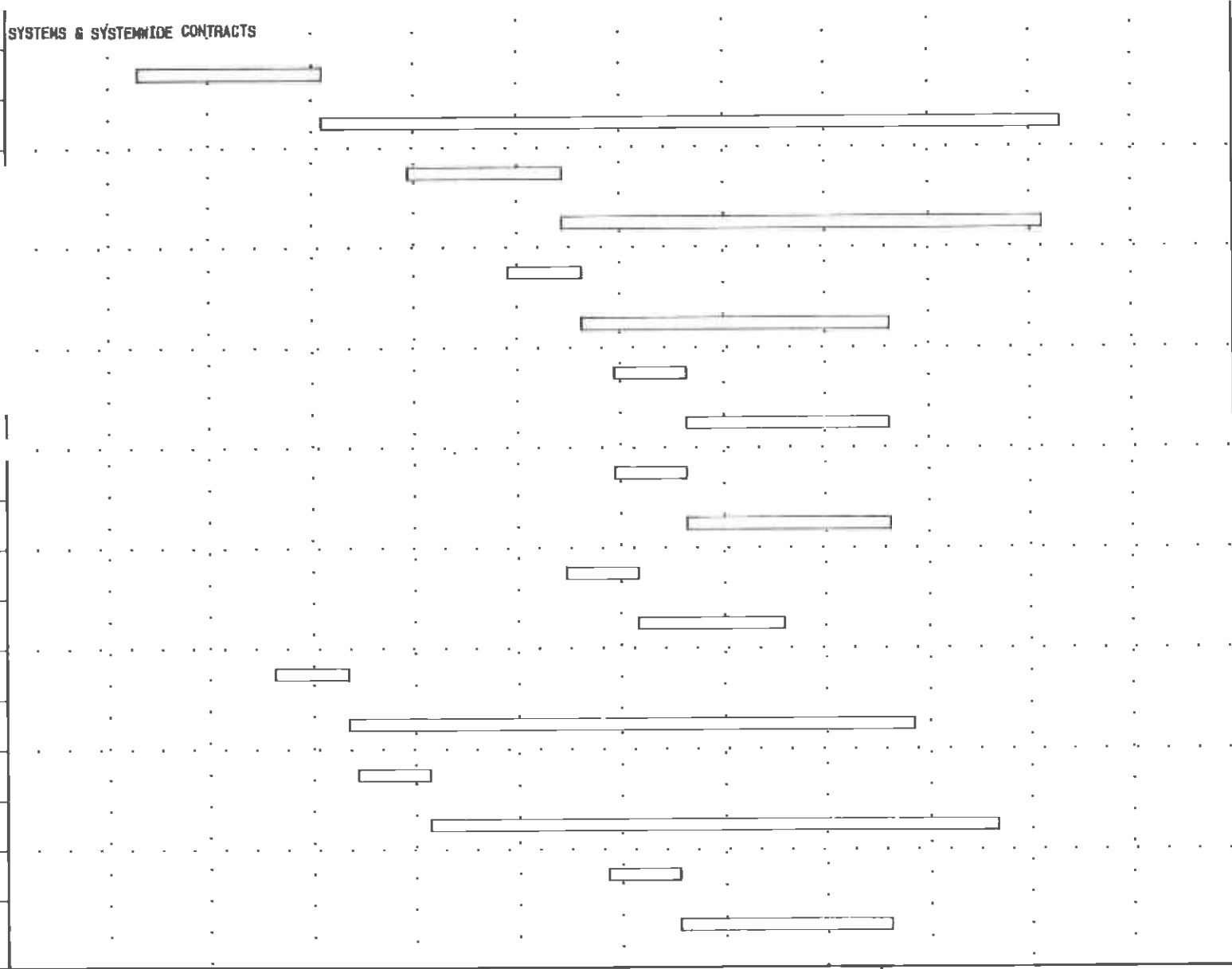
SOUTHERN CAL RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT
 LEVEL I CONTRACT SCHEDULE

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LEVEL I CONTRACT SCHEDULE			
Date	Revision	Checked	Approved
9/25/88	5	AV	[Signature]

SYSTEMS & SYSTEMWIDE CONTRACTS

ADDU PASSENGER VEHICLES BID PROCESS	EF 18JAN88
VEHICLES PROCURE	
ADDU VEHICLES I PROCESS	
ADDU FARE	
AD71 LOGUMUITE BID PROCESS	
AD71 LOGUMUITE PROCURE	
AD72 FLAT CAR BID PROCESS	
AD72 FLAT CAR	
AD73 CRANE BID PROCESS	ES 21JUN89 EF 26OCT89
A675 CRANE PROCURE	
ES 27OCT89 EF 23OCT90	
A680 OPERATIONAL GRAPHICS BID PROCESS	
ES 27MAR89 EF 1AUG89	
A680 OPERATIONAL GRAPHICS PROCURE	
ES 2AUG89 EF 18APR90	
A710 ESCALATORS BID PROCESS	
ES 26OCT87 EF 3MAR88	
A710 ESCALATORS PROCURE/INSTALL	
ES 4MAR88 EF 4DEC90	
A720 ELEVATORS BID PROCESS	
ES 21MAR88 EF 26JUL88	
A720 ELEVATORS PROCURE/INSTALL	
ES 27JUL88 EF 1MAY91	
A730 FIXED SHOP EQUIP BID PROCESS	
ES 7JUN89 EF 12OCT89	
A730 FIXED SHOP EQUIP PROCURE	
ES 13OCT89 EF 23OCT90	



