

SECOND ANNUAL WORK PLAN
for
**CONSTRUCTION
MANAGEMENT
PRECONSTRUCTION
SERVICES**

for the
**LOS ANGELES METRO RAIL
PROJECT**

Presented to
**Southern California
Rapid Transit District**

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PDCD

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

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METRO RAIL CONSTRUCTION MANAGEMENT SERVICES

SECOND ANNUAL WORK PLAN
FOR
PRECDNSTRUCTION SERVICES

Prepared for
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

17 May 1985
Revised 11 June 1985
Revised 13 June 1985

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Month June Year 1985

Southern California Rapid Transit District

PDCD, A JOINT VENTURE
600 South Spring Street
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FOREWORD

This document presents the Second Annual Work Plan for the period 1 July 1985 to 30 June 1986 for the Metro Rail Construction Management Services contract. It encompasses Phase I - Preconstruction Services only; Construction Services will be added when the RTD exercises the option for Phase II.

The plan is based on the Contract Unit Description Book, revised as of 10 April 1985, the Level 0 and Level 1 schedules for MOS-1, dated 23 January 1985, provided by the Southern California Rapid Transit District, the Systems Design Status Report dated 21 March 1985 and the Facilities Design Status Report dated 3 May 1985.

The Annual Work Plan is organized as follows:

- Section 1 - Project Description and Work Basis
- Section 2 - Project Participants and their Interrelationships
- Section 3 - Scope of Services
- Section 4 - Organization and Responsibilities
- Section 5 - Annual Work Plan Schedule
- Section 6 - Staffing Plan
- Section 7 - Work Breakdown Structure
- Section 8 - Cost Data and Budget

SECTION 1

PROJECT DESCRIPTION AND WORK BASIS

This Annual Work Plan (AWP) has been prepared to cover Phase I - Preconstruction Services for the second Construction Management Services contract period extending from 1 July 1985 to 30 June 1986. It is based on the project description outlined below and on the scope of work, schedules, and staffing plan presented in the subsequent sections of this plan.

1.1 PROJECT DESCRIPTION

The project is the design and construction of the initial segment, or Starter Line, of the ultimate rapid transit network for the Los Angeles urbanized area. The initial segment is a conventional heavy rail system 18.6 miles in length with 18 stations serving the Central Business District, Wilshire Boulevard, Fairfax, Hollywood, and North Hollywood areas. The general alignment of the Project is shown in Figure 1-1. The entire 18.6 mile main line route is in subway configuration. The yard and shop area is an at-grade facility located between 1st and 6th Street and between the Los Angeles River and Santa Fe Avenue in an area currently occupied by the Santa Fe Railway. Access tracks from the yard and shop will enter a tunnel in the vicinity of the Santa Ana Freeway and will connect the yard and shop to the southernmost station on the line at Union Station. Within this Starter Line, the stations and line segments from Union Station to and including the Wilshire/Alvarado Station (about 4.4 miles) and the at-grade yards and shops are defined as the minimal operable segment (MOS-1) for UMTA funds (Figure 1-2).

1.2 SCHEDULE

The District's Preliminary Master Level 0 Schedule for MOS-1 is presented in Figures 1-3.

1.3 WORK BASIS

The work basis for this plan consists of the Scope of Services defined in Section 3 and the schedules presented in Section 5.

The CM Team staff will be located in the Project Office in downtown Los Angeles at 600 South Spring Street.

For the period 1 July 1985 to 31 December 1985, the plan is based on the anticipated preconstruction activities during this period. It has been assumed that PDCD will have at least 30 days after funds are available before utility work commences and at least 60 days after funds are available to add construction

personnel to its staff before contract construction starts. These periods would be used to perform survey work and other field preparation work not included in the preconstruction scope of services.

For the period 1 January 1986 through 30 June 1986, it is assumed that construction funds have not been and will not be made available and a phase down of staffing will occur to a "minimum crew" for contract closeout. Based on this assumption, our AWP cost estimate includes return relocation costs, lease cancellation costs, etc.

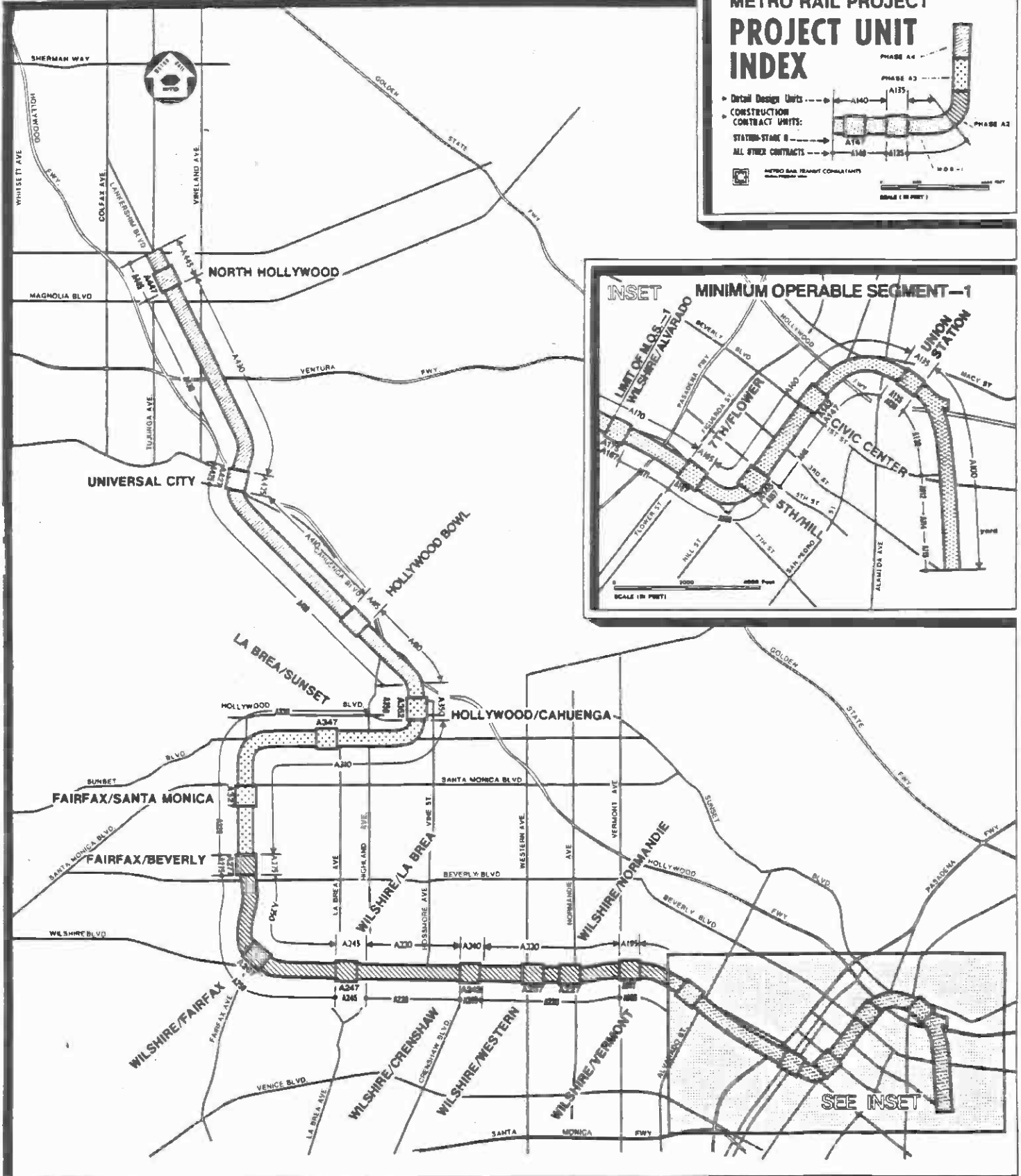
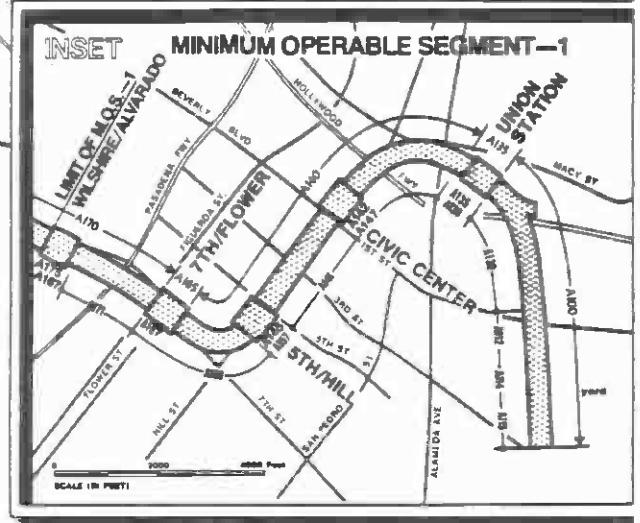
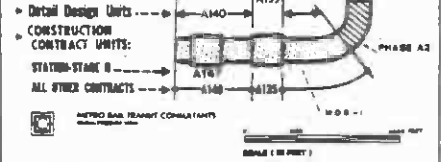
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

