



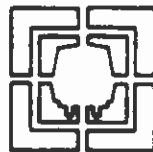
**SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT**

GENERAL CONSULTANT SERVICES CONTRACT

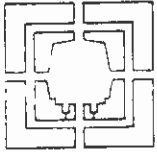
**ANNUAL WORK PROGRAM
PROPOSED REVISION**

November 6, 1985

FISCAL PERIOD ENDING APRIL 30, 1986



**METRO RAIL TRANSIT CONSULTANTS
DMJM/PBQD/KE/HWA**



METRO RAIL TRANSIT CONSULTANTS

November 6, 1985

Mr. Robert J. Murray
Assistant General Manager
Transit Systems Development
Southern California Rapid Transit District
425 South Main Street
Los Angeles, California 90013

Subject: Third Annual Work Program for Fiscal Period
Ending April 30, 1986 (FY85/86)

Purpose: Approval Requested

File No: P001X005

Dear Mr. Murray:

MRTC is in receipt of your letter dated October 25, 1985 directing us to submit a proposal to amend the AWP for 1985/86 to provide for continuation of engineering services to April 30, 1986. Based on your letter, we are pleased to submit our proposal to amend the 1985/86 AWP.

For the purpose of clarification, the items of work which have to do with Metro Rail only are identified as Part A of this letter. Also, those tasks and costs required to modify the 7th and Flower Station drawings to accommodate the Home Savings are identified separately under Part A. Those items which deal with the revisions to the 7th and Flower Station to accommodate the Light Rail System requirements, as well as the design of the Light Rail provisions, are separately identified as Part B.

For your information, MRTC and its consultants are on schedule and have expended approximately 75% of the original FY85/86 budget and will have exhausted the entire budget around the end of December 1985.

As you have acknowledged in your letter, MRTC's present budget would essentially phase out our operations by December 31, 1985 with only a few administrative personnel remaining to close out

MRTC's activities and to transmit documents to SCRTD. At the time of the third AWP negotiations, it was recognized, by both parties, that the phase-out budget would not allow for completing all items of work required for MOS-1. However, the phase-out was to be accomplished in a manner such that, if it became apparent that funding did become available prior to our completing the phase-out, SCRTD would issue an amendment to the AWP to stop the phase-out and complete the documents for MOS-1.

Our proposed staffing plan, which we are forwarding with this letter, takes into consideration the scope of work that you have outlined in your letter.

We have prepared several graphics to illustrate the planned expenditures forecast through April 30, 1986. The graphics consist of the following:

1. Five (5) drawings entitled "Manpower Utilization". These drawings, by Division, show as "building blocks" each task from the "Planned" FY85/86 AWP for each month and the manpower requirements. Adjacent to the "Planned" is the proposed. These drawings are shown for the remaining portion of this fiscal year (November 1, 1985 to April 30, 1986).
2. A graph entitled "Expenditures of MRTC and Consultants During FY1985 & 1986 AWP which matches Time vs. Dollars, shows the "Planned Budget", the "Actual Budget" expended and the "Projected Budget". This illustrates that the entire available budget is expected to be expended around the end of December 1985.
3. The following Manpower and Cost Tables have been revised from the original FY85/86 AWP.

IV-1	Summary Manpower Allocation
IV-1A	Detailed Manpower Allocation (11 Sheets)
IV-2	General Consultant Cost Summary
IV-3	Design Subcontract Budget Summary
IV-4	Specialty Subcontracts Budget Summary Part I
IV-4A	Special Subcontracts Budget Summary Part II

Although MRTC has had a reorganization of its staff, the revisions are shown, for continuity purposes, in the original AWP format. The complete listing of previously non-budgeted work is as follows:

Part A (Metro Rail Changes Only)

I.	<u>Facilities</u>	<u>Manhours</u>
	<u>A. Yards & Shops</u>	
1.	Revise drawings & specifications to reflect changes due to deletion of A114 Contract, relocation of Car Wash facility (folded in A130 Contract), revision to trackwork (MOW facility) and new contract for demolition of Westransco (ref: memos from J. Shah to Murthy dated 6/12/85).	7340
2.	Design of CCF (to be negotiated) less credit for balance of RCC hours not used (7700-4200).	3500
	<u>B. Union Station</u>	
1.	Review and incorporation of 100% review comments and repackaging of A-135 series contracts. (Ref. June 27, 1985 letter from Mr. Hammond to Mr. Murray and subsequent letter from Mr. Crawley to Mr. Chaliff dated 9/20/85.	3080
	<u>C. Civic & 5th/Hill Stations</u>	
1.	Prepare contract documents for A149 Contract. (Ref. Mr. Murray to Mr. Chaliff dated 9/17/85)	2600
2.	Preparation of traffic plans, studies and reports for changes to station entries and integration of compaction grouting drawings and specifications into A141 and A146 Contracts. (Verbal directions to proceed with traffic plans per City of Los Angeles mark-ups and letter from Mr. Chaliff to Mr. Murray dated 9/17/85.	1580

2040 to be used in this AWP - used 600 hrs!

D. 7th & Flower Station

- | | | |
|----|--|------|
| 1. | Incorporate 100% review comments, preparation of cost and technical data concerning Home Savings site development, changes to traffic plans, combined utility relocation discussion and preparation of supporting data. (MRTC's estimate based on Review meetings, comments, and resolutions). | 1420 |
| 2. | Undertake design changes that are required due to accomodate Home Savings development plan. (Note: All design changes to the existing Metro Rail contract documents to incorporate LRT into the 7th/Flower Station along with final design of the LRT Station and crossovers are covered in Part B of this package). | 7600 |

E. Wilshire/Alvarado (Line & Station)

- | | | |
|----|---|------|
| 1. | Redesign of floating slab and modifications prior to advertising A170 contract series. | 1970 |
| 2. | Structural analysis of Cut & Cover Structure (Ref: letter from Mr. Crawley to Mr. Hammond). | 400 |

F. Trackwork

- | | | |
|----|---|-----|
| 1. | Changes to trackwork to reflect Yard changes, A170 cross-over, car wash and drip slab, and car cleaners platform. | 200 |
|----|---|-----|

G. Signing/Edgelifting

- | | | |
|----|---|-----|
| 1. | Revise to include changes to 7th & Flower signing, incorporating dot matrix sign, and completing system maps. | 300 |
|----|---|-----|

H. Specifications

1. Extensive reviews and revisions to base line specifications. 3560

I. Estimating

1. Development of cost estimates for studies, estimates for financial plans and final estimates for MOS-1 Contracts. 4160

J. Program Control

1. Support MRTC's design groups and furnish District with Progress Reports, cost trending data, design control registers, and scheduling support for design. 5120

K. Facilities Design Management

1. Provide technical management to ongoing contracts and prepare wrap-up documentation for non MOS-1 Contracts. Delays in completion of MOS-1 require additional manpower to manage. 3840

II. Systems

- A. Fare Collection: Complete the specification from the 85% submittal including a final cost estimate and design review. Conduct an industry and peer review. Prepare and submit procurement plan. 2000

- B. Traction Power Installation: Complete the installation specification from the 85% submittal including a final cost estimate and design review. Provide technical assistance to RTD in continuing interface with DWP. Incorporate revisions to final Traction Power Procurement Specifications as directed by the District. 3200

- C. Operations and Maintenance: Participate in reviews of MOS-1 design packages to verify conformance with operation and maintenance 3000

requirements. Provide support to operation and maintenance planning activities including the Operations and Maintenance Committees and completion of the MOS-1 Operating Plan. Initiate design of operational graphics procurement contract. Prepare auxiliary equipment specifications as directed by the District.

