Southern California Rapid Transit District
Metro Rail Project

General Consultant Services Contract
Annual Work Program
Supporting Data and Financial Planning Aid

APRIL 1983

Prepared by:

DMJM/PBQD/KE/HWA A Joint Venture
Metro Rail Transit Consultants

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

METRO RAIL PROJECT

GENERAL CONSULTANT SERVICES CONTRACT

ANNUAL WORK PROGRAM SUPPORTING DATA

&

FINANCIAL PLANNING AID

FOR

FISCAL PERIOD ENDING MARCH 31, 1984

DATED _____ , 1983

Prepared By DMJM/PBQD/KE/HWA--A Joint Venture

Metro Rail Transit Consultants

ANNUAL WORK PROGRAM

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PREFACE

The Project covers development of a rail rapid transit system for the Los Angeles urbanized area under direction of the District. As part of the 1976 Regional Transit Developent Program, the Metro Rail Project was planned to help solve the increasing transportation problems of Los Angeles' high density urban center. The Metro Rail Project, which is the initial segment, or Starter Line of the ultimate rapid transit network for the urbanized area, is a conventional heavey rail rapid transit system 18.6 miles in length with 16 stations serving the Central Business District, Wilshire Boulevard, Fairfax, Hollywood and North Hollywood areas. The main line alignment is to be entirely in subway configuratin. A route map with preliminary station locations is attached as Figure 1.

The Starter Line segments is currently in the initial Preliminary Engineering phase, first approved for implementation and funding by the U.S. Urban Mass Transportation Administration (UMTA) in June, 1980, as a $38.8 million program designed to achieve approximately 30 percent of the total design effort. Recognition of the overriding importance of the project to the Los Angeles area resulted in Congressional appropriations to the U.S. Department of Transportation in fiscal years 1982 and 1983 which added $51.6 million to the initial authorization for continued preliminary engineering to carry the Starter Line segment to between 50-85 percent design completion in order to obtain improved cost estimates and much better definition of the system. This uninterrupted design development will permit final design and construction to commence in calendar year 1984, subject to UMTA approval.

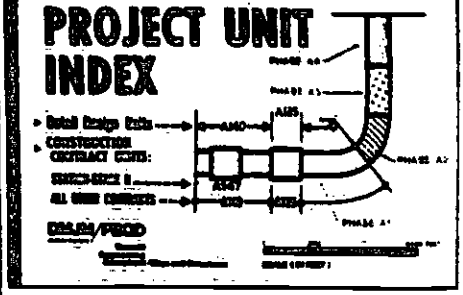
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

MARCH 1989

RTD

METRO RAIL PROJECT

PROJECT UNIT INDEX



NORTH HOLLYWOOD

UNIVERSAL CITY

LA BREA/SUNSET

HOLLYWOOD/CAHUENGA

FAIRFAX/SANTA MONICA

FAIRFAX/BEVERLY

WILSHIRE/FAIRFAX

WILSHIRE/LA BREA

WILSHIRE/WESTERN

WILSHIRE/VERMONT

WILSHIRE/NORMANDIE

WILSHIRE/ALVARADO

CENTRAL BUSINESS DISTRICT

INSET

UNION STATION

CIVIC CENTER

7TH/FLOWER

6TH/HILL

SEE INSET

I. INTRODUCTION

This document has been prepared, in accordance with provisions of Article III of the General Consulting Services Contract dated _____, 1983, between the Southern California Rapid Transit District and DMJM/PBQD/KE/HWA--Joint Venture, to provide detailed data on work descriptions, deliverables, milestone schedules, and manpower allocations which form the basis of the AWP Cost Estimates for the fiscal period ending March 31, 1984, as contained in Exhibit 'A' of the Contract. The document further serves as a financial planning aid for the District in its consideration of future funding requirements for the Metro Rail Project.

The meaning of abbreviations, acronyms and other terms contained in this document are as defined or described in the Contract.

II. SCOPE OF METRO RAIL PROJECT

The Metro Rail Project, which is the initial segment, or starter line of the ultimate rapid transit network for the urbanized area, is a conventional heavy rail rapid transit system 18.6 miles in length with 16 stations serving the Central Business District, Wilshire Boulevard, Fairfax, Hollywood and North Hollywood areas.

This Section contains a five-year forecast of the GC's estimated costs for project management, design, construction engineering and procurement management. Also contained in this Section (enclosed in the cover of the manual) is a graphic representation of the construction and procurement staging schedule for major elements of the Project.

	LINE ITEM	CUMULATIVE ESTIMATE TO 3/31/83	ESTIMATED FISCAL PERIOD ENDING 3/31/84	CUMULATIVE ESTIMATE TO 3/31/84	ESTIMATED FISCAL PERIOD ENDING 3/31/85	CUMULATIVE ESTIMATE TO 3/31/85	ESTIMATED FISCAL PERIOD ENDING 3/31/86	CUMULATIVE ESTIMATE TO 3/31/86	ESTIMATED FISCAL PERIOD ENDING 3/31/87	CUMULATIVE ESTIMATE TO 3/31/87	ESTIMATED FISCAL PERIOD ENDING 3/31/88	CUMULATIVE ESTIMATE TO 3/31/88
A	Program Management		$ 596,390									
B	Program Administration		1,360,000									
C	Support Services and Special Analyses		987,390									
D	Program Control		2,318,000									
E	Design Services		3,543,000									
F	Design Management		1,378,620									
G	System Integration		2,450,000									
H	Construction Related Services		223,560									
	Subtotal G. C. Services		12,855,000 [1]	TO BE DONE	TO BE DONE	TO BE DONE	TO BE DONE	TO BE DONE	TO BE DONE	TO BE DONE	TO BE DONE	TO BE DONE
I	Subcontracts: Continuing P.E.		17,100,000 [2]									
J	Special Consultants	3	1,000,000 [2]									
K	Final Design		–									
	Subtotal Subcontracts		18,100,000									
	Subtotal All Services		30,955,000									
L	Direct Reimbursable Expense		1,500,000									
M	Fixed Fee (10% of Labor and Overhead)		1,028,000									
N	Subcontract Fee (3% of Subcontracts)		620,130									
O	Administrative Fee (5% of L)		75,000									
	Total G. C. Cost & Fee		34,178,000									
P	Preliminary Engineering – GECs	3	3									
	Grand Total Program Cost	3	3									

[1] Assume 80% Joint Venture, 20% MBE/WBE subcontractors.

[2] Allowance – amounts to be determined. This amount represents estimated obligations, not necessarily expenditures.

[3] To be determined/revised at time of contract execution.

GENERAL CONSULTANTS ESTIMATED COSTS

III. ANNUAL WORK PROGRAM ELEMENTS

This section contains a description of each element of the AWP, including the description of work to be accomplished, the responsible Manager(s), input data required from the District and others, deliverables, schedules, and labor and budget requirements. The estimated costs of each element include labor, payroll additives and overhead.

The District has ultimate responsibility for project management and direction, and for relations with the funding agencies. As part of its function, the District's management and engineering personnel will contract the GC efforts and will give general policy direction regarding project management, design develoment, and related engineering functions of the project which are assigned to the GC.

ITEM : Project Management

RESPONSIBILITY: Project Director

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

The GC will provide the overall project management needed to plan, organize, direct, and coordinate the work to be performed in support of the Metro Rail Project, and specifically to supervise and control the efforts of the GC Members and to bring the existing Preliminary Engineering Program to a timely conclusion to allow a direct transition to continued Preliminary Engineering. This latter work to involve the consolidatation and integratation of certain current activities under the Metro Rail Project Preliminary Engineering program. This activity includes all work products and data required under the following contracts:

General Engineering Consultant - Ways and Structures
General Engineering Consultant - Subsystems
General Engineering Consultant
Selected Technical Services Consultants

Perform the technical and schedulor integration, review, coordination and finalization of all work products and deliverables identified in the above consultant contracts so as to fulfill the original and amended scopes of such contracts and to allow a timely and direct transition to the Continued Preliminary Engineering Program.

2. Description of Work

a. Management Board

Provides overall management of the activities assigned to the GC. Establishes policy, gives direction to GC Project Management in the conduct of GC activities, and acts on appropriate matters brought before it by the Project Director. Reviews and evaluates progress in achieving the objectives of the Project as set forth by the District. Marshall the resources of GC Members in response to Project needs.

b. Project Director and Deputy Project Director

Provide the day-to-day overall direction and management to the GC activities in carrying out services to the District in support of the Project. Reports to and communicates direction from the District Assistant General Manager on conduct of GC activities.

c. Implement Work Program

Implement the detailed Work Program of programmatic management functions and project control and administration; all technical management functions, such as design management, design and procurement management services; and the bridging or catalyst function of system integration.

d. Preliminary Engineering

Manage, direct, and coordinate the completion of selected existing technical work under contract to the District for the Metro Rail Project; bring these contract efforts to completion as quickly as possible.

Assist the District in bringing the on-going EIS effort to successful completion to support a timely application to DOT/UMTA for program funding.

3. End Product

a. See input requirements for Continuing Preliminary Design (following).

b. See Section V for Work Product Delivery Details.

B. INPUT DATA REQUIREMENT

1. Copies of all existing contracts District has with the general consultants and specialty consultants.

2. Copies of all technical reports prepared by the general and specialty consultants.

3. Copies of all progress reports submitted by the general and specialty consultants.

4. Copies of all criteria, standard and directive drawings, and all guide specification prepared for or by the general consultants.

5. Copies of all Milestone reports.

6. Copy of adopted horizontal alignment and profile of the Starter Line.

7. Copies of adoped locations and layouts of all fixed facilities; stations, lines, ventilation structures, pocket tracks, crossovers, yards and shops, substation, etc.

8. Copies of minutes of meetings that bear on design decisions.

C. SCHEDULE

The Project Management function will continue throughout the duration of the GC Contract.

All GC work on Preliminary Engineering will start immediately with Notice to Proceed and will continue to completion of the Preliminary Engineering, in mid-1983 (November 1983, Subsystems).

D. DISTRICT ACTION

District approvals where required are anticipated within 30 calendar days of submittal, unless indicated otherwise for specific actions, in order to expedite continuing work.

E. MANPOWER AND COSTS

1. Manpower

The estimated manpower for the first fiscal year is 59 man-months, distributed uniformly over the first fiscal period. Staff would include the Project Director, Deputy Project Director, a Special Assistant, and two Secretaries.

2. Costs

The estimated costs are $596,390.

ITEM : Project Administration

RESPONSIBILITY: Project Administration Manager

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

Provide the management and staff needed to plan, organize, direct, supervise, control, and coordinate the administrative aspects of the GC efforts, including contract and GC subcontract administration, affirmative action, office services, and publications/graphics support.

2. Description of Work

a. Contract and GC Subcontract Administration

Provide contract procurement and administration services for professional and general services, and, when requested, for equipment procurement. Includes the preparation of procurement packages, proposal requests, solicitations, review and evaluation of proposals. Schedule, coordinate and prepare manpower estimates for the negotiation of design fees. Coordinate pre-award meetings, prepare pre- and post-award documentation, and administer contracts and/or subcontracts after award through completion and closeout.

b. Affirmative Action

Coordinate, monitor, evaluate, enforce, and report on all matters of Equal Employment Opportunity (EEO), Minority Business Enterprise (MBE), and Women Business Enterprise (WBE) of the GC and its subcontractors in accordance with the objectives and goals set forth by the District. Assist the District in evaluating and implementing the EEO/MBE/WBE program and its compliance for the entire Metro Rail Project.

c. Office Services

Provide a wide range of centralized services to the GC organization in support of the Project including, but not limited to:

- o office space, furniture and equipment
- o purchasing and supplies
- o word processing
- o reproduction

- o receptionist
- o messenger service
- o mail and telecommunications
- o data processing
- o travel and relocation services
- o administrative policy development and administration

d. Publications/Graphics Support

Provide and coordinate editorial, graphics, and printing services needed to support publication of project reports.

e. Other Direct Costs

1. Office Expenses

   - o Materials and Supplies
   - o Communications and Shipping
   - o Equipment and Tools
   - o Insurance

2. Travel and Related Expenses

3. Personnel Costs

   - o Mobilization and Relocation
   - o Payroll and Special Taxes
   - o Recruiting

4. Computer Services

5. Models and Renderings

6. Legal Services

7. Miscellaneous

3. End Product

a. Project Management Plan
b. Affirmative Action Plan
c. Project Administration Procedures Manual
d. Office Management Manual
e. Quarterly Affirmative Action Reports

B. INPUT DATA REQUIREMENT

Not applicable.

C. DISTRICT ACTION

District approvals where required are anticipated needed within 30 calendar days of submittal, unless indicated otherwise for specific actions, in order to expedite continuing work.

D. SCHEDULE

The work involved in administration of the services will continue throughout the duration of the Contract.

Project Management Plan	- 8 weeks after NTP
Affirmative Action Plan	- 4 weeks after NTP
Project Administration Procedures Manual	- 12 weeks after NTP
Office Management Manual	- 12 weeks after NTP
Affirmative Action Reports	- Quarterly

Direct costs will be incurred throughout the duration of GC involvement.

E. MANPOWER AND COSTS

1. Manpower

The estimated manpower is 223 man-months.

2. Costs

The estimated costs are $1,384,830 for labor and are as shown below for other direct costs.

	1983
Office Expenses	$ 25,000
Travel and Related Expenses	260,000
Personnel Costs	800,000
Computer Services	20,000
Models and Renderings	20,000
Legal Services	10,000
Miscellaneous	25.000
Total	$1,160,000

ITEM : Project Control

RESPONSIBILITY: Project Control Manager

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

Provide Project Management with appropriate information and analyses of budget, schedule, and technical status to enable management to direct the project activities towards a timely and cost-effective conclusion in accordance with the District program control requirements, Project Master Schedule and contract budgets.

2. Description of Work

Provide estimates, schedules and cost reports; analyses and recommendations to address deviations from schedules and estimates and variances from budgets.

a. Cost Estimating

Provide design, construction procurement and installation contract cost estimates and recommended project budgets, current working estimates, escalation and construction cash flow analyses, estimates of claims and change orders, and budgets and budget forecasts. Prepare and maintain Cost Estimating Procedures Manual.