NOVEMBER 1984

FIGURE 1-1



METRO RAIL PROJECT PROJECT UNIT INDEX



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

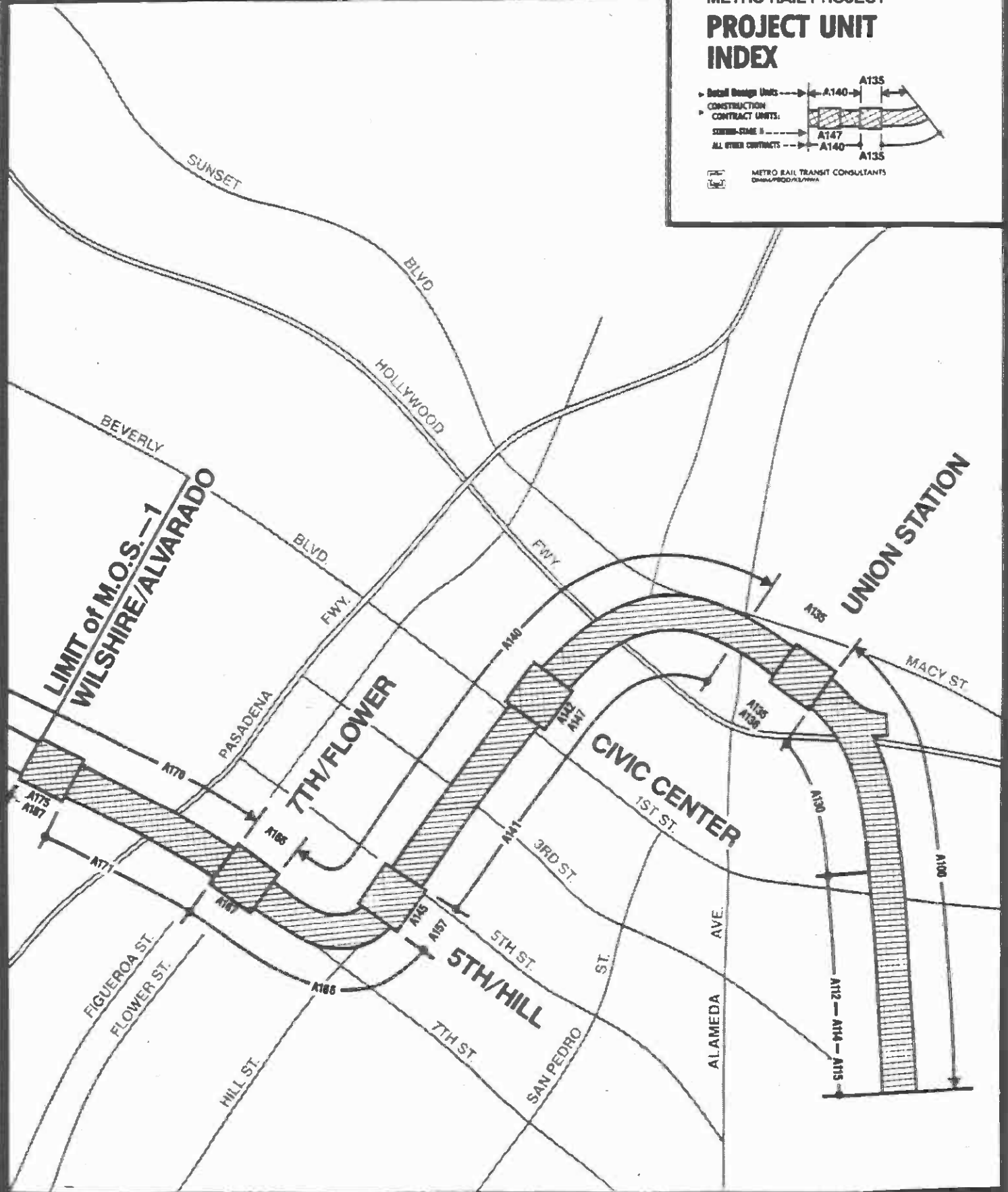
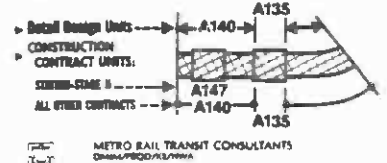
MINIMUM OPERABLE SEGMENT-1

NOVEMBER 1984

FIGURE 1-2



METRO RAIL PROJECT PROJECT UNIT INDEX



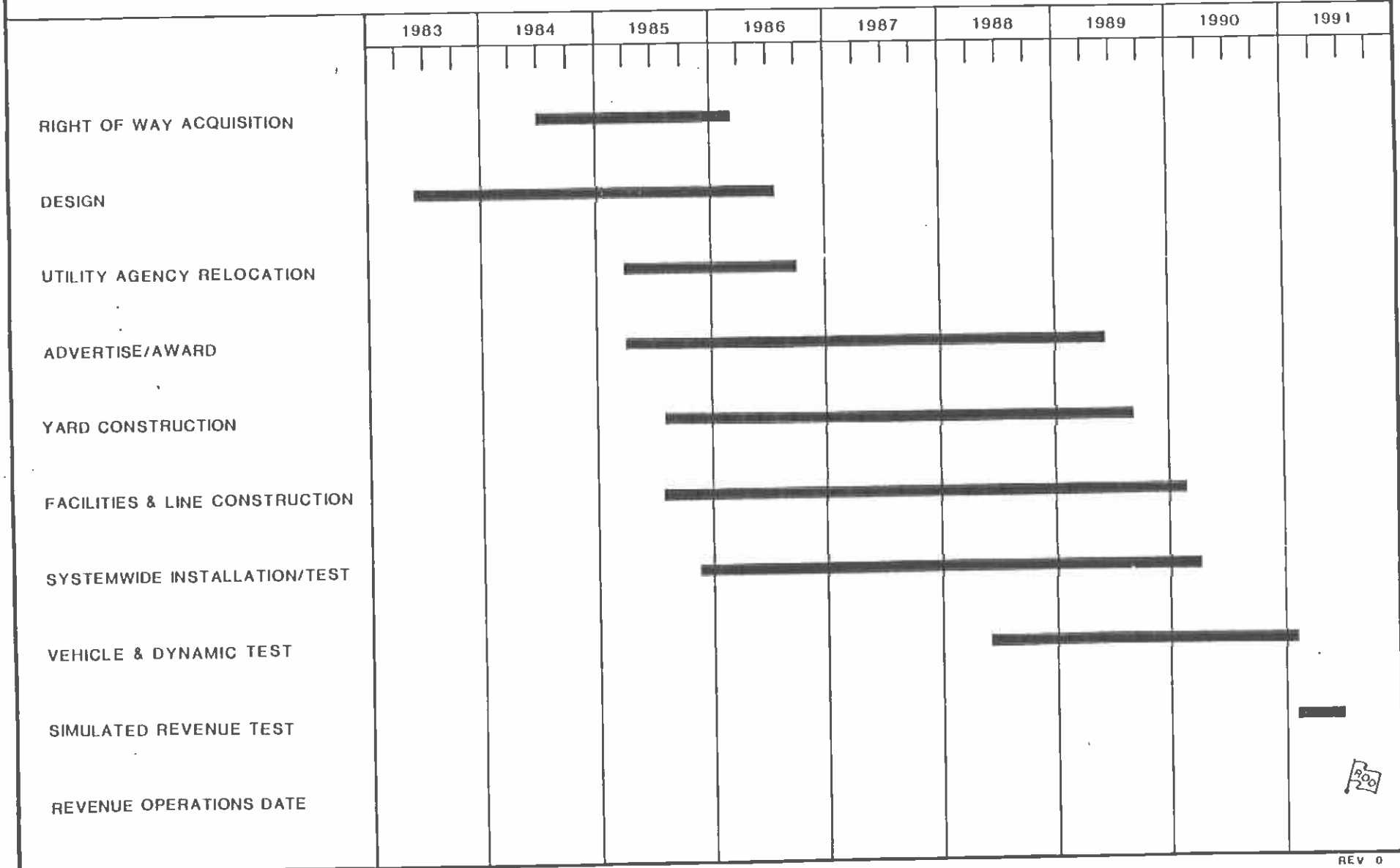
METRO RAIL PROJECT

MINIMUM OPERABLE SEGMENT - 1

LEVEL 0 SCHEDULE

FIGURE 1-3

01/23/85



1-5

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SECTION 2

PROJECT PARTICIPANTS AND THEIR INTERRELATIONSHIPS

The identification of and the various interrelationships among the participants in design, procurement, and construction of the Metro Rail Starter Line are defined in this section. This work plan covers only those activities associated with Phase I - Preconstruction Services for the Second Annual Work Plan period.

2.1 PROJECT PARTICIPANTS

Major participants during design and construction are the Southern California Rapid Transit District, the General Consultant (responsible for overall design), the Construction Manager (responsible for construction management services), the District Insurance Administrator (responsible for the OCIP), special consultants, the CMO, equipment suppliers, utilities and railroads, and general construction contractors. The identification and broad responsibilities of each are presented below together with a discussion of their interrelationships.

2.2 PARTICIPANT RESPONSIBILITIES AND INTERRELATIONSHIPS

In general, the responsibilities of and interrelationships among the major participants are as follows:

2.2.1 SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

The Southern California Rapid Transit District has overall responsibility for all aspects of the Metro Rail Project. In that connection the District will provide overall project management and supervision, and has final approval of all construction drawings and specifications, change orders, procurements, acceptance of construction and equipment installation, and contractor payments.

2.2.2 GENERAL CONSULTANT

The General Consultant (GC) is a Joint Venture of Daniel, Mann, Johnson and Mendenhall/Parsons, Brinckerhoff, Quade and Douglas/Kaiser Engineers/Harry Weese and Associates, operating under the name Metro Rail Transit Consultants (MRTC), and is under direct contract to the District. The GC has overall design responsibility, and provides the Construction Manager with preliminary and final designs, drawings, specifications, cost estimates and bid documents for constructibility, claims avoidance and cost savings review. The GC also provides preliminary construction contract packaging, identification of long-lead procurements, and construction and procurement schedules for CM review. Project designs may be performed by design subcontractors under contract to MRTC or by in-house MRTC personnel.

Material from the GC to the CM is transmitted through the District. Review comments and recommendations by the CM are returned to the District for screening and forwarding to the GC. The District will resolve any differences of opinion that arise from the CM review. The CM will not deal directly with any design, engineering, supply, or manufacturing subcontractor under contract to or supporting the GC, but will work through the District and the GC whenever contact is necessary.

2.2.3 CONSTRUCTION MANAGER

The CM is PDCD, a Joint Venture of The Ralph M. Parsons Company, Dillingham Construction, Inc., and De Leuw, Cather & Company. Under contract to the District, the CM is responsible for constructibility and claims avoidance reviews of designs, schedules, cost estimates, and bid documents; assistance in procurement of long-lead materials and equipment; assistance in selecting construction contractors; supervision and inspection of construction; and the scheduling and cost control of construction. The CM is also responsible for certain systems aspects of the project, including systems integration, supervision of systems installation, startup, testing, and systems certification.

Management of the Joint Venture is represented by the Construction Manager who is responsible to a Joint Venture Executive Board, which supports the performance of the Construction Manager and also provides a direct point of contact between the District and the management of the Joint Venture companies. Subcontractors and special consultants are under contract to the Joint Venture.

2.2.4 GENERAL CONSTRUCTION CONTRACTORS AND EQUIPMENT SUPPLIERS

Construction contractors and equipment suppliers selected for the Construction Phase will be under contract to the District. The CM, acting as agent for the District, will manage and supervise the construction contractors. The CM assists in the selection of construction contractors; performs onsite supervision, coordination, quality control, and safety inspection of all construction; reviews detailed schedules prepared by the contractors; reviews and evaluates shop drawings and change order requests; certifies contractor payments; verifies contractor compliance with Equal Employment Opportunity requirements; establishes a community relations program; and exercises cost and scheduling control. Final approval of changes or revisions recommended by the CM and the authority to direct their implementation rests with the District. The CM will oversee the work performed by equipment suppliers, performing expediting and shop inspection services and coordinating and scheduling delivery, checkout and acceptance testing.

2.2.5 UTILITIES AND RAILROADS

Utility and railroad relocation work associated with Metro Rail construction may be performed by utility and railroad force account personnel, under contract or agreement with the District. The CM will coordinate, inspect and/or monitor this work as directed by the District and will review force account records and periodic billings.

2.2.6 DISTRICT INSURANCE ADMINISTRATOR

The District Insurance Administrator (DIA) is a Joint Venture of four brokerage firms headed by the Fred S. James & Company of California, under contract to the SCRTD to procure the necessary insurance coverage and implement the Owner Controlled Insurance Program (OCIP). The DIA is responsible for implementing the OCIP, will administer the OCIP and will function as the District's Technical Advisor on insurance policy and issues insofar as they concern the Metro Rail project.