- D. System Safety, Assurance and Security: 3200
Participate in reviews of MOS-1 design packages to verify conformance with safety, assurance and security criteria, including completion of certification checklists. Participate in Fire/Life Safety and Security Committees.
- E. Passenger Vehicle: Undertake special tasks to optimize train control and propulsion control. Update procurement documents to conform with ATC, Shop, Facilities, Communications designs, and results of special tasks. Update design criteria. Incorporate revisions to final specifications and prepare contract package for advertisement. 1000
- F. ATC: Optimize block design, control line diagrams, ATP and vehicle tolerances and parameters. Develop interface documentation. Establish the process, procedure and criteria for evaluating technical proposals. Undertake special tasks as directed by the District. 1000
- G. Communications: Review and incorporate comments to the 85% design review and complete the 100% communication documents. Verify that all interfaces between the Communications System and the Passenger Vehicle, ATC, Shop, Facilities, and CCF are correctly defined. Update design criteria. Prepare final cost estimates. 3200
- H. Management and Clerical: Provide management, clerical and word processing support for all Systems Division function and contract document preparation and provide for procurement engineering support. 4000

III. Project Administration

- | | |
|---|------|
| A. <u>Continued Administration Support to MRTC:</u>
includes accountants, contract administrators, word processors, publications, graphics, and office services. | 7200 |
| B. <u>Configuration Management:</u> includes configuration control, document control, interface management, and design review support. | 2200 |

IV. Project Management

To manage and to provide technical and administrative direction to MRTC's work and to support SCRTD's work program.	3840
---	------

TOTAL MANHOURS (PART A) 80,510

Part B (LRT-Related Changes at 7th/Flower Station and Final Design of LRT Station and Crossovers)

- | | |
|---|--------|
| 1. Undertake changes to A165 and A167 contract documents to accommodate LR interface and assemble a combined package for bidding as a single contract. | 3000 |
| 2. Prepare final design document (plans, specifications, and construction cost estimates) for the LRT Station and associated tail track and crossovers approximately 960' in length.

(Note: Only a portion of this work will be done in this FY85/86). | 41,625 |
| 3. Undertake required coordination with affected agencies and 3rd parties and participate in design reviews. | 3000 |

TOTAL MANHOURS (PART B) 47,625

In addition to above manhours, costs for design subcontractors, speciality contractors, direct reimbursables, and fixed fee are identified in the Summary Sheet for "Forecast Expenditures through AWP 85/86" for Part A of this package.

Because of the late start of the CCF (early March, 1986 vs. November, 1985), only 12 man-months will be utilized vs. an overall requirement of 42 man-months. Approximately 30 man-months will be necessary in our 1986/87 AWP.

The overall manhour budget we have developed in this letter for specific tasks is higher than those shown on the attached graphics because we are able to use our existing resources and talents more efficiently. When several tasks are done concurrently there is an economy using all personnel more effectively.

With regard to Part B of this package, we have prepared the attached graphics.

B-1: A drawing entitled "Manpower Utilization" for all LRT-related staffing requirements as "building blocks" with a starting date of December 1, 1985.

B-2: A detailed Manpower Allocation Table in our AWP format for this work.

B-3: A Cost Summary Table outlining all of our projected costs associated with the LRT-related work over the full 10 month design period and a dollar amount required through the end of this AWP.


Note: We are including this Manpower and Cost Data for budgeting purposes although we realize these amounts have not yet been agreed upon by yourselves or LACTC.

MRTC has restructured the organization to reflect your needs. As a result reductions in staff were made at an extraordinary pace to live within the budget. We now have your established priorities for advertising the contracts. We have the same sense of obligation to support your requirement and therefore your approval is immediately requested so that we can make efforts to retain the staff who have been advised that their current assignment with MRTC ends on December 31, 1985.

Mr. Robert J. Murray
November 6, 1985
Page 9

We are available at your convenience to discuss this request. In the meantime if you have any questions or require clarifications, please advise.

METRO RAIL TRANSIT CONSULTANTS


Howard J. Chaliff
Project Director

HJC:ss

Attachments.

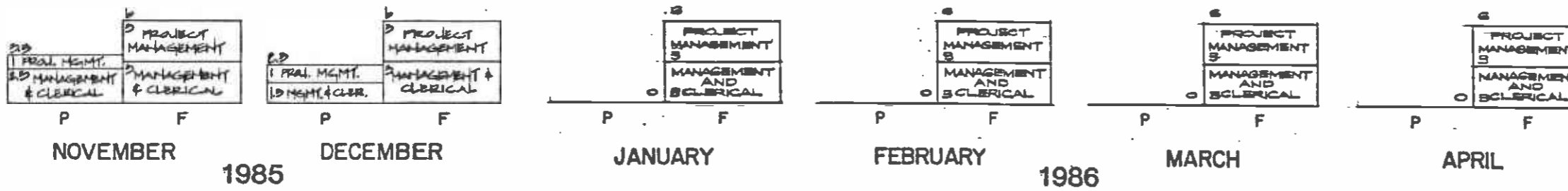
cc: J. Christiansen
J. Crawley
W. Rhine
DCC (2)

LEGEND

P PLANNED
F FORECAST




MANAGEMENT



FACILITIES DESIGN MANAGEMENT

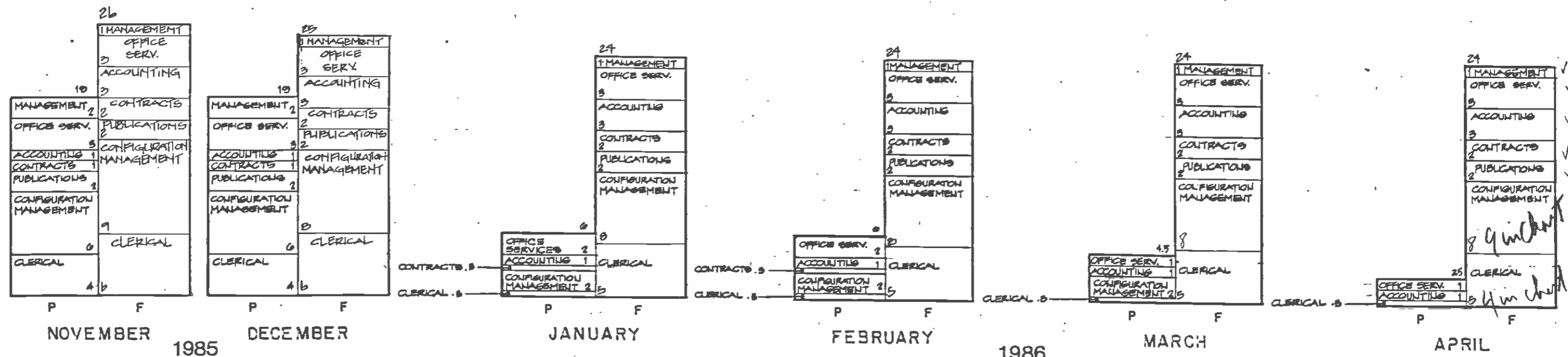
PART A

<p>THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.</p>				<p>DESIGNED BY</p> <p>DRAWN BY</p> <p>CHECKED BY</p> <p>IN CHARGE</p> <p>DATE: NOV 6-85</p>		<p>SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT</p> <p>METRO RAIL PROJECT</p> 		<p>MANAGEMENT & FACILITIES DESIGN MGMT MANPOWER UTILIZATION REMAINING 1985/86 AWP</p>		<p>CONTRACT NO.</p> <p>DRAWING NO.</p> <p>SCALE</p> <p>SHEET NO. 1 OF 5</p>	
REV.	DATE	BY	SUB.	APP.	DESCRIPTION	REV.	DATE	BY	SUB.	APP.	DESCRIPTION