Prepare and/or review milestone estimates at conceptual, preliminary, in-process, pre-final design levels. Prepare engineer's estimate at the bid level. Develop and implement trend forecasting system and trend construction and procurement costs during the design process to monitor associated cost against control budget and recommend corrective action.

b. Planning, Scheduling and Cost Engineering

Provide assistance to the District in the District's development of a Project Master Schedule in the form of a Design Master Schedule, as Master Bar Chart Schedule and data input for the Master CPM Schedule. Prepare AWP's Progress Reports, Schedule and Budget Procedures Manuals, and special studies and reports. Prepare, coordinate and monitor work element assignments. Evaluate effects of changes in scope of work, delays, and other possible impacts and report exceptions. Develop and implement progress reporting system. Provide Periodic manpower and cost data reports.

Prepare and monitor detail design and construction schedules against control schedule, focusing on problem areas and recommending corrective actions.

Assist the District in the development of schedule and cost control systems and reporting requirements, select new systems and/or adopt and modify the existing software and hardware, and implement the overall project scheduling and cost control systems, including procedures and manuals. Review and refine current working estimate, as required.

Assist the District with the preparation of capital budgets, cost and financial planning and the grant applications.

3. End Product

a. Draft Annual Work Program
b. Schedules - CPM's and Bar Charts
c. Schedule Procedures Manual
d. Current Working Estimate Update
e. Cost Control Procedures Manual
f. Progress Reports
g. Special Reports

B. INPUT DATA REQUIREMENTS

1. Initial Requirements

a. District Cost Estimate
b. District Schedule
c. District Estimating
d. Contract/Subcontract Estimated Costs and Schedules
e. District Current Status Report

2. Continuing Requirements

a. Monthly contract/subcontract progress reports
b. Cost estimate changes
c. Procurement and construction schedule changes

C. DISTRICT ACTION

District approvals where required are anticipated 3 within 30 calendar days of submittal, unless indicated otherwise for specific actions, in order to expedite continuing work.

D. The work included in program control will continue throughout the duration of the Contract.

Draft Anual Work Program	90 days prior to close of fiscal period
Data input to District's Master CPM Schedule	16 weeks after NTP
Design Package Bar Chart Schedules	3 weeks after subcontract award

Schedule Procedures Manual	12 weeks after NTP
Estimating Procedures Manual	16 weeks after NTP
CWE Update	12 weeks after NTP
Progress Reports	Monthly
Special Reports	As required

E. MANPOWER AND COSTS

1. Manpower

The estimated manpower is 159 man-months.

2. Costs

The estimated costs are $987,390.

ITEM : Facilities Design

RESPONSIBILITY: Facilities Design Manager

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

The final development, refinement and maintenance of facilities design criteria, standard specifications, and standard and directive drawings produced during the Preliminary Engineering phase of the Metro Rail Project. During the Continuing Preliminary Engineering work, perform design reviews of milestone submittals and conduct value engineering analyses of submitted designs. Provide support to the District for rights-of-way acquisitions, relocation requirements and agency agreements. Develop technical procedures for GC Subcontractor in-house use. Prepare drawings and specifications to an approximately 50% completion level for various facility systemwide items.

2. Description of Work

a. Preliminary Engineering Phase

(1) Review, confirm, consolidate and publish those facilities design criteria produced during the Preliminary Engineering Phase which cover all disciplines involved in the Continuing Preliminary Engineering Work.

(2) Review, refine and update standard specifications for the materials and performance activities pertaining to the construction of the line segments, stations, yards and shops of the Metro Rail Project.

(3) Review, confirm, coordinate and print the standard and directive drawings produced during the Preliminary Engineering Phase which are relevant for use by the GC Subcontractor firms and equipment suppliers in the preparation of their project drawings. Produce additional standard and directive drawings deemed useful.

(4) Review, confirm, consolidate and publish the criteria for project drawings.

(5) Manage, coordinate, review and integrate the on-going work of the selected special consultants, identify any overlaps or mismatches and make recommendations to the District for revision to their scopes of services. Review the specific recommendations made by these consultants and determine that necessary decisions and policy inputs are made.

b. Continuing Preliminary Engineering Phase

(1) Update the design criteria, guide specifications, standard and directive drawings, and the drafting criteria as continued GC in-house reviews and feedback from GC Subcontractors and equipment suppliers might suggest.

(2) Perform design reviews of the prescribed Milestone submittals from Subcontractors and supplier firms of their project drawings, specifications and calculations. Review items of concern will be: conformance to established criteria; resolution of conflicts; verification of levels of completion; clarity of presentation; coordination between drawings and specifications and also among disciplines; acceptable architectural and engineering details; constructability; cost implications; good architectural and engineering judgement.

(3) Conduct value engineering analyses of the proposed designs and specification provisions on a continuing basis, using comparisons among Subcontractor and supplier submittals, expert and industry advice, and GC in-house experience.

(4) Assist District staff in right-of-way acquisition by establishing uniform procedures whereby design entities may certify right-of-way requirements, including definition of the type of space occupancy desired and any apparent necessary relocations.

(5) Support the District in its property acquisition and relocation activities, including preparation of parcel descriptions, court exhibits and other materials and services which may be required for condemnation proceedings.

(6) Support the District, as required, in its evaluation of Joint Development opportunities, and in its negotiations with potential developers.

(7) Identify the needs for agreements between the District and other public and quasi-public agencies by which changes to the existing structures and facilities of others may be accomplished, as required for the construction of Starter Line facilities.

(8) Provide technical support to the District in the preparation of master agreements between the District and major City, railroad and utility entities, establishing the general terms of cost expenditure for design and relocation or reconstruction, treatment of betterments, credit for salvage, provisions for service interruptions and other related matters.

(9) Draft site-specific criteria and specifications for agreements for revision, relocation, reconstruction, restoration and abandonment of existing City, railroad and utility structures and facilities; define the apparent relocation requirements.

(10) Provide technical support to the District in its negotiation of master agreements and site-specific agreements.

(11) Develop technical procedures for guidance of the subcontractor and supplier firms toward their milestone submittals and for in-house use for the review process of subcontractor and supplier submittals.

(12) Prepare, to approximately the 50% design completion point, drawings and specifications for systemwide facility items including trackwork procurement, trackwork installation, graphics and signing, ventilation facilities, the central control facility, station attendants' booths, escalators and elevators, and other miscellaneous systemwide items. (Completion percentage will vary by contract package.)

(13) Support Services and Special Analysis

The continuing development of the Metro Rail Project by the District will require additional support services beyond beyond those required in this AWP, and may, in addition, require analyses of special problems or design concepts. Such services shall be provided by the GC through the GC Members or GC Subcontractors.

Support services and special analyses will be provided by the GC and GC Subcontractors as and when requirements are identified and approved by the District. It is anticipated that there would be a certain number of requests throughout the duration of the Contract.

(14) Special Consultants and Other Technical Services

Provide specialized services through the use of subconsultants.

The GC during the course of the project period will secure the services of special consultants as GC Subcontractors subject to need and approval by the District. The following list of services is anticipated at this time; however, additional services may be required during the Project period:

(a) Soils and Subsurface Investigation
(b) Noise and Vibration
(c) Surveying, including Photogrammatic Manuscripts

(d) Corrosion Control
(e) Existing Building Foundation Surveys
(f) Underground Support System
(g) Fare Collection
(h) Underground Gas Survey

These services are in addition to those that will be provided by the GC Subcontractors for station and line sections and the yard and shop.

3. End Product

Update and maintain:

a. Design criteria for civil, structural, architectural, mechanical, electrical, yards and shops, trackwork, and systemwide elements.

b. Standard guide specifications for all areas of work included in the construction of facilities and manufacture of equipment for the Metro Rail Project.

c. Standard and directive drawings pertinent to the Project facilities and stations construction.

d. Criteria for preparation of project facilities and stations drawings complete for use for the Metro Rail Project in its entirety.

Develop and maintain:

e. Inputs to master and site-specific agreements with all affected City, railroad and utility entities.

f. Procedures for right-of-way certification, parcel maps and descriptions, exhibits.

g. Technical procedures for design review, including standard forms for review comments and action responses.

Drawings and specifications for facilities systemwide items at approximately a 50% completion point (will vary according to specific contract package).

B. INPUT DATA REQUIREMENTS

1. Initial Requirements

a. All existing Metro Rail Project design criteria.
b. Existing standard specifications for the project.
c. All prepared standard and directive drawings.
d. Existing criteria for project drawings.

2. Intermediate Requirements

a. Requirements for right-of-way certification

b. Definitions of relocation and reconstruction of existing facilities.

C. DISTRICT ACTION

District approvals where required are anticipated within 30 calendar days of submittal, unless indicated otherwise for specific actions, in order to expedite continuing work.

D. SCHEDULE

1.	Complete review and publish design criteria.	8 weeks after NTP
2.	Prepare list of available standard and directive drawings.	8 weeks after NTP
3.	Complete review and publish criteria for program drawings.	8 weeks after NTP
4.	Issue initial draft of technical procedures.	8 weeks after NTP
5.	Print and issue set of standard and directive drawings.	16 weeks after NTP
6.	Issue final copy of technical procedures.	16 weeks after NTP
7.	Update criteria, specifications and drawings.	Continuous
8.	Perform design reviews of milestone submittals.	Continuous
9.	Conduct value engineering analyses.	Continuous
10.	Right-of-way acquisition activities.	Continuous
11.	Preparation of master and site-specific agreements.	Continuous
12.	Fifty percent design completion documents for systemwide facilities items.	Various

E. MANPOWER AND COSTS

1. Manpower - GC Activities

The estimated manpower is ___ man-months.

2. Costs - GC Activities

The estimated costs are $_____ .

3. Manpower - Support Services and Special Analysis

The allowance is _____ man-months.

4. Costs - Support Services and Special Analysis

The estimated costs are $ _____ .

5. Manpower - Special Consultants and Other Technical Services

The efforts related to management, coordination and integration of the special consultants is provided elsewhere in the GC function.

6. Costs - Special Consultants and Other Technical Services

The costs of the GC work are included in other elements. Subcontract costs cannot be accurately determined at this time.

ITEM : Facilities Design Management (Subcontracts)

RESPONSIBILITY: Facilities Design Management Manager and Design Subcontractors

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

The intent of the Continuing Preliminary Design program is to further develop engineering design of all system elements. This work will be administered under subcontract to the GC, or will be performed by the GC, and will be developed in two phases. The Continuing Design program is intended to transition into Final Design following adoption of the EIS by UMTA. Work products and data generated in Preliminary Engineering will be refined, updated and incorporated in design packages by the GC for use by design subcontractors.

Phase I of this work will be to develop engineering to a level of 85% completion for the following project elements:

- o Central Yards and Maintenance Shops
- o Union Station
- o Civic Center and 5th/Hill Stations, including Tunnel to 7th/Flower Station
- o 7th/Flower Station
- o Tunnel from 7th/Flower to Wilshire/Vermont, including Wilshire/Alvarado Station
- o Wilshire/Vermont Station

Phase II of the work will be to develop engineering to a level of 50% completion for the following project elements:

- o Tunnel between Wilshire/Vermont Station to Wilshire/LaBrea Staion, including stations at Wilshire/Normandie and Wilshire/Western
- o Wilshire/LaBrea Station and Pocket Track
- o Tunnel between Wilshire/LaBrea Station and Fairfax/Beverly Station, including the Wilshire/Fairfax Station
- o Fairfax/Beverly Station

- o Hollywood/Cahuenga Station
- o Tunnel between Hollywood/Cahuenga Station and Universal City Station
- o Universal City Station
- o Tunnel between Universal City Station and North Hollywood Station
- o North Hollywood Station and End Line Storage Track

Acting through Project Managers assigned to one or more design packages, provide technical management of design packages to achieve uniform designs and maintain design quality; and provide cost and schedule control.

2. Detailed Description of Work

a. Continuing Preliminary Design - Phase I Stations and Tunnels

1. Direct development of technical work scopes and schedules and design budgets for work to be performed by Subcontractors.
2. Conduct Subcontract negotiations with District participation.
3. Issue Notice to Proceed letters and final directives to the selected Subcontractors.
4. Provide Subcontractors firm with all necessary criteria, standard specifications, drawings, maps, building data, etc., required as input documents.
5. Establish precise lines of authority, responsibility and communications, and monitor adherence.
6. Direct and monitor Subcontractors' work efforts with regard to conformance with established criteria and latest directives.
7. Provide awareness of, and assist in, the resolution of interface problems with abutting facilities design contracts and with systemwide contracts.
8. Ensure that all questions and requests for data posed by the Subcontractors are promptly addressed and responded to by channeling inquiries to the proper parties for expeditious responses.

9. Ensure that timely and accurate direction in regard to latest policy and criteria matters is given to the Subcontractors.

10. Define submittals and end products for Subcontractors' efforts. Measure milestone submittals against expected levels of progress.

11. Direct Subcontractors to conform to review comments deemed necessary by the Design Services Manager.

12. Evaluate completeness of Subcontractors' efforts on a monthly basis for progress payments.

13. Monitor and control the design cost and progress of each Subcontractor versus his budget and schedule.

14. Identify problems in design work progress and assist design team in relieving problem areas.

15. Control construction cost estimates at the various milestone completions versus targets established for each design contract.

16. Ensure that milestone submittals when received are properly logged and distributed for multidisciplinary review.

17. Coordinate review comments, resolve conflicts in comments in conjunction with Facilities Design Services Manager, forward comments to Subcontractor, and receive action responses from Subcontractor.

18. Schedule meetings, as necessary, to clarify issues and to resolve points of apparent disagreement between Subcontractors and reviewers.

19. Arrange and coordinate meetings between Subcontractors, City departments, railroad operators, utility agencies and building owners, as required to resolve design items affecting facilities and services of the respective interests.

20. Subcontractors shall provide:

    (a) Project Management: Provide overall management of design; prepare final design and construction schedule, attend meetings with other Consultants, SCRTD, and community; report on task status.