The CM will consult with the DIA on all questions relative to insurance requirements as they relate to the CM and its subcontractors. The CM will work closely with the DIA and assist as required and requested during the effort to secure the coverage to implement the OCIP.

2.2.7 SPECIAL CONSULTANTS TO DISTRICT

The District may engage special consultants to obtain expertise in a given area. The CM will cooperate with and assist such consultants in the performance of their assignments.

2.2.8 CONSTRUCTION MANAGEMENT OVERSIGHT

Under the provisions of the UMTA grant, the District will engage a Construction Management Oversight (CMO). The principle function of the CMO is to assure total project compliance to Federal quality requirements.

SECTION 3

SCOPE OF SERVICES

The Second Annual Work Plan for Construction Management Services to the Southern California Rapid Transit District for the Metro Rail Project encompasses only preconstruction activities, during which the CM will provide management, administrative, and technical personnel and services to perform constructibility and cost effectiveness reviews of designs (at various stages of development), schedules, cost estimates and bid documents. A major work effort will focus on claims avoidance reviews of construction contract bid documents and interface planning and coordination among bid packages, including the interface among facilities, utilities, and systemwide construction. As design documents, cost estimates, schedules and bid packages are completed, the CM will perform studies, as required, in the areas of cost comparison, use of materials, construction packaging, and construction methods and techniques; establish and maintain baseline schedules and budgets, utilizing TRACS, for control of construction contractors; and assist the District in the identification of long-lead materials and equipment.

The CM will continue to provide all support services and personnel necessary to assist RTD up to the initiation of Metro Rail construction. The CM offices of Equal Opportunity and Community Relations will assist the District in preparing to implement plans for equal opportunity in all organizations and personnel associated with the Metro Rail construction and in acquainting citizens with the Metro Rail construction program. Safety/Security and Quality Assurance offices will provide assistance and support to the RTD and finalize plans and procedures for use during the construction phase. The CM will continue to develop plans for coordinating permits, traffic, railroad and utility relocations and environmental control during construction; and will provide specialty support in labor relations, when and as requested by the District prior to commencement of construction.

3.1 SCOPE OF SERVICES AND STATEMENT OF WORK

CM activities during the Second Annual Work Plan will consist of Phase I - Preconstruction Services; Phase II - Construction Services will be added when RTD exercises its option for those services when construction funding become available. Preconstruction services are those CM services, up to the point of advertising for bids, described in the following statement of work. Based on UMTA funding limitations, these services include review of preliminary and final designs and bid documents for MOS-1 (the approximately 4.4 mile section from

Union Station to Wilshire/Alvarado, including yards and shops and associated systemwide elements) and design review to continuing Preliminary Engineering (85%) level for the remainder of the initial 18.6 mile segment of the Starter Line (Wilshire/Alvarado to North Hollywood).

The specific services to be provided during the preconstruction phase will be as indicated below, by task. Subtasks have been added where applicable to elaborate and more fully describe the services which will be provided.

3.1.1 PHASE I - PRECONSTRUCTION SERVICES

A. Criteria and Standards:

- o Recommend revisions resulting from constructibility and claims avoidance reviews, comparative cost studies, and other analyses.

B. Standard and Directive Drawings:

- o Recommend revisions resulting from constructibility and claims avoidance reviews, comparative cost studies and other analyses.
- o Review and recommend revisions to standard specification for construction contracts.

C. Preliminary Designs and Specifications:

- o Review and revise individual contract specifications for compliance with standard specifications and for consistency in areas of quality control, documentation, etc.
- o Recommend detailed, cost-effective instrumentation plans for each package, as applicable.

D. Preliminary Cost Estimates:

- o Recommend revisions resulting from estimate reviews, comparative cost studies, and other analyses.

E. Comparative Cost Studies:

- o Perform special studies/engineering analyses as requested by RTD.

F. Contract Packaging and Long-Lead Procurements:

- o Make recommendations for improved contract packaging resulting from reviews by outside agencies, analyses of methods of construction, etc.
- o Review and recommend repackaging of contract documents as necessary for optimum bids.
- o Assist RTD in repackaging of documents when packaging revisions are decided after design has been completed.

- o Verify that necessary specifications and drawings are included in each package, properly interfaced and cross referenced; that work which is not required has been deleted; and that future interfaces are identified.

G. Construction and Procurement Schedules:

- o Recommend revisions to schedules resulting from schedule analyses and other reviews.
- o Develop formats to ensure compatibility of schedules with TRACS and recommend modifications to schedules to ensure compliance.
- o Assume responsibility for maintenance of Level III Baseline Schedule.
- o Review Baseline Schedule for interfaces between systemwide elements and facilities construction and recommend revisions as appropriate.

H. Comparative Cost Studies:

- o Conduct comparative cost analyses of various construction materials and systems and make recommendations.

I. Policies and Procedures:

- o Complete policy/procedure manuals.
- o Develop detailed supplemental instructions to augment policy/procedure manuals.
 - Control of District-Furnished Materials/Equipment
 - Change order procedures
 - Shop drawing procedures
 - Progress payment procedures
 - Configuration management procedures
- o Develop detailed procedures and checklists for inspection of construction, including systemwide, utility, and railroad work.
- o Review all policies/procedures for consistency and compatibility.
- o Assist in development of RTD Policy/Procedure Manuals, e.g., Safety Manual.
- o Assist in development of O&M plans for operational phase staffing, equipment, tools, spare parts, etc.
- o Review System/Subsystem Test and Acceptance Plans and Procedures and recommend revisions as appropriate.

J. Management and Administrative Support:

- o Provide routine administrative support to the CM staff and the RTD as required.
- o Conduct audits and surveillance of CM activities to assure compliance with and assist in implementation of approved policies/procedures.
- o Conduct orientation and training for CM staff, utilizing in-house expertise.
- o Continue development and implementation of the automated Document and Material Control System (DMCS) and Cost Estimating System to facilitate productivity and efficiency in these areas.
- o Present familiarization training on TRACS/MSCS and Project Control techniques.
- o Assist District in defining and maintaining overall Project Control system including, but not limited to program budgeting, scheduling and analysis.
- o Participate and support RTD in Change and Schedule Control Boards.
- o Maintain and update a Level III Project Schedule capable of being summarized by automated systems to Schedule Levels II and I.
- o Maintain and update the Levels 7 and 8 of the Construction WBS.
- o Assist and recommend changes to the Project Schedule in terms of compatibility with the WBS and CUD, coding changes for summary presentations, and schedule status reports.

K. Community Relations:

- o Assess MOS-1 route and profile communities which will be impacted by construction.
- o Identify issues, general and specific, recognized as important to the communities.
- o Identify actual and potential problem areas and plan measures to mitigate or avoid.
- o Visit businesses and residents along MOS-1 to provide update on status of the project.
- o Assist RTD in developing factsheets, guidelines, and flyers for contractors, businesses, residents, and pedestrians.
- o Assist RTD in developing a Community Relations audiovisual program.

- o Assist DIA in liaison with the community in connection with Preconstruction Surveys.
 - o Continue to assist RTD Community Relations Office as required.
- L. Disadvantaged and Women-Owned Business and Equal Employment Opportunity Programs:
- o Assist RTD in development of training materials for construction contractors and subcontractors describing their EEO/AAP and DBE/WBE responsibilities.
 - o Assist RTD in development of standardized reporting forms for contractors/subcontractors for EO programs.
 - o Assist RTD in development of training programs for management and supervisory personnel of contractors/subcontractors.
 - o Develop employees handbook on equal employment opportunity.
 - o Assist RTD in developing and implementing an outreach program to DBE/WBEs regarding contract opportunities.
 - o Continue to assist RTD EO office as required.
- M. Final Designs, Drawings, Specifications, and Bid Documents:
- o Identify areas where design changes would facilitate construction or result in cost savings.
 - o Review individual contract specifications for compliance with Standard Specifications and for consistency in the areas of quality, documentation, omissions, and cross-referencing.
 - o Conduct interface and interdisciplinary reviews of MOS-1 bid documents (specifications and drawings), including systemwide work. Verify that all schedule, technical and physical interfaces have been clearly defined and delineated on applicable drawings and specs. Verify that items identified as NIC in one package are included in another as required.
 - o Conduct Claims Avoidance reviews for all MOS-1 projects (final bid documents), verify that prior comments have been incorporated or otherwise properly dispositioned.
 - o Assist RTD in developing and implementing a Bid Certification procedure to assure that all outstanding action items necessary to start construction have been completed prior to invitation to bid.
 - o Review bid forms for compatibility with WBS and payment clauses in the technical specifications.

- o For planning purposes, develop and maintain Level IV schedules for rail-road, utilities, construction, and systems packages. Identify interface points/milestones to be included in bid packages as required.
 - o Review utility relocation plans vis-a-vis construction contracts for technical and physical interfaces.
 - o Develop "what if" schedules for analyzing various options and scenarios.
 - o Perform special studies and planning, e.g., LRT facilities at 7th and Flower Station, Home Savings at 7th and Flower Station, etc.
 - o Participate in review meetings as required to reconcile comments and suggestions.
 - o Perform special studies and engineering analyses as required.
- N. Engineer's Cost Estimate:
- o Conduct detailed in-depth reviews of Construction Cost Estimates based on 100% design packages.
 - o Conduct comparative cost analyses of construction methods and systems to reduce construction costs, e.g., different excavation support systems.
 - o Maintain, and track changes to, baseline estimates as estimates/analyses are completed.
- O. Final Contract Packaging, Long-Lead Procurements and Schedules:
- o Recommend revisions to bid documents, as necessary, for optimum bids.
 - o Assist RTD in preparation and assembly of bid documents when requested.
 - o Prepare amendments/addendums to bid documents resulting from reviews by outside agencies, etc.
 - o Assist in preparation of interface coordination plans between affected contracts.
 - o Assist RTD in distribution of bid documents to potential bidders.
 - o Prepare revisions to Contract Unit Description Book.
 - o Review General Conditions for applicability of standardized approach to various types of contracts, e.g., procurement.
 - o Review procurement and related construction contracts for consistency in application of quality standards and other correlated issues.
 - o Conduct "what if" studies of construction alternatives.

- o Develop standardized logic schedules for typical construction activities.
 - o Prepare checklists of standard drawings to be included in contract documents for MOS-1 projects.
 - o Verify that the entire scope of work is clearly defined in each set of bid documents for MOS-1 contracts.
- P. District Management Meetings:
- o All members of staff will be available as needed to attend meetings, make presentations and provide other support requirements.
- Q. Monthly Reports:
- o Continue to prepare and submit monthly Contract Performance Reports; respond to RTD suggestions for improvements.
- R. Permits, Licenses, Certificates and Insurance Needs:
- o Continue in-depth planning to identify all required permits, licenses, certificates, and insurance needs.
- S. Coordination with Municipal authorities, Governmental agencies, Utility companies, and others:
- o Assist RTD in coordinating permits and agreements with agencies and utilities.
 - o Assist RTD in compiling data on expected discharges from MOS-1 contracts required by Regional Water Quality Control Board.
 - o Develop plans for testing and treating discharge and maintaining water quality during construction.
 - o Compile and maintain checklists of notices to agencies/utilities and other action items, on an individual MOS-1 basis, which must be accomplished to permit construction work to start.
 - o Review utility relocations as they impact, or are impacted by other construction operations, e.g., removal of tunnel equipment.
 - o Assist RTD in development of detailed working plans for traffic relocation, utility supports, etc.
 - o Investigate use of computerized Traffic Control System for MOS-1 Street Grid Network during construction.
 - o Conduct field activity planning and training, as required.