LEGEND

P PLANNED
F FORECAST

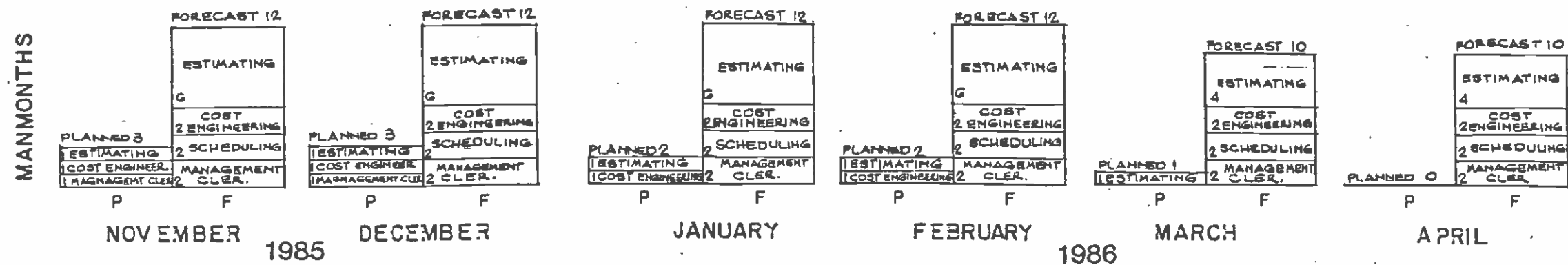
MAN MONTHS



THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.										DESIGNED BY DRAWN BY CHECKED BY IN CHARGE DATE NOV. 6-85		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT			DMJM/PSOD/KE/HWA GENERAL CONSULTANTS		PROJECT ADMINISTRATION MANPOWER UTILIZATION REMAINING 1985/86 AWP		CONTRACT NO. DRAWING NO. SCALE SHEET NO. 2 OF 5	
REV.	DATE	BY	SUB.	APP.	DESCRIPTION	REV.	DATE	BY	SUB.	APP.	DESCRIPTION	SUBMITTED	APPROVED							

LEGEND

P PLANNED
F FORECAST

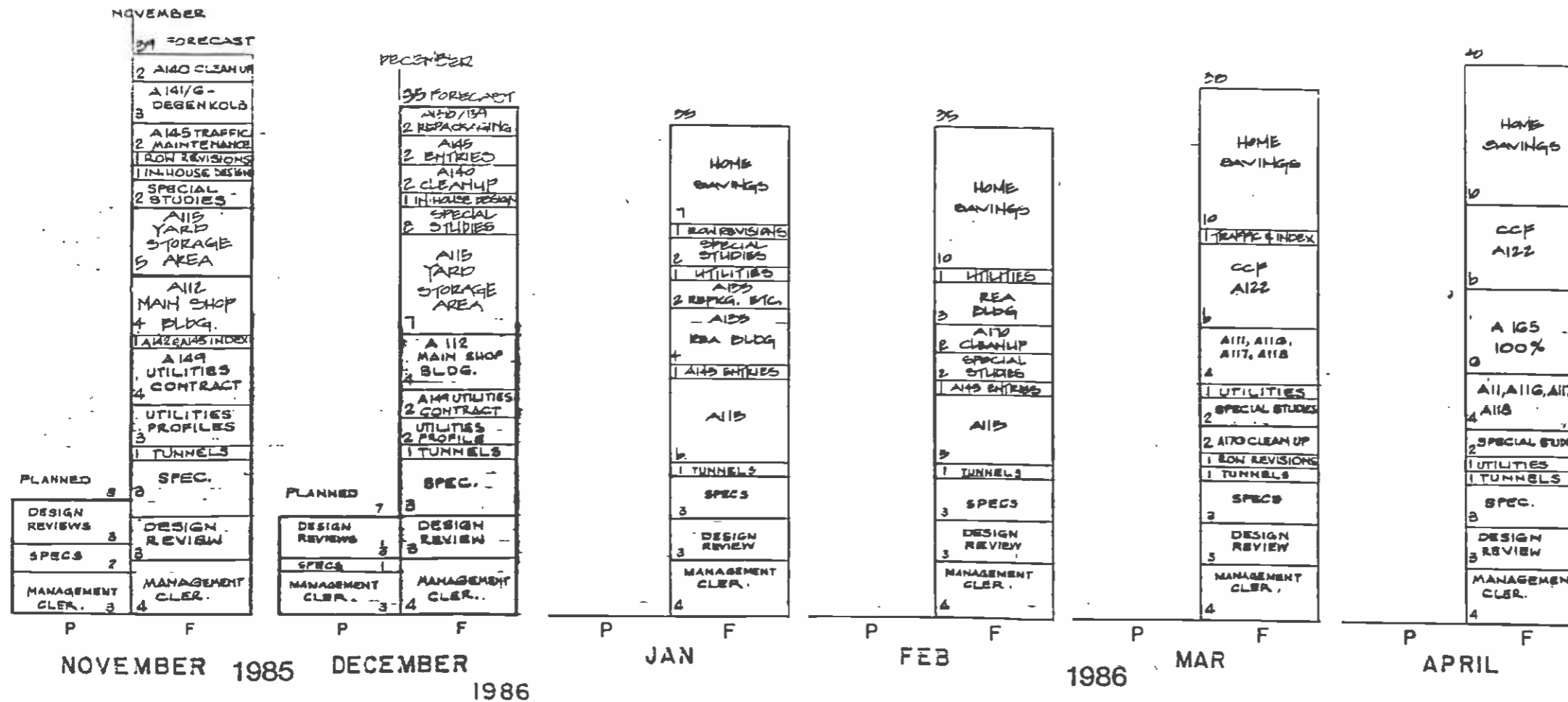


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REV. DATE BY SUB. APP. DESCRIPTION										SUBMITTED _____		APPROVED _____		NONE		NONE					