(b) Design Development to Approximately 85% Completion: Complete reviews of soils and survey information; complete rights-of-way, utility relocation, and street relocation drawings; prepare construction documents to 85% completion for civil, structural, architectural, mechanical, electrical, and landscape elements; prepare detailed quantity take-offs and cost estimates of construction; prepare draft of Final Design Report.

b. Continuing Preliminary Design - Phase II Stations and Tunnels

1. Items 1 through 19 in a. above

2. Subcontractors shall provide:

(a) Project Management: Provide overall management of design; prepare preliminary design and construction schedules, attend meetings with other Consultants, SCRTD, and community, report on task status.

(b) Design Development to 50% Approximately Completion: Prepare Design Development documents, including landscaping, architectural, structural, civil, mechanical and electrical drawings. Prepare detailed outline specifications, including a format for performance specifications. Develop preliminary quantity take-offs and preliminary constructin and cost estimates. Prepare Design Development Report.

c. Continuing Preliminary Design of Main Yard and Shops to Approximiately 85% Completion

1. Items 1 through 19 in a. above

2. Subcontractor to provide:

(a) Civil Design: Preparation of contract drawings and specifications for the project showing general topography and property lines, survey control, track alignment, all site work, limits of work by others.

(b) Utility Design: Preparation of construction contract documents, a detailed utility plan investigating existing utilities, composite and detailed rearrangement plans, and a site drainage design.

(c) Rights-of-Way: Preparation of documents delineating temporary and permanent rights of way with recommendation on constructn easements affecting rights-of-way.

(d) Building design: Preparation of construction contract documents for all new structures, including landscaping, architectural, structural, mechanical and electrical systems. Provide detailed quantity take-off and cost estimates as well as appropriate engineering calculations.

3. End Product

Phase I and II - Stations, Tunnels, Maintenance Yard and Shops

a. Negotiated subcontract packages

b. Subject to negotiation timing and actual starting dates for subcontracts, work products on contracts will include, as applicable:

1. Drawings and specifications showing development of project elements at 40-50% completion level (85% or pre-final review for Phase I elements, including yards and shops)

2. Preliminary and pre-final design computations and engineering calculations, as applicable
3. Preliminary and pre-final Quantity Take-offs, as applicable
4. Revised Construction Cost Estimates

B. INPUT DATA REQUIREMENTS

These data requirements are derived from the products of Preliminary Engineering.

1. Continuing Preliminary Engineering Stations, Tunnels

a. Definitive Design Criteria and information

b. Criteria for drawings and construction/procurement contract specificaions

c. Standard drawings, standard specifications

d. Track alignment data

e. Survey and soils information

f. Construciton budgets

2. Continuing Preliminary Engineering Main Yards and Shops

a. Project preliminary draw

b. System Design Criteria

c. Standard Specificatins

d. Criteria for Development of Project Manuals

e. Standard sheets for drawing

f. Contract drawings of primary control network (Survey incrementation)

g. Topographic maps

h. Utility maps

i. Property maps

j. Computer programs, if any, for track alignment

k. Contract specifications

l. Data on proposed future site developments

m. Soils and geotechnical reports

C. SCHEDULE

Overall	Date (Per SCRTD Schedule)
1. Mobilization of Phase I Consultants	June-July, 1983
2. Begin work on Phase I contracts	June 20, 1983
3. Mobilication of Phase II Consultants	July-August, 1983
4. Begin work on Phase II contracts	August 8, 1983
5. Begin initial design review of Phase I & II contracts	Fall, 1983
6. Design durations	See Section V for detail.

GC Activities - Phase I Contracts and Yard and Shops

	Initial Contract*
Review selected subcontractor responses	2 weeks after NTP
Define design packages.	6 weeks after NTP
Participate in Subcontractor selection.	16 weeks after NTP
Develop work scopes, schedules, costs.	13 weeks after NTP
Participate in contract negotiations.	18 weeks after NTP
Issue Notices to Proceed and Directives to Subcontractors.	19 weeks after NTP
Provide input documents to Subcontractors.	13 weeks after NTP
Direct and monitor Subcontractors' work.	Continuous
Process milestone submittals and comments.	Continuous
Monitor costs and progress of design.	Continuous
Arrange and coordinate meetings to resolve design impacts on outside entities.	Continuous

* Activities will be staggered for each contract package.

GC Activities - Phase II Contracts

All above activities will be reported approximately 8 to 12 weeks

D. DISTRICT ACTION

District approvals where required are anticipated within 30 days of submittal, unless indicated otherwise for specifications, in order to expedite continuing work.

E. MANPOWER AND COSTS

1. Manpower - GC Activities

The estimated manpower is ___ man-months.

2. Costs - GC Activities

The estimated costs are _____.

3. Manpower - Subcontractors

Actual subcontractor manpower requirements cannot be ascertained at this time, because actual design contracts have yet to be negotiated. Accurate counts of actual manpower requirements on a contract-by-contract basis will be determinable in August or September of 1983.

4. Costs - Subcontractors

Because design contractors have not been engaged, costs of individual contracts, which are subject to negotiation and variance due to varying manpower costs, cannot be accurately determined at this time.

ITEM : System Integration

RESPONSIBILITY: System Integration Manager

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

The System Integration function to be performed is accomplished through four separate, but related, areas of activities. These areas are:

a. System Safety, Security & Assurance
b. Interface Management
c. Configuration Control
d. Operations & Maintenan e Planning

These four areas, in conjunction with each other, serve the functions of:

a. Establishment of design criteria and plans which serve as the basis for designs.

b. Control of the design process and documentation thereof.

c. Determination of compliance to design criteria.

The work must proceed throughout all project phases beginning immediately and continuing through final design and test and acceptance phases.

2. Description of Work

The work to be performed by the System Integration functions are listed below, grouped in the four major areas discussed above. They are:

a. System Safety, Security & Assurance

1. Refine project plans.
2. Refine systemwide design criteria.
3. Participation in the Fire/Life Safety Committee.
4. Perform analysis and evaluations of designs.
5. Conduct quality audits on the design process to determine whether procedures are being followed.
6. Perform special studies as required.

b. Interface Management

1. Support Identification of physical and functional interfaces.
2. Refine procedures for control of interface.
3. Refine procedures for design review process.
4. Monitor interface development.
5. Participate in/organize design reviews.
6. Establish integrated testing programs/concept.

c. Configuration Control

1. Refine procedures for configuration control.
2. Operate control process for designs, drawings and documents.
3. Manage change control process.
4. Establish and maintain library for criteria, reports, policy directives and designs.

d. Operations & Maintenance Planning

1. Refine operations plans.
2. Refine maintenance plans.
3. Perform train performance analysis.
4. Refine staffing levels.
5. Support update of & M cost projections.
6. Develop training interfaces.
7. Develop MIS for Maintenance (requirements and concepts)

3. End Products & Schedules

The end products for this work are shown below.

a. Safety, Security and Assurance

1. Refine Plans for Safety, Fire/Life Safety, Security and Assurance — 6 weeks after NTP

2. Refine systemwide design criteria

Fire/Life Safety	8 weeks after NTP
Safety, Security and Assurance	14 weeks after NTP

b. Interface Management

1. Refine Management Procedures	8 weeks after NTP
2. Refine for Design Reviews	12 weeks after NTP

c. Configuration Control

1. Refine Configuration Control Procedures	(initial)	6 weeks after NTP
	(final)	34 weeks after NTP

d. Operation and Maintenance Planning (Refinement)

1.	Systems Operating Plan	14 weeks after NTP
2.	O & M Cost Projections	14 weeks after NTP
3.	Systems Maintenance Plan	46 weeks after NTP

As can be observed from the above list, the initial effort is devoted to preparation and release of the key plans and procedures. The actual implementation of these plans and procedures begins concurrently during this period and continues throughout design.

B. INPUT DATA REQUIREMENTS

Most of the end product deliverable items identified herein have been previously programmed for completion under existing contracts. These plans and/or procedures, in their current stage of completion, should be assumed by the System Integration function and, after appropriate review and modification, completed and implementation begun. Assistance is required from the RTD staff in this transition process.

No other specific inputs are required of RTD staff, or the GC. Routine participation in the execution of the described tasks is anticipated.

C. DISTRICT ACTION

District approvals where required are anticipated within 30 calendar days of submittal, unless indicated otherwise for specific actions, in order to expedite continuing work.

D. SCHEDULE - General

The major portions of the System Integration function must be started immediately, limited only by mobilization constraints. The schedule for delivery of end products are discussed in Section A above.

E. MANPOWER & COSTS

1. Manpower

The estimated manpower (including any specialty consultants) is 222 man-months.

2. Costs

The estimated costs are $1,378,620.

ITEM :Systems Design

RESPONSIBILITY:Systems Design Manager

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

The final development, refinement and maintenance of systems design criteria produced during the Preliminary Engineering phase produced of the Metro Rail Project. During the continued Preliminary Engineering work, prepare drawings and specificaions for passenger vehicle, train control, communications, ventilation, and traction power equipment elements to approximately the 85% design completion point (will vary by contract). Prepare drawings and specifications for auxiliary power, fare collection, auxiliary vehicles, and mechanical/electrical equipment elements to approximately the 50% design completion point (will vary by contract).

2. Description of Work

a. Preliminary Engineering Phase

(1) Review, confirm, consolidate and publish those systems design criteria developed in the Preliminary Engineering Work.

(2) Review, refine and update system element descriptions and functional requirements for systems elements including passenger vehicles, train control, communications, traction power, fare collection, auxiliary vehicles, and auxiliary power and other items.

(3) Manage, coordinate, review, and integrate the on-going work of selected special consultants. Review specific scopes of services of these consultants, identify any overlaps or mismatches and make recommendatins to the District for revision to their scopes of services. Review the specific recommendatons made by these consultants and determine that neccessary decisions and policy inputs made.

b. Continuing Preliminary Engineering Phase

(1) Prepare drawings and specifications to the approximately 85% completion point (will vay by contract) for priorty system elements.

The design will be developed to approximately the 85% point on the following systemwide elements considered critical to projected shcedule accomplishment:

Passenger Vehicles
Train Control Subsystem
Communication Subsystem
Ventilation Equipment
Traction Power

The approximate 85% point will be represented by the development of procurement contract specifications for these elements to the Pre-Final stage. To accomplish this, the following tasks will be performed:

Completion of Updated Design Criteria
Development of Functional/Performance requirements
Identification of Interfaces with Other System Elements and Control
Preparation of Complete System Descriptions
Performance of Design Reviews
Provide Detailed Cost Estimates
Generate Contract Specification Documents
Conduct Industry Review

(2) Prepare drawings and specifications to the approximately 50% completion point (will vary by contract) for other system elements

The design will be completed to the approximate %50 point on the following systemwide elements which are not currently considered critical to meeting project schedules:

Fare Collection
Auxiliary Vehicles
Maintenance Equipment
Escalators/Elevators
Graphics
Lighting
Attendant's Booth

The 50% point will be represented by system description and functional/performance requirements. To accomplish this, the following tasks will be performed:

Completion of Updated Design Criteria
Development of Functional/Performance Requirements

Identification and Control of Interfaces with Other System Elements
Completion of System Descriptions
Performance of Design Reviews
Provide Updated Cost Estimates

(3) Support Services and Special Analysis

The continuing development of the Metro Rail Project by the District will require additional support services beyond those provided in this AWP, and may, in addition, require analyses of special problems or design concepts. Such sevices shall be provided by the GC through the GC Members or GC Subcontractors.

Support services and special analyses will be provided by the GC and GC Subcontractors as and when requirements are identified and approved by the District. It is anticipated that there would be a certain number of requests throughout the duratinof the Contract.

(4) Special Consultants and Other Technical Services

Provide specialized services through the procurement of subconsultants.

The GC during the course of the project period will secure the services of special consultants as GC Subcontractors subject to need and approval by the District. the following list of services is anticipated at this time; however, additional services may be required during the Project period:

Noise and Vibration
Corrosion Control
Fare Collection

These services are in addition to those that will be provided by the GC Subcontractors for stations and line sections, and the yard and shop.

(3) End Products

a. Refined systems design interior.
b. Priority Systems Elements

Work Products will include:

1. Design data at 50% point for intermediate design review purposes, including drawings and calculations

2. Draft contract specification documents (85%)*
3. Updated cost estimates
4. Results of industry review process

* Will vary by contract

c. Other Systems Elements

1. Complete system descriptions for design development point review purposes, including drawings and calculations (50%)*
2. Updated cost estimates

* Will vary by contract

B. INPUT DATA REQUIREMENTS

1. All existing Metro Rail Project systems design criteria, description and functional requirements

C. DISTRICT ACTION

District approvals where required are anticipated within 30 calendar days of submittal, unless indicated otherwise for specific actions, in order to expedite continuing work.

D. SCHEDULE

See Section V for specific requirements

E. MANPOWER AND COSTS

1. Manpower - GC Activities

The estimated manpower is _____ man-months.

2. Costs - GC Activities

The estimated costs ar $_____.

3. Manpower - Support Services and Special Analysis

The allowance is _____ man-months.

4. Costs - Support Services and Special Analysis

The estimated costs ar $_____.

5. Manpower - Special Consultants and Other Technical Services

The eforts related to management, coordination and integration of the special consultants is provided elsewhere in the GC function.

6. Costs - Special Consultants and Other Technical Services

The costs of the GC work are included in other elements. Subcontract costs cannot be accurately determined at this time.

ITEM : Construction and Procurement Engineering and Coordination and Coordination Services

RESPONSIBILITY: Construction Services Manager

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

The construction and procurement engineering and coordination necessary to plan and prepare contract packages, determine cost reasonableness and schedule compatibility, analyze equipment and material needs, identify cost effective procurement methods, and otherwise achieve all possible economies in construction, procurement and installation contracts. The required assistance to the District during the contract bidding and award period in providing information to bidders, analyzing bids, and recommending awards, coordination with the District's Construction Manager in evaluating design change proposals due to changed conditions and other design participation during construction. Management of the systems procurement activities.

