

COST AND SCHEDULE  
STATUS REPORT  
AUGUST 1984

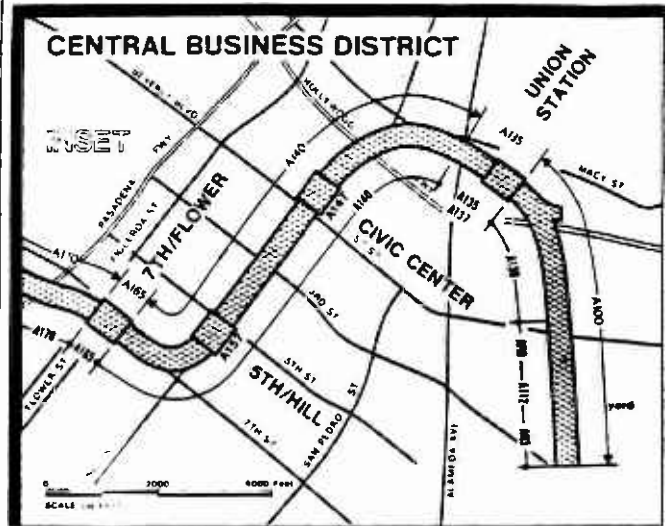
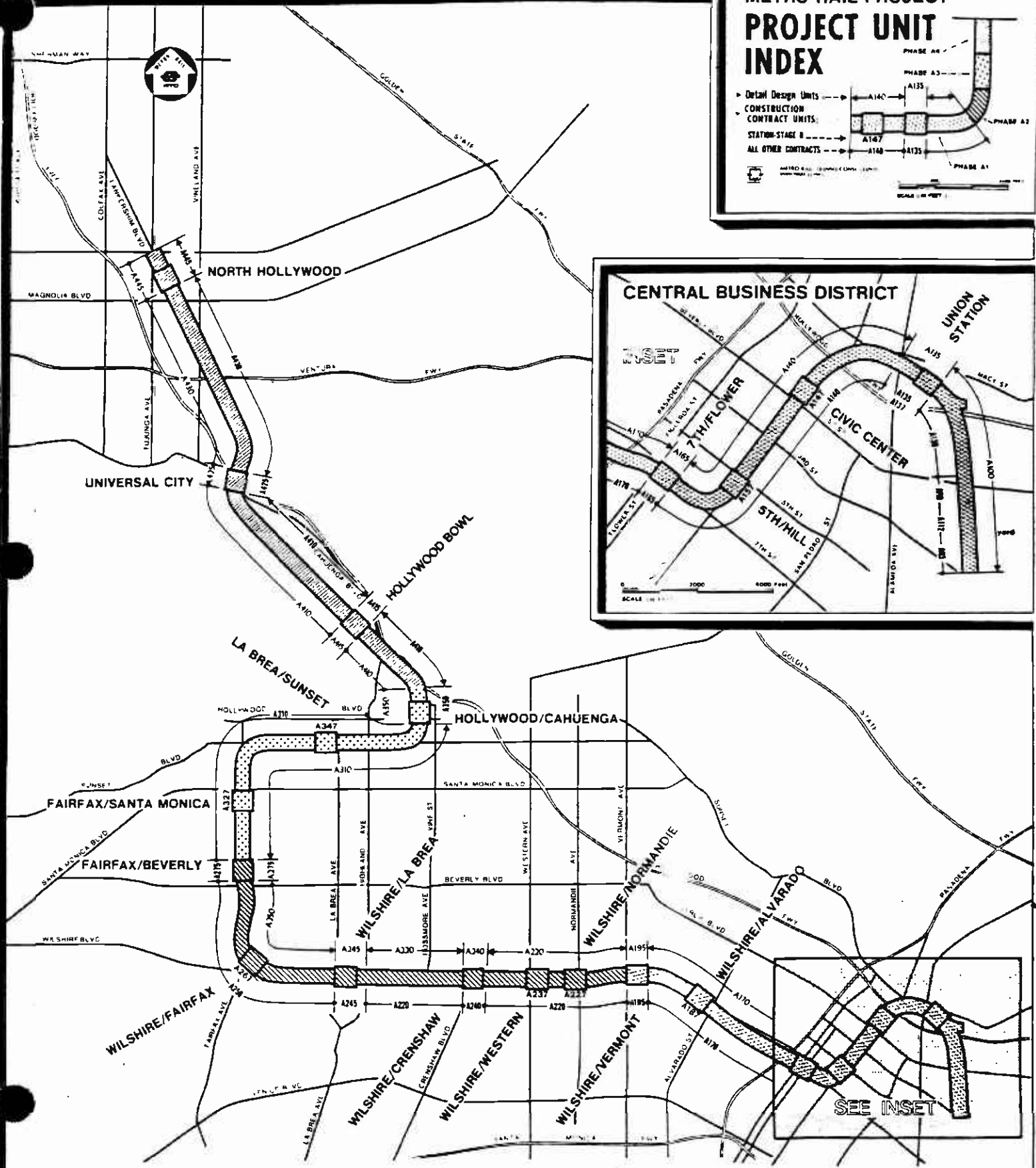
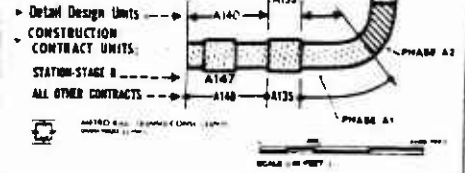
YRARELI ATR

# SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

NOVEMBER 1983



## METRO RAIL PROJECT PROJECT UNIT INDEX



SEE INSET

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SECTION I  
PRELIMINARY ENGINEERING

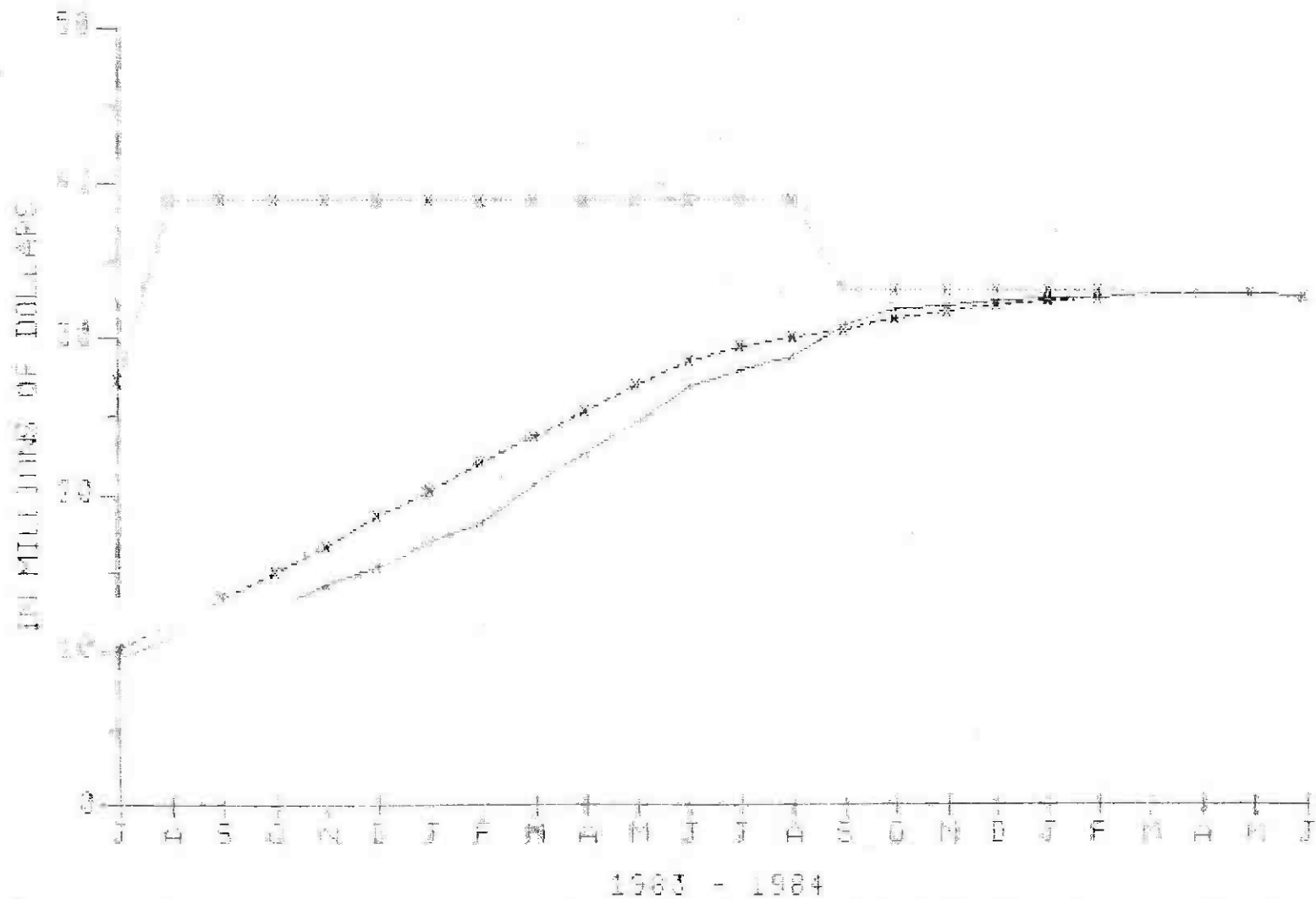
SCR TD METRO RAIL PROJECT  
PRELIMINARY ENGINEERING STATUS  
AUGUST 1984

This section details the \$32.813 million currently budgeted for Preliminary Engineering. Expenditures to date total \$32.813 million. The original budget is \$38.843 million, and the current budget mentioned above is \$32.813 million. The difference, \$6.030 million, represents the P.E. underrun and has been transferred to C.P.E.

All Preliminary Engineering contracts are complete. Monies remaining in the P.E. line items have been transferred to the same line items in C.P.E. finalizing the close-out of Preliminary Engineering.

The accompanying graph illustrates the planned P.E. expenditures against the actual expenditures.

PTD METRO RAIL PROJECT  
PRELIMINARY ENGINEERING STATUS



—•— ACTUALS    -x- PLANNED EXPENDITURES    -o- CAPITAL GRANT FUNDS



09/13/84  
P&C(WP)-7.3

Status as of : 08/31/84  
WBS # : 11DAA3113

SCRTD METRO RAIL PROJECT  
PRELIMINARY ENGINEERING BUDGET  
SUMMARY BY MACS CODE (\$000'S)

5  
MTA LIBRARY

APE# 0210	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WKG. BUDGET (7=3+6)	APPROVED BUDGET (8)	VARIANCE (9=8-7)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)			
1.	(20.02.01) Purchase of Support Autos	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 22	\$ 22	\$ 22	\$ 40	\$ 18
2.	(20.02.02) Purchase/Installation of Support Equipment	- 0 -	- 0 -	- 0 -	- 0 -	1,100	1,100	1,100	900	(200)
3.	(20.08.01) Professional Services Contracts	- 0 -	- 0 -	- 0 -	- 0 -	24,053	24,053	24,053	24,422	369
4.	(20.15.02) Force Account Work	- 0 -	- 0 -	- 0 -	- 0 -	6,499	6,499	6,499	12,270	5,771
5.	(20.16.90) Other Supporting Services	- 0 -	- 0 -	- 0 -	- 0 -	1,019	1,019	1,019	600	(419)
6.	(20.16.00) General & Administrative	- 0 -	- 0 -	- 0 -	- 0 -	120	120	120	136	16
7.	(32.00.00) Contingencies	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	475	475
GRAND TOTAL		\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 32,813	\$ 32,813	\$ 32,813	\$ 38,843	\$ 6,030

\* APE - Authorization for Expenditure  
\*\* MACS - Management and Control System

SECTION II  
CONTINUED PRELIMINARY ENGINEERING

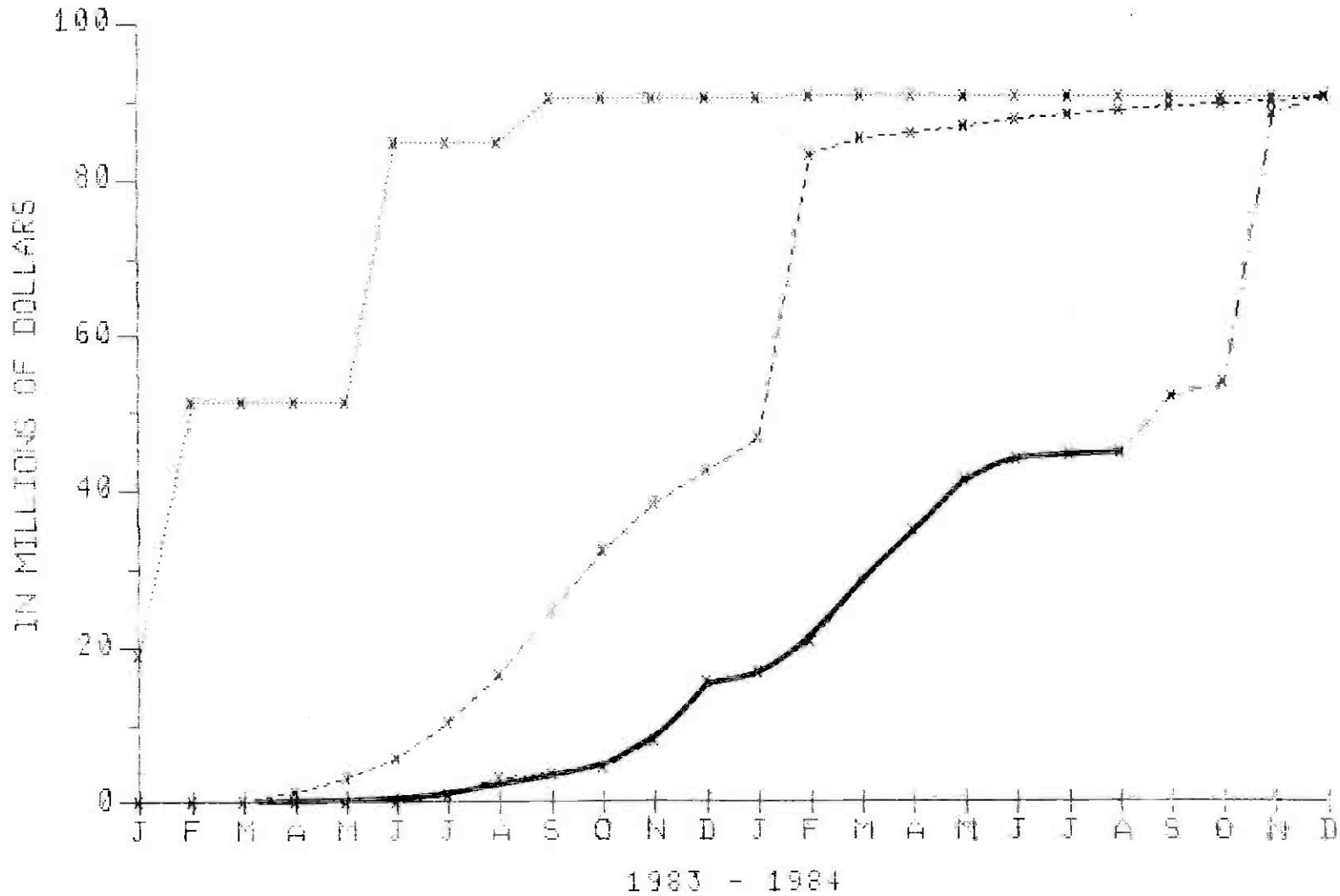


SCRTD METRO RAIL PROJECT  
CONTINUED PRELIMINARY ENGINEERING STATUS  
AUGUST 1984

This section details the \$90.743 million currently budgeted for Continued Preliminary Engineering. Expenditures to date total \$45.064 million.

The following graph illustrates the overall financial status of the C.P.E. Phase. To date, \$6.030 million has been transferred from the P.E. line items to the same line items in C.P.E. A budget amendment request will be sent to U.M.T.A. to address the transferring of funds between line items within C.P.E. This transfer is necessary in order to distribute the funds to the MACS code where monies have or will be spent during C.P.E. At the end of July, all MACS codes within C.P.E. were closed out, except for professional services, and any overruns or underruns will be transferred to the Pre-Construction Phase. A budget amendment request will be sent to UMTA to authorize this change.

RTD METRO RAIL PROJECT  
 CONTINUED PRELIMINARY ENGINEERING STATUS  
 AS OF AUGUST 1984



-x- FORECAST    —●— ACTUALS    -x- PLANNED EXPENDITURES    -x- CAPITAL GRANT FUNDS



SUMMARY OF CONTINUED PRELIMINARY ENGINEERING  
 BUDGET CHANGES  
 AS OF AUGUST 1984

<u>Date</u>	<u>Cum. Budget Amount \$ (000's)</u>	<u>Explanation of Change</u>
January 1983	18.750	Initial C.P.E. funding Phase I
February 1983	51.380	Funding for acquisition of Santa Fe Rail Yard
June 1983	84.713	C.P.E. Phase II
September 1983	90.461	Transfer of P.E. under- run to C.P.E.
June 1984	90.743	Transfer of P.E. underrun to C.P.E.

## CONTINUING PRELIMINARY ENGINEERING

UNOBLIGATED-COMMITTED BUDGET AMOUNTS-PROFESSIONAL SERVICES CONTRACTS

Listed below are Professional Services Contracts which are forecasted but unobligated as of the status date. These are budget amounts for work which has been authorized for solicitation by the Board, has been advertised, or for which negotiations have been started pursuant to an approved purchase requisition. In parenthesis is the date the contract is expected to be obligated (signed by the General Manager). The list is subdivided into two parts: "Proposed Contract Changes" which identifies proposed amendments to current contracts; "Proposed New Contracts" which in dollar amounts in areas where new contracts will be needed.

On a monthly basis this list is updated reflecting the most current information on proposed new or amended contracts, dollars amounts, and expected obligation dates.

## I. PROPOSED CONTRACT CHANGES:

o CALTRANS	\$	247,000	(09/84)
o Pacific Bell		44,000	(09/84)
o City of L.A.		60,000	(09/84)
o D.W.P. - Water Division		180,000	(09/84)
o Western Union		11,000	(09/84)
		<hr/>	
TOTAL PROPOSED CONTRACT CHANGES	\$	542,000	

## II. PROPOSED NEW CONTRACTS:

o SCE	\$	3,500	(09/84)
o Michael Tannenbaum		12,000	(09/84)
o Colin Busby - Peer Review		24,000	(09/84)
o Leslie Marcus - Peer Review		24,000	(09/84)
o Illinois State Museum - Peer Review		24,000	(09/84)
o Richard Proctor		24,000	(09/84)
o AGAMATA and Associates		1,800	(09/84)
o NBMBW & M		35,000	(09/84)
o Real Estate Appraisals		56,275	(09/84 - 11/84)
		<hr/>	
TOTAL PROPOSED NEW CONTRACTS	\$	264,575	
GRAND TOTAL COMMITTED AMOUNT			\$ 806,575

CONTINUED PRELIMINARY ENGINEERING  
OBLIGATED PROFESSIONAL SERVICES CONTRACTS

August 1984

<u>Audit #</u>	<u>Contract</u>	<u>\$ Budget</u>	<u>\$ Actual</u>
<b>I. TRANSIT FACILITIES</b>			
3301	CalTrans	2,553,000	25,000
2256	CWDD	360,000	348,626
2440-2	DMJM/PBQ&D	50,000	50,000
2284-5	Lindvall Richter	209,900	201,617
3058	L.A. Co. Museum	24,500	16,333
2510-2	Harry Weese	50,000	50,000
3212	W.H. Patterson	7,000	3,766
3172	Pacific Bell	156,000	- 0 -
3237	Western Union Telegraph	49,000	- 0 -
3262	N.J. Maloney	1,500	1,500
3138	City Master Agreement	693,000	285,324
3211	Eugene Stan	7,000	2,778
3267	CH2M Hill/Kellogg Corp.	24,900	24,900
3351	John Gordon	20,000	3,306
3379	Joseph Giovannini	20,000	10,040
3320	Julia Brown	20,000	1,712
3322	Bettye Saar	20,000	3,225
3323	Alan Sieorty	20,000	- 0 -
3340	Foster Engineering	24,900	- 0 -
3464	DWP - Water Section	24,500	24,500
3464-A	DWP - Water Section	90,000	37,076
<b>TOTAL TRANSIT FACILITIES</b>		<b>\$4,425,200</b>	<b>1,089,703</b>
<b>II. SYSTEMS DESIGN &amp; ANALYSIS</b>			
3394	MIDCOM	10,000	- 0 -
3282	SRI	19,985	10,850
2434-5	Booz-Allen & Hamilton	237,549	237,549
2439-2	Kaiser Engineers	50,000	50,000
3090	Cons. Fire Prot. Dist.	95,200	93,683
3136	Booz-Allen & Hamilton	999,980	960,205
3170	Mellon Institute	24,900	- 0 -
3371	CommuniCom	7,500	- 0 -
<b>TOTAL SYSTEMS DESIGN &amp; ANALYSIS</b>		<b>\$1,445,114</b>	<b>1,352,287</b>

A.B.DICK  
P&C 1.2  
10.05.84

CONTINUED PRELIMINARY ENGINEERING  
OBLIGATED PROFESSIONAL SERVICES CONTRACTS (Cont'd)

<u>Audit #</u>	<u>Contract</u>	<u>\$</u> <u>Budget</u>	<u>\$</u> <u>Actual</u>
III. PROGRAM CONTROL			
3044	Sharon Clark	9,900	9,900
	TOTAL PROGRAM CONTROL	\$ 9,900	\$ 9,900
IV. PLANNING			
3010	CRA	542,000	162,756
2797-2	Robert Harmon	50,000	50,000
3137	Jt. Dev. of Sta. Plans	573,000	387,223
3254	Schimpeler-Corradino	847,213	657,601
3328	CMB Communications	2,500	900
	TOTAL PLANNING	\$ 2,014,713	\$ 1,258,480
V. REAL ESTATE - YARD & SHOPS ACQUISITION			
2963-2	AT&SF Railway	64,000	53,430
3032	Flavell	50,000	43,858
3033	Lea Associates	50,000	39,329
2994	TICOR	8,300	8,300
3102	Robert Swanson	22,500	15,375
	TOTAL YARD & SHOPS ACQUISITION	\$194,800	\$160,292
OTHER REAL ESTATE			
3000	County of L.A.	24,108	24,108
3116	Chicago Title Services	50,000	- 0 -
3161	Eugene Guterrez	4,000	4,000
3162	Robert Jackson	3,500	3,500
3163	Ralph Laurain	3,750	3,750
3164	David Zoraster	3,500	3,500
3175	TICOR	75,000	21,450
3189	Joseph Gary	10,000	8,866
3149	William Helpes	4,250	4,250
3182	Thomas Scalora	8,500	8,500
3180	Lowell Steward Assoc.	2,500	2,500
3357	Business Valuation Svcs.	8,500	- 0 -
3241	Crockett & Assoc.	5,900	5,000
3242	Industrial Appraisal Co.	7,925	7,025

CONTINUED PRELIMINARY ENGINEERING  
OBLIGATED PROFESSIONAL SERVICES CONTRACTS (Cont'd)

<u>Audit #</u>	<u>Contract</u>	\$	\$	<u>Budget</u>	<u>Actual</u>
OTHER REAL ESTATE (Cont'd)					
3150	Jack Jue			3,500	3,500
3181	Norman Eichel			8,500	4,250
3179	Lee Hill			2,500	2,500
3209	Arthur Anderson			1,550	1,550
3261	Robert Olson			1,500	1,500
3260	Milton Tynan			1,600	1,600
TOTAL OTHER REAL ESTATE				\$230,583	111,349
TOTAL REAL ESTATE				\$425,383	\$271,641

VI. LEGAL

2910-5	NBMBW & M			20,000	16,230
2943	O'Melveny & Myers			100,000	68,513
TOTAL LEGAL				\$120,000	\$ 84,743

VII. MISCELLANEOUS CONTRACTS

3030	Dillon Reed & Co.			24,900	-0-
3065	David B. Ashley			7,000	6,911
3096	First Boston Corp.			24,900	24,900
TOTAL MISCELLANEOUS CONTRACTS				\$ 56,800	\$31,811

CONTINUED PRELIMINARY ENGINEERING  
OBLIGATED PROFESSIONAL SERVICES CONTRACTS (Cont'd)

<u>Audit #</u>	<u>Contract</u>	<u>Budget</u>	<u>Actual</u>
VIII. GENERAL CONSULTANT			
2967	MRTC	39,302,960	35,265,000
TOTAL GENERAL CONSULTANT		\$39,302,960	\$35,265,000
TOTAL PROFESSIONAL SERVICES		47,605,270	39,203,273
TOTAL YARDS & SHOPS ACQUISITION		194,800	160,292
GRAND TOTAL C.P.E.		\$47,800,070	\$39,363,565

\*

Note: Asterisked (\*) items indicate Peer Review Boards, General Managers Transit Technical Advisory Committee and "As Needed" Consultants for whom schedule status is not relevant.

N/A = Not Available

A.B.DICK  
P&C-1.2  
10.05.84



SCRTD METRO RAIL PROJECT  
CONTINUED PRELIMINARY ENGINEERING BUDGET  
SUMMARY BY MACS CODE (\$000'S)

AFE# 0210	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WKG. BUDGET (7=3+6)	APPROVED BUDGET (8)	VARIANCE (9=8-7)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)			
1.	(20.02.01) Purchase of Support Autos	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 0
2.	(20.02.02) Purchase/Installation of Support Equipment	- 0 -	- 0 -	- 0 -	140	91	231	231	- 0 -	(231)
8.	(20.02.07) Purchase/Installation of MIS Equipment	77	- 0 -	77	823	- 0 -	823	900	- 0 -	(900)
9.	(20.02.08) Purchase/Installation of Communications Equipment	100	- 0 -	100	- 0 -	- 0 -	- 0 -	100	- 0 -	(100)
3.	(20.08.01) Professional Services Contracts	2,860	807	3,667	8,402	39,203	47,605	51,272	44,436	(6,836)
4.	(20.15.02) Force Account Work	- 0 -	- 0 -	- 0 -	- 0 -	4,126	4,126	4,126	3,646	(480)
5.	(20.16.90) Other Supporting Services	- 0 -	- 0 -	- 0 -	- 0 -	1,163	1,163	1,163	1,750	587
6.	(20.16.00) General & Administrative	- 0 -	- 0 -	- 0 -	- 0 -	321	321	321	189	(132)
7.	(32.00.00) Contingencies	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	2,062	2,062
45.	ROW Acquisition for Central Yard & Shops	32,435	- 0 -	32,435	35	160	195	32,630	32,630	0
GRAND TOTAL		\$ 35,472	\$ 807	\$ 36,279	\$ 9,400	\$ 45,064	\$ 54,464	\$ 90,743	\$ 84,713	\$ (6,030)

\* AFE - Authorization for Expenditure  
\*\* MACS - Management and Control System

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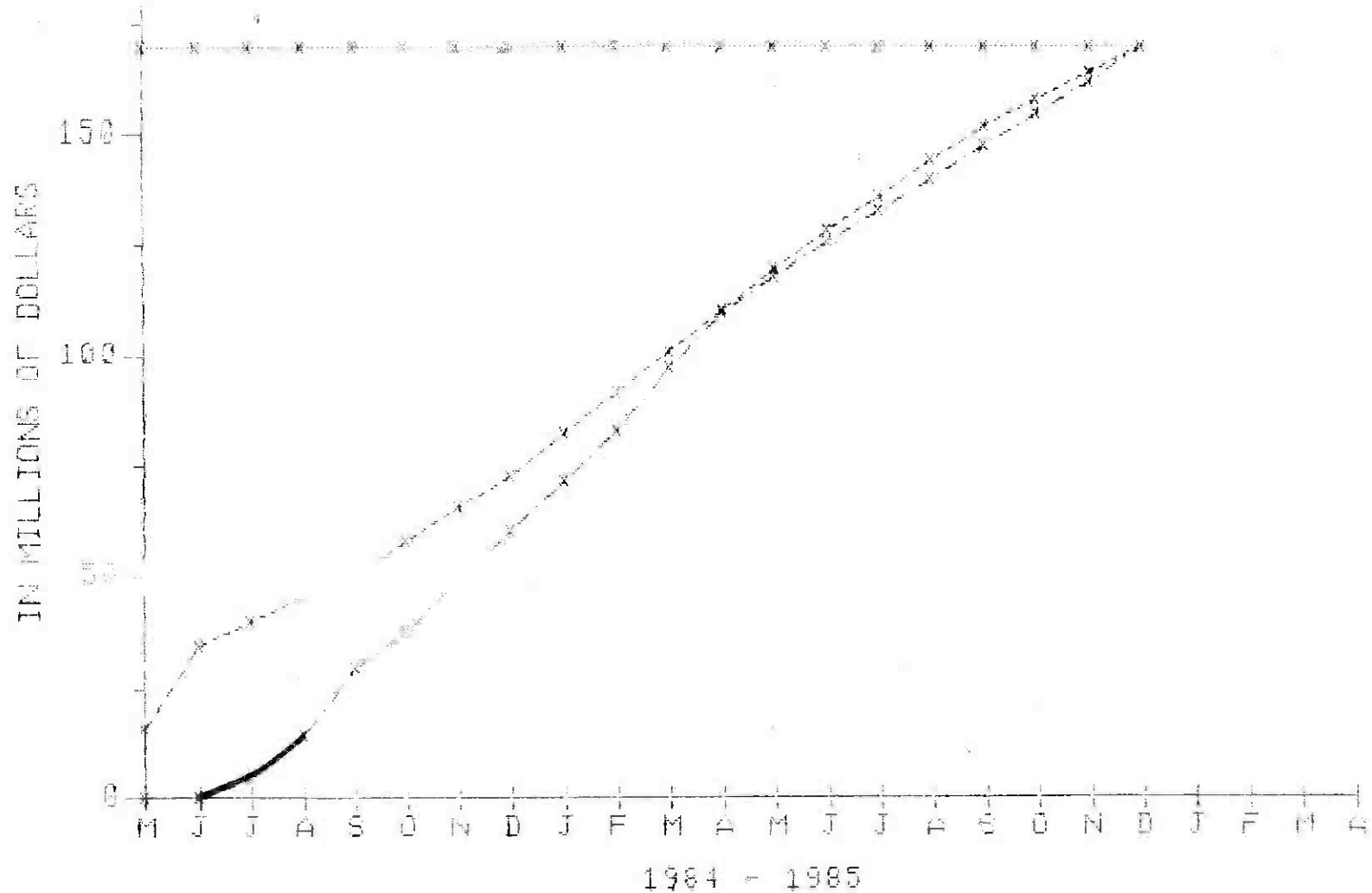
SECTION III  
PRE-CONSTRUCTION

SCR TD METRO RAIL PROJECT  
PRE-CONSTRUCTION STATUS  
AUGUST 1984

This section details the \$77.683 million currently budgeted for the Pre-Construction phase. Major contracts negotiated during this phase are: GC's FY '85 AWP, CM's FY '85 AWP, BA&H FY '85 AWP, Owner Controlled Insurance and ROW Acquisition.

The accompanying graph illustrates the planned expenditures of \$45.4 million versus the actual expenditures of \$14.5 million. This variance is due primarily to the late issuance of contract NTP's and the late acquisition of R-O-W properties.

PTD METRO RAIL PROJECT  
 PRE-CONSTRUCTION STATUS  
 AS OF AUGUST 1984



--x-- FORECAST    — ACTUALS    --x-- PLANNED EXPENDITURES    -x- CAPITAL GRANT FUNDS



SUMMARY OF PRE-CONSTRUCTION  
BUDGET CHANGES  
AS OF AUGUST 1984

<u>Date</u>	<u>Cum. Budget Amount \$ (000's)</u>	<u>Explanation of Change</u>
June 1984	\$ 170.00	Funding for Pre-Construction

PRE-CONSTRUCTION

CURRENT BUDGET: UNOBLIGATED-COMMITTED PROFESSIONAL SERVICES CONTRACTS

Listed below are Professional Services Contracts which are forecasted but unobligated as of the status date. These are budget amounts for work which has been authorized for solicitation by the Board, has been advertised, or for which negotiations have been started pursuant to an approved purchase requisition. In parenthesis is the date the contract is expected to be obligated (signed by the General Manager). The list is subdivided into two parts: "Proposed Contract Changes" which identifies proposed amendments to current contracts; "Proposed New Contracts" which in dollar amounts in areas where new contracts will be needed.

On a monthly basis this list is updated reflecting the most current information on proposed new or amended contracts, dollars amounts, and expected obligation dates.

I. PROPOSED CONTRACT CHANGES:

o Communicom	\$	15,000 (09/84)	
TOTAL PROPOSED CONTRACT CHANGES			\$15,000

II. PROPOSED NEW CONTRACTS:

<u>Owner Controlled Insurance</u>			
o Owner Controlled Insurance	\$	600,000 (11/84)	

Transit Facilities

o LAUPT	24,000
o Margot Albert	20,000
o SCAG	10,000
o DWP Power Division	360,000
o O'Brien & Krietzberg & Assoc.	24,900
o So. Calif. Gas Co.	<u>45,000</u>

TOTAL TRANSIT FACILITIES	483,900
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Real Estate

o Appraisal Services	138,000 (9/84-11/84)
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TOTAL PROPOSED NEW CONTRACTS	\$ 1,221,900
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GRAND TOTAL COMMITTED AMOUNT	\$ 1,236,900
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PRE-CONSTRUCTION BUDGET & COST REPORT

PROFESSIONAL SERVICES CONTRACTS

AUGUST 1984

<u>Audit #</u>	<u>Contract</u>	<u>\$ Budget</u>	<u>\$ Actual</u>
I. TRANSIT FACILITIES			
3173-A	D.W.P. - Power Division	-0-	-0-
II. SYSTEMS DESIGN & ANALYSIS			
3136-1	Booz-Allen & Hamilton	\$ 1,499,031	\$ 102,627
III. GENERAL CONSULTANT			
2967-1	MRTC	67,123,000	13,563,873
IV. CONSTRUCTION MANAGEMENT			
3369	PCDC	6,589,849	344,000
V. PLANNING			
3328	CMB COMMUNICATION	2,500	1,500
GRAND TOTAL PRE-CONSTRUCTION		\$ 75,214,380	\$14,012,000

SCRID METRO RAIL PROJECT  
PRE-CONSTRUCTION BUDGET  
SUMMARY BY MACS CODE (\$000'S)

AFE# 0210	(MACS ** CODE) DESCRIPTION	UNOBLIGATED			OBLIGATIONS TO DATE			CURRENT WKG. BUDGET (7=3+6)	APPROVED BUDGET (8)	VARIANCE (9=8-7)
		RESERVED (1)	COMMITTED (2)	TOTAL (3=1+2)	UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)			
1.	(20.02.01) Purchase of Support Autos	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 30	\$ 30
2.	(20.02.02) Purchase/Installation of Support Equipment	- 0 -	- 0 -	- 0 -	- 0 -	9	9	9	1,490	1,481
8.	(20.02.07) Purchase/Installation of MIS Equipment	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	1,000	1,000
9.	(20.02.08) Purchase/Installation of Communications Equipment	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	100	100
45.	(20.06.10) Right-of-Way	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	77,863	77,863
3.	(20.08.01) Professional Services Contracts for Engineering and Design	- 0 -	1,237	1,237	54,956	13,668	68,624	69,861	70,517	656
11	(20.08.02) Professional Services Contracts for Construction Management	- 0 -	- 0 -	- 0 -	6,246	344	6,590	6,590	9,000	2,410
12	(20.11.01) Owner Controlled Insurance	- 0 -	600	600	- 0 -	- 0 -	- 0 -	600	4,000	3,400
4.	(20.15.02) Force Account Work	- 0 -	- 0 -	- 0 -	- 0 -	424	424	424	3,500	3,076
15.	(20.16.90) Other Supporting Services	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	1,000	1,000
16.	(20.16.00) General & Administrative	- 0 -	- 0 -	- 0 -	183	16	199	199	500	301
17.	(32.00.00) Contingencies	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	1,000	1,000
GRAND TOTAL		\$ 0	\$ 1,837	\$ 1,837	\$ 61,385	\$ 14,461	\$ 75,846	\$ 77,683	\$ 170,000	\$ 92,317

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SECTION IV  
TOTAL PROJECT

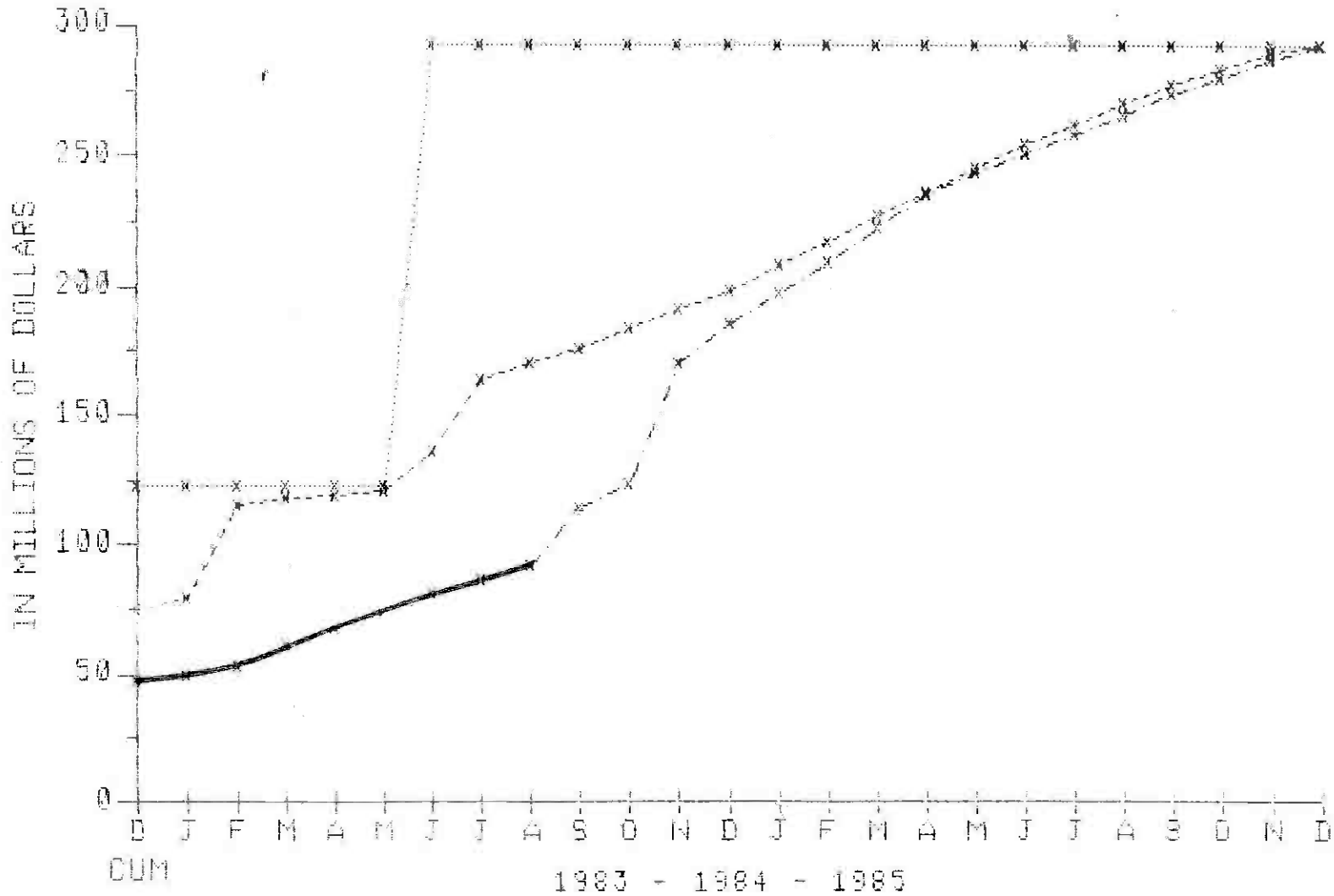
SCRTD METRO RAIL PROJECT  
TOTAL PROJECT STATUS  
AUGUST 1984

This section details the \$201.239 million currently budgeted for the Metro Rail Project. The total approved project budget is \$293.556 million. The expenditures to date for the total project are \$92.338 million.

The accompanying graph illustrates the planned expenditures, \$166.5 million, against the actual expenditures \$92.3 million. This variance is primarily due to the late issuance of contract NTP's and the late Acquisition of R-O-W properties.

Presently, Preliminary Engineering is complete and Program Control is taking steps to close-out Continued Preliminary Engineering.

RTD METRO RAIL PROJECT  
 TOTAL PROJECT STATUS  
 AS OF AUGUST 1984



--x-- FORECAST    — ACTUALS    -.-x- PLANNED EXPENDITURES    -x- CAPITAL GRANT FUNDS



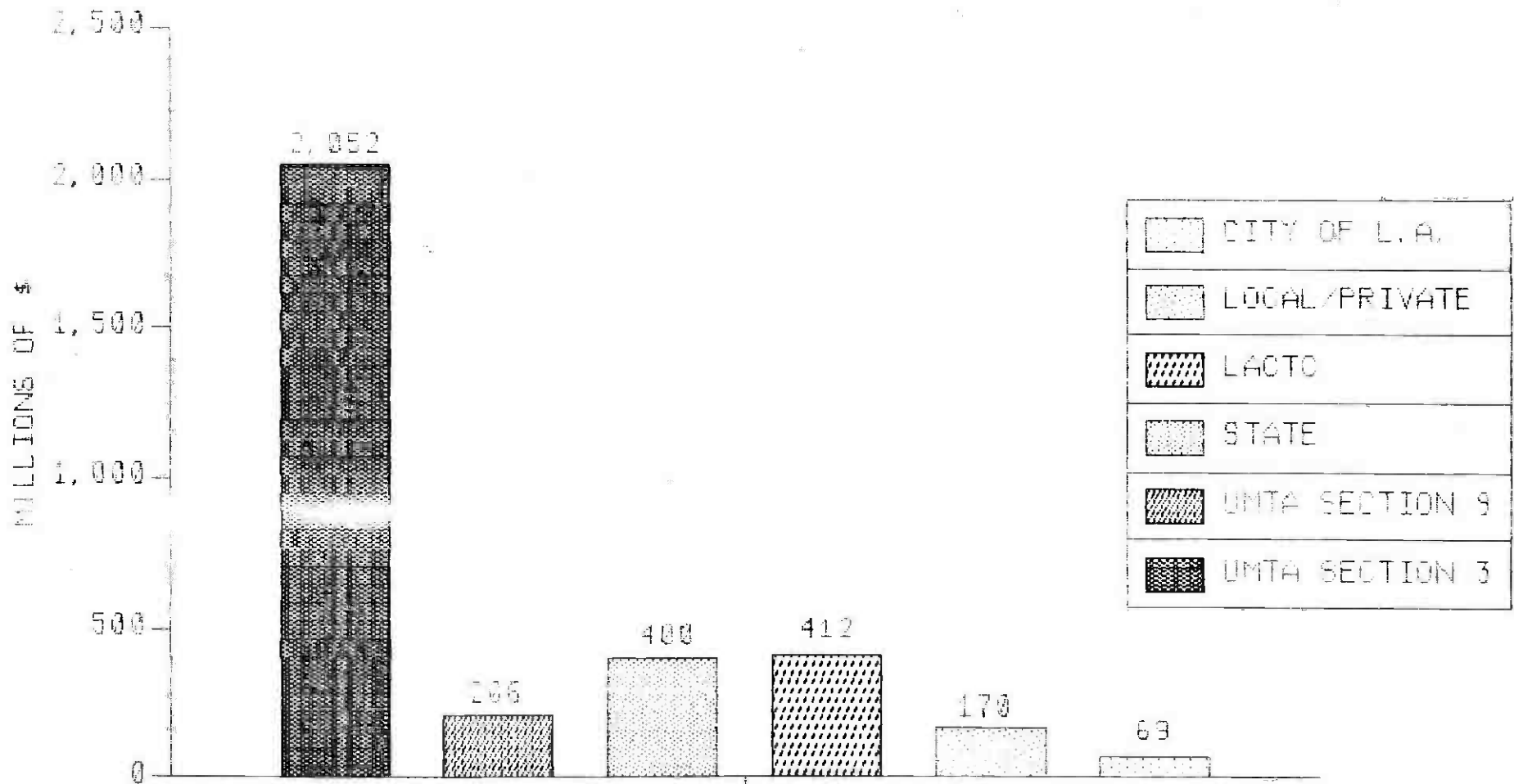
SUMMARY OF TOTAL PROJECT  
BUDGET CHANGES  
AS OF AUGUST 1984

<u>Date</u>	<u>Cum. Budget Amount \$ (000's)</u>	<u>Explanation of Change</u>
July 1982	27.300	Initial P.E. funding Phase I & II
August 1982	38.843	P.E. Phase III
January 1983	57.593	C.P.E. Phase I
February 1983	90.223	Funding for acquisition of Santa Fe Rail Yard
June 1983	123.556	Net Project Budget
June 1984	293.556	Pre-Construction Funding

SCRTD METRO RAIL PROJECT  
TOTAL PROJECT BUDGET  
SUMMARY BY MACS CODE (\$'000'S)

APE# 10210	(MACS ## CODE) DESCRIPTION	UNOBLIGATED		TOTAL (3=1+2)	OBLIGATIONS TO DATE			CURRENT WKG. BUDGET (7=3+6)	APPROVED BUDGET (8)	VARIANCE (9=8-7)
		RESERVED (1)	COMMITTED (2)		UNEXPENDED (4)	EXPENDED (5)	TOTAL (6=4+5)			
1.	(20.02.01) Purchase of Support Autos	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ - 0 -	\$ 22	\$ 22	\$ 22	\$ 70	\$ 48
2.	(20.02.02) Purchase/Installation of Support Equipment	- 0 -	- 0 -	- 0 -	140	1,200	1,340	1,340	2,390	1,050
8.	(20.02.07) Purchase/Installation of MIS Equipment	77	- 0 -	77	823	- 0 -	823	900	1,000	100
9.	(20.02.08) Purchase/Installation of Communications Equipment	100	- 0 -	100	- 0 -	- 0 -	- 0 -	100	100	- 0 -
45.	(20.06.10) Right-of-Way	32,435	- 0 -	32,435	35	160	195	32,630	110,493	77,863
3.	(20.08.01) Professional Services Contracts for Engrg. & Design	2,860	2,044	4,904	63,358	76,924	140,282	145,186	139,375	(5,811)
11.	(20.08.02) Professional Services Contracts for Constr. Mgmt.	- 0 -	- 0 -	- 0 -	6,246	344	6,590	6,590	9,000	2,410
12.	(20.11.01) Owner Controlled Insurance	- 0 -	600	600	- 0 -	- 0 -	- 0 -	600	4,000	3,400
4.	(20.15.02) Force Account Work	- 0 -	- 0 -	- 0 -	- 0 -	11,049	11,049	11,049	19,416	8,367
5.	(20.16.90) Other Supporting Services	- 0 -	- 0 -	- 0 -	- 0 -	2,182	2,182	2,182	3,350	1,168
6.	(20.16.00) General & Administrative	- 0 -	- 0 -	- 0 -	183	457	640	640	825	185
17.	(32.00.00) Contingencies	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	- 0 -	3,537	3,537
GRAND TOTAL		\$ 35,472	\$ 2,644	\$ 38,116	\$ 70,785	\$ 92,338	\$ 163,123	\$ 201,239	\$ 293,556	\$ 92,317

RTD METRO RAIL PROJECT  
 FUNDING DISTRIBUTION  
 TOTAL PROJECT  
 STATUS AS OF AUGUST 1984



SECTION V  
CONTRACT EVALUATIONS

**MTA LIBRARY**



STATUS AS OF AUGUST 1984

METRO RAIL PROJECT  
SECTION DESIGN  
SUBCONTRACT EVALUATION SUMMARY

UNIT NO.	DESCRIPTION	TOTAL % COMPLETE		CURRENT INCREMENTAL PROGRESS	PRODUCTIVITY BASED ON		ORIGINAL NEGOTIATED CONTRACT AMOUNT	FORECAST AT COMPLETION		TO COMPLETE AVERAGE EFFICIENCY *
		F'CAST	ACTUAL		MHRS	\$\$		MRTC	TSD PROJECTED	
A100	YARD AND SHOPS	72%	70%	5	85%	87%	\$ 4,080,878	\$ 6,100,000	\$ 7,011,494	151%
A135	UNION STATION	80%	77%	2	88%	96%	2,946,000	3,665,000	3,817,708	118%
A140	CIVIC CENTER/5TH & HILL/LINE	51%	50%	4	115%	119%	6,203,707	6,790,000	5,705,882	86%
A165	7TH & FLOWER	83%	78%	3	84%	85%	2,129,587	3,086,000	3,630,588	269%
A170	WILSHIRE/ALVARADO + LINE	78%	81%	9	96%	96%	3,119,430	3,612,000	3,762,500	120%
A195	WILSHIRE/VERMONT	77%	75%	2	101%	106%	1,541,126	2,413,277	2,276,676	85%
A220	WILSHIRE/NORMANDIE & WILSHIRE/WESTERN + LINE	34%	34%	5	100%	107%	4,676,695	5,237,000	4,894,392	97%
A240	WILSHIRE/CRENSHAW	41%	41%	9	101%	95%	2,394,790	2,693,000	2,834,736	104%
A245	WILSHIRE/LA BREA	69%	70%	4	136%	134%	1,608,579	1,955,000	1,458,955	63%
A250	WILSHIRE/FAIRFAX + LINE	23%	25%	7	125%	138%	3,956,421	4,387,000	3,178,986	92%
A275	FAIRFAX/BEVERLY	50%	50%	7	97%	93%	2,275,000	2,705,000	2,908,602	108%
A310	FAIRFAX/SANTA MONICA & LA BREA/SUNSET + LINE	23%	25%	5	108%	108%	4,409,415	4,554,000	4,216,667	98%
A350	HOLLYWOOD/CAHUENGA	36%	37%	7	101%	109%	2,071,181	2,455,300	2,252,568	95%
A410	LINE FROM HOLLYWOOD/CAHUENGA TO UNIVERSAL CITY	52%	52%	10	96%	93%	2,627,160	2,364,000	2,541,935	109%
A415	HOLLYWOOD BOWL	26%	25%	7	42%	41%	2,013,910	1,017,000	2,480,488	191%
A425	UNIVERSAL CITY	44%	43%	8	110%	97%	2,403,180	2,620,000	2,701,031	102%
A430	LINE FROM UNIVERSAL CITY TO NORTH HOLLYWOOD	54%	49%	3	110%	120%	1,968,766	2,098,000	1,748,333	86%
A445	NORTH HOLLYWOOD	32%	33%	8	127%	138%	2,141,868	2,512,348	1,820,507	88%
TOTALS							\$ 52,567,693	\$ 60,263,925	\$ 59,242,048	

\* FOR CONTRACTS TO BE COMPLETED AT MRTC'S FORECAST

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8/31/84  
PC 20.20</p>

#### OVERALL COST ASSESSMENT

This month's report allowed us to analyze reported actuals against MRTC's latest forecast (cost, labor and progress). Deviations in progress (forecast vs. actual) were in the range of 0-5% this month. MRTC plans to update these forecasts quarterly.

