FIFTH ANNUAL WORK PLAN

for

CONSTRUCTION MANAGEMENT PHASE II – CONSTRUCTION SERVICES

for the

LOS ANGELES METRO RAIL PROJECT

PART II – COST AND STAFFING

presented to

Southern California

Rapid Transit District

PDCD

A JOINT VENTURE OF THE RALPH M. PARSONS COMPANY, DILLINGHAM CONSTRUCTION, INC. AND DE LEUW, CATHER & COMPANY

METRO RAIL CONSTRUCTION MANAGEMENT SERVICES

FIFTH ANNUAL WORK PLAN

FOR

CONSTRUCTION SERVICES

Prepared for

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

PART II - COST AND STAFFING

11 April 1988
REVISED 7 JUNE 1988 (REV. 1)

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Month June Year 1988

Southern California Rapid Transit District

PDCD, A JOINT VENTURE
600 South Spring Street
Suite 1200
Los Angeles, California 90014

FOREWORD

This document presents the Fifth Annual Plan for the period 2 July 1988 to 30 June 1989 for the Metro Rail Construction Management Services contract. It encompasses Phase II - Construction Services and Construction and Procurement Related Activities as defined in Articles 3.1.2 and 3.1.3 of PDCD's contract with the District.

The plan is based on the Contract Unit Description Book, revised as of January 1987, and Revision 6, to the Level 3 MOS-1 Construction Schedule dated January 14, 1988

The Annual Work Plan is organized so that the CM Services information is presented in two parts with a separate document for each part. Part I covers the Definition of the Work Program. Part II covers the "Cost and Staffing" related to that work program.

This document is Part II and includes the following sections:

Section 1 - Staffing Plan

Section 2 - Staffing Plan Justification

Section 3 - Cost Proposal

PART II - COST AND STAFFING

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SECTION 1

STAFFING PLAN

This section presents the Summary Manloading By Discipline and the Construction Staff By Position Per Functional Unit for the Fifth Annual Work Plan, Phase II - Construction Services. In reviewing this section, reference should be made to Part I with emphasis on Section 3 - Scope of Services and Section 4 - Organization and Responsibilities and to Section 2 of Part II which provides the staffing justification.

Specific job classifications are identified with corresponding manmonths and manhours. In certain functional areas where full time permanent staff is not required, "as-required" manmonths are shown, which represents assignment of temporary, short term personnel on an as-needed basis.

SUMMARY MANLOADING BY DISCIPLINE

01-Jun-88

MNLBREV2

FIFTH ANNUAL WORK PLAN
JULY 1988 THRU JUNE 1989
CONSTRUCTION STAFF

PREPARED BY Gwen Dougherty
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	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MMONTHS	TOTAL MANHOURS
AVAILABLE HOURS PER PERIOD *	152	160	192	160	144	192	152	160	200	160	160	192	2024	
CONSTRUCTION MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
DEPUTY CM/OP	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
DEPUTY CM/E.S.	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
MANAGER ADMIN./STAFF SUPPORT	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
SECR./CLERKS/WORD PROC./DRAFT./COURIER	15	15	15	15	15	15	15	15	15	15	15	15	180	30360
PROJECT ADMIN./ACCT. MGR.	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
OFFICE SERVICES MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
ACCOUNTANT	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
ACCOUNTING CLERK	2	2	2	2	2	2	2	2	2	2	2	2	24	4048
COMMUNITY REALTIONS MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
COMMUNITY RELATIONS COORDINATOR	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
EO MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
EO ADMINISTRATOR	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LEGAL				AS REQUIRED									4	640
ARTS COORDINATOR				AS REQUIRED									1	160
QUALITY ASSURANCE MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
QA ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
QC ENGINEER/INSP.				AS REQUIRED									4	640
MANAGER - SAFETY & SECURITY	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
SAFETY ENGINEER/INSP SHIFT 2	2	2	2	2	2	2	2	2	2	2	2	2	24	4048
CONTRACTS/PROCUREMENT MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
CONTRACT ADMINISTRATOR	2	2	2	2	2	2	2	2	2	2	2	2	24	4048
PROJECT CONTROLS MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
TECHNICAL DATA COORDINATOR	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LEAD PLANNER/SCHEDULER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
PLANNER/SCHEDULER				AS REQUIRED									6	960
PLANNER/SCHEDULERS	5	5	5	5	5	5	5	5	5	5	5	5	60	10120
LEAD COST ENGR.	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
COST ENGR.	4	4	4	4	4	4	4	4	4	4	4	4	48	8096
LEAD ESTIMATOR	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
ESTIMATORS	3	3	3	3	3	3	3	3	3	3	3	3	36	6072
ESTIMATOR MECH/ELEC.				AS REQUIRED									4	640
ESTIMATOR CIVIL				AS REQUIRED									4	640
DATA TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LEAD DOC. CONTROL SPEC.	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
DOCUMENT CONTROL SPEC.	1	1	1	1	1	1	1	1	1	1	1	1	12	2024

*PERIOD IS THRU THE LAST FRIDAY OF EACH MONTH; AVAILABLE HOURS ARE LESS PDCD OBSERVED HOLIDAYS (PER RTD DIRECTIONS).

MWLDREV2

FIFTH ANNUAL WORK PLAN
JULY 1988 THRU JUNE 1989
CONSTRUCTION STAFF

PREPARED BY Gwyn Dougherty
CHECKED BY

	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MMONTHS	TOTAL MANHOURS
SHOP DRAWING COORDINATOR	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
DATA TECHNICIAN	2	2	2	2	2	2	2	2	2	2	2	2	24	4048
FILE CLERK	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LEAD CHANGE CONTROL	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
CHANGE SPECIALIST	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
CLAIM SPECIALIST	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
DATA TECHICIAN				1	1	1	1	1	1	1	1	1	9	1520
COMPUTER SUPPORT				AS REQUIRED									3	480
ES/SI MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LEAD ARCHITECT	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LEAD CIVIL/STRUCTURAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
CIVIL/STRUCTURAL ENGINEER	2	2	2	2	2	2	2	2	2	2	2	2	24	4048
CIVIL/STRUCTURAL ENGINEER				AS REQUIRED									6	960
LEAD MECHANICAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
ELEC/MECH ENGINEERS				AS REQUIRED									12	1920
LEAD ELECTRICAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
ELECTRICAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LD ENGR., GEOTECH SECT.	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
ENGR., GEOTECH SECT.	5	5	5	5	5	5	5	5	5	5	5	5	60	10120
ENGR., GEOTECH SECT.				AS REQUIRED									6	960
GEOTECH ENGR. SPEC.				AS REQUIRED									2	320
INSTR. INSTALLATIONS TECH.				AS REQUIRED									2	320
GEOPHYSICIST				AS REQUIRED									6	960
LD SYSTEMS ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
SYSTEMS ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
SYSTEMS ENGINEER				AS REQUIRED									12	1920
DRAFT TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
SR. DRAFT TECHNICIAN				AS REQUIRED									6	960
SR. DRAFT TECHNICIAN	1	1	1	1	1	1	2	2	2	2	2	2	18	3048
GENERAL SERVICES MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LEAD UTILITY ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
UTILITY ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
ENGINEER	1	1	1										3	504
ENGINEERING TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
LEAD ENVIR ENGR.	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
ENVR. SPEC. WATER QLTY/HAZ MTL				AS REQUIRED									6	960
ENVR. SPEC. WATER QUALITY/HAZARDOUS MATL	2	2	2	2	2	2	2	2	2	2	2	2	24	4048
CHIEF OF SURVEYS	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
PARTY CHIEF	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
INSTRUMENT PERSON	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
INSTRUMENT PERSON				AS REQUIRED									12	1920
ROD/CHAIN PERSON	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
RESIDENT ENGINEERS	9	9	9	9	9	9	9	9	9	9	9	9	108	18216
OFFICE ENGINEERS	10	10	10	10	10	10	10	10	10	10	10	10	120	20240
ASST. OFFICE ENGR./INSPECTOR				AS REQUIRED									3	480
CHIEF INSPECTORS	8	8	8	8	8	8	8	8	8	8	8	8	96	16192

09-Jun-88

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FIFTH ANNUAL WORK PLAN
JULY 1988 THRU JUNE 1989
CONSTRUCTION STAFF

PREPARED BY Irma Daugherty
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	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MMONTHS	TOTAL MANHOURS
INSPECTORS	17	19	19	21	21	21	21	21	22	22	23	23	250	42256
INSPECTORS				AS REQUIRED									97	15520
FIELD SECRETARIES	8	8	8	8	8	8	8	8	8	8	8	8	96	16192
FILE CLERKS	3	3	3	3	3	3	4	4	6	6	6	6	50	8520
LABOR RELATIONS													2	320
SYSTEMWIDE CONSTR. MGR.	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12	2024
OFFICE ENGINEER				AS REQUIRED									6	960
RESIDENT ENGINEERS	4	4	4	4	4	4	4	4	4	4	4	4	48	8096
INSPECTOR				AS REQUIRED									8	1280
SECRETARY	1	1	1	1	2	2	2	2	2	2	2	2	20	3384
TOTAL WITHOUT AS REQUIRED	155	157	157	159	160	160	162	162	165	165	166	166	1934	326400
LESS AS REQUIRED	12.5	13.5	14	14.5	15	16	16	18.5	21.5	23	23.5	24	212	33920
GRAND TOTAL	167.5	170.5	171	173.5	175	176	178	180.5	186.5	188	189.5	190	2146	360320

CONSTRUCTION STAFF
BY POSITION
PER FUNCTIONAL UNIT

09-Jun-88

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FIFTH ANNUAL WORK PLAN
JULY 1988 THRU JUNE 1989
CONSTRUCTION STAFF

PREPARED BY
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	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MM
A - PROJECT MANAGEMENT													
CONSTRUCTION MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
DEPUTY CM/OP	1	1	1	1	1	1	1	1	1	1	1	1	12
DEPUTY CM/E.S.	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
CLERK TYPIST	1	1	1	1	1	1	1	1	1	1	1	1	12
COURIER/MESSENGER	1	1	1	1	1	1	1	1	1	1	1	1	12
COURIER/MESSENGER	1	1	1	1	1	1	1	1	1	1	1	1	12
WORD PROCESSOR	1	1	1	1	1	1	1	1	1	1	1	1	12
DRAFTS PERSON	1	1	1	1	1	1	1	1	1	1	1	1	12
SUBTOTAL	18	18	18	18	18	18	18	18	18	18	18	18	216
C - FACILITY CONSTRUCTION													
A112,A116,A117,A118, A610/A115 CONTRACTS													
RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
FILE CLERK	1	1	1	1	1	1	1	1	1	1	1	1	12
OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
INSPECTOR A112	1	1	1	1	1	1	1	1	1	1	1	1	12
INSPECTOR A610/A115	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ INSPECTOR A112													6
AS REQ INSPECTOR A610/A115													6
AS REQ INSPECTOR MECH/ELECT.													8
SUBTOTAL	8	8	8.5	8.5	8.5	8.5	9	9	9	9	9	9	104
A130 CONTRACT													
RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
CLERK									1	1	1	1	4

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FIFTH ANNUAL WORK PLAN
JULY 1988 THRU JUNE 1989
CONSTRUCTION STAFF

PREPARED BY Gary Daugherty
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		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MM
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR		1	1	1	1	1	1	1	1	1	1	1	11
AS REQ	INSPECTOR SHIFT 2													5
AS REQ	INSPECTOR													2
	SUBTOTAL	4	5	5	5	5	5	5	6	7	7	8	8	70
	A135 CONTRACT													
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
	FILE CLERK									1	1	1	1	4
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR		1	1	1	1	1	1	1	1	1	1	1	11
AS REQ	INSPECTOR													5
	INSPECTOR SHIFT 2				1	1	1	1	1	1	1	1	1	9
AS REQ	INSPECTOR SHIFT 2													3
	INSPECTOR SHIFT 3											1	1	2
	SUBTOTAL	4	5	5	6	6	6	6	7	8	9	10	10	82
	A141 CONTRACT													
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
	CLERK	1	1	1	1	1	1	1	1	1	1	1	1	12
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	INSPECTOR													6
	INSPECTOR SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR SHIFT 3				1	1	1	1	1	1	1	1	1	9
AS REQ	INSPECTOR SHIFT 2													3
AS REQ	INSPECTOR													2
AS REQ	INSPECTOR SHIFT 3													3
	SUBTOTAL	8.5	8.5	8.5	9.5	9.5	9.5	10.5	10.5	11	11	11	11	119
	A141 - WTP													
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	SUBTOTAL	1	1	1	1	1	1	1	1	1	1	1	1	12
	A145 CONTRACT													
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12

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CONSTRUCTION STAFF

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		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MM
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	ASST. OFFICE ENGR./INSPECTOR													3
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
	CLERK TYPIST	1	1	1	1	1	1	1	1	1	1	1	1	12
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	INSPECTOR													6
AS REQ	INSPECTOR SHIFT 2													6
	SUBTOTAL	10	10	10	9	9	9	9	9	9	9	9	9	111
	A146 CONTRACT													
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR - TUNNEL	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR - TUNNEL SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR - TUNNEL SHIFT 3	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	INSPECTOR - COMP. GROUT ‡													3
AS REQ	INSPECTOR - COMP. GROUT ‡													3
AS REQ	INSPECTOR - COMP. GROUT ‡													3
AS REQ	INSPECTOR - COMP. GROUT ‡													3
‡ 7 DAYS A WEEK, 3 SHIFTS A DAY, ROTATING SHIFTS.														
	SUBTOTAL	8	8	8	8	8	8	8	8	8	8	8	8	96
	A-165 CONTRACT													
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
	FILE CLERK							1	1	1	1	1	1	6
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	INSPECTOR													6
	INSPECTOR SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	INSPECTOR SHIFT 2													6
	SUBTOTAL A-165	8	8	8	8	8	8	9	9	9	9	9	9	102
	A171, A175 CONTRACT													
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12

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		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MM
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSPECTOR SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	INSPECTOR SHIFT 2													6
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	INSPECTOR													6
	INSPECTOR										1	1	1	4
	SUBTOTAL A171, A175	10	10	10	10	10	10	10	10	11	11	11	11	124
	TOTAL ZONE CONSTRUCTION	61.5	63.5	64	65	65	65	67.5	69.5	73	74	76	76	820
	E - SYSTEMWIDE CONSTRUCTION													
	SYSTEMWIDE CONSTR. MGR.	1	1	1	1	1	1	1	1	1	1	1	1	12
	RESIDENT ENGINEER A620	1	1	1	1	1	1	1	1	1	1	1	1	12
	RESIDENT ENGINEER A640	1	1	1	1	1	1	1	1	1	1	1	1	12
	RESIDENT ENGINEER 740,745,720,710	1	1	1	1	1	1	1	1	1	1	1	1	12
	RESIDENT ENGINEER 630, 631, 795	1	1	1	1	1	1	1	1	1	1	1	1	12
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	OFFICE ENGINEER													6
AS REQ.	INSPECTOR													8
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1	12
	SECRETARY						1	1	1	1	1	1	1	8
	SUBTOTAL	7.5	7.5	7.5	8.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	8.5	106
	F - GENERAL SERVICES													
	GENERAL SERVICES MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD UTILITY ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	UTILITY ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	ENGINEER	1	1	1										3
	CHIEF OF SURVEYS	1	1	1	1	1	1	1	1	1	1	1	1	12
	ENGINEERING TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12
	PARTY CHIEF	1	1	1	1	1	1	1	1	1	1	1	1	12
	INSTRUMENT PERSON	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	INSTRUMENT PERSON													12
	ROD/CHAIN PERSON	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD ENVIR ENGR.	1	1	1	1	1	1	1	1	1	1	1	1	12
	ENVR. SPEC. WATER QUALITY	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	ENVR. SPEC. WATER QLTY/HAZ MTL													6

09-Jun-88

AWP5REV2

FIFTH ANNUAL WORK PLAN
JULY 1988 THRU JUNE 1989
CONSTRUCTION STAFF

PREPARED BY
CHECKED BY

		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MM
	ENVR. SPEC. HAZARDOUS MATL	1	1	1	1	1	1	1	1	1	1	1	1	12
	SUBTOTAL	13.5	13.5	13.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	153
	K - PROJECT CONTROLS													
	PROJECT CONTROLS MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
	TECHNICAL DATA COORDINATOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD COST ENGR.	1	1	1	1	1	1	1	1	1	1	1	1	12
	COST ENGR.	1	1	1	1	1	1	1	1	1	1	1	1	12
	COST ENGR.	1	1	1	1	1	1	1	1	1	1	1	1	12
	COST ENGR.	1	1	1	1	1	1	1	1	1	1	1	1	12
	COST ENGR.	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD PLANNER/SCHEDULER	1	1	1	1	1	1	1	1	1	1	1	1	12
	PLANNER/SCHEDULER	1	1	1	1	1	1	1	1	1	1	1	1	12
	PLANNER/SCHEDULER	1	1	1	1	1	1	1	1	1	1	1	1	12
	PLANNER/SCHEDULER	1	1	1	1	1	1	1	1	1	1	1	1	12
	PLANNER/SCHEDULER	1	1	1	1	1	1	1	1	1	1	1	1	12
	PLANNER/SCHEDULER	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	PLANNER/SCHEDULER													6
	LEAD ESTIMATOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	ESTIMATOR CIVIL MISC	1	1	1	1	1	1	1	1	1	1	1	1	12
	ESTIMATOR CIVIL UTIL.	1	1	1	1	1	1	1	1	1	1	1	1	12
	ESTIMATOR ARCH CIVIL	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	ESTIMATOR CIVIL													4
AS REQ	ESTIMATOR MECH/ELEC.													4
	DATA TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD DOC. CONTROL SPEC.	1	1	1	1	1	1	1	1	1	1	1	1	12
	DOCUMENT CONTROL SPEC.	1	1	1	1	1	1	1	1	1	1	1	1	12
	SHOP DRAWING COORDINATOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	DATA TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12
	DATA TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12
	FILE CLERK	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD CHANGE CONTROL	1	1	1	1	1	1	1	1	1	1	1	1	12
	CHANGE SPECIALIST	1	1	1	1	1	1	1	1	1	1	1	1	12
	CLAIM SPECIALIST	1	1	1	1	1	1	1	1	1	1	1	1	12
	DATA TECHICIAN				1	1	1	1	1	1	1	1	1	9
AS REQ	COMPUTER SUPPORT													3
	SUBTOTAL	27.5	27.5	27.5	29	29	29	28.5	29	30.5	31	30.5	31	350
	L - CONTRACTS/PROCUREMENT													
	CONTRACTS/PROCUREMENT MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
	CONTRACT ADMINISTRATOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	CONTRACT ADMINISTRATOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	SUBTOTAL	3	3	3	3	3	3	3	3	3	3	3	3	36

09-Jun-88

AWP5REV2

FIFTH ANNUAL WORK PLAN
JULY 1988 THRU JUNE 1989
CONSTRUCTION STAFF

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		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MM
	M - ENGINEERING SERVICES/SYSTEMS INTEGRATION													
	ES/SI MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD ARCHITECT	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD ELECTRICAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	ELECTRICAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	LEAD MECHANICAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ.	ELEC/MECH ENGINEERS													12
	LEAD CIVIL/STRUCTURAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	CIVIL/STRUCTURAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	CIVIL/STRUCTURAL ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ.	CIVIL/STRUCTURAL ENGINEER													6
	LD SYSTEMS ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
	SYSTEMS ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ.	SYSTEMS ENGINEER													12
	LD ENGR., GEOTECH SECT.	1	1	1	1	1	1	1	1	1	1	1	1	12
	ENGR., GEOTECH SECT.	1	1	1	1	1	1	1	1	1	1	1	1	12
	ENGR., GEOTECH SECT. *	1	1	1	1	1	1	1	1	1	1	1	1	12
	ENGR., GEOTECH SECT. *	1	1	1	1	1	1	1	1	1	1	1	1	12
	ENGR., GEOTECH SECT. *	1	1	1	1	1	1	1	1	1	1	1	1	12
	ENGR., GEOTECH SECT. *	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ	ENGR., GEOTECH SECT. *													6
AS REQ	GEOPHYSICIST													6
AS REQ	GEOTECH ENGR. SPEC.													2
AS REQ	INSTR. INSTALLATIONS TECH.													2
	DRAFT TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12
	SR. DRAFT TECHNICIAN	1	1	1	1	1	1	1	1	1	1	1	1	12
	SR. DRAFT TECHNICIAN							1	1	1	1	1	1	6
AS REQ	SR. DRAFT TECHNICIAN													6
* WILL ROTATE TO ENSURE COVERAGE ON 3-SHIFT BASIS.														
	SUBTOTAL	21.5	22.5	22.5	22.5	22.5	22.5	23.5	22.5	23.5	23.5	23.5	23.5	274
	N - COMMUNITY RELATIONS													
	COMMUNITY REALTIONS MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
	COMMUNITY RELATIONS COORDINATOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	SUBTOTAL	2	2	2	2	2	2	2	2	2	2	2	2	24
	P - SAFETY AND SECURITY													
	MANAGER - SAFETY & SECURITY	1	1	1	1	1	1	1	1	1	1	1	1	12
	SAFETY ENGINEER/INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	SAFETY ENGINEER/INSP SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1	12
	SUBTOTAL	3	3	3	3	3	3	3	3	3	3	3	3	36

Q - QUALITY ASSURANCE

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AMP5REV2

FIFTH ANNUAL WORK PLAN
JULY 1988 THRU JUNE 1989
CONSTRUCTION STAFF

PREPARED BY
CHECKED BY

		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL MM
	QUALITY ASSURANCE MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
	QA ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ.	QC ENGINEER/INSP.													4
	SUBTOTAL	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	28
	R - ADMINISTRATION													
	MANAGER ADMIN./STAFF SUPPORT	1	1	1	1	1	1	1	1	1	1	1	1	12
	PROJECT ADMIN./ACCT. MGR.	1	1	1	1	1	1	1	1	1	1	1	1	12
	ACCOUNTANT	1	1	1	1	1	1	1	1	1	1	1	1	12
	ACCOUNTING CLERK	1	1	1	1	1	1	1	1	1	1	1	1	12
	ACCOUNTING CLERK	1	1	1	1	1	1	1	1	1	1	1	1	12
	OFFICE SERVICES MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
AS REQ.	ARTS COORDINATOR													1
	SUBTOTAL	6	6	6	6	6	6	6	6	6	6	6	7	73
	S - EQUAL OPPORTUNITY ADMINISTRATION													
	EO MANAGER	1	1	1	1	1	1	1	1	1	1	1	1	12
	EO ADMINISTRATOR	1	1	1	1	1	1	1	1	1	1	1	1	12
	SUBTOTAL	2	2	2	2	2	2	2	2	2	2	2	2	24
	T - LABOR RELATIONS													
AS REQ	LABOR RELATIONS													2
	U - LEGAL													
AS REQ	LEGAL													4
	TOTAL WITHOUT AS REQUIRED	155	157	157	159	160	160	162	162	165	165	166	166	1934
	AS REQUIRED	12.5	13.5	14	14.5	15	16	16	18.5	21.5	23	23.5	24	212
	GRAND TOTAL	167.5	170.5	171	173.5	175	176	178	180.5	186.5	188	189.5	190	2146

SECTION 2

STAFFING PLAN JUSTIFICATION

The methodology used to develop PDCD's staffing requirements for the 5th AWP included a rigorous analysis of the planned work program from July 2, 1988 to June 30, 1989 by each functional unit within the organization. The major factors taken into consideration were as follows:

A. Determination of the number and schedule of all facility and systems contracts to be active during the 5th AWP.

B. Based on the predetermined contractual CM scope of services, identification of the functional activities required to satisfy these services. Included were service categories in both the field construction operations and the corresponding central office support activities.