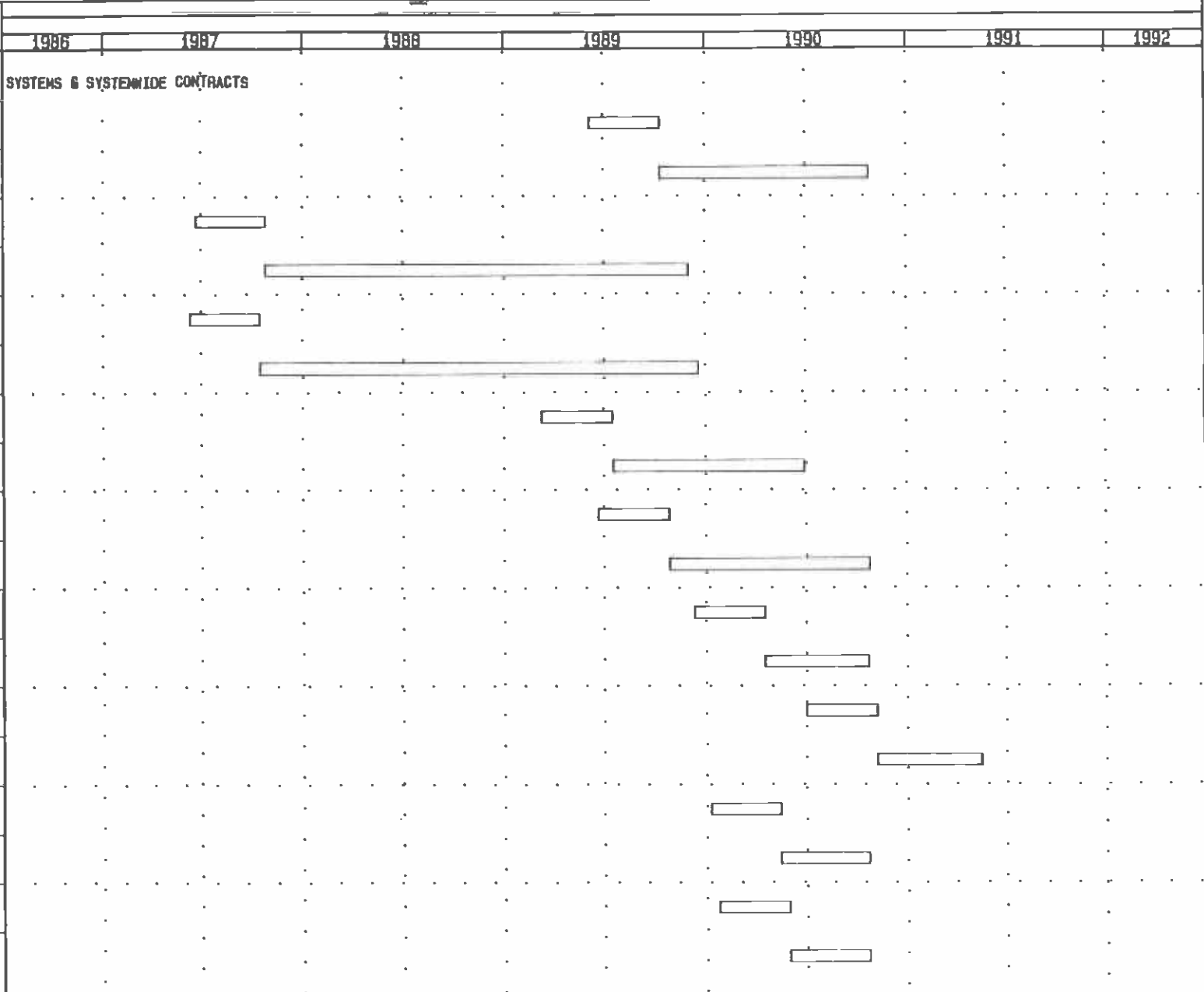
Legend:
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 [Thick line] Critical Activity
 [Dashed line] Progress Bar

Primavera Systems, Inc. 1984, 1985

SOUTHERN CAL RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT
 LEVEL I CONTRACT SCHEDULE

Sheet 6 of 8

LEVEL I CONTRACT SCHEDULE			
Date	Revised	Checked	Approved
9/25/86	5	AV	<i>[Signature]</i>



Legend:
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 ■ Critical Activity
 ■ Progress Bar

Primavera Systems, Inc. 1984, 1985

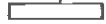
SOUTHERN CAL RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT
 LEVEL I CONTRACT SCHEDULE

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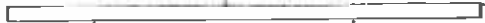
LEVEL I CONTRACT SCHEDULE			
Date	Revision	Checked	Approved
9/25/86	5	AV	[Signature]