- T. Conferences with Officials of the District, Governmental agencies, or other persons:
 - o All members of the staff will be available as needed to attend meetings, make presentations, and provide other support required.
 - o Continue active involvement with Fire/Life Safety Committee.
- U. Field Office Space:
 - o Determine field office needs and plan for obtaining space, furniture, equipment, etc.
- V. Instrumentation Program:
 - o Recommend geotechnical instrumentation requirements/specifications which are cost effective.
 - o Assist in assessment of subsurface investigations to ensure information needed for construction, not just design, is obtained.
 - o Advise and assist in packaging of subsurface investigation reports/data to ensure they are useful and adequate for incorporating into contract documents.
 - o Plan for display of geologic samples to minimize bidders' claims.
 - o Advise and consult with the RTD on geotechnical engineering matters for the project.
- W. Construction Safety Program:
 - o In conjunction with the DIA, develop "Emergency Response" plans to react to emergency/catastrophic failures/incidents during construction, such as:
 - Explosion
 - Fire
 - Cave-in
 - Structural failure/movement of adjacent structures
 - Gassy environment
 - Injury to personnel
 - Earthquake damage
 - Flooding
 - o In conjunction with the DIA, develop a "Total Loss Control" Manual for the Metro Rail project, to be used by the construction industry, to cover:
 - Injury Prevention
 - Total Accident Control
 - Fire Prevention
 - Industrial Security

Industrial Health and Hygiene
Pollution Control
Business Interruption Avoidance
Product Liability

- o Assist in developing programs to present to schools and communities to understand construction hazards.
- o Conduct training on emergency rescue and other safety-related aspects of the project.

X. Approvals from Government Agencies:

- o Continue to assist the District in coordination with government agencies as required.
- o Assist the District in coordinating an in-depth Environmental Control Program, covering:

Ground Gasses
Air Quality
Wastewater
Train Vibration
Noise
Ambient Conditions Documentation
Archeology and Paleontology

Y. Preconstruction Survey Activities:

- o Assist in and coordinate "Preconstruction Survey" activities with the OCIP consultant (DIA).
- o Monitor and report on track relocation work being performed by Santa Fe as part of the Real Estate agreement with the District.

Z. Procurement-Related Activities:

- o Develop a checklist of testing requirements, determine types of testing laboratories that will be utilized during construction and establish requirements for evaluation/pre-qualification.
- o Provide contract administration and quality control support to the District for preparation of procurement contract documents.
- o Assist RTD in developing procedures for Pre-Award Surveys and review of Quality Assurance/Quality Control Programs for procurement and specialty construction contracts.
- o Assist RTD in developing and maintaining lists of potential bidders/suppliers who have expressed interest in the project.

- o Review and analyze systems procurement documents and requirements to establish clear definition of interfaces and responsibilities.
- o Evaluate long-lead requirements and methods for procurement for cost effectiveness.
- o Assess procurement lead times for delivery, storage, and schedule impacts.

SECTION 4

ORGANIZATION AND RESPONSIBILITIES

The project organization for achieving the scope of services defined for the Second Annual Work Plan for Construction Management Services is presented in this section together with the assignment of responsibilities and duties necessary to perform these services.

4.1 CONCEPT OF ORGANIZATION

The Construction Management Team, a Joint Venture with subcontractors and special consultants, is a unified organization, structured to be fully responsive to the needs of the project, with all members integrated into the project organization and working under the management control of the Construction Manager.

The project organization was revised, effective March 1, 1985, to make it more streamlined and efficient for managing preconstruction and construction of MOS-1 and to be more responsive to the RTD.

4.2 ORGANIZATION FOR CONSTRUCTION MANAGEMENT SERVICES

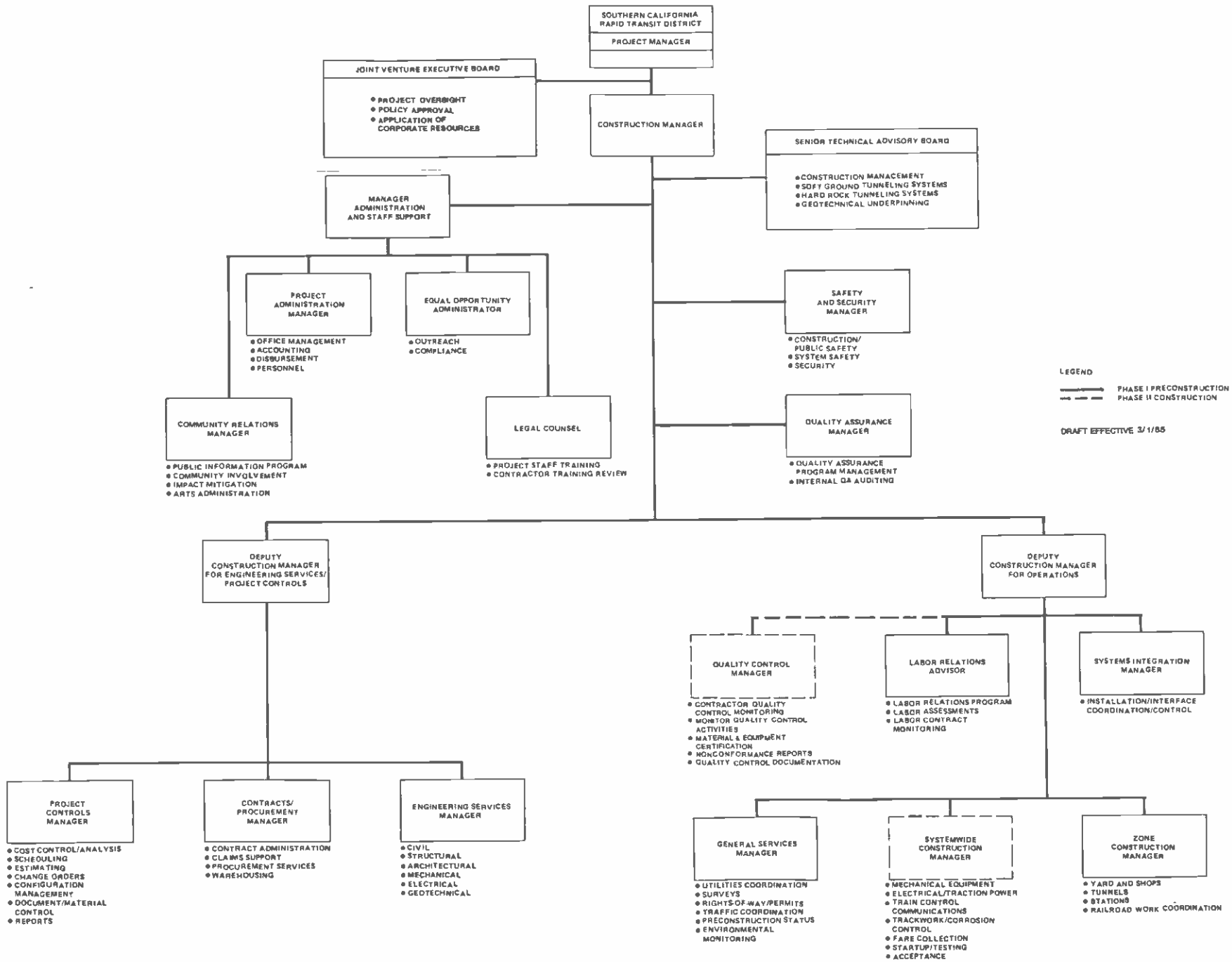
Figure 4-1 presents the basic functional organization chart for the Construction Management Team for Phase I - Preconstruction Services. Key additional organizational elements for Phase II - Construction Services are shown by dotted lines.

Figure 4-2 presents the personnel assignments for Phase I. This organization provides clear lines of authority and responsibility. The primary line of authority flows from the SCRTD to the PDCD Construction Manager and then to the two Deputy Construction Managers and three Managers who report directly to the CM. Work orders, instructions, directives, and other delegatory matters flow from the District Project Manager to the CM who makes assignments to the applicable DCMs/Managers as appropriate for execution. Reports, recommendations, and directed deliverables flow upward through the same channels to the RTD.

The Joint Venture firms comprising the Construction Management Team are represented by an Executive Board to which the CM is responsible internally for the performance of this project. This Board also provides an alternate point of contact between the District and the top management of the member firms, if the District and the top management of the member firms, if the District so desires, and assures availability of company resources required.