C. Identification of the job classification requirements (needed expertise) for effectiveness in carrying out the CM duties and responsibilities.

D. In relation to the number and size of the approved contract packages, and the corresponding start/completion schedule, a determination of the staff numbers within each job classification.

E. Consideration of other services requirements in the areas of municipal mandates, outside agency coordination, special support to the RTD, supervision of subcontractors and specialized consultants and others.

It should be noted that the selection of numbers and types of expertise requirements for the 5th AWP is based on the current forecast of the program for the coming year (Rev 6 schedule). PDCD, for the past four annual work plans, has always employed a major premise of requesting approval of additional staff only when it is absolutely necessary. Delays and/or slips in the work program will have a corresponding impact on the planned staffing requirements.

The following is a presentation of each functional unit within the CM organization and the justification of the number and types of job classifications within each unit.

2.1 CONSTRUCTION MANAGER

The Construction Manager has overall responsibility for the construction management services contract. He is the prime point of contact with the District and interfaces directly with the District's Director of Construction. He reports to an Executive Board consisting of a senior officer of each Joint Venture firm and one of the subcontractors, and has complete authority from the

Board to take any necessary action to ensure the highest level of performance in response to the District's needs. He is authorized to commit the Joint Venture for services within the limits of the negotiated cost budget and schedule. He assigns personnel to the project subject to District approval.

The Construction Manager has complete responsibility for providing all CM services to the District, including planning, scheduling, cost control, community relations, administration, engineering and engineering support, procurement assistance as requested by the District, construction supervision, and coordination as defined by the terms of the contract.

2.1.1 SAFETY AND SECURITY

A. Functional Responsibility

The functional responsibility of the safety and security department is to establish safety guidelines for a total construction safety program covering facility construction, systems procurement and installation and public safety. Once the guidelines and requirements are established, this department conducts daily monitoring and surveillance to assure that contractors are adhering to safety and security procedures. Emergency preparedness programs are also an essential element within this functional area.

B. Personnel Required for 5th AWP

- o Manager, Safety/Security
- o 2 - Safety Inspector/Engineer

C. Duties/Responsibilities of Job Classifications

MANAGER - SAFETY AND SECURITY

Implements the overall Safety and Security program. Supervises day and swing shift Safety Inspectors/Engineers. Reviews all loss report, workers' compensation, property damage, public liability claims and compiles statistics, analyzes, interprets and reports accordingly. Reviews and approves contractor safety and security programs and personnel. Conducts twice monthly safety meetings attended by SCRTD, DIA, Argonaut and contractor safety personnel. Participates on the Fire/Life Safety and Security committees and the Safety Certification committee. Makes periodic safety inspections of the projects. Works with SCRTD, DIA, Insurance, Federal and State safety personnel to keep management aware of any problems. Is a prime member of the PDCD/SCRTD Emergency Response Team.

SAFETY INSPECTOR (ENGINEER) - Day Shift

Performs daily safety inspections at ten facility contracts (7-1-88) and submits written reports and recommendations resulting from these inspections. Insures that contractor safety and gas testers perform required tasks and maintain adequate records. Insures contractor compliance with SCRTD, local, state and federal safety regulations. Instructs first-aid, underground safety and other

safety related classes for PDCD, SCRTD and subcontractor personnel. Performs gas tests and air flow tests periodically. It is anticipated that there will not be any onsite work by Systems Contracts during the 5th AWP requiring safety inspection. There will be eleven systems contracts underway during AWP5.

SAFETY INSPECTOR (ENGINEER) - Swing/Grave Shift

Performs daily safety inspections on the swing/graveyard shift at an average of eight facility multiple shift contracts (7-1-88) and submits written reports and recommendations resulting from these inspections. Insures contractor compliance with SCRTD, local, state and federal safety regulations. Performs gas tests and air flow checks periodically.

2.1.2 QUALITY ASSURANCE/QUALITY CONTROL

A. Functional Responsibility

The primary focus of the group is to verify implementation of the District approved PDCD Quality Assurance program and support the RTD Systems Assurance and Safety Certification programs.

The QA/QC group interfaces internally with PDCD functional managers and resident engineers and their staff and provides assistance and guidance to PDCD inspection forces on QA/QC matters and on the documentation needed to show compliance with contractual quality requirements. Externally the group interfaces with RTD, MRTC, BAH, Los Angeles Fire Department and suppliers on quality matters.

During AWP-5, MOS-1 tunnel, station and yard contracts will be at their apex of activity and systems procurement and installation contracts will increase in activity. We can expect to spend a considerable amount of time on submittal reviews, particularly with respect to product certification, mill test reports, welding and non destructive testing of materials, and review of quality assurance and testing for systems contracts. Other significant areas of activity include conducting surveillances and audits for the new contracts starting during AWP-5, in-progress audits for those contracts currently underway, and monitoring the performance of laboratory testing subcontracts. A list of the various specific tasks anticipated and the manhours needed to accomplish them is provided below.

B. Personnel Required for 5th AWP

QA/QC Manager, one QA/QC Engineer, and approximately four man months of as-required technical and audit support will be needed. The four man months of support will come from parent company resources and will be used on an as needed basis to provide specialized expertise in metallurgy, material applications, fire protection engineering, and audit support during peak load periods or when technical support cannot be made available from within PDCD Engineering Services.

C. Duties/Responsibilities of Job Classifications

QA/QC group must work simultaneously on an as required basis on all on-going contracts.

QUALITY ASSURANCE MANAGER

- Revise, as necessary, the QA/QC program to ensure efficient effective program.
- Monitor test laboratory activities.
- Select, assign, train and supervise QA Engineers.
- Develop or approve checklists for performing internal and external audits for all on-going contracts and for functional management audits.
- Perform surveillances, audits and quality reviews of submittals including QA/QC programs, product certifications and tests and subcontractor support, RTD safety certification and other systems assurance activities.
- Report status and progress of QA program to CM.

QUALITY ASSURANCE ENGINEER

- Perform surveillances and audits of on-going contracts in both the field and CM office.
- Perform QA/QC surveillances and audits of supplier activities and assist RE's in plant inspections.
- Perform receiving inspection for District furnished materials.
- Randomly participate in and witness tests to verify test procedures, conduct of tests, and test results meet quality requirements.
- Verify inspection and test by RE inspection staff and contractors is in compliance with contract and CM requirements.
- Assist QA Manager and RTD Systems Assurance in Safety Certification (particularly documentation) activities.

2.2 CONSTRUCTION OPERATIONS

The primary mission of the Construction Operations Group is to supervise, monitor and coordinate field construction operations relative to facility and systemwide contractors. Construction management procedures are followed to assure that the project is being constructed in accordance with District approved plans and specifications; and that the budget and schedule are tightly controlled. To accomplish this objective, this Group has three major departments - Facility Construction, Systemwide Construction and General Services. In lead of this Group is the Deputy Construction Manager - Operations (DCM Operations).

2.2.1 DCM OPERATIONS

DCM Operations is responsible for all field construction operations, field engineering, and support services. He directly supervises the Facility Resident Engineers assigned to each line segment and station; the Systemwide Construction

Manager who oversees the entire system construction program and the General Services Manager for the utilities, surveys, traffic and environmental control activities.

2.2.2 FACILITY CONTRACT - YARDS/SHOPS

A. Functional Responsibility

During the 5th AWP, the Yards/Shops field operations area will have five active contracts: A112, Main Shop Building; A610/A115, Track Installation, Yard Storage Area; A117, Yard Lighting; A116, Fencing; and A118, Landscaping.

The five projects will start, continue or finish during the year. The three projects which will begin will require pre-bid familiarization presentations and initial meetings and indoctrination of contractors new to the Metro Rail procedures and requirements. The Main Shop Building is a large, complicated structure encompassing all building trades and extensive coordination. There have been a substantial number of questions in the preparatory phase and it is reasonable that there will continue to be numerous questions and coordination to be answered and effected. The Trackwork/Yard Storage Area will be completing site development and intensive preparations for trackwork installation in the following work year. The Main Shop Building should be completed with close out activities accomplished at the end of the year.

B. Personnel Required for 5th AWP

The manpower needs to provide CM Services at this area include:

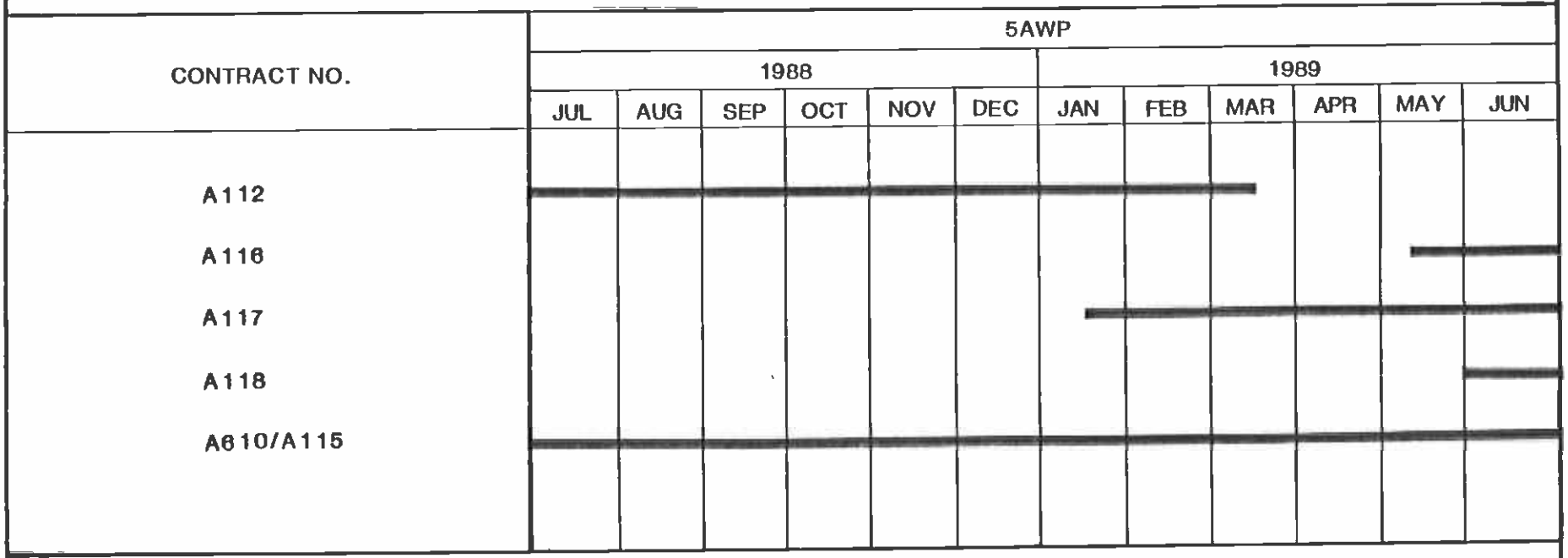
1 - Resident Engineer
1 - Office Engineer, A610/A115
1 - Office Engineer, A112, A116, A117, A118
2 - Inspectors, A112 - One full time and one part time as required.
2 - Inspectors, A610/A115 - One full time and one part time as required.
1 - Inspector Elect./Mech. (as req'd.)
1 - Secretary
1 - File Clerk

C. Duties/Responsibilities of Job Classifications

The office will be staffed by a Resident Engineer who will manage the various activities and supervise personnel in the accomplishment of their work. The resident engineer will attend required meetings, conduct correspondence, coordinate with District Project Engineers and coordinate the five separate contractors.

One office engineer will be assigned to each major project to oversee submittal processing, make out payment requests, answer technical questions and generate necessary documentation for the projects and revisions to those projects. The Yard Lighting project will be a collateral assignment for one office engineer with the ultimate resolution being the assignment of the three smaller, new projects to one office engineer and the other continuing on with the trackwork project.

FIELD OFFICE STAFFING PLAN
YARD AND SHOP FIELD OFFICE



A112,A116,A117,A118,
A610/A115 CONTRACTS

		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	FILE CLERK	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR A112	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR A610/A115	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR A112 (6 MM)												
AS REQ	INSPECTOR A610/A115 (6 MM)												
AS REQ	INSPECTOR MECH/ELECT. (8 MM)												

As the projects cover some 35 acres, there is a considerable area subject to inspection. The trackwork will require one full time inspector for rail work. A second inspector will be fully occupied with the utility work and site development.

The Main Shop Building will have simultaneous structural, architectural, electrical and mechanical work in a very spread out building. There will be numerous concurrent activities requiring close supervision and detailed reporting. Additionally there will be material deliveries from various supplier contracts. At all times these inspectors will be charged with obtaining safe construction.

A secretary and file clerk will be required to generate and file correspondence as necessary as well as process incoming mail.

As-required manmonths for Inspectors will be utilized to accommodate the surges in inspection activity, on multi-shifts if necessary and will cover routine and special activities.

2.2.3 FACILITY CONTRACT A141 - CIVIC CENTER STATION, TUNNEL U/S TO 5/H STATION

A. Functional Responsibility

The work scope under this contract includes the Stage I construction of the Civic Center Station and construction of a tunnel from Union Station to 5th/Hill Station.

During Fiscal Year July 1, 1988 to June 30, 1989, the excavation for Civic Center Station will be completed and concrete work will be 90% completed. Occupancy of the Union Station site is expected by June 15, 1988, with shaft construction started by mid-July. Tunnel construction will commence with the installation of the Tunnel Shield Machine in late October. Tunnel concrete work is scheduled to start in April of 1989.

B. Personnel Required for 5th AWP

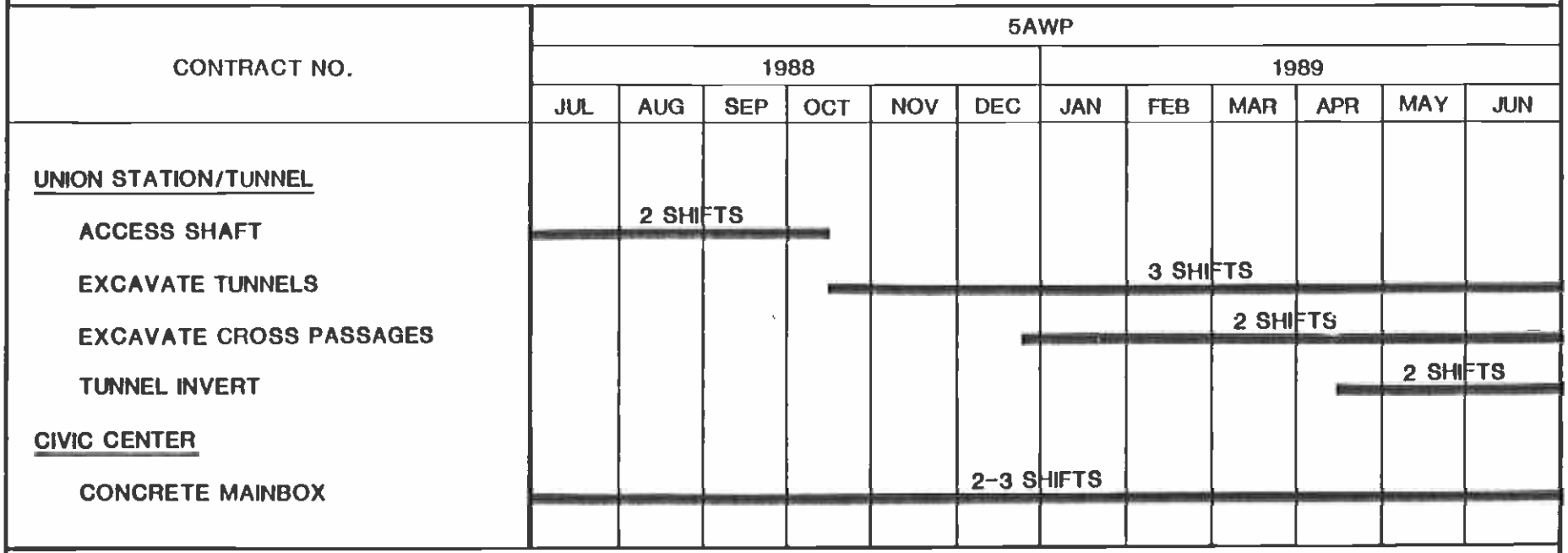
During the Fiscal Year the following personnel will be required to perform the following duties:

1 - Resident Engineer (A141)
1 - Office Engineer
1 - Chief Inspector
4 to 8 Inspectors (see staffing plan)
1 - Secretary
1 - File Clerk
1 - Resident Engineer (Water Treatment Facil.)

C. Duties/Responsibilities of Job Classifications

A Resident Engineer will be required throughout the year to supervise the field office, be contact point between the District and Contractor, administer the Contract and oversee project safety.

FIELD OFFICE STAFFING PLAN
A141 – CIVIC CENTER FIELD OFFICE



	A141 CONTRACT	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	CLERK	1	1	1	1	1	1	1	1	1	1	1	1
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR (6 MM)												
	INSPECTOR SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR SHIFT 3				1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR SHIFT 2 (3 MM)												
AS REQ	INSPECTOR (2 MM)												
AS REQ	INSPECTOR SHIFT 3 (3 MM)												

Resident Engineer - Water Treatment Facility - During the 4th AWP, a Water Treatment Facility (WTF) was installed and placed into operation to treat contaminated ground water found in the Union Station area. Starting during the last quarter of the 4th AWP and into the 5th AWP, a Resident Engineer will be deployed to coordinate and supervise the overall operation of the WTF. He will assure that the facility is operated in accordance with approved specifications and that the resultant water discharge meets established standards.

An Office Engineer will be required throughout the year to act as office manager, maintain shop drawings, submittal and claims logs, compile weekly and reports, update as-built drawings, review and process progress payments, and perform other duties as assigned.

To date 20 Change Orders and 26 Change Notices have been issued for Contract A141, with 40 potential claims underway; increased claim activity is anticipated during the 5th AWP period.

A Secretary will be required throughout the year to maintain correspondence logs and filing system, type, word process and code contract correspondence, order office supplies, answer telephones and handle other miscellaneous duties as assigned.

A File Clerk is required for the 5th AWP period to assist the secretary with typing, filing and copying. Contract A141 copy machine averages 15,000 copies per month. Contractor has written over 1,200 letters in under one year of operations and R.E. has generated over 800 letters of reply, in addition to memos and letters to other sources. It is anticipated that the amount of correspondence will increase due to the increasing number of subcontractors involved on the project. File clerk is also to answer telephones and assist in the ordering of office supplies.

A Chief Inspector is required throughout the year to supervise field inspectors, prepare daily inspection reports, review shift inspector's reports and ensure that project construction is being carried out in accordance with contract documents and safety requirements. The chief inspector also will apprise the R.E. of any field problems and potential claims as well as enforce safety regulations.

Inspectors are required throughout the year to observe and record all construction activities to ensure compliance with the contract documents, measure various contract items for payment, report all safety violations, prepare accident/incident reports and daily inspection reports, and maintain a professional relationship with the contractor's crews.

The need for inspectors will increase throughout the year. At Civic Center Station the large volume of concrete will require two (2) inspectors at the station; one inspector at point of concrete placement and the other checking rebar, HDPE concrete forms, embedded items, etc. The contractor plans to concrete the station five (5) days at 10 hours/day. The contractor foresees the probability of a second shift setting rebar and HDPE. If this occurs, a third Civic Center Inspector will be needed for that shift. An allowance for this third inspector has been made on the A141 5th AWP for 50% of the year.

The contractor will commence construction at the Union Station site during June on a single shift basis with shaft construction on a two shift basis starting in mid-July. A third shift will be added in October. A single inspector on each working shift will be required observing the support placement ground conditions and tunnel safety. The anticipated driving time for the A.R. Tunnel is approximately five (5) months, whereupon the shell of the Machine will be left in place, the equipment moved and reinstalled, and the A.R. Tunnel driven.

Upon completion of the A.R. Tunnel, concreting will commence. This will require four (4) inspectors, one underground at the site of the work observing the form setting, rebar, HDPE and concrete placement. An additional inspector will be needed at the concrete truck checking slump and truck timing delays.

In addition to identified positions, specialized and technical support will be required from PDCD staff. There will be considerable asbestos encountered in the demolition of portions of the R.E.A. Building at Union Station. Geotechnical support will be needed in the mapping of geology and interpretation of instrumentation readings as well as review of structural concerns.

As-required manmonths for Inspectors will be utilized to accommodate the surges in inspection activity, on multi-shifts if necessary and will cover routine and special activities.

2.2.4 FACILITY CONTRACT A145 - 5TH/HILL STATION STAGE I CONSTRUCTION, UTILITIES RELOCATION AND VAULT MODIFICATION

A. Functional Responsibility

The scope of work under this contract includes extensive relocation and installation of new utilities, switchover to new services and abandonment of existing utilities within the public right-of-way. Master Agreement interface with the utility companies is required to a substantial extent. In addition, vault modification work will continue well into the 5th AWP with the rearrangement of building basements to accommodate new utility service laterals and construction of new closure walls on the property line. Stage I 5th/Hill Station excavation construction will begin during the 5th AWP.