SYSTEMS & SYSTEMWIDE CONTRACTS

A/93 UNINTERRUPTIBLE POWER SUPPLIES BID PROCESS



A/93 UNINTERRUPTIBLE POWER SUPPLIES PRODUCE



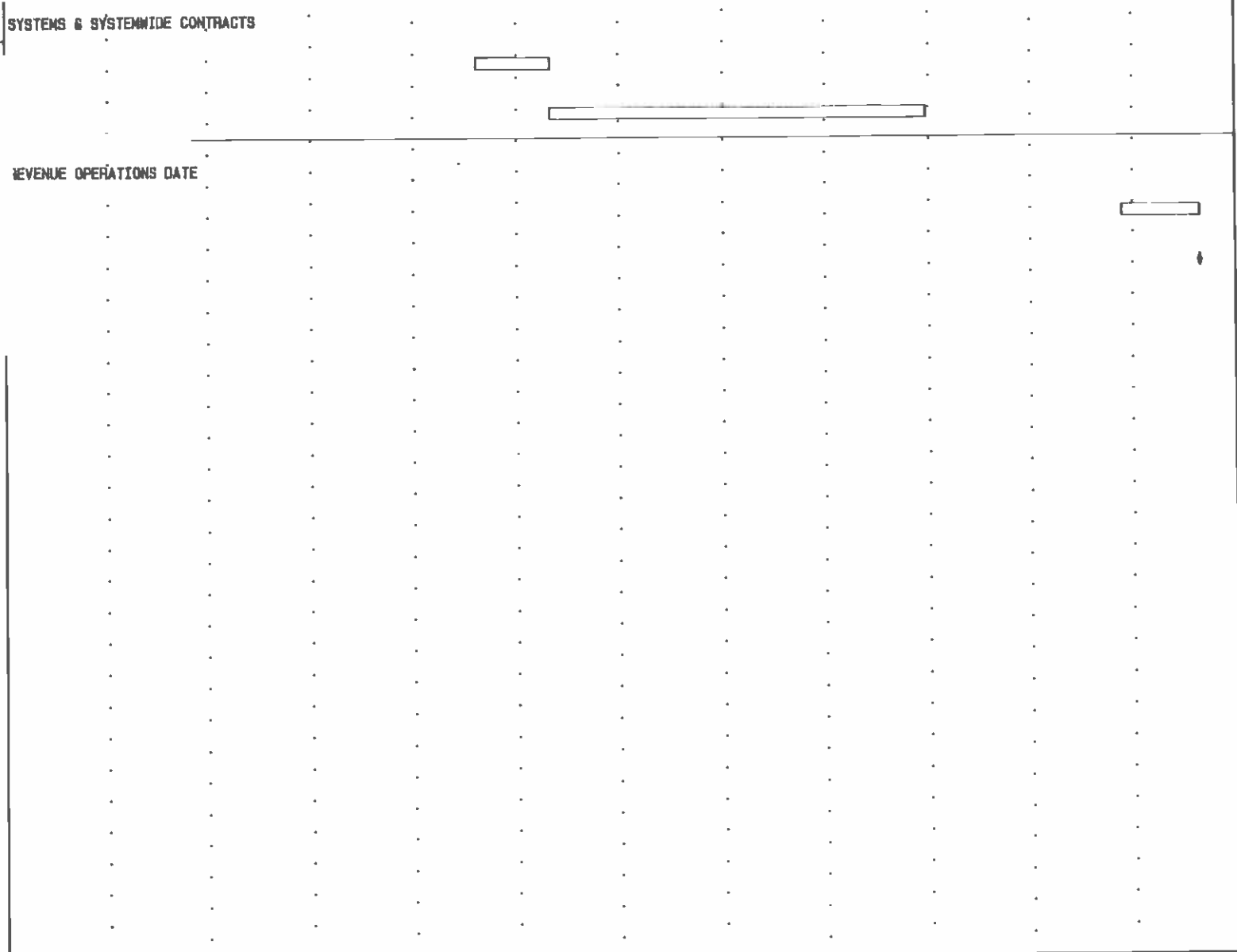
REVENUE OPERATIONS DATE

PRE-REVENUE OPERATIONS



REVENUE JUNE DATE

27



Legend:
 Activity Bar/Early Dates
 Critical Activity
 Progress Bar

SOUTHERN CAL RAPID TRANSIT DISTRICT
 METRO RAIL PROJECT
 LEVEL I CONTRACT SCHEDULE

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LEVEL I CONTRACT SCHEDULE

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IV. CONSTRUCTION READINESS

A. RESPONSE TO THE CITY INDEPENDENT TECHNICAL
REVIEW COMMITTEE REPORT

CONSTRUCTION READINESS

IV.A. RESPONSE TO THE CITY INDEPENDENT TECHNICAL REVIEW
COMMITTEE RECOMMENDATIONS

On January 9, 1986, the Board received a copy of the City Independent Technical Review Committee Evaluation of the MOS-1 Portion of the Metro Rail Project.

The recommendations of the Technical Review Committee have been evaluated by District staff. We have concluded that some of the recommendations made by the Committee can and will be implemented immediately, while some, which relate directly to construction, will be implemented as construction gets underway. In addition, some recommendations which relate to pre-operations will be implemented at the time that phase occurs. Finally, those specifically relating to the operations of the system will be implemented when operations begin.

A summary of the estimated additional costs to implement the Technical Review Committee's recommendations is included, followed by a detailed description of the SCRTD actions to comply with the recommendations and their status as of September 20, 1986.

SUMMARY OF ADDITIONAL COSTS

<u>NO.</u>	<u>SUBJECT</u>	<u>ADDITIONAL COST</u>
1	Uncharted Oil & Gas Wells	\$2,250,000
1A	Methane Gas Warning Devices	-0-
1B(1)	Provide Documentation to Contractors	-0-
1B(2)	8-Hour Training for Tunneling Personnel	150,000
1C	Oxygen Breathing Units	-0-
2	Geological Environment & Subsurface Conditions (Eng'g. - Science)	250,000
3	Automatic Back-up for Emergency Ventilation	10,000
4	Needs of the Handicapped	-0-
5	Revisions to Gas Monitoring System	600,000
6	Fault Classification & Lining Criteria	400,000
7	Additional Groundwater Measurements	-0-
8	Seismic Design Review	-0-
9	Back-up Power Supplies	810,000
10	Membrane Clamps Redesign	-0-
	Total Estimated Additional Cost	<u>\$4,470,000</u>

STATUS REPORT (DATE: September 20, 1986)

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

1. The SCRTD should conduct additional studies and research to improve the method of locating uncharted oil and gas wells before they are encountered and ruptured by a tunnel excavator and establish a procedure to abandon any oil or gas well encountered.

SCRTD Actions

Detailed research conducted to date using all available historical records and photographs has indicated that there are no known abandoned oil wells along the MOS-1 tunnel alignment. SCRTD and its consultants are continuing their search for any data that could provide additional information on abandoned oil wells along the alignment.

The SCRTD has completed its investigation of a technology being used in oil fields to locate well casings. The technology involves the use of a magnetometer, located at the end of a probe, that is capable of detecting oil well casings with a ferrous material content. The finding indicates that this technology can be applied successfully to the Metro Rail alignment. The SCRTD is presently formulating plans to use the technique in the MOS-1 alignment.