The concerns with this month's report are:

- . The MRTC Trend Report and Progress Report are not indicating the same forecast cost for many design contracts.
- . Several MRTC in-house design contracts do not have cost curves associated with them. The contracts that do have cost curves do not reflect the total design costs.
- . MRTC's forecast for many of the section design contracts are not indicative of a true cost at completion forecast. Several contracts are achieving close to their forecasted progress for less money than in their plans. The MRTC has issued no productivity trends reducing the design costs for any of these contracts.

OVERALL SCHEDULING ASSESSMENT

FACILITIES DESIGN

As of the Status date (8/31/84) all schedules have been submitted for review. Contracts A135, A165, A195, A245 and A415 reflect significant delays during the reporting period. Most delays to completion are due to seismic requirements.

SYSTEMWIDE

MRTC is formulating Bar Chart Schedules to be submitted on a monthly basis for review/status purposes. Response time in obtaining these schedules has been extremely slow.

GENERAL

Schedule dates continue to be arbitrarily adjusted without approval. This process gives the appearance that contracts are proceeding with minimum delay, when just the opposite is true.

**CONTRACT STATUS AS OF**

CONTRACT NO.	ON SCHED	LATE	UPDATE SUBMITTED	CONTRACT NO.	ON SCHED	LATE	UPDATE SUBMITTED
A110		DELETED	Yes	A610	X		
A112		8 wks.	Yes	THRU			
A114	X		Yes	A618			
A115		12 wks.	Yes	A620	X		
A130		15 wks.	Yes	A630/31	X		
A135		34 wks.	Yes	A640	SEE EVALUATION SHEET		
A140	X		Yes	A650	X		
A165		24 wks.	Yes	A660	X		
A170		1 wk.	Yes	A670	X		
A195		25 wks.	Yes	A710		20 wks.	
A220	X		Yes	A720		14 wks.	
A240		7 wks.	Yes	A740	X		
A245		10 wks.	Yes	A750	X		
A250	X		Yes	A760		1 wk.	
A275	X		Yes				
A310	X		Yes				
A350		2 wks.	Yes				
A410		4 wks.	Yes				
A415		11 wks.	Yes				
A425	X		Yes				
A430	X		Yes				
A445	X		Yes				

RID METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A100, YARD & SHOPS (A112, A114, A115, A130)  
 DESIGN CONTRACTOR - DMJM/PBQD

COMMENTS ON MRTIC PROGRESS REPORT

o NONE

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	100	72	70
INCREMENTAL PROGRESS	0	N/A	5
COST	4,081,000	6,100,000	4,888,000
MANHOURS	87,900	131,400	108,500
CONTRACT DURATION	12	17	12

$$\begin{aligned} \text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} &= \frac{.70 \times 131,400}{108,500} \times 100 = 85\% \\ \text{(CUMULATIVE)} & \end{aligned}$$

AN UNSATISFACTORY PRODUCTIVITY.

$$\begin{aligned} \text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} &= .70 \times 6,100,000 = \$4,270,000 \\ \text{(CUMULATIVE)} & \end{aligned}$$

THIS CONTRACTOR, BEING AT 70% COMPLETE, HAS THEORETICALLY EARNED \$4,270,000.

$$\begin{aligned} \text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} &= \frac{4,270,000}{4,888,000} = \$ .87 \\ \text{(CUMULATIVE) - CPI} & \end{aligned}$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$.87 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\begin{aligned} \text{COST VARIANCE} = \text{ACTUAL } \$ \text{ SPENT} - \text{EARNED } \$ &= 4,888,000 - 4,270,000 = \$ 618,000 \\ \text{(CUMULATIVE)} & \end{aligned}$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$618,000.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A100, YARD & SHOPS (A112, A114, A115, A130)  
 DESIGN CONTRACTOR - DMJM/PBQD

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \text{ACTUAL COSTS SPENT} \\ \text{(CUMULATIVE)} \quad \underline{\hspace{2cm}} = \frac{4,888,000}{6,100,000} = 80\% \\ \text{FORECAST AT COMPLETION} \end{array}$$

THE CONTRACTOR HAS SPENT 80% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 70%.

$$\begin{array}{l} \text{EST. AT COMPLETION} = \text{FORECAST AT COMPLETION} \\ \text{(CALCULATED - EAC)} \quad \underline{\hspace{2cm}} = \frac{6,100,000}{.87} = \$7,011,494 \\ \text{COST PERFORMANCE INDEX} \end{array}$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$7,011,494. THIS REPRESENTS A COST OVERRUN OF \$2,930,494 OR A 72% INCREASE. THIS INCREASE IS BASED ON THE ORIGINAL BUDGET AND NOT THE AMENDED BUDGET.

$$\begin{array}{l} \text{TO COMPLETE} = \text{FORECAST AT COMPLETION} - \text{EARNED COSTS} \quad 6,100,000 - 4,270,000 \\ \text{PERFORMANCE INDEX} \quad \underline{\hspace{2cm}} = \frac{\hspace{2cm}}{\hspace{2cm}} \\ \text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT} \quad 6,100,000 - 4,888,000 \\ \\ = 151\% \end{array}$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 151% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST. THIS IS HIGHLY UNREALISTIC BASED ON THE PAST THREE MONTHS AVERAGE C.P.I. OF .85.

CONCLUSION

BASED ON THE ABOVE CALCULATIONS, THIS CONTRACT IS PROJECTED TO BE COMPLETED IN 22 MONTHS VS. THE 17 MONTHS AS REPORTED.

08/31/84  
PC-BACKUP 14.2<1>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A110 Yard Clearing, Grading	AWARD: 07/07/83
DESIGN SUBCONTRACTOR: DMJM/PBQD	NTP: 07/13/83
PROJECT MANAGER(TSD/MRTC): J. Shah/P. McCauley	DURATION: 459 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	-	-	-	-
IN PROG. SUBMITTAL (60%)	-	-	-	-
PRE FINAL SUBMITTAL (85%)	-	-	-	-
FINAL SUBMITTAL (100%)	-	-	-	-
BID DOCUMENTS	-	-	-	-
FINAL DESIGN COMPLETE	-	-	-	-
TIME OF PERFORMANCE	-	-	-	-

COMMENTS:

This contract has been deleted per MRTC letter to Section Designer dated July 24, 1984. The reason for the deletion is as follows:

Contract A110 assumed availability of the entire yard site prior to start of construction. In addition, this contract assumes the availability of the site in advance of completion of the design of contract A112. As a result of the ongoing negotiations with AT & SF Railroad to purchase site, MRTC is now assuming a planned release of the site to the District by the Santa Fe as substitute railroad facilities are constructed. Therefore, the section designer has been directed to repackage the yard construction contract south of First Street.

The contract A110 mylar drawing has been recycled into A112, A114, and A115. This will be the last Schedule Analysis submitted for this contract.

PERFORMANCE ASSESSMENT:

None

### SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT:	A112 Service Area & Main Shop Building	AWARD:	07/07/83
DESIGN SUBCONTRACTOR:	DMJM/PBQD	NTP:	07/13/83
PROJECT MANAGER(TSD/MRTC):	J. Shah/P. McCauley	DURATION:	459 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/28/83	-
IN PROG. SUBMITTAL (60%)	02/01/84	-	06/14/84	-
PRE FINAL SUBMITTAL (85%)	03/28/84	10/08/84	-	-213
FINAL SUBMITTAL (100%)	05/23/84	11/12/84	-	-203
BID DOCUMENTS	-	12/10/84	-	-
FINAL DESIGN COMPLETE	05/23/84	12/10/84	-	-201
TIME OF PERFORMANCE	10/15/84	12/10/84	-	- 56

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

Not resolved yet is the continuing action of the Section Designer to submit incomplete monthly Program Control Required Contract Submittals. Due to this problem the project managers are required to calculate the contract percent complete subjectively. Resolution of this problem will be the adherence to Revision 5 of the MRTC Program Control Procedures.

#### AREAS OF CONCERN:

The Section Designer continues to revise forecast dates. The current concern is that forecast dates are not being accurately predicted and are not reliable. During the previous reporting periods the forecast dates for the 85% Pre-Final Submittal has slipped eight (8) weeks.

#### COMMENTS:

To increase management visibility of the status of this contract a detailed Pre-Construction Readiness Schedule has been prepared. This schedule is updated and presented to management on a weekly basis.

The 85% Pre-Final Submittal is thirty (30) days behind the contract scheduled date.

The latest slippage has been caused by reclassifying the Main Shop Building as a B-4 occupancy and of type II-FR construction per 1979 VBC.

#### PERFORMANCE ASSESSMENT:

Completion of Contract A112 is forecast eight (8) weeks beyond the contract Time of Performance. The PDE-Final is currently forecast for 10/08/84. The scheduled submittal date is 3/28/84.

08/31/84  
PC-BACKUP 14.2<5>

**SECTION DESIGNER EVALUATION**

**SCHEDULE ANALYSIS**  
**STATUS AS OF: August 31, 1984**

DESIGN CONTRACT: A114 Maintenance of Way Building	AWARD: 07/07/83
DESIGN SUBCONTRACTOR: DMJM/PBQD	NTP: 07/13/83
PROJECT MANAGER(TSD/MRTC): J. Shah/P. McCauley	DURATION: 459 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/28/83	-
IN PROG. SUBMITTAL (60%)	-	-	01/27/84	-
PRE FINAL SUBMITTAL (85%)	04/25/84	-	05/30/84	-
FINAL SUBMITTAL (100%)	06/13/84	-	08/27/84	-
BID DOCUMENTS	-	09/10/84	-	-
FINAL DESIGN COMPLETE	06/13/84	09/10/84	-	-89
TIME OF PERFORMANCE	10/15/84	09/10/84	-	+35

**RESOLUTIONS OF LAST PERIODS PROBLEMS:**

Not resolved yet is the continuing action of the Section Designer to submit incomplete Monthly Program Control Required Contract Submittals. Due to this problem the project managers are required to calculate the contract percent complete subjectively. Resolution of this problem will be the adherence to Revision 5 of the MRTC Program Control Procedures.

**AREAS OF CONCERN:**

Additional delay in preparing Bid Documents due to revising drawings after review by Fire and Life Safety Committee.

**COMMENTS:**

The 100% Final Submittal was submitted August 27, 1984.

The forecast of September 10, 1984 for Bid Document is dependent on completion of review of drawings by Fire and Life Safety Committee. The Final Design Completion date is thirteen (13) weeks behind schedule.

**PERFORMANCE ASSESSMENT:**

A114 is forecast to complete five (5) weeks before the end of the Contract Time of Performance.

08/31/84  
PC-BACKUP 14.2<7>

SECTION DESIGNER EVALUATION  
SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A115 Storage Yard<sup>a</sup>  
SECTION DESIGNER: DMJM/PBQD  
PROJECT MANAGER (TSD/MRTC): J. Shah/P. McCauley

AWARD: 07/07/83  
NTP: 07/13/83  
DURATION: 459  
(CALENDER DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/28/83	-
IN PROG. SUBMITTAL (60%)	09/10/84	09/10/84	-	0
PRE FINAL SUBMITTAL(85%)	10/08/84	10/08/84	-	0
FINAL SUBMITTAL (100%)	12/10/84	12/10/84	-	0
BID DOCUMENTS	01/07/85	01/07/85	-	0
FINAL DESIGN COMPLETE	01/07/85	01/07/85	-	0
TIME OF PERFORMANCE	10/15/84	01/07/85	-	-84

\* In the Design Status Report (July 27, 1984) MRTC reported that contract numbers will be reassigned. Contract number A110 has been deleted and the storage yard assigned contract number A115.

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Not resolved yet is the continuing action of the Section Designer to submit incomplete Monthly Program Control Required Contract Submittals. Due to this problem the project managers are required to calculate the contract percent complete subjectively. Resolution of this problem will be the adherence to Revision 5 of the MRTC Program Control Procedures.

AREAS OF CONCERN:

There are no major problems at this time that are anticipated to affect the 100% Final Submittal.

COMMENTS:

The 60% In-Progress Submittal is forecast for September 10, 1984.

PERFORMANCE ASSESSMENT:

A115 is forecast to complete twelve (12) weeks beyond the contract Time of Performance.



08/31/84  
PC-BACKUP 14.2<8>

### SECTION DESIGNER EVALUATION

#### SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A130 Line Subway to Union Station	AWARD: 07/07/83
DESIGN SUBCONTRACTOR: DMJM/PBQD	NTP: 07/13/83
PROJECT MANAGER(TSD/MRTC): J. Shah/P. McCauley	DURATION: 459 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/28/83	-
IN PROG. SUBMITTAL (60%)	03/07/84	-	05/23/84	-
PRE FINAL SUBMITTAL (85%)	05/02/84	10/29/84	-	-180
FINAL SUBMITTAL (100%)	06/27/84	01/07/85	-	-194
BID DOCUMENTS	-	01/29/85	-	-
FINAL DESIGN COMPLETE	06/27/84	01/29/85	-	-216
TIME OF PERFORMANCE	10/15/84	01/29/85	-	-106

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

Not resolved yet is the continuing action of the Section Designer to submit incomplete Monthly Program Control Required Contract Submittals. Due to this problem the project managers are required to calculate the contract percent complete subjectively. Resolution of this problems will be the adherence to Revision 5 of the MRTC Program Control Procedures.

#### AREAS OF CONCERN:

None

#### COMMENTS:

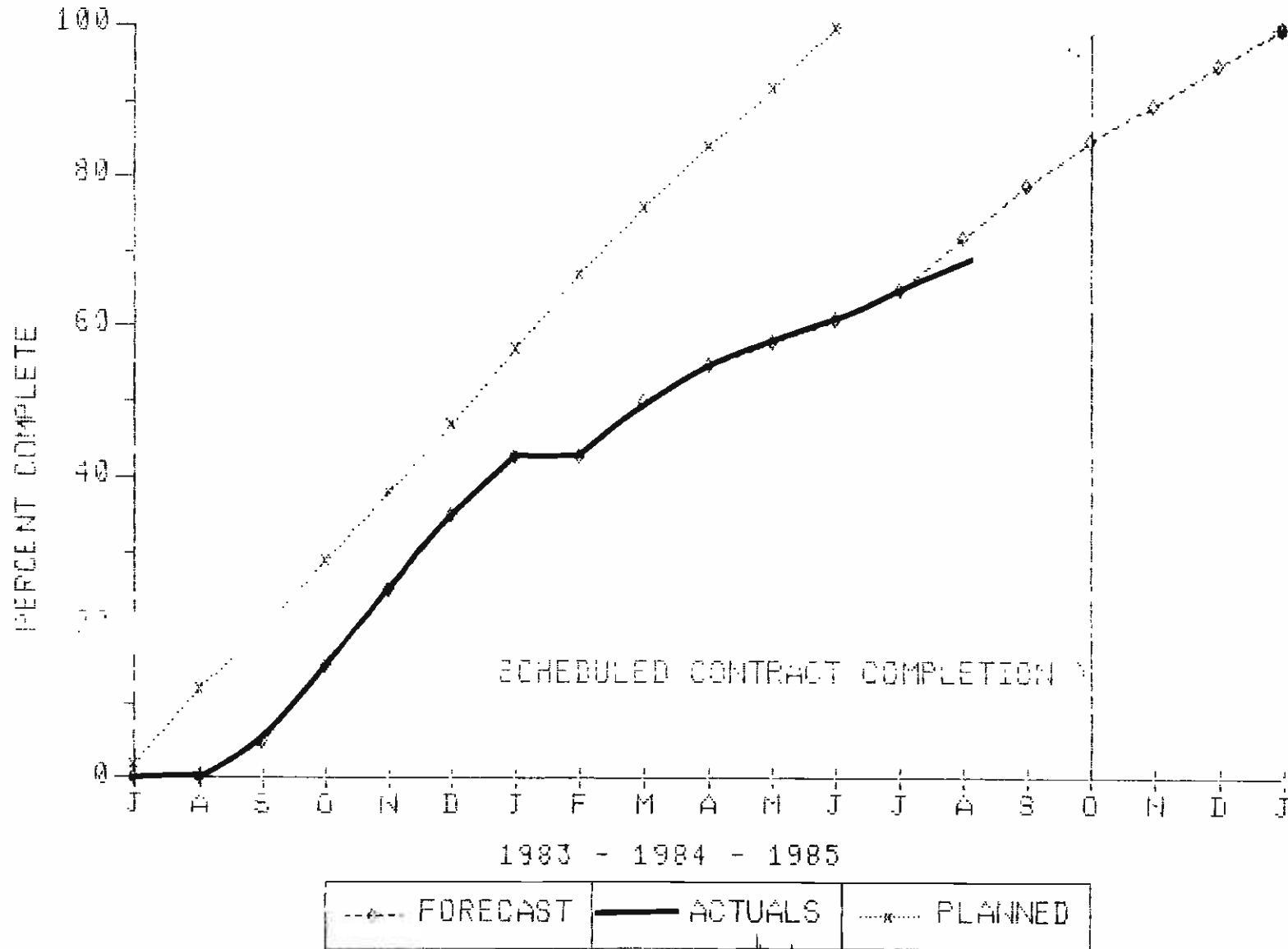
The section designer is twenty-six (26) weeks behind in submitting the 85% Pre-Final Submittal. Several reasons for this large delay are:

1. The same resources for this contract also work on A112 and A114 which have a higher priority.
2. The review process by outside agencies has taken longer than previously expected.
3. The addition of tunnel energy ventilation was not included in the Preliminary Engineering work effort.
4. A Traction Power Substation was deleted from A135 and is now included in A130.

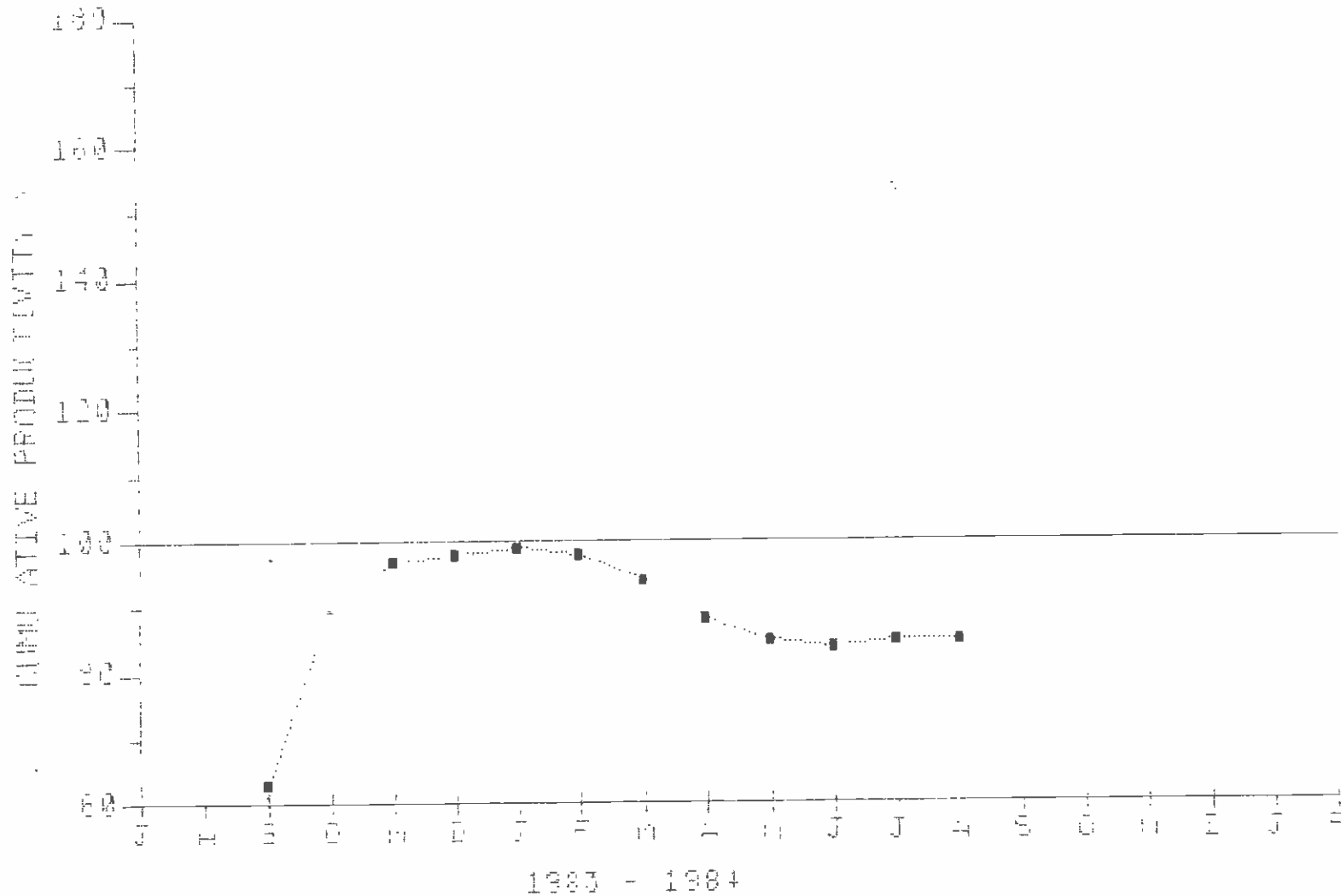
#### PERFORMANCE ASSESSMENT:

A130 is forecast to complete fifteen (15) weeks beyond the Contract Time of Performance.

RTD METRO RAIL PROJECT  
 CONTRACT #100 - MAIN YARD & SHOPS  
 SECTION DESIGNER: DNJM/PBQD  
 STATUS AS OF AUGUST 1984

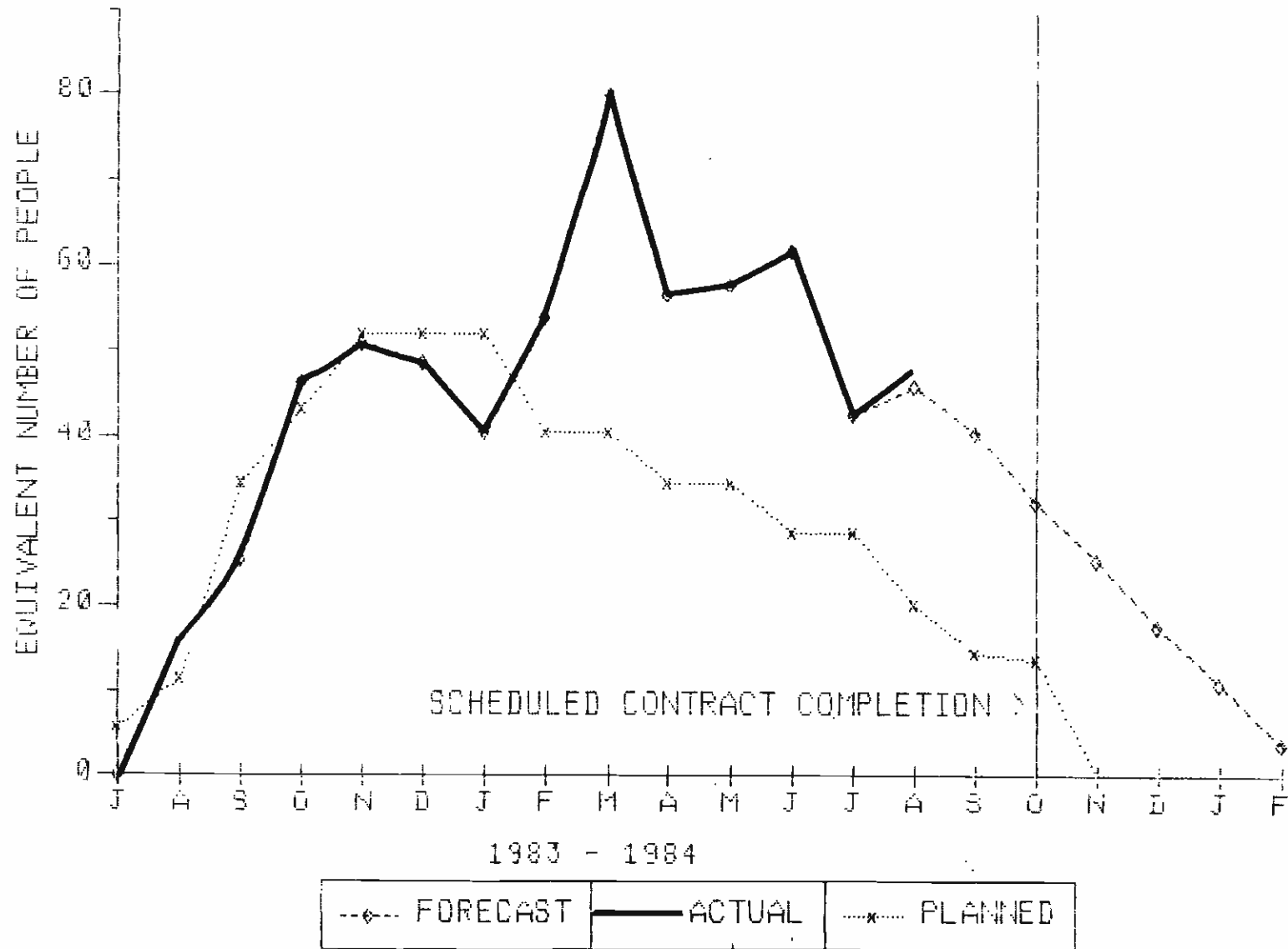


MTA METRO RAIL PROJECT  
 CONTRACT #130 - MAIN LANE AND SHOPS  
 SECTION DESIGNER: DMJM-PBWB  
 STATUS AS OF AUGUST 1984



ACTUAL

RTD METRO RAIL PROJECT  
 CONTRACT A100 - MAIN YARD AND SHOPS  
 SECTION DESIGNER: DMJH/PB00  
 MANPOWER STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
SECTION DESIGNER EVALUATION  
AUGUST 1984  
COST ANALYSIS

CONTRACT # - A135, UNION STATION  
DESIGN CONTRACTOR - HARRY WEESE & ASSOCIATES (HWA)

COMMENTS ON MRTIC PROGRESS REPORT

- o TOTAL MONTHLY ACTUAL AND FORECASTED COSTS AND MANHOURS DO NOT AGREE WITH THE TOTAL AMOUNT LISTED IN THEIR RESPECTIVE CUMULATIVE COLUMNS.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	100	80	77
INCREMENTAL PROGRESS	N/A	5	2
COST	2,897,000	3,665,000	2,953,000
MANHOURS	55,900	74,900	65,800
CONTRACT DURATION	13	19	14

$$\begin{aligned} \text{PRODUCTIVITY} &= \% \text{ COMPLETE} \times \text{TOTAL MH FORECAST} \\ \text{(CUMULATIVE)} &= \frac{.77 \times 74,900}{\text{MHS. SPENT}} \times 100 = 88\% \\ &= \frac{.77 \times 74,900}{65,800} \times 100 = 88\% \end{aligned}$$

$$\begin{aligned} \text{EARNED COSTS} &= \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} \\ \text{(CUMULATIVE)} &= .77 \times 3,665,000 = \$2,822,050 \end{aligned}$$

THIS CONTRACTOR, BEING AT 77% COMPLETE, HAS THEORETICALLY EARNED \$2,822,050.

$$\begin{aligned} \text{COST PERFORMANCE INDEX} &= \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} \\ \text{(CUMULATIVE) - CPI} &= \frac{2,822,050}{2,953,000} = \$ .96 \end{aligned}$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$0.96 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\begin{aligned} \text{COST VARIANCE} &= \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 2,953,000 - 2,822,050 = \$ 130,950 \\ \text{(CUMULATIVE)} & \end{aligned}$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$130,950.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A135, UNION STATION  
DESIGN CONTRACTOR - HARRY WEESE & ASSOCIATES (HWA)

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{rcl} \% \text{ SPENT} = & \text{ACTUAL COSTS SPENT} & 2,953,000 \\ \text{(CUMULATIVE)} & \frac{\quad}{\text{FORECAST AT COMPLETION}} & = \frac{\quad}{3,665,000} = 81\% \end{array}$$

THE CONTRACTOR HAS SPENT 81% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 77%, I.E., HE IS SPENDING FASTER THAN HE IS PROGRESSING.

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$$\begin{array}{rcl} \text{EST. AT COMPLETION} = & \text{FORECAST AT COMPLETION} & 3,665,000 \\ \text{(CALCULATED - EAC)} & \frac{\quad}{\text{COST PERFORMANCE INDEX}} & = \frac{\quad}{.96} = \$3,817,708 \end{array}$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$3,817,708. THIS REPRESENTS A COST OVERRUN OF \$ 920,708 OR A 32% INCREASE.

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$$\begin{array}{rcl} \text{TO COMPLETE} & = & \text{FORECAST AT COMPLETION - EARNED COSTS} & 3,665,000 & - & 2,822,050 \\ \text{PERFORMANCE INDEX} & & \frac{\quad}{\text{FORECAST AT COMPLETION - ACTUAL \$ SPENT}} & = & \frac{\quad}{3,665,000 - 2,953,000} & \\ & & & & & = 118\% \end{array}$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 118% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

FOR THE THIRD CONSECUTIVE MONTH, THIS CONSULTANT'S PRODUCTIVITY IS BELOW 100%, AND NOW THIS CONTRACT IS FULLY INVOLVED IN A SUBSTANTIAL COST OVERRUN. HOWEVER, THE SCRIPPS PROJECT MANAGER FEELS THAT THE PROJECTED OVERRUN WILL BE SIGNIFICANTLY REDUCED DUE TO EXPECTED BUDGET INCREASES DURING ENGINEERING CHANGE REQUEST NEGOTIATIONS.

08/31/84  
PC-BACKUP 14.2<6>

### SECTION DESIGNER EVALUATION

#### SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A135 Union Station	AWARD: 07/07/83
DESIGN SUBCONTRACTOR: Harry Weese & Associates	NTP: 07/13/83
PROJECT MANAGER(TSD/MRTC): Low/Cooper	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES (Stage I)	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	07/27/83	-	10/05/83	-
IN PROG. SUBMITTAL (60%)	02/01/84	-	03/09/84	-
PRE FINAL SUBMITTAL (85%)	04/01/84	11/30/84*	-	-243
FINAL SUBMITTAL (100%)	06/01/84	02/01/84*	-	-246
BID DOCUMENTS	07/18/84	03/12/84	-	-237
TIME OF PERFORMANCE	07/12/84	03/12/84	-	-244

\* Slippage is due to the incorporation of the seismic design criteria.

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

East end portal location and overall site development (parking and bus) now established and being incorporated in Section Designer's work.

#### AREAS OF CONCERN:

Receipt of seismic design criteria (7/3/84) has major impact to structural design progress. To mitigate any hold up to other disciplines an (in-house) in-progress submittal will be made (9/7/84) of all drawings (Stage I & Stage II) except structural and civil.

#### COMMENTS:

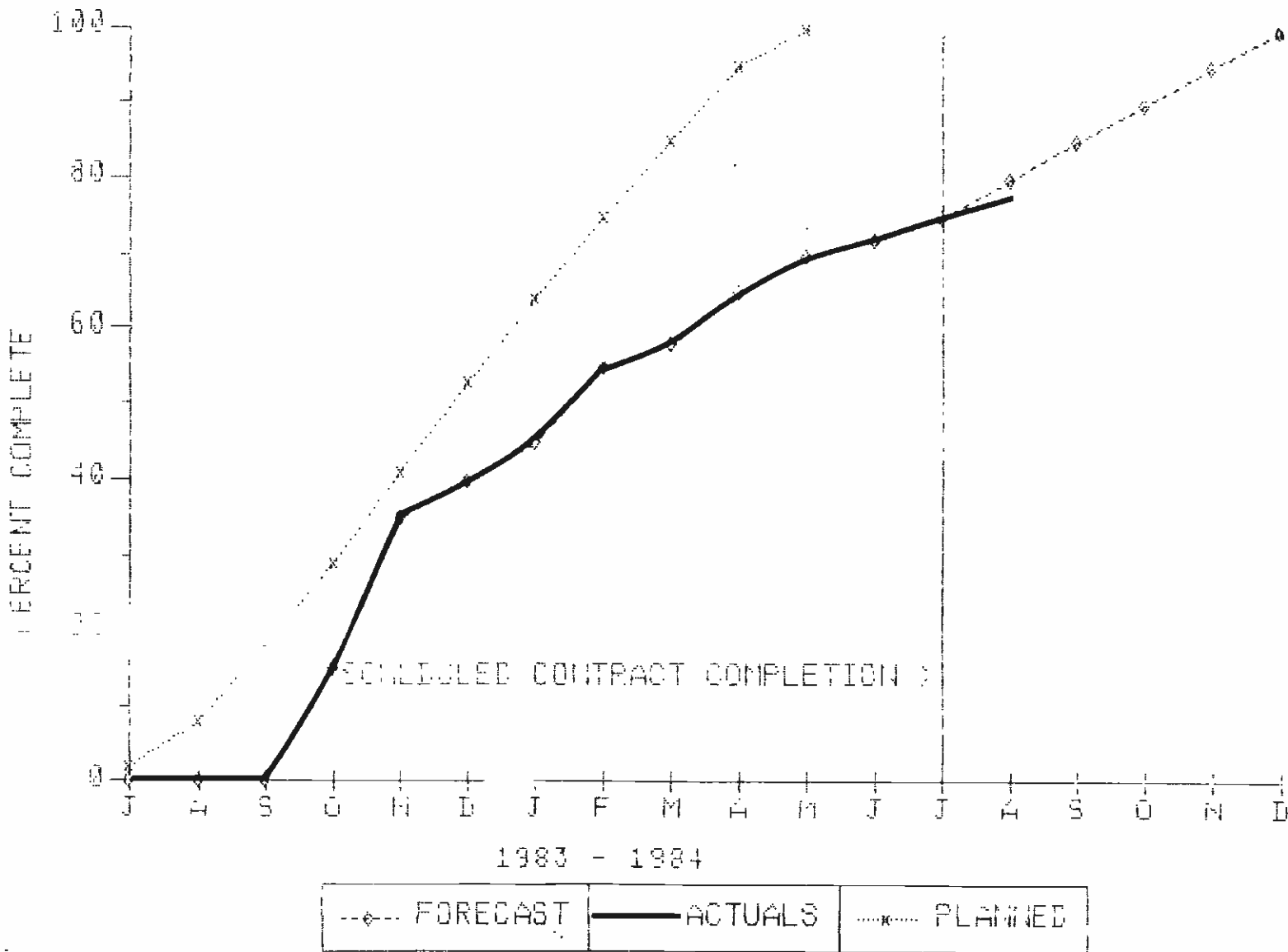
The Section Designer submitted a revised CPM Schedule (07/05/84) reflecting the breakout of Stage I/Stage II Construction packages. The schedule is to be further revised to incorporate the impact of seismic design criteria.

The Section Designer's request for extended Contract Time of Performance and Increase Obligated Funding to be resolved during the next reporting period.

#### PERFORMANCE ASSESSMENT:

Project Completion is forecast to complete 34 weeks beyond the Contract Time of Performance (7/12/84). Delay is due to continuous design changes and the late-coming seismic design criteria.

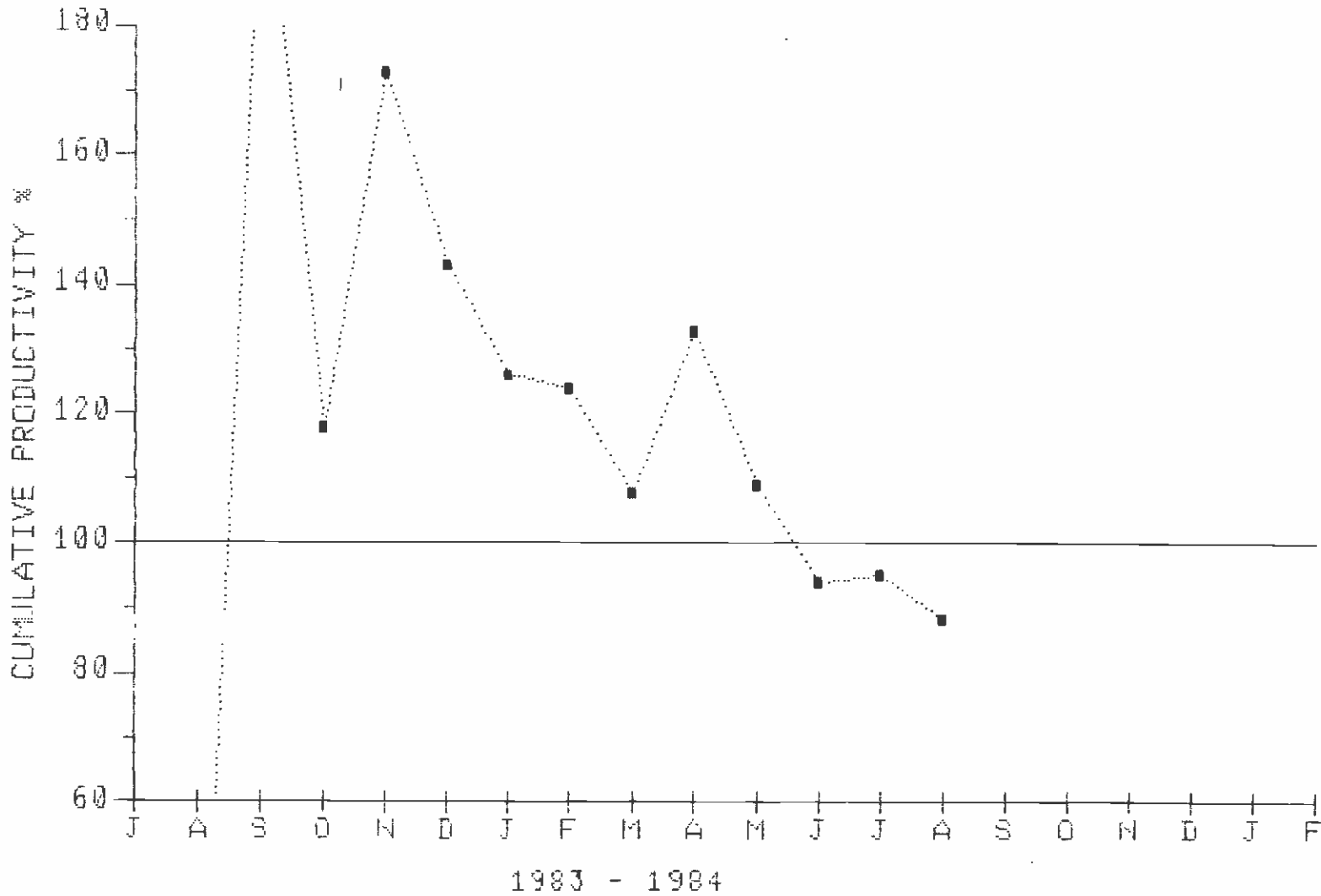
RTD METRO RAIL PROJECT  
 CONTRACT A135 - UNION STATION  
 SECTION DESIGNER: HARRY WEESE & ASSOC.  
 STATUS AS OF AUGUST 1984





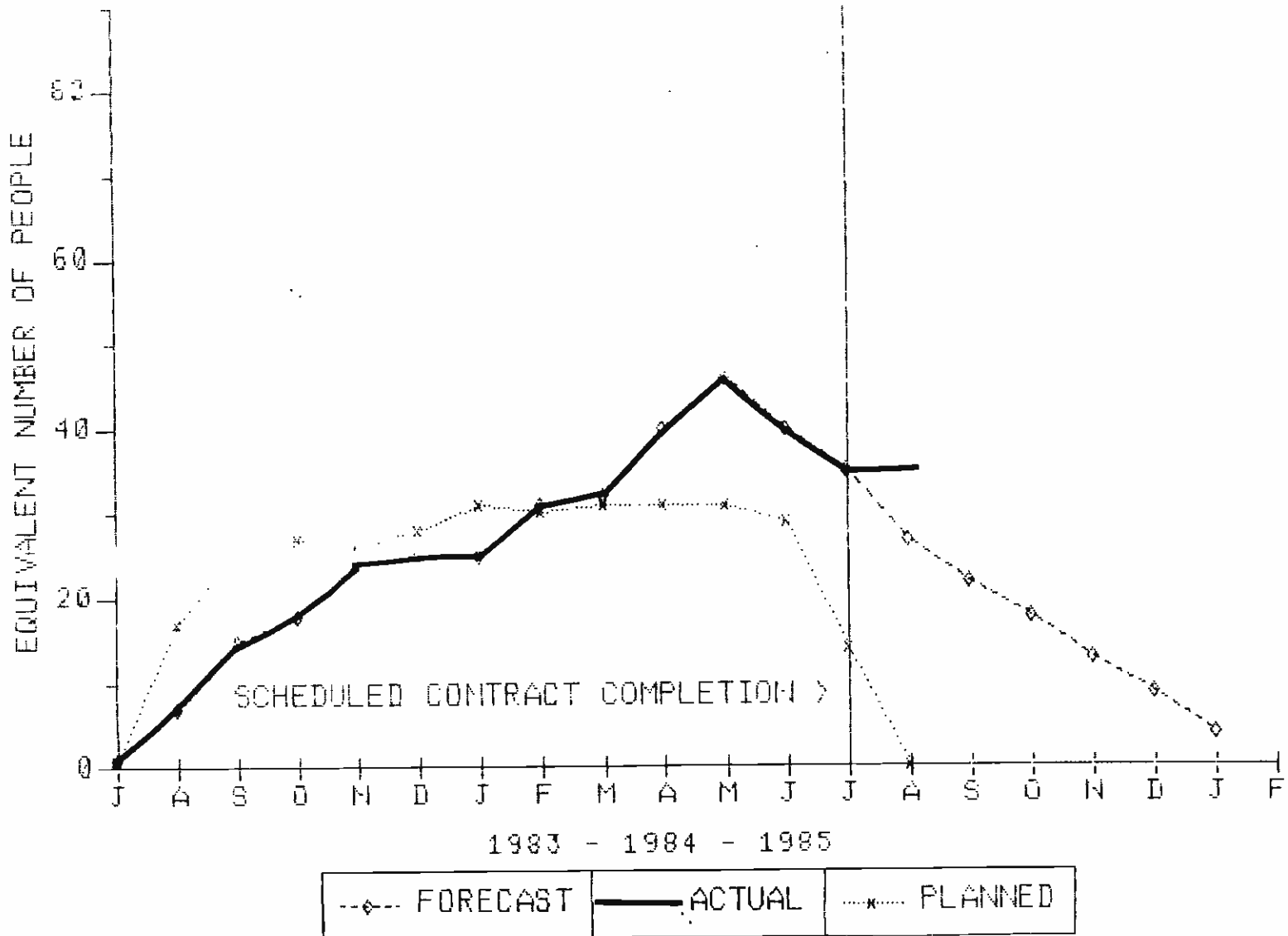
RTD METRO RAIL PROJECT  
 CONTRACT A135 - UNION STATION  
 SECTION DESIGNER: HARRY WEESE AND ASSOC.  
 STATUS AS OF AUGUST 1984

47



ACTUAL

RTD METRO RAIL PROJECT  
 CONTRACT A135 - UNION STATION  
 SECTION DESIGNER: HARRY WEESE & ASSOC.  
 STATUS AS OF AUGUST 1984



RID METRO RAIL PROJECT  
SECTION DESIGNER EVALUATION  
AUGUST 1984  
COST ANALYSIS

CONTRACT # - A140, CIVIC CENTER/5TH & HILL STATIONS + LINE  
DESIGN CONTRACTOR - DELON HAMPTON & ASSOCIATES (DHA)

COMMENTS ON MRTC PROGRESS REPORT

- o TOTAL MONTHLY ACTUAL AND FORECASTED COSTS AND MANHOURS DO NOT AGREE WITH THE TOTAL AMOUNT LISTED IN THEIR RESPECTIVE CUMULATIVE COLUMNS.

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	55	51	50
INCREMENTAL PROGRESS	5	5	4
COST	6,210,000	6,790,000	2,857,000
MANHOURS	111,200	142,900	62,300
CONTRACT DURATION	25	26	14

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MTRS. SPENT}} = \frac{.50 \times 142,900}{62,300} \times 100 = 115\%$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .50 \times 6,790,000 = 3,395,000$$

THIS CONTRACTOR, BEING AT 50% COMPLETE, HAS THEORETICALLY EARNED \$3,395,000.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{3,395,000}{2,857,000} = \$ 1.19$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.19 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 2,857,000 - 3,395,000 = \$ <538,000>$$

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$538,000.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A140, CIVIC CENTER/5TH & HILL STATIONS + LINE  
DESIGN CONTRACTOR - DELON HAMPTON & ASSOCIATES (DHA)

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{2,857,000}{6,790,000} = 42\%$$

THE CONTRACTOR HAS SPENT 42% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 50%.

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{6,790,000}{1.19} = \$ 5,705,882$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$5,705,882. THIS REPRESENTS A COST UNDERRUN OF \$504,118 OR A 8% DECREASE.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{6,790,000 - 3,395,000}{6,790,000 - 2,857,000} = 86\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 86% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

CONSULTANT IS CONTINUED TO MAINTAIN PROGRESS, AND BOTH PRODUCTIVITY AND COST PERFORMANCE FIGURES ARE VERY GOOD. HOWEVER, UTILITY CONFLICTS AT 5TH & HILL STATION MAY RESULT IN MAJOR STRUCTURAL CHANGES AND THE POSSIBILITY OF SUBSTANTIAL COST INCREASES.

08/31/84  
PC-BACKUP 14.2<10>

**SECTION DESIGNER EVALUATION**

**SCHEDULE ANALYSIS**

STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A140 Stations & Line Section Civic Center & 5th/Hill Stations	AWARD: 07/25/83
DESIGN SUBCONTRACTOR: Delon Hampton & Associates	NTP: 07/27/83
PROJECT MANAGER(TSD/MRTC): Louis/Yaccoub	DURATION: 730 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	08/17/83	-	10/26/83	-
IN PROG. SUBMITTAL (60%)	08/01/84	-	08/01/84	-
PRE FINAL SUBMITTAL (85%)	03/01/85	03/01/85	-	0
FINAL SUBMITTAL (100%)	06/10/85	06/10/85	-	0
BID DOCUMENTS	07/15/85	07/15/85	-	0
TIME OF PERFORMANCE	07/27/85	06/10/85	-	+57

Construction Contract Package A142 (Civic Center Excavation and Support) to be submitted (9/7/84) is a revised Pre-Final Submittal for review.

**RESOLUTIONS OF LAST PERIODS PROBLEMS:**

The entrance of Thrifty Drug/Equitable Building has been shifted one bay north and the station is to be lowered three feet to accommodate utility reconfigurations. The combining change may impact the Pre-Final Submittal date (3/01/85).

**AREAS OF CONCERN:**

The section designer received the seismic design criteria and is currently analyzing the incorporation and effect to the structural drawings. This directive will impact the (85%) Pre-Final Submittal date (3/01/85).