PCCD FUNCTIONAL ORGANIZATION

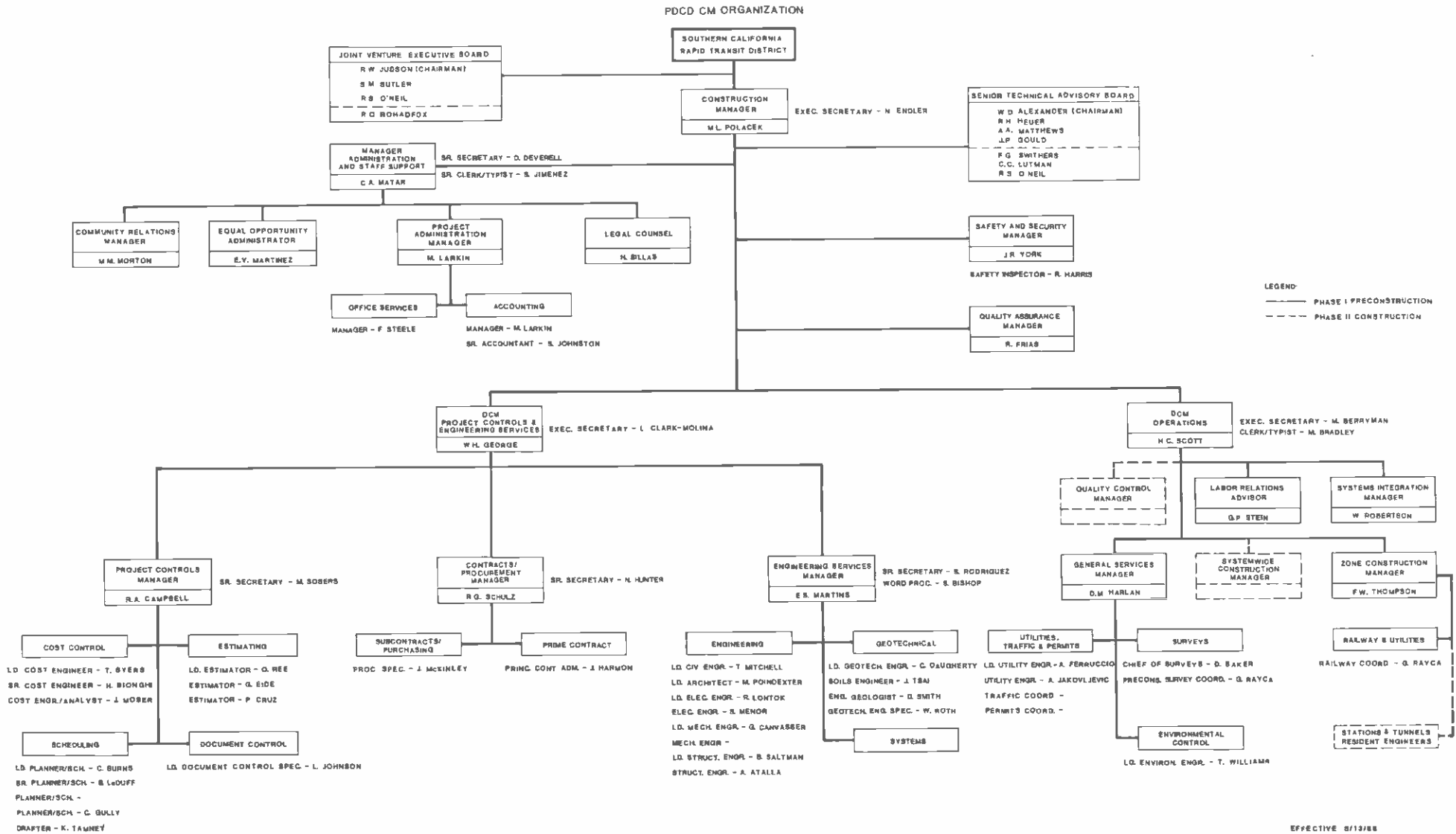
FIGURE 4-1



LEGEND
 ——— PHASE I PRECONSTRUCTION
 - - - PHASE II CONSTRUCTION
 DRAFT EFFECTIVE 3/1/85

4-2

FIGURE 4-2



EFFECTIVE 8/13/88

4-3

A Senior Technical Advisory Board of noted specialists in the fields of hardrock tunneling, soft/granular soils tunneling, systems elements and general construction management services is available to the CM and the Executive Board on an as-required basis. The specialists assist in the resolution of special problems when so requested.

4.3 RESPONSIBILITIES

The responsibilities of the key personnel within the CM organization are defined below.

A. 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 Project Manager. He reports internally to an Executive Board comprising 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, construction supervision, and coordination, as defined by the terms of the contract.

B. Safety Manager

The Safety Manager establishes safety guidelines to be incorporated into a total project safety program covering systems, construction, and public safety. He reviews bid documents for safety requirements, monitors contractor safety programs for compliance with approved guidelines and prepares and maintains the project safety procedures manual. He also prepares security guidelines, prepares and implements the emergency preparedness program for the project, and monitors jobsites for security, as well as safety.

C. Quality Assurance Manager

The Quality Assurance Manager establishes the quality assurance program in cooperation with the District covering all aspects of construction, installation, testing, and acceptance. He reviews and monitors quality control procedures prepared and conducted by contractors for compliance with the requirements of the QA program and conducts internal QA audits of the CM Team as directed by the Construction Manager.

D. Manager, Administration and Staff Support

The Manager, Administration and Staff Support is responsible for coordination, supervision, and management of administrative and special staff. He assists the

CM in the development of administration policies, develops and implements project administration procedures, maintains current organization charts and ensures that prompt, reliable administrative services are provided to the CM organization.

The Project Administration Manager is responsible for securing and monitoring appropriate working space and providing services for secretarial, drafting, typing, reproduction, mailing/shipping, office equipment and supplies, transportation and other administrative functions, including personnel and financial/accounting support to the organization.

The Community Relations Manager is responsible for coordination with the District to develop an aggressive community relations program that will provide a conduit between the community and the construction effort, solicit public opinion, identify actual and potential problem areas, and offer corrective or preventative actions to mitigate or avoid conflict with the public. The Community Relations Manager also reviews and monitors the public relations programs of all construction contractors to ensure that they are consistent with the District's objectives and are effectively managed, and is responsible for organizing and conducting special events.

The EEO Administrator prepares and monitors an EEO program for the CM Team pertaining to its personnel management and to the construction and supply contracting programs. She reviews and monitors the EEO practices of all construction contractors and suppliers, offering counseling where necessary and reporting performance against District goals. In addition, she is responsible for the administration of the DBE/WBE program.

The Legal Counsel provides legal services to the CM and Executive Board primarily in the areas of reviewing proposed contract language (construction and procurement), contract interpretation, disputes, claims, and EEO matters.

E. Deputy Construction Manager - Engineering Services/Project Controls

The Deputy Construction Manager for Engineering Services/Project Controls, is responsible for engineering services, project control, and contracts and procurement. His responsibility for engineering services is exercised through an Engineering Services Manager who has a full-discipline staff of engineers and specialists to review criteria and standards, review design drawings for constructibility and cost effectiveness, conduct shop drawing reviews, perform special engineering studies and analyses to include value-engineering analysis, and prepare as-built drawings.

The DCM's project controls responsibilities include planning and scheduling, cost control and analysis, estimating, review of cost estimates, change control, claims support, document control, and publications. Under contracts and procurement, he is responsible for the administration of the prime contract, of all subcontracts to the Joint Venture, and for all procurement directed by the District, as well as procurement for Joint Venture needs. In both project controls and contracts/procurement, he is supported by a functional area manager.

The Engineering Services Manager is responsible for coordinating the engineering services of a multidisciplined staff of engineers and specialists who review criteria and standards; design drawings, specifications, and bid documents for constructibility and cost effectiveness; shop drawings; special engineering studies and analyses; field engineering services; value engineering analyses; and the preparation of as-built drawings.

The Project Controls Manager is responsible for planning and scheduling; cost analysis and control, estimate reviews, change control, claims support and document control.

The Contracts/Procurement Manager is responsible for the administration of the prime contract, the Joint Venture Executive Board resolutions, all subcontracts to the Joint Venture, all procurement for the Joint Venture, and all procurement directed by the RTD to be performed by PDCD.

F. Deputy Construction Manager - Operations

The Deputy Construction Manager for Operations is responsible for all field construction operations, field engineering, specialized support services, and systems integration. During Phase I - Preconstruction Services, he assists in design reviews for constructibility, materials selection and construction packaging, in development of construction planning and scheduling, in preparation of procedures, and in performing special studies. He is assisted by a Zone Construction Manager who supervises the Resident Engineers assigned to each line segment or station and by a Systemwide Construction Manager, who is supported by Resident Engineers responsible for trackwork, traction power, train control and communications, mechanical systems (such as elevators, escalators, fare collection boxes, and HVAC), systems testing and startup, and final acceptance; and a General Services Manager responsible for interfacing with utility companies, topographic surveys and monumentation, traffic coordination, preconstruction surveys, instrumentation monitoring, and environmental monitoring.

The Zone Construction Manager is directly responsible for the construction management of facility construction in MOS-1. The Zone CM is the primary construction manager in the field and is responsible for all CM field operations within his zone to include construction supervision and inspection, systems installation, relocations, surveys, field engineering, systems startup and testing, community relations, final acceptance, system certifications, and contract administration. He maintains an adequate staff to meet these responsibilities, assisted as required by personnel from other elements of the project staff, and he allocates resources to the Resident Engineers in the performance of their duties.

The Systems Integration Manager is responsible to the DCM-Operations for the proper interfacing, coordination, and control of systems and site work. In cooperation with the Zone CM and the Systemwide Construction Manager, he identifies and resolves interface problems and prepares any required procedures, schedules, drawings, and specifications in this regard.

The Systemwide Construction Manager is directly responsible for construction and/or installation of all systems that are common to the entire project. He

coordinates with the Zone CM and the Systems Integration Manager to effectively integrate his contract work with that assigned to the zone. Under the supervision of the Zone CM, he conducts startup and testing of all segments of the systems assigned to him and assists the Zone CM in the final acceptance and certification of such systems. The Systemwide Construction Manager is supported by Resident Engineers to handle the onsite work.

The General Services Manager is directly responsible for performing construction surveys and monumentation, coordination of utility relocations, traffic coordination, permits, preconstruction surveys, and instrumentation and environmental monitoring. He is responsible for coordinating these activities with ongoing field construction (through the Zone CM) and with the Community Relations Manager.

The Labor Relations Advisor administers and coordinates the labor practices of the general construction contractors and sub-tier contractors, primarily to avoid labor problems rather than reacting to them. He is responsible for evaluating and assessing project labor needs, maintaining a harmonious relationship between management and labor, and developing their interest in and support of the project. He assists and advises the Resident Engineers in methods to prevent or resolve labor problems.

SECTION 5

ANNUAL WORK PLAN SCHEDULE

This section presents the overall schedule for the Second Annual Work Plan, Phase I - Preconstruction Services.

Those activities/tasks which are continuous, ongoing, and not directly related to a specific project have not been scheduled.

DESCRIPTION	1985						1986					
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A111 CURBS, GUTTERS & SIDEWALK CONSTRUCTION ALONG SANTE FE AVENUE								FDC				
A112 MAIN SHOP BUILDING & YARD SERVICE AREA	FDC								CAR	BCC		
A115 YARD STORAGE AREA												
A116 YARD SITE SECURITY FENCING												
A117 YARD SITE LIGHTING												
A118 YARD SITE LANDSCAPING												
A119 TRACK RELOCATION, FIRST STREET AND HOBART YARD (FORCE ACCOUNT)												
A121 MAINTENANCE-OF-WAY BUILDING												
A130 YARD LEADS AND TRANSFER ZONE												
A133 UNION STATION REPLACEMENT BAGGAGE HANDLING FACILITIES												
A135 UNION STATION, STATION AND PORTION OF CROSSOVER STAGE I												
A136 UNION STATION, STATION AND CROSSOVER STAGE II												
A138 UNION STATION EAST END RESTORATION												

LEGEND: 60% = IN-PROGRESS
 85% = PRE-FINAL
 100% = FINAL SUBMITTAL
 FDC = FINAL DESIGN COMPLETE
 DC = DESIGN CONSTRUCTIBILITY REVIEW
 DE = DESIGN ESTIMATE REVIEW
 CE = CHECK ESTIMATE PREPARATION
 CAR = CLAIMS AVOIDANCE REVIEW
 IPC = INTERFACE PLANNING AND COORDINATION
 BCC = BID CERTIFICATION COMPLETE