LEGEND

- P PLANNED
- F FORECAST

MAN MONTHS

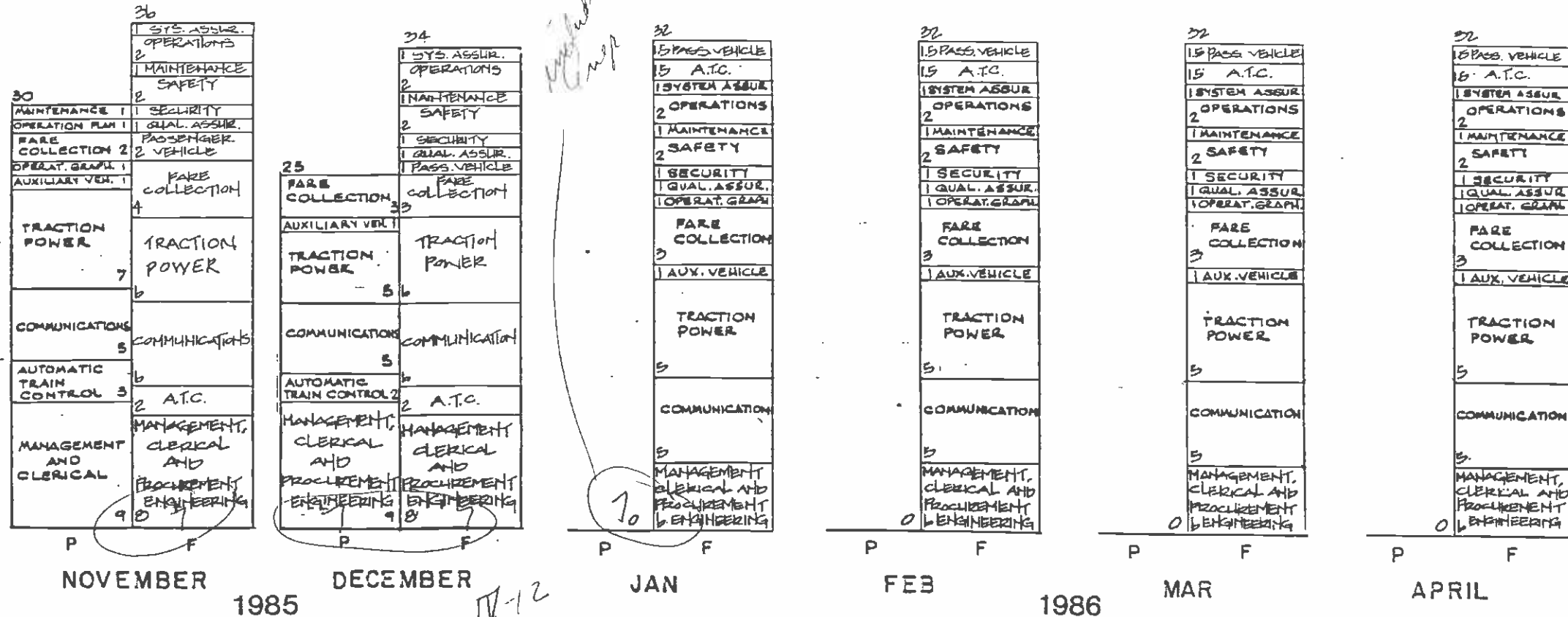


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LEGEND


P PLANNED
F FORECAST

MAN MONTHS

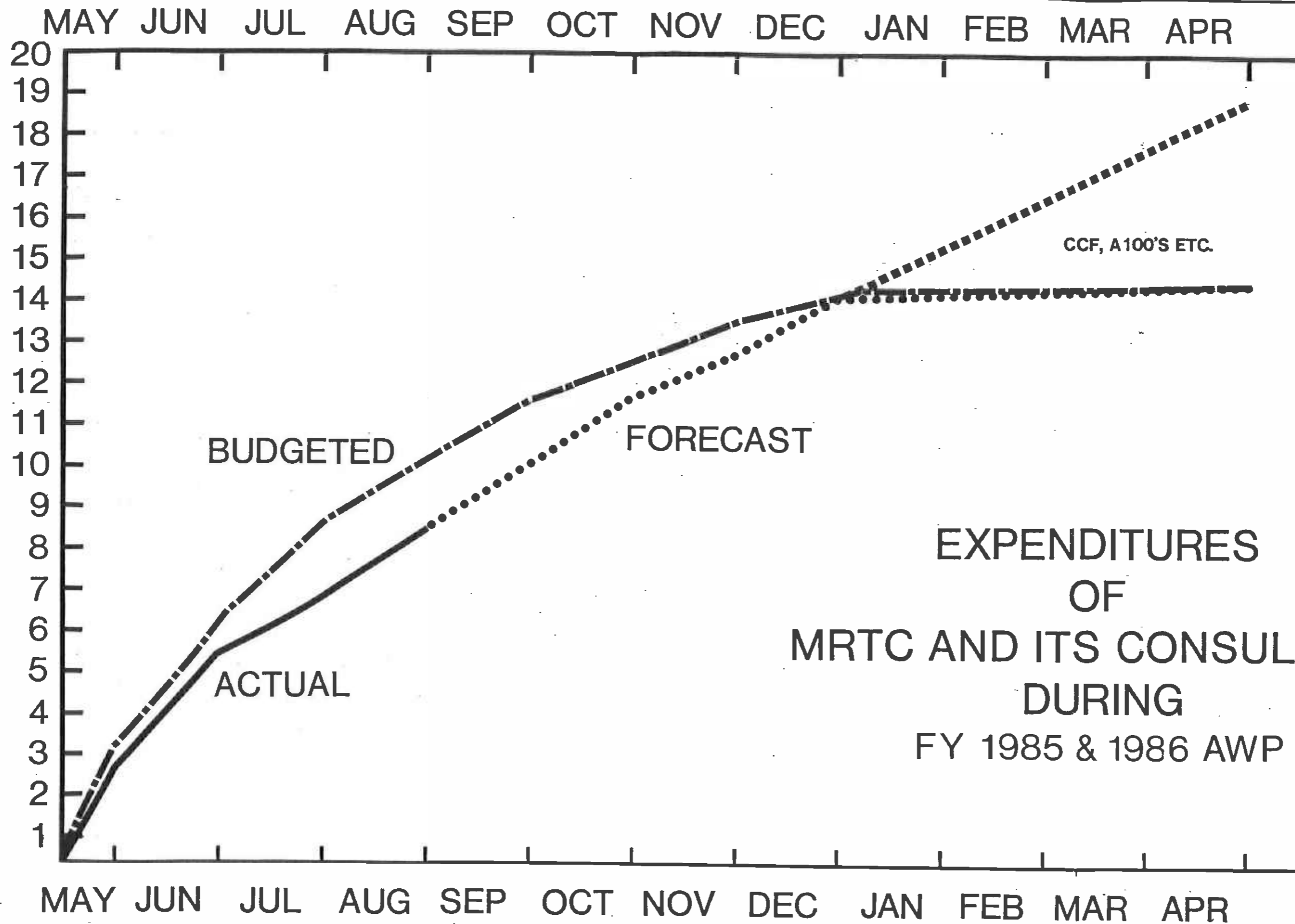


Includes November 7

70

THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U. S. DEPARTMENT OF TRANSPORTATION, URBAN MASS TRANSPORTATION ADMINISTRATION, UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.				DESIGNED BY DRAWN BY CHECKED BY IN CHARGE DATE NOV. 6, 85		SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 		SYSTEMS DESIGN MANPOWER UTILIZATION REMAINING 1985/86 AWP		CONTRACT NO. DRAWING NO. SCALE SHEET NO. 5 OF 5	
REV.	DATE	BY	SUB.	APP.	DESCRIPTION	REV.	DATE	BY	SUB.	APP.	DESCRIPTION