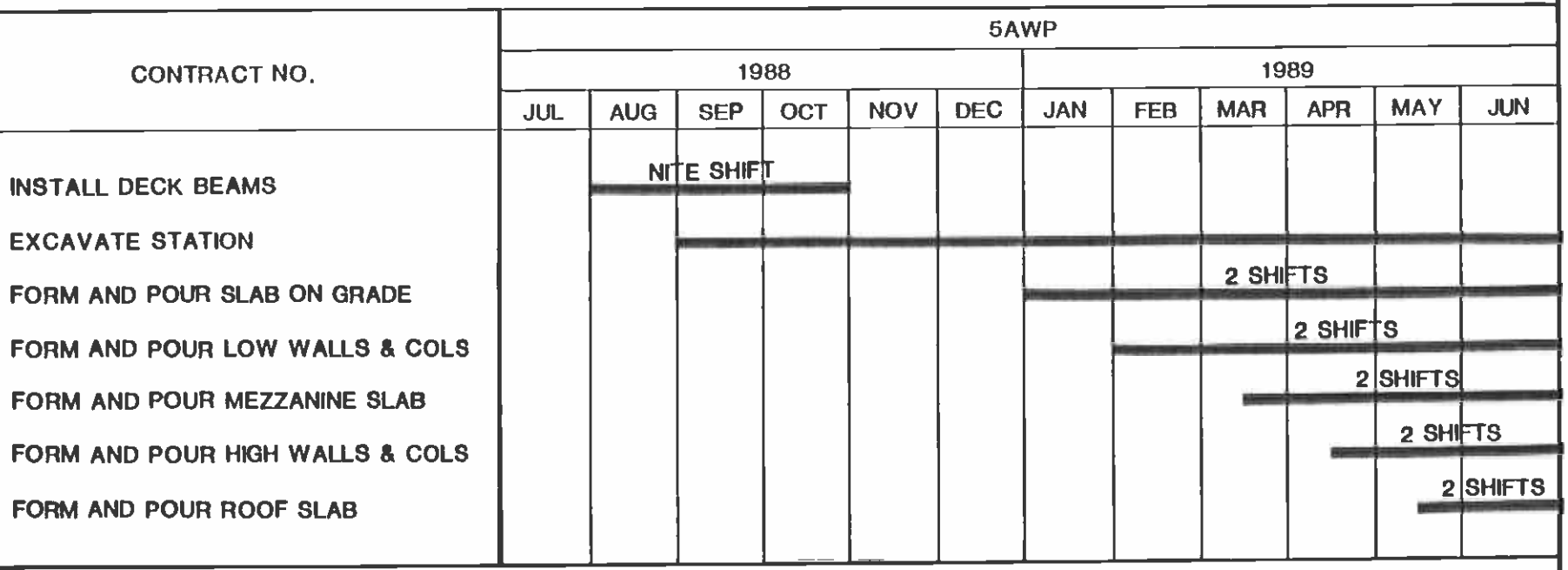
B. Personnel Required for the 5th AWP

1 - Resident Engineer
1 - Office Engineer
1 - Assistant Office Engineer (As Required)
1 - Chief Inspector
5 - Inspector (3 full time - 2 part time as required)
1 - Secretary
1 - Clerk Typist

C. Duties/Responsibilities of Job Classifications

Resident Engineer - A resident engineer will be required for the 5th AWP period to supervise the field office staff, sign all official correspondence for this contract on behalf of the District, and insure contract document and safety compliance.

FIELD OFFICE STAFFING PLAN
A145 - 5TH AND HILL FIELD OFFICE



	A145 CONTRACT	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	ASST. OFFICE ENGR./INSPECTOR (3 MM)												
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	CLERK TYPIST	1	1	1	1	1	1	1	1	1	1	1	1
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR (6 MM)												
AS REQ	INSPECTOR SHIFT 2 (6 MM)												

Office Engineer - An office engineer will be required for the 5th AWP period to maintain all correspondence logs, shop drawing logs, submittals for station excavation and concrete, write weekly and monthly reports, and handle special assignments as required.

Assistant Office Engineer/Inspector - An assistant office/claims engineer will be required to handle all contract change package preparation, maintain all potential claim files and logs, write contract correspondence, and generally assist office engineer with contract assignments. To date, 30 change orders have been issued and 76 potential claims have been logged, justifying the need for a full time position. It is anticipated that during the 5th AWP, a minimum of 50 change orders and 100 potential claims will occur, with the heaviest load during the first six months.

Secretary - A contract secretary is required to answer telephones, type all contract correspondence, listen to and transcribe weekly and monthly meeting minutes, order office supplies, and handle miscellaneous duties.

File Clerk - A full-time file clerk is required on this contract due to the large amount of contract correspondence which flows through the office. To date, the contractor has written 1,500 letters, to which the RE office has responded to 1,100. Each letter has approximately seven (7) copies made, which results in copying and filing over 18,000 copies for correspondence alone. This number is increased by 50% for interoffice PDCD and RTD memos and letters. In addition, this file clerk has been used to type letters and change package reports during heavy periods, as well as answering phones.

It is anticipated that the amount of correspondence will increase, as original contract work volume increases, due to the number of subcontractors involved.

Chief Inspector - A chief inspector is required to supervise contract inspectors, review and assure correct daily inspection reports, and generally insure that the contract is built in accordance with contract plans and specifications.

Inspectors - For the 5th AWP, the contractor will generally be working two shifts for station excavation and concrete. Additionally, the first few months will require completion of utility work and force account operations currently ongoing.

Currently and through the 5th AWP, the inspectors are responsible for making out daily inspection reports, Force Account sheets where applicable, and Master Agreement labor and material costs. Additionally, inspectors are marking up "as-built" information on contract prints.

Each shift will require a minimum of two inspectors, one for excavation and one for concrete. Therefore, two shifts will require four inspectors minimum. The fifth inspector interfaces with the cost engineer to keep inspection quantities, as-built information, and Force Account records. Additionally, this inspector is used to cover miscellaneous activity inspection, such as building work or other Force Account operations.

As required manmonths for Inspectors will be utilized to accommodate the surges in inspection activity, on multi-shifts if necessary and will cover routine and special activities.

D. Coordination with Other Project Participants

Contract A145/A145A has the most third party involvement of any MOS-1 contract. The third party interface involves three (3) different areas:

Utilities - Outside utility agency interface involves Pacific Bell, LADWP-Water and Power Systems, Southern California Gas Company, Western Union, etc. PDCD is responsible to insure coordination with these agencies, as well as insuring that the contractor properly coordinates his work.

City Agencies - PDCD inspectors are responsible for arranging inspections with City personnel, and directly coordinating inspections with LA Dept. of Building & Safety, Bureau of Contract Administration, and LADOT.

Other Contracts - PDCD RE's are responsible to coordinate with other Metro Rail contracts. Specifically for Contract A145/A145A, coordination with the other tunneling contracts, A141 and A146, is required with regards to station/tunnel interface, traffic plans, etc.

2.2.5 FACILITY CONTRACT A146 - LINE TUNNEL 5TH/HILL STATION TO 7TH/FLOWER STATION

A. Functional Responsibility

The scope of work under this contract includes line section tunneling from 5th/Hill to 7th/Flower. In addition to the basic tunneling, this contract has requirements for an access shaft, an access adit, starter tunnels, tail tunnels, compaction grouting and underpinning.

B. Personnel Required for 5th AWP

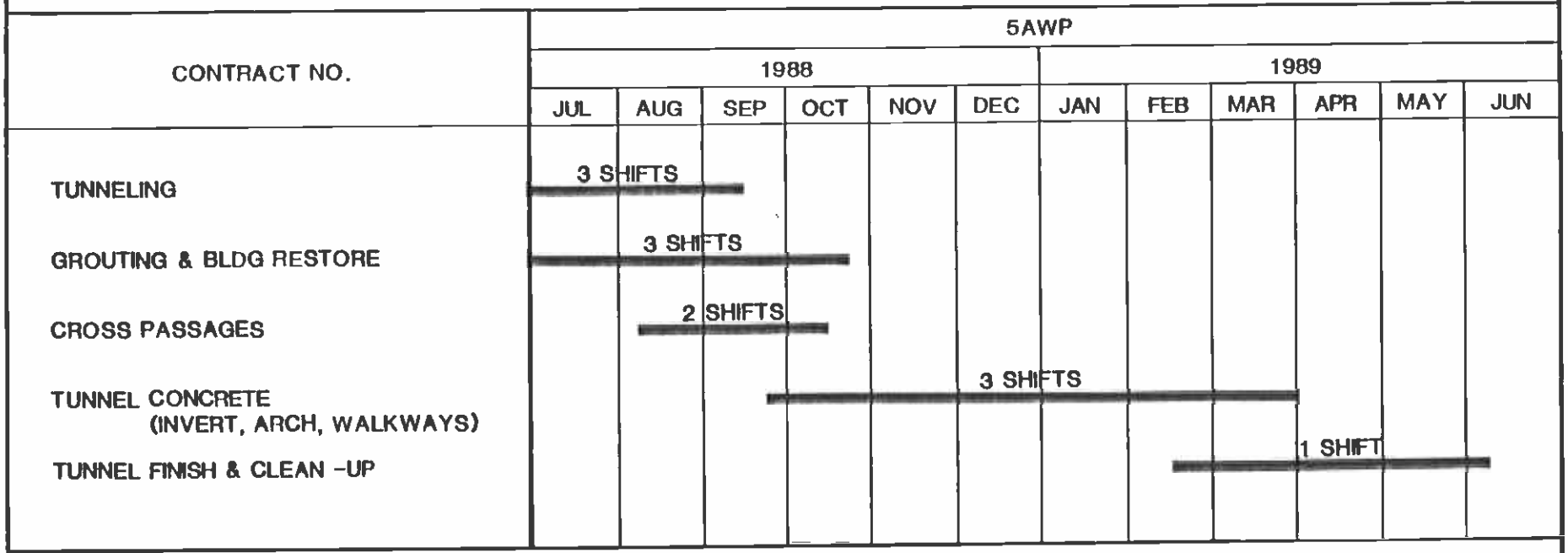
1 - Resident Engineer
1 - Office Engineer
1 - Chief Inspector
3 - Tunnel Inspectors
4 - Compaction Grouting Inspectors (Part time - as required)
1 - Secretary

C. Duties/Responsibilities of Job Classifications

Resident Engineer - A resident engineer will be required for the 5th AWP period to supervise the entire CM effort for this contract on behalf of the District, and insure contract document and safety compliance.

Office Engineer - An office engineer will be required for the 5th AWP period to maintain all claim logs, shop drawing logs, submittals for tunnel excavation and concrete, write weekly and monthly reports, and handle special assignments as required.

FIELD OFFICE STAFFING PLAN
A146 – LINE TUNNELING FIELD OFFICE



		JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	A146 CONTRACT												
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR - TUNNEL	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR - TUNNEL SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR - TUNNEL SHIFT 3	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR - COMP. GROUT ‡ (3 MM)												
AS REQ	INSPECTOR - COMP. GROUT ‡ (3 MM)												
AS REQ	INSPECTOR - COMP. GROUT ‡ (3 MM)												
AS REQ	INSPECTOR - COMP. GROUT ‡ (3 MM)												

‡ 7 DAYS A WEEK, 3 SHIFTS A DAY, ROTATING SHIFTS.

Secretary - A contract secretary is required to type all contract correspondence, maintain all correspondence logs, maintain all contract files and handle miscellaneous duties.

Chief Inspector - A chief inspector is required to supervise contract inspectors, review and assure correct daily inspection reports, monitor safety compliance and generally insure that the contract is built in accordance with contract drawings and specifications.

Tunnel Inspectors - For the 5th AWP period, the contractor will generally be working three shifts/day, five days/week for tunnel excavation and concrete pouring.

As-required manmonths for Inspectors will be utilized to accommodate the surges in inspection activity, on multi-shifts if necessary and will cover routine and special activities.
Currently and through the 5th AWP, the inspectors are responsible for making out daily inspection, tunnel inspection and geologic face mapping reports. Additionally, inspectors are marking up "as-built" information on contract prints.

Each shift will require a minimum of one inspector to fulfill the job duties.

Compaction Grouting Inspectors - For the 5th AWP period, the Contractor will be required to be ready to grout on a 24-hour/day, 7 days/week operation. A total of four positions is required to provide this coverage.

The compaction grouting inspectors will be responsible for making out daily inspection reports and monitoring quality and quantities of grout injected.

2.2.6 FACILITY CONTRACT A165 - STAGE I CONSTRUCTION OF 7TH/FLOWER STATION

A. Functional Responsibility

The contractor, Granite Construction, has defined his work scope into the five (5) following areas: South Flower, North Flower, East Seventh Street, West Seventh Street, and Intersection Seventh and Flower Street.

However, the R.E. field office is divided into two sections: Light Rail - Flower Street and Metro Rail - 7th Street including the Flower & Seventh Street intersection.

Project schedule establishes the following work being performed concurrently.

Light Rail - Flower Street

1. Demolition & Underpinning of Bank of America - day shift
2. Demolition & Underpinning of California Commerce Bank - day shift
3. Demolition in Barker Brothers Building - day shift
4. Soldier Pile Installation on Flower Street - day shift
5. Deck Beams on Flower Street - night shift
6. Excavation for/and Support of Utilities - night shift

Metro Rail - 7th Street

1. Soldier Pile Installation - day shift
2. Deck Beam Installation - night shift
3. Excavate for/and Support of Utilities - night shift
4. Demolition of Roosevelt Building

B. Personnel Required for the 5th AWP

1 - Resident Engineer
1 - Office Engineer
1 - Chief Inspector
5 - Inspector (3 full time - 2 part time as required)
1 - Secretary
1 - File Clerk (6 months)

C. Duties/Responsibilities of Job Classificatons

Resident Engineer - A resident engineer will be required for the 5th AWP period to supervise the field office staff, sign all official correspondence for this contract on behalf of the District, and ensure contract document and safety compliance.

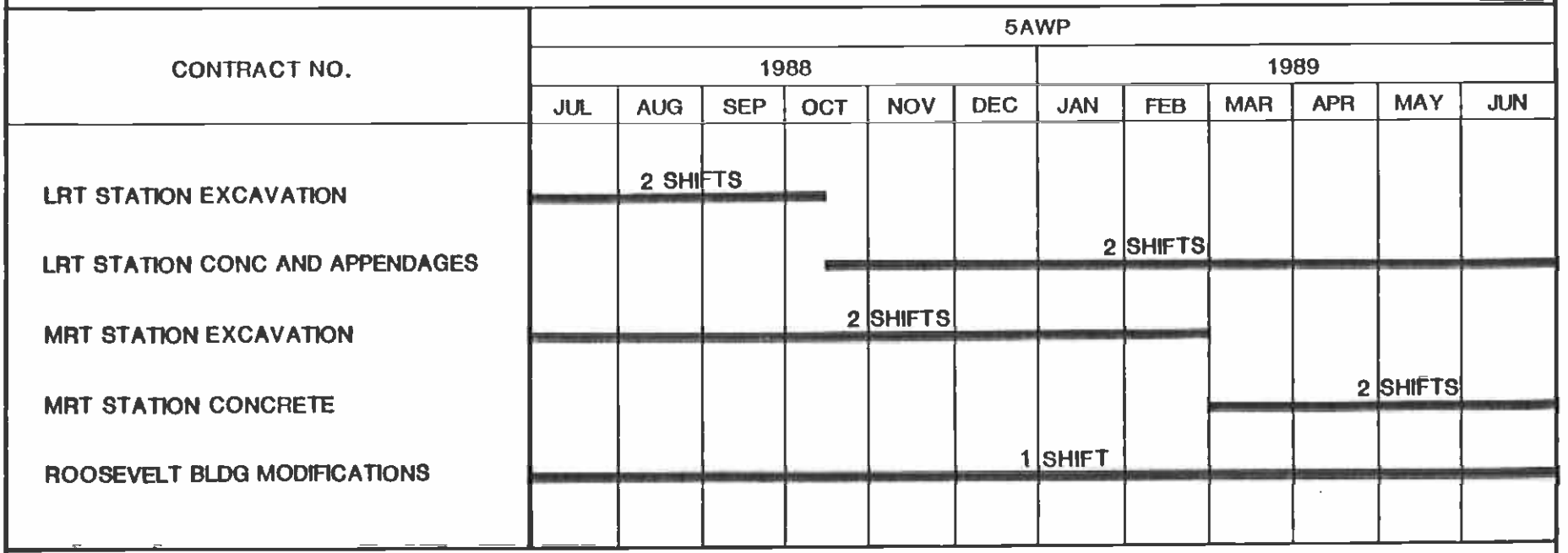
Office Engineer - An office engineer is required to maintain shop drawing logs, potential claims logs and process contract change packages. The magnitude and location of this contract will necessitate daily brief/coordination with staff inspectors to review documents relative to work assignments. The engineer will maintain submittals for station excavation support systems, demolition of existing building structures, provide resolution to the contractor's CQR's (Contractor Question & Response), expedite special assignments as required, maintain documentation at contract interface and compile documentation from inspection to procure A165 as-built plans.

Chief Inspector - A chief inspector is required to supervise the inspectors and establish the daily priority of inspection work as coordinated with the contractor and the resident engineer (RE). Ensures through the efficient utilization of the inspection staff that the work being performed by the contractor is in accordance with the contract drawings and specification. Determines that daily inspection reports are complete and in sufficient detail to describe the daily work activities. Reviews sketches and drawing markups developed by the inspectors for input to as-built drawings. Maintain logs for gas testing, water discharge control and noise monitoring. Prepares the weekly and monthly progress reports and assists in developing the Monthly Contractor Pay Estimate.

Inspectors - The complexity of the scope of the A165 Contract schedule includes double shift work and multi-building demolition to be performed concurrently. This facilitates the need for inspection inside the buildings which will limit the ability to monitor activities on the streets for excavation support, etc.

Secretary - A secretary will be required to supervise clerical support. To maintain all correspondence logs, shop drawing and submittal logs. Input data into computer (correspondence). Maintain care of computer. Order and maintain office supplies, handle petty cash distribution and approved staff parking. Schedule meetings, prepare and distribute minutes of meetings. Answer phone.

FIELD OFFICE STAFFING PLAN
A165 – 7TH AND FLOWER FIELD OFFICE



	A-165 CONTRACT	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	FILE CLERK							1	1	1	1	1	1
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR (6 MM)												
	INSPECTOR SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR SHIFT 2 (6 MM)												

Work with file clerk to ensure that files are in a good working order and easily accessible to staff and auditors. To handle any special assignments as required. Ensure that all time sheets are properly filled out and submitted to main office on a timely basis and that paychecks are distributed.

File Clerk - A full time file clerk (anticipated to start January 1989) is required due to the anticipation of the heavy projected workload of orrespondence. To date, the contractor has written 102 letters, RE has written/responded to 155 letters for contract, which is still in the early stage of the work. Approximately seven (7) copies per letter. The amount of letters will greatly increase as the work progresses. Will answer phones, assist senior secretary in maintaining files. Will handle special assignments as required, such as input of data into computer.

As-required manmonths for Inspectors will be utilized to accommodate the surges in inspection activity, on multi-shifts if necessary and will cover routine and special activities.

2.2.7 FACILITY CONTRACTS A171 AND A175 - TUNNEL, 7TH/FLOWER TO WILSHIRE/ALVARADO AND STAGE I, 7TH/FLOWER STATION

A. Functional Responsibility

The A171 and A175 Contracts will be managed by one field office under one RE with separate field monitoring staffs for each contract. The A171 project includes line tunneling from Wilshire/Alvarado to 7th/Flower. The A175 project involves Stage I Station construction using cut/cover.

B. Personnel Required for 5th AWP

A171	A175
1 - Resident Engineer	1 - Chief Inspector
1 - Chief Inspector	2 - Shift Inspector
2 - Shift Inspector	1 - Office Engineer
1 - Office Engineer	A171/A175
1 - Secretary	2 - Inspectors (Part time as required)

C. Duties/Responsibilities of Job Classifications

Resident Engineer - Supervision of all field office staff. Assure that documentation exists for pay items, claims and contracted quality.

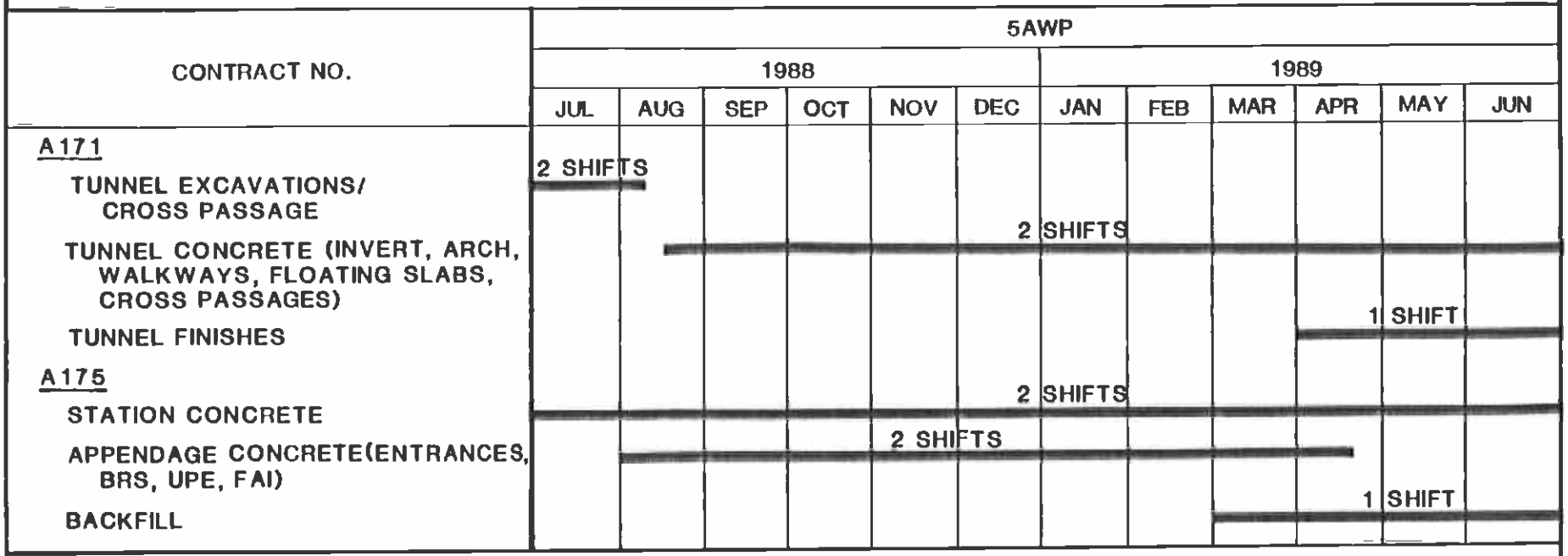
Chief Inspector - The contractor is currently on a two (2) shift schedule. The chief inspector normally does not stand a regular field shift but does supervise the assigned inspector on each shift.

Other required duties of the Chief Inspector also preclude his standing of a full time field shift because of the following additional duties:

- The assembly, distribution and filing of daily inspection reports.
- Supervise and review the weekly time sheets of inspector and conduct bi-annual performance reviews.

FIELD OFFICE STAFFING PLAN

A171/A175 – WILSHIRE AND ALVARADO FIELD OFFICE



	A171, A175 CONTRACT	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR SHIFT 2	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR SHIFT 2 (6 MM)												
	INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR (6 MM)												
	INSPECTOR									1	1	1	1

- Maintain and sign off for Force Account work and keep daily diary of delay events.
- Take pictures of job progress and maintain photo and slide albums.
- Provide bid item daily support records to office engineer from daily inspection reports.
- Assist office engineer in routing letter responses to contractor regarding submittals.
- Review and forward all daily records of instrumentation received from the contractor.
- Attend weekly and monthly contractor progress meetings.
- Provide shift back-up inspection when inspector is sick or on vacation.

Both A171 and A175 will require a separate full time Chief Inspector for the AWP of 1988-1989 because the contract completion dates are beyond June 1989.