**COMMENTS:**

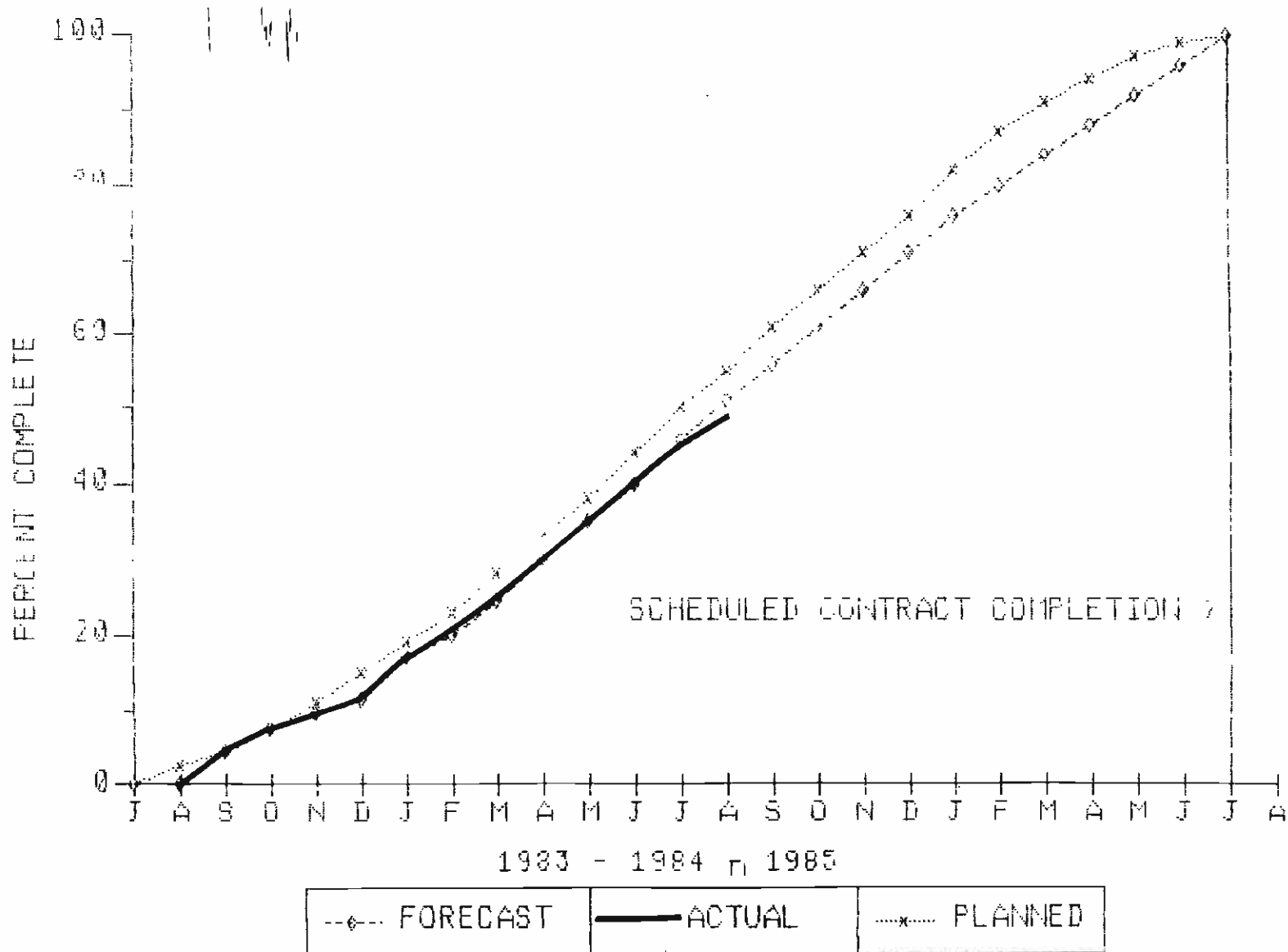
The section designer has submitted the In-Progress (60%) Submittal (8/01/84) for tunnel and stations (Stage I & Stage II) design.

CAL PLAZA Entrance (at 4th & Hill Street) continues design progress under the current plan. Any decision to change this configuration will impact the Pre-Final Submittal date.

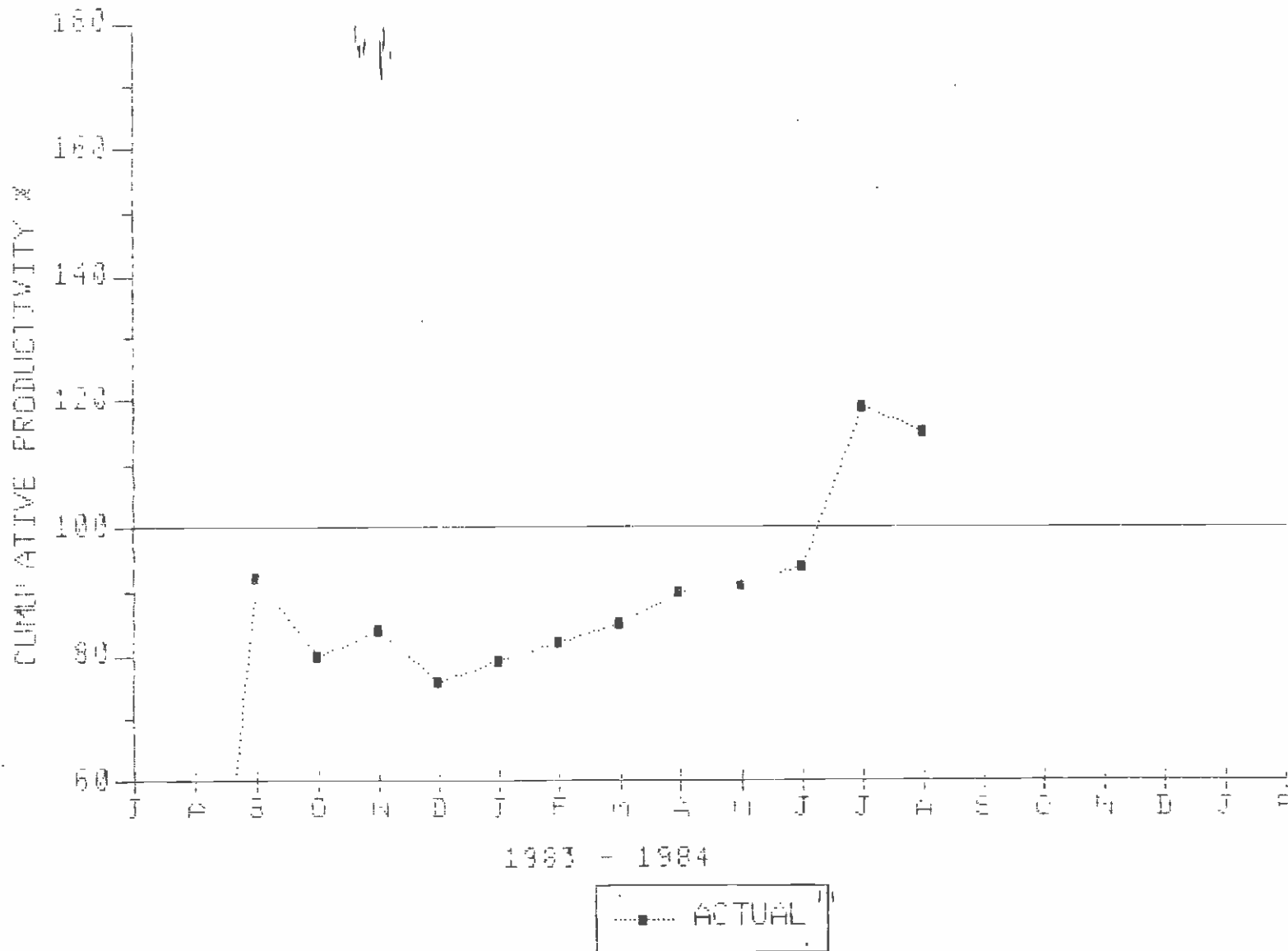
**PERFORMANCE ASSESSMENT:**

The overall project is on schedule. The current changes potentially impact the Pre-Final Submittal (85%) but the Final (100%) Design Submittal is expected to maintain the schedule date (6/10/85).

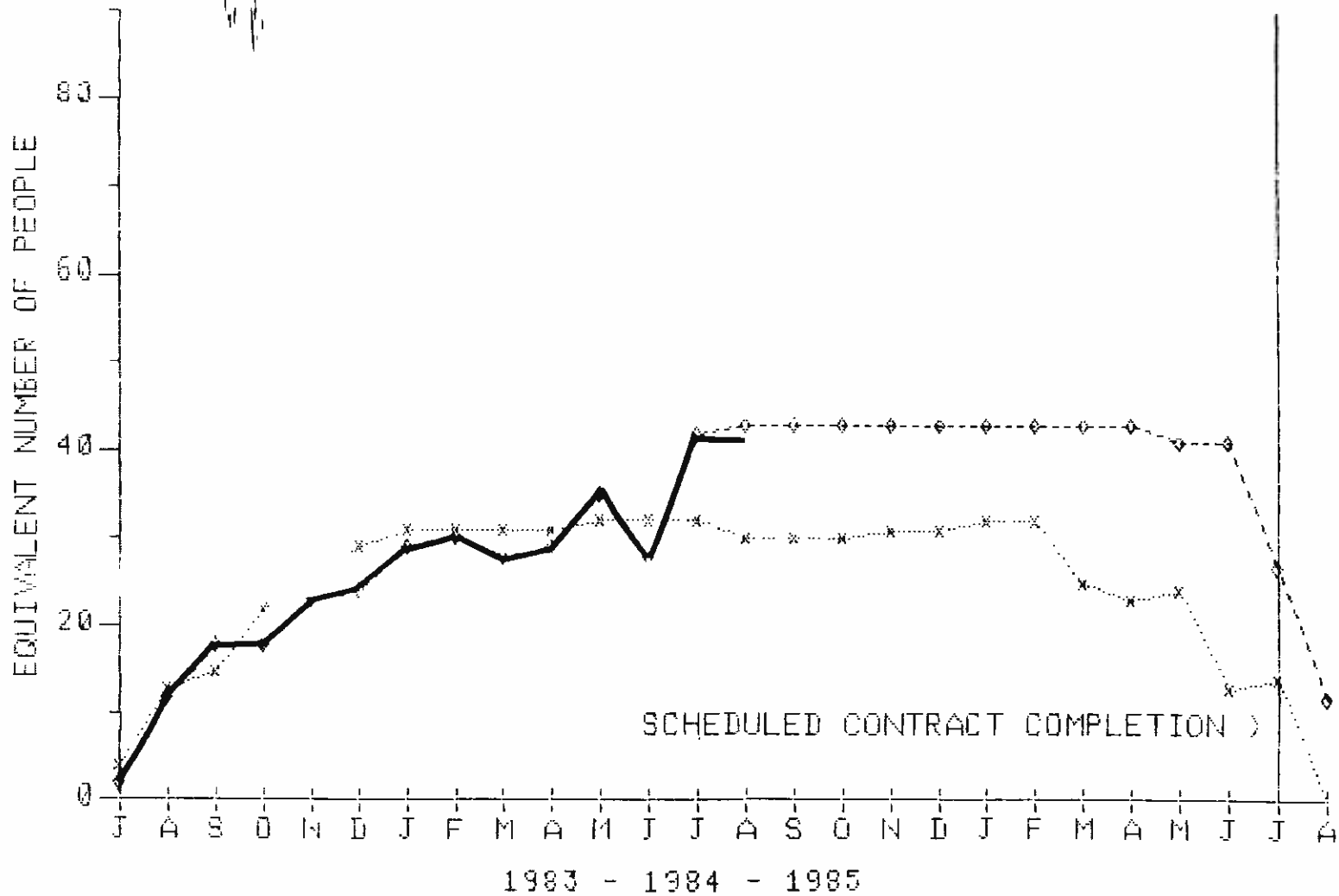
RTD METRO RAIL PROJECT  
 CONTRACT A140 - CIVIC CENTER/FIFTH & HILL  
 DESIGNER: DELON HAMPTON & ASSOC.  
 STATUS AS OF AUGUST 1984



METRO RAIL PROJECT  
 CONTRACT #140 - CIVIC CENTER-FIFTH & HILL  
 SECTION DESIGNER: DELON HAMPTON & ASSOC.  
 STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 CONTRACT A140 - CIVIC CENTER/FIFTH & HILL  
 SECTION DESIGNER: DELON HAMPTON & ASSOC.  
 STATUS AS OF AUGUST 1984



--◇-- FORECAST	— ACTUAL	---*--- PLANNED
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RTD METRO RAIL PROJECT  
SECTION DESIGNER EVALUATION  
AUGUST 1984  
COST ANALYSIS

CONTRACT # - A165, 7TH/FLOWER STATION  
DESIGN CONTRACTOR - GANNETT FLEMING/DWORSKY

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COMMENTS ON MRTC PROGRESS REPORT

- o NO INCREMENTAL COSTS OR MANHOURS ARE SHOWN BETWEEN THE ORIGINAL PLAN AND THE REVISED PLAN ON THE COST AND MANHOUR CHARTS.

=====

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	100	83	78
INCREMENTAL PROGRESS	5	8	3
COST	2,401,000	3,086,000	2,834,000
MANHOURS	64,000	79,400	73,500
CONTRACT DURATION	13	18	13

=====

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = .78 X 79,400 X 100 = 84 %  
(CUMULATIVE) ----- MHR. SPENT ----- 73,500

PRODUCTIVITY CONTINUES TO DECLINE FROM PREVIOUS MONTHS.

=====

EARNED COSTS = % COMPLETE X TOTAL COST FORECAST = .78 X 3,086,000 = \$ 2,407,080  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 78% COMPLETE, HAS THEORETICALLY EARNED \$2,407,080.

=====

COST PERFORMANCE INDEX = EARNED COSTS 2,407,080  
(CUMULATIVE) - CPI ----- = ----- = \$ 0.85  
ACTUAL COSTS SPENT 2,834,000

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$0.85 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THE CPI HAS GONE FROM 1.02 TO .85 IN JUST ONE MONTH, A DECREASE OF 17%.

=====

COST VARIANCE = ACTUAL \$ SPENT - EARNED \$ = 2,834,000 - 2,407,080 = \$426,920  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$426,920.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A165, 7TH/FLOWER STATION  
 DESIGN CONTRACTOR - GANNETT FLEMING/DWORSKY

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{rcl} \% \text{ SPENT} = & \text{ACTUAL COSTS SPENT} & 2,834,000 \\ \text{(CUMULATIVE)} & \frac{\quad}{\text{FORECAST AT COMPLETION}} & = \frac{\quad}{3,086,000} = 92 \% \end{array}$$

THE CONTRACTOR HAS SPENT 92 % OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 78%.

$$\begin{array}{rcl} \text{EST. AT COMPLETION} = & \text{FORECAST AT COMPLETION} & 3,086,000 \\ \text{(CALCULATED - EAC)} & \frac{\quad}{\text{COST PERFORMANCE INDEX}} & = \frac{\quad}{.85} = \$3,630,588 \end{array}$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$3,630,588. THIS REPRESENTS A COST OVERRUN OF \$1,229,588 OR A 51% INCREASE.

$$\begin{array}{rcl} \text{TO COMPLETE} & = & \text{FORECAST AT COMPLETION} - \text{EARNED COSTS} & 3,086,000 & - & 2,407,080 \\ \text{PERFORMANCE INDEX} & & \frac{\quad}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} & = & \frac{\quad}{3,086,000 - 2,834,000} & \\ & & & & & = 269\% \end{array}$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 269% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THE CONSULTANT'S COST AND LABOR PERFORMANCE HAS TAKEN A DRASTIC DROP FROM LAST MONTH. THIS IS DUE, IN PART, TO THE INCORPORATION OF SEVERAL CHANGES INTO THE CONTRACT SCOPE THROUGH THE CONTRACT AMENDMENT APPROVED THIS MONTH.

08/31/84  
PC-BACKUP 14.2<8>

## SECTION DESIGNER EVALUATION

### SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A165 7th & Flower Station	AWARD: 08/05/83
DESIGN SUBCONTRACTOR: Gannett Fleming/Dworsky	NTP: 08/09/83
PROJECT MANAGER(TSD/MRTC): Low/Cooper	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST STAGE I & II	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	08/30/83	-	10/17/83	-
IN PROG. SUBMITTAL (60%)	02/07/84	-	03/12/84	-
PRE FINAL SUBMITTAL (85%)	05/22/84	11/19/84	-	-181
FINAL SUBMITTAL (100%)	08/07/84	01/21/85	-	-167
BID DOCUMENTS	10/14/84	01/21/85	-	-99
TIME OF PERFORMANCE	08/08/84	01/21/85	-	-166

An informal Pre-Final Submittal (85%) will be made (9/10/84) which will not include the seismic design.

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

Section Designer received supplemental directive from MRTC for seismic design and began seismic design of the station.

#### AREAS OF CONCERN:

Section Designer expects the incorporation of the seismic criteria to delay Project Completion approximately three months.

The Section Designer's current CPM network schedule cannot be used for assessing contract status. In view of the Stage I/Stage II breakout and the impact of seismic design directive it is recommended the CPM schedule be revised to show remaining work items required to complete the project.

#### COMMENTS:

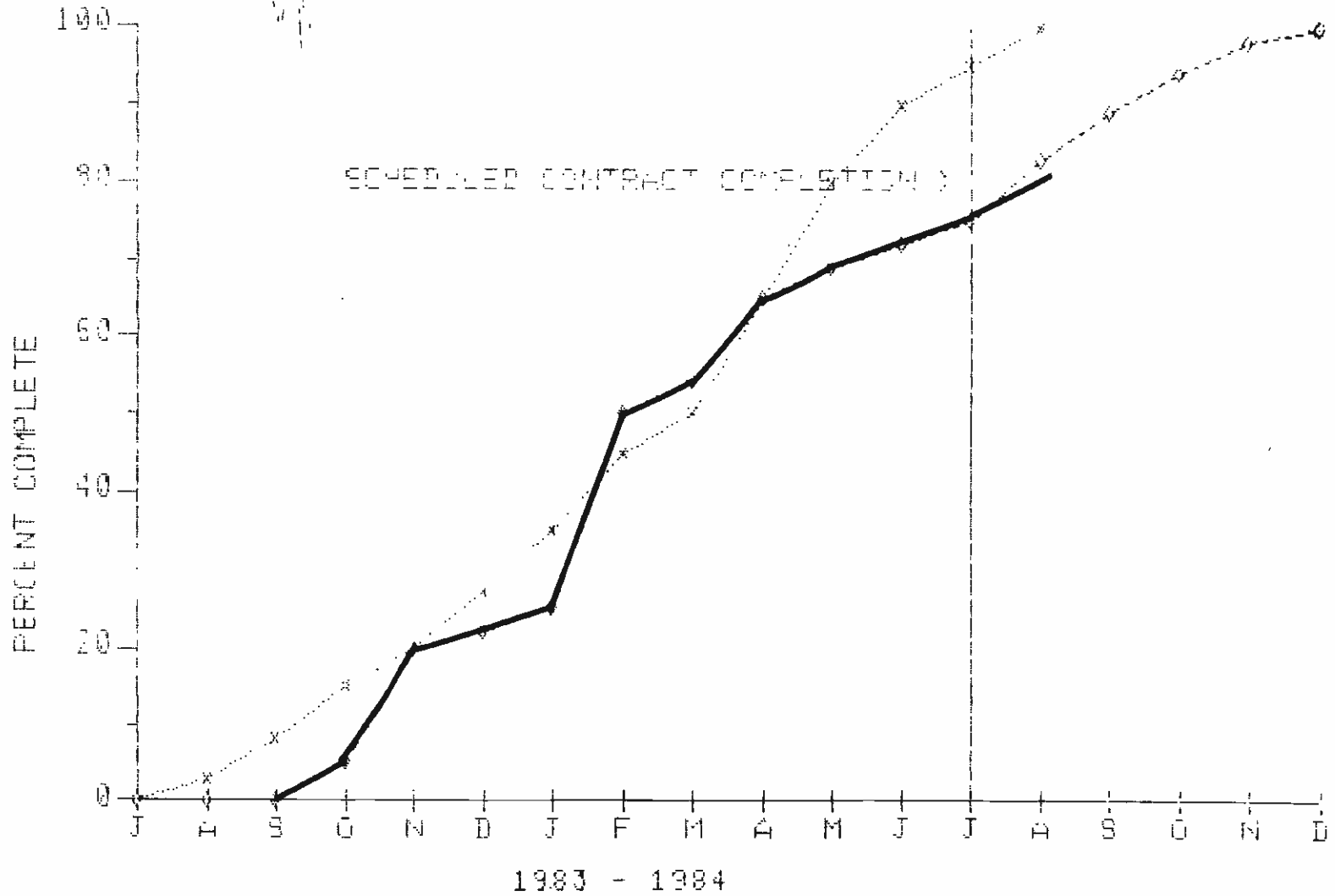
The Section Designer is lacking certain information from the City of Los Angeles.

A Contract Amendment to extend the Time of Performance (for the Stage I/Stage II Construction Packaging Change) is in progress.

#### PERFORMANCE ASSESSMENT:

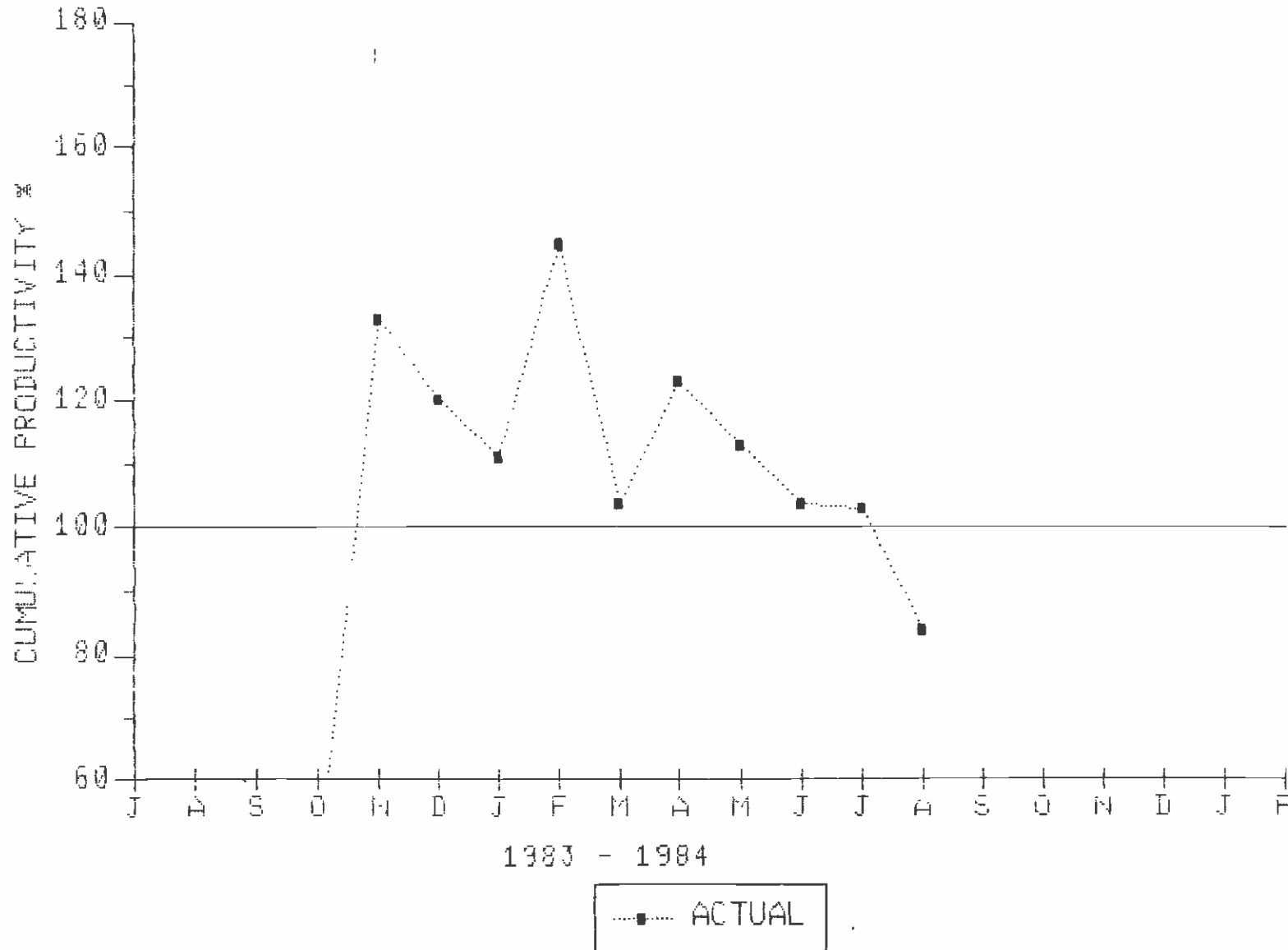
Project completion is currently forecast to complete 24 weeks beyond the Contract Time of Performance. Incorporation of the seismic requirements is expected to delay Project Completion an additional three (3) months.

ATO METRO RAIL PROJECT  
 CONTRACT A165 - SEVENTH & FLOWER  
 SECTION DESIGNER: GANNETT FLEMING/DWORSKY  
 STATUS AS OF AUGUST 1984

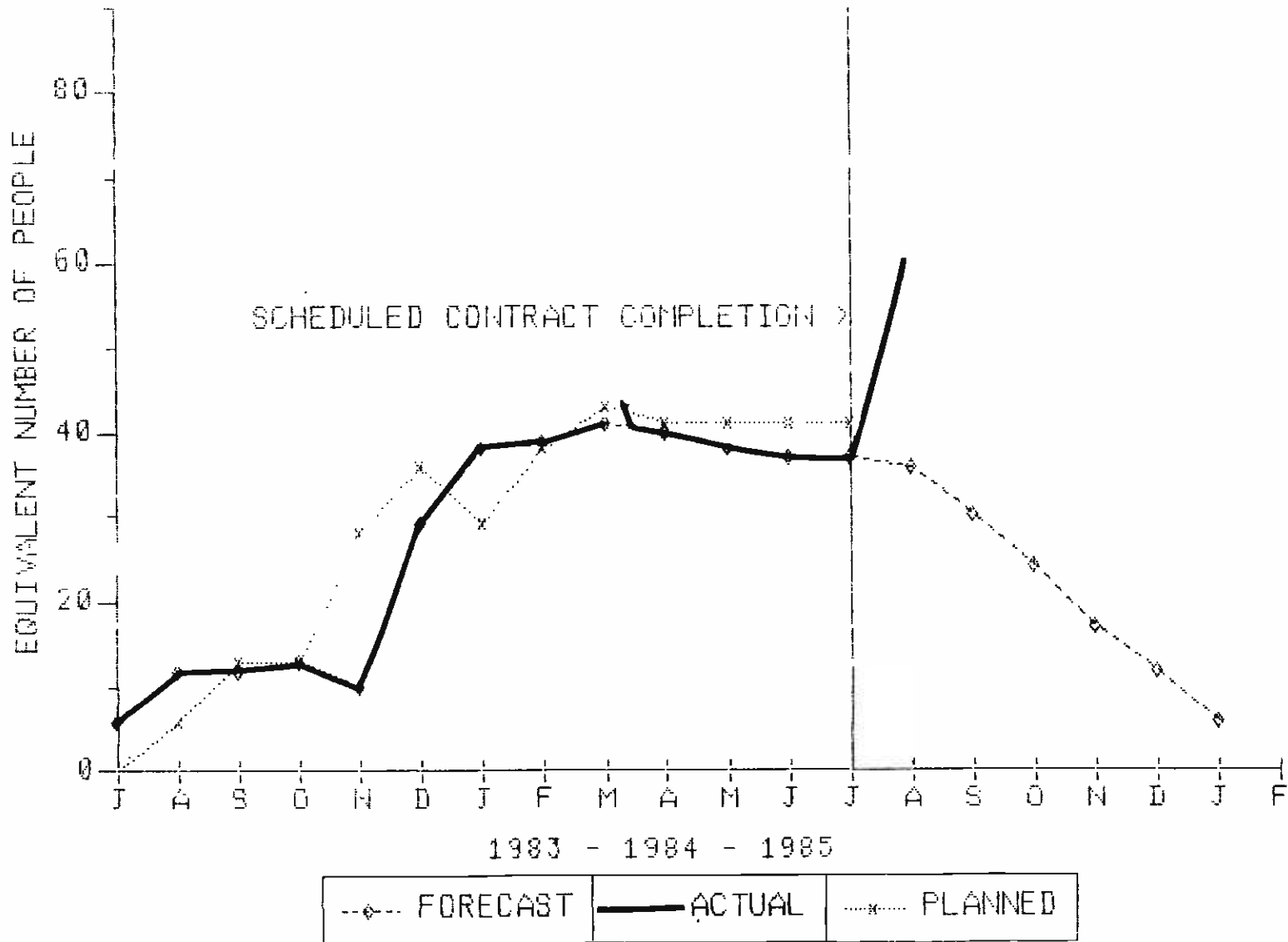


--◇-- FORECAST    ——— ACTUALS    ····×···· PLANNED

RTD METRO RAIL PROJECT  
CONTRACT A165 - SEVENTH & FLOWER  
SECTION DESIGNER: GANNETT FLEMING/DWORSKY  
STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 CONTRACT H165 - SEVENTH & FLOWER  
 SECTION DESIGNER: GANNETT FLEMING/DWORSKY  
 STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A170, WILSHIRE/ALVARADO STATION  
 DESIGN CONTRACTOR - SVERDRUP CORP.

COMMENTS ON MRTC PROGRESS REPORT

o NONE

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	93	78	81
INCREMENTAL PROGRESS	6	6	9
COST	3,119,000	3,612,000	3,038,000
MANHOURS	63,400	74,200	62,900
CONTRACT DURATION	17	18	13

$$\text{PRODUCTIVITY} = \frac{\% \text{ COMPLETE} \times \text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.81 \times 74,200}{62,900} \times 100 = 96\%$$

REPORTED PRODUCTIVITY CONTINUES TO BE GOOD, ALTHOUGH AT A REDUCED LEVEL FROM PREVIOUS MONTHS.

$$\text{EARNED COSTS} = \frac{\% \text{ COMPLETE} \times \text{TOTAL COST FORECAST}}{\text{(CUMULATIVE)}} = .81 \times 3,612,000 = \$2,925,720$$

THIS CONTRACTOR, BEING AT 81% COMPLETE, HAS THEORETICALLY EARNED \$2,925,720.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{2,925,720}{3,038,000} = \$0.96$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$0.96 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THE CPI IS RUNNING RIGHT IN LINE WITH THE PRODUCTIVITY RATE.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 3,038,000 - 2,925,720 = \$112,280$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$112,280.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A170, WILSHIRE/ALVARADO STATION  
DESIGN CONTRACTOR - SVERDRUP CORP.

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{3,038,000}{3,612,000} = 84\%$$

THE CONTRACTOR HAS SPENT 84% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 81%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{3,612,000}{.96} = \$ 3,762,500$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$3,762,500. THIS REPRESENTS A COST OVERRUN OF \$643,500 OR A 21% INCREASE.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{3,612,000 - 2,925,720}{3,612,000 - 3,038,000} = 120\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 120% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

THE CONSULTANT'S PERFORMANCE HAS TAKEN A MODERATE DIP IN THE PAST TWO MONTHS, ALTHOUGH IT IS STILL WITHIN A SATISFACTORY RANGE. THE MAJOR REASON FOR THIS DIP IS THE INCREASED LEVEL OF CHANGES TO THE CONTRACT DESIGN.



08/31/84  
 PC-BACKUP 14.2<12>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
 STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A170 Wilshire/Alvarado Station & Line AWARD: 08/05/83  
 DESIGN SUBCONTRACTOR: Sverdrup & Parcel Assocs. NTP: 08/09/83  
 PROJECT MANAGER(TSD/MRTC): Thakarar/Hodges DURATION: 485  
 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	08/23/83	-	09/19/83	-
STAGE I				
IN PROG. SUBMITTAL (60%)	02/14/84	-	02/16/84	-
PRE FINAL SUBMITTAL (85%)	05/30/84	-	08/24/84	-
FINAL SUBMITTAL (100%)	08/14/84	11/30/84	-	-108
BID DOCUMENTS	09/26/84	12/21/84	-	-86
STAGE II				
IN PROG. SUBMITTAL (60%)	04/02/84	-	05/07/84	-
PRE FINAL SUBMITTAL (85%)	07/25/84	09/28/84	-	-65
FINAL SUBMITTAL (100%)	11/02/84	11/09/84	-	-7
BID DOCUMENTS	12/28/84	12/14/84	-	+14
TIME OF PERFORMANCE	12/07/84	12/21/84	-	-14

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Seismic criteria was received and the Section Designer has completed analysis of impact to design.

The Pre-Final Submittal was made (8/24/84) without the structural drawings. Seismic incorporation and submittal of structural design is expected in six weeks (mid-October).

AREA OF CONCERN:

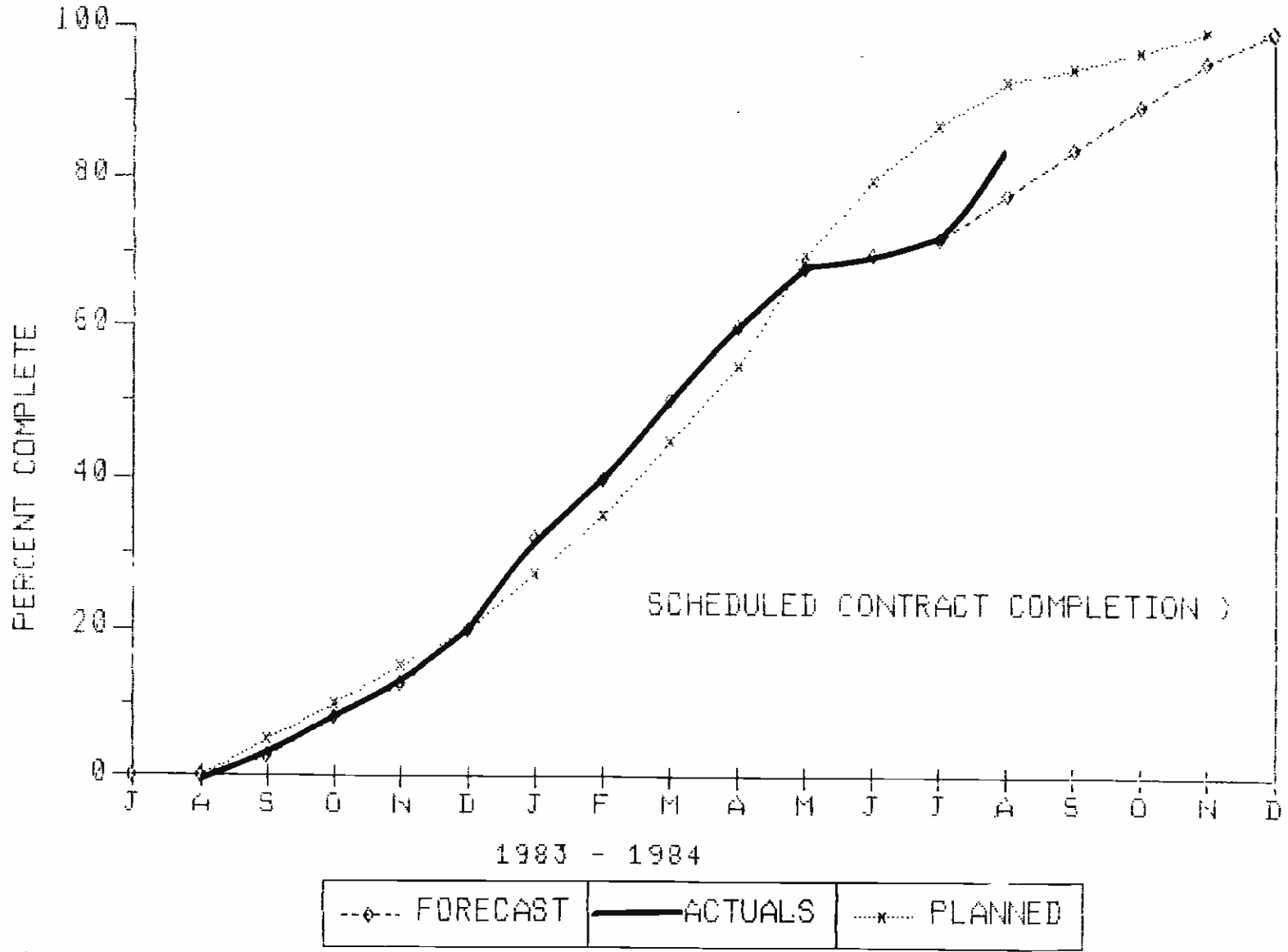
Approved City of Los Angeles street pavement sections are not available. This lack of information impacts design progress of civil and utility drawings and the cost estimate.

The base line final specifications are not available for mark-up by the section designer.

PERFORMANCE ASSESSMENT:

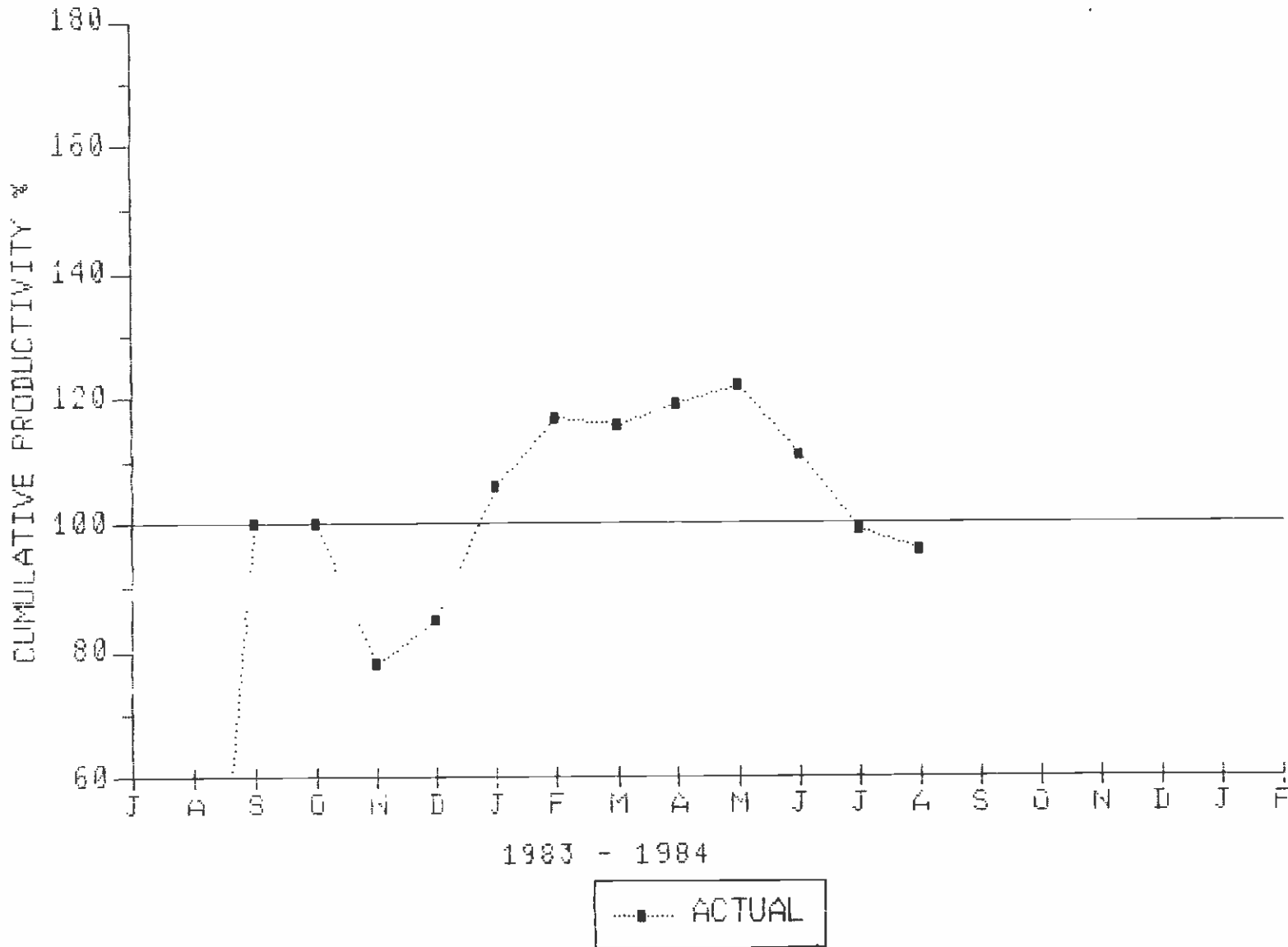
Project completion is forecast to complete one week beyond the Contract Time of Performance Date (12/7/84).

RTD METRO RAIL PROJECT  
 CONTRACT A170 - WILSHIRE/ALVARADO  
 SECTION DESIGNER: SVERDRUP CORP.  
 STATUS AS OF AUGUST 1984

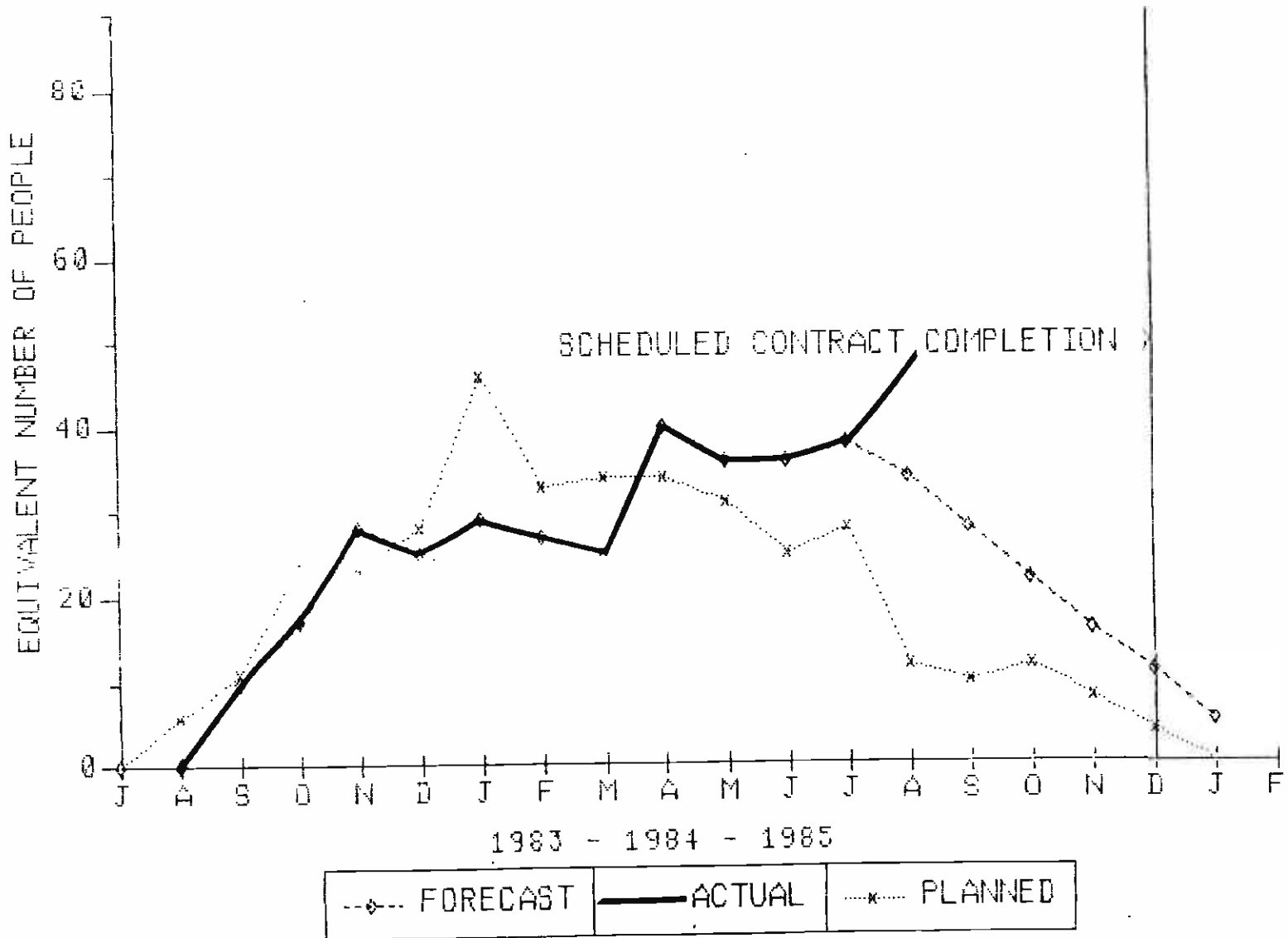


RTD METRO RAIL PROJECT  
 CONTRACT A170 - WILSHIRE/ALVARADO  
 SECTION DESIGNER: SVERDRUP CORP.  
 STATUS AS OF AUGUST 1984

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RTD METRO RAIL PROJECT  
 CONTRACT A170 - WILSHIRE/ALVARADO  
 SECTION DESIGNER: SVERDRUP CORP.  
 STATUS AS OF AUGUST 1984



99

RID METRO RAIL PROJECT  
SECTION DESIGNER EVALUATION  
AUGUST 1984  
COST ANALYSIS

CONTRACT # - A195, WILSHIRE/VERMONT STATION  
DESIGN CONTRACTOR - KOBER/MAGUIRE

COMMENTS ON MRTIC PROGRESS REPORT

- THE VARIANCE BETWEEN THE PLANNED BUDGET AND PRESENT FORECAST OF \$872,277 IS DUE TO ECO'S THAT HAVE BEEN NEGOTIATED AND SOME THAT ARE STILL PENDING. ECO'S #14-29 HAVE BEEN SUBMITTED TO THE DISTRICT FOR APPROVAL. BASED ON LAST MONTH'S FORECAST, THE NEGOTIATED DOLLARS THIS MONTH WERE HIGHER THAN ANTICIPATED IN LAST MONTH'S REPORT. THE MONTHLY PROGRESS REPORT FAILED TO NOTE WHAT THE ACTUAL CAUSE OF THE STATED COST OVERRUN WAS.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	100	77	75
INCREMENTAL PROGRESS	5	4	2
COST	1,541,000	*2,413,277	1,700,000
MANHOURS	32,000	50,000	37,200
CONTRACT DURATION	13	19	13

\*THIS NUMBER IS NOT REFLECTED IN THE MONTHLY PROGRESS REPORT, BUT IS IN THE AUGUST TREND REPORT; DUE TO TIME CONSTRAINTS IT WAS NOT INCORPORATED IN THE MONTHLY REPORT.

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.75 \times 50,000}{37,200} \times 100 = 101$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .75 \times 2,413,277 = \$1,809,958$$

(CUMULATIVE) = \$1,810,000

THIS CONTRACTOR, BEING AT 75% COMPLETE, HAS THEORETICALLY EARNED \$1,810,000.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,810,000}{1,700,000} = \$ 1.06$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.06 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,700,000 - 1,810,000 = \$ 110,000$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$110,000 WHEN COMPARED TO THE EARNED VALUE COSTS.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A195, WILSHIRE/VERMONT STATION  
 DESIGN CONTRACTOR - KOBER/MAGUIRE

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \text{ACTUAL COSTS SPENT} \\ \text{(CUMULATIVE)} \end{array} = \frac{1,700,000}{2,413,277} = 70\%$$

THE CONTRACTOR HAS SPENT 70% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 75%.

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,413,277}{1.06} = \$2,276,676$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,277,000. THIS REPRESENTS A COST UNDERRUN OF \$136,300 OR A 6% DECREASE WHEN COMPARED TO THE PRESENT FORECAST. BUT WHEN COMPARED TO THE PLANNED BUDGET OF \$1,541,000, THERE IS A SIGNIFICANT OVERRUN OF \$736,000, OR 48%.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,413,277 - 1,810,000}{2,413,000 - 1,700,000} = 85\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 85% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THE PRODUCTIVITY PERCENTAGE AND COST PERFORMANCE INDEX SHOW A THEORETICALLY FAVORABLE PICTURE. BUT THE FACT STILL REMAINS THAT THEY ARE EXTREMELY OVER THE PLANNED BUDGET, ALONG WITH PRESENTLY BEING OVER STAFFED BY 14 PEOPLE. THIS CONTRACT IS SCHEDULED TO BE COMPLETED ONLY TO THE 85% LEVEL. BASED ON THE PRESENT FORECAST FOR "COST TO COMPLETE", THEY WILL OVERRUN THE PLANNED BUDGET BY \$639,000 OR A 42% INCREASE.

08/31/84  
PC-BACKUP 14.2<10>

### SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A195 Wilshire/Vermont Station	AWARD: 08/05/83
DESIGN SUBCONTRACTOR: Kober/Maguire	NTP: 08/12/83
PROJECT MANAGER(TSD/MRTC): Taylor/Stickel	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
-----				
STAGE I				
CONTROL SYSTEM SUBMITTAL	08/29/83	-	09/19/83	-
IN PROG. SUBMITTAL (60%)	02/07/84	-	02/10/84	-
PRE FINAL SUBMITTAL (85%)	05/22/84	11/30/84	(08/09/84)*	-192
FINAL SUBMITTAL (100%)	08/07/84	01/15/85	-	-160
BID DOCUMENTS	09/19/84	01/15/85	-	-118
STAGE II				
PRE-FINAL SUBMITTAL(85%)	05/22/84	11/30/84	-	-192
FINAL SUBMITTAL (100%)	09/21/84	02/01/85	-	-133
BID DOCUMENTS	11/19/84	02/01/85	-	- 74
TIME OF PERFORMANCE	08/11/84	02/01/85	-	-174
-----				

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

The Section Designer received and analyzed the seismic design criteria. Late issuance of this directive is expected to delay the structural drawings approximately six to eight weeks.