Status

The District has concluded that magnetometer surveys will be conducted from probes installed at the tunnel headings. This requirement has been incorporated into the construction specifications for each MOS-1 tunneling contract.

Cost

The estimated additional cost for providing magnetometer surveys for MOS-1 is: \$2,250,000.

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

- 1A. Audible and visual warning devices should be installed on tunnel excavating machines and in the tunnels to alert employees when detectors have identified the presence of methane gas.

SCRTD Actions

The requirements for audible and visual warning devices are presently incorporated in the SCRTD Construction Specification. Before tunnel construction commences, the contractor will be required to demonstrate that the warning devices are properly functioning. The Construction Manager together with the Cal-OSHA site representatives will enforce the use of the devices.

Status

The proper use of the devices will be monitored from the time construction begins until it is completed. The District's Construction Manager is fully aware of this requirement and it has prepared procedures to ensure compliance.

Cost

Because this requirement was included in the Project cost estimate, the additional cost for warning devices for MOS-1 is: \$-0-.

STATUS REPORT (DATE: September 20, 1986)

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

1B(1). The SCRTD should provide all its available methane gas documentation and interpretations by qualified experts to those bidding on the construction contracts involving tunneling or station construction.

SCRTD Actions

The Project contract documents require that all available methane gas documentation and interpretation will be made available to the bidders for review during bidding and use during construction.

Status

Closed.

Cost

The estimated additional cost for MOS-1 is: \$-0-.

STATUS REPORT (DATE: September 20, 1986)

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

1B(2). The SCRTD should include in bid documents the requirement that the contractor provide all employees involved in underground construction work with at least 8 hours of training in dealing with the hazards created by methane gas, safety precautions and emergency procedures to be followed when working underground, prior to those employees commencing underground work. In addition, periodic emergency drills and simulated rescues should be staged to reinforce the training.

SCRTD Actions

The SCRTD has developed a Construction Safety and Security Manual, which covers the training of employees involved in underground construction. The training portion of the manual contains the requirement that a minimum of 8 hours of training is to be provided to all employees involved in tunneling operations. Use of the manual is a construction contract requirement. Also, periodic emergency drills and simulated rescues will be conducted to reinforce the training.

Status

The Construction Safety and Security Manuals have been reviewed and concurred in by Cal-OSHA and the use of the manual is included as a contract requirement.

Cost

The estimated additional cost to implement a minimum 8 hour training program for MOS-1 is: \$150,000.

STATUS REPORT (DATE: September 20, 1986)

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

- 1C. Any tunnel excavating machine used to excavate the tunnels should be equipped with an enclosed cab and/or self-contained oxygen supply for the machine operator. In addition, all other workers in the immediate vicinity of the face should have, at all times and in immediate proximity of their working locations, self-contained "self rescuers" with an independent oxygen supply. Catalytic type "self rescuers" should not be relied upon since they are not effective in a methane environment.

SCRTD Actions

The construction specifications address this matter by requiring the use of self-contained oxygen breathing units for equipment operators and all others within 100 feet of the tunnel face.

Status

No modifications to current design or contract documentation are required. Compliance with these provisions of the construction contracts will be continuously monitored by the Construction Manager throughout the construction period.

Cost

Because the requirement for oxygen breathing units was already included in the Project contract documents, the estimated additional cost for these devices for MOS-1 is: \$-0-.

STATUS REPORT (DATE: September 20, 1986)

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

2. The SCRTD should undertake additional study to determine the effects that the geological environment surrounding the tunnel route will have on the amount of water and gas likely to penetrate the tunnels. A more thorough study of the characteristics of the oil and gas reservoirs in the vicinity of the route should also be undertaken.

SCRTD Actions

The SCRTD will continue its ongoing investigation of gas and water conditions along the alignment before and during construction. This effort will include evaluation of data from probes, analysis of all existing and new data by a reservoir engineer and a reservoir geologist, and analysis of all data by District and consultant specialists. As part of this detailed review and analysis of all pertinent data, the effects of the geological environment around the tunnel on the flow of water and gas will be evaluated. A reservoir engineer and a reservoir geologist have been engaged to evaluate the geological environment.

Status

Draft Subsurface Conditions Report was issued in May 1986. The report concluded that subsurface facilities should be constructed using standard precautions and gas mitigation measures.

Cost

The additional cost for the Subsurface Conditions Report was: \$250,000.

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

3. The SCRTD should review its decision not to provide some automatic mechanism to "back-up" the control room operators' activation of emergency ventilation fans. An automatic system should be designed for the control room so that if an alarm should warn of increasing levels of methane gas and the appropriate actions required of a human operator do not occur within a specific period of time, a preprogrammed computerized sequence of events will be initiated to activate the required fans, blowers, exhaust systems, etc.

SCRTD Actions

SCRTD has completed its review of the Metro Rail emergency operations when gas is detected. A change to the control software is being made to automatically activate the ventilation system if no action is taken by the communications controller within a prescribed period of time. The communications controller will need some time to ascertain that the prescribed emergency fan activation regimen is correct considering all events that may be taking place.

Status

The Metro Rail Communications system specification is being changed to provide the automated ventilation system activation as described above.

Cost

The estimated cost of this change is: \$10,000.

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

4. The SCRTD should, if it has not already completed such a review, assemble its own review panel to examine if its construction designs incorporate sufficient planning to accommodate adequately the special needs of the handicapped patron to use emergency accesses with as little assistance from employees or other patrons as can reasonably be expected.

SCRTD Actions

SCRTD has carried out an extensive review of the emergency exiting requirements of the handicapped. This review has involved the general public and the handicapped. The special needs of the handicapped have been, and will continue to be given particular attention in the design and operation of Metro Rail. The Fire/Life Safety Committee sets the standards and has the final approval of all safety exiting related issues including the accommodations for the handicapped.