EXPENDITURES
\$000,000.00



EXPENDITURES
OF
MRTC AND ITS CONSULTANTS
DURING
FY 1985 & 1986 AWP

PART A

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

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

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

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

SUBMITTED _____ APPROVED _____



CONTRACT NO.
DRAWING NO. REV.
SCALE
SHEET NO. 10F1

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

Part A
TABLE IV-1
METRO RAIL GENERAL CONSULTANT
SUMMARY MANPOWER ALLOCATION IN MAN MONTHS

MONTH DIVISION	10/31/85	FORECAST						4/19/85	11/06/85
	EXPENDED TO DATE (MAY-OCT)	1985			1986			AWP Budget VS. New Total with Amendment	Amendment Net Increases
		W	D	J	F	M	A		
Project Mgt. (AWP)	19	3	3	1	1	1	1	29	
11/06/85 Amendment	18 (Actual)	3	3	3	3	3	3	36	7
Project Adm. (AWP)	105	13	13	4	4	2	2	143	
11/06/85 Amendment	95 (Actual)	16	16	15	15	15	15	187	44
Project Control (AWP)	78	3	3	2	2	1	0	89	
11/06/85 Amendment	73 (Actual)	12	12	12	12	10	10	141	52
Fac. Des. Mgt. (AWP)	65	3	2	0	0	0	0	70	
11/06/85 Amendment	49 (Actual)	6	6	6	6	6	6	85	15
Fac. Design (AWP)	292	8	7	0	0	0	0	307	
11/06/85 Amendment	292 (Actual)	39	35	35	35	38	40	514	207
System Integ. (AWP)	149	10	8	2	2	2	0	173	
11/06/85 Amendment	118 (Actual)	18	17	17	17	17	17	221	48
Systems Design (AWP)	208	26	20	0	0	0	0	254	
11/06/85 Amendment	204 (Actual)	28	26	24	24	24	24	354	100
Total Man-Months (AWP)	916	66	56	9	9	6	3	1065	
11/06/85 Amendment	849 (Actual)	122	115	112	112	113	115	1538	473

Notes (1) Includes specialty consultants staff working in conjunction with GC.
 (2) Includes JV members' home office support.
 (3) AWP (4/19/85) represents Original Budget.

Prepared: 11/06/85

80412
 177
 173 hrs/month
 170

TABLE IV-1A

DETAILED MANPOWER ALLOCATION

SUMMARYSCHEDULEREVISION 5
NOVEMBER 6, 1985

<u>ELE</u>	<u>SEG</u>	<u>RESP</u>	<u>TASK DESCRIPTION</u>	<u>MM</u> 85/86	<u>ACTUALS</u> <u>EXPENDED</u> <u>TO DATE</u>	<u>FORECAST</u>				<u>COMMENTS</u>		
						1985		1986				
						<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	
	A		Project Management	32.5	17.5	2.5	2.5	2.5	2.5	2.5	2.5	
	B		Project Administration	187.5	95.5	16.0	16.0	15.0	15.0	15.0	15.0	24 in chart ¹
	C		Project Control	140.2	72.2	12.0	12.0	12.0	12.0	10.0	10.0	
	D		Facilities Design Management	85.6	49.6	6.0	6.0	6.0	6.0	6.0	6.0	
	E		Facilities Design	513.4	291.4	39.0	35.0	35.0	35.0	38.0	40.0	
	F		System Integration	220.9	117.9	18.0	17.0	17.0	17.0	17.0	17.0	
	G		Systems Design	353.5	203.5	28.0	26.0	24.0	24.0	24.0	24.0	
TOTAL:				1533.6	847.6	121.5	114.5	111.5	111.5	112.5	114.5	

- NOTE: (1) Includes specialty consultants' staff working in conjunction with GC efforts.
- (2) Estimated equivalent staff level for April, 1985 is 204.
- (3) As of September 1, 1985 a number of consolidations were implemented; Project Control, Facilities Design Management and System Integration Divisions were abolished.
- (4) All manmonths are rounded to the nearest 1/10th, including totals.

DETAILED MANPOWER ALLOCATION

PROJECT MANAGEMENT

SCHEDULE

REVISION 5
NOVEMBER 6, 1985

<u>ELE</u>	<u>SEG</u>	<u>RESP</u>	<u>TASK DESCRIPTION</u>	<u>MM</u> <u>85/86</u>	<u>ACTUALS</u> <u>EXPENDED</u> <u>TO DATE</u>	<u>FORECAST</u>					<u>COMMENTS</u>	
						<u>1985</u>		<u>1986</u>		<u>MAR</u>		<u>APR</u>
						<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>			
P	99	A	Project Management & Clerical	32.5	17.5	2.5	2.5	2.5	2.5	2.5	2.5	

NOTE: (1) Estimated equivalent staff level for April, 1985 is 4.0

IV-4

DETAILED MANPOWER ALLOCATION

PROJECT ADMINISTRATION

SCHEDULE

REVISION 5
NOVEMBER 6, 1985

5-IV-5

<u>ELE</u>	<u>SEG</u>	<u>RESP</u>	<u>TASK DESCRIPTION</u>	<u>MM</u> <u>85/86</u>	<u>ACTUALS</u> <u>EXPENDED</u> <u>TO DATE</u>	<u>FORECAST</u>						<u>COMMENTS</u>
						<u>1985</u>		<u>1986</u>				
						<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	
P	99	B	Management	14.5	8.5	1.0	1.0	1.0	1.0	1.0	1.0	
P	99	B	Accounting	39.0	21.0	3.0	3.0	3.0	3.0	3.0	3.0	
P	99	B	Office Services	33.8	15.8	3.0	3.0	3.0	3.0	3.0	3.0	
P	99	B	Cont. Administration	24.9	12.9	2.0	2.0	2.0	2.0	2.0	2.0	
P	99	B	Clerical & Word Processing	53.4	27.4	5.0	5.0	4.0	4.0	4.0	4.0	
P	99	B	Reports Production	<u>21.9</u>	<u>9.9</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	
Total				187.5	95.5	16.0	16.0	15.00	15.0	15.0	15.0	

- Note:
- (1) Include specialty consultants' staff working in conjunction with GC efforts.
 - (2) Estimated equivalent staff level for April, 1985 is 33.
 - (3) Human Resources and Personnel are included in Office Services.
 - (4) As of September 1, 1985 Configuration Management functions have been consolidated into the Administration Division.

DETAILED MANPOWER ALLOCATION

PROJECT CONTROL

SCHEDULE

REVISION 5
NOVEMBER 6, 1985

9-ΔI

ELE	SEG	RESP	TASK DESCRIPTION	MM 85/86	ACTUALS EXPENDED TO DATE	FORECAST					COMMENTS	
						1985		1986				
						NOV	DEC	JAN	FEB	MAR	APR	
P	99	C	Management & Clerical	27.4	15.4	2.0	2.0	2.0	2.0	2.0	2.0	
P	99	C	Program Analysis & Budget	1.0	1.0							
P	99	C	Scheduling	23.0	11.0	2.0	2.0	2.0	2.0	2.0	2.0	
P	99	C	Cost Engineering	23.8	11.8	2.0	2.0	2.0	2.0	2.0	2.0	
P	99	C	Estimating	<u>65.0</u>	<u>33.0</u>	<u>6.0</u>	<u>6.0</u>	<u>6.0</u>	<u>6.0</u>	<u>4.0</u>	<u>4.0</u>	
TOTAL:				140.1	72.2	12.0	12.0	12.0	12.0	10.0	10.0	

- NOTE: (1) Includes specialty consultants' staff working in conjunction with GC efforts.
 (2) Estimated equivalent staff level for April, 1985 is 20.5
 (3) As of September 1, 1985 all these functions are consolidated into the Design Division.