#### AREAS OF CONCERN:

Due to funding limitations Project Completion will be performed in two increments:

Increment I (Sign and Seal Civil, Utility and Structural Drawings) will be reflected in an upcoming schedule by the section designer (9/17/84(F)).

Increment II will include a negotiated time extension to the contract.

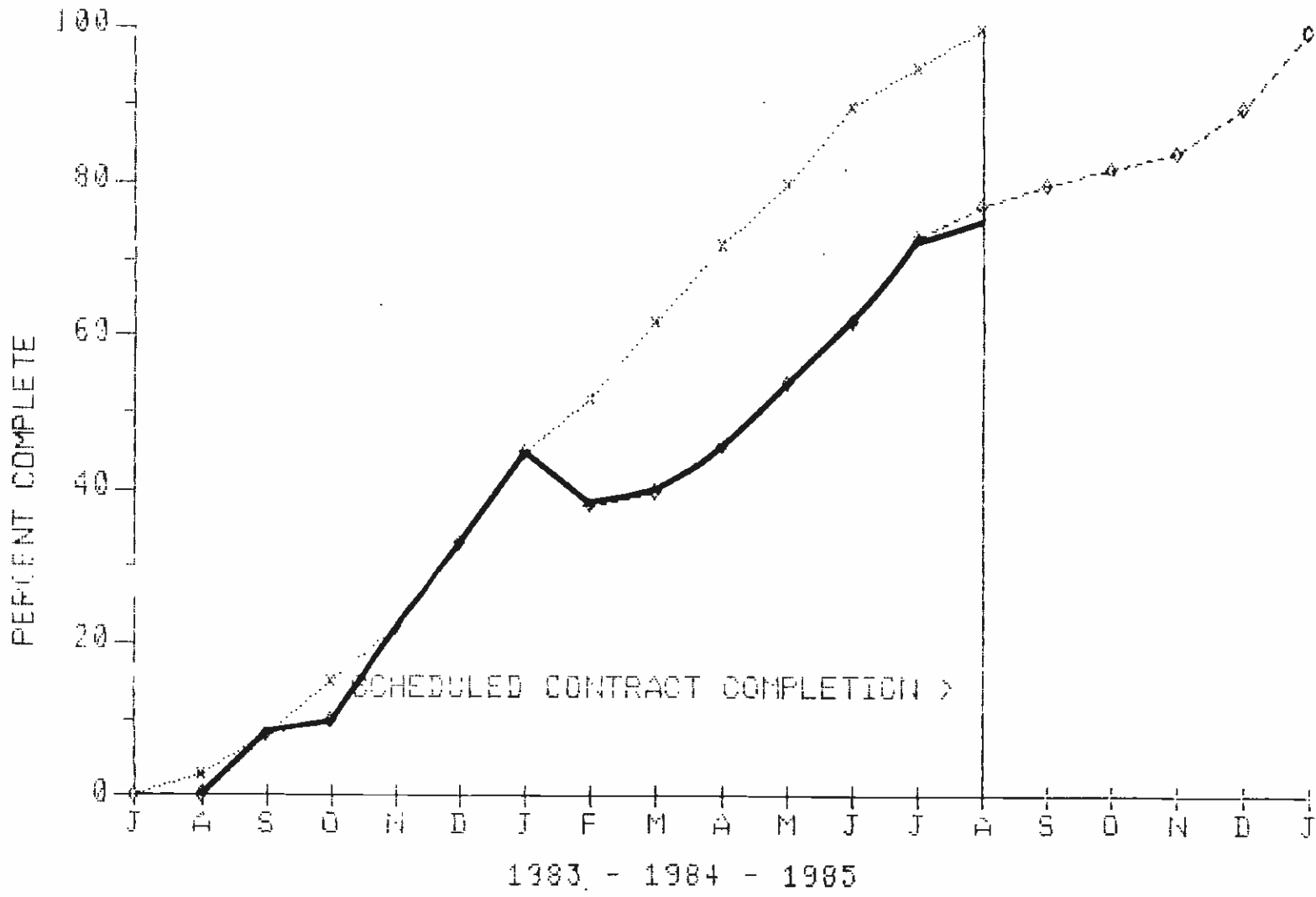
#### COMMENTS:

\*The Pre-Final Submittal made (8/9/84) did not include the structural drawings, design report, technical specifications and cost estimate. A resubmittal is expected (11/30/84) to include the seismic design criteria.

#### PERFORMANCE ASSESSMENT:

Project completion is forecast to complete 25 weeks beyond the Contract Time of Performance Date (8/11/84).

RTD METRO RAIL PROJECT  
 CONTRACT A195 - WILSHIRE/VERMONT  
 SECTION DESIGNER: SVERDRUP CORP.  
 STATUS AS OF AUGUST 1984



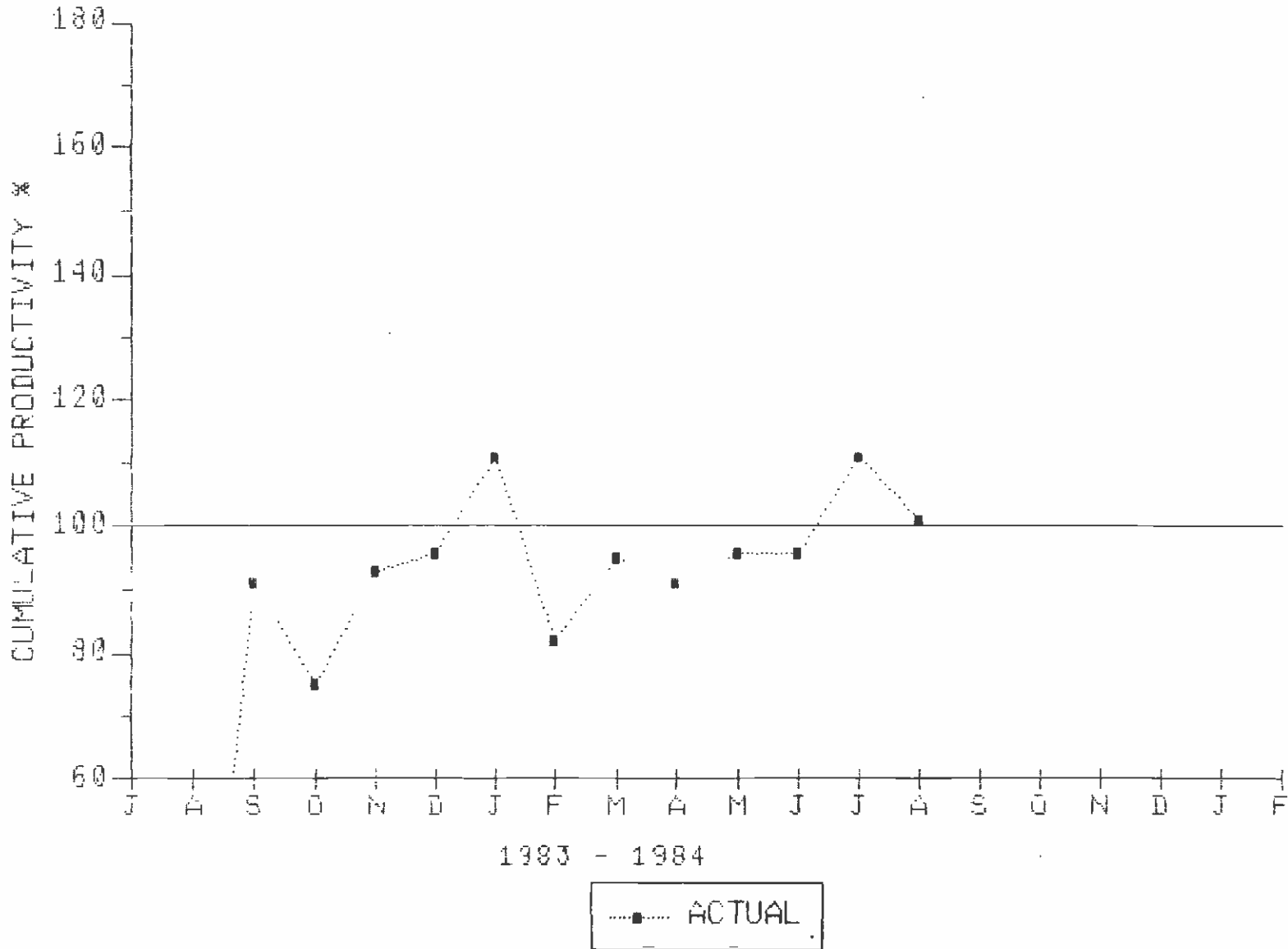
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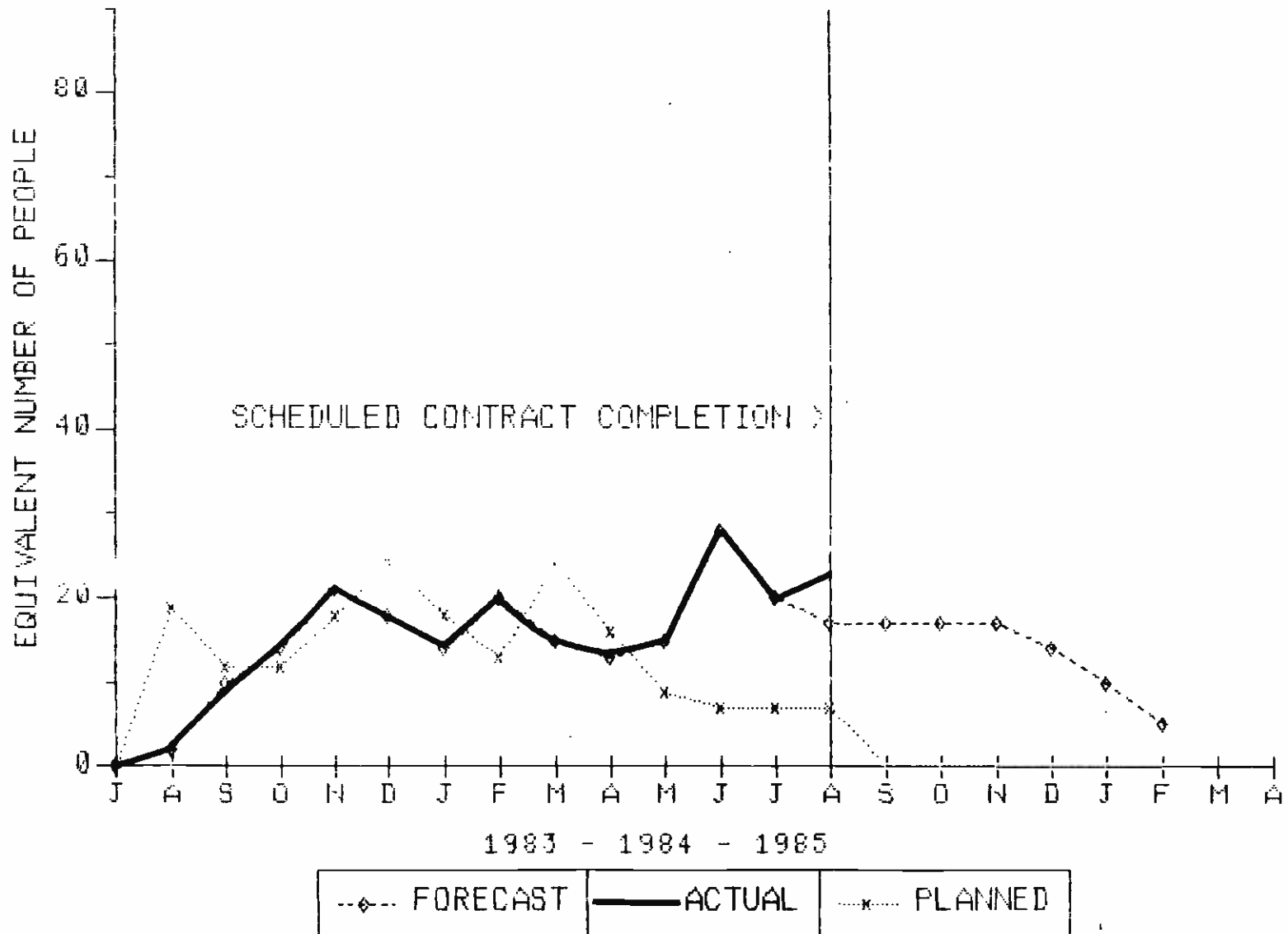
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RTD METRO RAIL PROJECT  
 CONTRACT A195 - WILSHIRE/VERMONT STATION  
 SECTION DESIGNER: KOBER/MAGUIRE  
 STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 CONTRACT A135 - WILSHIRE/VERMONT  
 SECTION DESIGNER: KOBER/MAGUIRE  
 STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A220 (A227, A237), WILSHIRE/NORMANDIE AND WILSHIRE/WESTERN STATIONS & LINE  
 DESIGN CONTRACTOR - TUDOR/PEREIRA

COMMENTS ON MRTIC PROGRESS REPORT

o NONE

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	35	34	34
INCREMENTAL PROGRESS	5	N/A	5
COST	4,677,000	5,237,000	1,658,000
MANHOURS	79,000	88,900	30,200
CONTRACT DURATION	24	24	10

$$\text{PRODUCTIVITY} = \frac{\% \text{ COMPLETE} \times \text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.34 \times 88,900}{30,200} \times 100 = 100\%$$

A SATISFACTORY PRODUCTIVITY CALCULATION.

$$\text{EARNED COSTS} = \frac{\% \text{ COMPLETE} \times \text{TOTAL COST FORECAST}}{\text{(CUMULATIVE)}} = .34 \times 5,237,000 = \$ 1,780,580$$

THIS CONTRACTOR, BEING AT 34% COMPLETE, HAS THEORETICALLY EARNED \$ 1,780,580.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,780,580}{1,658,000} = \$ 1.07$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ .07 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THIS IS A VERY FAVORABLE RATE.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,658,000 - 1,780,580 = <\$122,580>$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$ 122,580.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A220 (A227, A237), WILSHIRE/NORMANDIE AND WILSHIRE WESTERN STATIONS & LINE  
 DESIGN CONTRACTOR - TUDOR/PEREIRA

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \text{ACTUAL COSTS SPENT} \\ \text{(CUMULATIVE)} \end{array} = \frac{1,658,000}{5,237,000} = 32\%$$

THE CONTRACTOR HAS SPENT 32% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 34%.

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{5,237,000}{1.07} = \$4,894,392$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$4,894,392. THIS REPRESENTS A COST OVERRUN OF \$ 217,392 OR A 5% INCREASE.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{5,237,000 - 1,780,580}{5,237,000 - 1,658,000} = 97\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 97% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THIS CONTRACT IS PROGRESSING WELL AND, BASED ON THE ABOVE CALCULATIONS, WILL COME IN ON SCHEDULE AND WITHIN FORECAST.

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

Page 1 of 3

DESIGN CONTRACT: A220-Line Section, Normandie & Western Stations  
DESIGN SUBCONTRACTOR: Tudor/Pereira  
PROJECT MANAGER(TSD/MRTC): Bilco/Bejan  
AWARD 10/10/83  
NTP: 10/10/83  
DURATION: 730  
(CALENDAR DAYS)

<u>TUNNEL</u> MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	10/24/83	-	10/24/83	-
IN PROG. SUBMITTAL (60%)	10/08/84	-	06/01/84	-
PRE FINAL SUBMITTAL (85%)	04/08/85	10/11/84	-	+179
FINAL SUBMITTAL (100%)	10/07/85	11/30/84	-	+311
BID DOCUMENTS	07/01/85	07/01/85	-	-
TIME OF PERFORMANCE	10/07/85	06/03/85	-	+126
-----				
IN PROG. SUBMITTAL (60%)	-	-	-	-
PRE FINAL SUBMITTAL (85%)	-	-	-	-
FINAL SUBMITTAL (100%)	-	-	-	-
BID DOCUMENTS	-	-	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

- . The Wilshire/Normandie Station will have to be lowered to improve the vertical clearance for utilities.

AREAS OF CONCERN:

- . The design of the midline vent shaft is on hold. A study by MRTC to justify the function or elimination of the shaft has been completed and released to RTD.

COMMENTS:

- . The In Progress Submittal (60%) for Wilshire/Western Station, Stage I & II, was made on August 23, 1984.

PERFORMANCE ASSESSMENT:

- . The section designer overall is ahead of schedule. The intermediate submittals for all portions of this contract, however, are not being completed as scheduled. No slip in the overall contract is evident at this time.

08/31/84  
PC-BACKUP 14.2<12>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

Page 2 of 3

DESIGN CONTRACT: A220-Line Section,  
Normandie & Western Station  
DESIGN SUBCONTRACTOR: Tudor/Pereira  
PROJECT MANAGER(TSD/MRTC): Bilco/Bejau

AWARD 10/10/83  
NTP: 10/10/83  
DURATION: 730  
(CALENDAR DAYS)

WILSHIRE/NORMANDIE

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
STAGE I				
IN PROG. SUBMITTAL (60%)	10/08/84	06/29/84	-	+101
PRE FINAL SUBMITTAL (85%)	04/08/85	08/30/84	-	+221
FINAL SUBMITTAL (100%)	10/07/85	10/31/84	-	+341
BID DOCUMENTS	-	-	-	-
STAGE II				
IN PROG. SUBMITTAL (60%)	12/03/84	12/03/84	-	0
PRE FINAL SUBMITTAL (85%)	03/04/85	03/04/85	-	0
FINAL SUBMITTAL (100%)	-	-	-	-
BID DOCUMENTS	-	-	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

AREAS OF CONCERN:

See Comments on Page One of Three (Tunnel Section) of Contract A220

COMMENTS:

PERFORMANCE ASSESSMENT:

08/31/84  
PC-BACKUP 14.2<16>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

Page 3 of 3

DESIGN CONTRACT: A220- Line Section,  
Normandie & Western Station  
DESIGN SUBCONTRACTOR: Tudor/Pereira  
PROJECT MANAGER (TSD/MRTC): Bilco/Bejan

AWARD: 10/10/83  
NTP: 10/10/83  
DURATION: 730  
(CALENDER DAYS)

WILSHIRE/WESTERN

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
-----				
STAGE I				
IN PROG. SUBMITTAL (60%)	08/06/84	-	08/23/84	-
PRE FINAL SUBMITTAL (85%)	11/05/84	12/13/84	-	-40
FINAL SUBMITTAL (100%)	02/04/85	03/14/85	-	-
BID DOCUMENTS	-	-	-	-
STAGE II				
PROG. SUBMITTAL (60%)	08/06/84	-	08/23/84	-
PRE FINAL SUBMITTAL (85%)	11/05/84	02/14/85	-	-102
FINAL SUBMITTAL (100%)	-	-	-	-
BID DOCUMENTS	-	-	-	-
-----				

RESOLUTIONS OF LAST PERIODS PROBLEMS:

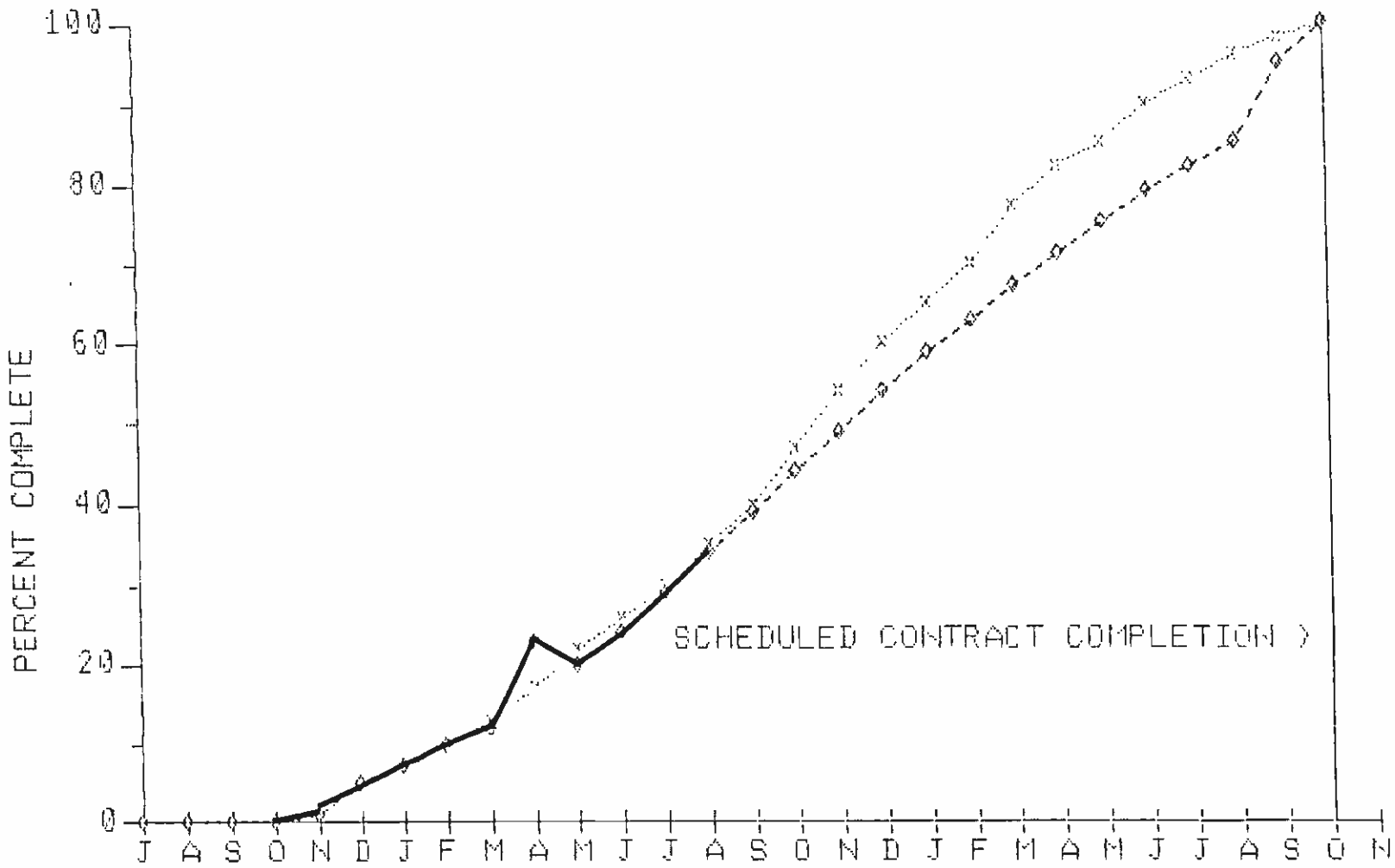
AREAS OF CONCERN:

See Comments on Page One (Tunnel Section) of Contract A220

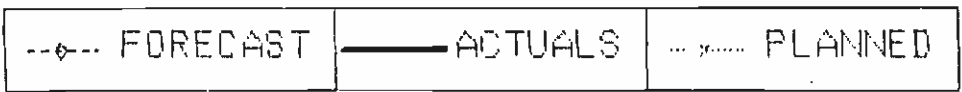
COMMENTS:

PERFORMANCE ASSESSMENT:

RTD METRO RAIL PROJECT  
 CONTRACT A220 - WILSHIRE/NORMANDIE & WILSHIRE/WESTERN  
 DESIGNER: TUDOR/PEREIRA  
 STATUS AS OF AUGUST 1984

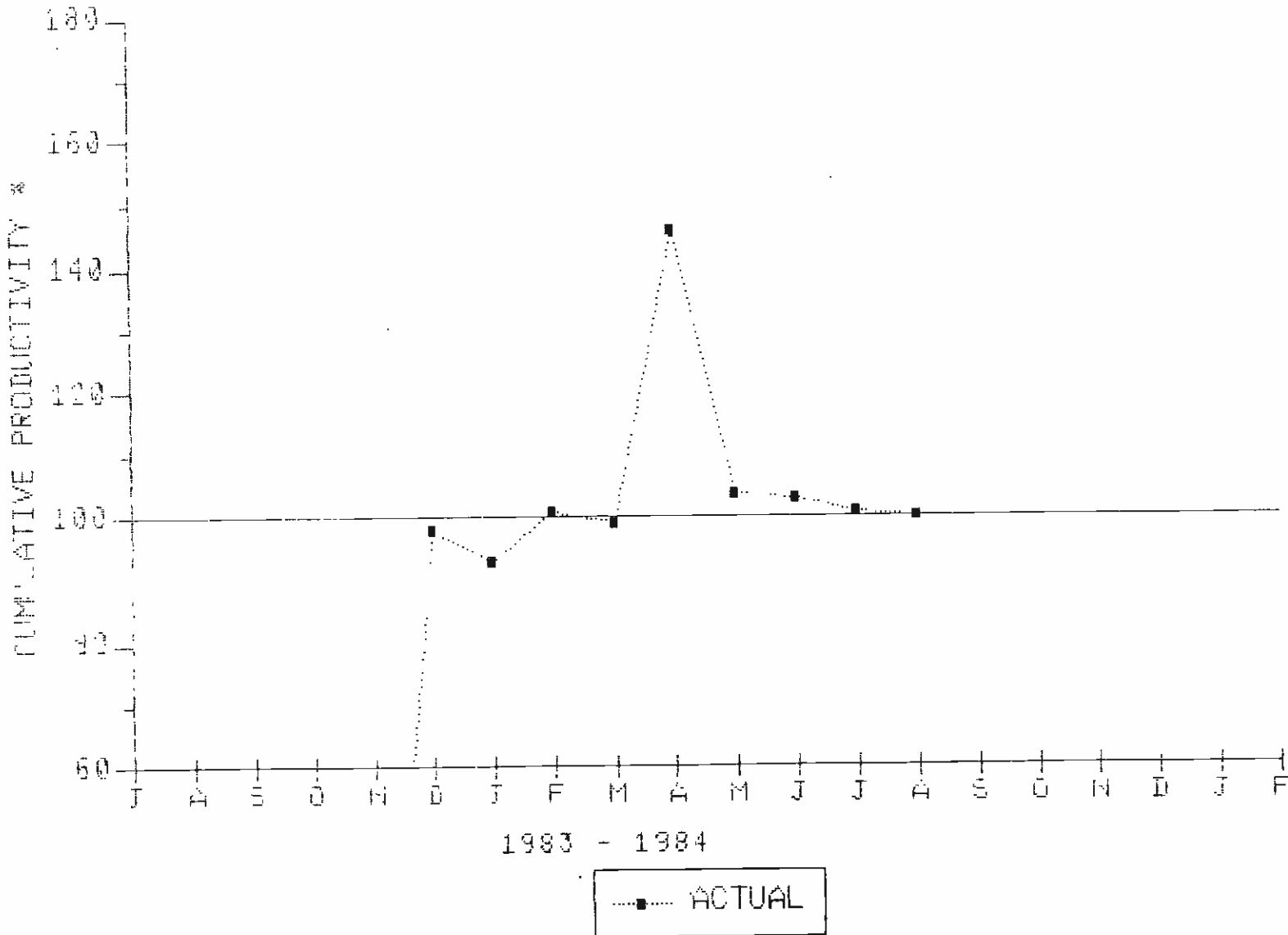


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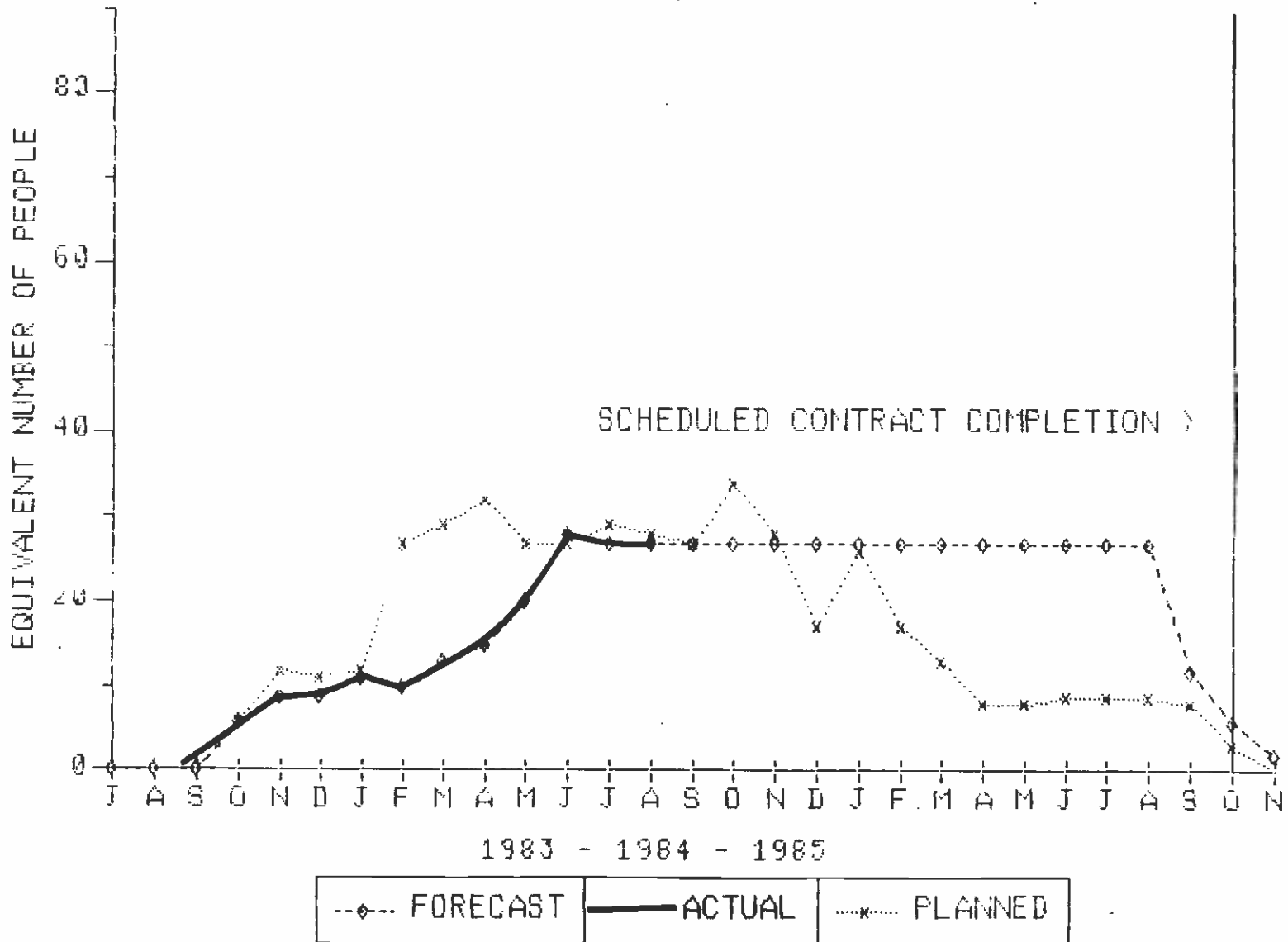




RTD METRO RAIL PROJECT  
 CONTRACT A220 - WILSHIRE/WESTERN & WILSHIRE/NORMANDIE  
 DESIGNER: TUDOR/PEREIRA  
 STATUS AS OF AUGUST, 1984



RTD METRO RAIL PROJECT  
 CONTRACT A220 - WILSHIRE/WESTERN & WILSHIRE/NORMANDIE  
 DESIGNER: TUDOR/PEREIRA  
 STATUS AS OF AUGUST 1984



RID METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A240, WILSHIRE/CRENSHAW STATION  
 DESIGN CONTRACTOR - TURNER/CHANG

COMMENTS ON MRTIC PROGRESS REPORT

- THE VARIANCE BETWEEN THE PLANNED BUDGET AND THE PRESENT FORECAST OF \$298,000 IS DUE TO ECO'S THAT HAVE BEEN NEGOTIATED AND SOME THAT ARE STILL PENDING APPROVAL OR NEGOTIATIONS. THIS MRTIC REPORT DOES NOTE THAT THE MECHANICAL AND PLUMBING ARE BEHIND SCHEDULE BUT THE CAUSE IS UNSTATED, AS IS THE PLAN FOR RECOVERY.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	57	41	41
INCREMENTAL PROGRESS	12	9	9
COST	2,395,000	*2,693,000	1,164,000
MANHOURS	44,600	53,800	21,900
CONTRACT DURATION	12	15	7

\*THIS NUMBER IS NOT REFLECTED IN THE MONTHLY PROGRESS REPORT BUT IS IN THE AUGUST TREND REPORT; DUE TO TIME CONSTRAINTS IT WAS NOT INCORPORATED IN THE MONTHLY REPORT.

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MRS. SPENT}} = \frac{.41 \times 53,800}{21,900} \times 100 = 101\%$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .41 \times 2,693,000 = \$ 1,104,130$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 41% COMPLETE, HAS THEORETICALLY EARNED \$1,104,130.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,104,130}{1,164,000} = \$ .95$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$.95 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,164,000 - 1,104,130 = \$ 59,870$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$ 59,900.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A240, WILSHIRE/CRENSHAW STATION  
 DESIGN CONTRACTOR - TURNER/CHANG

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \text{ACTUAL COSTS SPENT} \\ \text{(CUMULATIVE)} \end{array} = \frac{1,164,000}{2,693,000} = 43\%$$

THE CONTRACTOR HAS SPENT 43% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 41%.

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,693,000}{.95} = \$2,834,736$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,835,000. THIS REPRESENTS A COST OVERRUN OF \$141,700 OR AN 5% INCREASE WHEN COMPARED TO PRESENT FORECAST, BUT WHEN COMPARED TO THE PLANNED BUDGET OF \$2,395,000, THERE IS A SIGNIFICANT OVERRUN OF \$440,000, OR 18%.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,693,000 - 1,104,000}{2,693,000 - 1,164,000} = 104\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 104% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST. THIS IS A REASONABLE TCPI.

CONCLUSION

THIS CONTRACT IS SCHEDULED TO BE COMPLETED ONLY TO THE 85% LEVEL. BASED ON PRESENT FORECAST FOR COST TO COMPLETE, THEY WILL OVERRUN THE PLANNED BUDGET BY \$35,000. THEY ARE PRESENTLY OVER STAFFED AND FORECAST AN OVER STAFF STATUS OF AN AVERAGE OF 5 PEOPLE FOR THE REMAINDER OF THE JOB. LAST MONTH THE 60% SUBMITTALS WERE RESCHEDULED DUE TO UNSATISFACTORY WORK AND OVERTIME, PAID BY STRAIGHT TIME, HAD TO BE AUTHORIZED IN ORDER TO MEET THE NEW SCHEDULE DATE.

08/31/84  
PC-BACKUP 14.2<17>

### SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A240 Wilshire/Crenshaw Station	AWARD: 01/18/84
DESIGN SUBCONTRACTOR: Turner/Chang	NTP: 01/27/84
PROJECT MANAGER(TSD/MRTC): Bilco/Tallett	DURATION: 366 (CALENDAR DAYS)

STAGE I MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	02/16/84	-	03/12/84	-
IN PROG. SUBMITTAL (60%)	07/26/84	09/13/84	-	-49
PRE FINAL SUBMITTAL (85%)	11/01/84	11/15/84	-	-14
FINAL SUBMITTAL (100%)	01/14/85	01/14/85	-	0
BID DOCUMENTS	02/14/85	02/14/85	-	0
TIME OF PERFORMANCE	01/26/85	01/14/85	-	+12

#### STAGE II

IN PROG. SUBMITTAL (60%)	07/26/84	09/13/84	-	-59
PRE FINAL SUBMITTAL (85%)	11/01/84	11/15/84	-	-14
FINAL SUBMITTAL (100%)	01/14/85	01/14/85	-	0
BID DOCUMENTS	-	-	-	-

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

- . The recovery plan implemented has been successful and an improvement in progress over the past two months has been evident.

#### AREAS OF CONCERN:

- . Several disciplines remain behind schedule. Electrical & Mechanical have reported late finish dates of May 3, 1985 (Design Summary Progress Report - August 1984). This date has not been reflected on the forecast above.

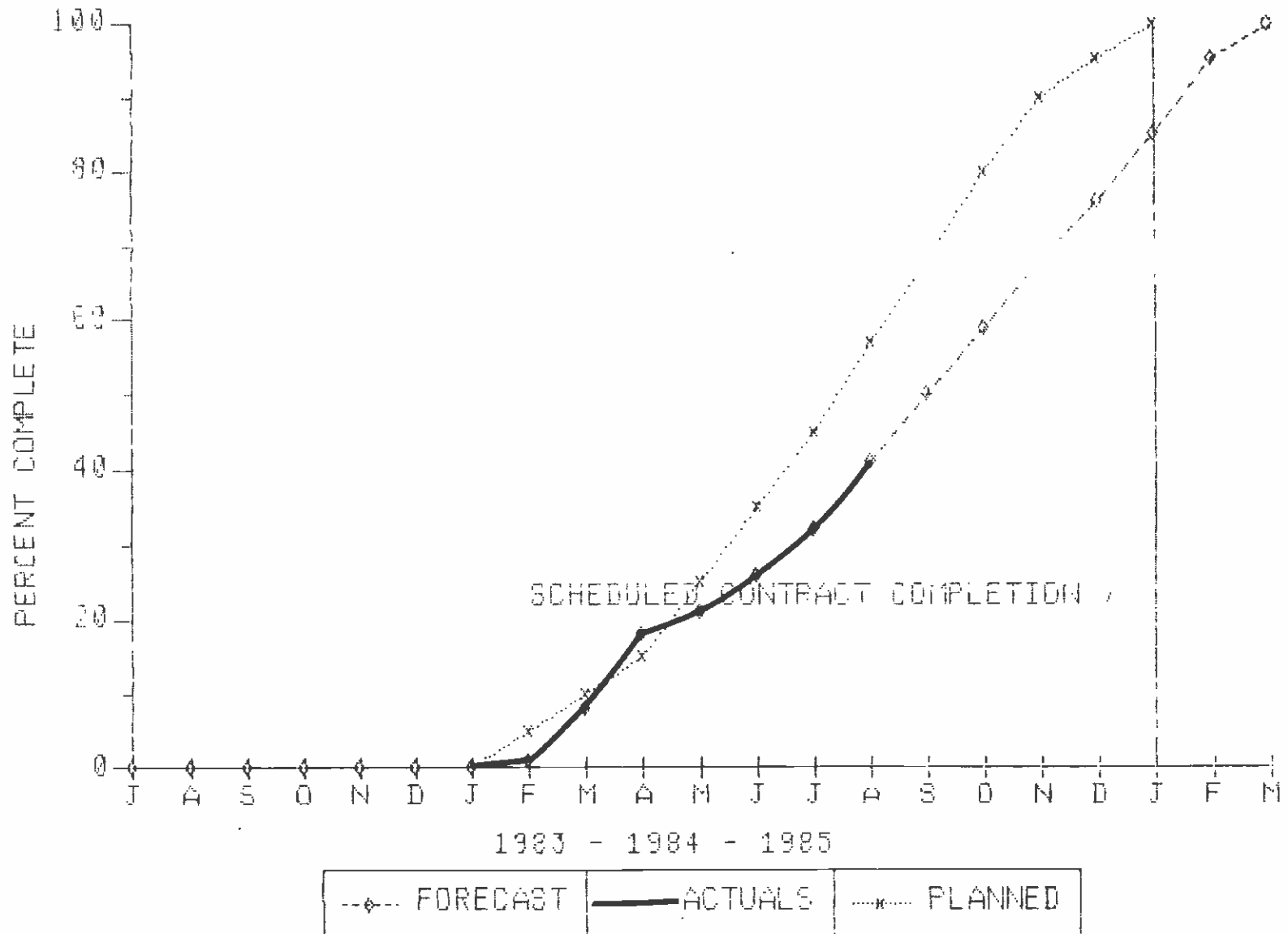
#### COMMENTS

- . The In-Progress Submittal was forecast to September 13, 1984 as a result of a review in which the section designer's documents were found to be inadequate.
- . The MRTC Project Progress Report (August) forecast 100% completion to be in March 1985, this isn't indicated in the milestones above.

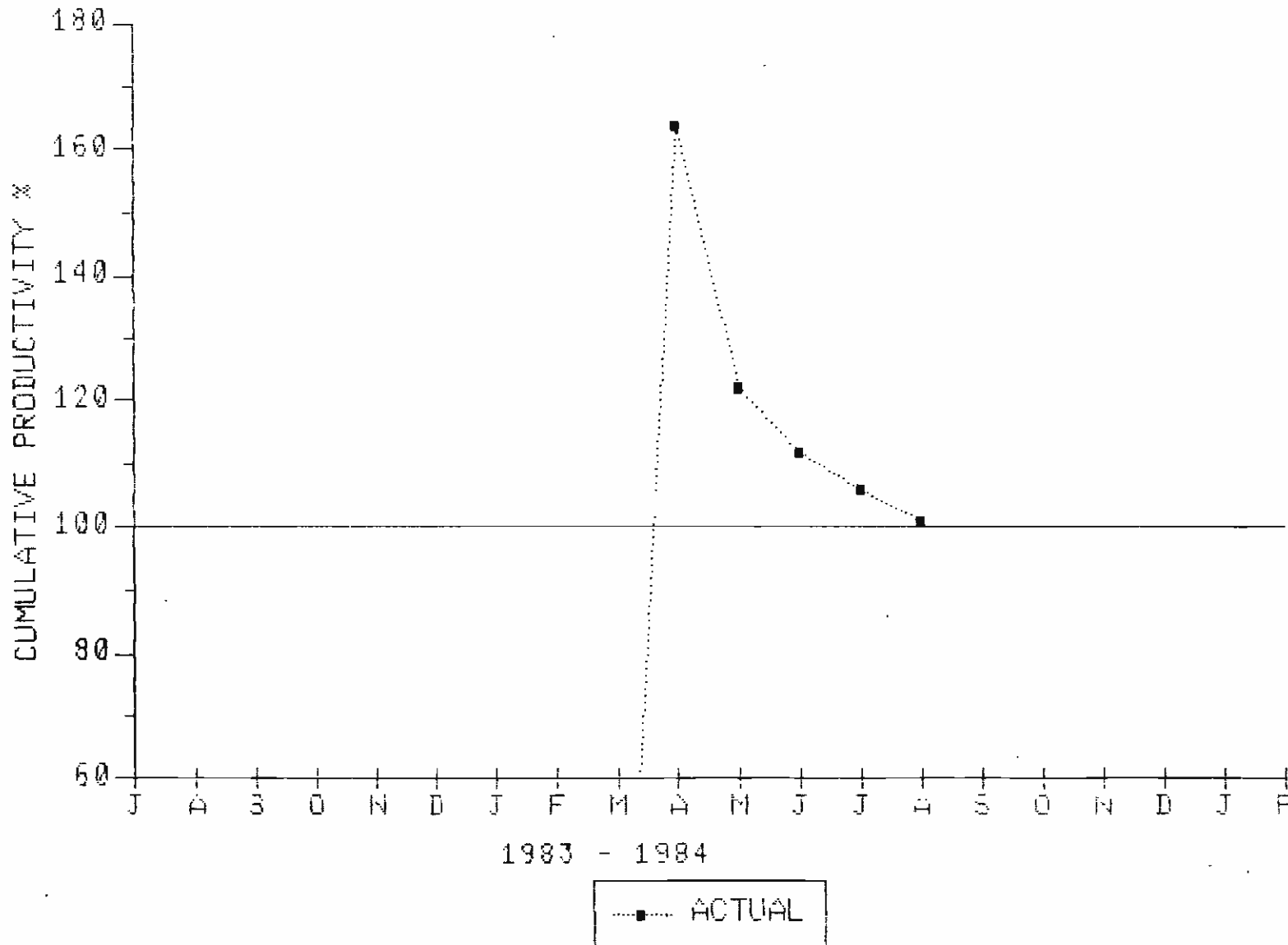
#### PERFORMANCE ASSESSMENT:

- . The section designer is seven (7) weeks behind schedule. A recovery program has been implemented.

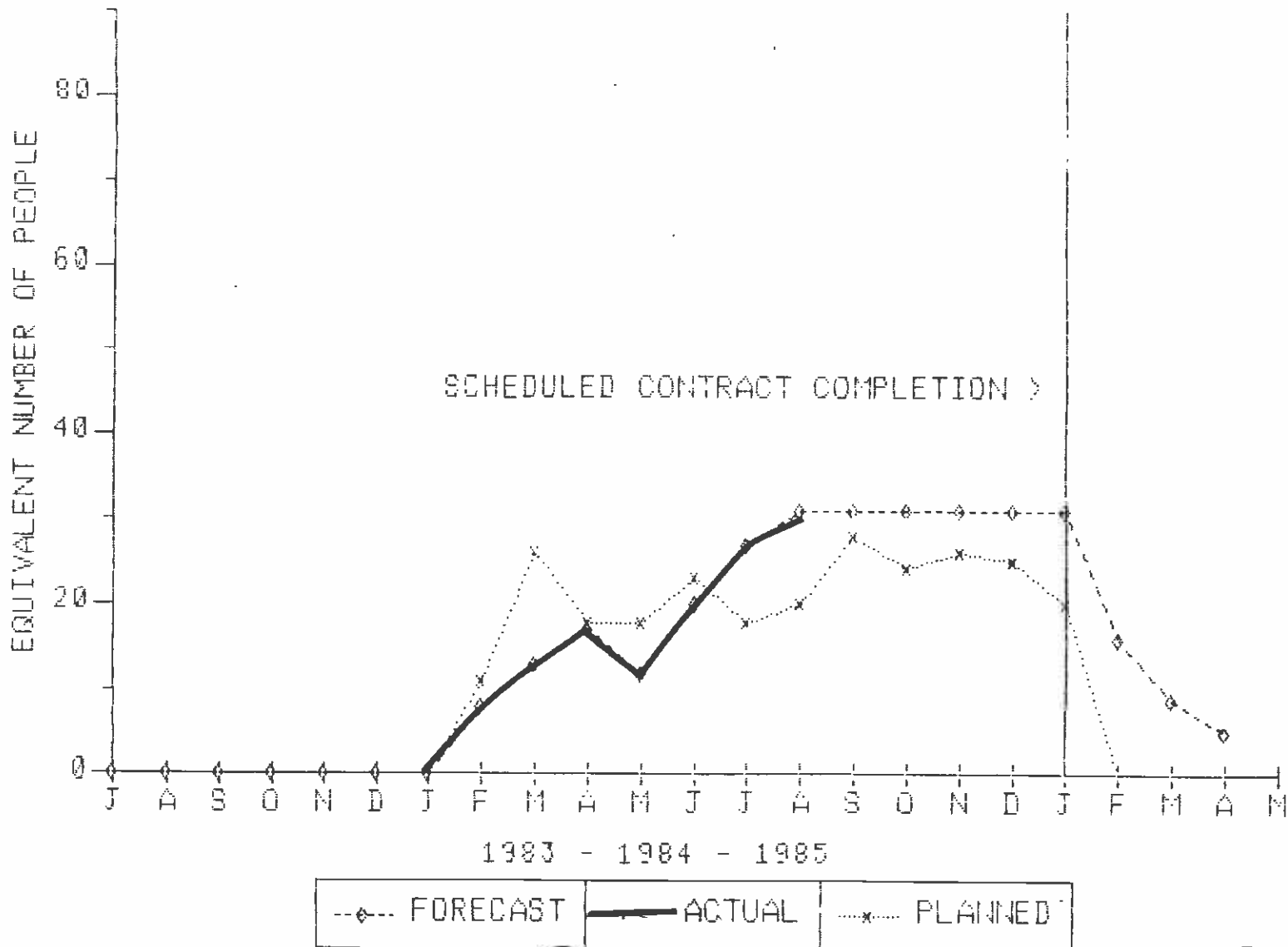
RTD METRO RAIL PROJECT  
 CONTRACT A240 - WILSHIRE/CRENSHAW  
 SECTION DESIGNER: TURNER/CHANG  
 STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
CONTRACT A240 - WILSHIRE/CRENSHAW STATION  
SECTION DESIGNER: TURNER/CHANG  
STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 CONTRACT A240 - WILSHIRE/CRENSHAW STATION  
 SECTION DESIGNER: TURNER/CHANG  
 STATUS AS OF AUGUST 1984





RTD METRO RAIL PROJECT  
SECTION DESIGNER EVALUATION  
AUGUST 1984  
COST ANALYSIS

CONTRACT # - A245, WILSHIRE/LABREA STATION  
DESIGN CONTRACTOR - STV ENGINEERS/LYON ASSOCIATES

COMMENTS ON MRTIC PROGRESS REPORT

- o TOTAL MONTHLY ACTUAL AND FORECASTED COSTS AND MANHOURS DO NOT AGREE WITH THE TOTAL AMOUNT IN THEIR RESPECTIVE CUMULATIVE COLUMNS.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	90	69	70
INCREMENTAL PROGRESS	10	3	4
COST	1,609,000	1,955,000	1,022,000
MANHOURS	32,200	41,500	21,300
CONTRACT DURATION	13	17	11

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.70 \times 41,500}{21,300} \times 100 = 136\%$$

(CUMULATIVE)

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .70 \times 1,955,000 = \$1,368,500$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 70% COMPLETE, HAS THEORETICALLY EARNED \$1,368,500.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,368,500}{1,022,000} = \$ 1.34$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.34 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,022,000 - 1,368,500 = \$ <346,500>$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$346,500.