Office Engineer - Similarly, the office engineer position must be separately filled for each of the contracts being operated out of the single field office. A single office engineer can not handle the combined duties of both contracts for the AWP ending in June 1989 because of the following responsibilities applicable:

- Make drafts for RE review for weekly and monthly reports on PDCD forms. After review, type, distribute and file. Interface with senior inspector to attach monthly progress photos utilizing District photographer. Attach photos to weekly reports of problem areas if appropriate.
- Supervise the secretary and filing system. Pay particular attention to determine that proper attachments and enclosures exist in original outgoing letters and our file copies.
- Maintain claim files, update the change log in a timely manner.

Field Inspectors - Currently, each working shift of the contractor requires one full time field inspector. His primary responsibility is to furnish written documentation of shift activities and support for pay work installed including the acceptability of the quality achieved.

He reports to the chief inspector who reviews his daily reports and assures familiarity with contract documents.

Construction Contract No. A171 requires one full time inspector in the tunnel for inspection of the support segments. Accordingly, the PDCD Geotechnical Department has been inspecting street surface and building reference points for instrumentation. The A171 staffing for AWP 1988-89 assumes that others will continue to monitor instrumentation in the field, if any.

The AWP has used the current contractor shift basis: two (2) shifts for A175 and three (3) shifts for A171. Accordingly, a total of five (5) field inspectors have been included in the staffing plan. In addition, we have added a sixth inspector to cover restoration activities.

As-required manmonths for Inspectors will be utilized to accommodate the surges in inspection activity, on multi-shifts if necessary and will cover routine and special activities.

Secretary - The staffing plan includes one secretary to handle the responsibilities of construction Contract No. A171 and A175. The duties include posting logs of letter responses, typing, filing, distribution of correspondence, visitor logs and answering telephones.

2.2.8 FACILITY CONTRACT A130 - YARD LEADS AND TRANSFER ZONE INCLUDING CAR WASH

A. Functional Responsibility

The scope of work under this contract includes cut-and-cover construction of yard leads and transfer zone, a section of mined tunnel under the freeway embankment, demolition, dewatering (including an option to provide additional water treatment equipment), retaining walls, box structure, rerouting or support of utilities, underpinning of existing busway piers, design and installation of passenger vehicle car wash, grading and paving and restoration work. The Notice to Proceed is now anticipated to be July 1, 1988.

B. Personnel Required for 5th AWP

1 - Resident Engineer
1 - Office Engineer
1 - Secretary
1 - Clerk (3/01/89)
1 - Chief Inspector
3 - Inspectors (One full time - 2 part time as required)

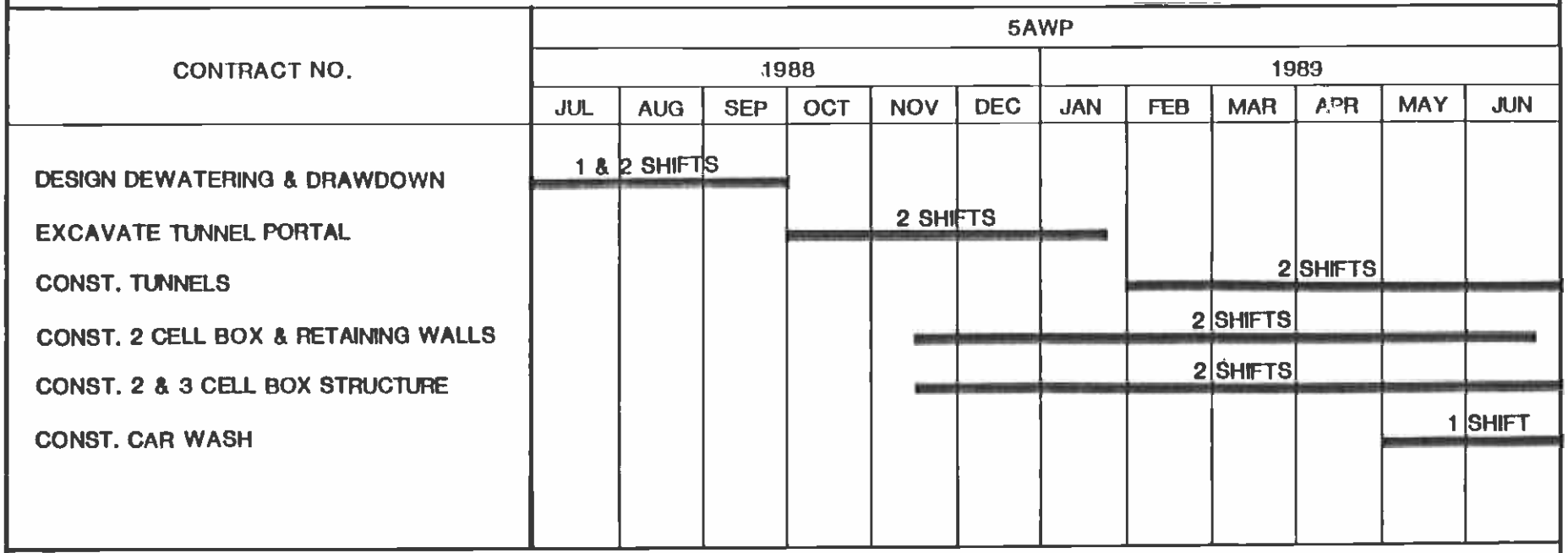
C. Duties/Responsibilities of Job Classifications

Resident Engineer - The resident engineer should be on board at least one month prior to NTP and will, therefore, be on staff prior to beginning of AWP-5. The resident engineer is required to serve as the focal point for RTD and PDCD in the administration of the contract. He supervises the field office staff, signs all official correspondence on behalf of the RTD and insures compliance with contract documents, including the Safety Manual.

Office Engineer - The office engineer is required to maintain correspondence logs, shop drawing logs, maintain quantity records, prepare progress payments, prepare change request packages, maintain potential claims files and logs, write weekly and monthly reports, prepare special analyses or evaluations and perform other assignments as required.

Secretary - The secretary is required to answer telephones, type all contract correspondence, transcribe weekly and monthly meeting minutes, file and distribute contract correspondence, order office supplies and handle miscellaneous administrative duties as required.

FIELD OFFICE STAFFING PLAN
A130 - YARD LEADS/TRANSFER ZONE



	A130 CONTRACT	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	CLERK									1	1	1	1
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR		1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR SHIFT 2 (5 MM)												
AS REQ	INSPECTOR (2 MM)												

Chief Inspector - The chief inspector is required to supervise contract inspectors, review and assure complete and accurate daily inspection reports and generally insure that the contract work is performed in accordance with plans and specifications.

Inspectors - The inspectors are responsible for being completely familiar with the contract documents, inspecting the work, preparing daily inspection reports, Force Account sheets when required, master agreement labor, material and equipment usage/cost records and maintaining "as-built" information on a set of contract documents.

As-required manmonths for Inspectors will be utilized to accommodate the surges in inspection activity, on multi-shifts if necessary and will cover routine and special activities.

Inspectors assignments are based on the current Level III schedule and NTP of 7/01/88.

2.2.9 FACILITY CONTRACT A135 - UNION STATION STAGE I

A. Functional Responsibility

The scope of work under this contract includes the cut-and-cover construction of the Union Station box structure, ancillary facilities, the east entrance and a portion of the double crossover structure west of the station to the A141 interface. The work includes civil and structural construction, dewatering (including an option to provide additional water treatment equipment), embedded items for electrical, mechanical and architectural systems/finishes and removal and construction of railroad facilities (e.g., baggage handling facility). The Notice-to-Proceed is now anticipated to be June 13, 1988.

B. Personnel Required for 5th AWP

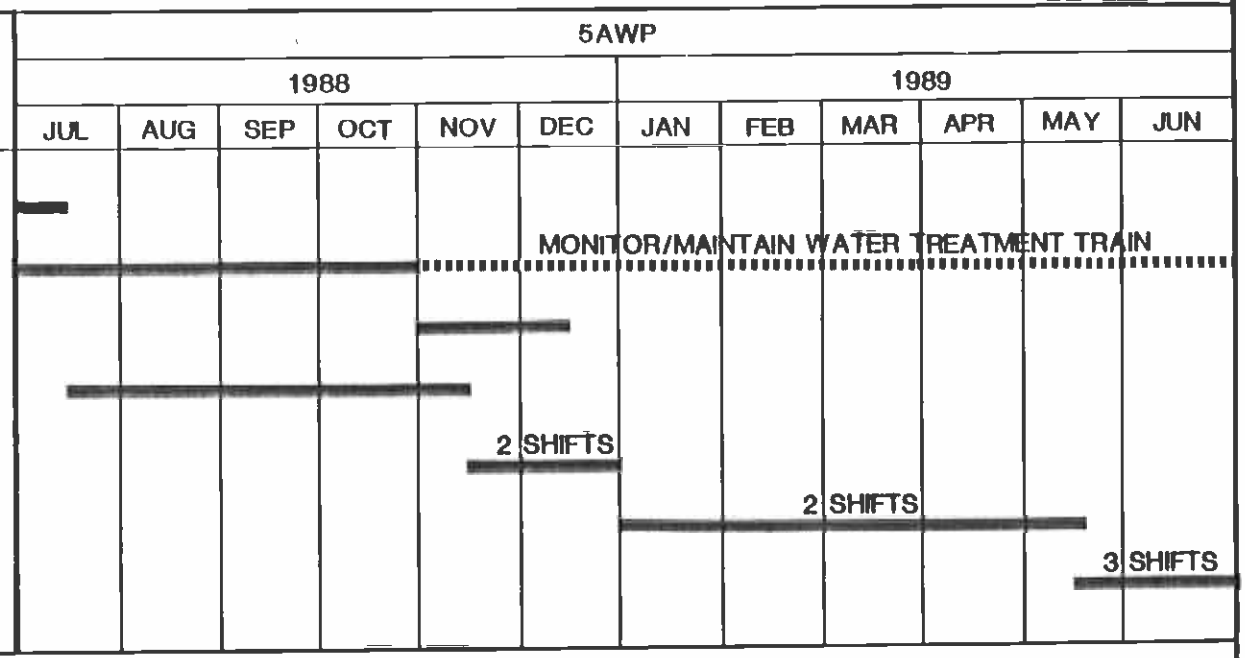
1 - Resident Engineer
1 - Office Engineer
1 - Secretary
1 - File Clerk (3/01/89)
1 - Chief Inspector
5 - Inspectors (1 - 8/01/88; 1 - 10/01/88; 1 - 5/01/89 and 2 part time as required

C. Duties/Responsibilities of Job Classifications

Resident Engineer - The resident engineer should be on board at least one month prior to NTP and will, therefore, be on staff prior to beginning of AWP-5. The resident engineer is required to serve as the focal point for RTD and PDCD in the administration of the contract. He supervises the field office staff, signs all official correspondence on behalf of the RTD and insures compliance with contract documents, including the Safety Manual.

FIELD OFFICE STAFFING PLAN
A135 – UNION STATION FIELD OFFICE

CONTRACT NO. 5AWP



	A135 CONTRACT	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	RESIDENT ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	FILE CLERK									1	1	1	1
	CHIEF INSPECTOR	1	1	1	1	1	1	1	1	1	1	1	1
	INSPECTOR		1	1	1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR (5 MM)												
	INSPECTOR SHIFT 2				1	1	1	1	1	1	1	1	1
AS REQ	INSPECTOR SHIFT 2 (3 MM)												
	INSPECTOR SHIFT 3											1	1

Office Engineer - The office engineer is required to maintain correspondence logs, shop drawing logs, maintain quantity records, prepare progress payments, prepare change request packages, maintain potential claims files and logs, write weekly and monthly reports, prepare special analyses or evaluations and perform other assignments as required.

Secretary - The secretary is required to answer telephones, type all contract correspondence, transcribe weekly and monthly meeting minutes, file and distribute contract correspondence, order office supplies and handle miscellaneous administrative duties as required.

File Clerk - It is expected that a file clerk will be required on this project due to the large amount of contract correspondence expected on a contract of this nature, based on experience gained on similar projects.

Chief Inspector - The chief inspector is required to supervise contract inspectors, review and assure complete and accurate daily inspection reports and generally insure that the contract work is performed in accordance with plans and specifications.

Inspectors - The inspectors are responsible for being completely familiar with the contract documents, inspecting the work, preparing daily inspection reports, Force Account sheets when required, master agreement labor, material and equipment usage/cost records and maintaining "as-built" information on a set of contract documents.

As-required manmonths for Inspectors will be utilized to accommodate the surges in inspection activity, on multi-shifts if necessary and will cover routine and special activities.

2.2.10 SYSTEMWIDE CONSTRUCTION

A. Functional Responsibility

Systemwide construction management includes the procurement and installation of all systems that are common to the entire project except passenger vehicle and fare collection equipment. The department interfaces with RTD on all systemwide procurement and installation contractors. During the execution of procurement contracts, it will witness or provide witnesses/inspectors for in-plant manufacturing and testing of RTD purchased material or equipment. Additionally, in concert with facility construction, it ensures the performance of all contractual installation and acceptance tests and support, start-up and integration testing.

For the 5th AWP, the following procurement contracts will be active and require management services by Systemwide Construction:

1. A612 - Contact Rail, Manufacture, Test Deliver
2. A615 - Protective Coverboard, Manufacture, Test, Deliver
3. A616 - Direct Fixation Rail Fasteners
4. A620 - Automatic Train Control
5. A630 - Traction Power Equipment

6. A631 - Traction Power Installation
7. A640 - Systemwide Communications
8. A710 - Station Escalators, all MOS-1
9. A720 - Station Elevators, all MOS-1
10. A740 - Ventilation Equipment
11. A745 - Air Handling Equipment
12. A795 - Uninterruptible Power Supplies (UPS)

B. Personnel Required for 5th AWP

1 - Systemwide Construction Manager
4 - Resident Engineers
2 - Office Engineers (1 full time, 1 as required)
2 - Secretaries
1 - Inspector (as req'd.)

C. Duties/Responsibilities of Job Classifications

Systemwide Construction Manager - The systemwide construction manager (SCM) will oversee all of the systems contracts identified as 600 or 700 seven except for A610 Trackwork. The SCM will be actively involved in all of the system contracts and will coordinate with the facilities resident engineers during the installation and test plans of A740, A745 and A795.

The SCM coordinates with the manager of Quality Assurance and Quality Control and RTD Manager of Quality Assurance during procurement testing as well as installation testing.

The SCM also serves as Resident Engineer for Contracts A612, A615 and A616.

Resident Engineer (A612, A615) - The Contact Rail and Coverboard contracts requires a part-time resident engineer and clerical assistance to manage the A612/A615 contracts. There are approximately 50 submittals each required over the AWP-5 time period.

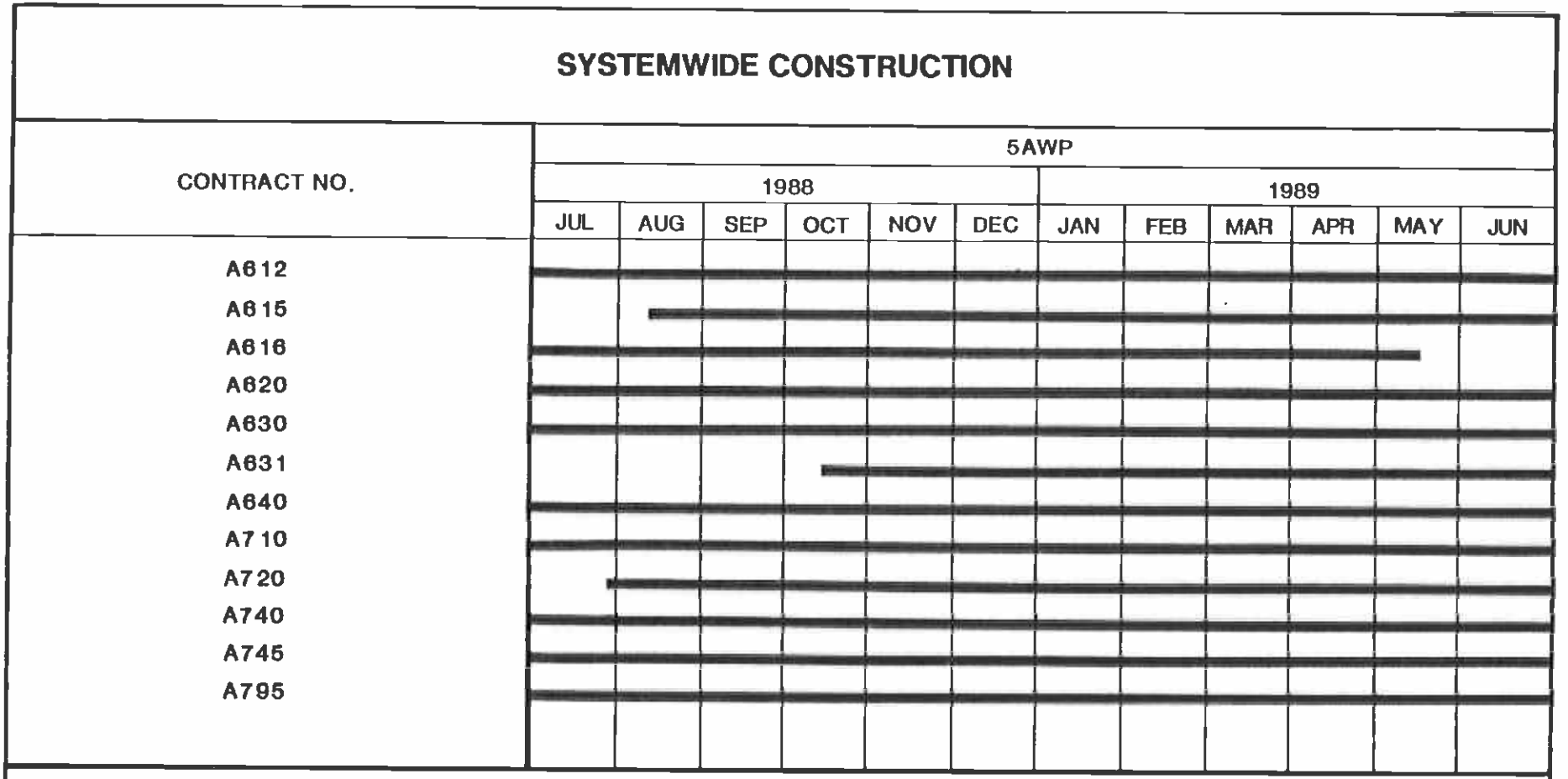
The resident engineer performs QA inspections of tests and manufacturing in the contractor's facility. The resident engineer is responsible for accepting delivery of the material for the District and inspect the delivered material and associated data for completion of the contract documents.

Trips: To contractor's facilities to inspect material and manufacturing processes as well as witness tests and approve material for shipment.

Resident Engineer (A616) - The Direct Fixation Track Fastener Contract requires a part time resident engineer, office engineer and clerical assistance to manage the A616 contract. There are approximately four submittals per month composed of the schedule update, progress report, test specifications, test reports, notification of shipment of material, QA reports and notification of tests. Correspondence is currently running about 35 pieces a month.

Trips: To contractor's facilities to inspect material and manufacturing processes as well as witness tests and approve material for shipment.

SYSTEMWIDE CONSTRUCTION



	E - SYSTEMWIDE CONSTRUCTION	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
	SYSTEMWIDE CONSTR. MGR.	1	1	1	1	1	1	1	1	1	1	1	1
	RESIDENT ENGINEER A620	1	1	1	1	1	1	1	1	1	1	1	1
	RESIDENT ENGINEER A640	1	1	1	1	1	1	1	1	1	1	1	1
	RESIDENT ENGINEER 740,745,720,710	1	1	1	1	1	1	1	1	1	1	1	1
	RESIDENT ENGINEER 630, 631, 795	1	1	1	1	1	1	1	1	1	1	1	1
	OFFICE ENGINEER	1	1	1	1	1	1	1	1	1	1	1	1
AS REQ	OFFICE ENGINEER (6 MM)												
AS REQ.	INSPECTOR (8 MM)												
	SECRETARY	1	1	1	1	1	1	1	1	1	1	1	1
	SECRETARY					1	1	1	1	1	1	1	1

The resident engineer performs QA inspections of tests and manufacturing in the contractor's facility in order to assure a high quality product manufactured to the contract specifications. The resident engineers are responsible for accepting delivery for the District.

Resident Engineer (A620) - During AWP-5 it is anticipated that the contractor will be submitting six (6) Preliminary Design Reviews (PDR's) and six (6) Final Design Reviews (FDR's) for review and approval, one each for each station, yard and ATP.

The contractor will also be submitting Product Submittals, Installation Layout Details, CDRL Items (55 items) for review and approval not including items submitted during period immediately preceding AWP-5 for which the review cycle would extend into AWP-5.

In addition to the above, the contractor is required to submit various reports which will require review and processing by the resident engineer such as: interface data reports - bimonthly for track circuit test and as required for others; various plans required by the specifications will also be submitted for review and approval during this period.

Resident Engineer (A630, A631, A795) - The traction power equipment procurement, the traction power installation, and the uninterruptible power supply require a full time resident engineer and part time office engineer and clerical assistance and inspection services. There will be approximately 130 submittals for the three contracts during the AWP-5 period.

The resident engineer will perform QA inspections of tests and manufacturing in the contractor's facility. The resident engineer will accept delivery of the equipment, monitor into storage and installation in the traction power site stations as these become available.

Trips: To contractor's facilities to inspect material and manufacturing processes as well as witness tests and approve material for shipment.

Resident Engineer (A640) - During AWP-5 it is anticipated the contractor will be submitting design packages for the SCADA and others for communications subsystems to be located at the five (5) stations, the yard, and the RCC.

The contractor will also be submitting, for approval, product submittals, installation layout details, interface documentation, etc. for the equipment/Material which he proposes to use in order to meet the specifications requirements.

In addition to the above the contractor is also required to submit various reports which will require review and processing by the resident engineer such as material test reports, test procedures, interim test reports and summary test reports, qualification test reports. Various plans required by the specifications will also be submitted for review and approval during this period.

It is estimated that 54 design packages containing an average of 20 drawings and 20 catalog cuts will be submitted for review and approval during the AWP-5 period.

Resident Engineer (A710, A720, A740, A745) - Review contractor submittals: QA program, manufacturing plan, shop drawings, samples, calculation, fan and motor test data, escalator and elevator data, and test reports of pre-production models.

Coordination with contractor: Clarification, progress reports, coordinate availability of station access for schedule delivery of equipment, and ensure contractor compliance with all required submittals.

Prepare correspondence, directives, change requests and status reports. Visit facilaity (station) contracts for familiarization.

Trips: Travel to manufacturing locations to inspect work in progress, and pre-production models, and verify contract compliance.

Office Engineers (2) - Provide support to all Resident Engineers in administration of the systemwide contracts. Maintain correspondence, submittal and changes/claims logs, compile weekly and monthly reports, review and process progress payments, prepare and process change requests and perform other duties as required.

Secretaries (2) - Provide support to all Resident Engineers. Type and code correspondence; maintain files; answer telephones; transcribe meeting minutes; and handle other administrative duties (time sheets, order supplies, etc.) as required.