DETAILED MANPOWER ALLOCATION

FACILITIES DESIGN MANAGEMENT

SCHEDULE

REVISION 5
NOVEMBER 6, 1985

ELE	SEG	RESP	TASK DESCRIPTION	MM 85/86	ACTUALS EXPENDED TO DATE	FORECAST						COMMENTS
						1985		1986				
						NOV	DEC	JAN	FEB	MAR	APR	
P	99	D	Management & Clerical	40.1	21.1	3.0	3.0	3.0	3.0	3.0	3.0	
P	99	D	Project Management	<u>46.5</u>	<u>28.5</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	
TOTAL:				85.6	49.6	6.0	6.0	6.0	6.0	6.0	6.0	

IV-7

- NOTE: (1) Includes specialty consultants' staff working in conjunction with GC efforts.
- (2) Estimated equivalent staff level for April, 1985 is 13.0
- (3) As of September 1, 1985 all of these functions are consolidated into the Design Division.

DETAIL MANPOWER ALLOCATION

FACILITIES DESIGN

SCHEDULE

REVISION 5
NOVEMBER 6, 1985

8-Δ I

<u>TASK DESCRIPTION</u>	<u>MM</u> 85/86	<u>ACTUALS</u> <u>EXPENDED</u> <u>TO DATE</u>	<u>FORECAST</u>							<u>COMMENTS</u>
			1985		1986					
			<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>		
A. <u>Design Reviews</u>	52.1	40.1		2.0	2.0	2.0	2.0	2.0		
B. <u>In-House Designs</u>										
1. Rail Control Center (Central Control Facility)	12.0	0.0					6.0	6.0		
2. Standards and Directives and Design Criteria: Wind-up	22.0	16.0	1.0	1.0	1.0	1.0	1.0	1.0		
3. In-House Procurements: Wind-up (A610, A740, A745, A760 plus Demolition)	27.0	25.0	1.0	1.0						
4. Methane protection; Tunnel Liner Design; Seismic Design; Under- pinning	16.0	10.0	1.0	1.0	1.0	1.0	1.0	1.0		
5. Section Designer contract packages: Wind-up and changes to incorporate revised Standard Drawings; (Contracts A130, A135, A165)	72.5	66.5							6.0	
6. ECS Report: Finalize all review comment tasks	5.0	5.0								
7. Underpinning - A140 Struct.	6.0	6.0								

DETAIL MANPOWER ALLOCATION

FACILITIES DESIGN

SCHEDULE

REVISION 5
NOVEMBER 6, 1985

	<u>MM</u> <u>85/86</u>	<u>ACTUALS</u> <u>EXPENDED</u> <u>TO DATE</u>	<u>FORECAST</u>						<u>COMMENTS</u>
			1985		1986				
			<u>NOV</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	
E. <u>Management/Clerical</u>	54.5	30.5	4.0	4.0	4.0	4.0	4.0	4.0	
TOTAL	513.4	291.4	39.0	35.0	35.0	35.0	38.0	40.0	

- NOTE: (1) Includes specialty consultants' staff working in conjunction with GC efforts.
- (2) Estimated equivalent staff level for April, 1985 is 63.
- (3) As of September 1, 1985 Facilities Design Management and Program Control functions have been consolidated into the Design Division.

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OI-VI

DETAILED MANPOWER ALLOCATION

SYSTEM INTEGRATION

SCHEDULE

REVISION 5
NOVEMBER 6, 1985

ELE	SEG	RESP	TASK DESCRIPTION	MM 85/86	ACTUALS EXPENDED TO DATE	FORECAST					COMMENTS	
						1985 NOV	1985 DEC	1986 JAN	1986 FEB	MAR		APR
P	99	F	001 Management	7.0	6.0	1.0						
P	99	F	002 Clerical	21.0	9.0	2.0	2.0	2.0	2.0	2.0	2.0	
P	99	F	094 Operations Planning	12.5	6.5	1.0	1.0	1.0	1.0	1.5	1.0	
P	99	F	085 Maintenance Planning	12.5	6.5	1.0	1.0	1.0	1.0	1.0	1.0	
P	99	F	093 Interface Management	14.5	8.5	1.0	1.0	1.0	1.0	1.0	1.0	
P	99	F	095 Configuration Control	24.0	12.0	2.0	2.0	2.0	2.0	2.0	2.0	
P	99	F	086 Document Control	46.3	22.3	4.0	4.0	4.0	4.0	4.0	4.0	
P	99	F	083 Design Review Support	15.3	9.3	1.0	1.0	1.0	1.0	1.0	1.0	
P	99	F	096 Safety Engineering	12.0	6.0	1.0	1.0	1.0	1.0	1.0	1.0	
P	99	F	088 Safety Certification	12.0	6.0	1.0	1.0	1.0	1.0	1.0	1.0	
P	99	F	097 Security Planning	12.0	6.0	1.0	1.0	1.0	1.0	1.0	1.0	
P	99	F	098 System Assurance Eng.	15.8	9.8	1.0	1.0	1.0	1.0	1.0	1.0	
P	99	F	098 Quality Assurance Eng.	16.0	10.0	1.0	1.0	1.0	1.0	1.0	1.0	
TOTAL				220.9	117.9	18.0	17.0	17.0	17.0	17.0	17.0	

IV-11

- NOTE: (1) Includes specialty consultants' staff working in conjunction with GC efforts.
 (2) Estimated equivalent staff level for April, 1985 is 28.
 (3) As of September 1, 1985 Tasks 093, 095, 083, 086 have been consolidated into the Administration Division. The balance of the tasks have been consolidated into the Systems Division.

DETAILED MANPOWER ALLOCATION

SYSTEMS DESIGN

REVISION 5
NOVEMBER 6, 1985

SCHEDULE

AWP #5

ELE	SEG	RESP	TASK DESCRIPTION	MM 85/86	ACTUALS EXPENDED TO DATE	FORECAST				COMMENTS		
						1985		1986				
						NOV	DEC	JAN	FEB	MAR	APR	
<u>Management & Clerical</u>												
Z	99	G	Management & Clerical	40.8 77.0	-2.2 43.0	7.0	7.0	7.0	5.0	5.0	5.0	36 x 170 - 4000?
<u>Procurement Engineering</u>												
Z	99	G	Contract Packaging	17.0 17.0	16.7 5.7 left 11.0	1.0	1.0	1.0	1.0	1.0	1.0	6 x 170 - 1020 OK
<u>Automatic Train Control</u>												
Z	73	G	Criteria/Specs Drwgs. Reviews	40.0 32.2	30.0 -2.2 32.2	2.0	2.0	1.5	1.5	1.5	1.5	10 = 1700 → 14000
<u>Communication</u>												
Z	77	G	Criteria/Specs	68.0 49.2	36.0 13.2 left 36.0	6.0	6.0	5.0	5.0	5.0	5.0	28 = 4760 2700
<u>Traction Power</u>												
Z	72	G	Criteria/Specs	66.0 50.3	34.0 16.3 left 34.0	6.0	6.0	5.0	5.0	5.0	5.0	32 5440 3200
<u>Auxiliary Vehicles & Maintenance & Equipment</u>												
Z	81	G	Criteria/Specs Drawings, Review	12.1 6.6	4.0 left 2.6			1.0	1.0	1.0	1.0	4 680
<u>Operational Graphics</u>												
Z	92	G	Engr/Drafting	4.0 4.0	4.0 left 0.0	0.0	0.0	1.0	1.0	1.0	1.0	4 680