2. Description of Work

Provide construction planning and engineering support for the following items:

a. Review plans and specifications as they are being developed, and advise on the selection and availability of materials and available of labor, time requirements for installation and construction costs.

b. Recommend for purchase by the District and expedite delivery of long-lead-time procurement of machinery, equipment, materials, and supplies needed for the project for delivery compatible with requirements. Make recommendations to the District for transfer of such items to contractors and installers where applicable.

c. Assist in development of construction contract packages taking into consideration such factors as the type and scope of work to be performed, time of performance, availability of labor and material, community relations and other pertinent criteria. Identify cost-effective opportunities for design/construct, design/fabricate/install, and joint or follow-up procurement of materials, equipment, and subsystems.

d. Review plans and specifications (1) for proper interfacing among contracts, (2) to avoid overlapping jurisdictions which would produce conflicts between contractors, and (3) to assign all phases of the work to the proper construction contract.

e. Review specifications to determine that they contain (1) provisions for the temporary facilities necessary to enable a contractor to perform his work, and (2) provisions for all of the jobsite facilities necessary to enable the construction management personnel to perform their duties.

f. Assist the District in the conduct of pre-bid conferences to inform prospective contractors of requirements, and assist the District in the evaluation of the capability and professional competence of prospective construction and procurement contractors, conduct bid meetings, review abstracts and tabulation of bids received and make recommendations for award to the District.

g. Provide assistance in the analysis of Value Engineering proposals.

h. Coordinate and cooperate with the District's Construction Manager to evaluate proposed design changes necessitated by conditions revealed during construction and other requirements for design office participation during constuction. Arrange for and process all design changes to the plans and specificatins. Arrange for and coordinate the on-site visits by and assistance of the GC Design Engineers whenever required or requested by the District or the Construction Manager.

i. Provide a staff for the management and inspection of systems procurements, including furnish, fabricate and install procurements for system-wide elements of the Project. Subject to District authorization and direction, perform, or cause to be performed through subcontract, any or all of the following Services:

- Conduct pre-procurement conferences with successful bidders

- Review manufacturer's activities schedules to provide effective management review and control of progress

- Review and approve manufacturer's quality assurance and workmanship standards programs, and monitor manufacturer's compliance with approved programs

- Identify and make recommendations to the District regarding any pending labor or materials shortages, and/or labor relations problems

- Interpret technical documents for manufacturers

- Perform first article inspections, required test monitoring and inspection, and release for shipment inspections

- Monitor equipment acceptance tests and on-site subsystem verification tests

- Monitor Contractor compliance with Contract requirements

- Submit findings and recommendains for corrective action on problem areas, including variances from cost and schedule forecasts

- Notify District of any potential changes to the work and/or claims from manufacturers

- Receive, evaluate and recommend to the District disposition of requests for Change Orders

- Prepare and issue Change Notices directing changes to the work in accordance with District-approved policies and prodecures

- Review and certify monthly invoices submitted by manufacturers performing work on the Project

- Maintain overall cost records for each contract, including such documentation as District may require

- Develop and implement District-approved contract acceptance procedures, including provisions for correction of deficiencies

3. End Product and Schedules

   a. Supplementry conditions to the contract document specifying notices to proceed and times of completion.

   b. Special analyses and reports of specialized construction procedures as and when requested.

   c. Construction and procurement packaging study.

   d. Construciton industry study and contract placement strategy.

B. INPUT DATA REQUIREMENTS

1. Initial Requirements

   a. Definition of design, construcion and procurement packages.
   b. Project Manager Schedules.
   c. Control budgets for various contracts.

2. Intermediate Requirements

   a. Design submittals (at various design stages)

C. DISTRICT ACTION

District approvals where required are anticipated within 30 calendar days of submittal, unless indicated otherwise for specification, in order to expedite continuing work.

D. SCHEDULES - General

The schedule for delivery of end products is discussed in Section A above. There will be a level of efforts, related to input to design, consistent with the design development.

E. MANPOWER AND COSTS

1. Manpower

The estimated manpower is 36 man-months.

2. Costs

The estimated costs are $223,560.

ITEM : Preliminary Engineering

RESPONSIBILITY: General

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

Consolidate and integrate all current activity under the Metro Rail Project Preliminary Engineering program. This activity includes all work products and data required under the following contracts:

General Engineering Consultant - Ways and Structures
General Engineering Consultant - Subsystems
General Architectural Consultant

Assume management of all technical services contracts currently in force with the District. Establish and implement the GC function of overall coordination and management of the project. Develop and put in effect all necessary technical and programmatic procedures for the coordination and management of the completion of the Preliminary Engineering program.

2. Description of Work

a. Implement the detailed Work Program of programmatic management functions and project control and administration; all technical management functions, such as design management, design and procurement management services; and the bridging or catalyst function of system integration.

b. Manage, direct, and coordinate the completion of all existing technical work under contract to the District for the Metro Rail Project; bring these contract efforts to completion as quickly as possible.

c. Assist the District in bringing the on-going EIS effort to successful completion to support a timely application to DOT/UMTA for program funding.

3. End Product

a. See input requirements for Continuing Preliminary Design (following).

b. See Section V for Work Product Delivery Details.

B. INPUT DATA REQUIREMENT

1. Copies of all existing contracts District has with the general consultants and specialty consultants.

2. Copies of all technical reports prepared by the general and specialty consultants.

3. Copies of all progress reports submitted by the general and specialty consultants.

4. Copies of all criteria, standard and directive drawings, and all guide specification prepared for or by the general consultants.

5. Copies of all Milestone reports.

6. Copy of adopted horizontal alignment and profile of the Starter Line.

7. Copies of adopted locations and layouts of all fixed facilities; stations, lines, ventilation structures, pocket tracks, crossovers, yards and shops, substation, etc.

8. Copies of minutes of meetings that bear on design decisions.

C. SCHEDULE

All GC work on Preliminary Engineering will start immediately with Notice to Proceed and will continue to completion of the Preliminary Engineering, in mid-1983.

D. DISTRICT ACTION

District approvals where required are needed within 15 calendar days of submittal, unless indicated otherwise for specific ations, in order to expedite continuing work.

E. MANPOWER AND COSTS

Included in other Work Program elements.

ITEMS : Continuing Preliminary Engineering and Final Design

RESPONSIBILITY: Design Subcontractors

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

The intent of the Continuing Preliminary Design program is to further develop engineering design of all system elements. This work will be administered under subcontract to the GC, or will be performed by the GC, and will be developed in two phases. The Continuing Design program is intended to transition into Final Design following adoption of the EIS by UMTA. Work products and data generated in Preliminary Engineering will be refined, updated and incorporated in design packages by the GC for use by design subcontractors.

Phase I of this work will be to develop engineering to a level of 85% completion for the following project elements:

- o Central Yards and Maintenance Shops
- o Union Station
- o Civic Center and 5th/Hill Stations, including Tunnel to 7th/Flower Station
- o 7th/Flower Station
- o Tunnel from 7th/Flower to Wilshire/Vermont, including Wilshire/Alvarado Station
- o Wilshire/Vermont Station
- o Critical Path Systemwide Elements

Phase II of the work will be to develop engineering to a level of 50% completion for the following project elements:

- o Tunnel between Wilshire/Vermont Station to Wilshire/LaBrea Station, including stations at Wilshire/Normandie and Wilshire/Western
- o Wilshire/LaBrea Station and Pocket Track
- o Tunnel between Wilshire/LaBrea Station and Fairfax/Beverly Station, including the Wilshire/Fairfax Station
- o Fairfax/Beverly Station

- o Tunnel between Fairfax/Beverly Station and Hollywood/Cahuenga Station, including stations at Fairfax/Santa Monica and LaBrea/ Sunset
- o Hollywood/Cahuenga Station
- o Tunnel between Hollywood/Cahuenga Station and Universal City Station
- o Universal City Station
- o Tunnel between Universal City Station and North Hollywood Station
- o North Hollywood Station and End Line Storage Track
- o Systemwide Elements--non critical

2. Detailed Description of Work

a. Continuing Preliminary Design - Phase I Stations and Tunnels

1. Project Management: Provide overall management of design; prepare final design and construction schedule, attend meetings with other Consultants, SCRTD, and community; report on task status.

2. Design Development to Approximately 85% Completion: Complete reviews of soils and survey information; complete rights-of-way, utility relocation, and street relocation drawings; prepare construction documents to 85% completion for civil, structural, architectural, mechanical, electrical, and landscape elements; prepare detailed quantity take-offs and cost estimates of construction; prepare draft of Final Design Report.

3. Special Studies: Engage in special studies or analysis not in scope of work.

b. Continuing Preliminary Design - Phase II Stations and Tunnels

1. Project Management: Provide overall management of design; prepare preliminary design and construction schedules, attend meetings with other Consultants, SCRTD, and community, report on task status.

2. Design Development to 50% Approximately Completion: Prepare Design Development documents, including landscaping, architectural, structural, civil, mechanical and electrical drawings. Prepare detailed outline specifications, including a format for performance specifications. Develop preliminary quantity take-offs and preliminary construction and cost estimates. Prepare Design Development Report.

c. Continuing Preliminary Design of Main Yard and Shops to Approximately 85% Completion

1. Civil Design: Preparation of contract drawings and specifications for the project showing general topography and property lines, survey control, track alignment, all site work, limits of work, and work by others.

2. Utility Design: Preparation of construction contract documents, a detailed utility plan investigating existing utilities, composite and detailed rearrangement plans, and a site drainage design.

3. Rights-of Way: Preparation of documents delineating temporary and permanent rights of way with recommendation on construction easements affecting rights-of-way.

4. Building Design: Preparation of construction contract documents for all new structures, including landscaping, architectural, structural, mechanical and electrical systems. Provide detailed quantity take-off and cost estimates as well as appropriate engineering calculations.

d. Critical Path Systemwide Elements

The design will be developed to approximately the 85% point on the following systemwide elements considered critical to projected schedule accomplishment:

Passenger Vehicles
Train Control Subsystem
Communication Subsystem
Ventilation Euipment
Track Work
Traction Power

The approximate 85% point will be represented by the development of procurement contract specifications for these elements to the Pre-Final stage. To accomplish this, the following tasks will be performed:

Completion of Updated Design Criteria
Development of Functional/Performance Requirements
Identification of Interfaces with Other System Elements and Control
Preparation of Complete System Descriptions
Performance of Design Reviews
Provide Detailed Cost Estimates
Generate Contract Specification Documents
Conduct Industry Review

e. Non-critical Systemwide Elements

The design will be completed to the approximate 50% point on the following systemwide elements which are not currently considered critical to meeting project schedules:

Fare Collection
Auxiliary Vehicles
Maintenance Equipment
Escalators/Elevators
Graphics
Lighting
Attendant's Booth

The 50% point will be represented by system description and functional/performance requirements. To accomplish this, the following tasks will be performed:

Completion of Updated Design Criteria
Development of Functional/Performance Requirements
Identification and Control of Interfaces with Other System Elements
Completion of System Descriptions
Performance of Design Reviews
Provide Updated Cost Estimates

3. Work Products

a. Phase I and II - Stations, Tunnels, Maintenance Yard and Shops

Subject to negotiation timing and actual start dates for subcontracts, work products on contracts will include, as applicable:

1. Drawings and specifications showing development of project elements at 40-50% completion level (85% or pre-final review for Phase I elements, including yards and shops)
2. Outline specification with formats for project manuals
3. Preliminary and pre-final design computations and engineering calculations, as applicable
4. Preliminary and pre-final Quantity Take-offs, as applicable
5. Revised Construction Cost Estimate

b. Systemwide Elements - Critical

Work products will include:

1. Design data at 50% point for intermediate design review purposes, including drawings and calculations
2. Draft contract specification documents (85%)
3. Updated cost estimates
4. Results of industry review process

c. Systemwide Elements - Non-critical

1. Complete system descriptions for intermediate design review purposes, including drawings and calculations (50%)
2. Updated cost estimates

B. INPUT DATA REQUIREMENTS

These data requirements are derived from the products of Preliminary Engineering.

1. Initial Requirements

a. Continuing Design of Stations, Tunnels and Systemwide Elements

1. Definitive Design Criteria and information
2. Criteria for drawings and construction/procurement contract specifications
3. Standard drawings, standard specifications, guide specifications
4. Track alignment data
5. Survey and soils information
6. Procurement and construction budgets

b. Continuing Design of Main Yards and Shops

1. Project preliminary drawings
2. System Design Criteria
3. Guide and/or Standard Specifications
4. Criteria for Development of Project Manuals
5. Standard sheets for drawing
6. Contract drawings of primary control network (survey incrementation)
7. Topographic maps
8. Utility maps
9. Property maps
10. Computer programs, if any, for track alignment
11. Contract specifications
12. Data on proposed future site developments
13. Soils and geotechnical reports

2. Intermediate Requirements

a. Continuing Design of Stations, Tunnels and Systemwide Elements

1. Review of copies of in-progress submittals
2. Contract drawings of boring logs and primary control network
3. Master agreements with railroad and other agencies
4. List of relocation work performed by others
5. Information on excluded items
6. Procurement and construction cost targets
7. Rights of Entry as required
8. Instrumentation Program as required
9. Review comments on design reviews

10. Noise and Vibration recommendations
11. Corrosion Control recommendations
12. Seismic recommendations

b. Continuing Design of Main Yard and Shops

1. Project drawings of boring logs
2. Agreements with governmental and private agencies, utilities and railroads
3. Listings of utilities, railroads, streets and highway relocation work to be performed by others
4. Procedures for design calculations
5. Procedures for drawing control register
6. Real property certification procedure
7. Project scheduling guide
8. Forecast and progress report format
9. Review comments on preliminary design
10. Technical direction and other information and data as applicable and required
11. Computation for mathematized right-of-way needs lines
12. Noise and Vibration recommentations
13. Corrosion Control recommendations

C. SCHEDULE

	Date (Per SCRTD Schedule)
1. Mobilization of Phase I Consultants	June-July, 1983
2. Begin work on Phase I contracts	June 20, 1983
3. Mobilization of Phase II Consultants	July-August, 1983
4. Begin work on Phase II contracts	August 8, 1983
5. Begin initial design review of Phase I & II contracts	Fall, 1983
6. Design durations	See Section V for detail.