Inspectors (as req'd.) - As-required inspectors will be needed periodically to inspect in-plant fabrication and/or assembly, verify adequacy of quality control plans and procedures of contractors, prepare inspection reports, report on quantities completed and in process, ensure that current, approved plans are being adhered to and perform special inspection and surveillance as required.

2.2.11 GENERAL SERVICES DEPARTMENT

A. Functional Responsibility

Functional responsibilities are in three areas.

o Environmental Controls

o Construction Surveys

o Utilities, Traffic Control, Permits

GENERAL SERVICES MANAGER

The General Services Manager (GSM) reports directly to the DCM for Operations. The GSM is directly responsible for performing construction surveys and monumentation, coordination of utility relocations, traffic coordination, permits, preconstruction survey coordination, and environmental monitoring. The GSM is responsible for coordinating these activities with ongoing field construction (through the Facilities Resident Engineers and the Systemwide Construction Manager).

1. Environmental Controls - The primary mission of Environmental Controls is to provide assistance to resident engineers to assess and develop plans for dealing with environmental concerns and compliance with environmental regulations and contract specification provisions generally included under Section 01566 and Section 02140. A secondary mission is to maintain the water quality monitoring program for the SCRTD in compliance with requirements for the NPDES permit and of the California Regional Water Quality Control Board. Included in the scope of work is review of contractor submittals related to environmental controls.

   EC interfaces with typical Metro Rail associates (RTD, MRTC, etc.), the project archaeologist, and numerous LA city/county, state and federal agencies.

   Environmental Controls Staff Requirements

Lead Env. Engr.	Full Time
Env. Specialist (HM)	Full Time
Env. Specialist (WQM)	Full Time
Env. Specialist (WQM/HM)	As Required*

*As required:

Other Specialists
- Certified Industrial Hygienist
  - Asbestos Certification
  - Contamination Exposure
- Hazardous Materials (HM)
  - Asbestos
  - Fuel Tanks
  - Soil Contamination
  - Transformer Contamination
- Groundwater Treatment Facilities
  - GWTF Start-up
  - A130/A135 Design Review and Integration
- Water Quality Monitoring (WQM)

Detailed Activities Description

Based on the experience of AWP-4, Environmental Controls has had to acquire additional staff on temporary assignments to conduct environmental-related work either beyond the expertise or available time of the full time Environmental Controls staff. Such activities will be a continuing requirement through the remainder of AWP-4 and for at least nine months of AWP-5.

Water Quality Monitoring

Discharges	6 stations	
Storm Drains	5 stations	
LA River	3 stations	(+3 background)
Ballona Creek	2 stations	
Total Monitoring	16 stations	

Groundwater Evaluations

Water Treatment Coordination (July-Sept. 1988)
- Groundwater Treatment Facilities (future trains)
  - Planning and Design Review
  - Technical Review of Procurements
- Performance evaluations and recommendations

Noise/Vibration Monitoring (A145, A146, A165, A171)
- Record Review
- Complaint Inspections
- Recommendations for Compliance

Air Quality Monitoring (A165)
- Equipment Review and Complaint Inspections
- Recommendations for Compliance

Hazardous Materials (All Projects)
- Identifications
- Sampling/Testing
- Alternative Abatement
- Monitoring and Inspection
- Closure

- Asbestos
- Underground Fuel Tanks
- Hydrocarbon Contamination
- Groundwater Treatment Wastes
- Transformer Stations and Equipment
  - Polychlorinated Biphenyls (PCBs)

Spillage/Leakage Remediations (All Projects)
- Soil and Groundwater Exploration
- Soil and Groundwater Sampling and Testing
- Remediation Development and Evaluations

Archaeological Coordination
- Review of Schedules for Monitoring
- Coordination During Excavations/Discoveries
  - Union Station
  - A145/A165
  - A175

Because of the imprecisely known character of activities for Union Station, substantial additional efforts over and above those requested above will focus on asbestos abatement, hazardous materials (PCBs in transformer, hydrocarbons in groundwater, etc.), and problems in groundwater treatment.

During AWP-4, many activities were related to design coordination and procurements for the Groundwater Treatment Facilities (A141/CO-002). During AWP-5, considerable effort will be directed to the review of A140/A135 contractor submittals for additional facilities and proper integration with the earlier constructed facilities. Assuming at least one month of dewatering and treatment experience prior to designs for A130/A135

facilities, substantial changes in magnitude or type of processes may be required once pumping begins. Such changes will be incorporated into the operating trains 1-2 and into the design review for contractors' submittals for Trains 3-5.

The Yard has and is expected to have more problems with soil and groundwater contamination by numerous known and perhaps some as yet unknown underground fuel tanks.

2. Construction Surveys - The primary mission of the survey section is to provide support to the resident engineers. Examples are:

Check contractor construction layout.
Provide as-built information.
Provide construction layout of the water treatment facility.
Provide survey information to MRTC.
Provide survey information to the District.
Provide information to serve as a basis of payment.
Verify contractor settlement readings.
Provide drawings, plan and profile, to the resident engineers, the District and MRTC.
Provide permanent monumentation for facilities and trackwork.

Staff Requirements: Chief of surveys, 2-instrument persons, 1-rodperson, 1-draftsperson/technician.

Chief of Surveys - Develop, recommend and comply with established survey procedures. Coordinate survey requirements within the CM organization. Determine the method and procedure necessary to obtain requested survey data. Coordinate office support of field crew including calculation of data and preparation of construction notes. Maintain survey equipment and supplies. File survey data. Coordinate with outside agencies.

Survey Crews for AWP-5 - 1 Crew:

1 - Party Chief
2 - Instrument Men (1 full time, 1 as required)
1 - Rod/Chain Men

Due to all stations being under construction the work load will be at its peak.

There will be at least two (2), probably three (3), tunnel operations underway simultaneously.

Trackwork will require intensive survey work. PDCD is required to supply all control points horizontal and vertical to the contractor.

PDCD is required to spot check contractor installed settlement monitoring points set by the contractor.

PDCD will provide construction layout for the groundwater treatment facilities.

PDCD will furnish surveying information and perform surveys for MRTC, and the District.

Draftsman Technician (1) - Prepares engineering drawings for the surveying section, engineering services, mechanical, structural, and electrical, as well as the traffic and permits section of General Services; performs all data reduction, preliminary interpretation, etc. and gives it to the chief of surveys for review before dissemination to the person or agency that requested the survey.

3. Utilities, Traffic, Permits - Ongoing construction effort requires close coordination between PDCD staff and various utilities and City of Los Angeles Departments. Utility Section's responsibilities include: Coordination with utility companies, reviewing of utility related contractor submittals, reviewing master agreement invoices and recommending action to RTD, answering field inquiries related to utility work and reviewing pre-bid contract documents. Along with responsibilities related to utility matters, this section is also in charge of coordinating traffic related matters and haul routes for MOS-1 with LADOT. Permit acquisition not covered by the "Blanket Permit" is another responsibility.

Proposed Staffing:

1 - Lead Utility Engineer
1 - Utility Engineer
1 - Engineer (3 months)

Combined Duties & Responsibilities

Lead Utilities Engineer - Primary responsibility for 5th AWP includes coordination with utility companies, City of Los Angeles Departments and RTd Design/Construction Groups with regard to construction and preconstruction activities as follows:

1) Provide continuous liaison with the utilities for all CM responsibilities during the construction phase.

2) Assist the District in obtaining approvals and verifying acquisition of permits.

3) Assist RE's by providing liaison services to the utilities for the coordination of program revisions and maintenance of priorities.

4) Coordinate with RE's to get the respective (Master Agreement) utilities to the jobsite when needed, and establish project-wide priorities for the crews.

5) Assist in handling contractor and utility company change requests and expedite responses.

6) Examine shop drawings (related to utilities and traffic control) submitted by contractors and approve for conformance with contract documents.

7) Coordinate and confirm scheduling of the utility company crews for advance utility work. Coordinate with RE's to ensure that advance utility work is monitored.

8) Provide Cost Engineering Department data concerning Master Agreement work for monthly progress reports.

9) Assist Community Relations Department when complaints from property owners refer to access requirements.

10) Participate with other CM personnel in meetings with the RTD and municipal authorities as may be required.

11) Coordinate construction effort with RE's and affected local municipal authorities, utility companies and others that are involved in the Project.

Utility Engineer

This position is required for 5th AWP because the amount of coordination needed between the RE offices, utilities and City of Los Angeles Departments continues to steadily increase as new contracts are awarded. Utility Engineer will assist by making field inspections with LADOT, obtaining various permits at the Los Angeles City Hall and keeping up with administrative effort in the office.

Engineer (3 months)

An additional engineer is required for the first three months to complete evaluation, verification and documentation of invoices from the utilities for master agreement work (see following procedure).

PROCEDURE FOR MASTER AGREEMENT WORK VERIFICATION

A. General Information

Invoices for Master Agreement (MA) work accomplished by various utilities and public agencies on behalf of the District must be verified for reasonableness and accuracy before they can be paid. Due to a long lag time between the work performed and invoicing, it is necessary to document MA work as it occurs in order to provide, as reliably as possible, a basis for invoice verification. The following procedure outlines a method of tracking MA work and invoice verification.

B. Procedure

Field Office: As MA work is accomplished, it must be documented utilizing the Daily Inspection Report (DIR) (PDCD Form 143). Labor, equipment, materials, description of work and location for MA work must be entered on DIR along with the time spent performing the work. On a weekly basis forward the compiled DIRs to Document (DC).

Main Office: Upon receipt of the MA invoice from SCRTD, Construction Manager (CM) will forward their invoice and backup material to the Lead Utility Engineer and a copy of the invoice to the Lead Cost Engineer. The Lead Utility Engineer

will obtain field backup data from DC, review the invoice and verify labor and equipment against the compiled DIRs and the reasonableness of major quantities. Upon review, he will check recommendation where appropriate on the SCRTD Construction Billing Form (CBF) and draft a response to SCRTD to be signed by CM.

In the event that DIRs are not available for MA work performed, the Lead Utility Engineer will review the invoice and applicable MA documents to verify its validity. Upon determining that the wok performed is valid, invoice labor and equipment will be compared to invoices submitted for similar type of work for reasonableness. Upon review, Lead Utility Engineer will check recommendations where appropriate on the SCRTD CBF and draft a response to SCRTD to be signed by CM.

2.3 ENGINEERING SERVICES/PROJECT CONTROLS (ES/PC)

The ES/PC Group is responsible for engineering services/systems integration project controls and contracts and procurement. Each of these functional areas is addressed in detail below.

2.3.1 DEPUTY CONSTRUCTION MANAGER (DCM)- ES/PC)

The DCM -ES/PC supervises the managers of the three functional areas, ensures compliance with policies and procedures and evaluates performances of functions/services rendered. In addition, the DCM - ES/pc is responsible for preparation of staffing plans, annual work plans and contract documents; preparation of periodic and special reports to the RTD and the Joint Venture Executive Board; and liaison with key personnel within the RTD.

2.3.2 CONTRACTS/PROCUREMENT

A. Functional Responsibility

Contracts/Procurement has the responsibility for the following functions:

- o Administration of the prime PDCD contract.
- o Administration of PDCD Associate and services subcontracts and consulting agreements.
- o Procurement of all materials, supplies, equipment, etc. needed by PDCD.
- o Support to RTD in preparation of RFP's/contract documents.
- o Support to RTD in evaluation of construction and procurement bids.
- o Support to Resident Engineer and DCM-O on contract administration matters.
- o Preparation of Joint Venture Executive Board resolutions.
- o Liaison with OCPM and other RTD elements.

B. Personnel Required for 5th AWP

1- Contract/Procurement Manager
2- Senior Contract Administrator

C. Duties/Responsibilities of Job Classifications

Staffing for this Section should remain the same as was authorized for the Fourth Annual Work Plan (AWP-4), which is a Manager and two Senior Contract Administrators, based on the following justification:

The Contract/Procurement Manager, supervises the two Contract Administrators plus a Secretary assigned to the Contracts/Procurement Section and, as a working manager, directs and performs hands-on administration of a number of the subcontracts awarded by the Joint Venture. In addition, he administers the prime contract between RTD and PDCD and prepares Joint Venture Board resolutions. He is directly involved in the evaluation of all bids for which PDCD has secondary evaluation responsibility. To date in AWP-4, there has been a total of nine bids for which evaluations were performed and the most recent schedule calls for seven bid openings to be held prior to June 30, 1988. Several of those evaluated to date were evaluated more than once. It is anticipated that PDCD involvement will continue at approximately the same level during the Fifth Annual Work Plan. The manager is also directly involved in RTD construction and systems contracts by providing assistance to the Resident Engineer or Deputy Construction Manager for Operations on dispute determinations, procurement of equipment and materials and other support as requested. Further, he is responsible for all purchases for the Joint Venture and all procurements as directed by the RTD to be accomplished and/or administered by PDCD.

The two Senior Contract Administrators perform all of the purchasing of equipment, supplies and services to support the Construction Manager. This entails preparing/processing Requests for Quotations or Invitations to Bid (if required), performing commercial evaluations, obtaining required approvals, preparing the Purchase Orders, and performing all required administration through delivery and closeout. To date, purchases during AWP-4 have more than doubled for the same time period in AWP-3 (from 203 to 463). Purchases during AWP-5 are expected to remain at the same level or increase as more construction contracts are awarded and support is provided to new field offices. In addition to the purchasing, the continued support through the administration of eleven Associate Subcontracts, individual services subcontracts (e.g. photographic, testing, security, rodent/pest control), periodic consulting agreements and other subcontracts as needed by the Construction Manager or as directed by RTD, will all be carried out by these two Contract Administrators. So far on this project, thirty subcontracts have been written and executed by the Contracts/Procurement Section. Twenty-one of these are still active and require regular, routine administration, including issuance of Work Directives, Change Orders, Amendments, and authorizations for payment.

While a request has not been made for an additional position during AWP-5, there will be a need for temporary procurement help from the Joint Venture partners to assist during absenteeism and to handle periodic overloads at the discretion of the Construction Manager.

2.3.3 ENGINEERING SERVICES/SYSTEMS INTEGRATION

. Functional Responsibility

The justification for Engineering Services/Systems Integration is broken into two parts, because of the significant role that the Geotechnical Section has in the areas of instrumentation, geologic mapping, fault interpretation, magnetometer probes and other geotechnical support to the Resident Engineers.

Part I - ENGINEERING SERVICES/SYSTEMS INTEGRATION (other than Geotechnical)

A. Engineering Services/Systems Integration is responsible for the following functions:

- o Review of Contractor technical submittals (working drawings, shop drawings, samples, etc.)
- o Responding to Field Inquiries/Requests for Clarifications submitted by Contractors.
- o Coordination of technical submittals/inquiries with MRTC when design is impacted.
- o Field engineering support to Resident Engineers, including investigation/resolution of field construction problems, inspection of specialty construction, and other support as needed.
- o Engineering support to other PDCD elements during preparation and/or evaluation of change proposals.
- o Special engineering analyses/studies, including Value Engineering analyses.
- o Systems Integration, primarily resolution of interface problems between systems elements and facilities and among systems elements and themselves.

B. Personnel Required for 5th AWP

1 - Engineering Services/Systems Integration Manager
1 - Lead Architect
1 - Lead Electrical Engineer
1 - Electrical Engineer
1 - Lead Mechanical Engineer
1 - Lead Civil/Structural Engineer
2 - Civil/Structural Engineers
1 - Lead Systems Engineer
1 - Systems Engineer
1 - System Engineer -(As Required)
1 - Elec/Mech Engineer (As-Required)

As required support for Civil/Structural, Electrical, Mechanical and Systems Engineering will be provided as deemed necessary by the workload related to Contractor submittals. Backup detail by discipline area including a projection of the number of submittals and the review times

per submittal has been developed to support the staffing needed to review Contractor suvbmittals. It has not been included in the formal submittal, but is available for review and discussion during negotiations.

C. Duties/Responsibilities of Job Classification

Manager, ES/SI

Supervises the Lead Engineers of all disciplines; coordinates priorities of reviews with the Resident Engineers and DCM-O; coordinates and reconciles review comments from various disciplines; coordinates with MRTC personnel on matters forwarded to them for review; assists in investigation and resolution of field problems; and is primarily responsible for the Systems Integration functions.

Architectural

A total of 6.27 man-months is required for facilities work primarily due to the anticipated increase in architectural submittals for the Main Shop building, Contract A112. Support will also be provided in the structural area to check various submittals for overall conformance. Architectural support of 6.89 man-months will be required for review of submittals for Escalators Contract A710 and Elevators Contract A720. This adds up to 13.16 man-months, or full time requirement for a Lead Architect. In addition, the Lead Architect assists the Manager in coordination and resolution of field inquiries/clarifications.

Electrical

A total of 19.11 man-months is required for facilities work, which includes continuation of existing station and tunnel contracts, plus increased submittals for Contract A112 and A610/A115, and new Contracts A130 and A135.

13.48-man-months support will be provided for submittals on Systemwide Contracts A612, A615, A631, and A795. Additional support may be required for A710, A720, A740, and A745. The total electrical requirement is 32.59 man-months. With two full time electrical engineers on the staff, additional support will be obtained from Home Office resources on an "as required" basis.

Mechanical

A total of 13.23 man-months is required for facilities, which includes continuation on existing station and tunnel contracts, plus increased activity for Contract A-112, plus new Contracts A-130 and A-135. 8.77 man-months support will be provided for submittals on Systemwide Contracts A-740 and A-745. Additional support may be required for A710 and A720. The total mechanical requirement is 21.99 man-months. With one full-time Lead Mechanical Engineer on the staff, additional support will be obtained from Home Office resources on an "as required" basis.

Civil/Structural

A total of 43.41 man-months is required for facilities work, which includes continuation of existing shop, yard, station and tunnel contracts,) plus new

Contracts A130 and A135. With one Lead Structural Engineer and two Structural Engineers, for a total of 3 on the staff, additional support will be obtained from Home Office resources on an "as required" basis.

Systems

With a Lead Systems Engineer (Communications) and a Systems Engineer (Train Control) on the staff, additional support for speciality items in these contracts will be obtained from Home Office resources on an "as required" basis.

Engineering support for other systemwide contracts is described above in the Architectural, Electrical, and Mechanical areas.

PART II - GEOTECHNICAL

A. Functional Responsibility

The Geotechnical Section is responsible for the following functions:

o Pre-construction/Installation

- Review contractors' working drawing submittals on geotechnically related functions such as instrumentation and support of excavation.

- Observe and keep geologic records on pre-excavation activities such as soldier pile drilling.

- Provide inspection during geotechnical instrumentation installation--to include geologic logging of related borings.

o Tiebacks

- Devise/maintain training materials and periodically instruct construction inspectors in proper installation and testing procedures.

- Make site visits to assist RE's in the inspection of installation and testing.

o Geologic Mapping and Observation

- Map geology as exposed in six cut-and-cover excavations.

- To extent possible, map geology as exposed in three mined soft ground tunnel contracts.

  (1) Effort includes using notes and face sketches by RE's Inspectors, for which Inspectors have to be trained by Geotech staff. Training will be an on-going (not a one-shot) activity because of staggering of job start-ups and a certain amount of inspection personnel turnover.

(2) Requires at least one Geologist to be on overall job site 24 hours per day while tunnels are being mined.

- As an adjunct to mapping/observing, keep photographic records of all notable exposures and operations.

o Instrumentation Usage

- Provide and maintain instrumentation readout devices--includes coordination with a lab performing calibrations.

- Monitor contractors' reading of geotechnical instrumentation in eight major subsurface contracts--to include taking of check readings (10%-15%) for the CM. Geotechnical staff to perform half of the check readings and train the RE's Inspectors to perform the others.

- Make independent interpretations of geotechnical instrumentation readings (including surveyed detection of movement points) and how they relate to construction operations. Involves replotting of some contractor data to make it mesh with plots of PDCD-Generated data.

o Fault Interpretation

- Perform studies to determine characteristics of encountered faults and whether tunnel linings need to be modified.

(1) May entail the planning, logging and interpretation of additional boreholes.

(2) May entail the use of a consulting Structural Geologist whose activities have to be coordinated.

- Where a tunnel penetrates an observed fault without the design lining being supplemented with a steel inner sleeve, continue to observe the lining in the fault area to evaluate whether it is under unusual stress.

o Magnetometer Probes

- Review contractors' proposals for drilling/surveying advance tunnel probes and for carrying out abandoned oil well casing detection programs.

- Verify RE's Inspectors' accuracy in watching for geologic evidence revealed by magnetometer probe holes, paying particular attention to advance evidence of faulting as provided by the drilling phase.

- Review the results of each magnetometer run and assist the contractor's operator/specialists in interpreting signals that indicate magnetic anomalies and possible abandoned oil well casings prior to the next advance of the tunnel shield. The task entails use of an experienced, constantly available Geophysicist working as a consultant or subcontractor to PDCD.

o Miscellaneous

- Review geologically related claims and disputes and assist in litigation, including the giving of expert testimony.

- Formalize results of logging, mapping and instrumentation readings in documents of record.

- As required, provide advice to RE's regarding effects of geology on construction operations.

- Assist in review of contractors' plans for drilling/surveying grout holes and for determining whether grouting has been effective.

- Once construction is completed, follow up on late-occurring geotechnically related problems and provide advice as needed.

- Observe footing and other shallow excavations in yard areas and help determine adequacy of bearing, use of soil as borrow, etc.

- Assist in monitoring activities of contract lab performing construction soils testing.

o Training field personnel (i.e., Inspectors) in mapping techniques, installation of instrumentation, etc.

B. Personnel Required for 5th AWP

1-Lead Geotech Engineer
5-Engineering Geologists (plus one on an As-required basis)
3-Drafting Technicians(plus one As-required)
1-Geophysicist (As required)
1-Geotechnical Engineering. Specialist (As required)
1-Instrumentation Installation Technicians (As required)

C. Duties/Responsibilities of Job Classifications

Although geotech personnel will be based in the main office at 600 S. Spring Street, the majority of their activities are aimed at support of field activities. Working out of various field office headquarters would not be practical because each man must bring his collected data to a central office where the computer and drafting facilities are located. Hence, they will have desks in the main office but most of their time will be spent in traveling among the various field sites. Exceptions will be the part-time Geophysicist and Geotech Engineering Specialist, who will mostly operate out of the subcontractor's headquarters on Figueroa Street and in Pasadena.

The staff must increase by one full time person in order to accomplish all of the tasks associated with pre-construction and construction activities as the various contracts come on line (Note: PDCD has requested RTD

approval to increase the staff by one.) Most of the geotech work will stem from the eight major subsurface contracts where geologic documentation and instrumentation are important.

Full time personnel staffing will reach a peak with the start-up of mined tunneling in Contract A-141. There must be a sufficient number of Engineering Geologists on hand to map all of the cut-and-cover excavations during day shifts and to map the advancing mined tunnels 24 hours per day as recommended by the City Task Force.