**MTA LIBRAR**

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A245, WILSHIRE/LABREA STATION  
 DESIGN CONTRACTOR - STV ENGINEERS/LYON ASSOCIATES

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{1,022,000}{1,955,000} = 52\%$$

THE CONTRACTOR HAS SPENT 52% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 70%.

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{1,955,000}{1.34} = \$1,458,955$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$1,458,955. THIS REPRESENTS A COST UNDERRUN OF \$150,045 OR A 9% DECREASE.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{1,955,000 - 1,368,500}{1,955,000 - 1,022,000} = 63\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 63% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THIS CONTRACT IS MAINTAINING HIGH PRODUCTIVITY, A HIGH COST PERFORMANCE INDEX, AND A PROJECTED COST UNDERRUN, YET IS BEHIND IN PROGRESS, INDICATING A NEED FOR A RE-EVALUATION OF THE PROGRESS PLAN.

MANPOWER STAFFING CONTINUES TO FALL BELOW THE PLAN AND FORECAST; HOWEVER, IT SEEMS TO HAVE NO ADVERSE AFFECT UPON PROGRESS.

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A245 Wilshire/La Brea Station  
DESIGN SUBCONTRACTOR: STV/Lyon  
PROJECT MANAGER(TSD/MRTC): Streitman/Hodges

AWARD: 10/17/83  
NTP: 10/10/83  
DURATION: 365  
(CALENDAR DAYS)

STAGE I

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	10/24/83	-	11/16/83	-
IN PROG. SUBMITTAL (60%)	04/16/84	-	05/07/84	-
PRE FINAL SUBMITTAL (85%)	07/07/84	09/17/84	-	-72
FINAL SUBMITTAL (100%)	10/16/84	10/15/84	-	+1
BID DOCUMENTS	11/16/84	11/16/84	-	0
TIME OF PERFORMANCE	10/09/84	10/15/84	-	-6
STAGE II				
IN PROG. SUBMITTAL (60%)	04/16/84	-	05/07/84	-
PRE FINAL SUBMITTAL (85%)	07/07/84	09/17/84	-	-72
FINAL SUBMITTAL (100%)	10/16/84	10/16/84	-	0
BID DOCUMENTS	11/16/84	11/16/84	-	0

RESOLUTIONS OF LAST PERIODS PROBLEMS:

- . Last months problems have not been resolved (see below).
- . Held meeting on seismic design and answered questions from consultant.

AREAS OF CONCERN:

- . Pre-Final Submittal (85%) has slipped to Sept. 17, 1984.
- . Decision to lower the station to clear utilities has not been made.
- . Location of ventilation grates needs to be settled.
- . Need graphics and signage input.

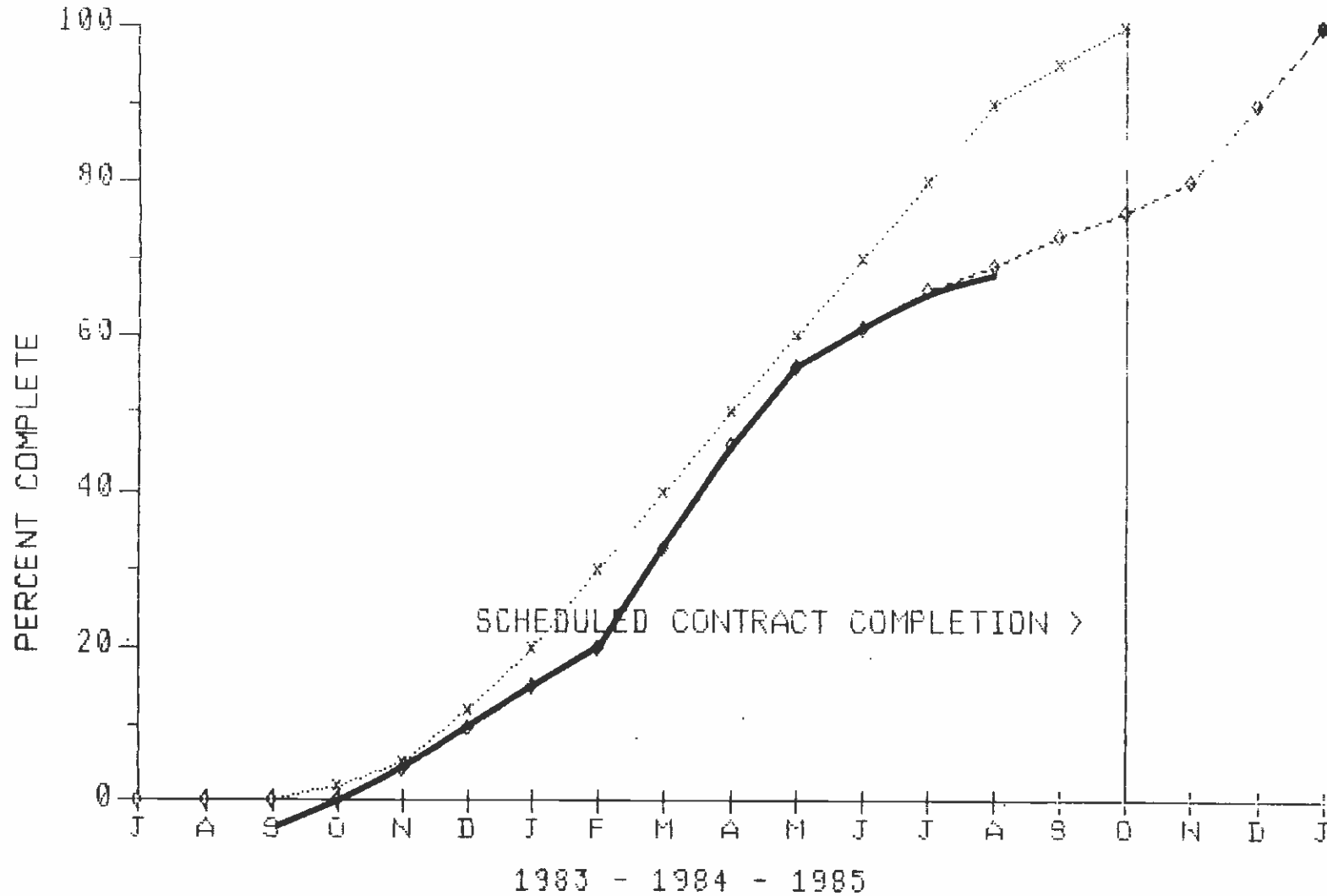
COMMENTS:

- . The forecast indicates the contract will be completed on schedule. Based on the section designers past monthly progress and the time between the Pre-Final and Final Submittals, this contract will not be completed as scheduled. The MRTC Project Progress Report (August) indicated 100% completion will be in January 1985.

PERFORMANCE ASSESSMENT:

- . The section designer is ten (10) weeks behind schedule. the delay is due to various contract changes during the 60% submittal review period.

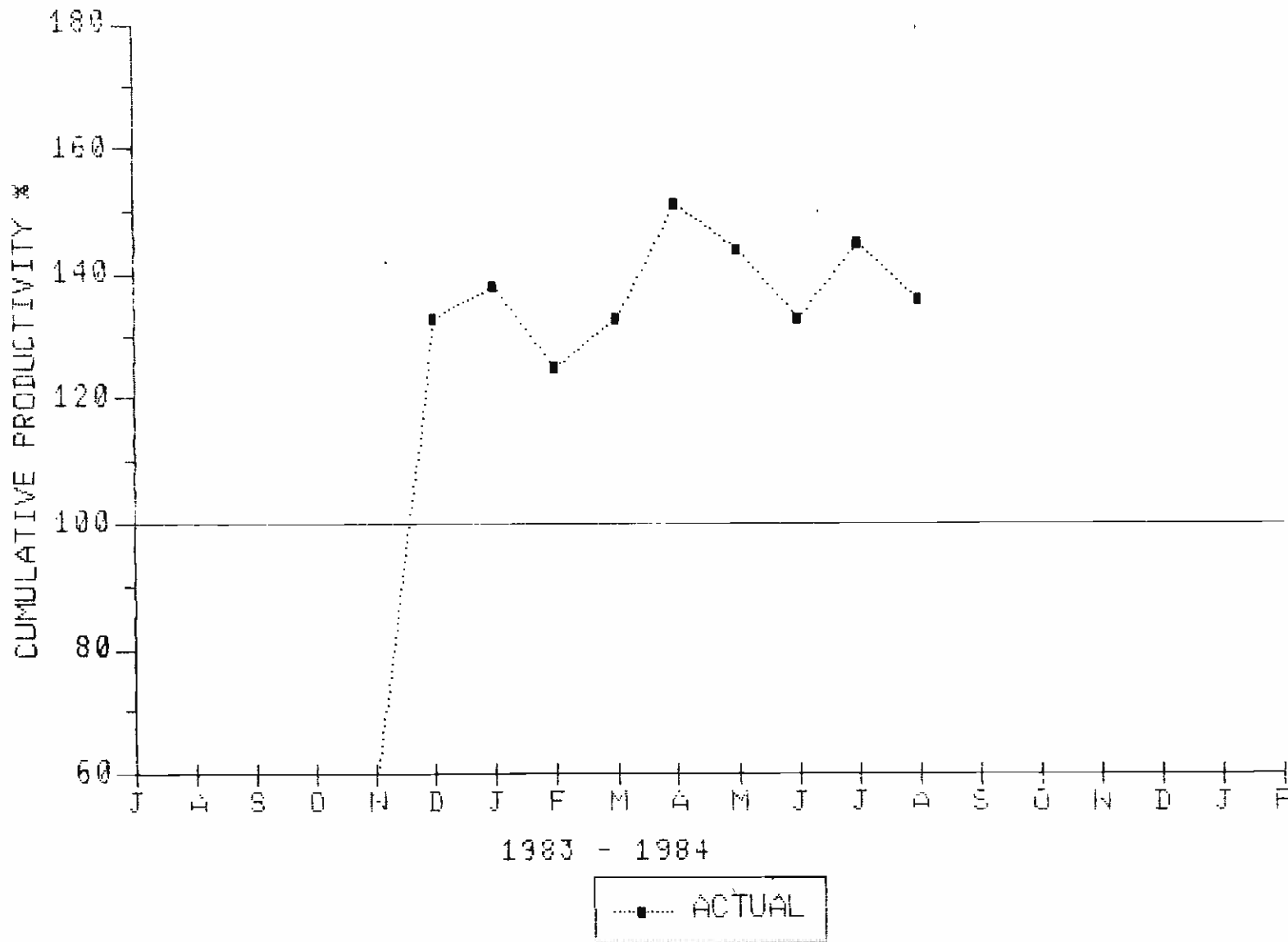
RTD METRO RAIL PROJECT  
 CONTRACT A245 - WILSHIRE/LA BREA  
 SECTION DESIGNER: STV/LYON  
 STATUS AS OF AUGUST 1984



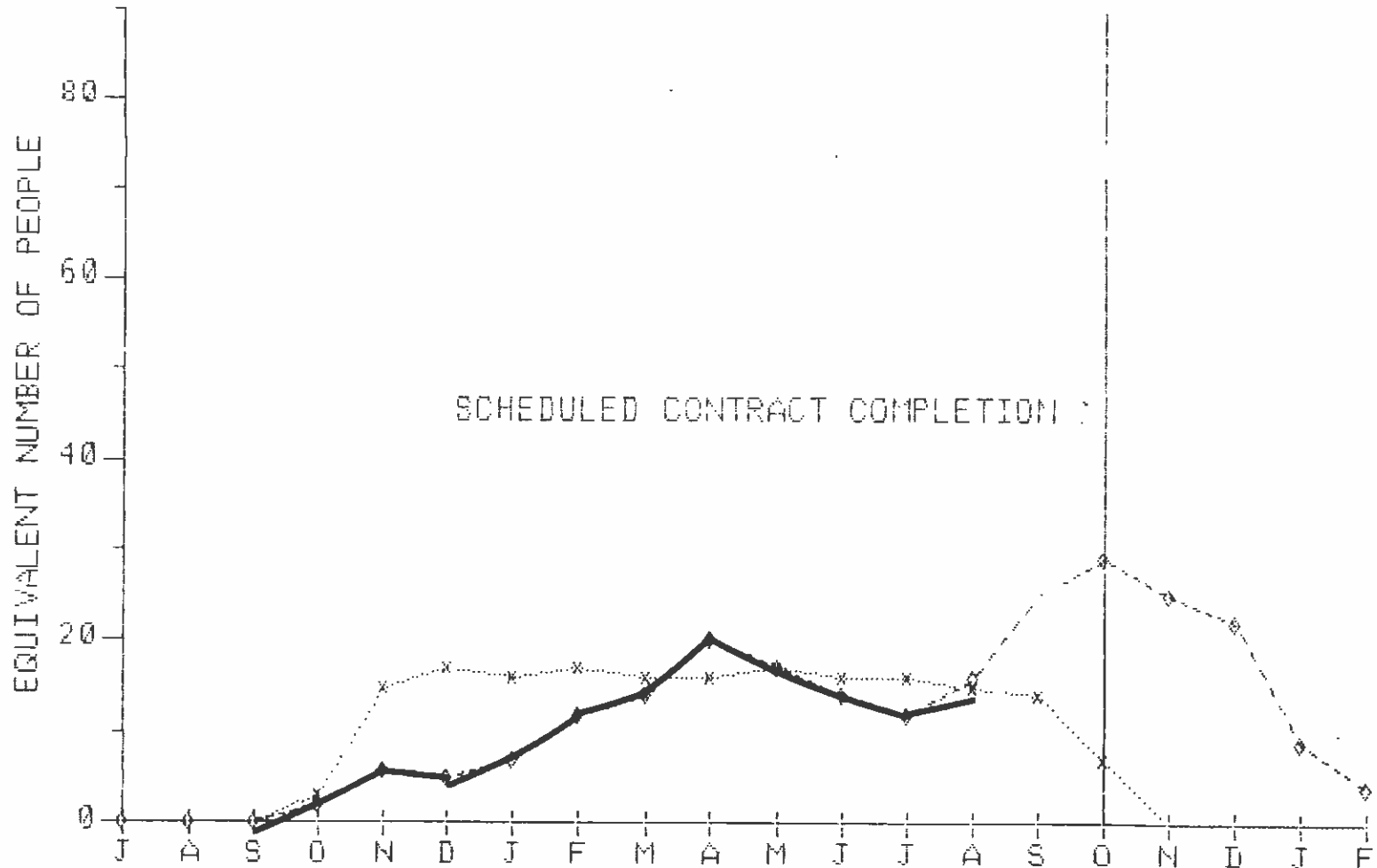
--◇-- FORECAST
— ACTUALS
-x- PLANNED

RTD METRO RAIL PROJECT  
 CONTRACT A245 - WILSHIRE/LA BREA  
 SECTION DESIGNER: STV/LYON  
 STATUS AS OF AUGUST 1984

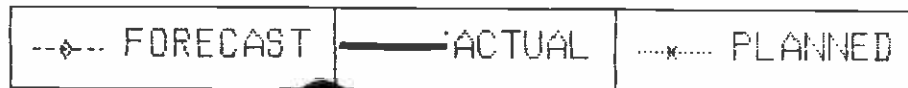
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RTD METRO RAIL PROJECT  
 CONTRACT A245 - WILSHIRE/LA BREA  
 SECTION DESIGNER: STV/LYON  
 STATUS AS OF AUGUST 1984



1983 - 1984 - 1985



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RTD METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A250, WILSHIRE/FAIRFAX STATION & LINE  
 DESIGN CONTRACTOR - BECHTEL

COMMENTS ON MRTIC PROGRESS REPORT

- o THE ACTUAL PROGRESS PERCENT FOR APRIL HAS BEEN CHANGED FROM 6% TO 5%

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	27	23	25
INCREMENTAL PROGRESS	7	5	7
COST	4,196,000	4,387,000	795,000
MANHOURS	77,000	85,800	17,200
CONTRACT DURATION	16	18	6

$$\begin{aligned} \text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \text{TOTAL MH FORECAST} &= .25 \times 85,800 \\ \text{(CUMULATIVE)} &= \frac{\text{MTRS. SPENT}}{17,200} \times 100 = 125\% \end{aligned}$$

PRODUCTIVITY BY THE CONSULTANT CONTINUES AT A HIGH LEVEL

$$\begin{aligned} \text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} &= .25 \times 4,387,000 = \$ 1,096,750 \\ \text{(CUMULATIVE)} & \end{aligned}$$

THIS CONTRACTOR, BEING AT 25% COMPLETE, HAS THEORETICALLY EARNED \$1,096,750.

$$\begin{aligned} \text{COST PERFORMANCE INDEX} = \text{EARNED COSTS} &= \frac{1,096,750}{795,000} = \$ 1.38 \\ \text{(CUMULATIVE) - CPI} & \end{aligned}$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.38 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THIS IS A VERY HIGH CPI.

$$\begin{aligned} \text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} &= 795,000 - 1,096,750 = \$ <301,750> \\ \text{(CUMULATIVE)} & \end{aligned}$$

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$301,750.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A250, WILSHIRE/FAIRFAX STATION & LINE  
 DESIGN CONTRACTOR - BECHTEL

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \text{ACTUAL COSTS SPENT} \\ \text{(CUMULATIVE)} \end{array} = \frac{795,000}{\text{FORECAST AT COMPLETION} = 4,387,000} = 18\%$$

THE CONTRACTOR HAS SPENT 18% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 25%.

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION} = 4,387,000}{\text{COST PERFORMANCE INDEX} = 1.38} = \$3,178,986$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$3,178,986. THIS REPRESENTS A COST UNDERRUN OF \$1,017,014 OR A 24% DECREASE.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS} = 4,387,000 - 1,096,750}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT} = 4,387,000 - 795,000} = 92\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 95% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THE CONSULTANT'S COST PERFORMANCE HAS BEEN STEADILY INCREASING FOR 2 MONTHS TO ITS PRESENT HIGH LEVEL. THE MRTIC FORECAST INDICATES THAT THIS TREND MAY BE REVERSED IN THE NEXT FEW MONTHS AS THE GAP BETWEEN ACTUAL AND PLANNED PROGRESS WIDENS.



SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A250 Line Section, Wilshire/Fairfax Station	AWARD: 12/28/83
DESIGN SUBCONTRACTOR: Bechtel	NTP: 03/12/84
PROJECT MANAGER(TSD/MRTC): Streitman/Cooper	DURATION: 462 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
STAGE I				
CONTROL SYSTEM SUBMITTAL	03/26/84	-	04/12/84	-
IN PROG. SUBMITTAL (60%)	11/12/84	11/12/84	-	0
PRE-FINAL SUBMITTAL (85%)	03/04/85	03/04/85	-	0
FINAL SUBMITTAL (100%)	05/06/85	05/06/85	-	0
BID DOCUMENTS	06/17/85	06/17/85	-	0
TIME OF PERFORMANCE	06/17/85	06/17/85	-	0
STAGE II				
PROG. SUBMITTAL (60%)	11/12/84	11/12/84	-	0
PRE FINAL SUBMITTAL (85%)	03/04/85	03/04/85	-	0
FINAL SUBMITTAL (100%)	05/06/85	05/06/85	-	0
BID DOCUMENTS	06/17/85	06/17/85	-	0

RESOLUTIONS OF LAST PERIODS PROBLEMS:

- . No areas of concern were reported last period.

AREAS OF CONCERN:

- . No areas of concern exist at this time.

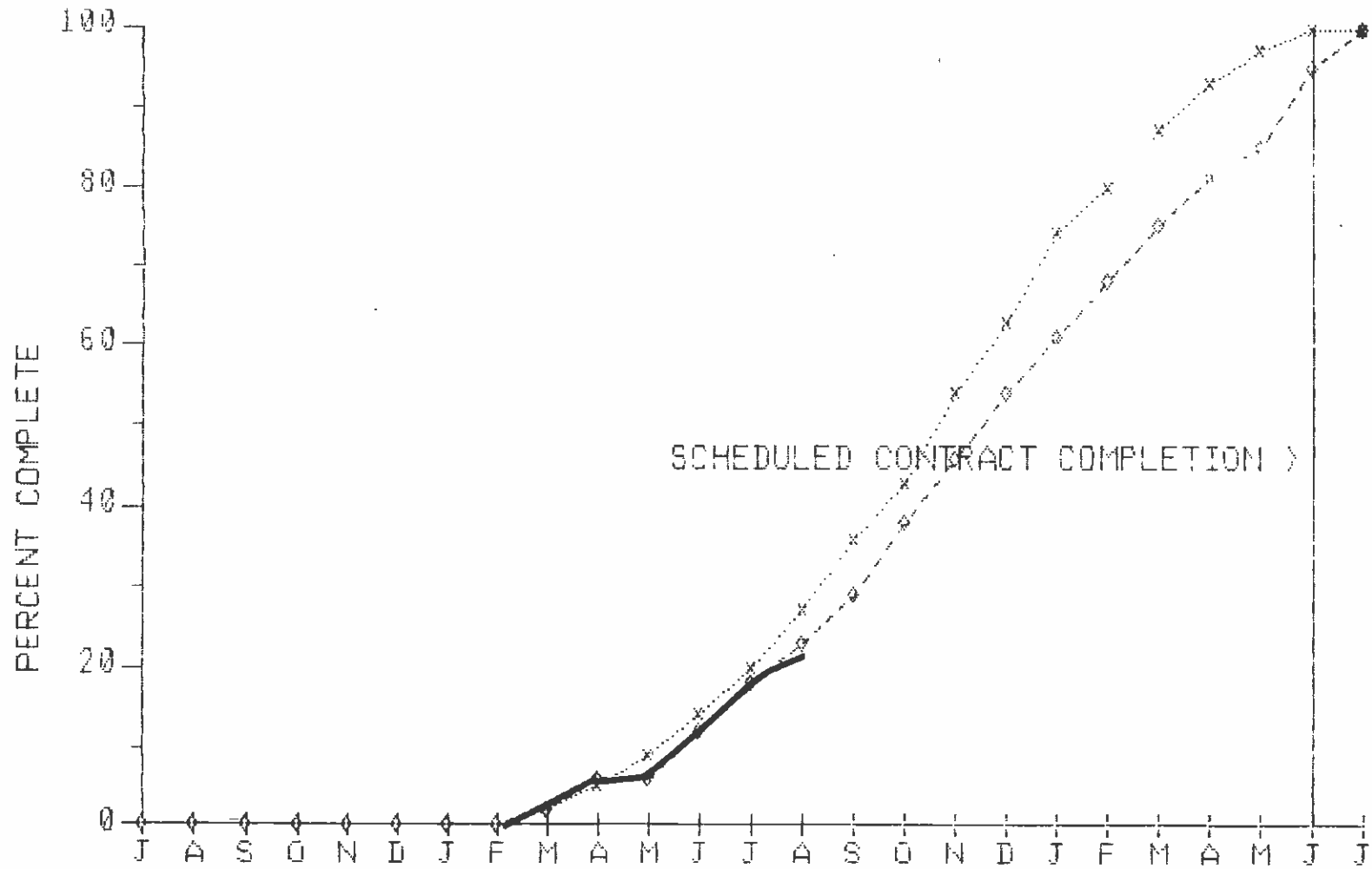
COMMENTS:

- . The section designer has been directed to proceed with the test pit design.
- . Request to incorporate seismic criteria into the contract was presented to the section designer.

PERFORMANCE ASSESSMENT:

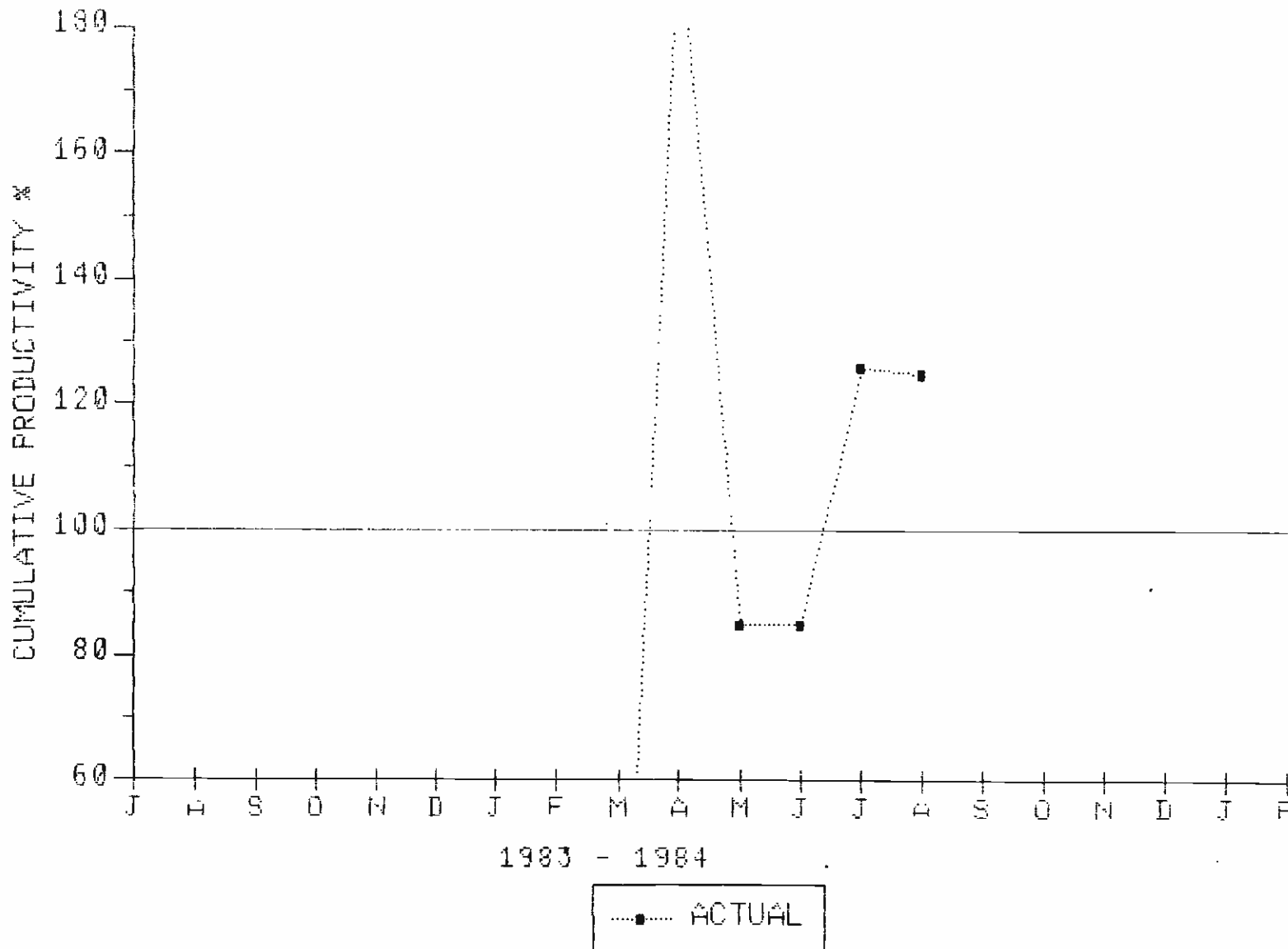
- . The section designer is proceeding on schedule.

RTD METRO RAIL PROJECT  
 CONTRACT A250 - WILSHIRE/FAIRFAX LINE  
 SECTION DESIGNER: BECHTEL  
 STATUS AS OF AUGUST 1984

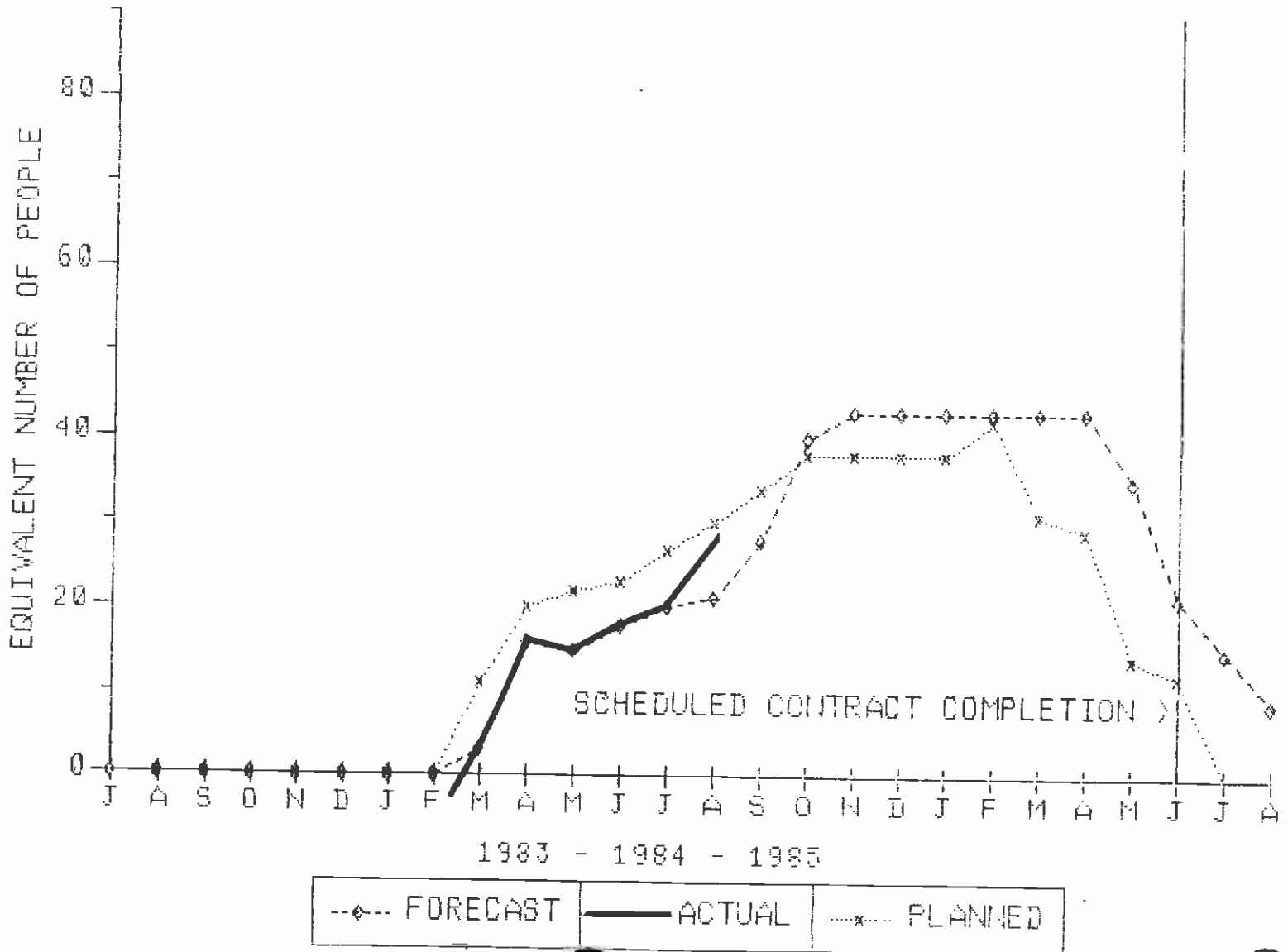


--◇-- FORECAST
— ACTUALS
-x- PLANNED

RTD METRO RAIL PROJECT  
CONTRACT A250 - WILSHIRE/FAIRFAX LINE  
SECTION DESIGNER: BECHTEL  
STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 CONTRACT A250 - WILSHIRE/FAIRFAX LINE  
 SECTION DESIGNER: BECHTEL  
 STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A275, FAIRFAX/BEVERLY STATION  
 DESIGN CONTRACTOR - WILSHIRE DESIGN ASSOCIATES

COMMENTS ON MRTIC PROGRESS REPORT

- o TOTAL MONTHLY ACTUAL AND FORECASTED COSTS AND MANHOURS DO NOT AGREE WITH THE TOTAL AMOUNT LISTED IN THEIR RESPECTIVE CUMULATIVE COLUMNS.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	69	50	50
INCREMENTAL PROGRESS	9	7	7
COST	2,275,000	2,705,000	1,448,000
MANHOURS	41,300	53,300	27,500
CONTRACT DURATION	12	16	8

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.50 \times 53,300}{27,500} \times 100 = 97\%$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .50 \times 2,705,000 = \$ 1,352,500$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 50% COMPLETE, HAS THEORETICALLY EARNED \$1,352,500.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,352,500}{1,448,000} = \$ .93$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING .93 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,448,000 - 1,352,500 = \$ 95,500$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$95,500.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A275, FAIRFAX/BEVERLY STATION  
DESIGN CONTRACTOR - WILSHIRE DESIGN ASSOCIATES

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{1,448,000}{2,705,000} = 54\%$$

THE CONTRACTOR HAS SPENT 54% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 50%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,705,000}{.93} = \$2,908,602$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,908,602. THIS REPRESENTS A COST OVERRUN OF \$633,602 OR A 28% INCREASE.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,705,000 - 1,352,500}{2,705,000 - 1,448,000} = 108\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 108% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

PRODUCTIVITY AND THE COST PERFORMANCE INDEX HAVE DECLINED SUBSTANTIALLY THIS MONTH, AND A COST OVERRUN IS PROJECTED. HOWEVER, FOR THE PAST TWO MONTHS MANPOWER HAS BEEN HIGHER THAN PLANNED, AND IT IS FORECAST TO REMAIN SO THROUGH THE END OF THE CONTRACT. THIS MANPOWER LOADING SEEMS TO HAVE BEEN BENEFICIAL THIS FAR SINCE THE CONSULTANT IS NOW IN LINE WITH FORECASTED PROGRESS.

08/31/84  
PC-BACKUP 14.2<17>

### SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A275 Fairfax/Beverly Station	AWARD: 12/30/83
DESIGN SUBCONTRACTOR: Wilshire Design Associates	NTP: 12/30/83
PROJECT MANAGER(TSD/MRTC): Streitman/Tallett	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
STAGE I				
CONTROL SYSTEM SUBMITTAL	01/13/84	-	02/09/84	-
IN PROG. SUBMITTAL (60%)	06/28/84	-	06/28/84	-
PRE FINAL SUBMITTAL (85%)	09/27/84	09/27/84	-	0
FINAL SUBMITTAL (100%)	12/27/84	12/27/84	-	0
BID DOCUMENTS	01/26/85	01/26/85	-	0
TIME OF PERFORMANCE	12/27/84	12/27/84	-	0
STAGE II				
IN PROG. SUBMITTALS (60%)	06/28/84	-	06/28/84	-
PRE FINAL SUBMITTALS (85%)	09/27/84	09/27/84	-	0
FINAL SUBMITTALS (100%)	12/27/84	12/27/84	12/27/84	0
BID DOCUMENTS	01/26/85	01/26/85	01/26/85	0

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

- An agreement was reached with LADOT on improvements for widening of Beverly Boulevard. The section designer is proceeding based on direction given by SCRTD/LADOT.

#### AREAS OF CONCERN:

- CBS concern of construction noise and vibration. A response from Wilson-Ihrig (consultant) was received on additional noise and vibration studies and is being reviewed.

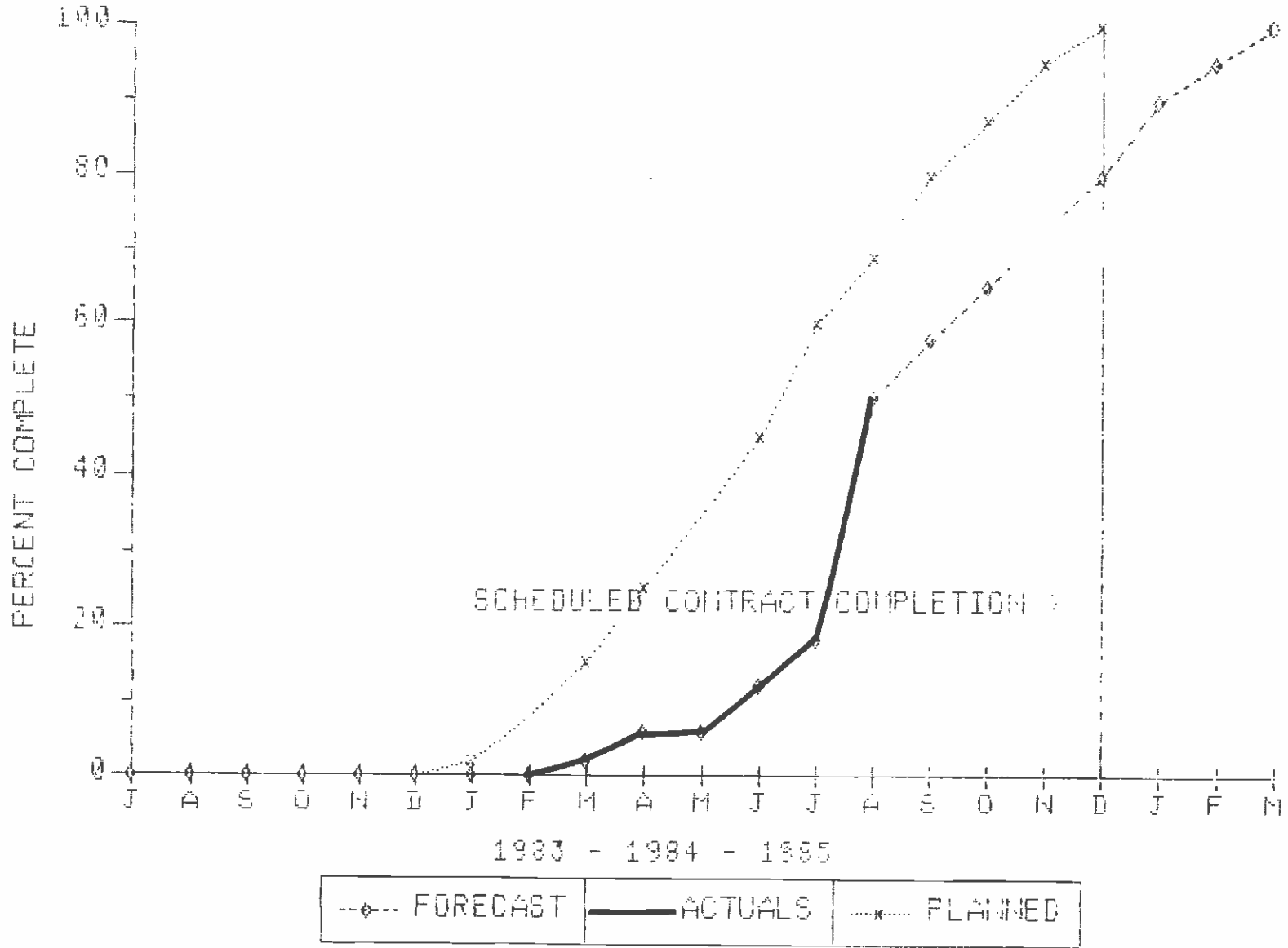
#### COMMENTS:

- Request to incorporate Seismic Criteria into the contract was presented to the section designer. The incorporation by structural may impact 85% submittal.
- The MRTC Project Progress Report (August) indicated 100% completion will be in March 1985, this forecast is not consistent with the forecast above. The RTD Project Architect does not recognize the March 1985 in the MRTC Project Progress Report.

#### PERFORMANCE ASSESSMENT:

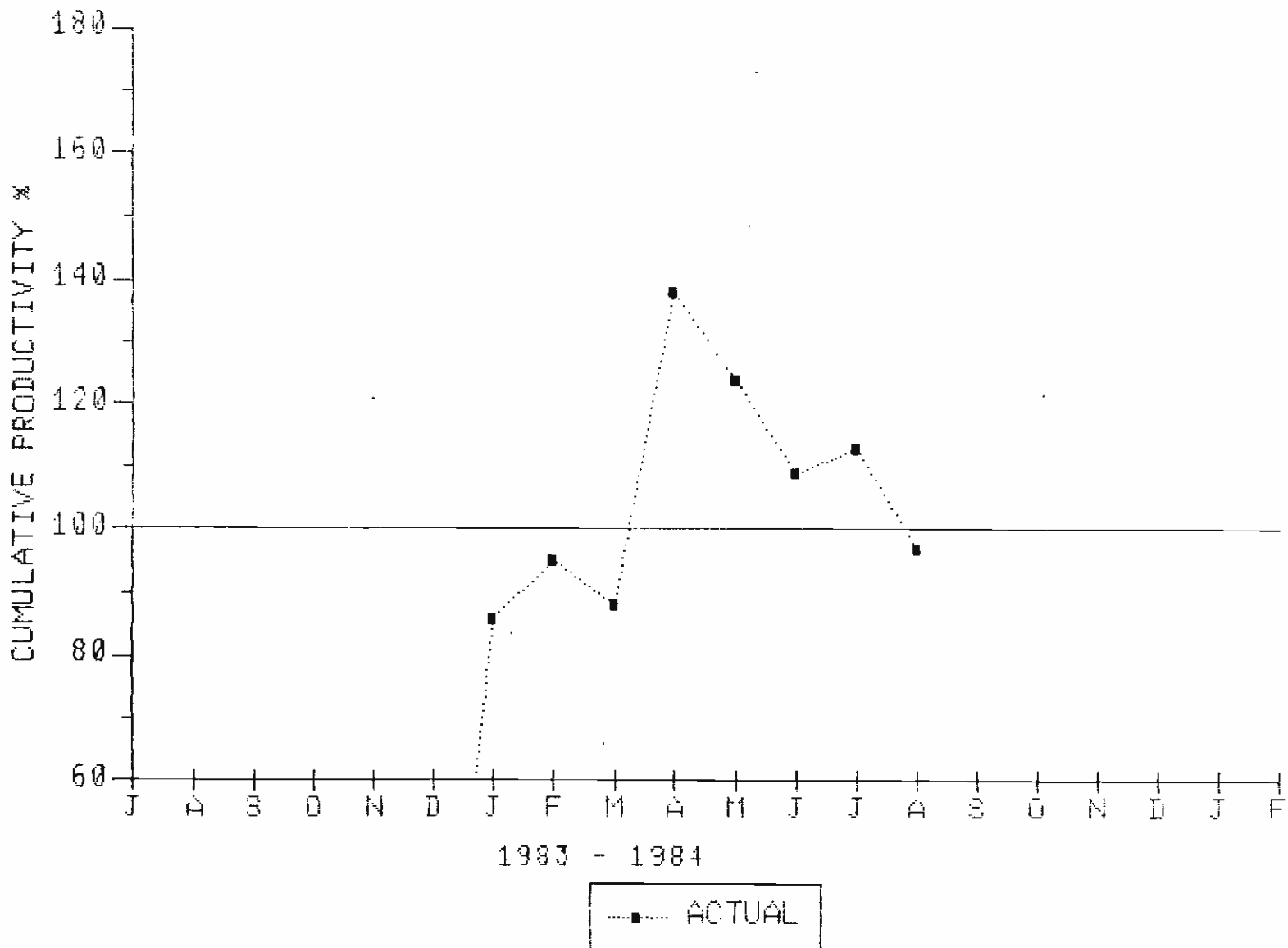
The Section Designer is presently on schedule.

RTD METRO RAIL PROJECT  
 CONTRACT A275 - FAIRFAX/BEVERLY  
 SECTION DESIGNER: WILSHIRE DESIGN ASSOC.  
 STATUS AS OF AUGUST 1984

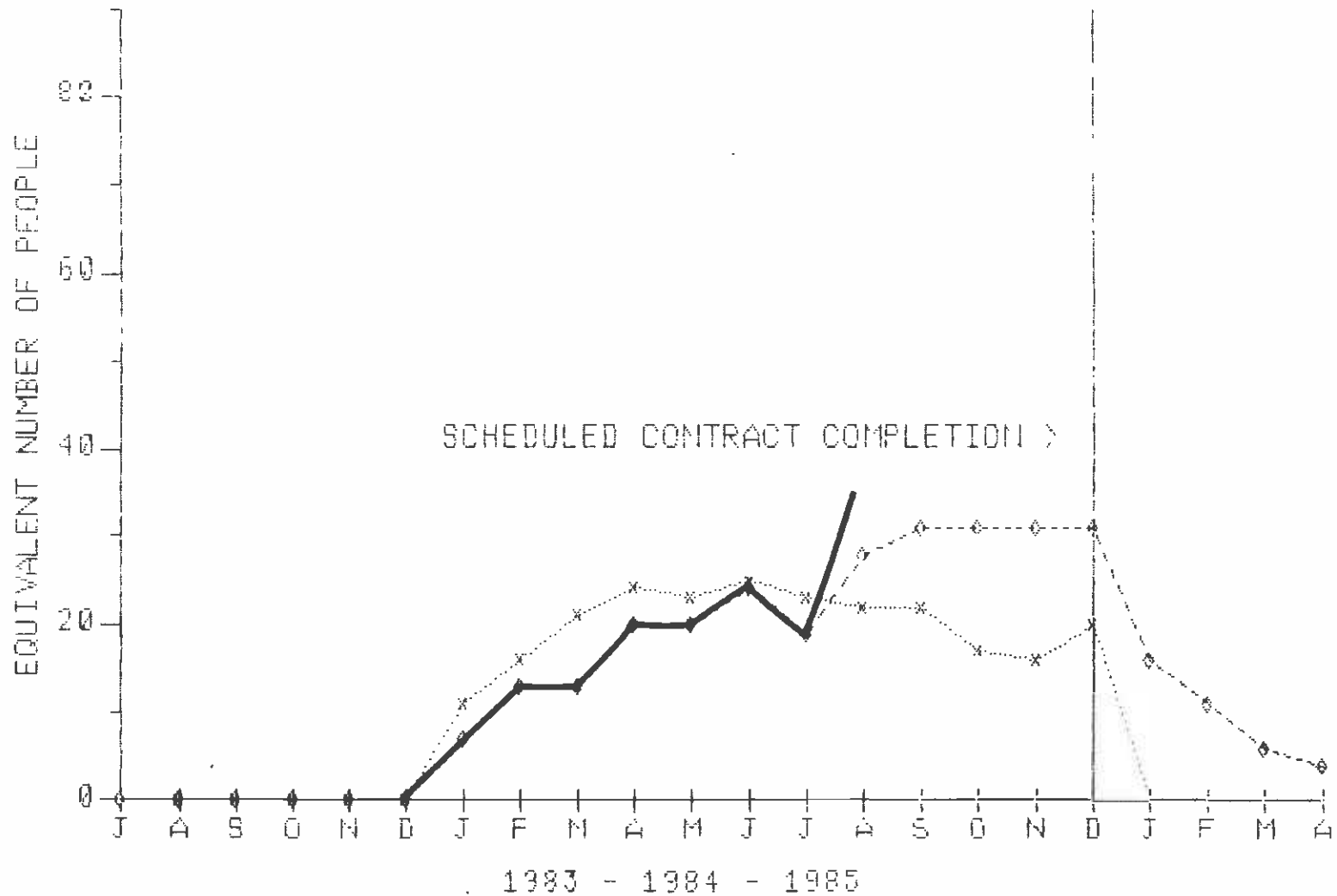




RTD METRO RAIL PROJECT  
CONTRACT A275 - FAIRFAX/BEVERLY  
SECTION DESIGNER: WILSHIRE DESIGN ASSOC.,  
STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 CONTRACT A275 - FAIRFAX/BEVERLY  
 SECTION DESIGNER: WILSHIRE DESIGN ASSOC.  
 STATUS AS OF AUGUST 1984



--◇-- FORECAST    —▲— ACTUAL    ····×··· PLANNED

RID METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A310, FAIRFAX/SANTA MONICA & LA BREA/SUNSET STATIONS + LINE  
 DESIGN CONTRACTOR - CARTER ENGINEERS/AMMANN & WHITNEY

COMMENTS ON MRTC PROGRESS REPORT

- o TOTAL ACTUAL AND FORECASTED COSTS AND MANHOURS DO NOT AGREE WITH THE TOTAL AMOUNT LISTED IN THEIR RESPECTIVE CUMULATIVE COLUMNS.

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	30	23	25
INCREMENTAL PROGRESS	4	3	5
COST	4,410,000	4,554,000	1,059,000
MANHOURS	84,200	86,900	20,100
CONTRACT DURATION	25	25	9

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.25 \times 86,900}{20,100} \times 100 = 108\%$$

A SATISFACTORY PRODUCTIVITY.

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .25 \times 4,554,000 = \$ 1,138,500$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 25% COMPLETE, HAS THEORETICALLY EARNED \$1,138,500.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,138,500}{1,059,000} = \$ 1.08$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.08 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,059,000 - 1,138,500 = \$ <79,500>$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$ 79,500.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A310, FAIRFAX/SANTA MONICA & LABREA/SUNSET STATIONS + LINE  
 DESIGN CONTRACTOR - CARTER ENGINEERS/AMMANN & WHITNEY

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{1,059,000}{4,554,000} = 23\%$$

THE CONTRACTOR HAS SPENT 23% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 25%.