SECOND ANNUAL WORK PLAN
 MANAGEMENT SUMMARY
 MINIMUM OPERABLE SEGMENT - 1

DESCRIPTION	1985						1986					
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A139 UNION STATION SITE LANDSCAPING												
A141 UNION STATION STAGE I AND LINE SECTION UNION STATION TO 5TH/HILL STATION		FDC		CE	BCC							
A142 CIVIC CENTER EXCAVATION SUPPORT AND UTILITIES												
A145 5TH/HILL STATION, STAGE I	100% DC	100% DE	FDC	CAR	CE	BCC						
A146 LINE SECTION, 5TH/HILL STATION TO 7TH/FLOWER STATION	100% DE		FDC	CAR	CE	BCC						
A147 CIVIC CENTER STATION, STAGE II	100% DE		FDC	CAR	CE	BCC						
A148 5TH/HILL STATION PRIVATE VAULT RELOCATION	CAR	IPC	CE	BCC								
A157 5TH/HILL STATION, STAGE II	100% DC	100% DE	FDC	CAR	CE	BCC						
A165 7TH/FLOWER STATION, STAGE I	CAR	IPC	CE	BCC								
A167 7TH/FLOWER STATION, STAGE II					CAR	IPC	CE	BCC				
A171 LINE SECTION, 7TH/FLOWER STATION TO WILSHIRE/ALVARADO STATION			FDC	CAR	IPC	CE	BCC					
A175 WILSHIRE/ALVARADO STATION, STAGE I			FDC	CAR	IPC	CE	BCC					
A185 WILSHIRE/ALVARADO STATION, SITE RESTORATION							CAR	IPC	BCC			

LEGEND:
 80% - IN-PROGRESS
 85% - PRE-FINAL
 100% - FINAL SUBMITTAL
 FDC - FINAL DESIGN COMPLETE
 DC - DESIGN CONSTRUCTIBILITY REVIEW
 DE - DESIGN ESTIMATE REVIEW
 CE - CHECK ESTIMATE PREPARATION
 CAR - CLAIMS AVOIDANCE REVIEW
 IPC - INTERFACE PLANNING AND COORDINATION
 BCC - BID CERTIFICATION COMPLETE

SECOND ANNUAL WORK PLAN
 MANAGEMENT SUMMARY
 MINIMUM OPERABLE SEGMENT - 1

DESCRIPTION		1985						1988						
		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	
A 186	WILSHIRE/ALVARADO STATION. SITE LANDSCAPING							▽ CAR ▽	▽ IPC ▽	BCC				
A 187	WILSHIRE/ALVARADO STATION. STAGE II							▽ CAR ▽	▽ IPC ▽	▽ CE ▽	BCC			

LEGEND:
 80% = IN-PROGRESS
 85% = PRE-FINAL
 100% = FINAL SUBMITTAL
 FDC = FINAL DESIGN COMPLETE
 DC = DESIGN CONSTRUCTIBILITY REVIEW
 DE = DESIGN ESTIMATE REVIEW
 CE = CHECK ESTIMATE PREPARATION
 CAR = CLAIMS AVOIDANCE REVIEW
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SECOND ANNUAL WORK PLAN
 MANAGEMENT SUMMARY
 MINIMUM OPERABLE SEGMENT - 1

DESCRIPTION	1985						1986					
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A810 TRACKWORK INSTALLATION		FDC DE	CAR IPC	CE	BCC							
A812 CONTACT RAIL			CAR IPC	CE	BCC							
A815 PROTECTIVE COVERBOARD			CAR IPC	CE	BCC							
A820 AUTOMATIC TRAIN CONTROL	85%	85% DE	100% FDC DE	CAR IPC	CE	BCC						
A830 TRACTION POWER EQUIPMENT			CAR IPC	CE	BCC							
A831 TRACTION POWER INSTALLATION	80%	80% DE					88%	85% DE		100% FDC DE	CAR IPC	BCC
A840 COMMUNICATIONS		85%	85% DE		100% FDC DE	CAR IPC	CE	BCC				
A850 PASSENGER VEHICLES	100% FDC DE	100% DE CAR IPC	CE	BCC								
A860 FARE COLLECTION		85%	85% DE				100% FDC DE	CAR IPC	CE	BCC		
A871 LOCOMOTIVE												
A872 FLAT CARS												
A873 TUNNEL WASH/VACUUM SYSTEM												
A875 CRANE FOR FLAT CAR												

LEGEND:
 80% - IN-PROGRESS
 85% - PRE-FINAL
 100% - FINAL SUBMITTAL
 FDC - FINAL DESIGN COMPLETE
 DC - DESIGN CONSTRUCTIBILITY REVIEW
 DE - DESIGN ESTIMATE REVIEW
 CE - CHECK ESTIMATE PREPARATION
 CAR - CLAIMS AVOIDANCE REVIEW
 IPC - INTERFACE PLANNING AND COORDINATION
 BCC - BID CERTIFICATION COMPLETE
 BASED ON: DESIGN STATUS REPORT, 5/3/85
 SYSTEMS DESIGN STATUS REPORT, 3/21/85

SECOND ANNUAL WORK PLAN
 MANAGEMENT SUMMARY
 MOS-1 SYSTEMWIDE
 PAGE 1 OF 2

DESCRIPTION	1985						1986					
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A876	HI-RAIL CAR MOVER											
A877	HI-RAIL 3/4 TON TRUCK											
A880	OPERATIONAL GRAPHICS											
A710												
A720												
A730	SHOP EQUIPMENT											
A735	SHOP EQUIPMENT											
A740	FANS											
A745	TPSS-AIR HANDLING EQUIPMENT											
A780	SIGNS & GRAPHICS											
A770	RUBBER TIRED VEHICLES											
A775	MOBILE EMERGENCY & MAINTENANCE EQUIPMENT											
A780	FURNITURE											
A790	FIRST STORES & CONSUMABLES											
A795	UNINTERRUPTIBLE POWER SUPPLY											

LEGEND: 80% = IN-PROGRESS
85% = PRE-FINAL
100% = FINAL SUBMITTAL
FDC = FINAL DESIGN COMPLETE
DC = DESIGN CONSTRUCTIBILITY REVIEW
DE = DESIGN ESTIMATE REVIEW
CE = CHECK ESTIMATE PREPARATION
CAR = CLAIMS AVOIDANCE REVIEW
IPC = INTERFACE PLANNING AND COORDINATION
BCC = BID CERTIFICATION COMPLETE

BASED ON: DESIGN STATUS REPORT, 5/3/85
SYSTEMS DESIGN STATUS REPORT, 3/21/85

SECOND ANNUAL WORK PLAN
MANAGEMENT SUMMARY
MOS-1 SYSTEMWIDE

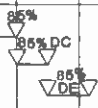
PAGE 2 OF 2

DESCRIPTION		1985						1986					
		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A 196	WILSHIRE/VERMONT STATION, STAGE I												
A 197	WILSHIRE/VERMONT STATION, STAGE II												
A220	WILSHIRE/NORMANDIE STATION, STAGE I WILSHIRE/WESTERN STATION, STAGE I AND LINE SECTION, WILSHIRE/VERMONT STATION TO WILSHIRE/LA BREA STATION	85% DC▽		86% DE▽									
A227	WILSHIRE/NORMANDIE STATION, STAGE II												
A237	WILSHIRE/WESTERN STATION, STAGE II												
A240	WILSHIRE/CRENSHAW STATION, STAGE I												
A242	WILSHIRE/CRENSHAW STATION, STAGE II												
A246	WILSHIRE/LA BREA STATION, STAGE I												
A247	WILSHIRE/LA BREA STATION, STAGE II												
A250	WILSHIRE/FAIRFAX STATION, STAGE I AND LINE SECTION, WILSHIRE/LA BREA TO FAIRFAX/BEVERLY STATION												
A267	WILSHIRE/FAIRFAX STATION, STAGE II												
A276	FAIRFAX/BEVERLY STATION, STAGE I												
A277	FAIRFAX/BEVERLY STATION, STAGE II												

LEGEND: 80% - IN-PROGRESS
 85% - PRE-FINAL
 100% - FINAL SUBMITTAL
 FDC - FINAL DESIGN COMPLETE
 DC - DESIGN CONSTRUCTIBILITY REVIEW
 DE - DESIGN ESTIMATE REVIEW
 CE - CHECK ESTIMATE PREPARATION
 CAR - CLAIMS AVOIDANCE REVIEW
 IPC - INTERFACE PLANNING AND COORDINATION
 BCC - BID CERTIFICATION COMPLETE
 BASED ON: DESIGN STATUS REPORT, 5/3/85

SECOND ANNUAL WORK PLAN
 MANAGEMENT SUMMARY
 CONSTRUCTION/PHASE II

DESCRIPTION	1985						1986					
	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A320	FAIRFAX/SANTA MONICA STATION, STAGE I											
A327	FAIRFAX/SANTA MONICA STATION, STAGE II											
A330	LA BREA/SUNSET STATION, STAGE I AND LINE SECTION, FAIRFAX/SANTA MONICA STATION TO LA BREA/SUNSET STATION											
A347	LA BREA/SUNSET STATION, STAGE II											
A350	HOLLYWOOD/CAHUENGA STATION, STAGE I											
A352	HOLLYWOOD/CAHUENGA STATION, STAGE II											



- LEGEND:**
- 80% - IN-PROGRESS
 - 85% - PRE-FINAL
 - 100% - FINAL SUBMITTAL
 - FDC - FINAL DESIGN COMPLETE
 - DC - DESIGN CONSTRUCTIBILITY REVIEW
 - DE - DESIGN ESTIMATE REVIEW
 - CE - CHECK ESTIMATE PREPARATION
 - CAR - CLAIMS AVOIDANCE REVIEW
 - IPC - INTERFACE PLANNING AND COORDINATION
 - BCC - BID CERTIFICATION COMPLETE

BASED ON: DESIGN STATUS REPORT, 5/3/85

SECOND ANNUAL WORK PLAN
MANAGEMENT SUMMARY
CONSTRUCTION/PHASE III

DESCRIPTION		1985						1986					
		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
A410	LINE SECTION, HOLLYWOOD/CAHUENGA STATION TO UNIVERSAL CITY STATION												
A425	UNIVERSAL CITY STATION, STAGE I												
A427	UNIVERSAL CITY STATION, STAGE II												
A430	LINE SECTION, UNIVERSAL CITY STATION TO NORTH HOLLYWOOD STATION												
A445	NORTH HOLLYWOOD STATION, STAGE I AND TAIL TRACK												
A447	NORTH HOLLYWOOD STATION, STAGE II												

LEGEND: 80% - IN-PROGRESS
85% - PRE-FINAL
100% = FINAL SUBMITTAL
FDC - FINAL DESIGN COMPLETE
DC = DESIGN CONSTRUCTIBILITY REVIEW
DE = DESIGN ESTIMATE REVIEW
CE = CHECK ESTIMATE PREPARATION
CAR = CLAIMS AVOIDANCE REVIEW
IPC = INTERFACE PLANNING AND COORDINATION
BCC = BID CERTIFICATION COMPLETE

BASED ON: DESIGN STATUS REPORT, 5/3/85

SECOND ANNUAL WORK PLAN
MANAGEMENT SUMMARY
CONSTRUCTION/PHASE IV

SECTION 6

STAFFING PLAN

This section presents the manloading by discipline for the Second Annual Work Plan, Phase I - Preconstruction Services.