The need to do check readings on surface-mounted instrumentation will also decrease the amount of time that geologists can give to tunnel mapping during the night hours. With two or three tunnels being constructed, there will be more and more instrumentation that requires attention.

The Geophysicist's well casing detection activities began slowly with the first magnetometer run by the A-171 Contractor's specialist, and will not get up to full speed until all of the tunnels are progressing at once. It is possible to budget the effort at tenths of a man period because the Geophysicist will be provided as needed through a subcontract rather than being a full time PDCD hire.

Instrumentation activities include inspecting all installations, taking 10-15% of the number of readings taken by contractors just as a cross check, and independently interpreting all of the readings. It may be necessary to increase this level of activity if field problems develop, but presently known quantities include the following:

Cut-and-Cover		
o Strain Gages	=	377
o Load Cells	=	50
o Inclinometers	=	41
o Observation Wells	=	42
o Building Settlement Reference Points	=	555
o Ground Surface Sett. Ref. Points	=	1577
o Deep Bench Marks	=	6
Mined Tunnel		
o Borehold Extensometers	=	180
o Tape Extensometer Anchor Points	=	100
o Shallow Subsurface Sett. Indicators	=	46
o Deep Subsurf. Settlement Indicators	=	19
o Observation Wells	=	34
o Building Settlement Reference Points	=	4700
o Ground Surface Sett. Ref. Point	=	2004
o Liquid Tube Monitoring Devices	=	296
o Deep Bench Marks	=	30

It should be noted that the Contractor on A146 and A171 is demanding PDCD's instrumentation interpretations as noted in specifications. This will become very time consuming and may require additional staffing over and above that requested if all contractors demand interpretations.

The Geotechnical Engineering Specialist is expected to increase his activities when the A146 AR tunnel is proceeding beneath compaction grouted structures. His participation will remain at a modest level thereafter because PDCD's permanent staff will be gaining interpretive expertise to handle the growing task.

The Drafting Technician's work consists of helping with instrumentation readings and doing whatever plotting is necessary to help make construction management decisions. This is in addition to performing normal drafting duties. The plotting of data requires heavy involvement with computer facilities.

With construction in full swing, performance of geotech activities will require the equivalent of 8.8 men per month. The breakdown includes 8 full time staffers, 0.5 man periods by the subcontracted Geophysicist, 0.16 man periods by the subcontracted Geotechnical Engineering Specialist, and 0.16 man periods by "borrowed" technicians to help inspect instrumentation installations when there are too many simultaneous operations for permanent staff. What may appear to be a large staff is necessitated by some unique requirements of the Metro Rail project, including:

- The 24-hour per day presence of geologists on the mined tunnel sites.
- The requirement for probe holes and magnetometer detection of well casings ahead of the tunnels.
- A heavy reading schedule of an unusually large quantity of geotechnical instrumentation. Even with PDCD personnel performing only 10-15% of the readings that is still a fairly sizable time commitment.

In addition, continuous training of geotechnical and field personnel is required to ensure consistency in logging boreholes, mapping geologic exposures and reading instrumentation.

2.3.4 PROJECT CONTROLS

A. Functional Responsibility

Project Controls is responsible for the following functions:

PLANNING AND SCHEDULING

The Scheduling Section is responsible for establishment of criteria and guidelines for schedule and reports development and maintenance, progress reporting, and impact analysis for the Metro Rail Project.

The Level III Construction Schedule baseline includes 57 construction contracts. The number of active construction contracts will increase to 28 by the end of AWP-5. In addition to providing scheduling services to an increased number of active contracts, Scheduling continues close surveillance on preawarded contracts. Changes to contract advertise for bids and NTP dates must be evaluated in terms of impact to facility contracts and to systems and systemwide installation and testing. As a result of "what if" studies performed, recommendations are submitted for CCB approval prior to implementation into the MOS-1 Master Schedule.

COST CONTROL

The Cost Control Section has the responsibility to prepare and submit to the RTD periodic reports on the status of all individual construction contracts and on the total construction program. Subject reports will reflect the budgeted and actual costs by contract bid items utilizing the RTD'sTRACS; provide reasons for significant changes, explanations of Actual vs. Projected cost variances, evaluation of all anticipated changes and liabilities impacting cost-to complete; prepare and submit monthly reports on the status of the Construction Manager's activities; interface with RTD personnel, Project Controls Construction and Contract Administration relative to contractor(s) performance and compliance with the terms of the respective contract(s); interface with the design consultant relative to maintaining the integrity of the work break down structure for MOS-1.

ESTIMATING

- o Preparation of construction check estimates for forthcoming contracts as required.
- o Preparation of rough order of magnitude (ROM) estimates for proposed changes.
- o Preparation of detailed cost estimates for Change Request or Change Notices.
- o Preparation of cost estimates to support the RTD evaluation of claims.

- o Review the Resident Engineers ROM estimates submitted with Change Requests.
- o Review, evaluate, and comment on contractors estimates for changes, claims, etc.
- o Participate in negotiations with contractor and RTD on changes.
- o Liaison with the RTD estimating group.
- o Liaison with other project groups regarding Scope of Work, quantities costs, schedule durations, etc. relating to construction contracts and changes.

CHANGE CONTROL

The Change Control Section (CCS) is responsible for processing all Change Requests, Change Notices, Change Orders and associated documentation. Controlling, monitoring and handling claims will take up an increased proportion of the section's responsibilities during AWP-5. The CCS is a central point within PDCD for change/claims control processing and is responsible for assuring that:

- o Effective change control is maintained
- o All documents that define the functional and physical characteristics of the changes and claims to the project are uniquely identified
- o Change Requests are completed correctly and pertinent and appropriate supporting information is attached
- o All cognizant participants evaluate the proposed change

The CCS is also responsible for:

- o Obtaining and inclusion of Finding-of-Fact Statements, estimates of cost and schedule impacts for contractor-initiated changes
- o Reviewing contractor-initiated Change Requests and submitting them for review, evaluation and authorization by the SCRTD
- o Submitting Change Requests and related information to the SCRTD's Change Control Center
- o Coordinating/distributing Change Notices to contractors
- o Evaluating contractor's Cost and Schedule Proposals
- o Transmitting Change Orders to/from the contractor
- o Preparing, maintaining and updating all required reports

DOCUMENT CONTROL

The Document Control Section is responsible for a broad range of functions, including mail/correspondence receipt and distribution; computer coding and input to DMCS; filing of all project documentation; reproduction services; submittals (shops drawings, etc.) coordination; ordering and maintaining technical reference materials; receipt, control and issuance of all contract documents, including revisions; and preparation of periodic status reports on documents in process and on file.

GENERAL

In addition to the specific functions described above, Project Controls is also responsible for liaison with the RTD Program Control staff, interfacing with the RTD TRACS project controls system, developing, coordinating and implementing computer systems (including hardware, software, training, etc.) for all of PDCD elements, and providing graphics (draftsperson) support for PDCD.

B. **Personnel Required for 5th AWP**

The following are the staffing requirements for Project Controls for AWP-5:

Staffing of some sections (primarily Estimating and Change Control) is dependent on the volume of changes and claims. If the volume increases significantly, beyond forecast, additional staffing may be required.

Planning and Scheduling
1 lead Planner/Scheduler
5 Planner/Schedulers (Plus one "as required")

Cost Control
1 Lead Cost Engineer
4 Cost Engineers

Estimating
1 lead estimator
3 Estimators
As required Estimators (8 man-months total)
1 Data Technician

Change Control
1 lead Change Control Engineer
1 Change Specialist
1 Claims Specialist
1 Data Technician (beginning 10/1/88)

Document Control
1 Lead Document Control Specialist
1 Document control Specialist
1 Shop Drawing Coordinator
2 Data Technicians
1 File Clerk

General
1 Project Control Manager
1 Technical Data Coordinator
1 Drafts Person (carried in Project mgmt.)
As required Home Office Computer Support (3 man-months)

C. Duties/Responsibilities of Job Classifications

Justification for the above Staffing for the specific functions is described below. The attached graph (See Figure 1) indicates that there will be a significant increase in the number of active contracts during the AWP-5 timeframe, as compared with the first nine months of AWP-4.

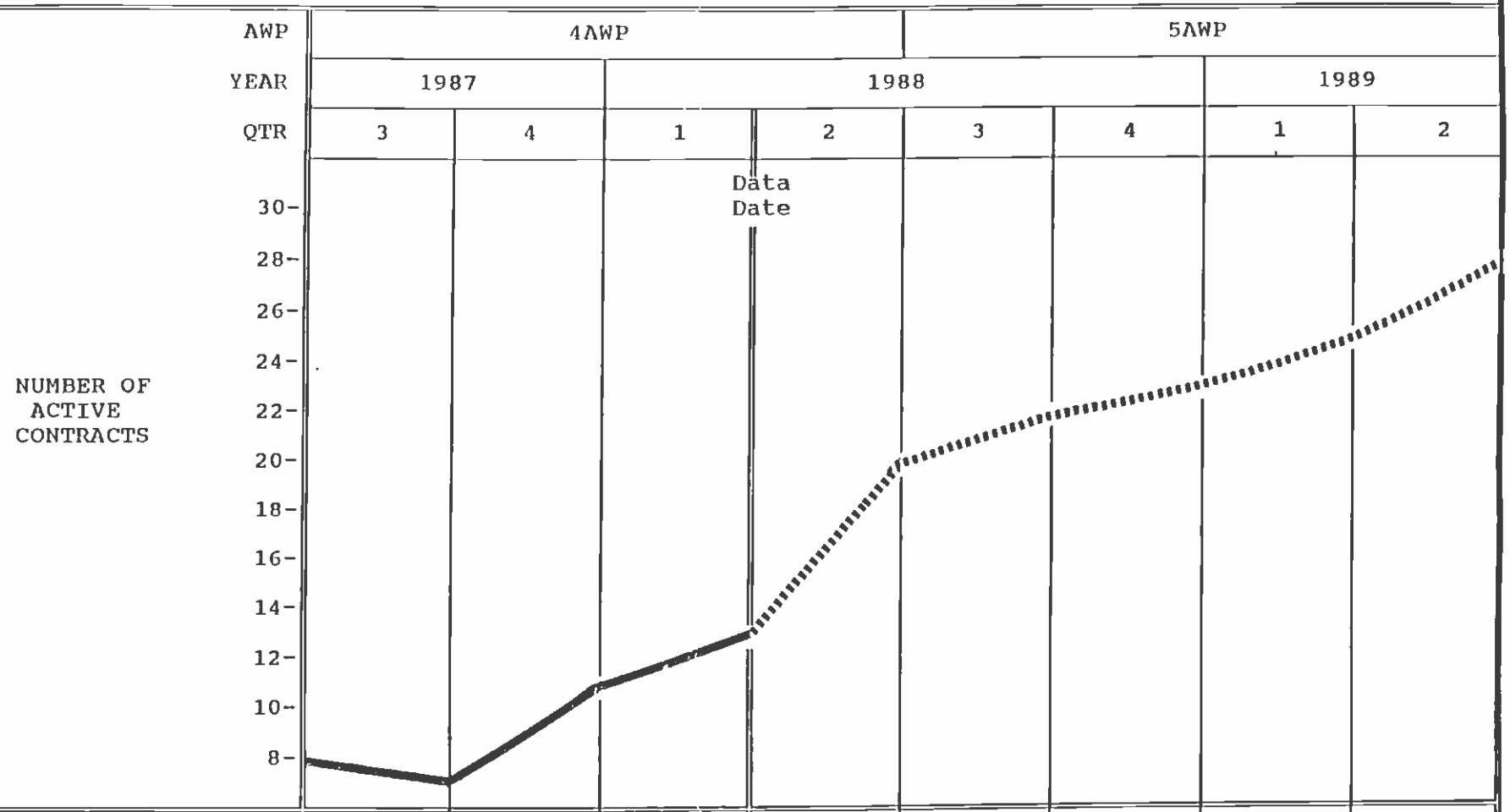
PLANNING AND SCHEDULING

Each job classification identified above is justified with the following duties and responsibilities. Specific contract assignments are included which require a dedicated amount of time monthly.

LEAD PLANNER (SCHEDULER)

- o Selects, trains, and supervises a staff qualified to analyze and schedule activities pertinent to the Metro Rail program.
- o Develops policies and procedures to ensure proper and timely application of planning, scheduling, and performance reporting and evaluation.
- o Reviews and comments on design and contractual documents for conformance with scope of work and the current construction baseline schedule and financial plan.
- o Reviews contractor submitted schedules and reports and provides analysis and recommendations to management.

5AWP STAFFING PLAN/SCHEDULING SECTION
STATISTICAL JUSTIFICATION
MARCH 25, 1988



# ACTIVE CONTRACTS	7	11	13	20	22	23	25	28
AVG. $ VALUE/SCHED(000)	36,979	42,832	58,747	94,083	82,806	83,827	85,933	86,152
AVG. # CONTRACTS/SCHED	1.4	2.2	2.6	4.0	3.6	3.9	4.2	4.7
STAFFING PLAN	5	5	5	5	6	6	6	6

FIGURE 1

- o Develops and maintains Metro Rail Construction Level II Construction Schedule.
- o Provides summary data to management Level 0, I, and II Schedules.
- o Provides baseline and current Level II Schedule data to TRACS system.
- o Provides scheduling support for Change Order cycle and contractor claim situations.
- o Attends meetings as required.
- o Provides trained staff capable of implementing and maintaining the MSCS scheduling system and TRACS.

PLANNER/SCHEDULER

Following are specific contracts for which this position is responsible for:

AWARDED	5AWP	PREAWARD
A130	A167	NONE ASSIGNED
A146	A171	
A165		

Specific scheduling duties and responsibilities for awarded contracts include but are not limited to:

- o Review and comment on design and contractual documents for conformance with Scope of Work, the current construction baseline schedule and financial plan.
- o Reviews contractor schedule narrative and report submittals for conformance to specification, accuracy and content and provides analysis and recommendations to management.
- o Prepares summary of approved contractor schedule and includes in MSCS as baseline for monitoring contractor performance in MOS-1 Level II Construction Schedule.
- o Provides monthly contract performance analysis for input to Construction Performance Report Analysis MOS-1 critical path impacts and provides analysis and recommendations to management.
- o Attends monthly contractor progress review meetings.
- o Prepare schedule analysis as required for CCB presentations.
- o Perform schedule analysis in support of Change Request.
- o Develop and maintain contract progress curve including contract baseline, current and executed Change Orders.

o Utilize JCL and ISPF to produce required schedule reports. Produce plotted barchart and CPM networks utilizing graphics hardware.

PLANNER/SCHEDULER

Following are specific contracts for which this position is responsible for:

AWARDED 5 AWP	PREAWARD
A141	NONE ASSIGNED
A145	
A147	
A157	

Specific scheduling duties and responsibilities for awarded contracts include but are not limited to:

o Review and comment on design and contractual documents for conformance with Scope of Work, the current construction baseline schedule and financial plan.

o Reviews contractor schedule narrative and report submittals for conformance to specification, accuracy and content and provides analysis and recommendations to management.

o Prepares summary of approved contractor schedule and includes in MSCS as baseline for monitoring contractor performance in MOS-1 Level III Construction Schedule.

o Provides monthly contract performance analysis for input to Construction Performance Report Analysis MOS-1 critical path impacts and provides analysis and recommendations to management.

o Attends monthly contractor progress review meetings.

o Prepare schedule analysis as required for CCB presentation.

o Perform schedule analysis in support of Change Request.

o Develop and maintain contract progress curve including contract baseline, current and executed Change Orders.

o Utilize JCL and ISPF to produce required schedule reports.

o Produce plotted barchart and CPM networks utilizing graphics hardware.

PLANNER/SCHEDULER

Following are specific contracts for which this position is responsible for:

AWARDED 5 AWP		PREAWARD
A620	A640	A650 (Coordination only)
A630	A795	A655
A631		A660/H880 (Coordination only)

Specific scheduling duties and responsibilities for awarded contracts include but are not limited to:

- o Review and comment on design and contractual documents for conformance with Scope of Work, the current construction baseline schedule and financial plan.
- o Reviews contractor schedule, narrative and report submittals for conformance to specification, accuracy and content and provides analysis and recommendations to management.
- o Prepares summary of approved contractor schedule and includes in MSCS as baseline for monitoring contractor performance in MOS-1 Level II Construction Schedule.
- o Provides monthly contract performance analysis for input to Construction Performance Report Analysis MOS-1 critical path impacts and provides analysis and recommendations to management.
- o Attends monthly contractor progress review meetings.
- o Prepare schedule analysis as required for CCB presentations.
- o Perform schedule analysis in support of Change Requests.
- o Develop and maintain contract progress curve including contract baseline, current and executed Change Orders.
- o Utilize JCL and ISPF to produce required schedule reports.
- o Produce plotted barchart and CPM networks utilizing graphics hardware.

PLANNER/SCHEDULER

Following are specific contracts for which this position is responsible for:

AWARDED 5 AWP		PREAWARD
A112	A610/A115	A111
A116	A612	A124
A117	A615	
A118	A616	

Specific scheduling duties and responsibilities for awarded contracts include but are not limited to:

- o Review and comment on design and contractual documents for conformance with Scope of Work, the current construction baseline schedule and financial plan.

- o Shares primary responsibility for MSCS/MRCS special requirements.

- o Reviews contractor schedule, narrative and report submittals for conformance to specification, accuracy and content and provides analysis and recommendations to management.

- o Prepares summary of approved contractor schedule and includes in MSCS as baseline for monitoring contractor performance in MOS-1 Level III Construction Schedule.

- o Provides monthly contract performance analysis for input to Construction Performance Report Analysis MOS-1 critical path impacts and provides analysis and recommendations to management.

- o Attends monthly contract progress review meetings.

- o Develop and maintain contract progress curve including contract baseline, current and executed Change Orders.

- o Produce plotted barchart and CPM networks utilizing graphics hardware.

PLANNER/SCHEDULER

Following are specific contracts for which this position is responsible for:

AWARDED 5 AWP	PREAWARD
A135	A186
A136	A187
A175	
A185	

Specific scheduling duties and responsibilities for awarded contracts include but are not limited to:

- o Review and comment on design and contractual documents for conformance with Scope of Work, the current construction baseline schedule and financial plan.

- o Shares primary responsibility for MSCS/MRCS special requirements.

- o Reviews contractor schedule, narrative and report submittals for conformance to specification, accuracy and content and provides analysis and recommendations to management.

- o Prepares summary of approved contractor schedule and includes in MSCS as baseline for monitoring contractor performance in MOs-1 Level III Construction Schedule.

- o Provides monthly contract performance analysis for input to Construction Performance Report Analysis MOS-1 critical path impacts and provides analysis and recommendations to management.

- o Attends monthly contractor progress review meetings.

- o Prepare schedule analysis as required for CCB presentations.

- o Perform schedule analysis in support of Change Request.

- o Develop and maintain contract progress curve including contract baseline, current and executed Change Orders graphics hardware.

PLANNER/SCHEDULER (As Required)

Following are specific contracts for which this position is responsible for:

AWARDED 5 AWP	PREAWARD		
A740	A671	A730	A775
A745	A672	A735	A780
A710	A675	A760	A785
A720	A680	A770	A790

Specific scheduling duties and responsibilities for awarded contracts include but are not limited to:

- o Review and comment on design and contractual documents for conformance with Scope of Work, the current construction baseline schedule and financial plan.

COST CONTROL

Detailed duties of the Cost Control Section are indicated below.

LEAD COST ENGINEER:

A Lead Cost Engineer will be required for AWP-5 to supervise the field and office activities of the cost engineering staff in the cost administration of twenty-seven facility/systems contracts with a constructed value of $492,000,000 and a Construction Management Contract with an estimated value of $19,000,000; supervise preparation of the input data for both the RTD Monthly Status Report and the Construction Managers' Services report; prepare reports for the members of the Joint Venture, and insure the accuracy of the data being recorded.

COST ENGINEER

Subject Cost Engineer has/or will have cost responsibility for four contracts: A145, A146, A165 and A130, the latter having an expected NTP of June 6, 1988. The total constructed value of these four contracts if currently estimated at $146,622,00. In maintaining the cost status of these contracts it is estimated that an average of thirty line items

will be statused each period, five Change Orders processed per contract during the first ten days of the period. This translates into 140 TRACS transactions to insure that the contractors are properly compensated. This Cost Engineer will also calculate liquidated damages as appropriate and prepare forecasting reports and curves and evaluate Master Agreement work as required.

COST ENGINEER:

Subject Cost Engineer will have the responsibility for three major facility contracts; A112, A141 and A610/A115 with a total estimated constructed value of $116,516,000 plus the associated Master Agreement Work. In this instance it is estimated that the Change Order activity will average a minimum of ten per month on A141 and five each on the other two contracts. Average number of line items to be statused for payment will be thirty per contract which translates into 110 TRACS transactions each pay period. Additionally, this Cost Engineer is responsible for assembling all input data for the RTD Monthly Status Report.

COST ENGINEER:

This Cost Engineer will have the responsibility for all of the Systems Contracts (13) with an estimated total constructed value of $79,301,000. This position is somewhat different than the preceding in that the contract mix consists of procure only and procure and install types of contracts. It is estimated that there will be an average of 10 line items and 2 Change Orders per contract to be statused monthly. This translates into approximately 156 TRACS transactions per period. Additional effort will be required on support of the pay estimate since it is the current plan to "Telefax" both the skeleton and payment estimate forms to certain contractors. Prior to the RTDremitting payment to the contractor, it will be the responsibility of the Cost Engineer to ascertain that the original of the pay estimate has been received, approved, and transmitted to RTD.

COST ENGINEER:

This Cost Engineer will have responsibility for facility contracts A171, A175, A135, A116, A117, A118 and A167. The total estimated constructed value of this group of contracts is $127,868,000. It is estimated that A135, A171 and A175 will average thirty line items each to status per period. The remaining contracts, being of considerably smaller size will probably average five line items each. Change Orders are expected to average twenty-five per period for all contracts. This translates into 135 TRACS transaction per period. This individual will also handle any Master Agreement work associated with his contract sites.

ESTIMATING

With the anticipated requirement for Stage II construction estimates, the need for qualified civil, architectural, mechanical, and electrical estimating expertise will be required.

The Estimating Section works closely with th_ Change/Claims Control Section and is responsible for providing:

- o A review of findings-of-fact and scope of work associated with, result of or anticipated due to change requests and change notices.
- o Development of takeoffs of quantities affected by changes including existing unit price items, lump sum items or new work.
- o Analyzing and/or preparing construction methods or plans affected by changes.
- o Preparation of estimates of cost for the changes proposed by the owner or initiated by the contractor.
- o Review, evaluate and comment on contractor estimates submitted with changes or claims.
- o Maintain files of current wage rates, equipment operation and rental rates, and current library of material costs.