Status

The review of emergency exiting provisions for the Metro Rail System is an ongoing process under the general aegis of the Metro Rail Fire/Life Safety Committee. This Committee will continue to review and approve all designs affecting such provisions. At an appropriate time prior to the start-up of the system, all emergency procedures and provisions will be thoroughly tested for revenue operations readiness.

Cost

Because this requirement was included in the contract documents and in the Project cost estimate, the additional cost for handicapped emergency access for MOS-1 is: \$-0-.

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

5. The SCRTD should reevaluate its gas probe and monitoring system so as to ensure that the system will: 1) locate probes in such underground locations as stations, tunnels, cross passages, etc., where methane and hydrogen sulfide gases are likely to collect (in addition to those to be located in the exhaust ducts); 2) locate the probes so that reasonably adequate diagnostic data can be generated to help locate the source of a gas intrusion, should it occur.

SCRTD Actions

SCRTD will continue its gas probe and monitoring system evaluation. The emphasis will be to assure that the gas sensing system provides adequate detection capability during operations. Specific attention will be given to the location recommendations stated above. The evaluation will identify appropriate locations for probes that will achieve thorough systems sensing.

Status

Review work on the gas probe and monitoring system has been concluded. As result of the review there will be an increase in the number of gas sensing points.

Cost

The estimated additional cost to provide additional sensing points for MOS-1 is: \$600,000.

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

6. The SCRTD should assign a certified engineering-geologist to be stationed at or near the working face of the tunnel at all times to inspect and log tunnel geology so as to obtain accurate information and interpretation in a timely manner about geologic conditions encountered such as methane pockets, groundwater, and changes in geologic conditions exposed during tunnel construction.

In addition, the SCRTD, if it has not already done so, should develop a contingency plan that will establish the criteria against which faults encountered during construction will be judged as potentially active or inactive and establish a procedure whereby the concrete tunnel lining will be replaced by specially designed steel lining when a fault classified as active is encountered.

SCRTD Actions

Engineering and geotechnical personnel will be assigned to the jobsites to accurately document geologic conditions and to ensure that proper construction procedures are followed.

SCRTD has developed a design for potentially active fault crossings that occur beyond MOS-1. The District will develop a contingency plan for any heretofore unknown faults that may be encountered within MOS-1. This contingency plan will include criteria and a range of options, including the use of the construction provisions for faults beyond MOS-1.

Status

The District will have available prior to active tunnel construction appropriate procedures and personnel to deal with the situation.

Cost

The estimated additional cost for Engineering and Geotechnical personnel for MOS-1 is: \$400,000.

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

7. The SCRTD should better define the groundwater environment through which the Metro Rail will traverse by preparing a detailed profile along the tunnel alignments, illustrating the position of the water levels. Estimates should be made of water inflow rates, and these should be compared with the capacities of pumping units to be installed in the tunnels. Evacuation plans and tunnel walkway plans should also be examined to ensure that they will remain useful to evacuate patrons and employees, should excessive inflow occur.

SCRTD Actions

Groundwater conditions along MOS-1 had been studied in detail during the design process. However, additional studies are being conducted to better determine the current aquifer characteristics.

Groundwater conditions along the MOS-1 alignment have been recorded in the geological reports prepared by Converse Consultants, U.S. Geological Survey Map MF-866, and gas monitoring reports prepared by Engineering Science in 1983 and 1985. Additional pump tests were initiated in March 1986, to verify previous tests and supplement existing data.

The list of geotechnical reports that addressed the groundwater environment is as follows:

- o Converse Consultants, Inc.:
 - August 29, 1983: Report of Man-Size Auger Boring.
 - September, 1983: Geotechnical Report, Metro Rail Project, Design Unit A-135 (with others).
 - October, 1983 : (a) Geotechnical Report, Metro Rail Project, Design Unit A-170 (with others).
 - October, 1983 : (b) Geotechnical Report, Metro Rail Project, Design Unit A-165 (with others).

STATUS REPORT (DATE: September 20, 1986)

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

SCRTD Actions (Continued)

- October, 1983 : (c) Geotechnical Report, Metro Rail Project, Design Unit A-140 (with others).
- June, 1984 : Supplemental Geotechnical Investigation Metro Rail Project, MacArthur Park Lake (with others).
- February, 1985 : Design Unit A-140 Geotechnical Information, Stations 178 through 199 (letter from MRTC).
- o Geotechnical Investigation Report, Volume I and II; Converse, Ward, Davis, Dixon, November 1981.

Current designs provide for water and gas-resistant membranes or coatings on the exterior of tunnel linings and station walls. Therefore, little or no water is expected to penetrate the stations or tunnels under operating conditions.

If a catastrophic seismic event were to occur, the postulated worst case scenario would involve a tunnel break of one foot wide around the entire tunnel circumference. Under this scenario, emergency evacuation would not be impaired by an inflow of groundwater. At typical flow rates through alluvium, the available tunnel storage capacity below the level of the safety walk would require approximately ten hours to fill.

Status

Pump test and additional groundwater measurements are in process. Should the findings indicate any design modifications are required they will be made. However, results to date indicate no modifications will be required.

Cost

There is not an anticipated construction cost increase: \$-0-.

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

8. The SCRTD and its consultants should obtain a copy of the U.S.G.S. Professional Paper 1360 and verify the adequacy of the MOS-1 structural seismic design. Additional consideration of fault displacement and related damage to the tunnel should also be analyzed.

SCRTD Actions

SCRTD and its consultants reviewed in detail all available literature including U.S.G.S. Professional Paper 1360, "Evaluating Earthquake Hazards in the Los Angeles Region." Selection of earthquake design values for the Metro Rail project involved consideration of several factors, including:

- o The design values are not the maximum ground acceleration (spike or peak) values, but rather represent the effective values for the design earthquake.
- o Attenuation of peak ground acceleration occurs and must be considered in selecting the design value.
- o There is a very small probability of exceeding the 0.6 g design acceleration during the life of the SCRTD structures.