IV-12

DETAILED MANPOWER ALLOCATION

SYSTEMS DESIGN

SCHEDULE

are not all new hours!
REVISION 6
NOVEMBER 6, 1985

ELE	SEG	RESP	TASK DESCRIPTION	MM 85/86	ACTUALS EXPENDED TO DATE	FORECAST				COMMENTS	
						1985 NOV	1985 DEC	1986 JAN	1986 FEB		MAR
<u>Fare Collection</u>											
Z	78	G	Criteria/Specs Drawings Reviews.	<i>28.1</i> 41.0	3.1 <i>3.1</i>	<i>AWP</i> 4.0	3.0	3.0	3.0	3.0	19 19x170 3230 Rnd H16H
<u>Passenger Vehicles</u>											
Z	79	G	Criteria/Specs Drawings Reviews	<i>28.5</i> 33.9	<i>1.4</i> 24.9	2.0	1.0	1.5	1.5	1.5	1.5 9.0 1530 O.K.
TOTALS				353.5	203.5	28.0	26.0	24.0	24.0	24.0	24.0 148 to go 100 in proposal

- NOTE:
- (1) Includes specialty consultants' staff working in conjunction with GC efforts.
 - (2) Estimated equivalent staff level for April, 1985 is 36.
 - (3) As of September 1, 1985 selected System Integration functions were consolidated into the Systems Division

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PART A
TABLE IV-2
GENERAL CONSULTANT COST SUMMARY

LINE ITEM	Forecast for Period 11/1/85 through 4-30-86	Previous Forecast for Period 11/1/85 through 4-30-86	More (Less) Than Previous
A Project Management	181,500	114,500	67,000
B Project Administration	499,000	289,000	210,000
C Project Control	620,000	87,000	533,000
D Facilities Design Management (Sub.)	263,000	164,000	99,000
E Facilities Design (G.C.)	1,427,500	54,000	1,373,500
F System Integration	474,000	93,000	381,000
G Systems Design (G.C.)	1,212,500	550,000	662,500
H Design Services During Constr.	---	---	---
Subtotal G.C. Services	4,677,500	1,351,500	3,326,000
I Subcontracts: Design	567,000	997,000	(430,000)
J Special Consultants	921,000	-0-	921,000
K Special Consultants - Staff Aug.	838,500	234,500	604,000
Subtotal Subcontracts	2,326,500	1,231,500	1,095,000
Subtotal All Services	7,004,000	2,583,000	4,421,000
L Direct Reimbursable Expense	750,000	253,500	496,500
M Fixed Fee	421,000	110,000	311,000
N Subcontract Fee	74,000	-0-	74,000
Total G.C. Cost & Fee	8,249,000	2,946,500	5,302,500
Expenditures May - October, 1985	11,553,500		
Forecast Total AWP '85-'86	19,802,500		

TABLE IV-3

DESIGN SUBCONTRACTS
1985/86 AWP

DESIGN PACKAGE	SUBCONTRACTOR	ESTIMATED COST AT COMPLETION	FORECAST EXPEND. BETWEEN 11/1/85 - 4/30/86	PREVIOUS FORECAST EXPEND. BETWEEN 11/1/85 - 4/30/86	MORE (LESS) THAN PREVIOUS FORECAST
A100	DMJM/PBQD	6,736,000	0	0	0
A135	HWA	4,324,000	0	0	0
A140	DHA	7,076,000	200,000	0	200,000
A165	GANNETT FLEMING/DWORSKY	4,047,000	0	0	0
A170	S & F	4,917,681	367,000	0	367,000
SUBTOTAL		27,100,681	567,000	0	567,000
A195	KOBER/McGUIRE	2,207,793 *	0	0	0
A220	TUDOR/PEREIRA	3,754,000 *	0	150,000	-150,000
A240	TURNER/CHANG	2,080,354 *	0	0	0
A245	STV ENGINEERS	1,732,432 *	0	0	0
A250	BECHTEL	3,223,258 *	0	295,000	-295,000
A275	WDA	2,342,590 *	0	0	0
A310	CARTER ENGINEERS	2,865,173 *	0	487,000	-487,000
A350	STULL ENGINEERS	1,629,503 *	0	0	0
A410	I & TC	2,459,056 *	0	0	0
A415	GEHRY, WARNIEKE, E & K	810,223 **	0	0	0
A425	LUCKMAN	1,676,085 *	0	0	0
A430	PAE/WH/S & W	1,534,980 *	0	0	0
A445	H. GIBBS AND D. GIBBS	1,377,769	0	65,000	-65,000
SUBTOTAL		27,693,216	0	997,000	-997,000
TOTAL		54,793,897	567,000	997,000	-430,000
EXPENDS. MAY - OCT. '85			2,743,000		
FORECAST EXPENDS. DURING AWP 85/86			3,310,000		

* INCREMENT 1 ONLY

** 50% AUTHORIZED

TABLE IV-4
SPECIALTY SUBCONTRACT BUDGET SUMMARY
PART I
(INDEPENDENT CONSULTING)

DIVISION	ASSIGNMENT	FORECAST EXPEND. BETWEEN 11/1/85 AND 4/30/86	PREVIOUS FORECAST EXPENDS. BETWEEN 11/1/85 AND 4/30/86	MORE (LESS) THAN PREVIOUS FORECAST
PROJECT MGMT.	TUNNELING	0	0	0
	SEISMIC CRITERIA & REVIEW	0	0	0
	SEISMIC SPECIAL STUDIES	200,000	0	200,000
	STRUCTURAL ANALYSIS	150,000	0	150,000
PROJECT ADMIN.	CONTRACT MANAGEMENT	0	0	0
	AUDITING	0	0	0
PROJECT CONTROL	ESTIMATING & SCHEDULING	0	0	0
FACIL. DESIGN MGMT.	NOISE & VIBRATION	20,000	0	20,000
	CORROSION CONTROL	45,000	0	45,000
FACIL. DESIGN	GEOTECHNICAL SURVEYING	123,000	0	123,000
	METHANE CONTROL	180,000	0	180,000
	LIGHTING	0	0	0
	SIGNING/GRAPHICS	0	0	0
	SYSTEM & VICINITY MAP MASTERS	30,000	0	30,000
	VAULT UTILITY RELOC.	0	0	0
SYSTEM INTEGRA- TION	FIRE/LIFE/SAFETY	90,000	0	90,000
	SAFETY & ASSURANCE	0	0	0
	OPERATIONS & MAINTENANCE	66,000	0	66,000
SYSTEMS DESIGN	FARE COLLECTION	0	0	0
	SCADA	16,000	0	16,000
	PASS. VEH. HVAC	1,000	0	1,000
TOTAL		921,000	0	921,000
EXPENDS. MAY - OCT, '85		693,500		
FORECAST EXPENDS. DURING AWP 85/86		1,614,500		

265000 Proposal
200000 Agababian
Dezunkalt →

William - Shing
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IV-18

TABLE IV-4A
SPECIALTY SUBCONTRACT BUDGET SUMMARY
PART II
(STAFF AUGMENTATION DBE/WBE)