The change/claims section, based on the project history to date and projected contract activity for the forthcoming period July 1, 1988 to June 30, 1989, has projected:

- o 400 new change requests
- o 450 new claims

During the past 9 months the estimating section has been involved in the review or estimating of costs for approximately 1/3 of the 237 change requests issued, with an expenditure of approximately 20 estimator months. It is noted that two of the major change requests has required a disproportionate amount of time. Past experience also shows the major number of changes to be related to underground utilities.

In the upcoming period it is anticipated that there will continue to be utility problems associated with contract A135 Union Station, A130 Yard Leads, A610/A115 Stage Yard, plus those associated with other contracts underway. Excavation support, station excavation and tunneling will also be underway and will require the expertise of heavy civil estimators, for evaluation and estimating. Activity will continue in the shop requiring architectural experience. New utilities, electrical ductbanks will be in progress at the yard. Systems contracts will begin.

Experience indicates that the estimating staff requirement is neither a function of the number of changes or the dollar value of changes, but rather a function of the number of major contracts in progress. It is estimated

that there will be 12 major projects in progress during the upcoming year, some requiring one estimator and others part time but for an average of 5 estimators. In addition, a computer operator/technician is required.

A description of duties and responsibilities for the above position is given below:

LEAD ESTIMATOR

Responsible for receiving documents, preliminary review, make assignments, oversee evaluation takeoff and estimates. Also prepare estimate, evaluations and writeups. Meet with project management and Resident Engineer to clarify scope, review completed estimates and participate in negotiations. Interface with the RTD estimating staff. Maintain contact with change/claims section regarding changes, establish priorities and schedules. Provide data as required for scheduling section, cost engineers, etc. Maintain and update labor wage rates, equipment rates, and material costs.

CIVIL-HEAVY ESTIMATOR

Reviews change request or change notice, finding of fact and scope, identifies bid items affected, and reviews original versus revised or changed. Prepares quantity takeoff of items affected. Reviews original versus changed construction methods. Prepares estimate (computer aided, or manual). Writes evaluation of change. Obtains material or subcontract quotation where required. Will need as-required support.

CIVIL-UTILITY ESTIMATOR

SAme responsibilities as heavy civil estimator but will give priority to utility work changes in addition to other work.

CIVIL-ARCHITECTURAL ESTIMATOR

Same responsibility as the civil estimator but will give priority to building, architectural work in addition to other work.

MECHANICAL-ELECTRICAL ESTIMATOR (As Required)

Same responsibility as other estimators but with expertise in mechanical and electrical work. Will be required as activity picks up on shop building, electrical ductbanks, etc., and as station construction progresses.

COMPUTER TECHNICIAN

Maintain estimating libraries, wage rates, equipment rates, materials. Set up projects on computer, input data prepared by estimators. Print out detail analysis, and estimate summaries. Prepare markup data for estimates, maintain estimate files. Perform miscellaneous functions in support of estimators. Also prepare estimate logs in conjunction with change/claims section.

CHANGE CONTROL

Based upon project history and projected contract activity during the period from July 1, 1988 to June 30, 1989, PDCD anticipates approximately:

- 400 new Change Requests
- 450 new Claims

As noted above, it is difficult to forecast this volume and there may be a more significant increase than we have projected.

The current change procedure is such that one (1) Change Request generates approximately 10 transmittals as it progresses from CR to CO. Contract activity including systems and facilities will increase from 98 contract-months to 265 contract-months during AWP-5, an increase of about 170%. An estimated total of 400 Change Requests are projected for the period. 400 Change Requests will generate approximately 4,000 transmittals between initiation of Change Request to execution of Change Order for an average of more than 15 transmittals per work day. System contracts have generated about 0.67 Change Requests per contract-month during AWP-4. At that rate, AWP-5 will see about 94 Change Requests, generated by Systems.

In AWP-4, it took 21 technical man-months to handle the workload of the CCS. 85% of this time was spent on Change Requests, 15% on claims. It is projected that handling of claims will increase to 50% of the total workload.

A description of duties and responsibilities for each position required is described below:

LEAD CHANGE CONTROL ENGINEER

- Responsible for the overall planning and direction of the Change/Claims Control Section, including document preparation, document control and distribution, quality assurance, personnel direction, instruction and evaluation, interaction with and coordination of field and office change/claims functions, and assumption of an active role in representing RTD changes/claims, positions, policies and procedures.
- Assigns and supervises work of Change/Claims Specialists.
- Processes Change Orders and Claims for specific contracts.
- Reviews and approves the work of all Change Control/Claims Specialists prior to distribution and presentation to CM's/RTD Change Control Board.
- Supervises maintenance of all Change Order logs and documents.
- Directs coordination with RE and Construction Management personnel on all related changes.
- Coordinates with the scheduling, cost engineering and estimating groups.

CHANGE SPECIALIST

- Processes Change Orders, providing analysis, documentation and presentation support.
- Processes Change Requests and Change Orders for specific contracts.
- Provides Change Order data to cost engineers for entry into the District's Project Controls Systems.
- Prepares change information for presentation to the Change and Claims Control Boards.
- Obtains and provides scope definitions and all pertinent available data to estimators to support cost evaluations.

CLAIMS SPECIALIST

- Processes claims, providing analysis documentation and presentation support.
- Processes claims for specific contracts.
- Provides claims data to cost engineers for entry into RTD Project Controls Systems.
- Prepares claims information for presentation to the Change and Claims Control Boards.
- Analyzes proposed claims and makes recommendations to the Board.
- Obtains and provides scope definition and all pertinent available data to estimators to support claims evaluations.

DATA TECHNICIAN

- Sorts, logs-in, performs data inputting, distributes and files incoming correspondence.
- Retrieves project correspondence and documents from the control files.
- Codes, performs computer inputting, and files outgoing and interoffice correspondence.
- Inputs data, prepares, updates and supplies reports and information to project management.
- Performs the computer input and computer reporting of logs, registers, reports, and other change/claims related documents.

DOCUMENT CONTROL

A viable and efficient team of personnel is needed to handle the ever increasing volume of incoming correspondence, requests for document

retrieval, library reproduction requirements and submittals from the field offices.

To date, over 30,000 documents have been received, stamped, coded, input into the computer and filed as hardcopy.

The following job descriptions represent PDCD Document Control personnel requirements for the 5th AWP.

LEAD DOCUMENT CONTROL SPECIALIST

- Supervise and train 5 Document Control personnel.
- Log-in, computer input, distribution and filing of project correspondence and documents.
- Receives, controls and distributes project documents, contract drawings, specifications.
- Develop procedures for handling correspondence, project documents, submittals, reproduction and library materials.
- Fully developed a working computerized document control and reporting system including submittal status and exception reporting.

DOCUMENT CONTROL SPECIALIST

- Assists lead document control specialist in providing new personnel training.
- Receives, codes, and assigns file numbers to over 300 incoming documents per day.
- Capable of providing assistance to Project Controls Manager on special assignments.
- Retrieval of project correspondence and documents from Central File.
- Orders and maintains library reference materials.
- Organizes and screens materials requiring storage.
- Monitors, distributes and updates contract drawings and specifications.

SHOP DRAWING COORDINATOR

- Processes over 100 submittals per month. (This number is expected to triple over the next few months with the systems contracts recently issued.)
- Works with resident engineers, office engineers and engineering services in the control and monitoring of shop drawings in the review cycle.

- o Computer input of all submittals received, and their status in the review cycle with report capability in status and exceptions.
- o Ability to interpret and transfer engineer comments from originals to copies.
- o Make blue line, sepia and xerox copies as required.
- o Maintain complete submittal files.

DATA TECHNICIAN (1)

- o Performs nearly all data input for incoming correspondence, contract documents, and library materials.
- o Analyzes and re-codes any changes made to file documents.
- o Establishes and coordinates new computer programs as required.
- o Codes/numbers/files as required.

DATA TECHNICIAN (1)

- o Updates incoming contract documents from MRTC.
- o Files all incoming documentation and correspondence.
- o Assists shop drawing coordinator in reproduction of blueprints and xerox copies.
- o Assists Resident Engineers in audit of files for contract closeout.
- o Ability to perform computer inputs of project documents.

FILE CLERK (1)

- o Runs 5,000 to 7,000 xerox copies per week.
- o Stamps and distributes over 300 pieces of correspondence per day.
- o Runs 150 to 250 blueline/sepia copies per week.
- o Runs specifications and contract drawings as required.
- o Checks contract documents in and out.
- o Acts as key operator for maintenance of all copy machines on the 13th floor,.

Document Control has been notified by the Systemwide Construction Manager that the volume of documentation is expected to triple over the next few months. There may be a need for additional personnel to handle this volume level.

GENERAL

The Project Controls Manager supervises the Section Leads and is responsible for developing the policies and procedures contained in the Project Control Manual. Further, the Manager ensures that the policies and procedures are consistent with RTD guidance and that they are implemented and followed within his organization. The Project Controls Manager is responsible for development, coordination and implementation of effective computer systems for all PDCD elements. The Manager establishes and maintains liaison with, and follows direction from, RTD Program Control staff.

The technical data coordinator reports directly to the Project Controls Manager. This coordinator will assist the manager primarily in development, coordination and implementation of computer systems, particularly PC software application development and training.

To continue to meet the demanding and changing reporting, status tracking and documentation requirements of the project, new or improved PC applications are being continuously developed. Operational departments are always looking for more efficient ways to handle these requirements to avoid adding to their staffs and to release staff to concentrate on the operational aspects of their job.

For PC users, Project Controls conducts training programs on the basic software skills and applications training on newly developed programs.

By the end of AWP-4, there will be 23 PC's in operation, and AWP-5 could see the introduction of 11 to 17 more. The technical data coordinator is responsible for keeping these systems running and to coordinate program changes, upgrades and servicing. Maximum use will be made of the systems and servicing resources of RTD. The technical data coordinator will screen the requests, try to solve the easy ones and coordinate others with RTD.

The technical data coordinator will assist the Project Controls Manager in report preparation and provide other assistance as required.

The draftsperson reports to the lead planner/scheduler and provides drafting support to project controls and other PDCD elements for preparation of reports, briefing charts, etc.

2.4 ADMINISTRATION AND STAFF SUPPORT

A. Functional Responsibility

Administration includes the following functional areas:

1. Administration Management
2. Accounting
3. Office Services
4. Personnel Administration
5. Community Relations
6. Equal Opportunity

General Administration Responsibilities

The administrative section within the Administration Department, by definition, is in a support role to the CM organization. The 5th AWP, according to the Baseline Schedule, indicates substantial increase in construction operations and general support activities to construction. Additional field offices will be opened (2) and more field support personnel and central office support personnel will be brought on board during the 5th AWP. Resulting will be an increased need for administrative support to the expanded CM organization.

Some of the major administrative support functions include:

1. General Secretarial/Clerical, Word Processing.
2. Office Services - Supplies, furniture, equipment, field office set-up and support, space planning and rearrangement and courier/messenger services to 8 field offices and several RTD and other agency locations.
3. Accounting - Cost accounting, subcontractor coordination, expense reporting, accounts payable, Joint Venture accounting, billing preparation, cash management, internal/external audit, material and equipment inventory. vendor files.
4. Personnel Administration - Personnel requisitions/job placement, personnel approvals, recruitment assistance, employee orientation, assistance to field personnel.
5. Manuals/Reports - Preparation of Construction and Contract Performance Reports, updates to CM Manuals and Procedures, assistance in preparation of technical reports.
6. Presentations - The CM and RE's will be giving monthly presentations to the RTD/TSD group and the RTD Board of Directors.

7. Training Programs as required.

8. PDCD Joint Venture Board Meetings.

COMMUNITY RELATIONS (CR) RESPONSIBILITIES

Construction activities will require CR support for eleven, multi-shift, contracts, including major community outreach in the Union Station, 5th/Hill, 7th/Flower and Wilshire/Alvarado areas, and daily, on-site contact and follow-up with affected business, organizations, employees and pedestrians. Given that "affected" communities cannot be contained within the boundaries of a construction site, complaints will be substantial, widespread and come from many different sectors of the business, residential and political communities, as well as the general public driving or walking through the construction areas.

Mitigation measures on the part of the CR staff will require an extensive and extremely thorough CR program. This program includes regular distribution of publications, specifically information regarding construction schedules; responding to the increase in complaints and inquiries generated by the Project Streetwise hotline; working at RTD's two Information Centers; and attending numerous community meetings to allay fears and concerns and encourage a better understanding as to how the public can cope during construction.

EQUAL OPPORTUNITY (EO) RESPONSIBILITIES

This department has the overall responsibility for the development, implementation, management and evaluation of the Equal Employment Opportunity/Affirmative Action Program (EEO/AAP), the Disadvantaged/Woman-owned Business Enterprise Program (DBE/WBE), and the Contract Compliance and Reporting functions of the CM and the construction contractors and subcontractors.

The emphasis during the construction phase of the project is the contract compliance and reporting requirements which includes monitoring and verifying numerous weekly, monthly and quarterly reports of the Prime contractors and numerous subcontractors in accordance with state and federal regulations. The contract compliance effort includes on-site visits to the construction sites to conduct employee interviews, and will require staff to be available during the night shifts to monitor the contract compliance activities. There will be 11 facilities construction contracts ongoing during the 5th AWP.

PDCD's EO staff will assist the RTD's EO Department as required to carry out the many responsibilities associated with the EEO/AAP program, the DBE/WBE program, and the contract compliance and reporting functions. This may include preparing written materials for construction and procurement workshops, seminars, and conferences, as well as coordinating the events for RTD.

B. Personnel Required for 5th AWP

Mgr., Admin./Staff Support
- o Secretary (carried under Project Mgmt.)
  Proj. Admin./Acct. Mgr.
- o Senior Accountant
- o Senior Acct. Clerk (Rec.)
- o Senior Acct. Clerk (Pay.)

o Office Serv. Mgr.
  - Sr. Clerk/Typist (carried under Project Mgmt.)
  - Courier/Messenger (carried under Project Mgmt.) (2)

Mgr., Community Relations
o Comm. Rel. Coordinator

Mgr., EO Administration
o EO Administrator
o Secretary (EO & CR) (carried under Project Mgmt.)

C. Duties/Responsibilities of Job Classifications

Each job classification identified above is justified with the following duties and responsibilities description and tie into the work program and schedule.

MANAGER, ADMINISTRATION AND STAFF SUPPORT

o Supervise all Administration activities, including Equal Opportunity, Community Relations, Personnel, Office Services, clerical staff and special projects.

o Organize, schedule, supervise, and direct production of PDCD's Monthly Contract Performance Report, input to RTD's Monthly Status Report and prepare monthly presentation to RTD/TSD Group Directors.

o Participate in management meetings, prepare meeting agendas, write meeting minutes, and monitor correspondence flow between RTD and PDCD.

o Prepare RE presentations to the SCRTD Board monthly.

o Follow up on all outstanding correspondence and maintain action log for both RTD and PDCD.

o Formulate, issue, and enforce PDCD Administration policy directives and procedures.

o Schedule, organize, and coordinate PDCD's internal training programs.

o Supervise all office re-configuration activities.

o Supervise, edit, coordinate, revise as required and issue PDCd CM Policy and Procedure Manuals.

o Review and approve all requisitions for office services.

o Review all travel authorizations for business travel and relocations.

o Handle special projects for the Construction Manager, including presentations, reports, special studies, etc.

o Supervise all office space planning and moving.

o Schedule, organize, and coordinate PDCD Joint Venture Board activities

ADMINISTRATIVE SECRETARY/SENIOR WORD PROCESSOR

o Provide secretarial support to Administration Department (3 Managers).

o Provide secretarial support to the QA/QC Department.

o Operate word processing machine.

A. Type correspondence as required.

B. Type Progress Meeting Agendas, Minutes and reports.

C. Format, input, and produce major reports, manuals, and procedures.

D. Type the Monthly Contract Performance Report.

o Answer telephones and maintain department files.

o Assist other departments in typing and clerical work as required.

ACCOUNTING AND ADMINISTRATION MANAGER:

o Supervise accounting staff (accounts payable, accounts receivable, general ledger, financial and management reporting, and inventory accounting.

o Review all parent company and subcontractor invoices for hours, rates, extensions, overhead rates, other direct costs and fees.

o Input time cards and maintain project time charge/labor distribution report.

o Review, coordinate and manage all audits of Joint Venture parent company and subcontractor billings and overhead rates.

o Prepare responses to RTD audit reports.

o Obtain approval to revise provisional overhead rates subsequent to audits.

o Interface with and make recommendations to procurement department on administration of subcontracts and major purchase orders.

o Supervise and make recommendations on personnel administration.

o Arrange maintenance for project vehicle fleet.

o Monitor vehicle usage for conformance to project procedures.

o Monitor credit card use for conformance to project procedures.

o Provide guidance to field office staffs on administration and accounting matters.

o Review the monthly CM Service Cost report for consistency with accrued and invoiced costs.

- o Maintain labor rate table within CM Services reporting system.
- o Prepare monthly accrued costs for all CM costs components.
- o Prepare requisitions for office services including temporary help, reproduction services, vehicles, office equipment, and other items.
- o Provide all pricing support in preparation of annual work plan budgets.
- o Prepare biweekly funds requests to district.
- o Review all transactions for conformance to prime contract, F.A.R., and other applicable guidelines.
- o Review and approve al payment requests (invoices, check requests, and expense reports).
- o Maintain and coordinate the PDCD insurance program.
- o Administer office space leases; review escalation requests, enforce lease provisions.
- o Meet with outside vendors for procurement of alternative office space and telecommunications needs.

SENIOR ACCOUNTANT

- o supervises accounts payable and receivable functions.
- o Posts and maintains general ledger.
- o Prepares and maintains management reports including inventory listing, relocation cost summary, non-reimbursable cost summary, gross profit summary, partners payment summary, intercompany work authorization report, and subcontractor status report.
- o Reviews all checks issued prior to signature.
- o Reviews all purchase orders and subcontracts upon receipt.
- o Prepares spreadsheets and monitors data input.
- o Reconciles vendor and check registers to general ledger.

SENIOR ACCOUNTING CLERK (Accounts Receivable)

- o Inputs data to computer programs.
- o Handles payment and collection of telephone bills.
- o Copies and makes distribution of financial reports and billings.
- o Maintains various computerized accounting reports on Lotus 123.

- o Assists in maintaining inventory records.
- o Posts vendor register.
- o Performs reconciliations of accounts.
- o Researches and analyzes problem accounts.

SENIOR ACCOUNTING CLERK (Accounts Payable)

- o Type checks.
- o Review vendor invoices.
- o Maintain A/P files, including record of payment forms and voucher files.
- o Copy and assemble billings to client.
- o File paid vouchers.
- o Prepare history records on problem PO's.
- o Maintain check registers and make bank deposits.
- o Post and maintain vendor register.
- o Handle smog certificates, vehicle maintenance records, and vehicle title records.

OFFICE SERVICES MANAGER

- o Supervises all secretarial/clerical staff and activities.
- o Coordinates space/furniture changes.
- o Maintains telephone system and coordinates changes.
- o Supervises mail, freight, and postal systems.
- o Supervises the ordering and control of supplies and equipment.
- o Coordinates requirements for reproduction and other printing requirements.
- o Processes weekly time sheets.
- o Maintains petty cash, credit cards, and company vehicle reports.
- o Coordinates travel and relocation arrangements.
- o Processes expense reports.
- o Supervises steno/clerical and courier/messenger personnel.

Also serves as the project's Personnel Administrator to include:

- o Preparation of letters to RTD for new personnel approvals.
- o Supervises maintenance of personnel records and processing of incoming and outgoing personnel.
- o Maintains salary information; personnel action schedules.
- o Follows-up on preparation of personnel requisitions and job descriptions.
- o Prepares relocation cost estimates and letters of transmittal to RTD for approval and coordinates relocation.
- o Maintains current resume file.
- o Assists in recruitment, arranges interviews.
- o Assists in update of personnel procedures.

ADMINISTRATIVE SECRETARY (SENIOR CLERK/TYPIST)

- o Orders, receives, and controls supplies and equipment, including logs and tagging; fills supply requests to all eleven field offices and central office functional units and maintains inventory.
- o Processes special shipments for completeness and accounting.
- o Issues keys, badges to staff.
- o Assists in typing, filing, copying and special projects as assigned.
- o Processes parking arrangements as required.
- o Coordinates with the accounting department and the purchasing department as required.

COURIER/MESSENGER (2)

- o Pick up and deliver mail to the following locations:

  U.S. Post Office - daily
  PDCD eleven field offices - twice daily
  RTD (3rd Floor) - thrice daily
  425 S. Main Street - Twice weekly
  City Hall - daily
  LADOT - daily
  Parsons - Weekly
  MRTC - daily
  Suppliers/vendors - as required

- o Vehicle maintenance:

  - Pick up, diagnose, and arrange maintenance for 17 fleet vehicles as required. Perform minor repairs to vehicles.

- o Distribute internal PDCD mail daily.
- o Assist in overflow reproduction tasks and filing for various departments.
- o Move furniture within PDCD offices as required.
- o Maintain a log for all outgoing PDCD correspondence.
- o Repair PDCD facilities (desks, electrical, file cabinets) as required.
- o Set up conference rooms for meetings.
- o Fill supply requests for field offices.
- o Perform inventory of facilities as required.
- o Pick up and delivery photos and film to field offices as required.

COMMUNITY RELATIONS

By 1988 significant tunneling and station construction contracts will be well underway. These contracts will have a substantial and continuous impact on each community surrounding the station or line area involved.

To maximize efficiency, productivity and overall department capability, the minimum resources of one Community Relations (CR) manager, one CR coordinator to work in the field and one secretary (to be shared with the EO department) are needed by CR office to carry out its full responsibilities. In sharing the secretary with the EO department, the secretary will respond to the needs of four positions: two for the CR office and two for EO.

COMMUNITY RELATIONS MANAGER

- o Develop and administer comprehensive community relations program incorporating RTD and PDCD policies and direct and implementation of all community relations activities on behalf of construction management.
- o Provide liaison activities between the Construction Management team and the community.
- o Conduct community outreach efforts with impacted tenants, residents and property owners along the MOS-1 alignment and provide appropriate follow-up activities.
- o Identify actual and potential problems and community concerns during construction and participate in planning mitigation measures.
- o Assist in implementing information programs in accordance with RTD's Community Relations Construction Work Plan, including dissemination of information through conduits such as Information Centers and the Project Streetwise program, and attend neighborhood/organizational community meetings.

- o Assist with the planning and development of publications, brochures and factsheets on construction aspects of the project.

- o Assist in coordinating special projects, with the development of audio-visual material and participate in presentations that will increase community awareness and encourage community cooperation and support.

- o Respond to complaints and inquiries, including providing multi-shift emergency response assistance.

- o Participate in CM-RTD meetings as necessary to make presentations, provide backup information and make recommendation pertinent to issues under discussion.

- o Review and monitor contractors' Community Relations programs.

- o Act as liaison between the community and RTD's Art-In-Transit Program.

- o Develop an implement in-house training sessions.

- o Prepare activity reports and provide documentation for community relations activities.

- o Perform other related duties to assist CM effort as required.