D. DISTRICT ACTION

District approvals where required are needed within 15 days of submittal, unless indicated otherwise for specifications, in order to expedite continuing work.

D. MANPOWER AND COSTS

1. Manpower Requirements

Actual subcontractor manpower requirements cannot be ascertained at this time, because actual design contracts have yet to be negotiated. Accurate counts of actual manpower requirements on a contract-by-contract basis will be determinable in August or September of 1983. GC manpower and costs are included in other Work Program elements except for design work which may later be directed to be performed by GC.

2. Costs for Continuing Preliminary Engineering

Because design contractors have not been engaged, costs of individual contracts, which are subject to negotiation and variance due to varying manpower costs, cannot be accurately determined at this time.

ITEM : Special Consultants and Other Technical Services

RESPONSIBILITY: Various Technical Managers

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

a. Provide management, coordination and integration services for the on-going work of the District's special consultants in support of the Metro Rail Project.

b. Provide specialized services through the procurement of sub-consultants.

2. Description of Work

a. Existing Special Consultants - Management

Manage, coordinate, review, and integrate the on-going work of the following special consultants. Review specific scopes of services of these consultants, identify any overlaps or mismatches and make recommendations to the District for revision to their scopes of services. Review the specific recommendations made by these consultants and determine that necessary decisions and policy inputs made.

Booz Allen Hamilton	-	Systems Engineering
Teledyne	-	Mapping
Wilson-Ihrig	-	Noise and Vibration
Lindvall-Richter	-	Geotechnical
PSG Waters	-	Corrosion Control
Glenn Johnson	-	Architectural Modelling
P.E. Sperry	-	Tunnel Design
T.G. McCusker	-	Tunnel Design

b. Special Consultants and Other Technical Services

The GC during the course of the project period will secure the services of special consultants as GC Subcontractors subject to need and approval by the District. The following list of services is anticipated at this time; however, additional services may be required during the Project period:

1. Soils and Subsurface Investigation
2. Noise and Vibration
3. Surveying, including Photogrammatic Manuscripts
4. Corrosion Control

5. Existing Building Foundation Surveys
6. Underground Support System
7. Fare Collection
8. Underground Gas Survey

These services are in addition to those that will be provided by the GC Subcontractors.

B. INPUT DATA REQUIRED

To be defined at the time of procurement of special consultant services.

C. SCHEDULE

Schedule to be compatible with the accelerated design programs to permit advancing the design as per the project master schedule.

D. DISTRICT ACTION

District approvals where required are needed within 15 calendar days, unless indicated otherwise for special actions, in order to expedite continuing work.

E. MANPOWER AND COST

1. Manpower

The efforts related to management, coordination and integration of the special consultants is provided elsewhere in the GC function.

2. Costs

The costs of the GC work are included in other elements. Subcontract costs cannot be accurately determined at this time.

ITEM : Other Direct Costs

RESPONSIBILITY: Project Administration Manager

DESCRIPTION

A. SCOPE

1. Definition of Work To Be Accomplished

All non-labor costs for supplies, materials, and services that are directly related to completion of the GC services.

2. Description of Work

a. Office Expenses

- o Materials and Supplies
- o Communications and Shipping
- o Equipment and Tools
- o Insurance

b. Travel and Related Expenses

c. Personnel Costs

- o Mobilization and Relocation
- o Payroll and Special Taxes
- o Recruiting

d. Computer Services

e. Models and Renderings

f. Legal Services

g. Miscellaneous

B. INPUT DATA REQUIREMENT

Not applicable.

C. SCHEDULE

Direct costs will be incurred throughout the duration of GC involvement.

D. COSTS

	1983
Office Expenses	$ 25,000
Travel and Related Expenses	260,000
Personnel Costs	800,000
Computer Services	20,000
Models and Renderings	20,000
Legal Services	10,000
Miscellaneous	25,000
Total	$1,160,000

IV. ORGANIZATION, MANPOWER ALLOCATIONS, AND COSTS

This Section presents an overall GC organization chart showing functional responsibilities and end of fiscal period manpower levels and, in tabular form, projected manning by month for each element of the AWP; cost estimates associated with the projected manning, utilizing average labor rates by category, including both the GC Members' efforts as well as that proposed for subcontractors; and summaries of manning and cost projections which support the AWP cost estimates.

GENERAL CONSULTANT COST SUMMARY

	LINE ITEM	CUMULATIVE ESTIMATE TO 3/31/83	ESTIMATED FISCAL PERIOD ENDING 3/31/84
A	Project Management		$ 596,390
B	Project Administration		1,360,000
C	Project Control		987,390
D	Facilities Design Management (Subcontracts)		2,318,000
E	Facilities Design (G.C.)		3,543,000
F	System Integration		1,378,620
G	Systems Design (G.C.)		2,450,000
H	Construction Related Services		223,560
	Subtotal G. C. Services		12,855,000[1]
I	Subcontracts: P.E.		17,100,000[2]
J	Special Consultants	3	1,000,000[2]
K	Final Design		
	Subtotal Subcontracts		18,100,000
	Subtotal All Services		30,955,000
L	Direct Reimbursable Expense		1,500,000
M	Fixed Fee (10% of Labor and Overhead)		1,028,000
N	Subcontract Fee (3% of Subcontracts)		620,130
O	Administrative Fee (5% of L)		75,000
	Total G. C. Cost & Fee		$34,178,000
P	Preliminary Engineering – GECs	3	3
	Grand Total Project Cost	3	3

---

1 Assume 80% Joint Venture, 20% MBE/WBE Subcontractors.

2 Allowance – amounts to be determined. This amount represents estimated obligations, not necessarily expenditures.

3 To be determined/revised at time of contract execution.

V. SCHEDULES

This Section includes the current District Accelerated Project Schedule, modified to illustrate the completion times for all elements of Preliminary Engineering, the commencement and duration of Continued Preliminary Engineering and the commencement of Final Design. This schedule is augmented with bar chart control schedules providing greater detail of the availability dates for certain information needed for inclusion in design subcontract packages for Continuing Preliminary Engineering. Also shown are bar charts representing the durations of GC management, support, and administrative functions.

CALENDAR YEAR → 1983 | 1984 | 1985 | 1986 | 1987 | 1988

A110 YARD CONSTRUCTION

A111 TEST TRACK

A112 SHOPS: S&I, MAJOR REPAIR, W OF W, WASHERS, LIGHT REPAIR, TPSS, ETC.

A150 YARD LEADS & LINE SECTION

A 133 UNION STATION-STATION COMPLETE

A137 OPERATIONS CONTROL BLDG.

A 140 LINE SECTION INCLUDING STAGE I OF CIVIC CENTER & 5TH/HILL STATIONS

CIVIC CENTER STATION - STAGE I (DESIGN ONLY)

A 147 CIVIC CENTER STATION-STAGE II

5 TH/HILL STATION - STAGE I (DESIGN ONLY)

A 157 5TH/HILL STATION-STAGE II

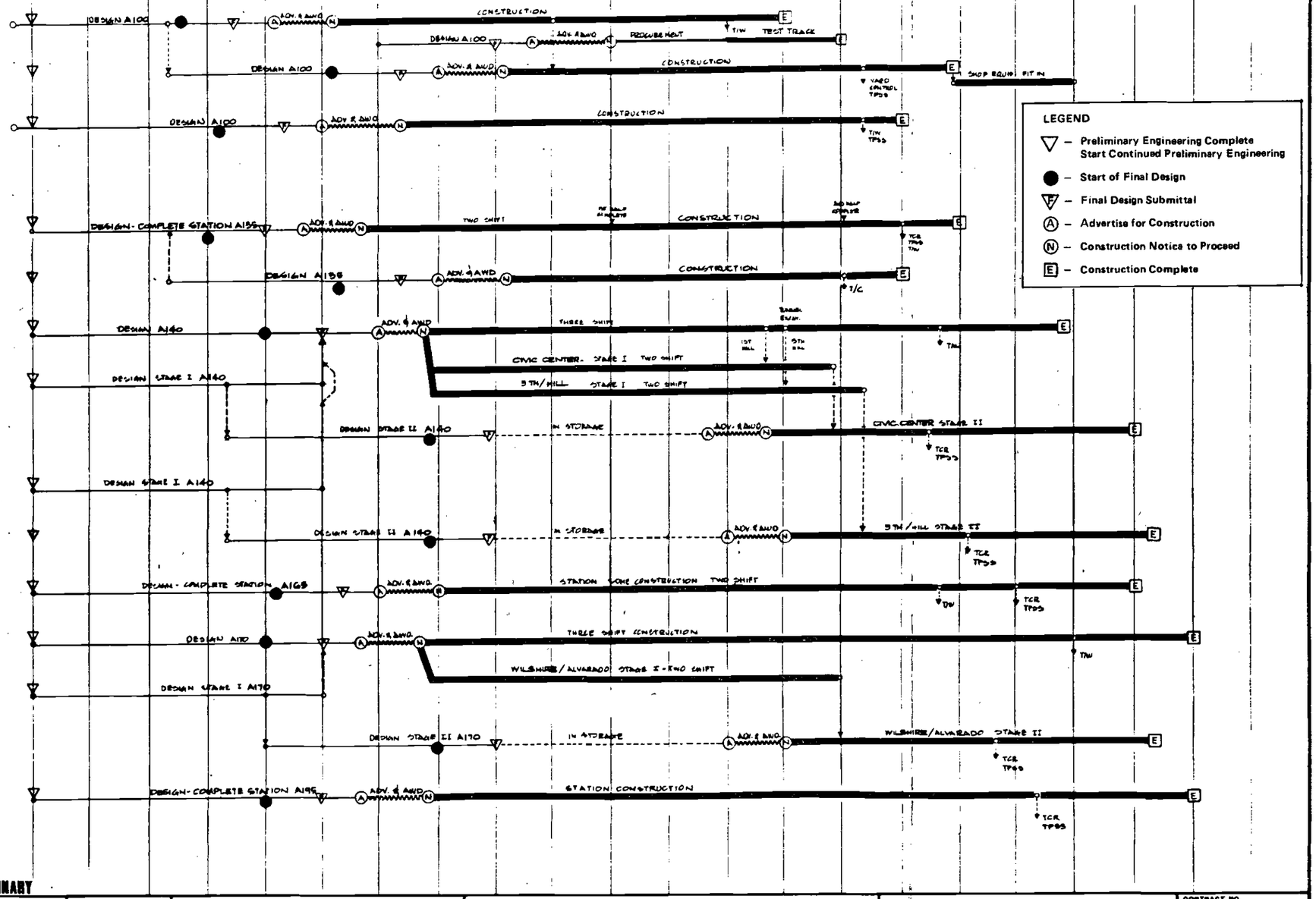
A 165 7 TH/ FLOWER - STATION COMPLETE

A 170 LINE SECTION INCLUDING STAGE I OF WILSHIRE/ALVARADO STATION

WILSHIRE/ALVARADO STATION - STAGE I (DESIGN ONLY)

A 187 WILSHIRE/ALVARADO STATION - STAGE II

A 195 WILSHIRE/VERMONT - STATION COMPLETE



PRELIMINARY

REV.	DATE	BY	APP.	DESCRIPTION
3	3-3-83	RJS	JCD	UPDATE
2	12-8-82		R.S.	UPDATE
1	6-8-82	J.B	R.S.	UPDATE

DESIGNED BY RAJ SHAH Date JAN. '83
DRAWN BY J.B Date JAN '83
CHECKED BY J.C. DUDA Date 3-3-83

DMJM/PBQD
A Joint Venture
General Engineering Consultant - Ways and Structures
SUBMITTED BY:
PROJECT MANAGER

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT
RTD
APPROVAL RECOMMENDED — Reg. No. ____
APPROVED — Date ____ — MANAGER / CHIEF ENGINEER — Reg. No. ____

PHASE A1
UNION STATION TO WILSHIRE/VERMONT STATION
PROJECT SCHEDULE
FACILITIES
ACCELERATED SCHEDULE

CONTRACT NO.
DRAWING NO.
SCALE N.T.S.
SHEET NO. 1 OF 5

CALENDAR YEAR → 1983 | 1984 | 1985 | 1986 | 1987 | 1988

TRACKWORK

Z111 RUNNING RAIL PROCUREMENT
Z112 CONTACT RAIL PROCUREMENT
Z113 TIES PROCUREMENT
Z114 SPECIAL TRACKWORK
Z115 COVER BOARDS
Z119 RAIL WELDING
Z110 TRACKWORK INSTALLATION
Z116 TRACK FASTENERS

TRACTION POWER

Z311 TRACTION PWR. EQUIPM'T PROCURM'T
Z310 TRACTION PWR. EQUIPM'T INSTALLATION

TRAIN CONTROL

Z210 TRAIN CONTROL & YARD CONTROL FURNISH & INSTALL

COMMUNICATIONS

Z410 COMMUNICATIONS FURNISH & INSTALL

VEHICLES

Z510 VEHICLES

FARE COLLECTION

Z610 FARE COLLECTION FURNISH & INSTALL

ESCALATORS

Z711 ESCALATORS FURNISH & INSTALL

ELEVATORS

Z715 ELEVATORS FURNISH & INSTALL

FANS

Z916 MID TUNNEL, EMERGENCY & STATION FANS - FURNISH

DESIGN · ADV. & AWD. · PROCUREMENT · SET UP · RAIL WELDING · INSTALL YARD TRACKS · INSTALL MAIN LINE · YARD · MOVE TO 3RD YEAR · INSTALL EQUIP HOOKUP & TEST · DESIGN, MANUFACTURE & TEST · INST. YARD CONTROL CABLES · INSTALL MAIN LINE CABLES · INST. YARD CONTROL CTR. EQUIP. · TIC SYSTEM EQUIP. & TEST · TIC INTEGRATION & TEST · INTERFACE TEST · PRE-REV · REVENUE SERVICE DEC. 1988 · DESIGN & MFR. · INST. YARD CABLES · INST. MAIN LINE CABLES · INST. YARD CONTROL, TCE, TPSS EQUIP. · TCE, TPSS EQUIP. · COMM. INTEGRATION TEST · DESIGN COMPONENTS MFR.'S, FIRST PAIR DELIVERY · MANUFACTURE & ASSEMBLE · FIRST PAIR TESTING · VEHICLE TESTING · DESIGN, MFR & TEST · INSTALL & TEST · DELIVERY