$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{4,554,000}{1.08} = \$4,216,667$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$4,216,667. THIS REPRESENTS A COST UNDERRUN OF \$193,333 OR A 4% DECREASE.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{4,554,000 - 1,138,500}{4,554,000 - 1,059,000} = 98\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 98% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

NINE MONTHS INTO A 25-MONTH CONTRACT, THIS SECTION DESIGNER IS PROCEEDING SATISFACTORILY. THE CONTRACT HAS NO APPROVED CHANGES AND ONLY \$125,000 WORTH OF PENDING CHANGES (\$75,000 FOR SEISMIC AND \$50,000 FOR UTILITY REARRANGEMENT), LOWER THAN ANY OTHER STATION DESIGNER (EXCL. HOLLYWOOD BOWL).

08/31/84  
PC-BACKUP 14.2<21>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

Page 1 of 2

DESIGN CONTRACT: A310 Fairfax/Sta. Monica,                      AWARD:            06/16/83  
                          La Brea/Sunset & Line  
DESIGN SUBCONTRACTOR: Carter Engrs./Ammann & Whitney NTP:             12/05/83  
PROJECT MANAGER(TSD/MRTC): Shah/Yacoub                    DURATION:       730  
  (CALENDAR DAYS)

FAIRFAX/SANTA MONICA & TUNNEL

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	12/19/83	-	01/17/83	-
IN PROG. SUBMITTAL (60%)	11/10/84	11/10/84	-	-
PRE FINAL SUBMITTAL (85%)	03/10/85	03/10/85	-	-
FINAL SUBMITTAL (100%)	06/10/85	06/10/85	-	-
BID DOCUMENTS	-	-	-	-
FINAL DESIGN COMPLETE	07/25/85	07/25/85	-	-
TIME OF PERFORMANCE	12/05/85	12/05/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

No problems reported last period.

AREAS OF CONCERN:

None

COMMENTS:

1. Work continues for Fairfax/Santa Monica Station on:
  - Civil and Structural design
  - Ventilation shaft arrangement.
2. Structural design has started for La Brea/Sunset Station.

PERFORMANCE ASSESSMENT:

Work for this contract remains on schedule.

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

Page 2 of 2

DESIGN CONTRACT: A310 Fairfax/Sta. Monica, AWARD: 06/16/83  
LaBrea/Sunset & Line  
DESIGN SUBCONTRACTOR: Carter Engrs./Ammann & Whitney NTP: 12/05/83  
PROJECT MANAGER(TSD/MRTC): Shah/Yacoub DURATION: 730  
(CALENDAR DAYS)

LA BREA/SUNSET

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	12/19/83	-	01/17/84	-
IN PROG. SUBMITTAL (60%)	02/10/85	02/10/85	-	-
PRE FINAL SUBMITTAL (85%)	06/25/85	06/25/85	-	-
FINAL SUBMITTAL (100%)	10/10/85	10/10/85	-	-
BID DOCUMENTS	-	-	-	-
FINAL DESIGN COMPLETE	11/10/85	11/10/85	-	-
TIME OF PERFORMANCE	12/05/85	12/05/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

AREAS OF CONCERN:

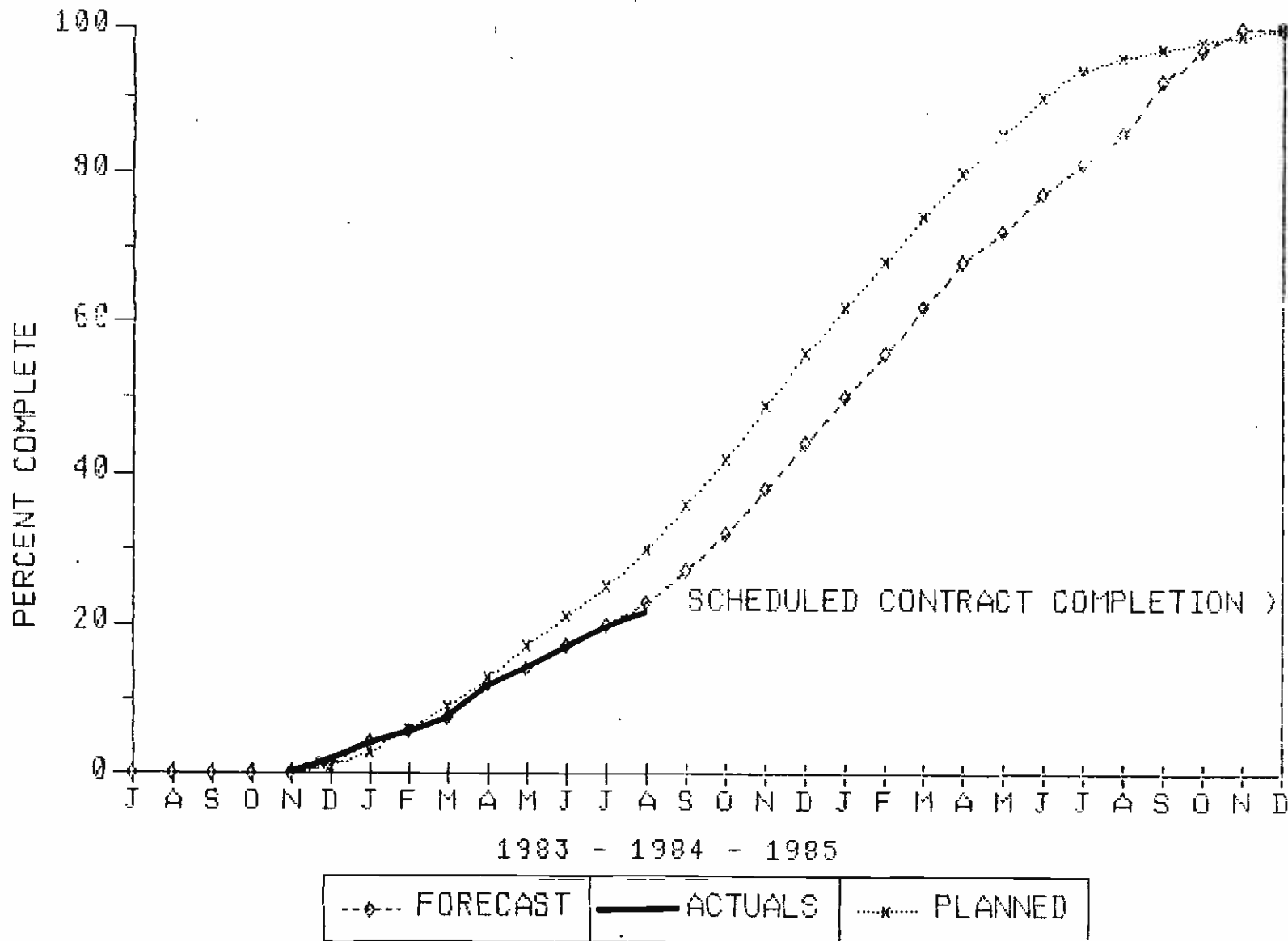
See Comments on Page One of Contract A310

COMMENTS:

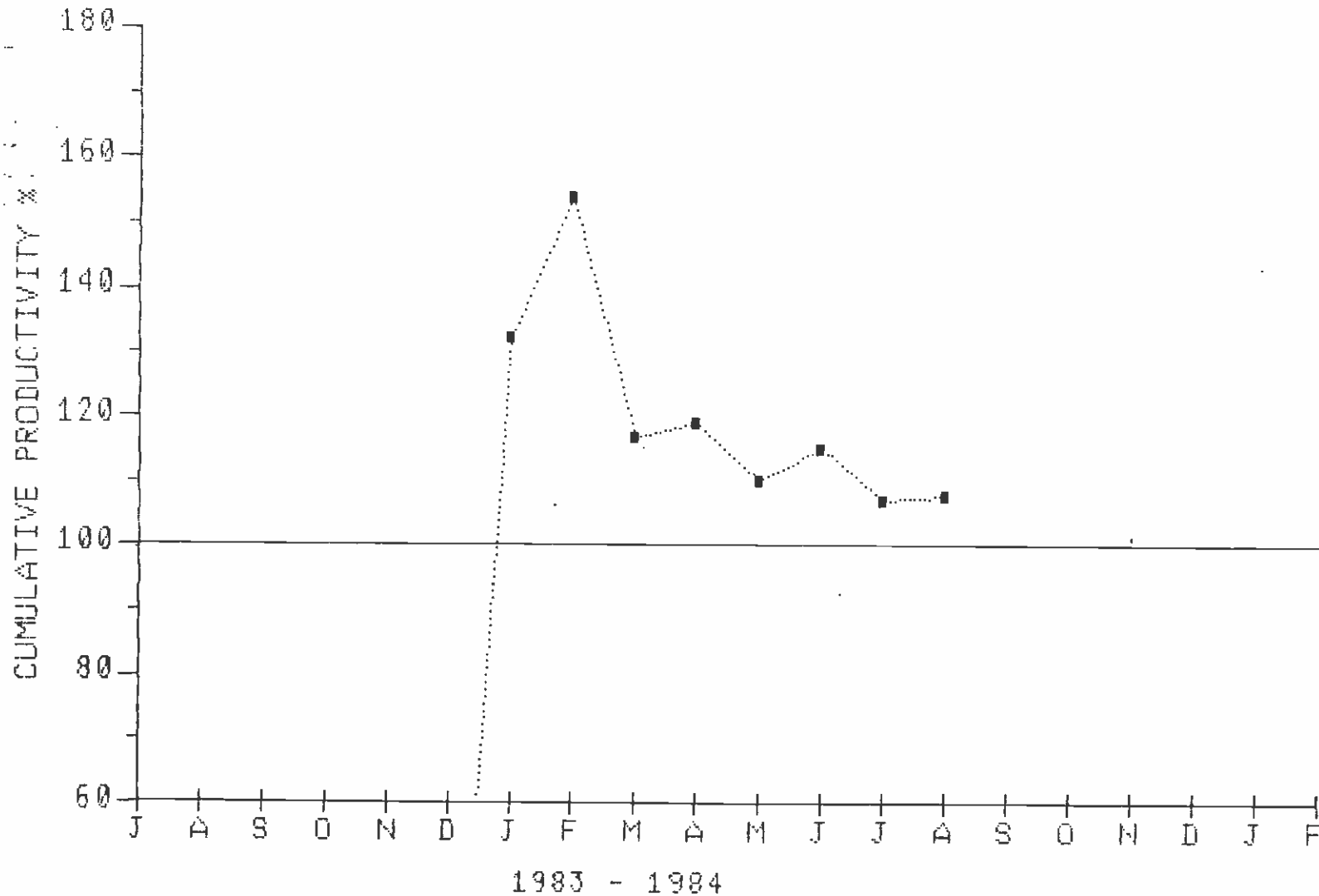
PERFORMANCE ASSESSMENT:

RTD METRO RAIL PROJECT  
 CONTRACT A310 - FAIRFAX/STA. MONICA & LA BREA/SUNSET  
 DESIGNER: CARTER ENG./AMMANN & WHITNEY  
 AUGUST 1984

109



RTD METRO RAIL PROJECT  
 CONTRACT A310 - FAIRFAX/STA. MONICA & LA BREA/SUNSET  
 DESIGNER: CARTER ENG./AMMANN & WHITNEY  
 AUGUST 1984



110

CUMULATIVE PRODUCTIVITY %

180

160

140

120

100

80

60

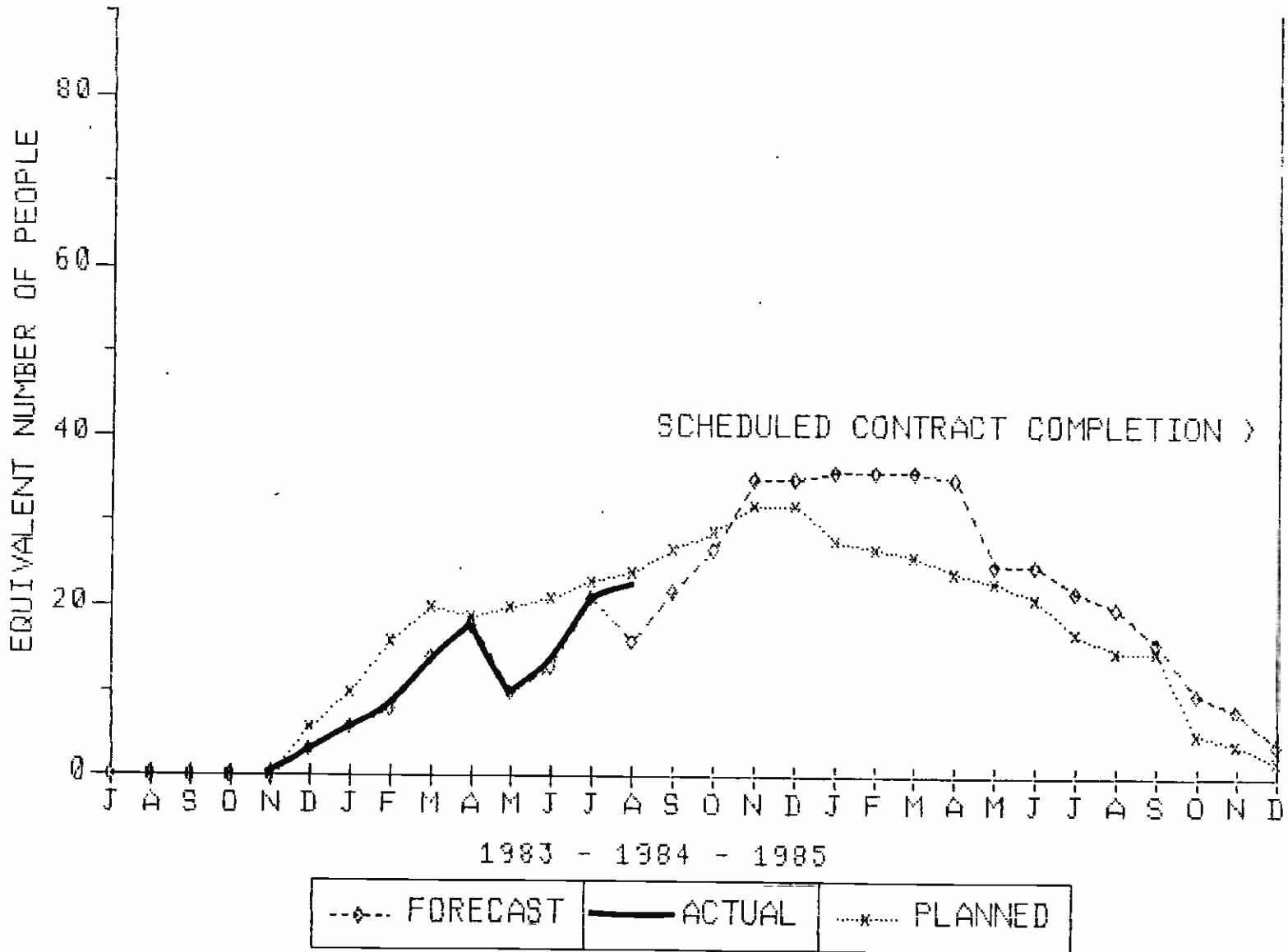
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1983 - 1984

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RTD METRO RAIL PROJECT  
 CONTRACT A310 - FAIRFAX/STA. MONICA & LA BREA/SUNSET  
 DESIGNER: CARTER ENG./ANMANN & WHITNEY  
 AUGUST 1984



RID METRO RAIL PROJECT  
SECTION DESIGNER EVALUATION  
AUGUST 1984  
COST ANALYSIS

CONTRACT # - A350, HOLLYWOOD/CAHUENGA STATION  
DESIGN CONTRACTOR - STULL ASSOCIATES

COMMENTS ON MRTIC PROGRESS REPORT

- o THE VARIANCE BETWEEN THE PLANNED BUDGET AND PRESENT FORECAST OF \$384,000 IS DUE TO ECO'S THAT HAVE BEEN NEGOTIATED AND SOME THAT ARE STILL PENDING.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	45	36	37
INCREMENTAL PROGRESS	7	6	7
COST	2,071,000	*2,455,300	833,000
MANHOURS	43,400	50,200	18,400
CONTRACT DURATION	16	19	8

\*THIS NUMBER IS NOT REFLECTED IN THE MONTHLY PROGRESS REPORT, BUT IS IN THE AUG. TRADE REPORT; DUE TO TIME CONSTRAINTS IT WAS NOT INCORPORATED INTO THE MONTHLY REPORT.

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.37 \times 50,200}{18,400} \times 100 = 101\%$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .37 \times 2,445,300 = \$ 908,461$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 37% COMPLETE, HAS THEORETICALLY EARNED \$908,500.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{908,500}{833,000} = \$ 1.09$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ 1.09 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 833,000 - 908,500 = \$ <75,500>$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$ 75,500.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A350, HOLLYWOOD/CAHUENCA STATION  
DESIGN CONTRACTOR - STULL ASSOCIATES

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{833,000}{2,445,300} = 34\%$$

THE CONTRACTOR HAS SPENT 34% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 37%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} = \\ \text{(CALCULATED - EAC)} \end{array} \quad \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,445,300}{1.09} = \$2,252,568$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,253,000. THIS REPRESENTS A COST OVERRUN OF \$202,300 OR A 8% INCREASE.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,445,300 - 908,500}{2,445,300 - 833,000} = 95\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 95% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

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CONCLUSION

THE CONTRACT IS SCHEDULED TO BE COMPLETED ONLY TO THE 85% LEVEL. BASED ON PRESENT FORECAST FOR THE COST TO COMPLETE, THEY WILL OVERRUN THE PLANNED BUDGET BY \$132,000 OR 64%. THEY ARE PRESENTLY OVER STAFFED BY 11 PEOPLE AND FORECAST AN OVER STAFF STATUS OF AN AVERAGE OF 7 PEOPLE FOR THE REMAINDER OF THE JOB.

08/31/84  
PC-BACKUP 14.2<23>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A350 Hollywood/Cahuenga Station	AWARD: 06/16/83
DESIGN SUBCONTRACTOR: Stull Associates	NTP: 12/29/83
PROJECT MANAGER(TSD/MRTC): Shah/Stickel	DURATION: 486 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
STAGE I				
CONTROL SYSTEM SUBMITTAL	01/11/84	-	02/08/84	-
IN PROG. SUBMITTAL (60%)	08/27/84	09/10/84	-	-15
PRE FINAL SUBMITTAL (85%)	12/20/84	02/11/84	-	-
FINAL SUBMITTAL (100%)	05/02/85	05/02/85	-	-
BID DOCUMENTS	-	-	-	-
FINAL DESIGN COMPLETE	07/01/85	07/01/85	-	-
STAGE II				
IN PROG. SUBMITTAL (60%)	08/27/84	09/10/84	-	-15
PRE FINAL SUBMITTAL (85%)	12/20/84	12/20/84	-	-
FINAL SUBMITTAL (100%)	05/02/85	05/02/85	-	-
BID DOCUMENTS	-	-	-	-
FINAL DESIGN COMPLETE	07/01/85	07/01/85	-	-
TIME OF PERFORMANCE	05/02/85	05/02/85	-	-

RESOLUTION OF LAST PERIODS PROBLEMS:

Survey data necessary for redesign of site plans has been received by the Section Designer from MRTC.

AREAS OF CONCERN:

1. Requests for three (3) additional borings is under study.
2. The electrical requirements in the TPSS Auxiliary Power rooms and electrical panels are being reviewed due to a variance with the National Electrical Code.

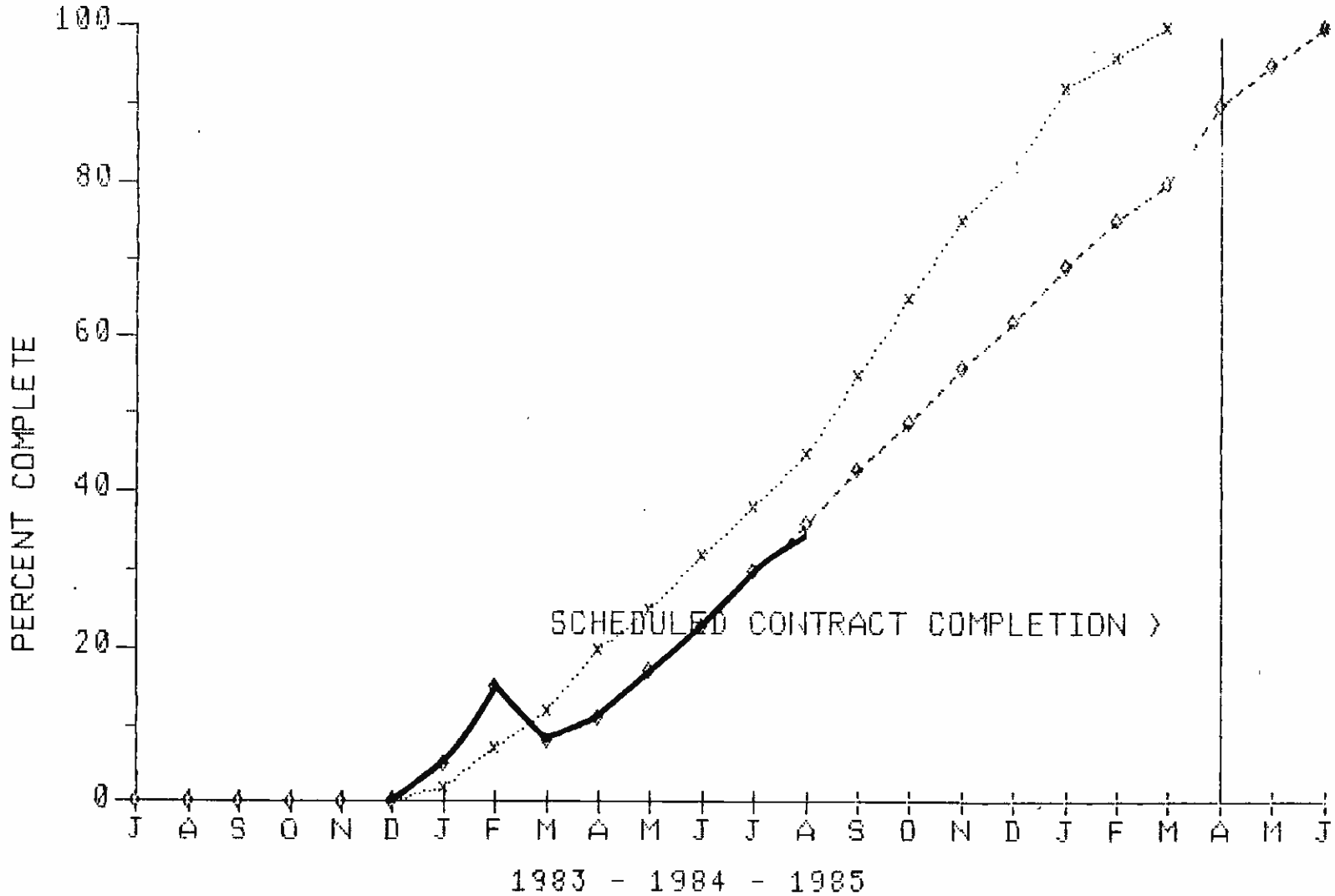
COMMENTS:

None

PERFORMANCE ASSESSMENT:

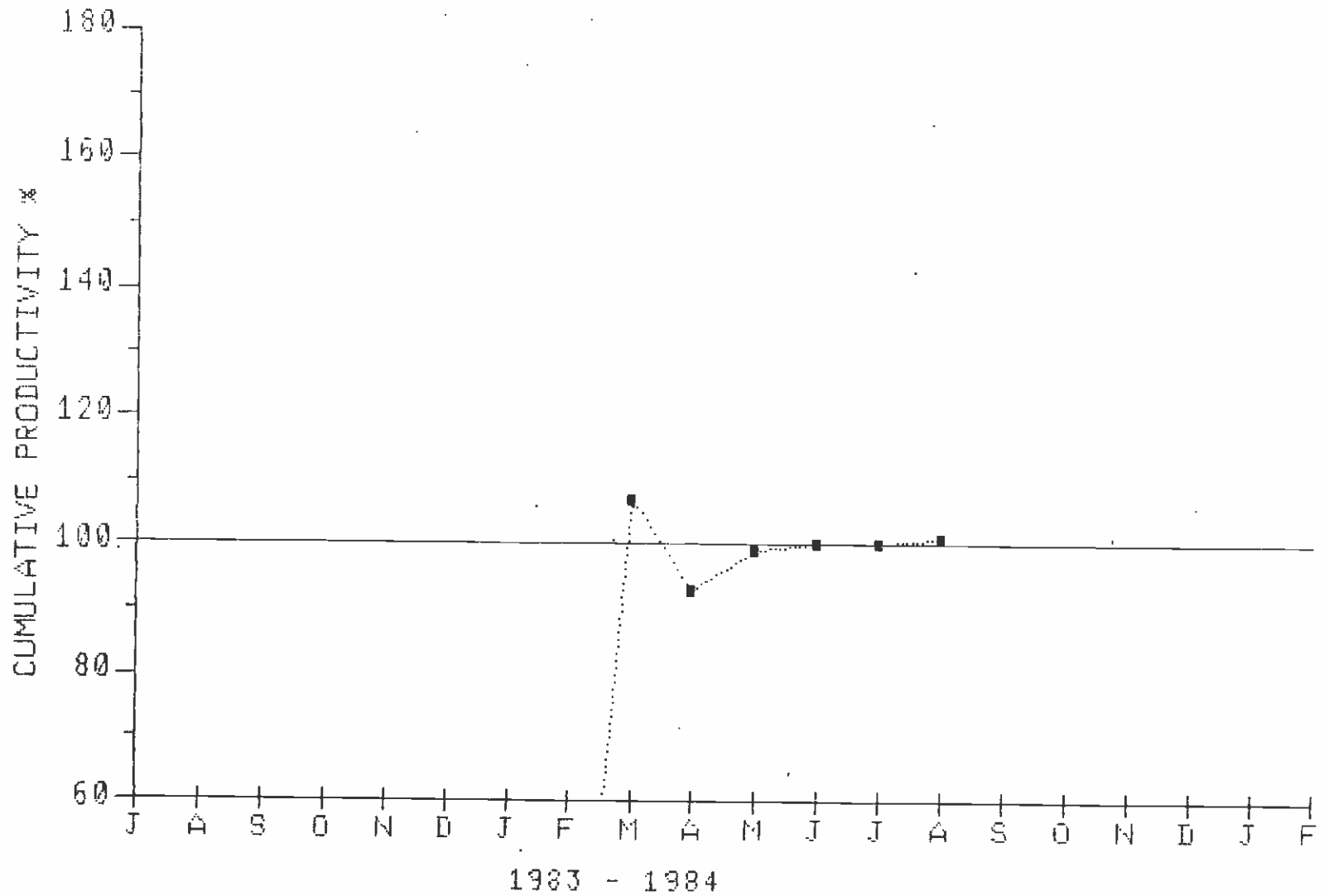
The Contract is 2 weeks behind schedule, as shown above, in the In-Progress Submittal.

RTD METRO RAIL PROJECT  
 CONTRACT A350 - HOLLYWOOD/CAHUENGA  
 SECTION DESIGNER: STULL ASSOC.  
 STATUS AS OF AUGUST 1984



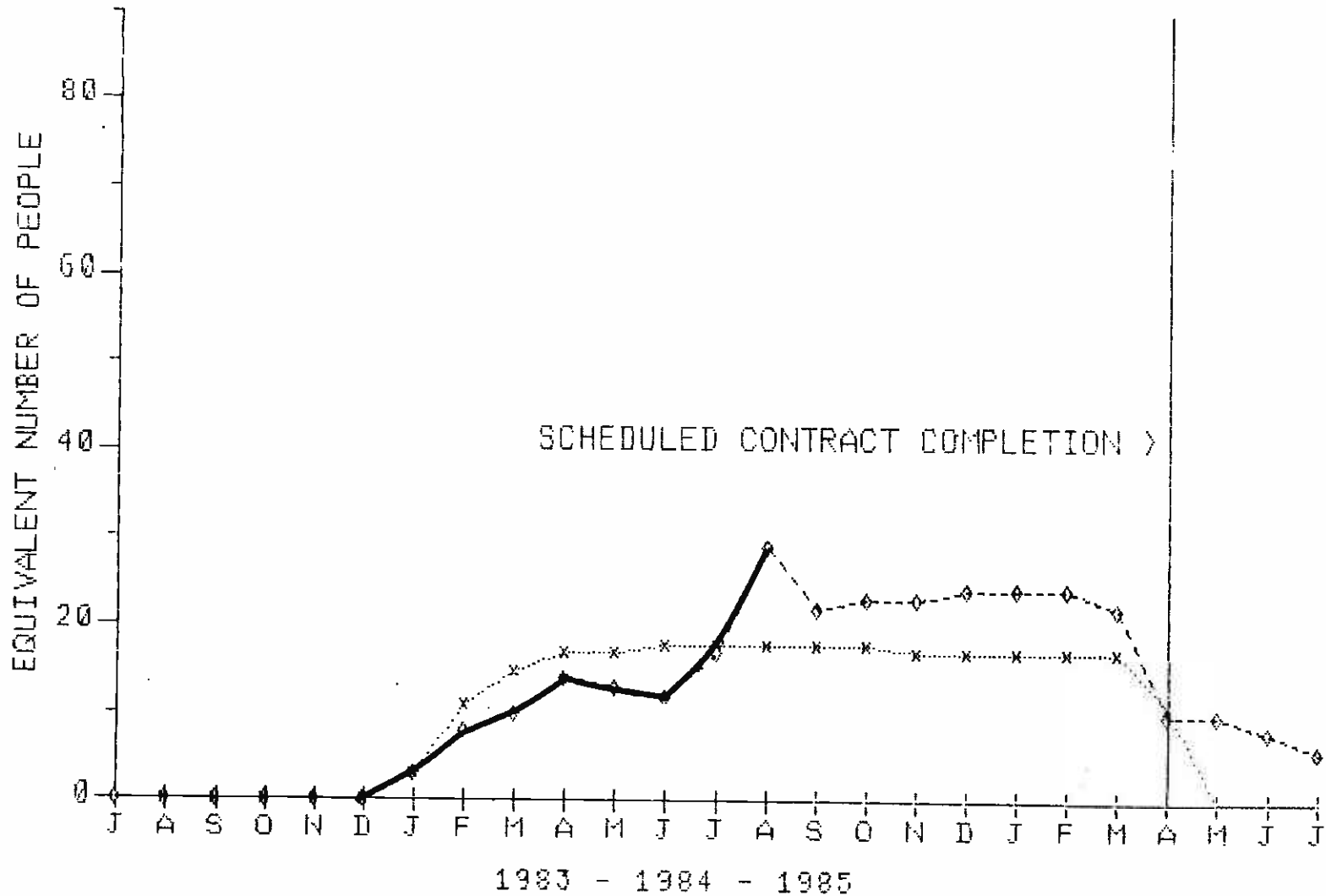
--◇-- FORECAST	— ACTUALS	.....x..... PLANNED
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RTD METRO RAIL PROJECT  
 CONTRACT A350 - HOLLYWOOD/CAHUENGA STATION  
 SECTION DESIGNER: STULL ASSOC.  
 STATUS AS OF AUGUST 1984



■ ACTUAL

RTD METRO RAIL PROJECT  
 CONTRACT A350 - HOLLYWOOD/CAHUENGA STATION  
 SECTION DESIGNER: STULL ASSOCIATES  
 STATUS AS OF AUGUST 1984



1983 - 1984 - 1985

--◇-- FORECAST	— ACTUAL	.....x..... PLANNED
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RTD METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A410, LINE BETWEEN HOLLYWOOD/CAHUENGA AND UNIVERSAL CITY STATIONS  
 DESIGN CONTRACTOR - TRANSIT & TUNNEL CONSULTANTS

COMMENTS ON MRTIC PROGRESS REPORT

o NONE

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	70	52	52
INCREMENTAL PROGRESS	13	N/A	10
COST	2,627,000	2,364,000	1,320,000
MANHOURS	46,000	47,000	25,400
CONTRACT DURATION	12	13	8

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MRS. SPENT}} = \frac{.52 \times 47,000}{25,400} \times 100 = 96\%$$

(CUMULATIVE)

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .52 \times 2,364,000 = \$ 1,229,280$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 52% COMPLETE, HAS THEORETICALLY EARNED \$1,229,280.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,229,280}{1,320,000} = \$ .93$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$.93 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,320,000 - 1,229,280 = \$ 90,720$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$ 90,720.



COST ANALYSIS  
(CONTINUED)

CONTRACT # - A410, LINE BETWEEN HOLLYWOOD/CAHUENGA AND UNIVERSAL CITY STATIONS  
DESIGN CONTRACTOR - TRANSIT & TUNNEL CONSULTANTS

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} = \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{1,320,000}{2,364,000} = 56\%$$

THE CONTRACTOR HAS SPENT 56% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 52%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,364,000}{.93} = \$2,541,935$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,541,935. THIS REPRESENTS A COST UNDERRUN OF \$85,065 OR A 3% DECREASE.

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$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,364,000 - 1,229,280}{2,364,000 - 1,320,000} = 109\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 109% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

---

CONCLUSION

CONTRACTOR IS FALLING BEHIND IN PROGRESS. BASED ON THE ABOVE CALCULATIONS THIS CONTRACT IS PROJECTED TO BE COMPLETED IN 16 MONTHS VS. THE 13 MONTHS REPORTED.

08/31/84  
PC-BACKUP 14.2<24>

## SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A410 Line Between Hollywood/  
Cahuenga & Universal City  
DESIGN SUBCONTRACTOR: Transit & Tunnel  
PROJECT MANAGER(TSD/MRTC): Shah/Bejan

AWARD: 06/16/83  
NTP: 12/29/83  
DURATION: 365  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	01/11/84	-	02/01/84	-
IN PROG. SUBMITTAL (60%)	06/28/84	07/31/84	07/31/84	-
PRE FINAL SUBMITTAL (85%)	09/28/84	10/30/84	-	-33
FINAL SUBMITTAL (100%)	12/28/84	12/28/84	-	-
BID DOCUMENTS	02/22/85	02/22/85	-	-
FINAL DESIGN COMPLETE	02/22/85	02/22/85	-	-
TIME OF PERFORMANCE	12/29/84	12/29/84	-	-

### RESOLUTIONS OF LAST PERIODS PROBLEMS:

Geotechnical report (soils data final report) was received July 16, 1984.

### AREAS OF CONCERN:

None

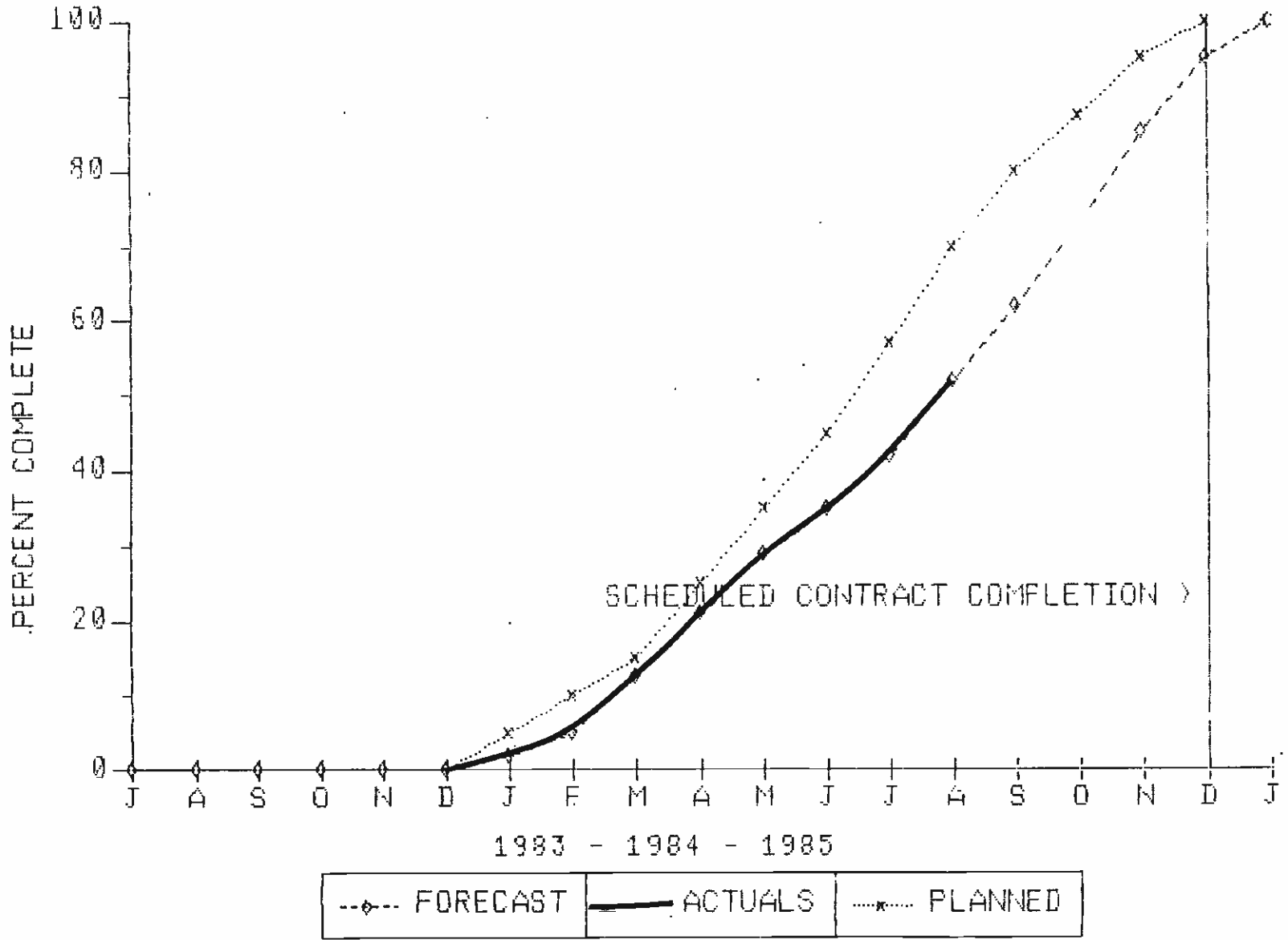
### COMMENTS:

Sixty percent (60%) submittal was completed and delivered July 31, 1984.  
The Pre-final Submittal will be delayed 4 weeks.

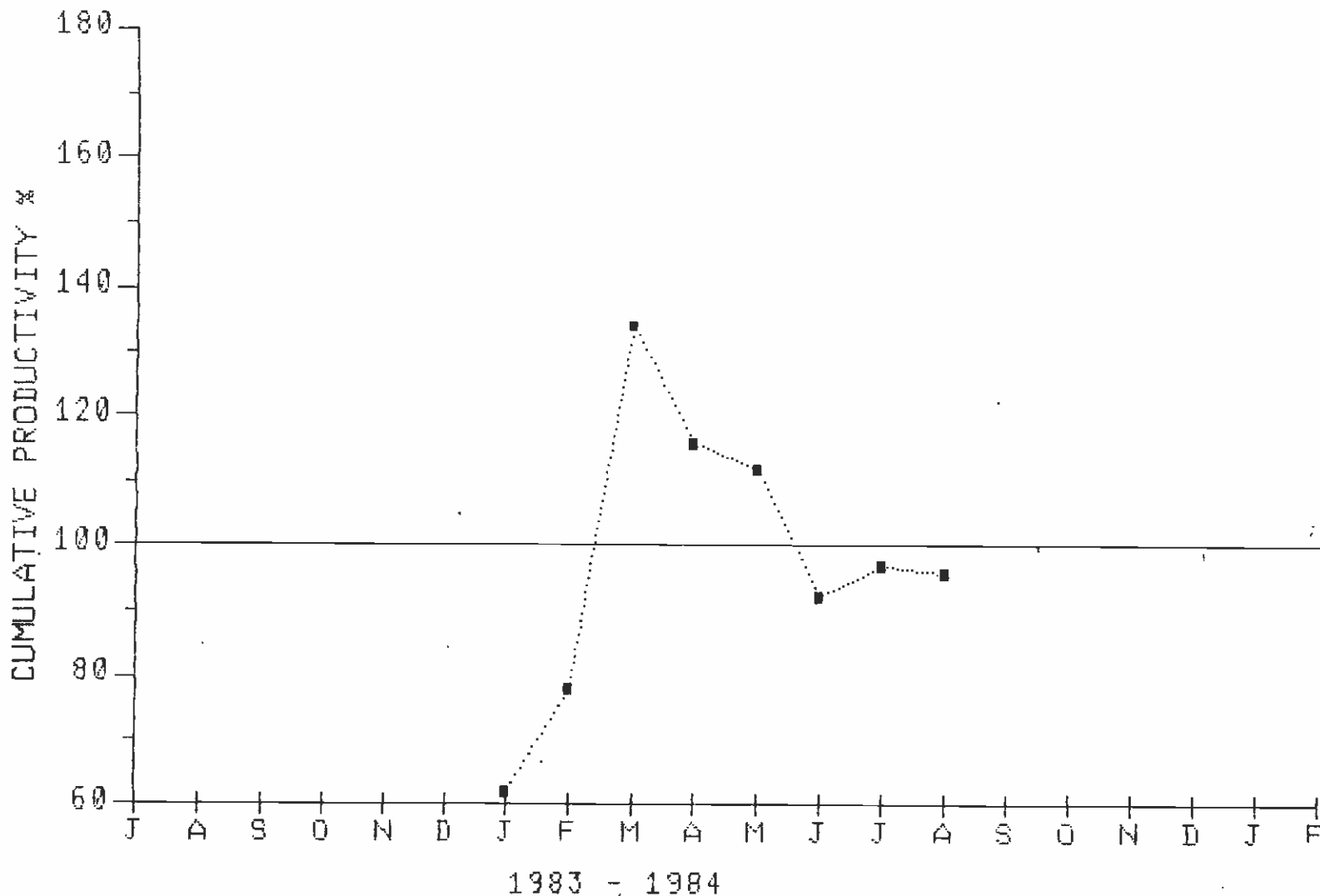
### PERFORMANCE ASSESSMENT:

The Section Designer is four (4) weeks behind schedule for the Pre-Final Submittal.

RTD METRO RAIL PROJECT  
 CONTRACT A410 - LINE BTW. HOLLYWOOD/CAHUENGA & UNIVERSAL CITY  
 DESIGNER: TRANSIT & TUNNEL CONSULTANTS  
 AUGUST 1984

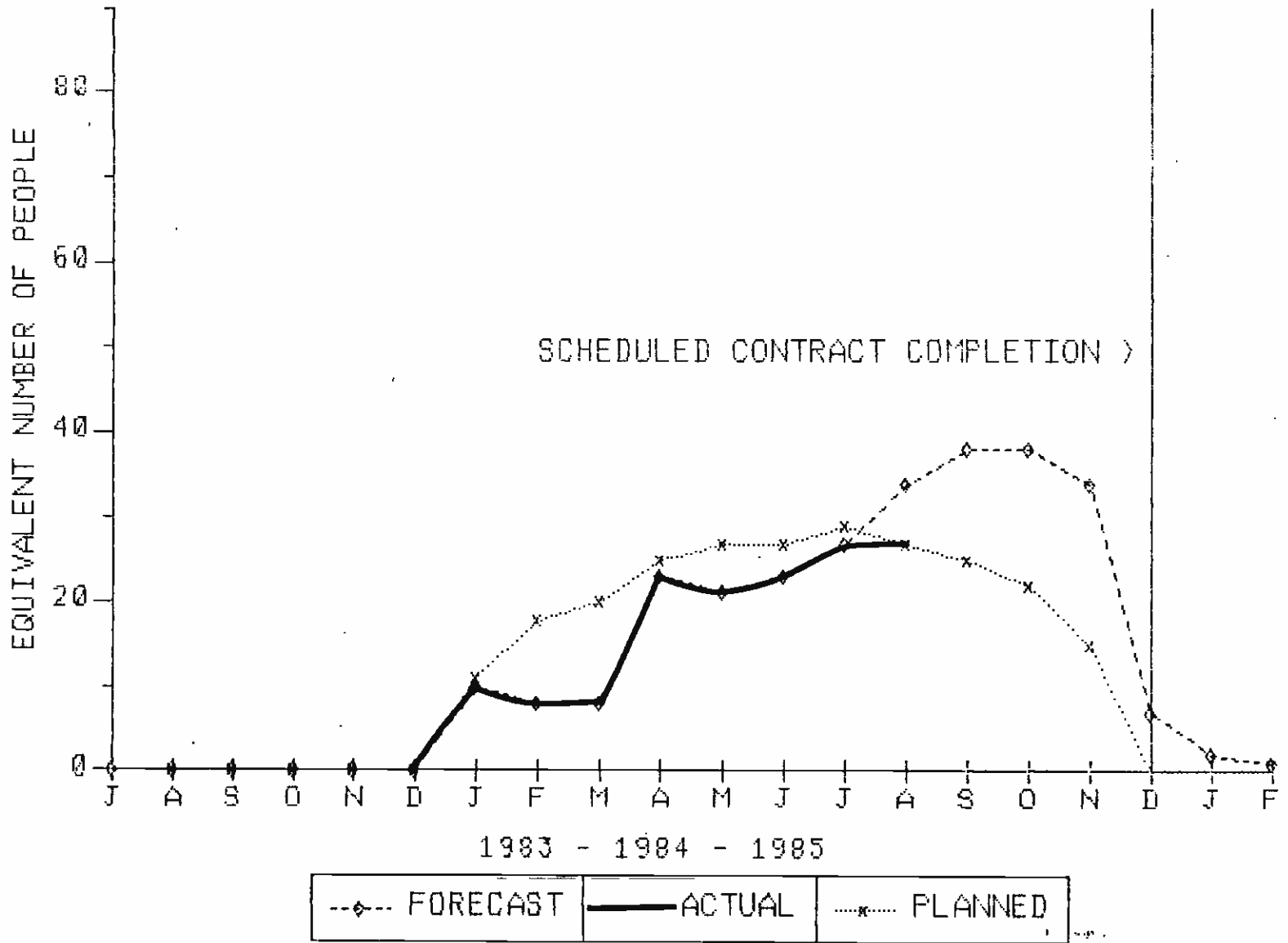


RTD METRO RAIL PROJECT  
CONTRACT A410 - LINE BTW. HLLYWD. /CAHUENGA & UNIVERSAL CITY  
DESIGNER: TRANSIT & TUNNEL CONSULTANTS  
AUGUST 1984



● ACTUAL

RTD METRO RAIL PROJECT  
 CONTRACT A410 - LINE BTW. HOLLYWOOD/CAHUENGA & UNIVERSAL CITY  
 DESIGNER: TRANSIT & TUNNEL CNSLTS.  
 AUGUST 1984



RID METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A415 HOLLYWOOD BOWL STATION  
 DESIGN CONTRACTOR - WARNECKE/GEHRY/EDWARDS & KELCEY

COMMENTS ON MRTIC PROGRESS REPORT

- o THE PROBLEM AREAS ARE TOO NEBULOUS. IT SHOULD STATE WHY THE STATION DESIGNER IS BEHIND IN PROGRESS.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST*</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	50	26	25
INCREMENTAL PROGRESS	10	N/A	7
COST	2,014,000	1,017,000	617,000
MANHOURS	40,200	23,400	14,000
CONTRACT DURATION	13	10	6

\* BASED ON 50% COMPLETE

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.25 \times 23,400}{14,000} \times 100 = 42\%$$

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .25 \times 1,017,000 = \$ 254,250$$

THIS CONTRACTOR, BEING AT 25% COMPLETE, HAS THEORETICALLY EARNED \$ 254,250.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{254,250}{617,000} = \$ .41$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ .41 WORTH OF WORK FOR EVERY DOLLAR WE SPEND. THIS CORRESPONDS WITH THE VERY LOW PRODUCTIVITY CALCULATION.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 617,000 - 254,250 = \$ 362,750$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$ 362,750.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A415, HOLLYWOOD BOWL STATION  
DESIGN CONTRACTOR - WARNECKE/GEHRY/EDWARDS & KELCEY

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{617,000}{1,017,000} = 61\%$$

THE CONTRACTOR HAS SPENT 61% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 25%.

$$\begin{array}{l} \text{EST. AT COMPLETION} = \\ \text{(CALCULATED - EAC)} \end{array} \quad \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{1,017,000}{.41} = \$2,408,488$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,480,488. THIS REPRESENTS A COST OVERRUN OF \$1,463,488 OR A 144% INCREASE.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{1,017,000 - 254,250}{1,017,000 - 617,000} = 191\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 191% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

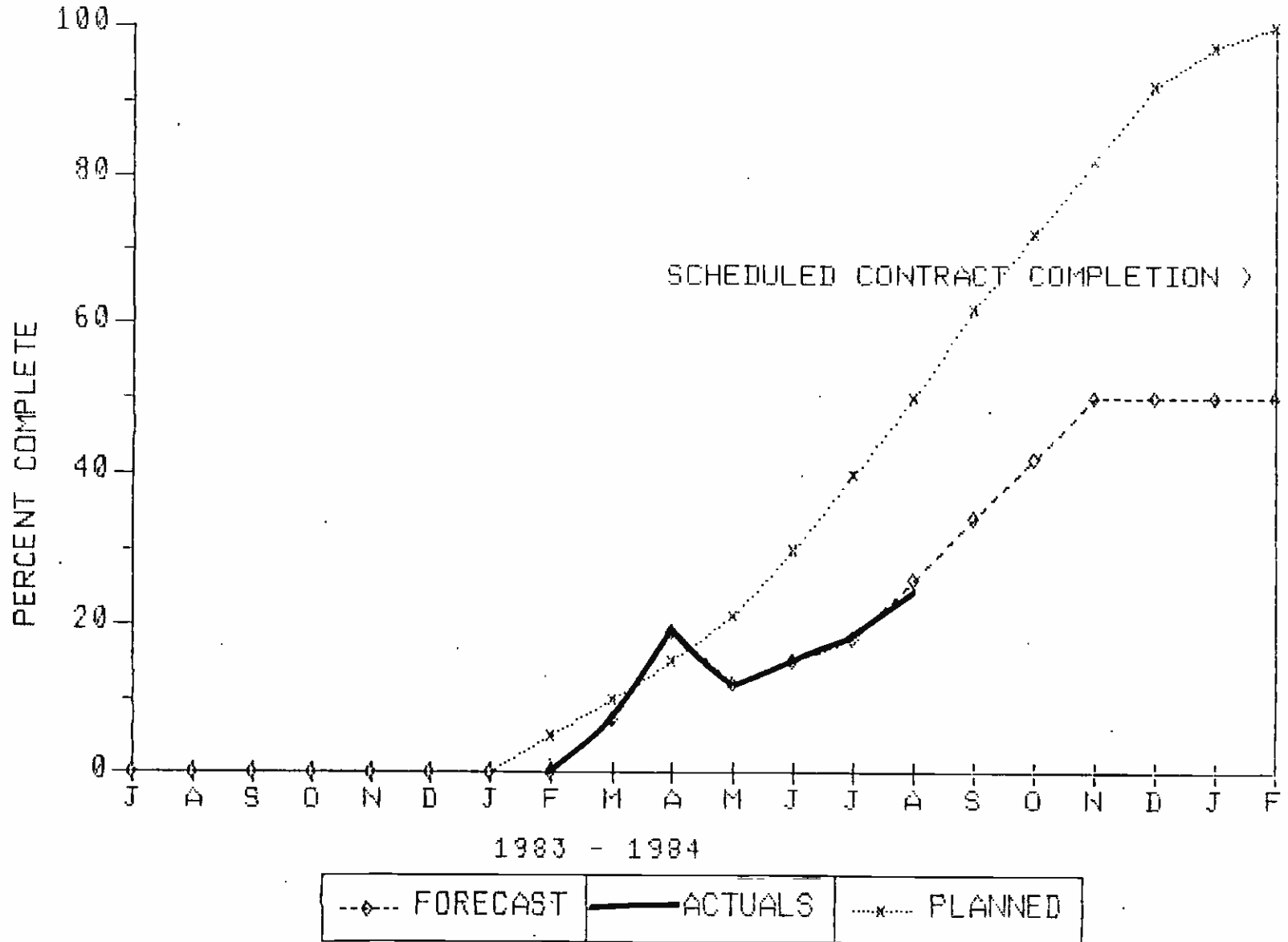
CONCLUSION

BASED ON THE ABOVE CALCULATIONS THE CONTRACT IS PROJECTED TO BE COMPLETED IN 14 MONTHS VS. THE 10 MONTHS REPORTED.