A comparison of the SCRTD design values with those postulated in U.S.G.S. Professional Paper 1360 results in the following tabulation.

	<u>SCRTD Maximum Design Earthquake MDE</u>	<u>USGS Postulated Earthquake</u>
Richter Magnitude	6.5 - 7.0	6.5
Max. Design Ground Acceleration	0.60 g	0.42 g

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

SCRTD Actions (Continued)

Max. Design Ground Velocity	3.2 ft/sec	3.3 ft/sec
Max. Design Ground Displacement	3.3 ft	2.3 ft

The SCRTD design values represent a conservative and appropriate earthquake design approach that addresses all consistent the relevant conditions.

Fault crossings were analyzed in detail, including numerical analysis of flexibility of various tunnel structures and dynamic laboratory tests on models prepared for the District by the California Institute of Technology. From these analyses, it was concluded that fabricated steel linings, because of their ductility, were the appropriate linings for the alignment in the vicinity of identified faults.

Status

Closed.

Cost

No additional cost has been identified for this item. Should steel liners be required in a portion of the MOS-1 alignment the increased cost over using concrete liners is considered minimal.

STATUS REPORT (DATE: September 20, 1986)

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

9. The SCRTD should review its plans for backup power supplies and utilize fixed or mobile generators to supply emergency power for the ventilation and dewatering pumps in critical areas.

SCRTD Actions

SCRTD will continue to analyze the plans for emergency operations in case of an area wide power failure. The adequacy of the existing triple-redundant, utility-supplied power system will be reviewed, as well as reconsideration of the use of fixed or mobile generators for emergency power.

The current plans require the installation of conduit at the station entrances for a mobile generator hook-up to the Uninterruptible Power Supply System. This emergency power connection capacity will be increased to operate the ventilation system if the system safety analysis indicates that it is required.

Status

SCRTD will complete the review of the need for additional backup power in July 1986, at which time a decision will be made on the appropriate action to be taken.

Cost

The estimated additional cost to implement the above recommendation in MOS-1 if required, up to \$1,100,000.

STATUS REPORT (DATE: September 20, 1986)

DISTRICT ACTIONS TO COMPLY WITH THE

CITY INDEPENDENT TECHNICAL REVIEW REPORT RECOMMENDATIONS

Recommendation

10. The SCRTD should reexamine the use of membrane clamps, grout holes, and grout pipes to insure that the membrane surrounding the tunnel lining will be properly sealed and closed off after grouting.

SCRTD Actions

The construction drawings contain detailed sketches governing the installation and sealing of grout holes through the membrane. The grouting design details have been reexamined by SCRTD and consultants to insure proper constructibility.

Status

The present design details are adequate to provide for the proper seals.

Cost

The estimated additional cost for MOS-1 is: \$-0-.

B. CONSTRUCTION MANAGEMENT (CM) STATUS

CONSTRUCTION READINESS

IV. B. CONSTRUCTION MANAGEMENT (CM) STATUS

Objectives of Construction Management

The objectives of Construction Management on the Metro Rail project are to complete the facilities and systems on schedule within budget in accordance with the plans, specifications, and applicable, local, state and federal requirements. In addition, a carefully planned safety program will be conscientiously implemented.

Organization And Responsibilities

The Metro Rail Department (MRD) has overall responsibility for Metro Rail construction and is supported by staff from other District Departments and the Construction Management Consultant, PDCD. PDCD, is a Joint Venture headed up by the Parsons Corporation, under contract to the SCRTD to provide specified construction management services.

Pre-Construction Activities

As the design process nears completion for each construction project, a Bid Certification Checklist is prepared for that contract. This checklist identifies all actions which must be completed before the contract can be advertised and assigns responsibility for accomplishing each action to a specific individual. The checklist is prepared and closely monitored by MRD staff and reviewed at weekly status review meetings. All responsible parties are required to certify by signature that action items have been completed and that the Construction Bid Documents are ready for advertising.

All construction contracts are planned to be competitively bid. The availability of bid documents will be advertised in local media and national trade publications such as Engineering News Record and the Dodge Report. In addition, an extensive list of potential bidders has been assembled who will be sent notices of upcoming contracts.

A Pre-Bid Meeting, including site visit, will be conducted for each contract to assist prospective bidders in fully understanding the nature and scope of the work and to clarify technical and administrative requirements.

Bid periods will range from 20 to 45 calendar days, depending on the nature and complexity of the contract.

Bids will be publicly opened in the District Board Room at the advertised time and date.

The District, with appropriate assistance from consultants will evaluate the bids for responsiveness and responsibility. The acceptable low bidder will be submitted to the Board for approval. Upon receipt of Board approval, the Contract will be awarded.

The Pre-Construction Conference will be promptly scheduled after contract award. This conference provides a forum for the District and the Contractor to discuss administrative procedures and other items of mutual interest regarding the terms of the contract and the project scope of work. The Notice To Proceed (NTP) will then be issued specifying the work start date, total construction time, and interim milestone completion times.

Construction Activities

The Resident Engineer (RE) is the focal point for construction management activities onsite and the day-to-day point of contact with the Contractor during the construction phase. The RE is provided guidance by the District Construction and Procurement staffs.

The primary function of each RE is to insure that:

- o All construction is accomplished in accordance with the contract documents, utilizing acceptable safety practices.
- o All construction is completed pursuant to the approved schedule and within budget.
- o All change and claim data are properly prepared and promptly processed.

After NTP is issued, all correspondence and communications to and from the District and the contractor will go through the RE unless otherwise specified. The RE will be responsible for maintaining a complete contract file.