PRELIMINARY

REV	DATE	BY	APP	DESCRIPTION
3	3-3-89	RDS	JCD	UPDATE
2	1-12-89		R.S.	UPDATE
1	11-85	J.B.	R.S.	UPDATE

DESIGNED BY RAJ SHAH Date JAN '85
DRAWN BY J.B. Date JAN'85
CHECKED BY J.C. DUDA Date 2-3-85

DMJM/PBQD
General Engineering Consultant: Ways and Structures
SUBMITTED BY: PROJECT MANAGER

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT
APPROVAL RECOMMENDED Date Reg. No
APPROVED Date MANAGER / CHIEF ENGINEER Reg. No

PHASE A1
UNION STATION TO WILSHIRE/VERMONT STATION
PROJECT SCHEDULE
SYSTEMWIDE
ACCELERATED SCHEDULE

CONTRACT NO.
DRAWING NO.
SCALE N.T.S.
SHEET NO. 2 of 5

CALENDAR YEAR — 1983 (AUGUST) | 1984 | 1985 | 1986 | 1987 | 1988 | 1989

WILSHIRE / NORMANDIE STA.
STAGE I - (DESIGN ONLY)
A227 WILSHIRE / NORMANDIE STATION - STAGE II

A 220 LINE SECTION INCLUDING STAGE I OF WILSHIRE / WESTERN AND WILSHIRE / NORMANDIE STATIONS

WILSHIRE / WESTERN STATION - STAGE I (DESIGN ONLY)

A 297 WILSHIRE / WESTERN STATION - STAGE II

A 245 WILSHIRE / LA BREA STATION - STATION COMPLETE

A 250 LINE SECTION INCLUDING STAGE I OF WILSHIRE / FAIRFAX STATION

WILSHIRE / FAIRFAX STATION - STAGE I (DESIGN ONLY)

A 267 WILSHIRE / FAIRFAX STATION - STAGE II

A 279 FAIRFAX / BEVERLY STATION - COMPLETE

Z110 TRACKWORK INSTALLATION

Z310 TRACTION PWR. EQUIP. INSTALLATION

Z210 TRAIN CONTROL FURNISH & INSTALL

Z410 COMMUNICATIONS FURNISH & INSTALL

SEE PAGE 2 OF 5 FOR SYSTEMWIDE CONTRACT DETAIL DESIGN, ADVERTISE & NOTICE TO PROCEED SCHEDULE. (N) INDICATED HERE REFLECTS NOTICE TO PROCEED.

Z610 FARE COLLECTION FURNISH & INSTALL

Z711 ESCALATORS FURNISH & INSTALL

Z715 ELEVATORS FURNISH & INSTALL

Z916 FANS PROCUREMENT

REVENUE SERVICE DEC 1990

PRELIMINARY

REV.	DATE	BY	APP.	DESCRIPTION
3	3-3-89	RJM	JCD	UPDATE
2	11-88		R.S	UPDATE
1	4-88	JB	R.S	UPDATE

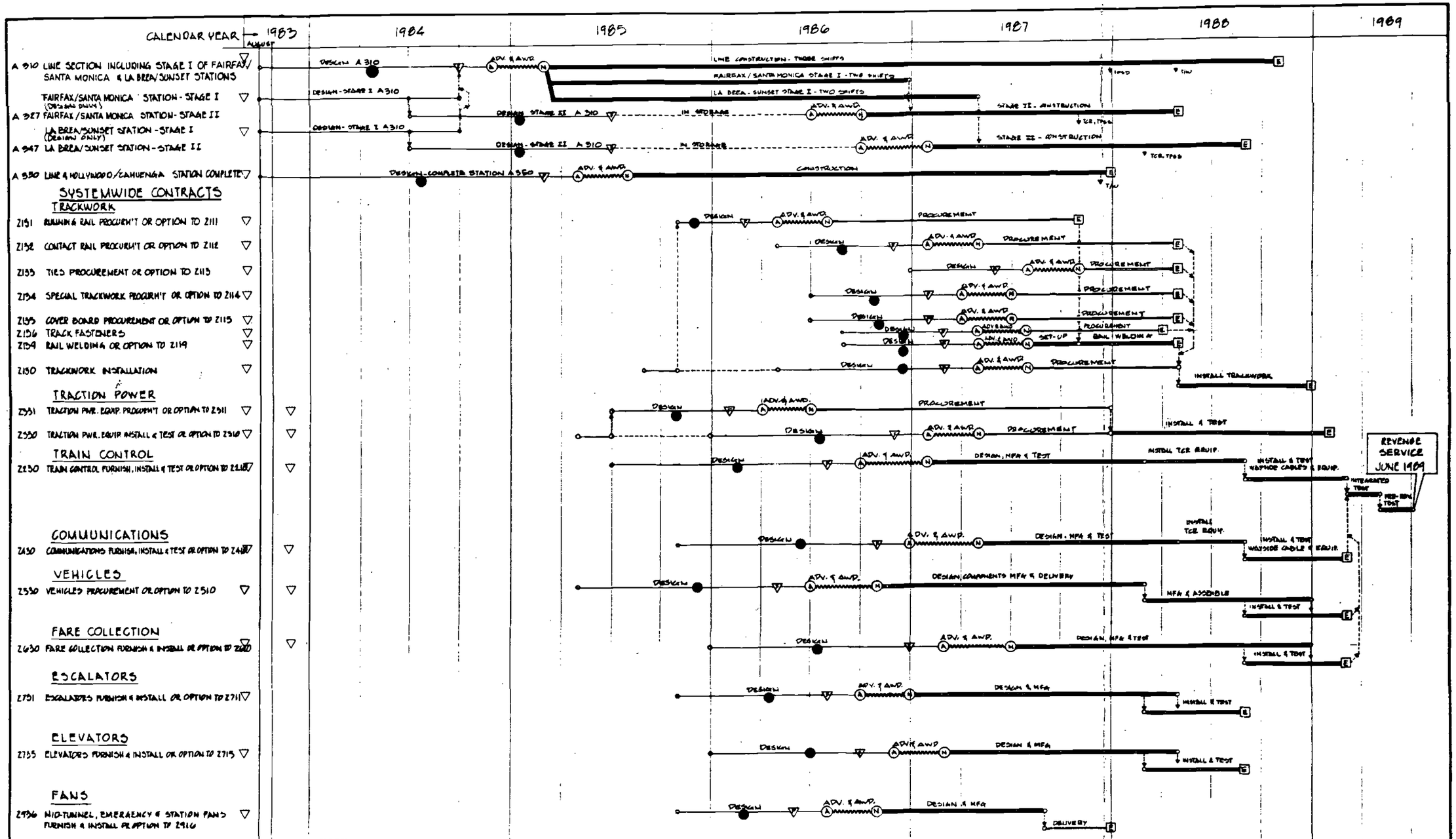
DESIGNED BY ZIA SHAH Date JAN '89
DRAWN BY J.B. Date JAN '89
CHECKED BY J.C. DUDA Date 3-3-89

DMJM/PBQD
A Joint Venture
General Engineering Consultant - Ways and Structures
SUBMITTED BY:
PROJECT MANAGER

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT
RTD
APPROVAL RECOMMENDED — Date — Reg. No.
APPROVED — Date — MANAGER / CHIEF ENGINEER — Reg. No.

PHASE A2
WILSHIRE / VERMONT TO FAIRFAX / BEVERLY
PROJECT SCHEDULE
FACILITIES AND SYSTEMWIDE
ACCELERATED SCHEDULE

CONTRACT NO.
DRAWING NO.
SCALE N.T.S.
SHEET NO. 3 OF 5



PRELIMINARY

REV.	DATE	BY	APP.	DESCRIPTION
3	3-3-89	RJS	JCD	UPDATE
2	1-12-89		R.S.	UPDATE
1	10-88	R.S.	R.S.	UPDATE

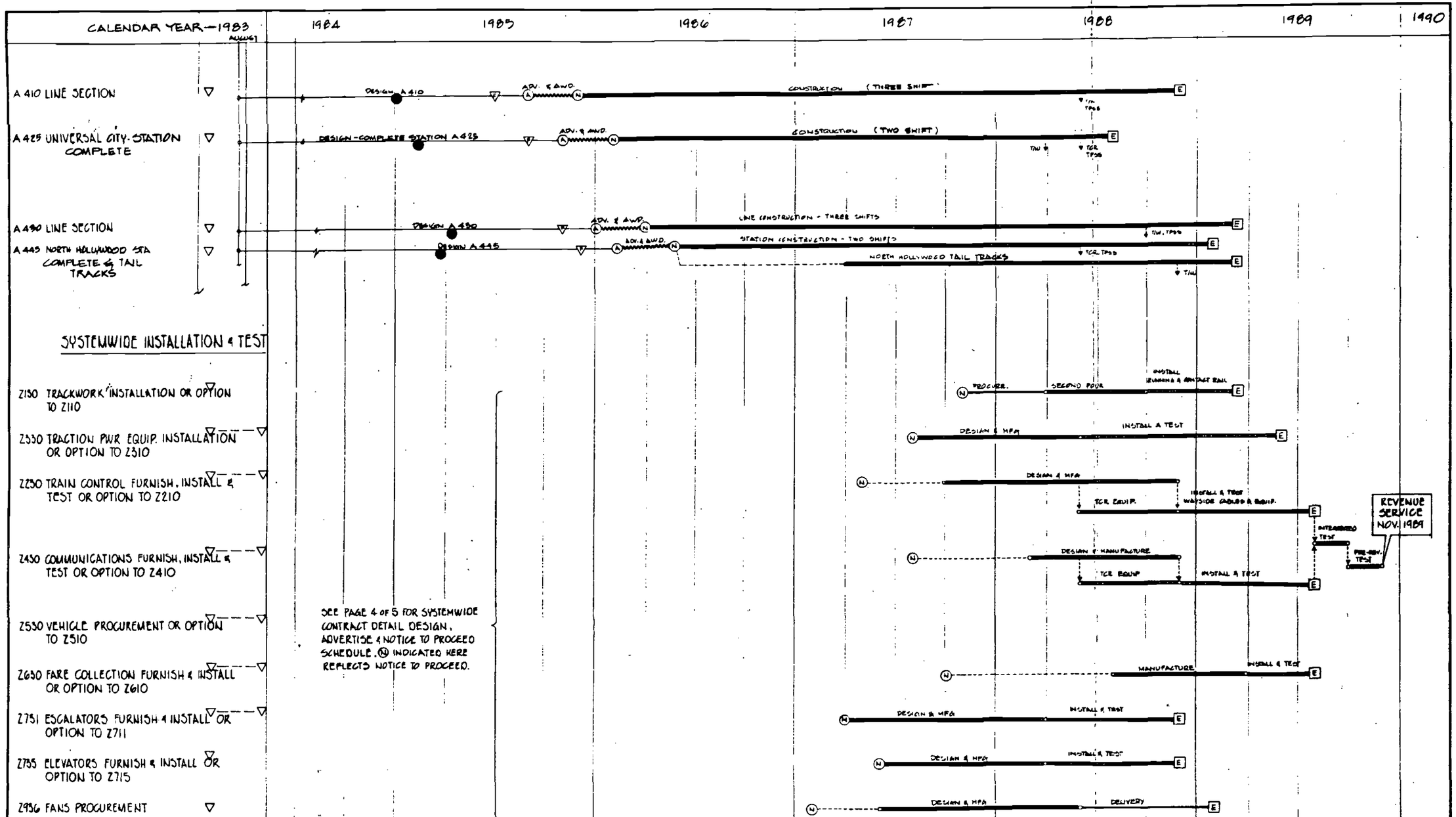
DESIGNED BY Date JAN '89 — RAJ SHAH
DRAWN BY Date JAN '89 — J.D.
CHECKED BY Date 3-3-89 — J.C. PUDA

DMJM/PBQD
A Joint Venture
General Engineering Consultant - Ways and Structures
SUBMITTED BY
PROJECT MANAGER

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT
RTD
APPROVAL RECOMMENDED — Reg. No. ____
APPROVED — Date ____ — MANAGER / CHIEF ENGINEER — Reg. No. ____

PHASE A 8
FAIRFAX/BEVERLY STATION TO HOLLYWOOD/CAHUENGA STATION
PROJECT SCHEDULE
FACILITIES AND SYSTEMWIDE
ACCELERATED SCHEDULE

CONTRACT NO.
DRAWING NO. -
SCALE N.E.S. -
SHEET NO. 4 of 5



SEE PAGE 4 OF 5 FOR SYSTEMWIDE CONTRACT DETAIL DESIGN, ADVERTISE & NOTICE TO PROCEED SCHEDULE. (N) INDICATED HERE REFLECTS NOTICE TO PROCEED.