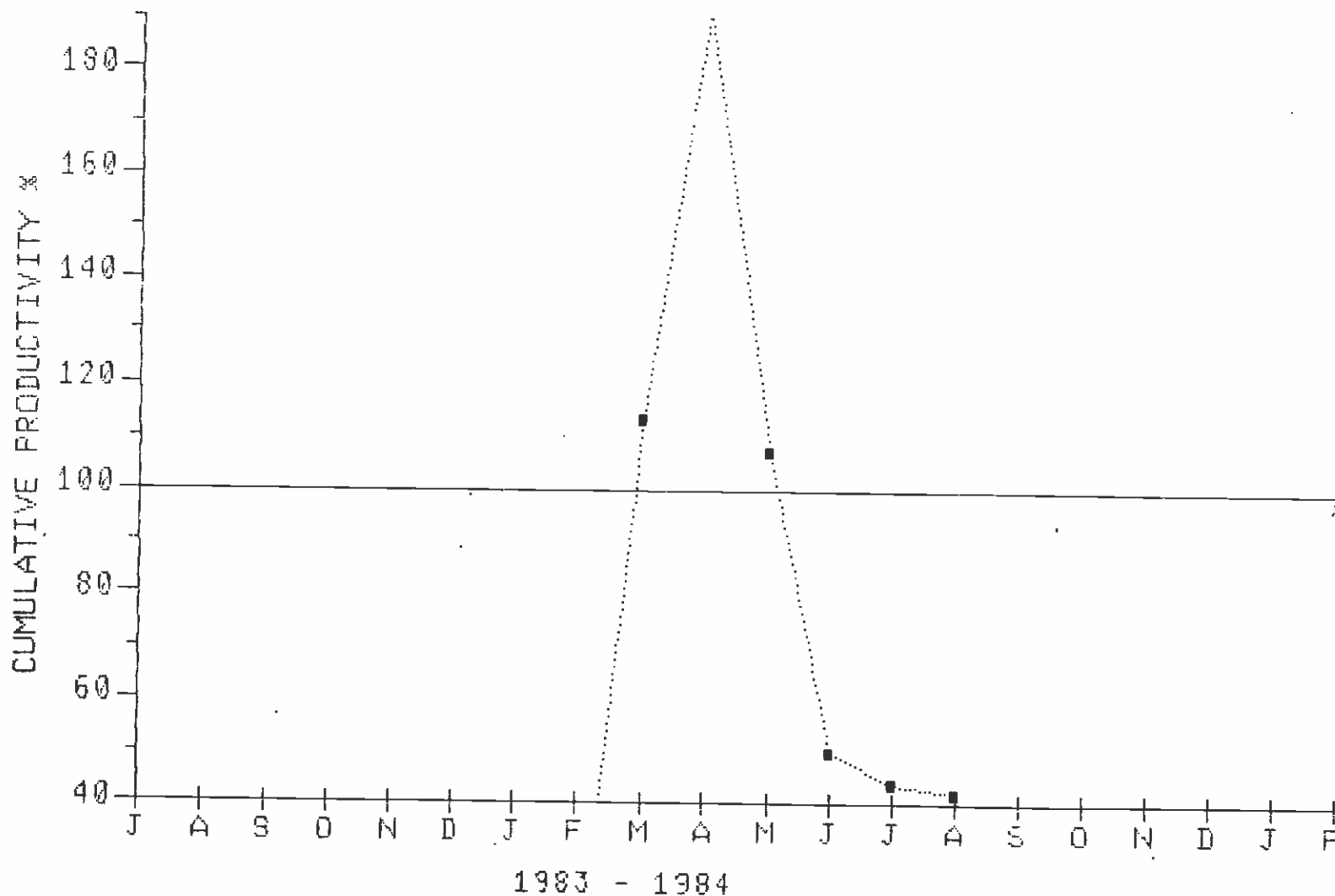




RTD METRO RAIL PROJECT  
 CONTRACT A415 - HOLLYWOOD BOWL  
 SECTION DESIGNER: WARNECKE/GEHRY/EDWARDS & KELCEY  
 STATUS AS OF AUGUST 1984

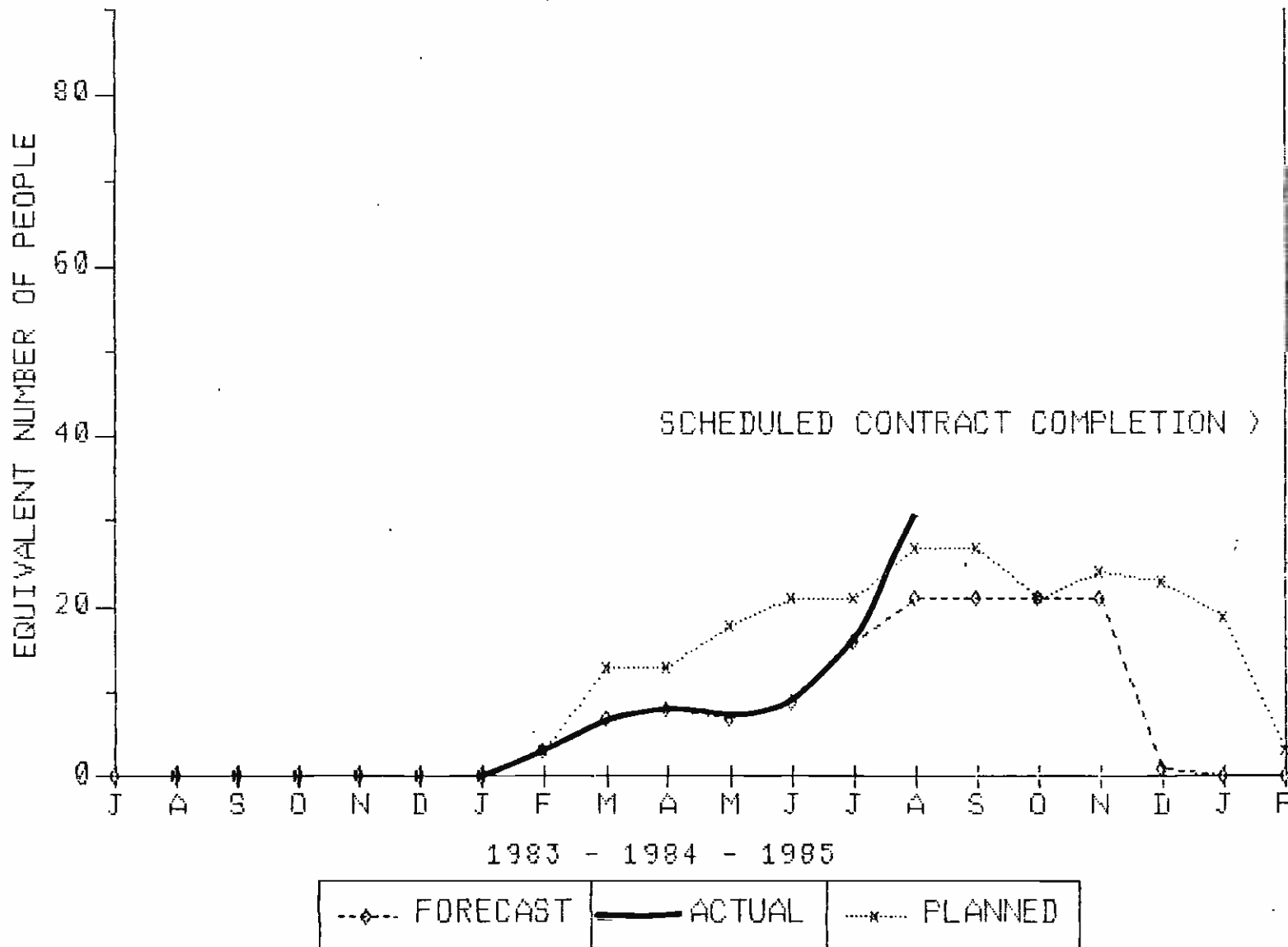


RTD METRO RAIL PROJECT  
 CONTRACT A415 - HOLLYWOOD BOWL  
 DESIGNER: WARNECKE/GEHRY/EDWARDS & KELCEY  
 STATUS AS OF AUGUST 1984



...● ACTUAL

RTD METRO RAIL PROJECT  
 CONTRACT A415 - HOLLYWOOD BOWL  
 SECTION DESIGNER: WARNECKE/GEHRY/EDWARDS & KELCEY  
 STATUS AS OF AUGUST 1984



RID METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A425, UNIVERSAL CITY STATION  
 DESIGN CONTRACTOR - THE LUCKMAN PARTNERSHIP

COMMENTS ON MRTIC PROGRESS REPORT

- o ACCORDING TO THE MANPOWER FORECAST, STAFFING WILL FALL FROM 49 PEOPLE TO 13 BETWEEN DECEMBER 1984 AND JANUARY 1985. A LOSS OF 36 PEOPLE IN ONE MONTH IS RATHER ABRUPT.
- o TOTAL MONTHLY ACTUAL AND FORECASTED COSTS AND MANHOURS DO NOT AGREE WITH THE TOTAL AMOUNT LISTED IN THEIR RESPECTIVE CUMULATIVE COLUMNS.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	50	44	43
INCREMENTAL PROGRESS	10	9	8
COST	2,403,000	2,620,000	1,156,000
MANHOURS	53,500	64,900	25,300
CONTRACT DURATION	13	16	7

$$\text{PRODUCTIVITY} = \frac{\% \text{ COMPLETE} \times \text{TOTAL MH FORECAST}}{\text{MTRS. SPENT}} = \frac{.43 \times 64,900}{25,300} \times 100 = 110\%$$

$$\text{EARNED COSTS} = \frac{\% \text{ COMPLETE} \times \text{TOTAL COST FORECAST}}{\text{(CUMULATIVE)}} = .43 \times 2,620,000 = \$ 1,126,600$$

THIS CONTRACTOR, BEING AT 43% COMPLETE, HAS THEORETICALLY EARNED \$1,126,600.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{1,126,600}{1,156,000} = \$ 0.97$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ 0.97 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 1,156,000 - 1,126,600 = \$ 29,400$$

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN \$29,400.

COST ANALYSIS  
(CONTINUED)

CONTRACT # - A425, UNIVERSAL CITY STATION  
DESIGN CONTRACTOR - THE LUCKMAN PARTNERSHIP

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PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{1,156,000}{2,620,000} = 44\%$$

THE CONTRACTOR HAS SPENT 44% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 43%.

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$$\begin{array}{l} \text{EST. AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,620,000}{.97} = \$2,701,031$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$2,701,031. THIS REPRESENTS A COST OVERRUN OF \$298,031 OR A 12% INCREASE.

---

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,620,000 - 1,126,600}{2,620,000 - 1,156,000} = 102\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 102% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

---

CONCLUSION

THIS SECTION DESIGNER IS SPENDING AT A SLIGHTLY FASTER RATE THAN HE IS PROGRESSING. IF PRODUCTIVITY REMAINS HIGH, PROGRESS SHOULD IMPROVE NEXT MONTH. ALL OF THIS CONTRACTOR'S SITEWORK REMAINS ON HOLD AND SOME TASKS IN THE ORIGINAL SCOPE HAVE NOT BEEN RELEASED.

08/31/84  
PC-BACKUP 14.2<26>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A425 Universal City	AWARD: 02/06/84
DESIGN SUBCONTRACTOR: Luckman Partnership	NTP: 02/13/84
PROJECT MANAGER(TSD/MRTC): Quesada/McCauley	DURATION: 365 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	02/27/84	-	03/27/84	-
STAGE I				
IN PROG. SUBMITTAL (60%)	08/13/84	08/13/84	08/13/84	-
PRE FINAL SUBMITTAL (85%)	11/19/84	11/19/84	-	-
FINAL SUBMITTAL (100%)	02/11/85	02/11/85	-	-
BID DOCUMENTS	02/11/85	02/11/85	-	-
FINAL DESIGN COMPLETE	-	-	-	-
STAGE II				
IN PROG. SUBMITTAL (60%)	08/13/84	08/13/84	08/13/84	-
PRE FINAL SUBMITTAL (85%)	11/19/84	11/19/84	-	-
FINAL SUBMITTAL (100%)	02/11/85	02/11/85	-	-
BID DOCUMENTS	02/11/85	02/11/85	-	-
FINAL DESIGN COMPLETE	-	-	-	-
TIME OF PERFORMANCE	02/11/85	02/11/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

No problems were reported last period.

AREAS OF CONCERN:

None

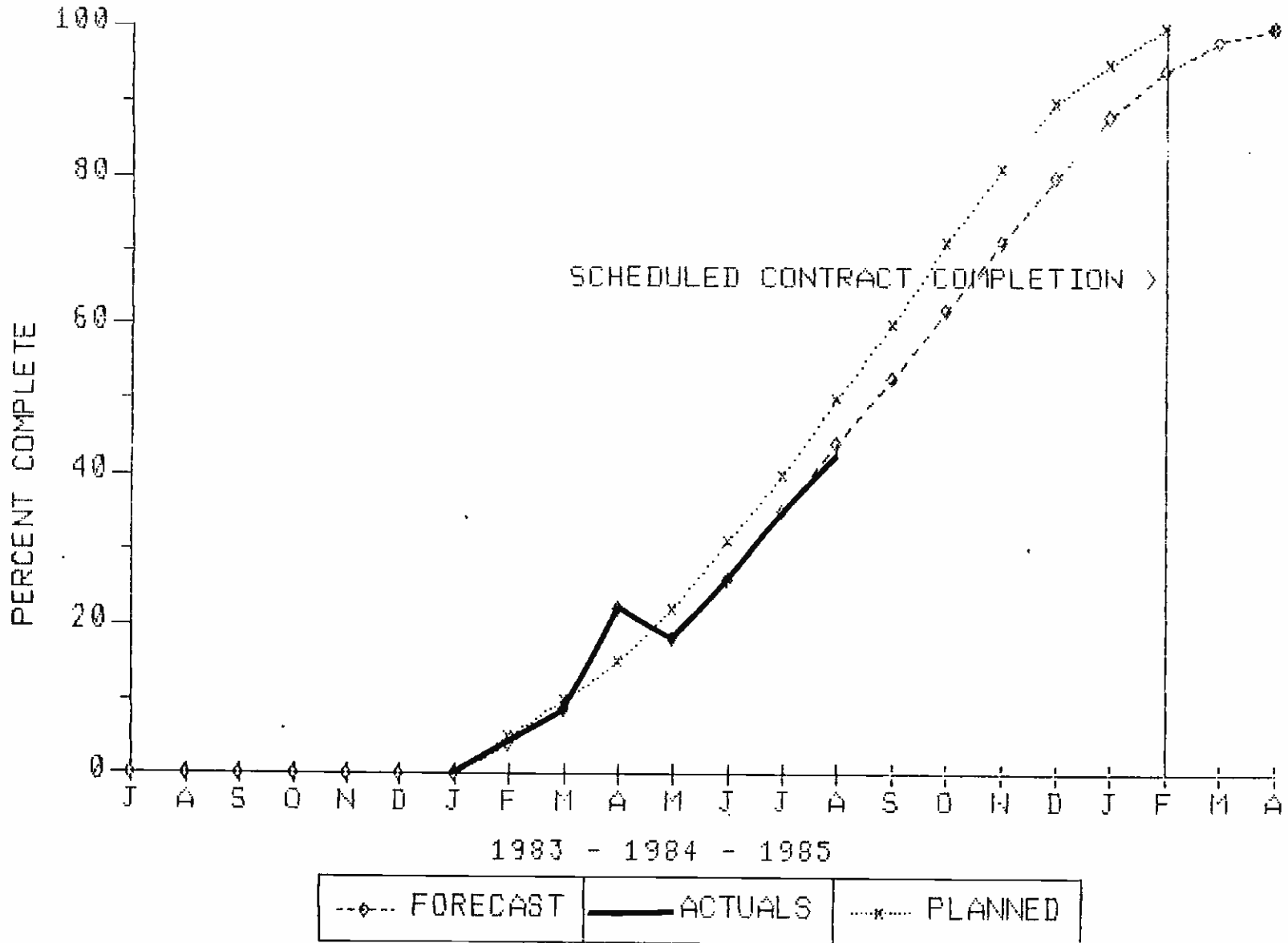
COMMENTS:

A hold was placed on all site design work pending approval of station area master plan.

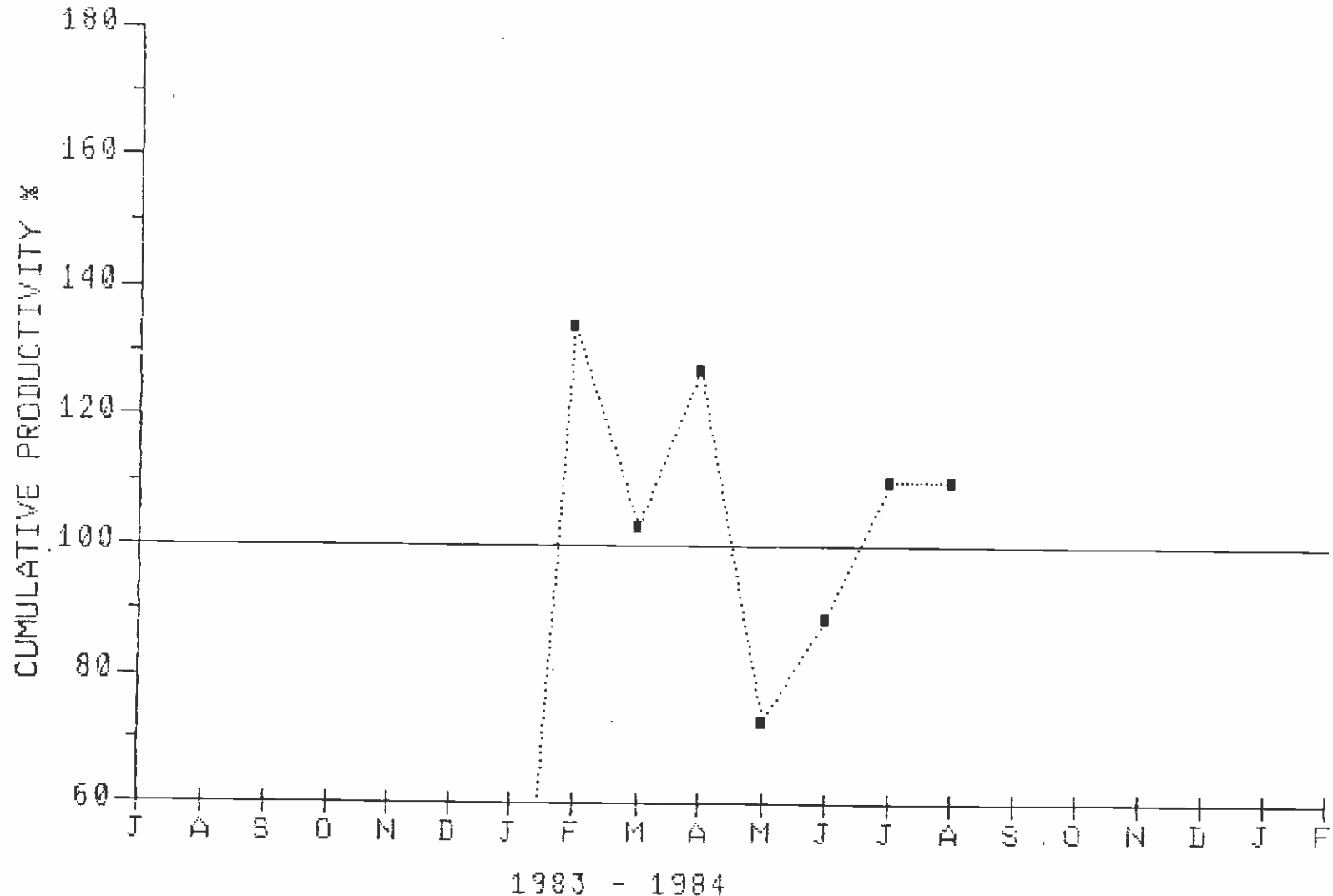
PERFORMANCE ASSESSMENT:

The contract remains on schedule.

RTD METRO RAIL PROJECT  
 CONTRACT A425 - UNIVERSAL CITY  
 SECTION DESIGNER: LUCKMAN PARTNERSHIP  
 STATUS AS OF AUGUST 1984



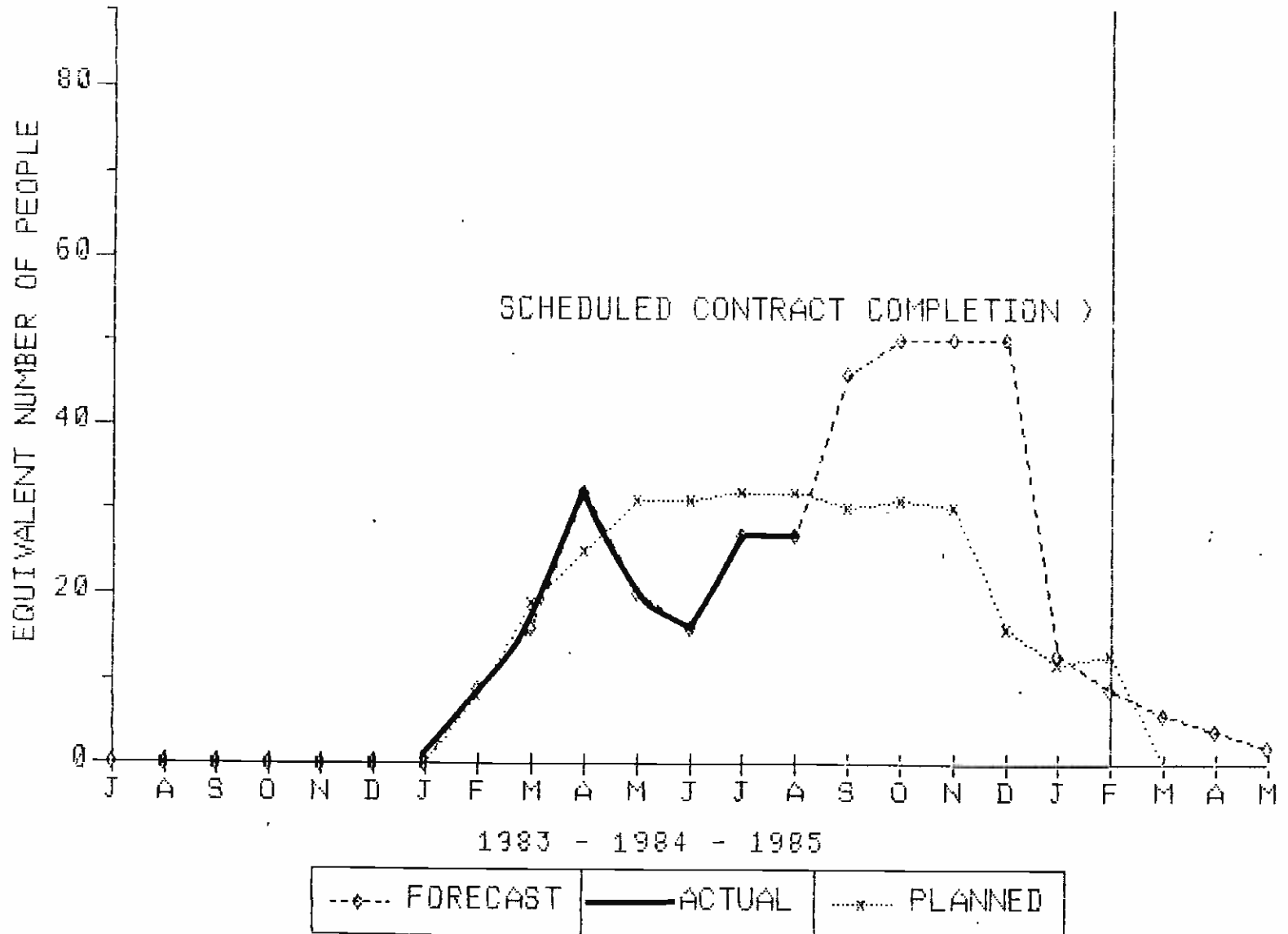
RTD METRO RAIL PROJECT  
CONTRACT A425 - UNIVERSAL CITY STATION  
SECTION DESIGNER: THE LUCKMAN PARTNERSHIP  
STATUS AS OF AUGUST 1984



ACTUAL



RTD METRO RAIL PROJECT  
 CONTRACT A425 - UNIVERSAL CITY  
 SECTION DESIGNER: LUCKMAN PARTNERSHIP  
 STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A430, LINE BETWEEN UNIVERSAL CITY AND NORTH HOLLYWOOD STATIONS  
 DESIGN CONTRACTOR - PAE/WH/S&W

=====

COMMENTS ON MRTC PROGRESS REPORT

- o THE PROGRESS REPORT SHOWS THAT THE CONSULTANT'S HOURLY RATE WENT FROM \$24/HR. IN JUNE TO \$61/HR. IN JULY, AN INCREASE OF 154%.

=====

DATA REPORTED BY MRTC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	65	54	49
INCREMENTAL PROGRESS	15	8	3
COST	1,969,000	2,098,000	856,000
MANHOURS	40,000	42,900	19,100
CONTRACT DURATION	12	14	8

=====

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST  
 (CUMULATIVE) ----- = ----- X 100 = 110%

MHS. SPENT 19,100

THE CONSULTANT CONTINUES TO REPORT EXCEPTIONALLY HIGH PRODUCTIVITY.

-----

EARNED COSTS = % COMPLETE X TOTAL COST FORECAST = .49 X 2,098,000 = \$ 1,028,020  
 (CUMULATIVE)

THIS CONTRACTOR, BEING AT 49% COMPLETE, HAS THEORETICALLY EARNED \$1,028,020.

-----

COST PERFORMANCE INDEX = EARNED COSTS 1,028,020  
 (CUMULATIVE) - CPI) ----- = ----- = \$ 1.20  
 ACTUAL COSTS SPENT 856,000

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$1.20 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

IF THIS CPI CONTINUES THROUGHOUT THE LIFE OF THE CONTRACT, A SUBSTANTIAL UNDERRUN WILL BE REALIZED.

-----

COST VARIANCE = ACTUAL \$ SPENT - EARNED \$ = 856,000 - 1,028,020 = \$ <172,020>  
 (CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY \$172,020.

COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A430, LINE BETWEEN UNIVERSAL CITY AND NORTH HOLLYWOOD STATIONS  
 DESIGN CONTRACTOR - PAE/WH/S&W

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \text{ACTUAL COSTS SPENT} \\ \text{(CUMULATIVE)} \end{array} = \frac{856,000}{2,098,000} = 41\%$$

THE CONTRACTOR HAS SPENT 41% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 49%.

$$\begin{array}{l} \text{EST. AT COMPLETION} = \text{FORECAST AT COMPLETION} \\ \text{(CALCULATED - EAC)} \end{array} = \frac{2,098,000}{1.20} = \$1,748,333$$

COST PERFORMANCE INDEX

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$1,748,333. THIS REPRESENTS A COST UNDERRUN OF \$220,667 OR A 11% DECREASE.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,098,000 - 1,028,020}{2,098,000 - 856,000} = 86\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 86% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THE COST AND LABOR PERFORMANCE BY THE CONTRACTOR CONTINUES TO BE VERY GOOD. ALL THE ANALYSES INDICATE THAT THIS CONTRACT HAS A GOOD POSSIBILITY OF BEING COMPLETED UNDER BUDGET. THE SCRIPD PROJECT MANAGER CONCURS IN THIS EVALUATION. HOWEVER, THE MRIC IS PROJECTING THAT THIS CONTRACT WILL BE COMPLETED OVER BUDGET. EVEN WITH THE PENDING CHANGES TO THE DESIGN, IT SEEMS UNLIKELY THAT THE CURRENT UNDERRUN WILL BE TOTALLY USED UP AND MORE FUNDS (\$129,000) WILL BE NEEDED.

08/31/84  
PC-BACKUP 14.2<24>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A430 Line Between Universal City & AWARD: 06/16/83  
North Hollywood Stations  
DESIGN SUBCONTRACTOR: PAE/WH/S&W NTP: 12/29/83  
PROJECT MANAGER(TSD/MRTC): Quesada/Hodges DURATION: 365  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	01/11/84	-	12/01/84	-
IN PROG. SUBMITTAL (60%)	07/06/84	-	08/06/84	-
PRE FINAL SUBMITTAL (85%)	10/08/84	10/08/84	-	-
FINAL SUBMITTAL (100%)	12/28/84	12/28/84	-	-
BID DOCUMENTS	-	-	-	-
FINAL DESIGN COMPLETE	01/28/85	01/28/85	-	-
TIME OF PERFORMANCE	12/29/84	12/29/84	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Decision on relocation of the mid-line vent structure has been received; comments and evaluation of mid-line vent shaft have been furnished.

AREAS OF CONCERN:

The Seismic Design Criteria necessary for the finalization of the preliminary structural design has not been received. Seismic analysis may delay the project 4-5 weeks.

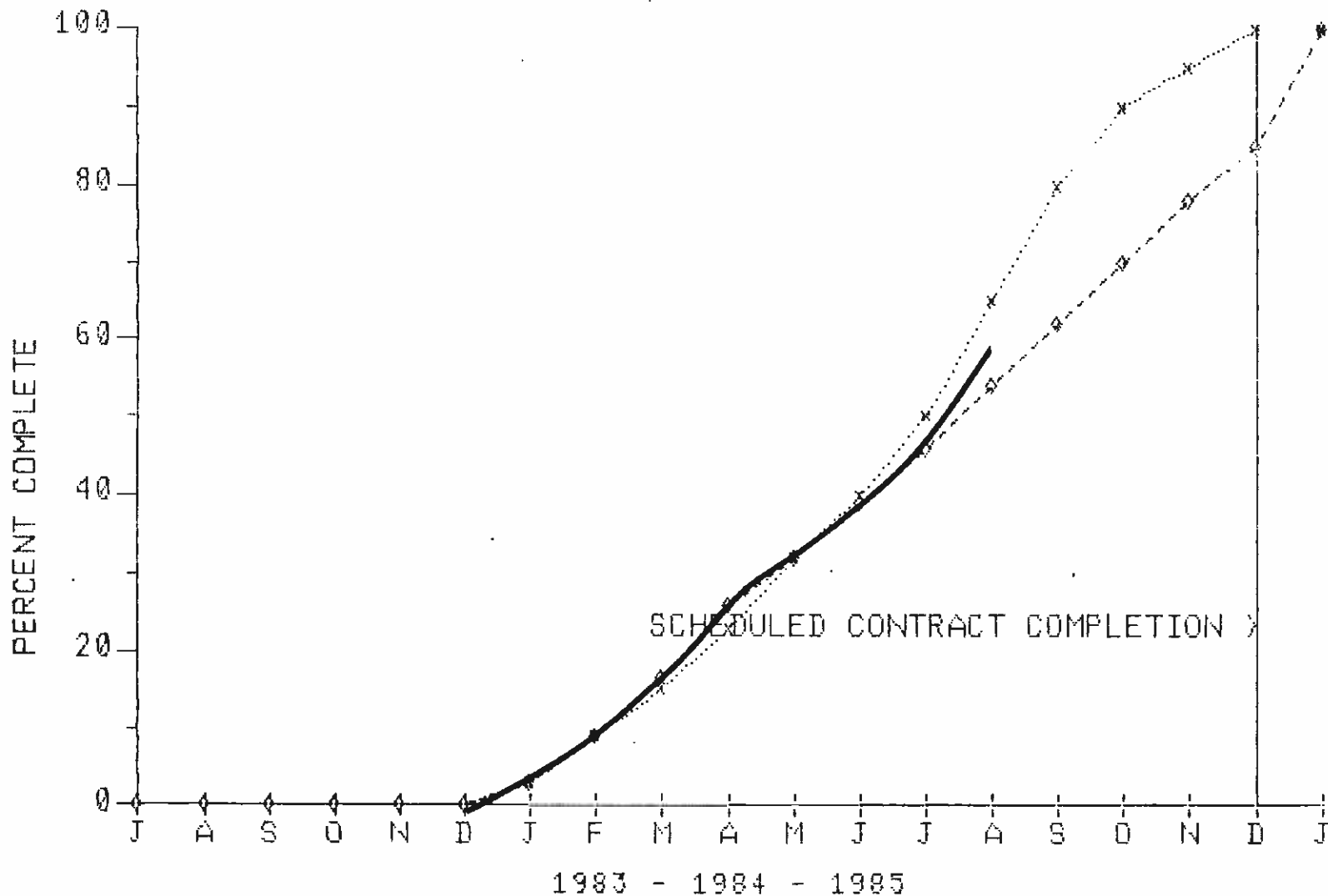
COMMENTS:

None

PERFORMANCE ASSESSMENT:

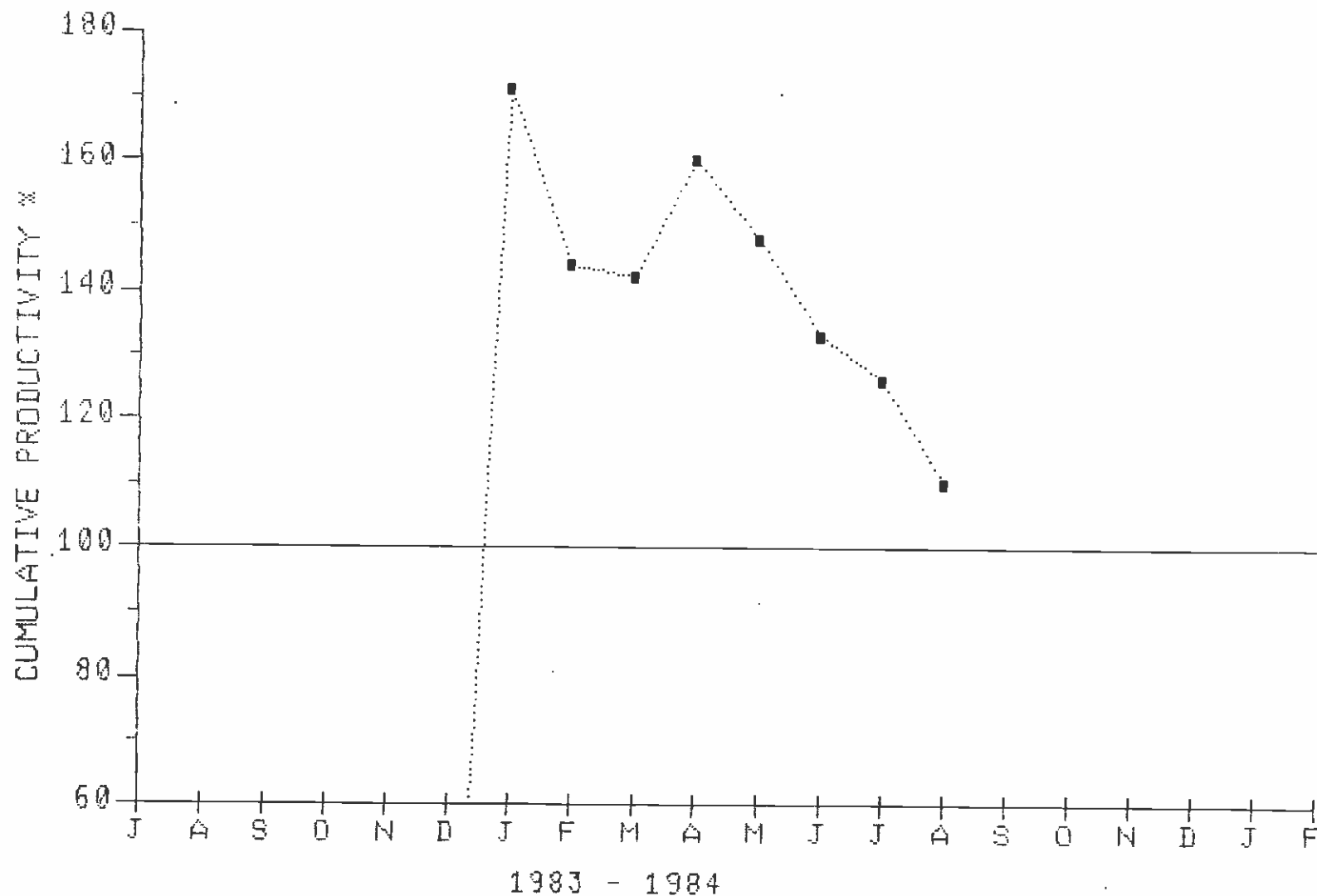
Contract is on schedule, but may be delayed due to late submittal of the Seismic Design Criteria.

RTD METRO RAIL PROJECT  
 CONTRACT A430 - LINE BTW. UNIVERSAL CITY & N. HOLLYWOOD  
 DESIGNER: PAE/WH/S & W  
 STATUS AS OF AUGUST 1984



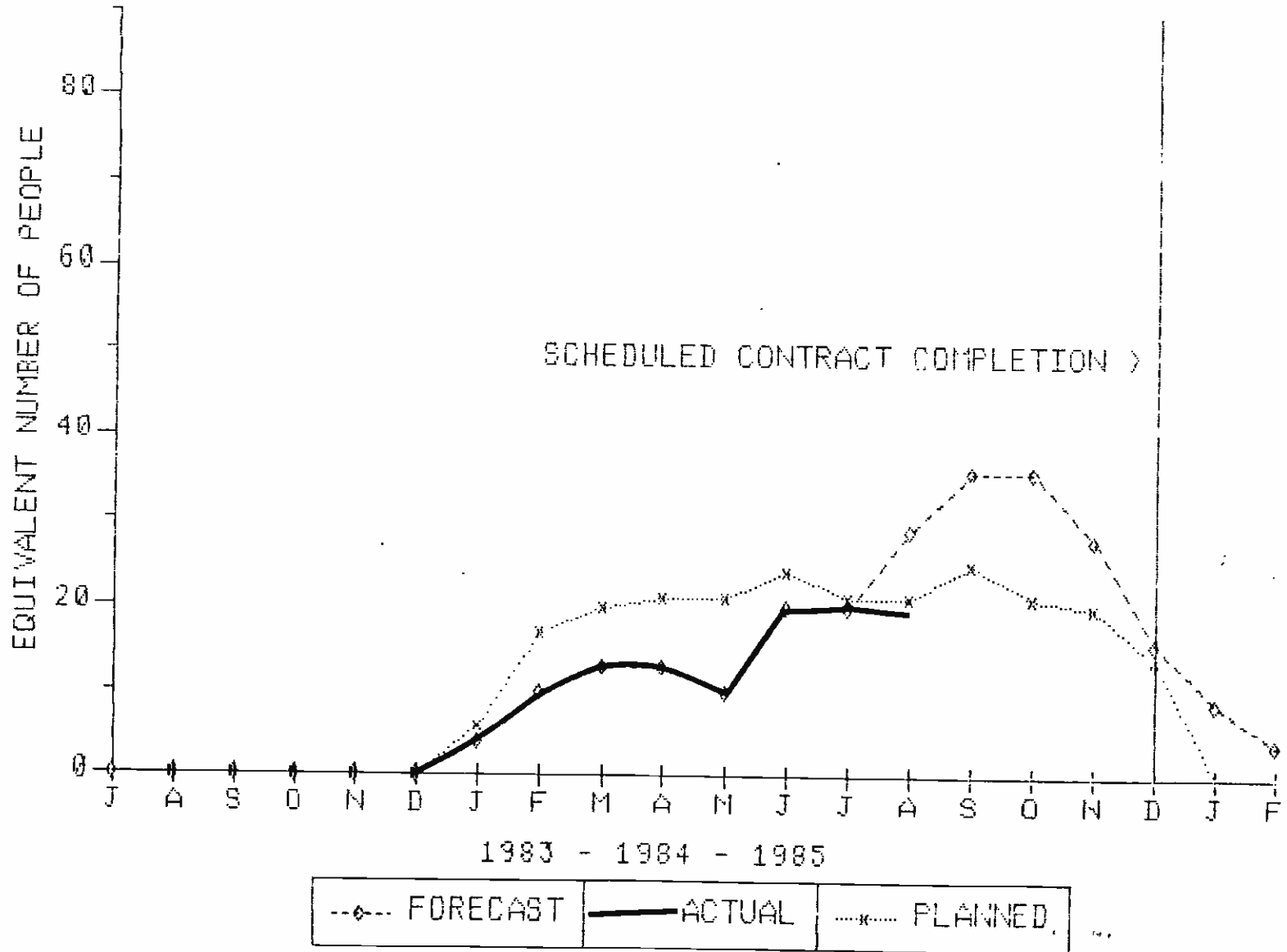
--◇-- FORECAST	— ACTUALS	---x--- PLANNED
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RTD METRO RAIL PROJECT  
CONTRACT A430 - LINE BTW. UNIVERSAL CITY & N. HOLLYWOOD  
SECTION DESIGNER: PAE/WH/S & W  
AUGUST 1984



ACTUAL

RTD METRO RAIL PROJECT  
 CONTRACT A430 - LINE BTW. UNIVERSAL CITY & N. HOLLYWOOD  
 DESIGNER: PAE/WS/S & W  
 STATUS AS OF AUGUST 1984



RTD METRO RAIL PROJECT  
 SECTION DESIGNER EVALUATION  
 AUGUST 1984  
 COST ANALYSIS

CONTRACT # - A445, NORTH HOLLYWOOD STATION  
 DESIGN CONTRACTOR - GIBBS/GIBBS

COMMENTS ON MRTIC PROGRESS REPORT

- o THIS CONTRACT IS PROGRESSING SMOOTHLY; THE SITE PLAN ALONG WITH ALL SURFACE WORK IS ON HOLD, CAUSING A COST IMPACT ON THE CONTRACT.

DATA REPORTED BY MRTIC/DESIGN CONSULTANT

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	40	32	33
INCREMENTAL PROGRESS	10	7	8
COST	2,142,000	*2,512,348	599,000
MANHOURS	45,100	49,100	12,800
CONTRACT DURATION	19	21	8

\*THIS NUMBER IS NOT REFLECTED IN THE MONTHLY PROGRESS REPORT BUT IS IN THE AUG. TREND REPORT; DUE TO TIME RESTRAINTS IT WAS NOT INCORPORATED IN THE MONTHLY REPORT.

$$\text{PRODUCTIVITY} = \% \text{ COMPLETE} \times \frac{\text{TOTAL MH FORECAST}}{\text{MHS. SPENT}} = \frac{.33 \times 49,100}{12,800} \times 100 = 127\%$$

(CUMULATIVE)

TOO HIGH OF A PRODUCTIVITY TO BE REALISTIC.

$$\text{EARNED COSTS} = \% \text{ COMPLETE} \times \text{TOTAL COST FORECAST} = .33 \times 2,512,348 = \$829,075$$

(CUMULATIVE)

THIS CONTRACTOR, BEING AT 33% COMPLETE, HAS THEORETICALLY EARNED \$829,000.

$$\text{COST PERFORMANCE INDEX} = \frac{\text{EARNED COSTS}}{\text{ACTUAL COSTS SPENT}} = \frac{829,000}{559,000} = \$ 1.38$$

(CUMULATIVE) - CPI

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ 1.38 WORTH OF WORK FOR EVERY DOL

$$\text{(CUMULATIVE) - CPI} = \frac{829,000}{559,000} = \$ 1.38$$

THE COST PERFORMANCE INDICATES THAT THEORETICALLY WE ARE GETTING \$ 1.38 WORTH OF WORK FOR EVERY DOLLAR WE SPEND.

$$\text{COST VARIANCE} = \text{ACTUAL \$ SPENT} - \text{EARNED \$} = 599,000 - 829,000 = \$ (230,000)$$

(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY \$ 230,000.



COST ANALYSIS  
 (CONTINUED)

CONTRACT # - A445 NORTH HOLLYWOOD STATION  
 DESIGN CONTRACTOR - GIBBS/GIBBS

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{l} \% \text{ SPENT} = \\ \text{(CUMULATIVE)} \end{array} \quad \frac{\text{ACTUAL COSTS SPENT}}{\text{FORECAST AT COMPLETION}} = \frac{599,000}{2,512,348} = 24\%$$

THE CONTRACTOR HAS SPENT 24% OF THE FORECAST VS. HIS PHYSICAL PROGRESS OF 33%.

$$\begin{array}{l} \text{EST. AT COMPLETION} = \\ \text{(CALCULATED - EAC)} \end{array} \quad \frac{\text{FORECAST AT COMPLETION}}{\text{COST PERFORMANCE INDEX}} = \frac{2,512,300}{1.38} = \$1,820,507$$

AT THE CURRENT RATE OF COST PERFORMANCE (CPI), WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT A COST OF \$1,820,507. THIS REPRESENTS A COST UNDERRUN OF \$691,800 OR A 28% DECREASE WHEN COMPARED TO THE PRESENT FORECAST, BUT WHEN COMPARED TO THE PLANNED BUDGET, IT WILL UNDERRUN BY \$321,000.

$$\begin{array}{l} \text{TO COMPLETE} \\ \text{PERFORMANCE INDEX} \end{array} = \frac{\text{FORECAST AT COMPLETION} - \text{EARNED COSTS}}{\text{FORECAST AT COMPLETION} - \text{ACTUAL \$ SPENT}} = \frac{2,512,348 - 824,000}{2,512,348 - 599,000} = 88\%$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 88% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

CONCLUSION

THIS CONTRACT IS SCHEDULED TO BE COMPLETED ONLY TO THE 85% LEVEL. BASED ON THE PRESENT FORECAST FOR THE COST TO COMPLETE, THEY WILL UNDERRUN THE PLANNED BUDGET BY \$35,000.

THIS CONTRACT IS STILL UNDERSTAFFED BY 12 PEOPLE.

08/31/84  
PC-BACKUP 14.2<28>

SECTION DESIGNER EVALUATION

SCHEDULE ANALYSIS  
STATUS AS OF: August 31, 1984

DESIGN CONTRACT: A445 North Hollywood Station	AWARD: 06/16/83
DESIGN SUBCONTRACTOR: Hugh Gibbs & Don Gibbs	NTP: 12/29/83
PROJECT MANAGER(TSD/MRTC): Quesada/Challes	DURATION: 548 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
CONTROL SYSTEM SUBMITTAL	01/11/84	-	02/01/84	-
STAGE I				
IN PROG. SUBMITTAL (60%)	09/20/84	09/20/84	-	-
PRE FINAL SUBMITTAL (85%)	01/31/85	01/31/85	-	-
FINAL SUBMITTAL (100%)	05/27/85	05/27/85	-	-
BID DOCUMENTS	-	-	-	-
FINAL DESIGN COMPLETE	06/28/85	06/28/85	-	-
STAGE II				
IN PROG. SUBMITTAL (60%)	09/20/84	09/20/84	-	-
PRE FINAL SUBMITTAL (85%)	01/31/85	01/31/85	-	-
FINAL SUBMITTAL (100%)	05/27/85	05/27/85	-	-
BID DOCUMENTS	-	-	-	-
FINAL DESIGN COMPLETE	06/28/85	06/28/85	-	-
TIME OF PERFORMANCE	06/28/85	06/28/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

No problems reported last period.