COMMUNITY RELATIONS COORDINATOR

- o Assist Community Relation Manager in the development and implementation of Community relations activities and other related duties as required.

- o Assist with liaison activities: Daily field, on-site contact; provide input regarding public concerns and problem areas; contribute to plans for specific projects and programs, write activity reports, assist in preparing internal and external communications; assist with Information Centers; attend community meetings; assist RTD/PDCD in coordinating special projects; and maintain community relations documentation.

- o Respond in a thorough manner to complaints and inquiries, keep the community informed of construction schedule activities, and implement the RTD CR Work Plan in the appropriate areas at the appropriate times.

- o Community contact with all affected business, residents, property owners, tenants, employees, pedestrians and local organizations must, by this time, occur on a daily basis.

SECRETARY (CR & EO)

- o For Community Relations, will handle the daily correspondence needed to communicate with the public documentation requirements for processing community requests and complaints, and the anticipated paperwork required to issue notifications, factsheets, newsletters and ongoing communication reports for RTD and PDCD.

- For EO, administer the anticipated large volume of contract compliance reports to be generated from the fourteen ongoing construction contracts, sixteen procurement contracts, as well as filing and increased telephone activity.

EQUAL OPPORTUNITY ADMINISTRATION

This department has the overall responsibility for the development, implementation, management and evaluation of the Equal Employment Opportunity/Affirmative Action Program (EEO/AAP), the Disadvantaged/Woman-owned Business Enterprise Program (DBE/WBE), and the Contract Compliance and Reporting functions of the CM, the construction and procurement contracts.

The current emphasis of these responsibilities is the construction phase of the project. A majority of staff time and effort is devoted to the contract compliance and reporting requirements which includes monitoring the weekly certified payrolls and related documentation, monthly affirmative action goals and the DBE/WBE program of the contractors an subcontractors. In addition to these activities, staff is required to conduct onsite employee interviews at lease twice a month of all ongoing construction projects.

There will be a total of 14 active construction project sites which will require EO activity during the 5th Annual Work Plan (AWP)

Procurement contracts will be another major activity during the 5th AWP. Although most of the procurement contracts will not require the installation of equipment by construction trades/crafts, EO will be monitoring the DBE/WBE program of the contractors. A total of 16 procurement contracts will be monitored during the 5th AWP.

EO Manager

This position is responsible for the overall management and supervision of the Equal Opportunity Administration. The primary responsibility during the construction and procurement phase is the implementation and management of the contract compliance and reporting functions. These responsibilities include site visits to the various construction project sites, monitoring and evaluating the weekly payrolls of the contractor and subcontractors, the Monthly employment Utilization Report, and the quarterly Summary Subcontractors Award and Paid Reports. Directly related to the compliance function is the resolution of issues related to contract compliance and labor problems. The EO Manager will also continue with the Outreach Program, interact with the various minority and women business associations, present material at the Initial Preconstruction Conferences, attend the monthly Progress Review Meetings, and interact with the REsident Engineers and field office staff to resolve minor issues and coordinate the contractors and subcontractors reporting requirements.

EO Administrator

This position is responsible for assisting the EO Manager perform the required contract compliance and reporting functions of the department. The EO Administrator will conduct the site visits for employee interviews and will monitor and evaluate the contractor's EEO/AAP program. Reports summarizing the condisitions identified at the sites will be prepared.

In the absence of the EO Manager, the EO Administrator will be responsible for the management and administration of the EO Office.

SECTION 3

COST PROPOSAL

This section presents the cost proposal for the Fifth Annual Work Plan, Phase II - Construction Services, together with monthly and cumulative cash flow curves. (Figures 3-1 and 3-2)

FEDERAL AVIATION AGENCY

COST AND PRICE ANALYSIS-RESEARCH AND DEVELOPMENT CONTRACTS

Form approved
Budget Bureau No. 04-R128

This form is to be used in lieu of FAA Form 3515 as provided under FAPR 2-16-260-2. It will be executed and submitted with proposals in response to "Requests for Proposals," for the procurement of research and development services. If your cost accounting system does not permit analysis of costs as required, contact the purchasing office for further instructions.

PURCHASE REQUEST NUMBER

NAME AND ADDRESS OF OFFEROR
PARSONS METRO RAIL TEAM JOINT VENTURE
600 S. Spring St., Suite 1200, LA 90013

TITLE OF PROJECT
METRO RAIL CONSTRUCTION MANAGEMENT

DETAIL DESCRIPTION	ESTIMATED HOURS	RATE/HOUR	TOTAL ESTIMATED COST (Dollars)
1.DIRECT LABOR (Specify)			
Total Project Labor - PDCD	218,496	20.94	4,576,148
Parsons Home Office	7,360	19.54	143,805
De Leuw, Cather Home Office	5,920	18.92	112,125
Dillingham Home Office	640	22.00	14,080
TOTAL DIRECT LABOR	232,416		4,846,158

2.BURDEN (Overhead-Specify) DEPARTMENT OR COST CENTER	BURDEN RATE	X BASE	BURDEN ($)	
Payroll Expense - Field	.521	4,576,148	2,382,000	
Project Overhead - Field	.34	4,576,148	1,555,890	
Parsons Home Office	103.00	143,805	148,119	
De Leuw, Cather Home Office	112.72	112,125	126,386	
Dillingham Home Office	160.00	14,080	22,528	
TOTAL BURDEN			4,234,923	4,234,923

3.DIRECT MATERIAL			
TOTAL MATERIAL			
4.SPECIAL TESTING (Including field work at Government installations)			
TOTAL SPECIAL TESTING			
5.SPECIAL EQUIPMENT (If direct charge-specify in Exhibit B on reverse)			
6.TRAVEL (If direct charge)			105,000
a. TRANSPORTATION			
b. PER DIEM OR SUBSISTENCE			
TOTAL TRAVEL			
7.CONSULTANTS (Identify-purpose-total)			
TOTAL CONSULTANTS			
8.SUBCONTRACTS (Specify in Exhibit A on reverse)	127,904 Hours		5,558,467
9.OTHER DIRECT COSTS (Specify in Exhibit B on reverse-explain royalty costs, if any)	General Condition Items		2,285,830
10. TOTAL DIRECT COST AND BURDEN	360,320 Hours		17,030,378
11.GENERAL AND ADMINISTRATIVE EXPENSE (Rate % of item no.)			
12. TOTAL ESTIMATED COST	360,320 Hours		17,030,378
13.FIXED FEE OR PROFIT (State basis for amount in proposal)			595,000
14. TOTAL ESTIMATED COST AND FIXED FEE OR PROFIT			17,625,378

OVERHEAD RATE AND GENERAL AND ADMINISTRATIVE RATE INFORMATION

B. NAME AND ADDRESS OF GOVERNMENT AGENCY MAKING AUDIT	DATE OF AUDIT	ACCOUNTING PERIOD COVERED

C. DO YOUR CONTRACTS PROVIDE NEGOTIATED OVERHEAD RATES? NO YES (If yes, name Agency negotiating rates)

D. (If no Government rates have been established, furnish the following information)

DEPARTMENT OR COST CENTER	RATE	BASE	TOTAL INDIRECT EXPENSE POOL	BASE FOR TOTAL

(E. Exhibit A-SUBCONTRACT INFORMATION (If more space needed use blank sheets identifying item number))

NAME AND ADDRESS OF SUBCONTRACTORS	SUBCONTRACTED WORK	SUBCONTRACT TYPE	SUBCONTRACT AMOUNT
SEE ATTACHED SCHEDULE			5,558,467

(F. Exhibit B-OTHER DIRECT COSTS (Specify) (If more space needed use blank sheets identifying item number))

SEE ATTACHED SCHEDULE:	
OTHER DIRECT COSTS	1,621,530
GENERAL CONDITION ITEMS	664,300
TOTAL	2,285,830

CERTIFICATE

The labor rates and overhead costs are current and other estimated costs have been determined by generally accepted accounting principles. Bidder represents: (a) that he has, has not, employed or retained any company or person (other than a full-time bona fide employee working solely for the Bidder) to solicit or secure his contract, and (b) that he has, has not, paid or agreed to pay to any company or person (other than a full-time bona fide employee working solely for the bidder) any fee, commission percentage or brokerage fee, contingent upon or resulting from the award of this contract, and agrees to furnish information relating to (a) and (b) above, as requested by the Contracting Officer.

(For interpretation of the representation including the term "bona fide employee," see (Code of Federal Regulations, Title 44, Part 150.)

NUMBER OF CONTRACTOR EMPLOYEES	STATE INCORPORATED IN
500 AND UNDER / OVER 500 / OVER 750 / OVER 1,000	

DATE	SIGNATURE AND TITLE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR
JUNE 7, 1988	x R. W. Judson CHAIRMAN, JOINT VENTURE MANAGEMENT COMMITTE

ITEM 16 - SUBCONTRACT INFORMATION

NAME & ADDRESS OF SUBCONTRACTOR(S)	SUBCONTRACTED WORK	TYPE	SUBCONTRACT AMOUNT	HOURS
BETTER PERSONNEL EMPLOYMENT SERVICES 7837 Pacific Blvd., Suite 10 Huntington Park, CA 90255	Secretarial Services	CPFF	$ 420,844	26,312
CONSTRUCTION CONTROL SERVICES CORP. 3685 Motor Avenue, Suite 130 Los Angeles, CA 90034	Project Controls Construction Management Inspection	CPFF	$1,482,503	30,816
DAMES & MOORE 445 So. Figueroa, Suite 3500 Los Angeles, CA 90071	Geotechnical Eng.	CPFF	$ 234,037	3,624
ENGINEERING-SCIENCE, INC. 75 North Fair Oaks Avenue Pasadena, CA 91109	Environmental Eng.	CPFF	$ 516,364	15,000
HAYAKAWA ASSOCIATES 1800 So. Beverly Drive Los Angeles, CA 90035	Mechanical Eng. Inspection	CPFF	$ 134,416	2,024
JACOBS ASSOCIATES 500 Sansome San Francisco, CA 94111	Construction Eng. Tunnels, Cost Estimating Claims Control	CPFF	$1,005,712	18,112
JENKINS, GALES & MARTINEZ, INC. 9841 Airport Blvd., Suite 730 Los Angeles, CA 90045	Architecture Inspection	CPFF	$ 746,075	14,224
MARTIN & HUANG INTERNATIONAL 1800 Wilshire Blvd., Suite 300 Los Angeles, CA 90057	Civil/Structural Eng. Inspection	CPFF	$ 489,663	8,896
NORTH PACIFIC CONSTRUCTION MANAGEMENT 2665 Main St., Suite 220 Santa Monica, CA 90405	Resident Engineering Inspection	CPFF	$ 438,853	8,096
OCHOA & SILLAS 617 South Olive Los Angeles, CA 90014	Legal Services, EEO Claims	LH RATE	$ 80,000	640
RANDOLPH & TATE ASSOCIATES 155 West 72nd St., Suite 501 New York, NY 10023	Arts Program Coord. Inspection	LH RATE	$ 10,000	160
	TOTAL:		$5,558,467	127,904

COST AND PRICE ANALYSIS-RESEARCH AND DEVELOPMENT CONTRACTS

17 EXHIBIT B-OTHER DIRECT COSTS:

1	Field Office Expenses	668,100.00
2	Office Equipment	181,900.00
3	Travel & Relocation	220,000.00
4	Vehicles & Maint.	93,600.00
5	Reproduction	75,600.00
7	Telephone & Telex	93,500.00
8	Computer Operation Support	38,900.00
9	Gross Receipt Tax	94,230.00
A	Field Equipment	105,700.00
B	Temporary Help	50,000.00
	ODC'S	1,621,530.00

GENERAL CONDITION ITEMS:

B	Guard Services	93,000.00
D	Field Office Trailers	34,000.00
X	Construction Photo	42,300.00
Y	Testing Program	395,000.00
Z	Unallocated	100,000.00
	GCI'S	664,300.00

Pricing Basis

5th Annual Work Plan
For Construction Management Services
Phase II Construction

Scope of Construction Management Services Activities

The Scope of activities are those specified in the RTD letter dated March 17, 1988, based on Construction Schedule Revision 6.

Since the AWP4 period was defined (by mutual agreement between the District and PDCD) as that of July 1, 1987 through July 1, 1988, this Plan covers the period July 2, 1988 through June 30, 1989.

Labor

Per direction of RTD Program Control, the total available working hours for each reporting period were calculated and then reduced by the number of PDCD recognized holidays. A time phased man-loading plan was then developed for the AWP based on the scheduled activities, which recognized the requirements for shift work and extended work week hours to accommodate the Contractor's schedules.

Each position was defined as to the source of personnel, i. e., Parsons, Dillingham, De Leuw, Cather, specific subcontractor, etc., and where possible, by name of the individual presently assigned to that position. Recognition of an increase in construction activities dictated additional staffing which was also identified by source company.

Actual labor rates of the presently assigned personnel were used; where new classifications were designated, either the parent company supplied the current average rate for that classification or, if insufficient data was available, PDCD used the approximate midpoint of the PDCD salary schedule.

Some positions do not require permanently assigned personnel and are designated on an "as required basis". For these positions the approximate midpoint of the PDCD salary schedule was used.

An escalation rate of 2.5% was applied to all base labor which results in an effective 5% annual escalation rate.

The labor on the Form 4400 is only for the PDCD personnel. Subcontractor labor is in the total Subcontracts Line or Consultants Line Item as applicable. Form 4400's have been prepared for each individual firm.

Payroll Burden Rate

The Payroll Burden rate shown on the Form 4400 is a weighted composite for PDCD only and reflects the individual base rates quoted by each Joint Venture Partner. The rates are exclusive of Workmen's Compensation and Comprehensive General Liability insurance premiums, which are presumed to be provided by the RTD as part of the OCIP.

Overhead Rates

PDCD

The contract between SCRTD and PDCD provides for a Joint Venture field overhead rate of 34% for the period July 1, 1988 through June 30, 1989. This rate was applied to the field labor bases of Parsons, De Leuw, Cather and Dillingham.

Home Office burden rates, a composite of overhead and payroll burden, were supplied by the parent companies. Both the Parsons and DeLeuw, Cather rates reflect the ESOP impact as allowable under F.A.R.

The applied rates are:

The Ralph M. Parsons Company	103.00%
Dillingham Construction	160.00%
DeLeuw, Cather and Company	112.72%

Subcontractors

The most current audited, provisional, or proposed overhead rates were applied to the subcontractors' direct labor rates to arrive at the subcontractors' costs shown on the Form 4400 under the line item of Subcontracts. The rates applied were as follows:

Better Personnel Services	64.0%
Construction Control Services	150.0%
Jenkins, Gale & Martinez	150.0%
Dames & Moore	150.0%
Engineering Sciences	85.0%

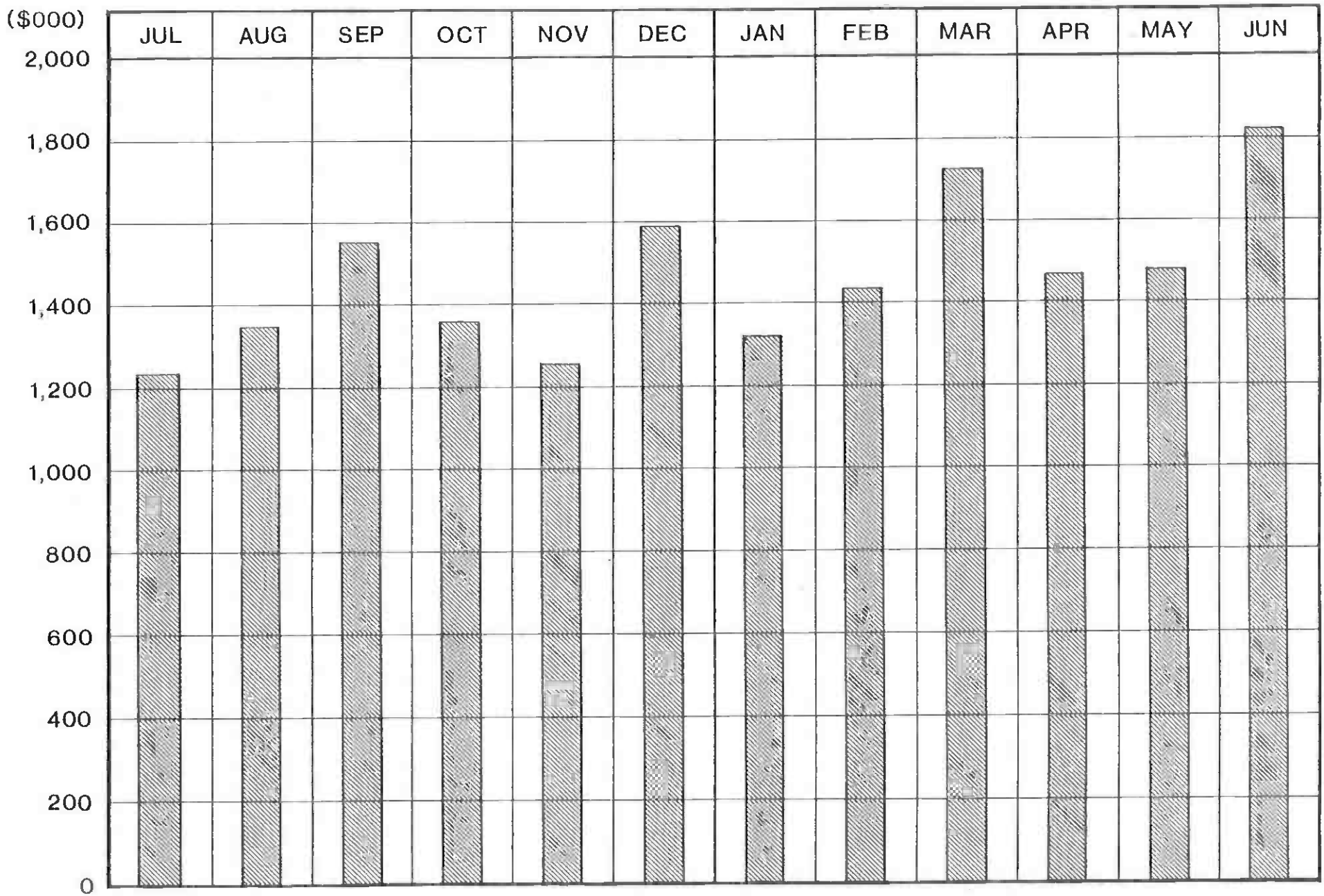
Hayakawa & Associates	138.0%
Jacobs Associates	112.0%
Martin & Huang International	138.0%
NCPM	125.0%
Ochoa & Sillas	None-Flat Rate/Hr.
Randolph & Tate	None-Flat Rate/Hr.

Subcontractor Fees

Subcontractor fixed fees are calculated at 8.25% of burdened labor only and this amount is also included in the Form 4400 line item entitled Subcontracts.

Other Direct Costs

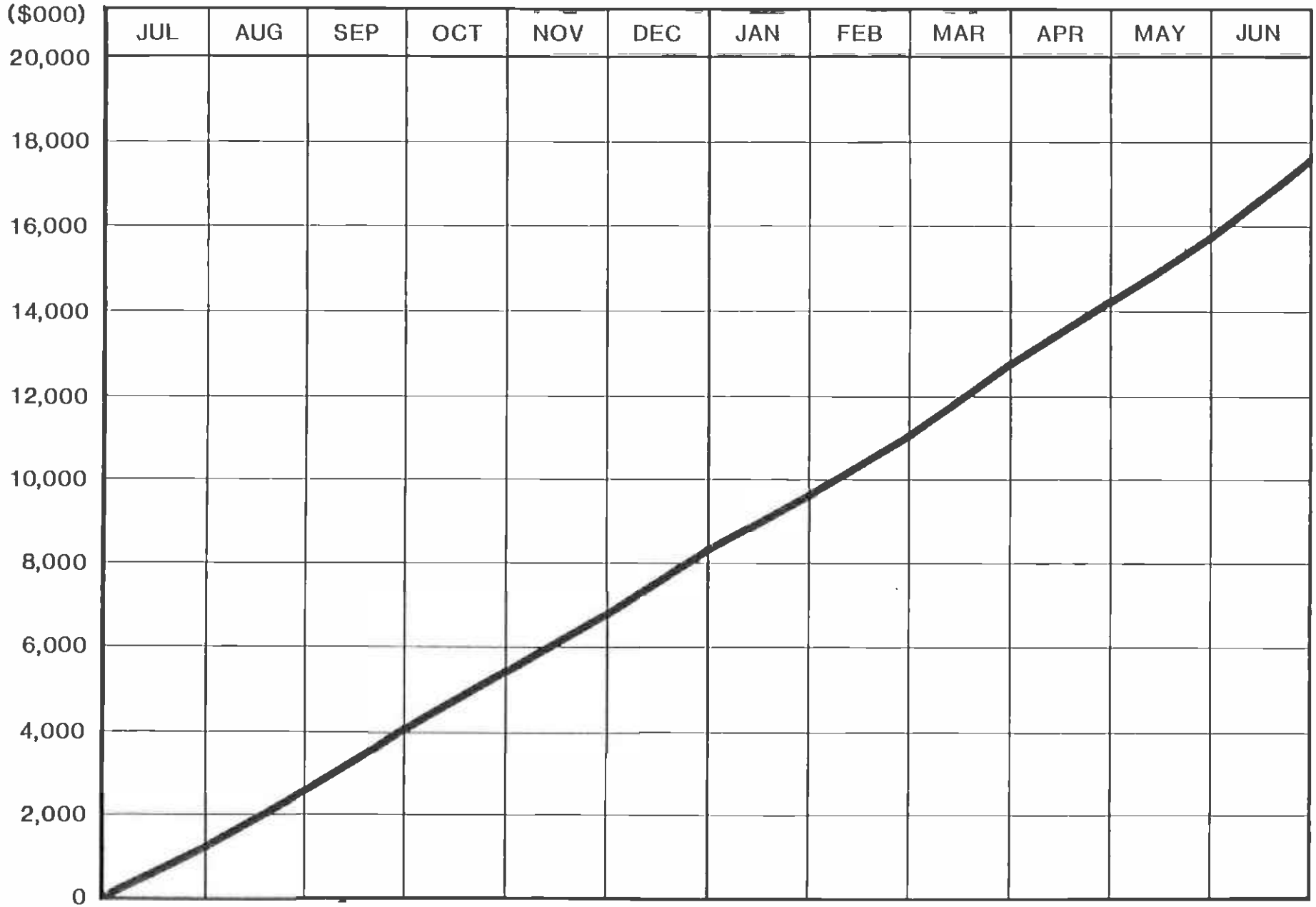
Based on the scope of work and schedule activities, each organization forecasted and justified their ODC requirements. After Management review, the items were priced out based on (1) quotations from vendors, (2) past experience, or (3) estimates.



MONTHLY CASH FLOW

FIFTH ANNUAL WORK PLAN FOR CM SERVICES

FIGURE 3-1



CUMULATIVE CASH FLOW
FIFTH ANNUAL WORK PLAN FOR CM SERVICES
FIGURE 3-2