MANLOADING BY DISCIPLINE

SECOND ANNUAL WORK PLAN - CM PRECONSTRUCTION SERVICES

7/1/85 - 6/30/86

Sheet 1 of 2

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Man Months	Man Hours @ 157 Hrs/M
Construction Manager	1	1	1	1	1	1	1	1	1	1	-	-	10	1,570
Deputy CM/Operations	1	1	1	1	1	1	1	1	1	-	-	-	9	1,413
Deputy CM/Engrg. Svcs./Proj. Control	1	1	1	1	1	1	1	1	1	-	-	-	9	1,413
Manager Administration/Staff Support	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Secretaries/Clerks/Word Proc./Drafts Person	11	11	11	11	10	10	7	5	1	1	-	-	78	12,246
Technical Advisory Board							AS REQUIRED					2	314	
Administration/Staff Support:														
Project Admin./Acctg. Manager	1	1	1	1	1	1	1	1	1	1	-	-	10	1,570
Office Manager	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Sr. Accountant	1	1	1	1	1	1	1	1	1	-	-	-	9	1,413
Manager - Community Relations	1	1	1	1	1	1	-	-	-	-	-	-	6	942
EO Administrator	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Legal Counsel							AS REQUIRED					3	471	
Arts Coordinator							AS REQUIRED					2	314	
Manager - Quality Assurance	1	1	1	1	1	1	-	-	-	-	-	-	6	942
Manager - Security/Safety	1	1	1	1	1	1	-	-	-	-	-	-	6	942
Manager - Contracts/Procurement	1	1	1	1	1	1	1	1	1	1	-	-	10	1,570
Procurem. Specialist/Contract Admin.	1	1	1	1	1	1	1	1	1	1	-	-	10	1,570
Manager - Project Controls	1	1	1	1	1	1	1	1	1	-	-	-	9	1,413
Lead Planner/Scheduler	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Planner/Scheduler	3	3	2	2	2	2	1	1	-	-	-	-	16	2,512
Lead Cost Engineer	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Sr. Cost Engineer	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Cost Engineer/Analyst	1	1	1	1	1	1	1	-	-	-	-	-	7	1,099
Lead Estimator	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Estimator	3	3	2	2	2	2	1	-	-	-	-	-	15	2,355
Lead Document Control Specialist	1	1	1	1	1	1	1	1	1	1	-	-	10	1,570
Data Technician	1	1	1	1	1	1	1	-	-	-	-	-	7	1,099
Technical Support							AS REQUIRED					2	314	

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MANLOADING BY DISCIPLINE

SECOND ANNUAL WORK PLAN - CM PRECONSTRUCTION SERVICES

7/1/85 - 6/30/86

Sheet 2 of 2

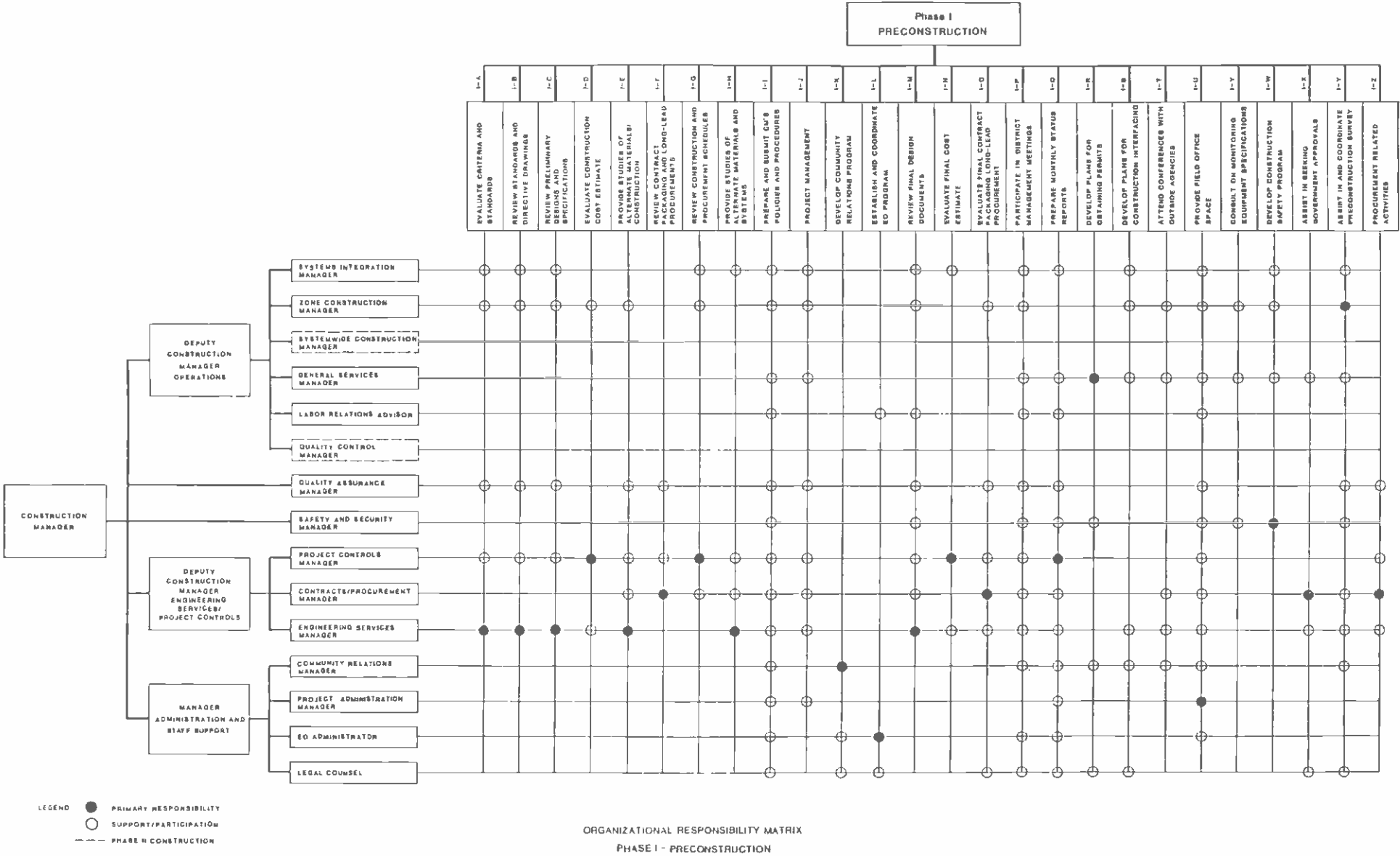
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Man Months	Man Hours @ 157 Hrs/M
Manager - Engineering Services	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Civil Engineer	1	1	1	1	1	1	-	-	-	-	-	-	6	942
Lead Architect	1	1	1	1	1	1	1	-	-	-	-	-	7	1,099
Lead Structural Engineer	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Structural Engineer	1	1	1	1	1	1	1	-	-	-	-	-	7	1,099
Lead Mechanical Engineer	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Mechanical Engineer								AS REQUIRED					2	314
Lead Electrical Engineer	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Electrical Engineer	1	1	1	1	1	1	1	-	-	-	-	-	7	1,099
Lead Geotechnical Engineer	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Soils Engineer	1	1	1	1	1	1	1	-	-	-	-	-	7	1,099
Jr. Geological Engineer	1	1	1	1	-	-	-	-	-	-	-	-	4	628
Geological Engrg. Specialist								AS REQUIRED					2	314
Systems Engineer								AS REQUIRED					2	314
Technical Specialist								AS REQUIRED					2	314
Manager - General Services	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Lead Utility Engineer	1	1	1	1	1	1	1	-	-	-	-	-	7	1,099
Utility Engineer	1	1	1	1	1	1	-	-	-	-	-	-	6	942
Chief of Surveys	1	1	1	1	1	1	-	-	-	-	-	-	6	942
Permits/Traffic Coordinator							AS REQUIRED						2	314
Environmental Engineer	1	1	1	1	1	1	-	-	-	-	-	-	6	942
Environmental Specialist							AS REQUIRED						2	314
Manager - Zone Construction	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
Railroad Coordinator	1	1	1	1	1	1	-	-	-	-	-	-	6	942
Labor Relations Advisor							AS REQUIRED						2	314
Manager - Systems Integration	1	1	1	1	1	1	1	1	-	-	-	-	8	1,256
TOTAL OF CATEGORIES	57	57	55	55	53	53	40	30	10	6	0	0	<u>439</u>	<u>68,923</u>

6-3

SECTION 7

WORK BREAKDOWN STRUCTURE

Following is a matrix showing the interrelationships of organizational responsibilities to the Work Breakdown Structure.



SECTION 8

COST DATA AND BUDGET

This section presents the cost estimate for the Second Annual Work Plan, Phase I - Preconstruction Services, together with monthly and cumulative cash flow curves. (Figures 8-1 and 8-2)

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 "Request 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
018404

NAME AND ADDRESS OF OFFERER

Parsons Metro Rail Team Joint Venture
600 South Spring St., 12th Floor, Rm 1212, Los Angeles

TITLE OF PROJECT

Metro Rail Construction Management

DETAIL DESCRIPTION		ESTIMATED HOURS	RATE/HOUR	TOTAL ESTIMATED COST (Dollars)
1 DIRECT LABOR (Specify)				
Total Joint Venture, Direct Labor		45,530		1,083,714
TOTAL DIRECT LABOR				1,083,714
2 BURDEN (Governor specify, DEPARTMENT OF COST CENTER)				
Payroll Expense		40.5%		438,573
		30.0%		325,114
TOTAL BURDEN				763,687
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 or reverse)				
6 TRAVEL (If direct charge)				
TRANSPORTATION			46,708	
PER DIEM OR SUBSISTENCE			3,000	
TOTAL TRAVEL				49,708
7 CONSULTANTS (Identify purpose and rate)				
Special Technical Advisor - 314 hours @ 89.50/hr				28,103
TOTAL CONSULTANTS				
8 SUBCONTRACTS (Specify in Exhibit A or reverse)				
		23,079 hrs.		946,620
9 OTHER DIRECT COSTS (Specify in Exhibit B or reverse; explain source of cost if any)				
				899,322
10 TOTAL DIRECT COST AND BURDEN				3,771,154
11 GENERAL AND ADMINISTRATIVE EXPENSE (Rate % of item nos.)				
				-
12 TOTAL ESTIMATED COST				3,771,154
		Hours 68,923		
13 FIXED FEE OR PROFIT (State basis for amount in proposal)				
				175,000
14 TOTAL ESTIMATED COST AND FIXED FEE OR PROFIT				3,946,154

15 OVERHEAD RATE AND GENERAL AND ADMINISTRATIVE RATE INFORMATION

B NAME AND ADDRESS OF GOVERNMENT AGENCY MAKING AUDIT See individual firms 4400-2's	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

16 EXHIBIT A-SUBCONTRACT INFORMATION (If more space needed use blank sheets, identifying item number)

NAME AND ADDRESS OF SUBCONTRACTOR(S)	SUBCONTRACTED WORK	SUBCONTRACT	
		TYPE	AMOUNT
See Attachment A			

17 EXHIBIT B-OTHER DIRECT COSTS (Specify if more space needed use blank sheets identifying item number)

Item 9 - Reproduction	30,610
Telephone & Telex	37,600
Capital & Office Expense	1,500
Field Office Expense	267,572
Mobilization & Relocation of incoming personnel	15,000
Computer Expense	14,500
SUB TOTAL	366,782
Estimated Cancellation Costs	
Automobile Expense	8,930
Office Lease @ 6th & Spring	146,645
Telephone Lease	14,475
Relocation Expense (outgoing personnel)	357,490
Move back to Pasadena	5,000
TOTAL OTHER DIRECT COSTS -	899,322

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, [X] 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, [X] 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.)