The RE will ensure that all contract deliverables (i.e., shop drawings, list of subcontractors, project schedule, safety plan, quality control plan, change proposals and claims, progress payment requests, etc.) are properly documented and promptly processed.

Regular jobsite meetings will be held to review contractor progress, status of deliverables, jobsite problems, safety matters, and other items pertinent to the contractor performance.

The RE will implement an inspection and testing program to verify that all work performed and all materials furnished are in conformance with contract requirements. When the results of inspections and testing establish that materials or workmanship do not comply with specifications, the RE will immediately notify the contractor in writing of the deficiency and the corrective action required.

The RE will ensure that measurement and payment for work performed are in strict conformance with the specifications.

Monthly progress payment estimates will be prepared by the RE, compared and reconciled with the Contractor's estimate, and recommended to the District for approval and payment.

Post-Construction Activities

Upon notification from the contractor that all contract work has been completed, a final inspection will be conducted by the Resident Engineer and District representatives. The final inspection will confirm that the work has been completed in conformance with all contract requirements.

The RE will prepare a complete set of record drawings, marked up to reflect as-built conditions.

The District, prior to final acceptance of the contract, will ensure that:

- o All accounts between the District and the contractor are in order.
- o All required warranties and guarantees have been received.
- o All O & M requirements (manuals, training, spare parts, etc.) have been met.
- o Certificates of acceptance for work performed for utilities, agencies, railroads and others have been received.
- o Contractor has submitted an affidavit releasing the District from all claims and liens arising from the contract.

Final payment will not be made until Final Acceptance of the work by the District.

Special Emphasis

- o Safety - Subsurface construction, including tunneling and cut-and-cover operations, must conform to Cal-OSHA

safety requirements. Also, there are special considerations involving the Metro Rail Project that must be specifically addressed.

- Methane Gas
- Abandoned Oil Wells
- Earthquake Faults
- Toxic/Hazardous Materials

The District has developed and implemented a construction safety and security program that is specifically tailored for construction of the Metro Rail Project.

-All tunnel construction shall be performed in strict compliance with Cal-OSHA requirements.

-Special safety plans have been prepared in the event that methane gas, abandoned oil wells, hazardous wastes or other unusual circumstances are encountered.

-All contractors are required by contract to develop a project-specific safety and security program for District review and approval.

-The District will closely monitor safety and security compliance to ensure that work is performed safely for the benefit of construction workers and the public and for the protection of property.

- o Quality Control - The District has developed and will implement a Quality Assurance Program for all phases of the Metro Rail Project.

Quality Assurance/Quality Control during construction will emphasize prevention of conditions adverse to quality, early identification of undesirable conditions, prompt analysis of actual and potential deficiencies and timely and corrective action.

- o Change Control - All changes during construction will be tightly controlled in accordance with the District's Configuration Management Plan. The following are the basic steps through which a change will be processed.

- Initiation of Change Request
- Evaluation of Need & Assessment of Impact
- Internal Approval of Change
- Contractor Proposal Requested
- Negotiations
- Change Order Approved - Contract Modified
- Contractor Performs Work As Changed

Timely And Decisive Action

Several recent reports on management of urban construction projects have emphasized the importance of timely and decisive action. One such report states that the single most important cause of costs overruns and delays is the delay in decisive management action.

To address this problem, the District must accomplish the following:

- o Have well defined objectives
- o Assign specific responsibilities and accompanying authority.
- o Take prompt and decisive action within the limits of authority and responsibility.
- o Eliminate red tape.

C. OWNER-CONTROLLED INSURANCE PROGRAM

DISTRICT INSURANCE PROGRAM

A. COVERAGES

On July 26, 1984, the SCRTD Board of Directors awarded a contract for the development and implementation of an Owner-controlled Insurance Program (OCIP) for the Metro Rail Project to the joint venture of Fred S. James & Co. of California, Inc., Akasaka, Ortiz & Ciocatto Insurance Assoc., Kadowaki Associates International Corp., and Rideau & Associates Insurance Agency (JKOR).

The OCIP components include: risk analysis, insurance marketing, claims management, pre-construction surveys, loss control, and a minority bond packaging program.

In support of the Metro Rail Construction Program, JKOR will procure and the District will pay premiums for the following coverages for the Contractors, subcontractors of any tier, and other entities working on the Project:

1. WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY covering statutory coverage in the State of California, All States Endorsement, United States Longshoremen and Harborworkers Compensations Act, Jones Act, and Federal Employers Liability Act.
2. PERSONAL INJURY, BODILY INJURY, AND PROPERTY DAMAGE LIABILITY - \$2,500,000 limit policy with a \$500,000 self-insured retention, and an additional \$48,000,000 limit excess liability policy. The Contractor will be responsible for the first \$5,000 for each utility claim arising out of any occurrence.
3. ALL RISKS COURSE OF CONSTRUCTION (PROPERTY) - \$75,000,000 total limit per occurrence other than in respect of the following sub-limits:
 - (a) Earthquake \$20,000,000 per occurrence
 - (b) Debris Removal \$ 7,500,000 per occurrence
 - (c) Transit \$ 5,000,000 per occurrence
 - (d) Off-Site Storage \$ 1,000,000 per occurrence

The sub-limit in (a) applies after the application of the Contractor's deductible amounts indicated below. The sub-limit in (d) increases to \$10,000,000 per occurrence when

full details of storage facilities and conditions are provided by the Named Insured (Contractor) to the Underwriters.

The property insurance is subject to the following deductibles:

- (a) Earthquake - 20 per cent of the adjusted loss per occurrence subject to a Minimum of \$100,000.
- (b) Collapse, Subsidence, Water Damage and Explosion - \$100,000 per occurrence
- (c) Defective design, faulty workmanship and Materials - \$1,000,000 per occurrence
- (d) All other Perils - \$25,000 per occurrence

The Contractor will be responsible for the first \$5,000 per occurrence for fire, explosion, vehicle damage, smoke, hail, aircraft, windstorm, and vandalism and malicious mischief. The Contractor will be responsible for the first \$25,000 per occurrence for all other perils covered by this policy.