DIVISION	ASSIGNMENT	FORECAST EXPENDS. BETWEEN 11/1/85 AND 4/30/86	PREVIOUS FORECAST EXPENDS. BETWEEN 11/1/85 AND 4/30/86	MORE (LESS) THAN PREVIOUS FORECAST
A PROJECT MANAGEMENT	NONE	0	0	0
B PROJECT ADMINISTRATION	EDITING	0	0	0
C PROJECT CONTROL	NONE	0	0	0
D FACILITIES DESIGN MGMT.	SUBCONTRACT MANAGEMENT	68,000	0	68,000
E FACILITIES DESIGN	DRAFTING UTILITIES ENGINEERING CLERICAL ELECTRICAL ENGINEERING ROW ENGINEERING SPECIFICATIONS	434,000	34,000	460,000
F SYSTEM INTEGRATION	CONFIGURATION CONTROL DOCUMENT CONTROL ASSURANCE ENGINEERING INTERFACE CONTROL DESIGN REVIEW OPERATIONS & MAINTENANCE PLANNING	103,000	156,000	-53,000
G SYSTEMS DESIGN	SYSTEMS ENGINEERING DRAFTING ELECTRICAL ENGINEERING	173,500	44,500	129,000
	TOTAL	838,500	234,500	604,000
	EXPENDITURES MAY - OCT, '85	902,500		
	TOTAL EXPENDS. DURING AWP 85/86	1,741,000		

*KDG
Jackie M.
Environmental Collaborators
ACG
Clark*

*Ohio
Poly
Clark*

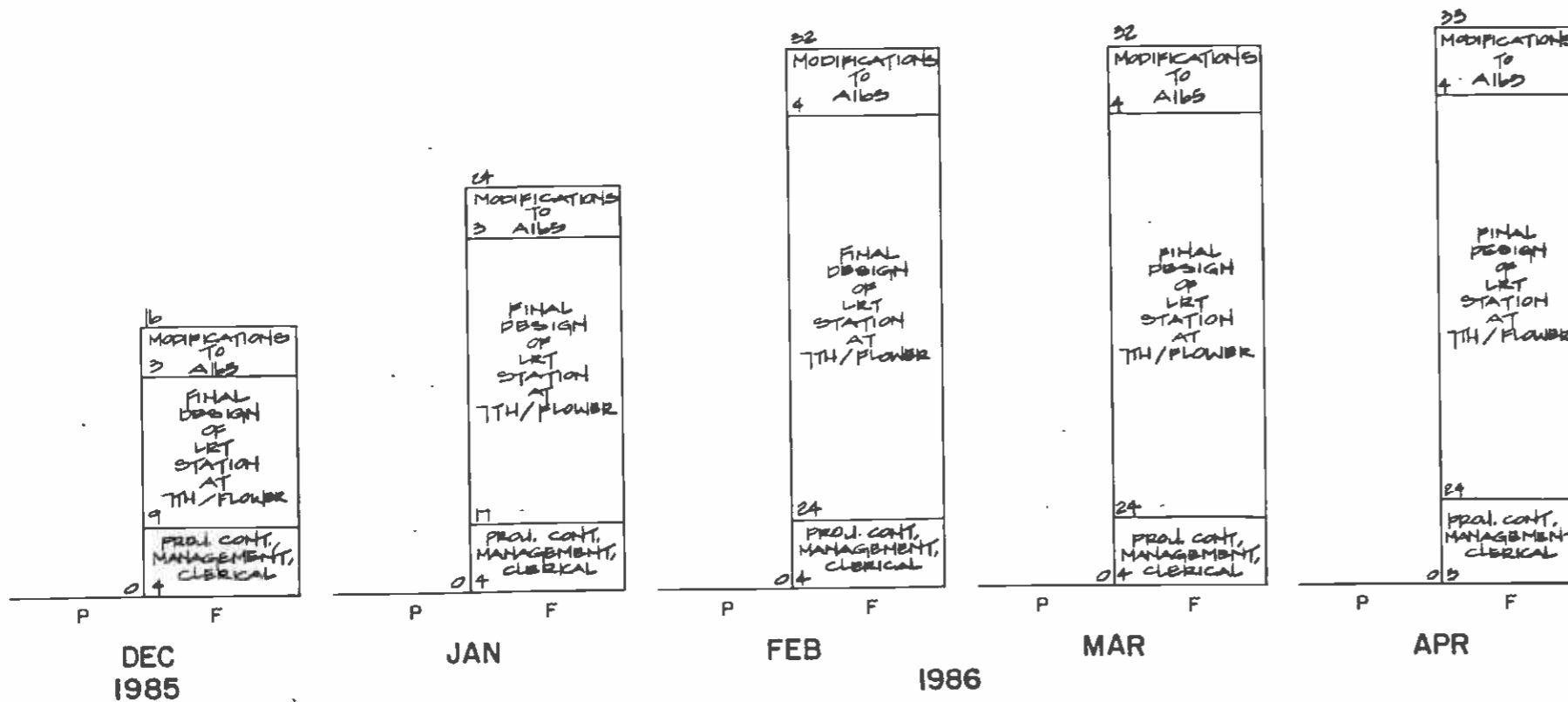
*ACG
VII
17% 3%
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6T-VI

LEGEND

P PLANNED
F FORECAST

MANMONTHS



PART B-1

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

DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE 24 OCT 85

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT



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

MRTC
LIGHT RAIL AT 7TH/FLOWER
MANPOWER UTILIZATION
FY 1985/86

CONTRACT NO.
DRAWING NO. REV.
SCALE
SHEET NO. 1 OF 1

REV.	DATE	BY	SUB.	APP.	DESCRIPTION

SUBMITTED _____ APPROVED _____

TABLE B-2
LRT STATION AT 7TH/FLOWER
MANPOWER ALLOCATION
FOR 85/86 AWP ONLY

<u>TASK DESCRIPTION</u>	<u>MM</u>	<u>1985</u>	<u>1986</u>			
	<u>85/86</u>	<u>DEC</u>	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>
A. Modifications to A165/7 document for LRT station	18.0	3.0	3.0	4.0	4.0	4.0
B. Final design of LRT station and cross-over at 7th/Flower	98.0	9.0	17.0	24.0	24.0	24.0
C. Management/Clerical/Project Control	21.0	4.0	4.0	4.0	4.0	5.0
Total	137.0	16.0	24.0	32.0	32.0	33.0

TABLE B-3
COST SUMMARY FOR ALL LRT-RELATED WORK
AT
7TH/FLOWER STATION

TASK DESCRIPTION	MANHOURS	ESTIMATED COST*
1. Design modifications to A-165 and A-167 contract documents to accommodate LRT interface and assemble combined bid package.	3,000	\$ 150,000
2. Final design of LRT Station:		
a. Final design drawings for LRT Station, tail track, and crossover (315 sheets)	33,425	1,671,250
b. Specifications	1,000	52,000
c. Estimates and Program Control	3,200	166,400
d. Clerical Support	2,000	64,000
e. Project Management	2,000	120,000
3. Coordination with all users, agencies/third parties; design reviews.	3,000	150,000
TOTAL LABOR	47,625	\$2,373,650
DIRECT REIMBURSABLE EXPENSES: (Printing, reproduction, supplies, expendable equipment, etc.)		60,000
SUBTOTAL		\$2,433,650
FIXED FEES:		
Consultant		200,400
Subcontracts (DBE/WBE)		64,000
Direct Expenses		1,950
SUBTOTAL		\$ 266,350
TOTAL COST OF ALL SERVICES		<u>\$2,700,000</u>
AMOUNT TO BE PROVIDED IN 85/86 AWP (21,920 Manhours + Pro Rata Share of Other Costs)		\$1,250,000

* Calculated on the basis of MRTC composite overhead rate of 1.396.