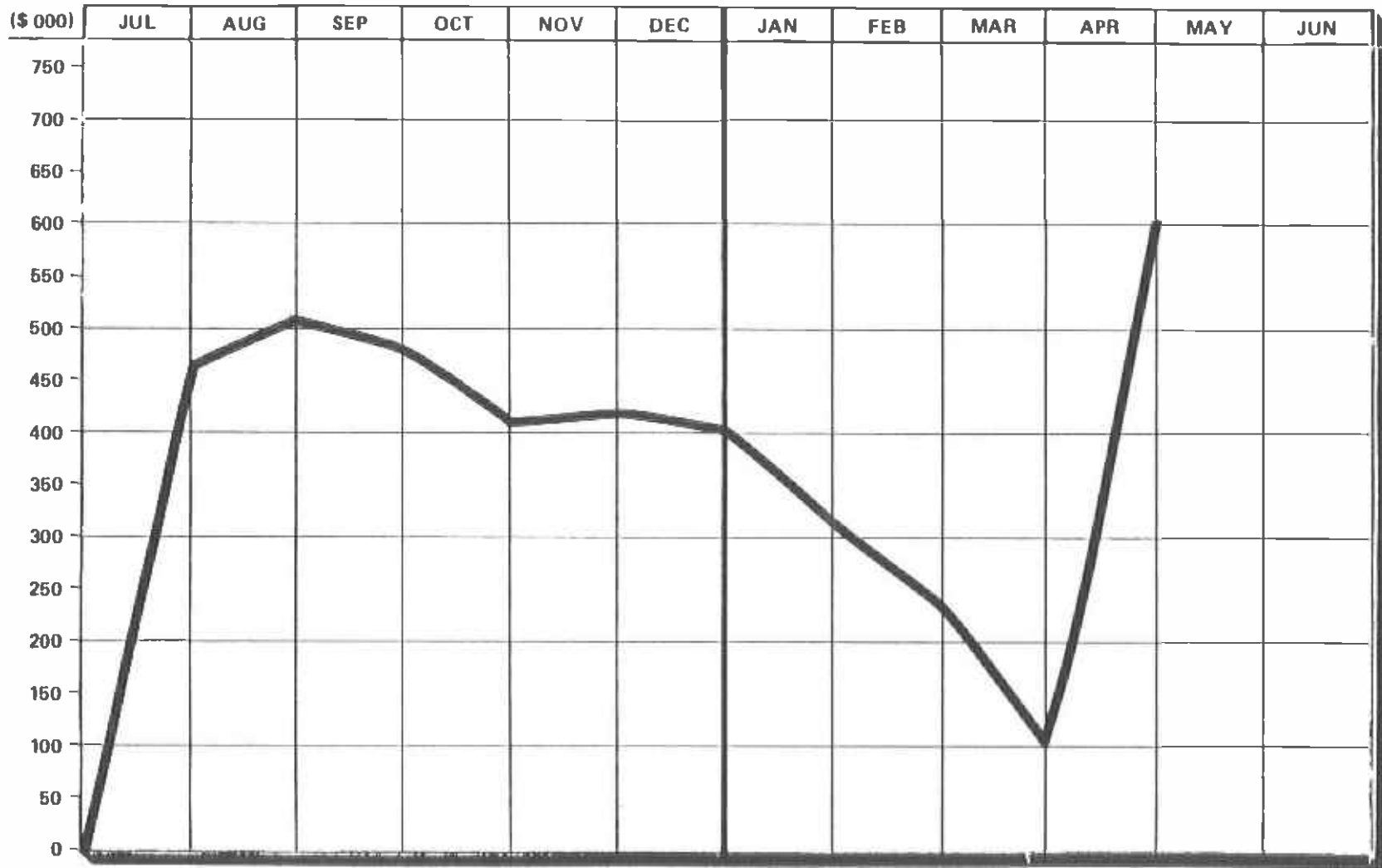
NUMBER OF CONTRACTOR EMPLOYEES <input checked="" type="checkbox"/> 500 AND UNDER <input type="checkbox"/> OVER 500	<input type="checkbox"/> OVER 500 <input type="checkbox"/> OVER 1,000	STATE INCORPORATED IN
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DATE June 13, 1985	SIGNATURE AND TITLE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR <i>R. W. Johnson</i> Chairman, Joint Venture Committee
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ITEM 16 - SUBCONTRACT INFORMATION

NAME & ADDRESS OF SUBCONTRACTOR(S)	SUBCONTRACTED WORK	SUBCONTRACT		
		TYPE	AMOUNT	HOURS
Better Personnel Employment Services 7837 Pacific Blvd., Ste. 10 Huntington Park, CA 90255	Secretarial Services	CPFF	87,683	6,908
Construction Control Services Corp. 5815 Uplander Way Culver City, CA 90230	Project Controls, Construction Management, Inspection	CPFF	286,053	5,652
Dames & Moore 445 So. Figueroa, Ste. 3500 Los Angeles, CA 9007	Geotechnical Engineering	CPFF	24,912	314
Engineering-Science, Inc. 125 W. Huntington Dr. Arcadia, CA 91006	Environmental Engineering	CPFF	61,439	1,256
Hayakawa Associates 1180 So. Beverly Dr. Los Angeles, CA 90035	Mechanical Engineering, Inspection	CPFF	65,946	1,256
Jacobs Associates 500 Sansome San Francisco, CA 94111	Construction Eng.-Tunnels, Cost Estng., Claims Control	CPFF	78,025	1,256
Jenkins, Gales & Martinez, Inc. 9841 Airport Blvd., Ste. 730 Los Angeles, CA 90045	Architecture, Inspection	CPFF	63,923	1,099
Martin & Huang International 1800 Wilshire Blvd., Ste. 300 Los Angeles, CA 90057	Civil/Structural Engineering, Inspection	CPFF	101,114	2,355
NPCC, Inc. CM 2665 Main St., Ste. 220 Santa Monica, CA 90405	Resident Engineering and Inspection	CPFF	43,520	942
Ochoa & Sillas 617 So. Olive Los Angeles, CA 90014	Legal Services-EEO, Claims	MH Rate	58,875	471
Randolph & Tate Associates 315 So. June St. Los Angeles, CA 90020	Arts Program Coordination/Inspection	CPFF	19,221	314
Vanir Construction Management, Inc. 660 J St., Ste. 295 Sacramento, CA 95814	EEO, Surveying, Construction Management	CPFF	55,909	1,256
	SUBTOTAL		946,620	23,079

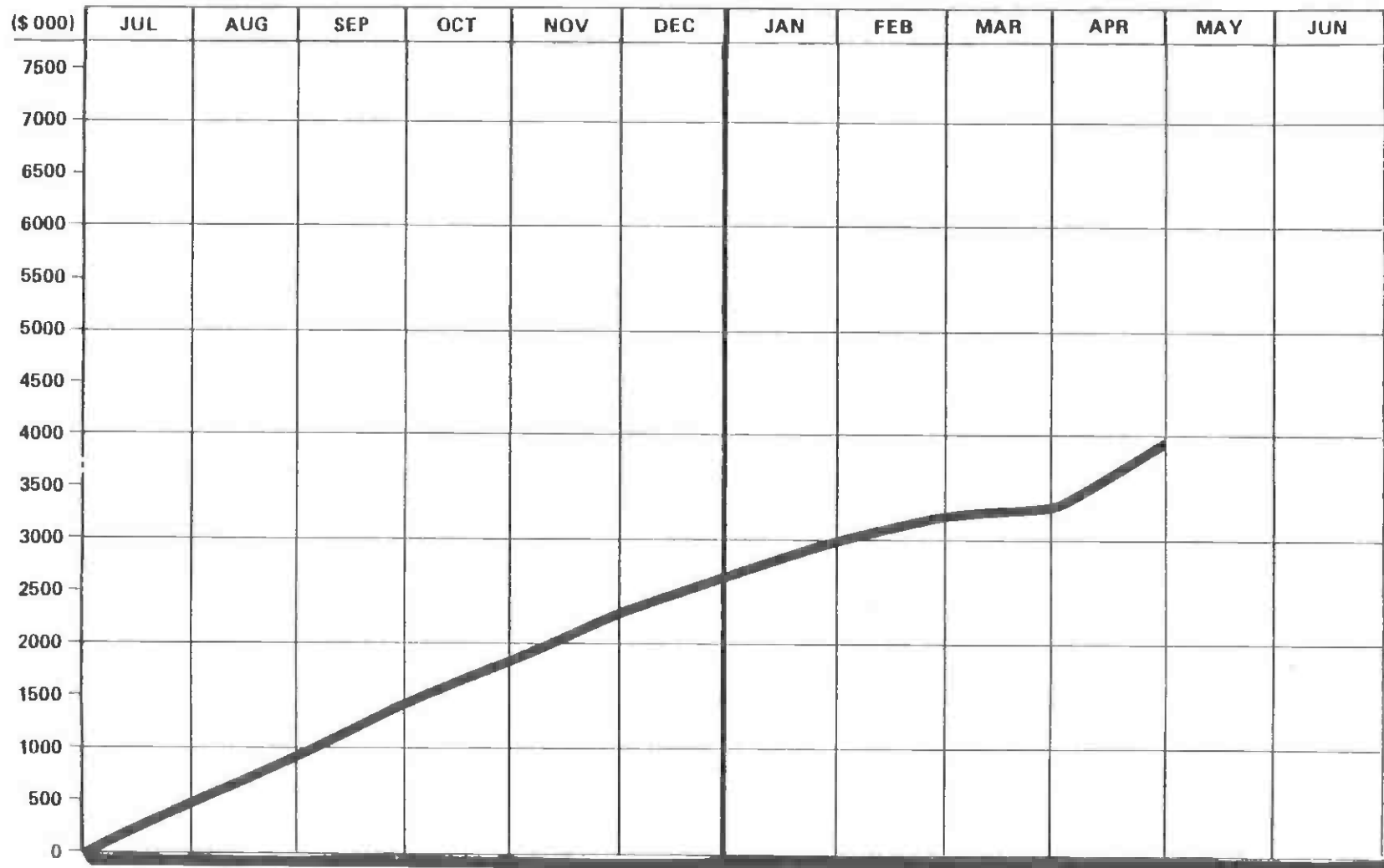
8-5



Monthly Cash Flow
Second Annual Work Plan for CM Services

FIGURE
8-1

9-8



Cumulative Cash Flow
Second Annual Work Plan for CM Services