AREAS OF CONCERN:

The preferred street widths of LA-DOT are at a variance with the Section Designer's current street widths design; hence design costs will be impacted if Section Designer must change design.

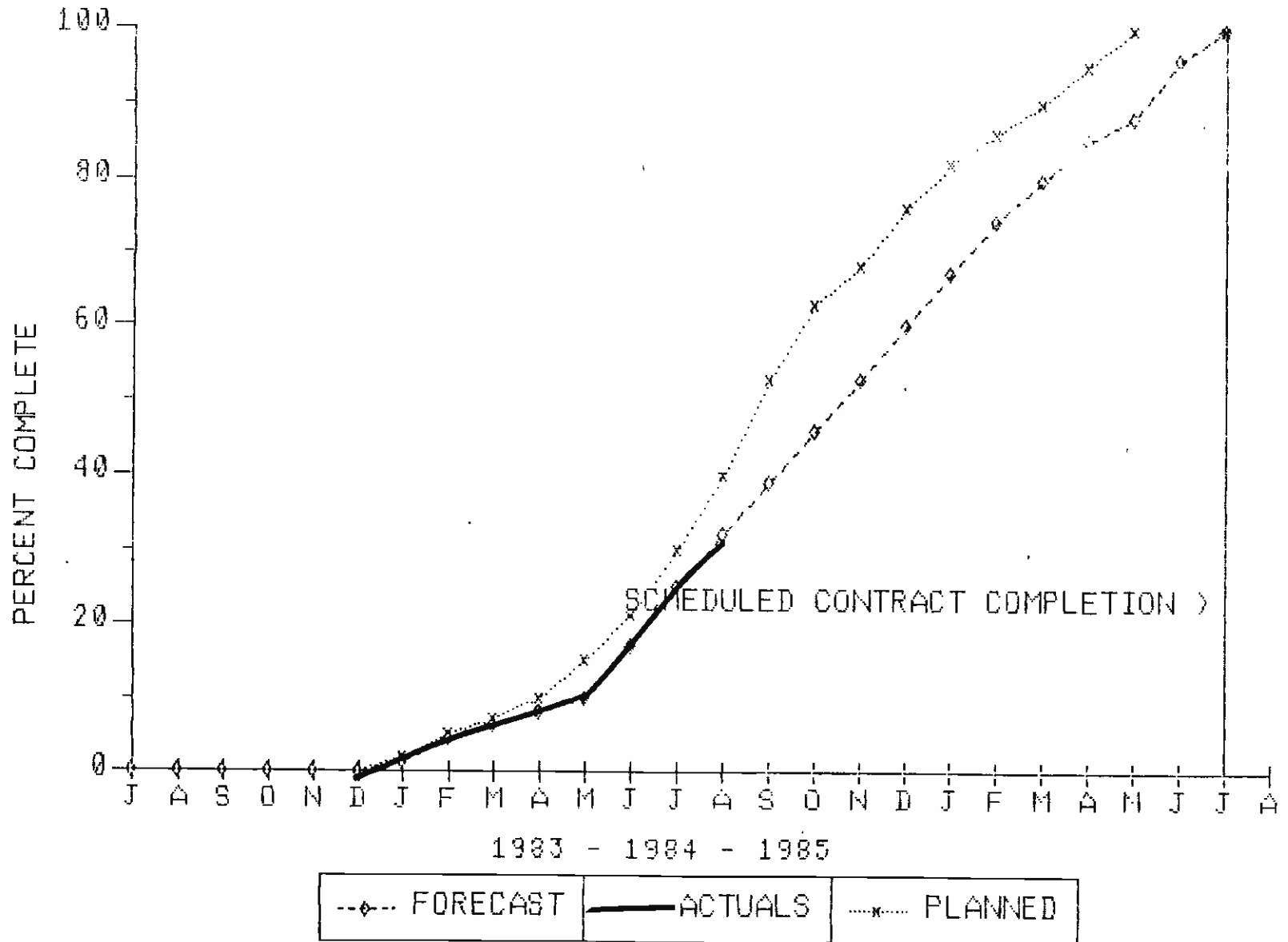
COMMENTS:

All site and surface development work is on hold; In-Progress Submittal (60%) may be delayed 2 weeks.

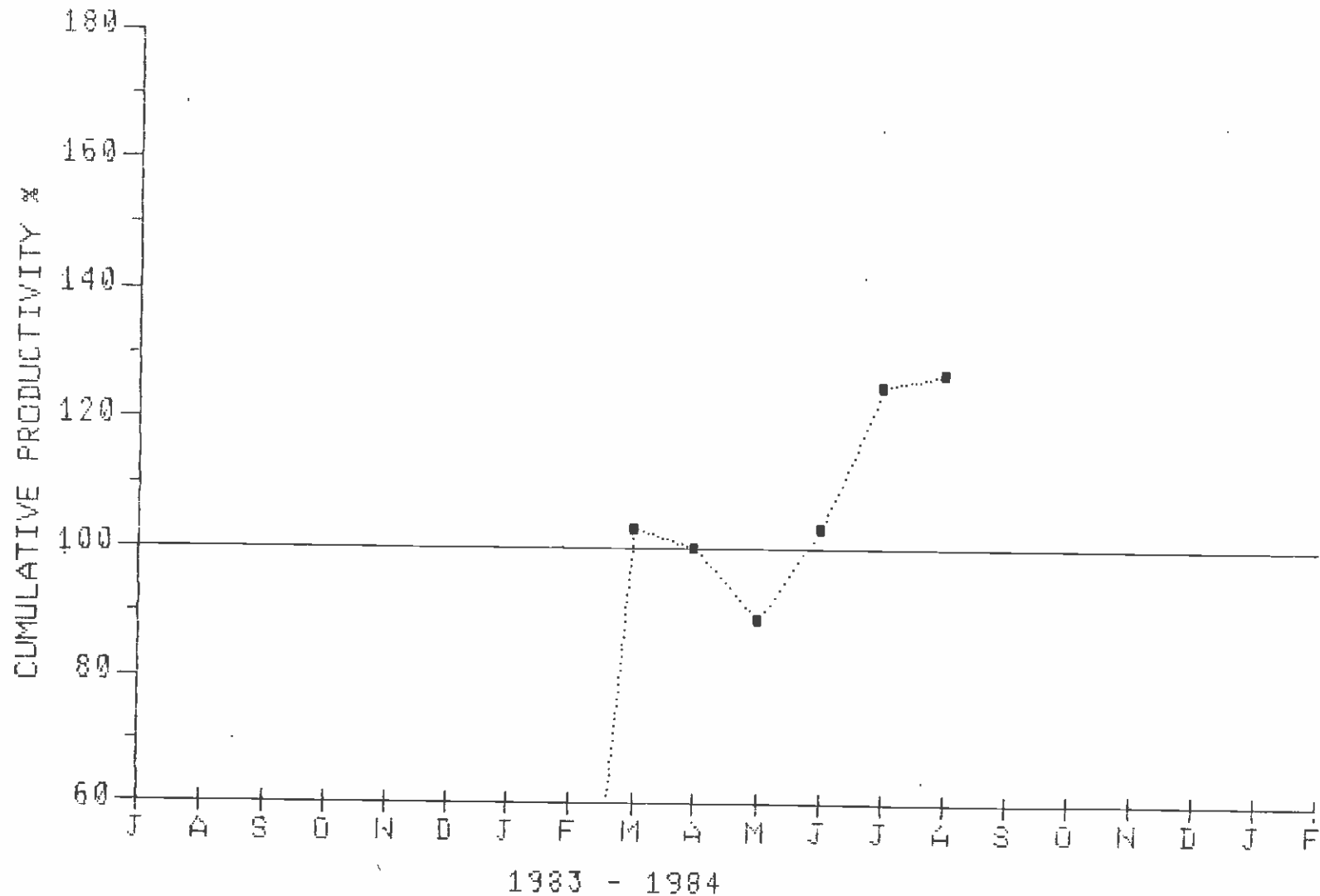
PERFORMANCE ASSESSMENT:

The contract is on schedule.

RTD METRO RAIL PROJECT  
 CONTRACT A445 - NORTH HOLLYWOOD  
 SECTION DESIGNER: GIBBS & GIBBS  
 STATUS AS OF AUGUST 1984

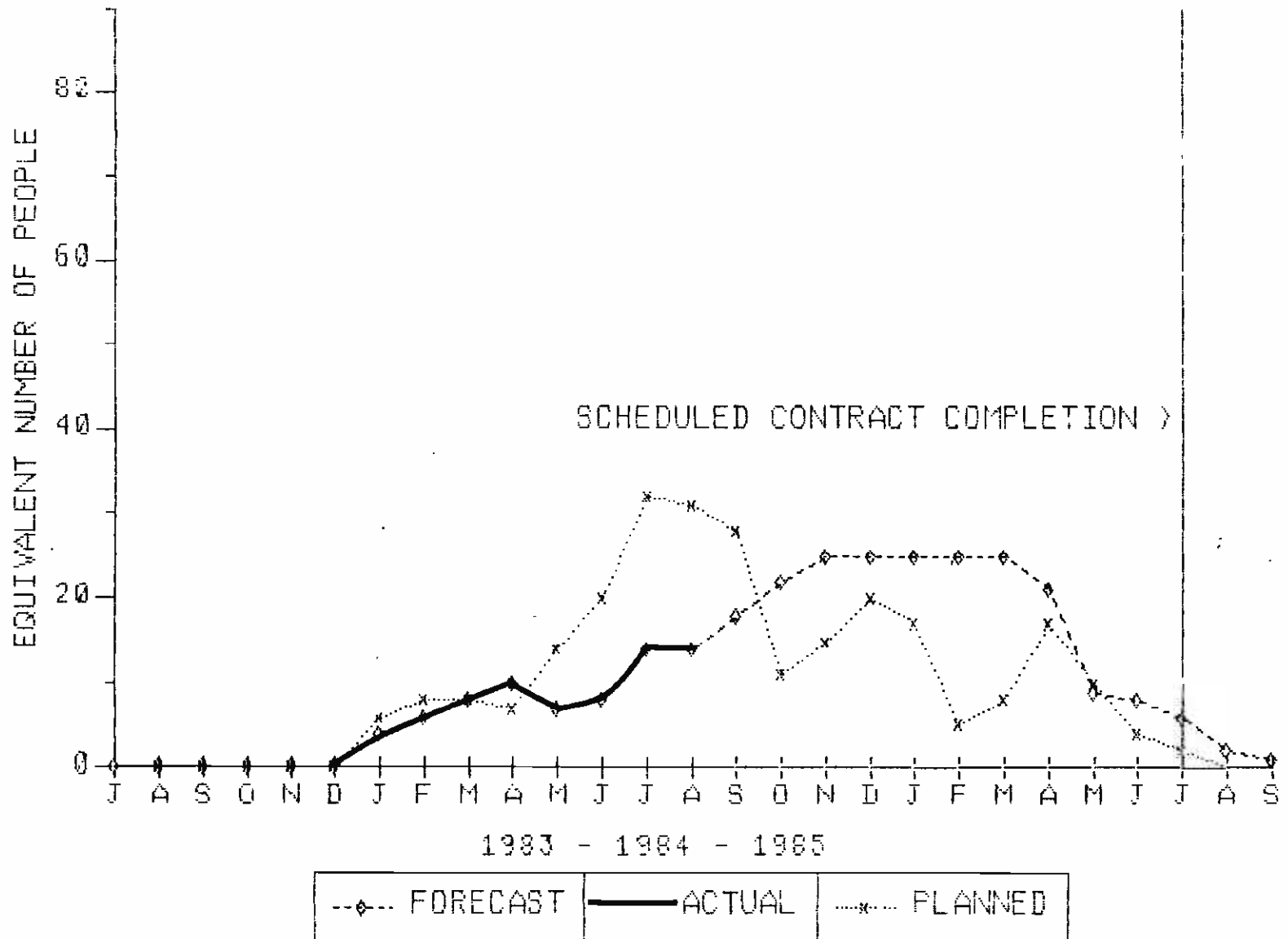


RTD METRO RAIL PROJECT  
CONTRACT A445 - NORTH HOLLYWOOD STATION  
SECTION DESIGNER: HUGH GIBBS & DONALD GIBBS  
STATUS AS OF AUGUST 1984



—■— ACTUAL

RTD METRO RAIL PROJECT  
 CONTRACT A445 - NORTH HOLLYWOOD STATION  
 SECTION DESIGNER: HUGH GIBBS & DONALD GIBBS  
 STATUS AS OF AUGUST 1984



SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: Trackwork Design  
SYSTEM RESPONSIBILITY: MRTC In-House Program  
PROJECT MANAGER(TSD/MRTC): Wesley/Valencia

START: 02/01/83  
COMPLETE: 01/01/86  
DURATION: 698  
(CALENDAR DAYS)

CONTRACTS

	SCHEDULED (100% FINAL	FORECAST SUBMITTAL)
A610 MAINLINE TRACKWORK INSTALLATION	11/01/86	11/01/86
A611 RUNNING RAIL PROCUREMENT	11/01/84	11/01/84
A613 TIES PROCUREMENT	03/01/85	03/01/85
A614 SPECIAL TRACKWORK PROCUREMENT	02/01/85	02/01/85
A616 TRACK FASTENERS PROCUREMENT	12/01/86	12/01/86
A617 RAIL WELDING SERVICE	11/01/85	11/01/85
A618 YARD TRACKWORK INSTALLATION	12/01/85	12/01/85

RESOLUTIONS OF LAST PERIODS PROBLEMS:

A Trackwork design presentation was made (8/15/84) to provide an overview of trackwork design and construction concepts to TSD Management. During discussion TSD requested MRTC look into repackaging trackwork contracts for the MOS-1 (4 mile) segment.

AREAS OF CONCERN:

Pursuant to the action requested (in the above meeting), MRTC and TSD Engineers and Scheduler met (8/24/84) to draw up a proposal for repackaging current trackwork procurement, installation and welding for MOS-1. This proposal is expected to be submitted for review next month.

COMMENTS:

The preliminary submittal (30%) for Contract A610 Mainline Trackwork is expected early next month.

PERFORMANCE ASSESSMENT:

Project Completion for all disciplines is on schedule.

RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A610, MAINLINE TRACKWORK INSTALLATION  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT  
NO COMMENT

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	30	-	25
INCREMENTAL PROGRESS	5	-	5
MANHOURS	10,317	-	2,523
CONTRACT DURATION	12	-	5

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = .25 X 10,317 = 2,579  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 25% COMPLETE, HAS THEORETICALLY EARNED 2,579 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = .25 X 10,317 X 100 = 102%  
(CUMULATIVE) -----  
MHS. SPENT 2,523

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 2,523 - 2,579 = (56)  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY 56 MANHOURS.

-----

**MTA LIBRARY**

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
(CONTINUED)

CONTRACT # - A610, MAINLINE TRACKWORK INSTALLATION  
DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

% SPENT = ACTUAL MANHOURS SPENT = 2,523  
(CUMULATIVE) ----- = ----- = 25%  
FORECAST AT COMPLETION 10,317

THE CONTRACTOR HAS SPENT 25% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 25%.

-----

EST. AT COMPLETION = FORECAST AT COMPLETION = 10,317  
(CALCULATED - EAC) ----- = ----- = 10,115  
PRODUCTIVITY/100 1.02

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT 10,115 MANHOURS . THIS REPRESENTS A COST UNDERRUN OF 202 MANHOURS OR A 2% DECREASE.

-----

TO COMPLETE = FORECAST AT COMPLETION-EARNED MANHOURS 10,317 - 2,579  
PERFORMANCE INDEX ----- = -----  
FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT 10,317 - 2,523  
  
= 99%

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 99% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION  
NO COMMENT



RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A614, SPECIAL TRACKWORK  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT  
o NO COMMENT

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	60	60	40
INCREMENTAL PROGRESS	15	15	5
MANHOURS	5,081	5,081	2,270
CONTRACT DURATION	9	9	5

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = .40 X 5,081 = 2,032  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 40% COMPLETE, HAS THEORETICALLY EARNED 2032 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = .40 X 5,081  
(CUMULATIVE) ----- = ----- X 100 = 90%  
MHS. SPENT 2,270

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 2,270 - 2,032 = 238  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY 238 MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
 (CONTINUED)

CONTRACT # - A614, SPECIAL TRACKWORK  
 MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

% SPENT =	ACTUAL MANHOURS SPENT	=	2,270	
(CUMULATIVE)	-----	=	-----	= 45%
	FORECAST AT COMPLETION		5,081	

THE CONTRACTOR HAS SPENT 45% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 40%.

EST. AT COMPLETION =	FORECAST AT COMPLETION =	5,081	
(CALCULATED - EAC)	-----	-----	= 5,645
	PRODUCTIVITY/100	90/100	

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT 5,645 MANHOURS . THIS REPRESENTS A COST OVERRUN OF 565 MANHOURS OR A 11% INCREASE.

TO COMPLETE	=	FORECAST AT COMPLETION-EARNED MANHOURS	5,081	-	2,032
PERFORMANCE INDEX		-----	=	-----	
		FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT	5,081	-	2,270
					= 109%

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 109% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION

NO COMMENT.

RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A618, YARD TRACKWORK INSTALLATION  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT

NO COMMENT

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	23	23	15
INCREMENTAL PROGRESS	8	8	5
MANHOURS	6,624	6,624	907
CONTRACT DURATION	11	11	3

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = .15 X 6,624 = 994  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 15% COMPLETE, HAS THEORETICALLY EARNED 994 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = 15 X 6,624  
(CUMULATIVE) ----- X 100 = 110%  
MHS. SPENT 907

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 907 - 994 = (87)  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY 87 MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
(CONTINUED)

CONTRACT # - A618, YARD TRACKWORK INSTALLATION  
DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{rclclcl} \% \text{ SPENT} = & \text{ACTUAL MANHOURS SPENT} & = & 907 & & \\ \text{(CUMULATIVE)} & \text{-----} & = & \text{-----} & = & 14\% \\ & \text{FORECAST AT COMPLETION} & & 6,624 & & \end{array}$$

THE CONTRACTOR HAS SPENT 14% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 15%.

$$\begin{array}{rclclcl} \text{EST. AT COMPLETION} = & \text{FORECAST AT COMPLETION} = & 6,624 & & & \\ \text{(CALCULATED - EAC)} & \text{-----} & = & \text{-----} & = & 6,022 \\ & \text{PRODUCTIVITY/100} & & 110 & & \end{array}$$

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT 6,022 MANHOURS . THIS REPRESENTS A COST UNDERRUN OF 6,022 MANHOURS OR A 62% DECREASE.

$$\begin{array}{rclclcl} \text{TO COMPLETE} & = & \text{FORECAST AT COMPLETION-EARNED MANHOURS} & 6,624 & - & 994 \\ \text{PERFORMANCE INDEX} & & \text{-----} & = & \text{-----} & \\ & & \text{FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT} & 6,624 & - & 907 \\ & & & & & \\ & & & & & = 99\% \end{array}$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 99% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION

NO COMMENT.

08/31/84  
PC BACKUP 14.3<2>

## SYSTEMS EVALUATION

### SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A620 Automatic Train Control	START: 05/02/83
SYSTEM RESPONSIBILITY: MRTC	COMPLETE: 04/26/85
PROJECT MANAGER(TSD/MRTC): M. Becher/M. Burgess	DURATION: 724
	(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	09/16/83	-	09/16/83	-
DESIGN SUBMITTAL (50/60%)	09/29/84	09/29/84	-	0
DESIGN SUBMITTAL (85/90%)	12/09/84	12/09/84	-	0
DESIGN SUBMITAL (100%)	04/19/85	04/19/85	-	0
ADVERTISE	06/07/85	06/07/85	-	0
AWARD	12/06/85	12/06/85	-	0

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

- . With the (50%) In-Progress Submittal previously rescheduled it appears the submittal will be made without impact to the completion of the contract.

#### AREAS OF CONCERN:

- . No areas of concern exist this period.

#### COMMENTS:

- . The contract is not proceeding to the level of completion which is indicated on the MRTC In-House Schedule. The (50%) In-Progress Submittal, however, will be completed as scheduled.

#### PERFORMANCE ASSESSMENT:

- . The contract is on schedule.

RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A620, AUTOMATIC TRAIN CONTROL  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT

o NONE

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	48	48	45
INCREMENTAL PROGRESS	3	3	8
MANHOURS	17,421	17,421	8,399
CONTRACT DURATION	N/A	N/A	N/A

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = .45 X 17,421 = 7,839  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 45% COMPLETE, HAS THEORETICALLY EARNED 7,839 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = .45 X 17,421  
(CUMULATIVE) = ----- X 100 = 93%  
MHR. SPENT 8,399

PRODUCTIVITY HAS INCREASED FROM LAST MONTH'S FIGURE OF 87%.

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 8,399 - 7,839 = 560  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY 560 MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
 (CONTINUED)

CONTRACT # - A620, AUTOMATIC TRAIN CONTROL  
 DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{array}{rclclcl} \% \text{ SPENT} = & \text{ACTUAL MANHOURS SPENT} & & 8,399 & & \\ \text{(CUMULATIVE)} & \text{-----} & = & \text{-----} & = & 48 \% \\ & \text{FORECAST AT COMPLETION} & & 17,421 & & \end{array}$$

THE CONTRACTOR HAS SPENT 48% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 45%.

$$\begin{array}{rclclcl} \text{EST. AT COMPLETION} & = & \text{FORECAST AT COMPLETION} & & 17,421 & \\ \text{(CALCULATED - EAC)} & & \text{-----} & = & \text{-----} & = 18,732 \\ & & \text{PRODUCTIVITY/100} & & .93 & \end{array}$$

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT MANHOURS . THIS REPRESENTS A COST OVERRUN OF 1,311 MANHOURS OR A 8% INCREASE.

$$\begin{array}{rclclcl} \text{TO COMPLETE} & = & \text{FORECAST AT COMPLETION-EARNED MANHOURS} & & 17,421 & - & 7,839 \\ \text{PERFORMANCE INDEX} & & \text{-----} & = & \text{-----} & & \\ & & \text{FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT} & & 17,421 & - & 8,399 \\ & & & & & & \\ & & & & & & = 106\% \end{array}$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 106% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION  
 WORK IS PROGRESSING ON A SATISFACTORY BASIS FOR THIS CONTRACT. INCOMPLETE OR INCORRECT SPECIFICATIONS HAVE HINDERED PROGRESS TO A MINOR DEGREE, HOWEVER, THESE PROBLEMS ARE BEING WORKED OUT AT THIS TIME.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A630/A631 Traction Power                    START:            02/01/84  
  Substation Equipment  
  Installation & Procurement  
SYSTEM RESPONSIBILITY: MRTC In-House Program                    COMPLETE:        07/01/86  
PROJECT MANAGER(TSD/MRTC): B. Hansson/I. Shafir                DURATION:        1126  
  (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULE	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	10/05/83	-	10/05/83	-
DESIGN SUBMITTAL (50/60%)	04/30/84	-	04/30/84	-
DESIGN SUBMITTAL (85/90%)	11/30/84	11/30/84	-	-
DESIGN SUBMITTAL (100%)	02/25/85	02/25/85	-	-
ADVERTISE	04/30/85	04/30/85	-	-
AWARD PROCUREMENT CONTR.	09/01/85	09/01/85	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Industry review comments are being compiled. After MRTC/RTD review each comment, selected industry participants will be dealt with individually.

The results of the Methane Gas Study have been received. This causes no schedule impact.

AREAS OF CONCERN:

No problems have been identified during this reporting period.

COMMENTS:

The upcoming Pre-final Submittal will consist of the following procurement packages:

- Contract A612 Contact Rail (Manufacture/Deliver)
- Contract A615 Coverboard (Manufacture/Deliver)
- Contract A630 Substation Equipment (Manufacture/Deliver/Supervise Installation)

PERFORMANCE ASSESSMENT:

Project Completion for procurement contracts are on schedule (4/30/84)

Project Completion for the installation contract (A631) is on schedule (4/30/86)



RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A612, A615, A630, TRACTION POWER PROCUREMENT  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT

- o THE MANHOUR SUMMARY GRAPH BEGINS AT 54% COMPLETE WHICH MAKES IT IMPOSSIBLE TO KNOW THE CONTRACT DURATION.
- o NO FORECAST HAS YET APPEARED FOR THESE THREE CONTRACTS.

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	72	72	69
INCREMENTAL PROGRESS	5	5	3
MANHOURS	20,958	20,958	13,781
CONTRACT DURATION	N/A	N/A	N/A

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = .69 X 20,958 = 14,461  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 69% COMPLETE, HAS THEORETICALLY EARNED 14,461 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = .69 X 20,958  
(CUMULATIVE) =  $\frac{\text{MRS. SPENT}}{13,781} \times 100 = 105\%$

PRODUCTIVITY IS SATISFACTORY.

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 13,781 - 14,461 = (680)  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY 680 MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
 (CONTINUED)

CONTRACT # - A612, A615, A630, TRACTION POWER PROCUREMENT  
 DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

% SPENT = ACTUAL MANHOURS SPENT = 13,781  
 (CUMULATIVE) ----- = ----- = 66%  
 FORECAST AT COMPLETION 20,958

THE CONTRACTOR HAS SPENT 66% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 69%.

-----

EST. AT COMPLETION = FORECAST AT COMPLETION = 20,958  
 (CALCULATED - EAC) ----- = ----- = 19,960  
 PRODUCTIVITY/100 1.05

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT 19,960 MANHOURS . THIS REPRESENTS A COST UNDERRUN OF 998 MANHOURS OR A 5% DECREASE.

-----

TO COMPLETE	=	FORECAST AT COMPLETION-EARNED MANHOURS	20,958	-	14,461
PERFORMANCE INDEX		-----	=	-----	
		FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT	20,958	-	13,781
				=	91%

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 91% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION

THESE THREE PROCUREMENT CONTRACTS ARE PROGRESSING SATISFACTORILY. PRODUCTIVITY IS ABOVE 100%, AND A MANHOOR UNDERRUN IS PROJECTED.

RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A631, TRACTION POWER INSTALLATION  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT

- o THE MANHOUR SUMMARY GRAPH IS PLOTTED ONLY TO THE 45% COMPLETE LEVEL (APRIL 1985, THE END OF MRTC'S ANNUAL WORK PLAN), INSTEAD OF THE 100% LEVEL.
- o THERE IS NO FORECAST YET FOR THIS CONTRACT.

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	12	12	12
INCREMENTAL PROGRESS	1	1	0
MANHOURS	5,335	5,335	1,011
CONTRACT DURATION	12	12	4

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = .12 X 5,335 = 640  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 12% COMPLETE, HAS THEORETICALLY EARNED 640 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = .12 X 5,335  
(CUMULATIVE) ----- = ----- X 100 = 63%  
MHS. SPENT 1,011

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 1,011 - 640 = 371  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY 371 MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
 (CONTINUED)

CONTRACT # - A631, TRACTION POWER INSTALLATION  
 DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

% SPENT = ACTUAL MANHOURS SPENT = 1,011  
 (CUMULATIVE) ----- = ----- = 19%  
 FORECAST AT COMPLETION 5,335

THE CONTRACTOR HAS SPENT 19% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 12%.

-----

EST. AT COMPLETION = FORECAST AT COMPLETION = 5,335  
 (CALCULATED - EAC) ----- = ----- = 8,468  
 PRODUCTIVITY/100 .63

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT 8,468 MANHOURS . THIS REPRESENTS A COST OVERRUN OF 3,133 MANHOURS OR A 59% INCREASE.

-----

TO COMPLETE	=	FORECAST AT COMPLETION-EARNED MANHOURS	5,335	-	640
PERFORMANCE INDEX		-----	=	-----	
		FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT	5,335	-	1,011
					= 109%

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 109% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION

NO PROGRESS WAS ACHIEVED DURING AUGUST DESPITE THE EXPENDITURE OF 243 MANHOURS. THE MANHOUR OVERRUN IS NOW PROJECTED TO BE 59% FOR THE PERIOD THROUGH THE MRTC'S ANNUAL WORK PLAN.

**SYSTEMS EVALUATION**

**SCHEDULE ANALYSIS**

STATUS AS OF: August 31, 1984

<b>SYSTEM DESCRIPTION:</b> A640 Communications	<b>START:</b> 05/02/83
<b>SYSTEM RESPONSIBILITY:</b> MRTC In-House Program	<b>COMPLETE:</b> 04/26/85
<b>PROJECT MANAGER(TSD/MRTC):</b> L.Durrant/C. Fisher	<b>DURATION:</b> 724 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	06/22/84	-	07/11/84	-
DESIGN SUBMITTAL (50/60%)	03/30/85	03/30/85	-	-
DESIGN SUBMITTAL (85/90%)	05/30/85	05/30/85	-	-
DESIGN SUBMITTAL (100%)	07/30/85	07/30/85	-	-
ADVERTISE	09/30/85	09/30/85	-	-
AWARD	03/04/86	03/04/86	-	-

**RESOLUTIONS OF LAST PERIODS PROBLEMS:**

No problems reported last period.

**AREAS OF CONCERN:**

None

**COMMENTS:**

The Scheduled/Forecast dates shown above are new dates; rescheduling of the contract was necessary to accomodate the delayed NTP of the Supervisory Control and Data Acquisition (SCADA) subcontractor award.

**PERFORMANCE ASSESSMENT:**

No performance assessment will be done for this period due to the rescheduling of the contract.

RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A640, COMMUNICATIONS AND MISC. MECHANICAL/ELECTRICAL  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT

- o NO FORECAST.
  
- o NO COST DATA.

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	45	45	47
INCREMENTAL PROGRESS	4	4	4
MANHOURS	21,674	21,674	10,451
CONTRACT DURATION	12	12	5

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR BUDGET = .47 X 21,674 = 10,187  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 47% COMPLETE, HAS THEORETICALLY EARNED 10,187 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH BUDGET = .47 X 21,674  
(CUMULATIVE) ----- = ----- X 100 = 97%  
MHS. SPENT 10,451

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 10,451 - 10,187 = 264  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY 264 MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
(CONTINUED)

CONTRACT # - A640, COMMUNICATIONS AND MISC. MECHANICAL/ELECTRICAL  
DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

% SPENT = ACTUAL MANHOURS SPENT = 10,451  
(CUMULATIVE) ----- = ----- = 48%  
FORECAST AT COMPLETION 21,674

THE CONTRACTOR HAS SPENT 48% OF THE TOTAL BUDGET VS. HIS PHYSICAL PROGRESS OF 47%.

-----

EST. AT COMPLETION = FORECAST AT COMPLETION = 21,674  
(CALCULATED - EAC) ----- = ----- = 22,344  
PRODUCTIVITY/100 97

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT 22,344 MANHOURS . THIS REPRESENTS A COST OVERRUN OF 670 MANHOURS OR 3% INCREASE.

-----

TO COMPLETE = BUDGET AT COMPLETION-EARNED MANHOURS 21,674 - 10,187  
PERFORMANCE INDEX ----- = -----  
BUDGET AT COMPLETION-ACTUAL MANHOURS SPENT 21,674 - 10,451  
  
= 102%

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 102% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION  
THERE ARE NO PROBLEM AREAS CONCERNING THIS CONTRACT.

## SYSTEMS EVALUATION

### SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A650 Passenger Vehicle	START: 05/02/83
SYSTEM RESPONSIBILITY: MRTC In-House Design	COMPLETE: 12/01/84
PROJECT MANAGER(TSD/MRTC): L. Durrant/S. Rodda	DURATION: 578 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	09/01/83	-	09/01/83	-
DESIGN SUBMITTAL (60%)	07/23/84	07/23/84	07/23/84	-
DESIGN SUBMITTAL (85%)	11/01/84	11/01/84	08/14/84	-
DESIGN SUBMITTAL (100%)	02/15/85	02/15/85	-	-
ADVERTISE	03/15/85	03/15/85	-	-
AWARD	09/30/85	09/30/85	-	-

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems reported last period.

#### AREAS OF CONCERN:

There are no major problems anticipated at this time.

#### COMMENTS:

The MRTC Systems Design department submitted the 60% design submittal 7/24/84. The submittal has received extensive comment on the contract specifications package. The contract specifications will be streamlined due to an overall comment that it was too bulky. The revised specification is forecast to be completed 9/10/84 as part of the 85% Design Submittal.

#### PERFORMANCE ASSESSMENT:

Planned work is on schedule.



RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A650, PASSENGER VEHICLES  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT

- o NO EXPLANATION IS GIVEN AS TO WHY THE PLANNED PROGRESS FIGURES END 5 MONTHS PRIOR TO THE PLANNED MANHOUR FIGURES.
- o NO EXPLANATION IS GIVEN AS TO WHY ACTUAL PROGRESS WENT DOWN FROM 60% IN JULY TO 59% IN AUGUST.

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	89	89	59
INCREMENTAL PROGRESS	4	4	-1
MANHOURS	14,783	14,783	8,712
CONTRACT DURATION	N/A	N/A	N/A

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = .59 X 14,783 = 8,722  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 59% COMPLETE, HAS THEORETICALLY EARNED 8,722 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = .59 X 14,783  
(CUMULATIVE) ----- = ----- X 100 = 100%  
MHS. SPENT 8,712

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 8,712 - 8,722 = (10)  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN BY 10 MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
(CONTINUED)

CONTRACT # - A650, PASSENGER VEHICLES  
DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

% SPENT = ACTUAL MANHOURS SPENT 8,712  
(CUMULATIVE) ----- = ----- = 59%  
FORECAST AT COMPLETION 14,783

THE CONTRACTOR HAS SPENT 59% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 59%.

-----

EST. AT COMPLETION = FORECAST AT COMPLETION 14,783  
(CALCULATED - EAC) ----- = ----- = 14,783  
PRODUCTIVITY/100 1.00

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT 14,783 MANHOURS. THIS REPRESENTS A COST UNDERRUN/OVERRUN OF MANHOURS OR A % INCREASE/DECREASE.

-----

TO COMPLETE = FORECAST AT COMPLETION-EARNED MANHOURS 14,783 - 8,722  
PERFORMANCE INDEX ----- = -----  
FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT 14,783 - 8,712

= 100%

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 100% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION

ALTHOUGH THE MRTC IS REPORTING EXCELLENT LABOR PERFORMANCE, THEY ARE 30% BEHIND THEIR PLANNED PROGRESS LEVEL. THIS MAY BE PARTIALLY DUE TO THE FACT THAT PLANNED PROGRESS IS SHOWN ENDING 5 MONTHS PRIOR TO CONTRACT COMPLETION. THE PLANNED PROGRESS FIGURES SHOULD BE EXTENDED TO THE CONTRACT COMPLETION DATE.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A660 Fare Collection	START: 05/02/83
SYSTEM RESPONSIBILITY: MRTC In-House Program	COMPLETE: 01/01/86
PROJECT MANAGER(TSD/MRTC): D. Gary/C. Williams	DURATION: 972 (CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	03/13/84	-	03/13/84	-
DESIGN SUBMITTAL (50/60%)	11/01/84	11/01/84	-	-
DESIGN SUBMITTAL (85/90%)	06/11/85	06/11/85	-	-
DESIGN SUBMITTAL (100%)	01/02/86	01/02/86	-	-
ADVERTISE	04/01/86	04/01/86	-	-
AWARD	08/29/86	08/29/86	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems reported last period.

AREAS OF CONCERN:

None

COMMENTS:

- . The In-Progress Specification submittal date may be affected pending decisions on bus/LRT interface.
- . A comparative study of reusable versus disposable tickets has started.

PERFORMANCE ASSESSMENT:

The Contract is on schedule.

RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984  
FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A660, FARE COLLECTION  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT

- o THE GRAPHIC PORTION OF THE MANHOUR SUMMARY DOES NOT AGREE WITH THE FIGURES LISTED BELOW FOR ACTUAL AND PLANNED MANHOURS.
- o PLANNED PROGRESS SHOULD GO TO THE 100% LEVEL NOT 75%.

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE	46	46	42
INCREMENTAL PROGRESS	2	2	0
MANHOURS	7,349	7,349	3,438
CONTRACT DURATION	N/A	N/A	N/A

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = .42 X 7,349 = 3,087  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT 42% COMPLETE, HAS THEORETICALLY EARNED 3,087 MANHOURS.

-----

PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST = .42 X 7,349  
(CUMULATIVE) ----- = ----- X 100 = 90%  
MHS. SPENT 3,438

PRODUCTIVITY IS STARTING TO DROP INTO AN UNSATISFACTORY LEVEL.

-----

MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = 3,438 - 3,087 = 351  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY OVERRUN BY 351 MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
 (CONTINUED)

CONTRACT # - A660, FARE COLLECTION  
 DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

% SPENT =	ACTUAL MANHOURS SPENT	=	3,438	=	
(CUMULATIVE)	-----	=	-----	=	47%
	FORECAST AT COMPLETION		7,349		

THE CONTRACTOR HAS SPENT 47% OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF 42%.

EST. AT COMPLETION =	FORECAST AT COMPLETION	=	7,349	=	
(CALCULATED - EAC)	-----	=	-----	=	8,166
	PRODUCTIVITY/100		.90		

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT 8,166 MANHOURS . THIS REPRESENTS A COST OVERRUN OF 817 MANHOURS OR AN 11% INCREASE.

TO COMPLETE	=	FORECAST AT COMPLETION-EARNED MANHOURS	7,349	-	3,087
PERFORMANCE INDEX		-----		=	-----
		FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT	7,349	-	3,438

= 109%

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT 109% EFFICIENCY FOR THE BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION

STUDIES ARE BEING CONDUCTED BY BOOZ-ALLEN & HAMILTON ON THE FINAL DESIGN OF THE FARE COLLECTION SYSTEM WHICH ARE HOLDING UP PROGRESS ON THIS CONTRACT. ONCE THE STUDIES ARE COMPLETED, THE PROGRESS RATE IS EXPECTED TO INCREASE.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A670 Auxiliary Vehicles- START: 01/01/84  
A671 Locomotive  
SYSTEM RESPONSIBILITY: MRTC In-House Program COMPLETE: 10/01/84  
PROJECT MANAGER(TSD/MRTC): R. Beuermann/P. Berkley DURATION: 273  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN SUBMITTAL (30%)	-	-	11/16/83	-
DESIGN SUBMITTAL( 50/60%)	05/01/84	-	05/11/84	-
DESIGN SUBMITTAL (85/90%)	10/01/84	10/01/84	-	0
DESIGN SUBMITTAL (100%)	02/15/85	02/15/85	-	0
ADVERTISE	07/01/85	07/01/85	-	0
AWARD	01/15/86	01/15/86	-	0

RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems reported last period.

AREAS OF CONCERN:

Finalization of a recommended auxiliary vehicle equipment list. This equipment list is required prior to finalization of a procurement schedule for auxiliary vehicles.

COMMENTS:

After TSD agrees to equipment list a design and procurement schedule will be prepared for the additional auxiliary vehicles and major mobile equipment.

PERFORMANCE ASSESSMENT:

Planned work is on schedule.

RTD METRO RAIL PROJECT  
MRTC IN-HOUSE DESIGN STATUS EVALUATION  
AUGUST 1984

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS

CONTRACT # - A671, A676, A678 AUXILIARY VEHICLES  
DESIGN CONTRACTOR - MRTC

=====

COMMENTS ON MRTC PROGRESS REPORT

o MRTC HAS ONLY WRITTEN A NARRATIVE FOR THE LOCOMOTIVE PORTION OF THIS CONTRACT AND HAS NOT INCLUDED A MANHOUR SUMMARY AT ALL.

=====

DATA REPORTED BY MRTC

	<u>PLAN</u>	<u>FORECAST</u>	<u>ACTUAL TO DATE</u>
% COMPLETE			
INCREMENTAL PROGRESS			
MANHOURS			
CONTRACT DURATION	Information is not supplied.		

=====

EARNED MANHOURS = % COMPLETE X TOTAL MANHOUR FORECAST = X =  
(CUMULATIVE)

THIS CONTRACTOR, BEING AT % COMPLETE, HAS THEORETICALLY EARNED MANHOURS.

-----  
PRODUCTIVITY = % COMPLETE X TOTAL MH FORECAST X  
(CUMULATIVE) ----- = ----- X 100 = %  
MHS. SPENT

-----  
MANHOUR VARIANCE = ACTUAL MANHOURS SPENT - EARNED MANHOURS = - =  
(CUMULATIVE)

TO DATE, THIS CONTRACT HAS THEORETICALLY UNDERRUN/OVERRUN BY MANHOURS.

-----

FACILITIES DESIGN/SYSTEM DESIGN ANALYSIS  
(CONTINUED)

CONTRACT # - A671,A676,A678 AUXILIARY VEHICLES  
DESIGN CONTRACTOR - MRTC

=====

PERFORMANCE ASSESSMENT (CONTINUED)

$$\begin{matrix} \% \text{ SPENT} = & \text{ACTUAL MANHOURS SPENT} & & & \\ \text{(CUMULATIVE)} & \frac{\text{-----}}{\text{FORECAST AT COMPLETION}} & = & \text{-----} & = & \% \end{matrix}$$

THE CONTRACTOR HAS SPENT        % OF THE TOTAL FORECAST VS. HIS PHYSICAL PROGRESS OF        %.

-----

$$\begin{matrix} \text{EST. AT COMPLETION} = & \text{FORECAST AT COMPLETION} & & & \\ \text{(CALCULATED - EAC)} & \frac{\text{-----}}{\text{PRODUCTIVITY/100}} & = & \text{-----} & = \end{matrix}$$

AT THE CURRENT RATE OF PRODUCTIVITY, WE PROJECT THAT THIS CONTRACT WILL BE COMPLETED AT  
MANHOURS . THIS REPRESENTS A COST UNDERRUN/OVERRUN OF        MANHOURS OR A        % INCREASE/DECREASE.

-----

$$\begin{matrix} \text{TO COMPLETE} & = & \text{FORECAST AT COMPLETION-EARNED MANHOURS} & & - & \\ \text{PERFORMANCE INDEX} & & \frac{\text{-----}}{\text{FORECAST AT COMPLETION-ACTUAL MANHOURS SPENT}} & = & \frac{\text{-----}}{\text{-----}} & \\ & & & & & = & \% \end{matrix}$$

TO COMPLETE PERFORMANCE INDEX INDICATES THAT THE CONTRACTOR MUST WORK AT        % EFFICIENCY FOR THE  
BALANCE OF THE CONTRACT TO COME IN AT THE PRESENT FORECAST.

=====

CONCLUSION



08/31/84  
PC BACKUP 14.3<8>

## SYSTEMS EVALUATION

### SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A710 Escalators	START: 05/02/83
SYSTEM RESPONSIBILITY: MRTC	COMPLETE: 06/01/84
PROJECT MANAGER(TSD/MRTC): L. Pham/A. Racho	DURATION: 396
	(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	07/15/83	-	07/15/83	-
DESIGN SUBMITTAL (60%)	01/30/84	-	02/08/84	-
DESIGN SUBMITTAL (85%)	04/16/84	-	06/21/84	-
DESIGN SUBMITTAL (100%)	06/01/84	10/22/84	-	-143
ADVERTISE	-	-	-	-
AWARD	-	-	-	-

#### RESOLUTIONS OF LAST PERIODS PROBLEMS:

- . 85% design review comments are being incorporated.

#### AREAS OF CONCERN:

- . Escalator deferrals have been identified and will impact documents.
- . Station lowering directives will also impact documents.

#### COMMENTS:

- . Final Submittal (100%) has slipped to October 22, 1984. This submittal will include completion of the design contracts contained in MOS-1, all others will be completed to the extent possible with the information presently available.

#### PERFORMANCE ASSESSMENT:

- . The contract is 20 weeks behind schedule. The completion is subject to the availability of the section designers contract drawings.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A720 Elevators	START: 05/02/83
SYSTEM RESPONSIBILITY: MRTC	COMPLETE: 07/01/84
PROJECT MANAGER(TSD/MRTC): L. Pham/A. Racho	DURATION: 424
	(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	07/15/83	-	07/15/83	-
DESIGN SUBMITTAL (60%)	05/01/84	-	07/05/84	-
DESIGN SUBMITTAL (85%)	06/01/84	*	-	-
DESIGN SUBMITTAL (100%)	07/01/84	10/15/84	-	-106
ADVERTISE	-	-	-	-
AWARD	-	-	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

- . Last period's area of concern has not been resolved (see below).

AREAS OF CONCERN:

- . Completion of the Final Submittal is subject to the availability of the section designers contract drawings which are the sole source of the information required to complete design.

COMMENTS:

- \* No formal Pre-Final Submittal (85%) will be made.
- . The Final Submittal (100%) has slipped to October 15, 1984. This submittal will include completion of the design contracts contained in MOS-1, all others will be completed to the extent possible with the information presently available.

PERFORMANCE ASSESSMENT:

- . The contract is 14 weeks behind schedule. The completion is subject to the availability of the section designers contract drawings.

# SYSTEMS EVALUATION

## SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A740 Fan Procurement  
SYSTEM RESPONSIBILITY: Parsons Brinkerhoff  
PROJECT MANAGER(TSD/MRTC): M. Becher/K. Sain

START: 02/02/84  
COMPLETE: 05/13/85  
DURATION: 463  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	02/27/84	-	03/06/84	-
IN-PROG. SUBMITTAL(50%)	04/02/84	-	04/16/84	-
PRE-FINAL SUBMITTAL(85%)	09/24/84	09/24/84	-	0
FINAL SUBMITTAL (100%)	04/12/85	04/12/85	-	0
BID DOCUMENTS	05/13/85	05/13/85	-	0

### RESOLUTIONS OF LAST PERIODS PROBLEMS:

Coordinated effort by MRTC Program Control has produced a design schedule and a narrative analysis of design progress.

### AREAS OF CONCERN:

Work will not proceed to a pre-final submittal (85%) until the general conditions for procurement contracts are available. The MRTC Equipment Procurement Department has confirmed the availability of the general conditions by mid-September.

### COMMENTS:

The schedule dates above (per the MRTC design schedule; 8/31/84) will serve as a baseline schedule to monitor future progress.

### PERFORMANCE ASSESSMENT:

Project completion is on schedule with the Bid Documents available for advertisement 5/13/85.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A750 Tunnel Liners START: 10/01/83  
SYSTEM RESPONSIBILITY: MRTC In-House Program COMPLETE: 12/15/84  
PROJECT MANAGER(TSD/MRTC): J. Crawley/J. Monsees DURATION: 439  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
{ DESIGN REVIEW (30%)	{ 02/24/84	{ -	{ 02/24/84	{ -
{ DESIGN REVIEW (50/60%)	{ 05/16/84	{ -	{ 05/16/84	{ -
{ DESIGN SUBMITTAL(85/90%)	{ 08/15/84	{ -	{ 08/23/84	{ -
{ DESIGN SUBMITTAL (100%)	{ 12/13/84	{ 12/13/84	{ -	{ -
{ ADVERTISE	{ -	{ -	{ -	{ -
{ AWARD	{ -	{ -	{ -	{ -

RESOLUTIONS OF LAST PERIODS PROBLEMS:

Not yet resolved.

AREAS OF CONCERN:

Finding satisfactory membrane to eliminate methane gas penetration remains the area of concern.

COMMENTS:

The intermediate level design for the precast concrete tunnel liners has been completed and has been verified for suitability for earthquake requirements.

PERFORMANCE ASSESSMENT:

The contract is on schedule.

SYSTEMS EVALUATION

SCHEDULE ANALYSIS

STATUS AS OF: August 31, 1984

SYSTEM DESCRIPTION: A760 Graphics and Signage  
SYSTEM RESPONSIBILITY: MRTC In-House Program  
PROJECT MANAGER(TSD/MRTC): D. Low/D. Harmon

START: 02/22/84  
COMPLETE: 10/01/84  
DURATION: 122  
(CALENDAR DAYS)

MAJOR MILESTONES	SCHEDULED	FORECAST	ACTUAL	VARIANCE
DESIGN REVIEW (30%)	06/18/84	-	06/18/84	-
DESIGN SUBMITTAL (50/60%)	08/15/84	08/15/84	-	-
DESIGN SUBMITTAL (85/90%)	10/15/84	10/15/84	-	-
DESIGN SUBMITTAL (100%)	11/30/84	11/30/84	-	-
ADVERTISE	-	-	-	-
AWARD	-	-	-	-

RESOLUTIONS OF LAST PERIODS PROBLEMS:

There were no problems reported last period.

AREAS OF CONCERN:

Exterior sign system is on hold pending RTD's decisions on station identification pylon.

COMMENTS:

- . Work continues with interior and exterior elements of station signing.
- . Sign locations and message schedules have been established for Union Station.

PERFORMANCE ASSESSMENT:

Forecast date for In-Progress Submittal has not been met; contract is one week behind schedule.