- 4. RAILROAD PROTECTIVE (As necessary and subject to Special Provisions) - Policies known as Railroad Protective Insurance in amounts and on a form as required by the railroad(s) involved.

DISTRICT INSURANCE PROGRAM

B. PRECONSTRUCTION SURVEYS

The Preconstruction Survey (PCS) Program is an inventory of all visible structural defects and deformations that occur to buildings, sidewalks, bridges, retaining walls, streets, statuary and utilities. The survey is conducted in an area considered to be an influence zone, impacted on or influenced by the Metro Rail construction activity.

The purpose of the survey is to clearly identify and record those visible conditions that predated the construction activity to be performed in the zone of influence.

The survey is primarily a loss control and claims defense mechanism. If a property owner alleges that damage was sustained due to SCRTD's construction activities along the alignment, the preconstruction survey is used to determine what visible damage pre-existed the construction and what damage, if any, post-dated the construction activity. This allows for fair and prompt settlement of third party property damage claims.

Preconstruction surveys have proven most beneficial, particularly in densely built up areas, where construction activities have produced vibration effects to structures.

The identification of structures to be surveyed will be done by a committee made up of representatives from SCRTD, the Construction Manager, Insurance Administrator, insurance carrier and preconstruction survey consultant. This committee will determine the scope of the surveys to be performed on structures within the zone of influence. The survey will be conducted immediately prior to commencement of construction operations in the contract area.

Survey volume varies along the route alignment and takes into account the degree and type of construction work. Where extensive, deep excavation is required, the area surveyed will involve a wide zone of survey activities.

Survey methodology involves the photographing of all buildings using architectural quality, still-color photography and an accompanying audio-taped report which describes each building's condition as it exists prior to commencement of construction operations.

When a claim is presented, the tape and photographic evidence will be reviewed and based upon the pre-existing conditions, a

settlement will be offered if appropriate. Should litigation result, the PCS consultant will be called upon for expert testimony in support of the District's position.

The preconstruction survey performance will be sensitive to the community. This will be accomplished by established procedures for gaining access to structures that are responsive to the needs of the property owner and building occupants.

DISTRICT INSURANCE PROGRAM
C. SAFETY OVERVIEW

Construction Manager	Insurance Administrator	District Safety
<p>Develop, implement and maintain an effective project-wide Safety Program.</p>	<p>Assist the Construction Manager in the program development effort. Review and recommend to the District, approval of the project wide Safety Program. Monitor all project related safety programs and prepare monthly reports on results.</p>	<p>Monitor effectiveness of Safety Program.</p>
<p>Reinforce Loss Control Program by implementing actions identified by Insurance Administrator; and enforcing loss control.</p>	<p>Evaluate level of on-site safety supervision and control provided contractors, safety superintendents, supervising, etc. Recommend changes for improving safety or meeting regulatory safety compliance.</p>	<p>Support actions executed by IA or CM related to safety enforcement. Monitor enforcement activities to ensure conformance with District requirements.</p>
<p>Develop Emergency Response Procedures and provide personnel training and equipment as necessary to handle on-site emergencies.</p>	<p>Assist in the development of Emergency Response activities; participate in training sessions and drills; ensure District liability is minimized by appropriate emergency response procedures. Provide Program Status Reports.</p>	<p>Oversee Emergency Preparedness activities to ensure consistency and conformance with District requirements.</p>
<p>Coordinate the inputs from the General Engineering Consultant to the Insurance Administrator which will identify special hazards. Provide control measures required to support the pre-construction surveys.</p>	<p>Perform pre-construction surveys to identify, record and catalogue pre-existing conditions in order to minimize District's liability on future claims.</p>	<p>Review pre-construction surveys and concur in recommended monitoring actions.</p>
<p>Perform on-site, quality control and environmental tests and inspections.</p>	<p>Provide support inspection services to CM and review inspection reports to ensure consistency with Loss Control Program.</p>	<p>Audit inspection records and review inspection reports for conformance with regulations and District requirements.</p>

DISTRICT INSURANCE PROGRAM

D. BOND PROGRAM

PURPOSE

The purpose of this program is to provide surety bonding and working capital to Disadvantaged and Women's Business Enterprises (DBEs and WBEs) participating as subcontractors on the Metro Rail Project.

FUNDING

Proposition A funds from the City of Los Angeles would be deposited into a reserve account which would be used to leverage unsecured working capital, and to authorize the issuance of bond guarantees through the account.

IMPLEMENTATION

The District's Insurance Administrator would be responsible for the implementation of the Program. The District will closely monitor the progress of the DIA's implementation of this program. The attached flow chart describes the procedural steps involved in the implementation of the program and the organizational responsibilities for those steps.

RISKS

The following features are included in the program to minimize potential losses of guarantee funds:

- o Only DBE and WBE subcontractors will participate in the guarantee program. Prime contractors will not be eligible to participate.
- o The Metro Rail Insurance Administrator will provide technical assistance and joint checking account services to all guarantee-bonded firms.
- o The unsecured working capital loans to be leveraged by the guarantee fund would provide financial stability to the guarantee-bonded firms.
- o In the event of a default, the surety would be required to complete the work of the defaulted subcontractor for the prime contractor. Only the increased cost above the subcontract price at the time of default would have to be paid from the guarantee reserve, not the entire subcontract cost.

PROGRAM STATUS

An Agreement between the City of Los Angeles and the District has been drafted. This requires the City to make an initial deposit into the bond guarantee reserve as soon as practicable after receipt by the District of a Letter of Intent from the Federal Government for the Metro Rail Project.

The District is in the process of finalizing a contract between the District and the Metro Rail Insurance Administrator for implementation of this program.