PRELIMINARY

REV.	DATE	BY	APP	DESCRIPTION
3	7-3-89	R.F.	N.C.D.	UPDATE
2	11.2.88		R.S.	UPDATE
1	1-6-88	J.B.	R.S.	UPDATE

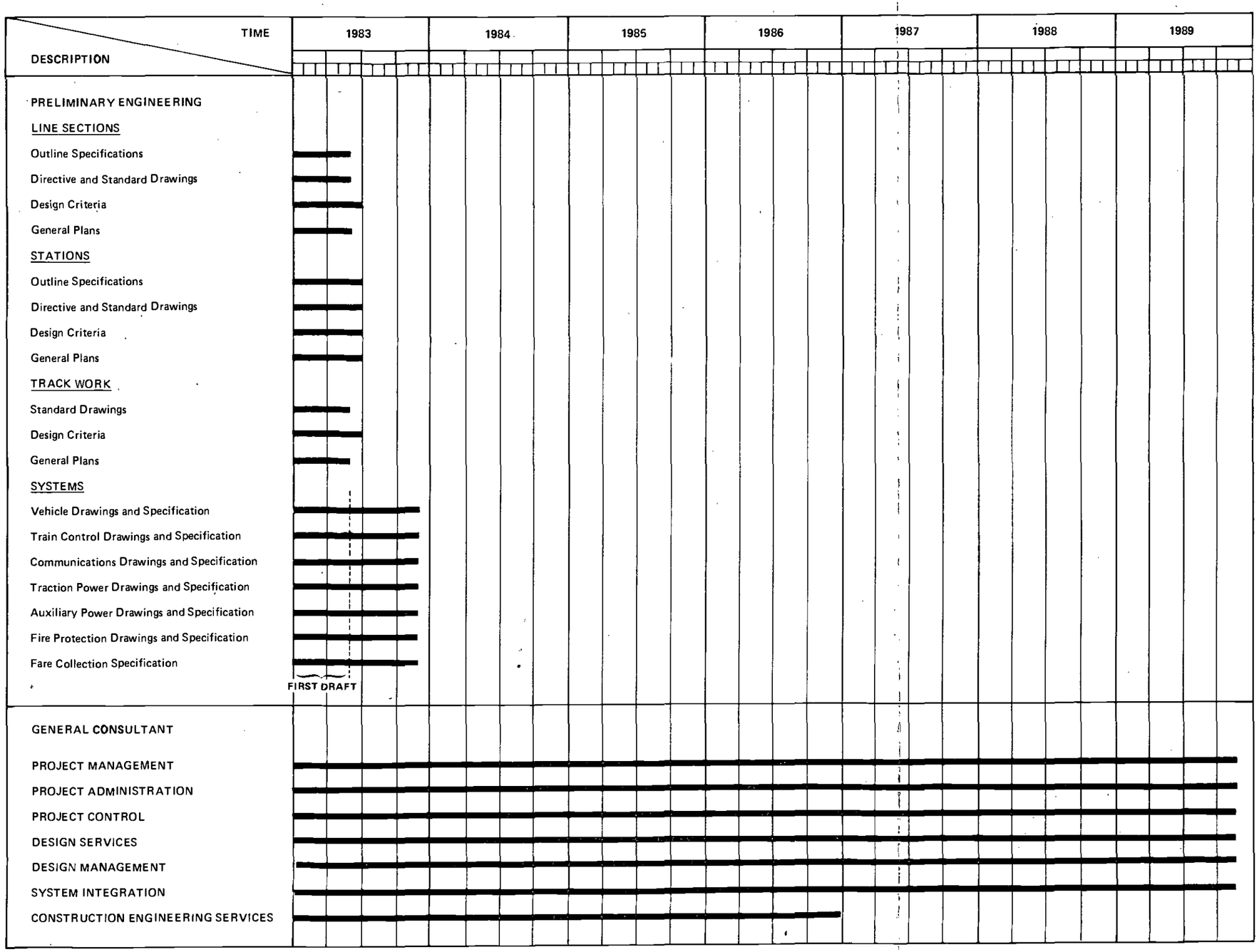
DESIGNED BY RAJ SHAH Date JAN. '88
DRAWN BY J.B. Date JAN. '88
CHECKED BY J.C. DUDA Date 3-3-88

DMJM/PBQD
A Joint Venture
General Engineering Consultant - Ways and Structures
SUBMITTED BY
PROJECT MANAGER

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT
RTD
APPROVAL RECOMMENDED — Reg. No.
APPROVED — Date — MANAGER / CHIEF ENGINEER — Reg. No.

PHASE A4
HOLLYWOOD/CAHUENGA STATION TO NORTH HOLLYWOOD STATION
PROJECT SCHEDULE
FACILITIES AND SYSTEMWIDE ACCELERATED SCHEDULE

CONTRACT NO.
DRAWING NO.
SCALE N.T.S.
SHEET NO. 5 OF 5



**PRELIMINARY ENGINEERING/
GENERAL CONSULTANT
CONTROL SCHEDULE**

VI. APPENDICES

This Section contains the following documents upon which the AWP Services and deliverables due under this Contract are based:

A. District Functions and Responsibilities

B. Contract Unit Description

C. General Consultant Organization Charts

DISTRICT FUNCTIONS AND RESPONSIBILITIES

Project Direction and Administration

- Policy Direction
- Project Financing
- Prime Contracts
- Budget Allocation
- Accounting
- Insurance Program
- Subconsultant Selection
- Subconsultant Contract Approval, including Amendments
- Project Control System, including Costs and Schedules
- EEO/MBE/WBE Policy and Plan Approval

Project Coordination

- Public Agencies
- Utilities
- Railroads
- Inputs from Community or Private Organizations and Citizens

Project Development

- Direction and Guidance of Design Development
- Master and Project Agreements

    Public Agencies
    Utilities
    Railroads

- Site Development (Policy)
- Project Development Priorities (Policy)
- Property Agreements

    Acquisition
    Easements
    Relocation

- Specific Approvals

    System Standards, Analyses and Studies as required
    Progress Payments (Prime Contracts)
    Amendments, Addenda and Change Orders (Prime Contracts)
    Selected Management Procedures
    Design Milestone Reviews and Contract Bid Packages
    Interim and Final Construction Estimates During Design
    Design Criteria and Standards and Changes Thereto
    Design Concepts
    Key Personnel Assignments

Planning

- o Future Systems
- o Ridership Projections
- o Demographic Data
- o Community Service and Impact
- o Environmental Impact Analyses and Assessments
- o Joint Development

Construction Management

- o Advertisement for Bids
- o Pre-bid Conference
- o Permits and Public Agency Approvals
- o Bid-opening and Contract Award
- o Preconstruction Conferences
- o Contractor Schedule Review and Monitoring
- o Coordination with Local Authorities
- o On-site Management and Inspection
- o Contract Interpretation
- o Monitor Contractor Compliance with Contract Requirements
- o Progress Reports
- o Invoice Certification
- o Change Notice Preparation and Issuance
- o Jobs Records Maintenance
- o Change Order and Claim Approval
- o Progress Payments

Testing

- o Acceptance of System Testing Procedures
- o Acceptance of Pre-revenue Testing Results

Operations

- o Service Scheduling
- o Fare Structure
- o Revenue Estimates
- o Approval of Operation Plan
- o Input to Preparation of Operating Manuals

Public Relations

- o Dissemination of Public Information
- o Public Education and Involvement Programs

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

METRO RAIL PROJECT

CONTRACT UNIT DESCRIPTIONS

MARCH 1983

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

METRO RAIL PROJECT

CONTRACT UNIT DESCRIPTIONS

FOREWORD

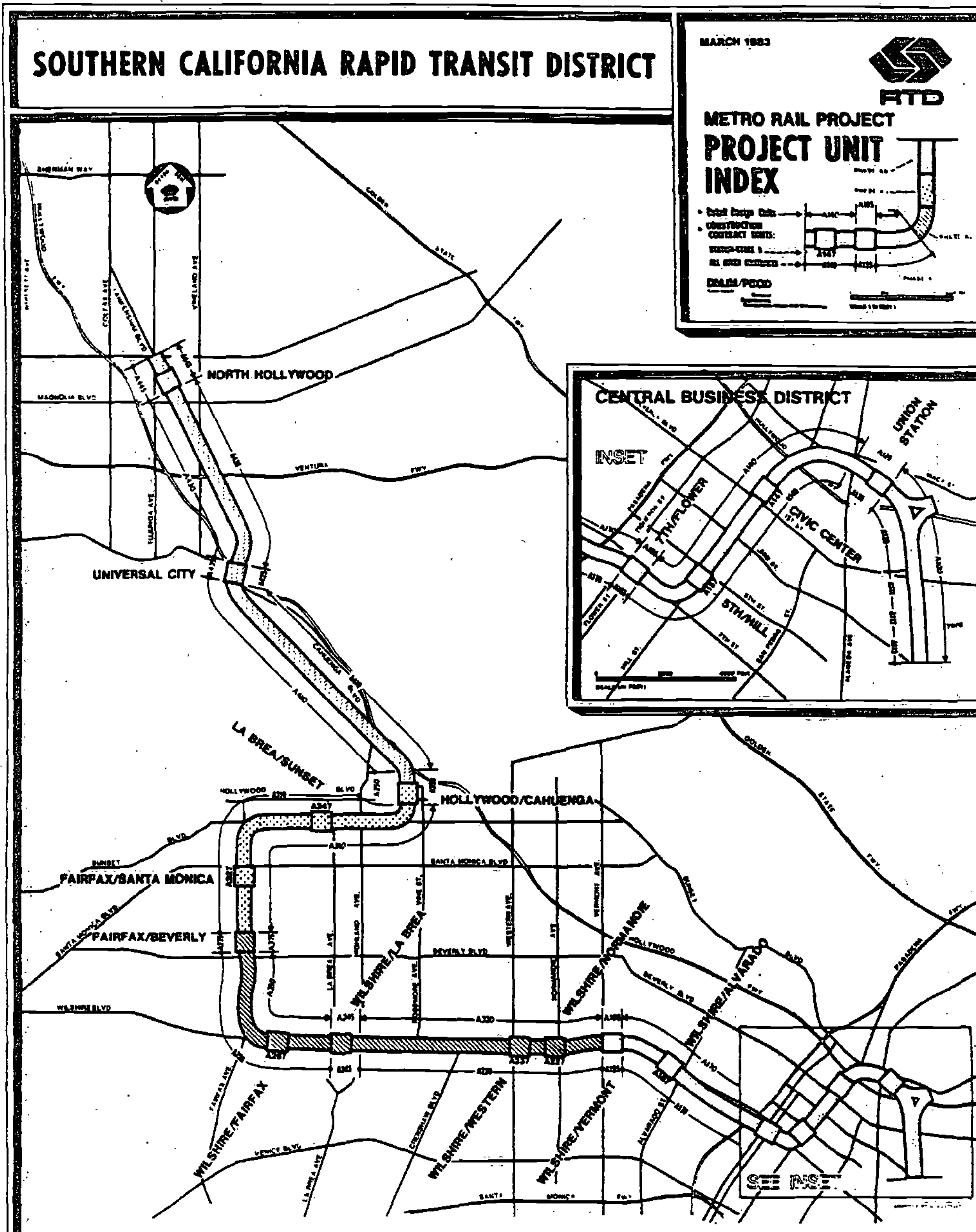
This document contains a complete listing of Metro Rail Project contracts; it includes general descriptions of the scope of the contracts and geographic references where applicable.

The information in this document is dynamic in nature and subject to change. As changes are made, users will be kept informed. Supplements or complete revisions will be provided in instances of major or extensive change.

Questions, comments or suggestions may be addressed to the Manager/Chief Engineer, SCRTD, Metro Rail Project by telephone, (213) 972-6431, or by mail as follows:

Southern California Rapid Transit District
Metro Rail Project, 6th Floor, Annex A
425 South Main Street
Los Angeles, California 90013

CONTENTS



SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
MARCH 1983
RTD
METRO RAIL PROJECT
PROJECT UNIT INDEX
CENTRAL BUSINESS DISTRICT
INSET
UNION STATION
7TH/FLOWER
CIVIC CENTER
5TH/HILL
NORTH HOLLYWOOD
UNIVERSAL CITY
LA BREA/SUNSET
HOLLYWOOD/CAHUENGA
FAIRFAX/SANTA MONICA
FAIRFAX/BEVERLY
WILSHIRE/LA BREA
WILSHIRE/NORMANDIE
WILSHIRE/ALVARADO
WILSHIRE/FAIRFAX
WILSHIRE/WESTERN
WILSHIRE/VERMONT
SEE INSET
SHERMAN WAY
MAGNOLIA BLVD
VENTURA FWY
HOLLYWOOD BLVD
SUNSET BLVD
SANTA MONICA BLVD
BEVERLY BLVD
WILSHIRE BLVD
VENICE BLVD
SANTA MONICA FWY
GOLDEN STATE FWY
HOLLYWOOD FWY
PASADENA FWY

FACILITIES CONTRACT UNIT DESCRIPTIONS

METRO RAIL PROJECT

-PHASE A1-

Yard & Union Station Through Wilshire/Vermont Station

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
A100	Detailed design of following packages:		Railroad 32,900 Transit Track 41,300			
	Demolition, Grading, Utilities, Yard Design; includes Test Track Design (Construction Contract Unit A111).	A110	46 Acres	Yard	At Grade construction of Train Storage Yard. Contract includes, demolition of old facility, grading and drainage, relocation of utilities.	24+40 84+40
		A111	5,800	Test Track	At Grade construction of Test Track.	
	Shops Design.	A112	230,610 (sq.ft.)	Shops	Construction of Shops, including Service & Inspection Bldg., Major Repairs Bldg., Maintenance-of-Ways Bldg., Traction Power Substation structures, Light Repairs Pit, Train Washers and Yard Control Bldg.	
	Line/Yard Leads Design.	A130	Main Line 4,290 Yard Lead to CBD 1,750 Yard Lead to East ±1,700	Line & Yard Leads	Cut and Cover construction of main line from Union Station to the East extension; Yard Lead from CBD - Twin cell box, Yard Lead from the East Extension two-single cell boxes.	59+90 101+90
	Operations Control Center Design.	A113	3,800 (sq.ft.)	Operations Control Center	Construction of Operations Control Center Facility building.	
A135	Union Station, Complete Station Design and crossover structure just North of Union Station.	A135	950	Station Complete	Union Station construction, complete including all Architectural, Electrical, & Mechanical Work, and portions of crossover structure.	101+90 111+40

Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
A140	Line Design including Stage I of Civic Center and 5th/ Hill Stations. Includes bid packages for the following:	A140	8,768	Line & 2 Stations Stage I	That portion of the Line beginning just west of Union Station, proceeding via tunnel beneath Macy St., deviating at Spring St., crossing Broadway & linking with Hill St. just north of Santa Ana Freeway. Line continues through 5th/Hill Station, turning east on 7th Street to 7th/Flower Station. Stage I construction of Civic Center and 5th/Hill Stations. Construction will provide for portions of double crossover track just north of Union Station.	111+40 199+03
	Civic Center Station, Stage II Design.	A147	695	Station Stage II	Civic Center Station, Stage II construction including all Architectural, Electrical & Mechanical work.	145+96 152+91
	5th/Hill Station, Stage II Design.	A157	943	Station Stage II	5th/Hill Station, Stage II construction including all Architectural, Electrical & Mechanical work.	169+26 178+69
A165	7th/Flower Station, Complete Station Design.	A165	820	Station Complete	7th/Flower Station construction, complete including all Architectural, Electrical & Mechanical work.	199+08 207+28
A170	Line Design includes Stage I of Wilshire/ Alvarado and two cross-over structures. Includes bid packages for the following:	A170	10,624	Line & 2 Stations Stage I	That portion of the Line continuing in a northwesterly direction from 7th/Flower Station under 7th Street curving northeasterly under Alvarado to link with and continue northwesterly under Wilshire Boulevard	207+28 313+52

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
A170 (Cont'd)		A170 (Cont'd)			and terminating at a point just North of Wilshire Boulevard and east of Vermont. Construction will provide for two double crossover tracks; one just east of Wilshire/Alvarado Station and one just east of Wilshire/Vermont Station. This Contract includes Stage I Construction of Wilshire/Alvarado Station.	
	Wilshire/Alvarado Station, Stage II Design.	A187	642	Station Stage II	Wilshire/Alvarado Station Stage II construction including all Architectural, Electrical & Mechanical work.	257+54 263+96
A195	Wilshire/Vermont Station, complete Station Design.	A195	642	Station Complete	Wilshire/Vermont Station construction, complete including all Architectural, Electrical & Mechanical work.	313+52 319+94

METRO RAIL PROJECT
-PHASE A2-
From Wilshire/Vermont Station through Fairfax/Beverly Station

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
A220	Line Design including Stage I of Wilshire/ Normandie amd Wilshire/ Western Stations. Includes bid packages for the following:	A220	14,246	Line & 2 Stations Stage I	That portion of the line which includes the Wilshire/Normandie Station and begins just west of Vermont and proceeds and proceeds west under Wilshire to the Wilshire/ La Brea Station. This contract includes Stage I construction of Wilshire/ Western and Wilshire/ Normandie Stations.	319+94 462+40
	Wilshire/Normandie Station, Stage II Design.	A227	768	Station Stage II	Wilshire/Normandie Station Stage II construction including all Architectural, Electrical & Mechanical work.	344+53 352+21
	Wilshire/Western Station, Stage II Design.	A237	684	Station Stage II	Wilshire/Western Station, Stage II Construction including all Architectural, Electrical, and Mechanical work.	365+24 372+08
A245	Wilshire/La Brea Station, Complete Station and Line Design. Includes double ended center pocket track.	A245	1,718	Station Complete & Pocket Track	Wilshire/La Brea Station, and Line including all Architectural, Electrical and Mechanical work. Construction will provide for a double-ended center pocket track just east of Wilshire/ La Brea Station.	462+40 479+58
A250	Line Design including Stage I of Wilshire/ Fairfax Station and two crossover structures. Includes bid package for the following:	A250	8,689	Line & 1 Station Stage I	That part of the line beginning at the western edge of the Wilshire/ La Brea Station & continuing west beneath Wilshire. Line curves north at Spalding, connecting with Fairfax at Lindenhurst and continuing to south of Fairfax/Beverly	479+58 566+47

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
A250 (Cont'd)		A250 (Cont'd)			Station. This contract includes Stage I construction of Wilahire/ Fairfax Station. Conatruction will provide for a double crossover track juat aouth of Fairfax/Beverly Station.	
	Wilahire/Fairfax Station, Stage II Design.	A267	676	Station Stage II	Wilshire/Fairfax Station Stage II construction including all Architectural, Electrical & Mechanical work.	510+10 516+86
A275	Fairfax/Beverly Station, Complete Station Deaign.	A275	675	Station Complete	Fairfax/Beverly Station conatruction complete, including all Architectural, Electrical & Mechanical work.	566+47 573+22

METRO RAIL PROJECT

-PHASE A3-

From Fairfax/Beverly Station through Hollywood/Cahuenga Station

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
A310	Line Design including Stage I of Fairfax/Santa Monica and La Brea/ Sunset Stations and crossover structure. Includes bid packages for the following:	A310	17,545	Line & 2 Stations Stage I	That part of the Line beginning just North of Fairfax/Beverly Station & continuing north beneath Fairfax. Line begins to curve east midblock between Fairfax & Sunset to join Sunset at Genesee Ave. Ave. Line continues east under Sunset, curves north at Hudson Ave., crossing under Wilcox Ave. & continuing up to the Hollywood/Cahuenga Station, just west & parallel to Cahuenga Blvd. This contract includes Stage I construction of Fairfax/ Santa Monica and La Brea/ Sunset Stations. Construction will provide for one double crossover just west of La Brea/ Sunset Station.	573+22 748+67
	Fairfax/Santa Monica Station, Stage II Design.	A327	684	Station Stage II	Fairfax/Santa Monica Station Stage II Construction, including all Architectural, Electrical, & Mechanical work.	623+28 630+12
	La Brea/Sunset Station, Stage II Design.	A347	642	Station Stage II	La Brea/Sunset Station Stage II construction, including all Architectural, Electrical & Mechanical work.	693+29 699+71

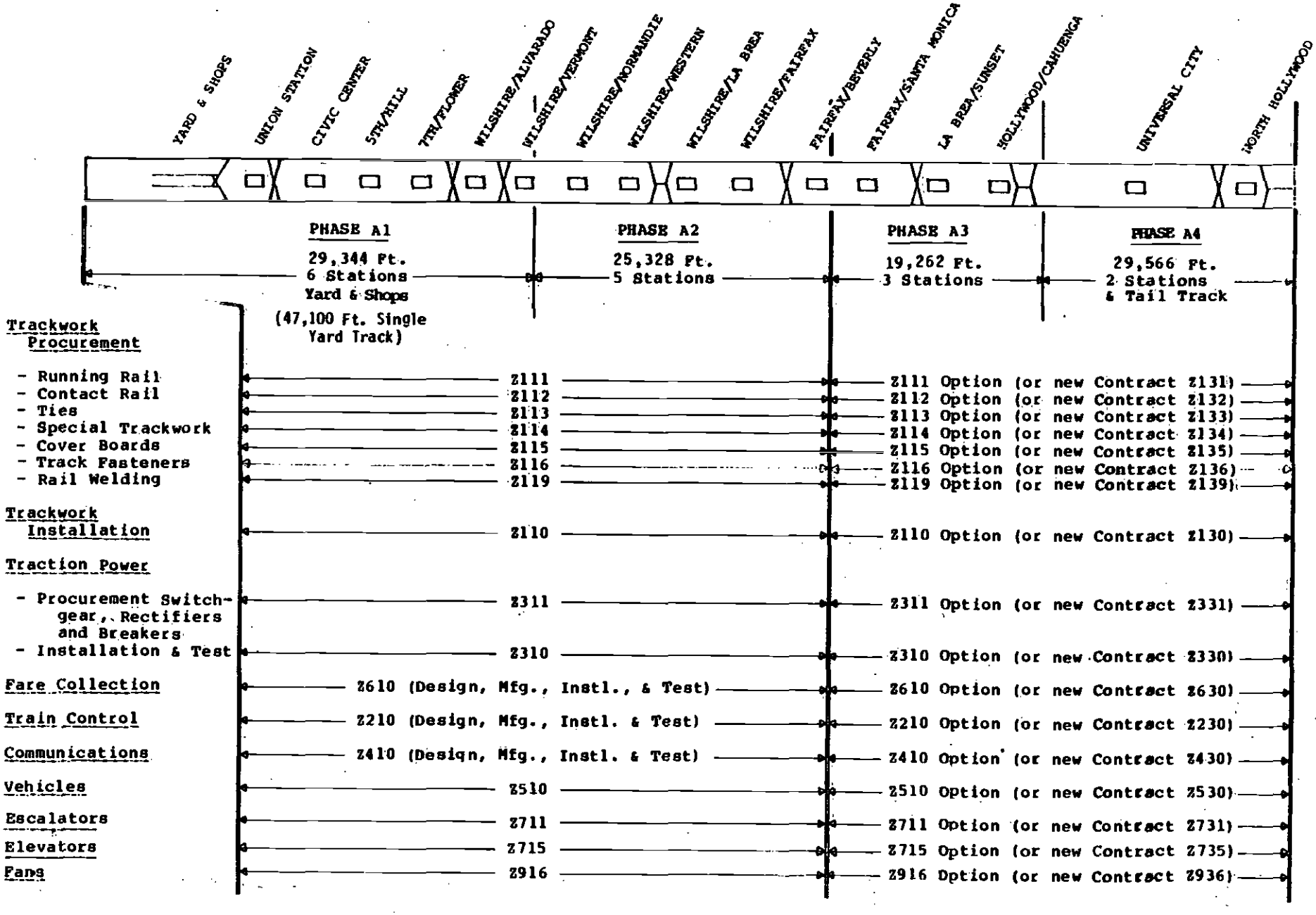
Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
A350	Hollywood/Cahuenga Station Design Complete, Including Line Design and double ended center pocket track.	A350	1,717	Line & Station Complete & Pocket Track	That part of the Line which begins at the southern edge of the Hollywood/ Cahuenga Station including the station & continuing 1257' northward. This contract includes complete construction of the Hollywood/Cahuenga Station, including all Architectural, Electrical & Mechanical work. Construction will provide for a double-ended center pocket track just north of Hollywood/Cahuenga Station.	748+67 765+84

METRO RAIL PROJECT
-PHASE A4-
From Hollywood/Cahuenga Station through North Hollywood Station & Tail Track

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
A410	Line Design.	A410	16,420	Line	That part of the Line starting just south of the Hollywood Freeway and curving westward beneath the Freeway. Line continues through the mountain to the Universal City Station, just north of the Hollywood Freeway & west of Lankershim.	765+84 930+04
A425	Universal City Station, Complete Station Design.	A425	684	Station Complete	Universal City Station construction complete, including all Architectural, Electrical Mechanical work.	930+04 936+88
A430	Line Design and cross-over structure.	A430	11,041	Line	That part of the Line beginning at the north side of the Universal City Station, curving west and linking with Lankershim shim at the Los Angeles River. Line proceeds northerly under Lankershim up to the North Hollywood Station. Construction will provide for a double cross-over track just south of North Hollywood Station.	936+88 1047+29
A445	North Hollywood Station complete station and Tail Track design.	A445	1,421	Station Complete & Tail Track	This contract includes complete construction of the Hollywood Station and Tail Track including all Architectural, Electrical & Mechanical Work, and Surface Parking Facilities.	1047+29 1061+50

SYSTEMWIDE CONTRACT UNIT DESCRIPTIONS

METRO RAIL PROJECT
Systemwide Planning Schematic



METRO RAIL PROJECT

TENTATIVE ASSIGNMENT OF SYSTEMWIDE ELEMENTS IN FACILITIES CONTRACT SCOPES OF WORK

GENERAL: In addition to the separate systemwide contracts provided for in the succeeding pages, the following division of systemwide elements is typical of all Facilities Contracts in the Metro Rail Project:

NOTE 1

FACILITIES CONTRACT FOR A STATION STAGE II OR COMPLETE STATION INCLUDES:

- Fans Installation (District Furnished Item)
- Lights, Furnish & Install
- Signage & Graphics, Furnish & Install within station areas only
- Fire & Intrustion Alarms, Furnish & Install within station areas only
- Locks, etc., Furnish & Install within station areas only
- CCTV Instruments., Furnish & Install within station areas only
- Station PA Instruments, Furnish & Install within station areas only
- Telephone Instruments, Furnish & Install within station areas only
- Radio Antenna, Furnish & Install within station areas only
- All Feeder Cables from instruments/equipment to interface cabinets/strips in Train Control Room
- HVAC & Auxiliary Electrical System

NOTE 2

FACILITIES CONTRACT FOR A LINE INCLUDES:

- Lights, Furnish & Install
- Fire & Intrusion Alarms, Furnish & Install
- Fans Installation (District Furnished Item)
- Wayside Signage, Furnish & Install

METRO RAIL PROJECT

-Systemwide-

Design, Installation, Procurement, Furnish & Install and Service

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
Z110	Trackwork Design, including Bid Documents for Phases A1 & A2 Procurement of:	Z110		Install	Trackwork - Includes installation and testing of District furnished running and contact rail, protective cover for contact rail, special trackwork, concrete ties and fasteners. Furnish and install all other materials including special ties and insulators. Contract includes Yard, Test Track and Yard Leads. Contract will specify an option for Trackwork, Phases A3 & A4.	Phases A1 & A2 Including Yard Option: Phases A3 & A4
	Running Rail	Z111		Procure	Running Rail (option for Phases A3 & A4)	
	Contact Rail	Z112		Procure	Contact Rail (option for Phases A3 & A4)	
	Concrete Ties	Z113		Procure	Concrete Ties (option for Phases A3 & A4)	
	Special Trackwork	Z114		Procure	Special Trackwork (option for Phases A3 & A4)	
	Cover Boards	Z115		Procure	Cover Boards (Option for Phases A3 & A4)	
	Track Fasteners	Z116		Procure	Track Fasteners (Option for Phases A3 & A4)	
	Rail Welding (Service)	Z119		Service	Rail Welding (option for Phases A3 & A4)	
Z130	Trackwork Design, Including Bid Documents for Phases A3 & A4 Procurement of:	Z130		Install	Trackwork - Includes installation and testing of District furnished running and contact rail, protective cover for contact rail, special trackwork, concrete ties and fasteners. Furnish and install all other materials including special tiss and insulators.	Phases A3 & A4

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
Z130 (Cont'd)	Running Rail	Z131		Procure	Running Rail	
	Contsct Rail	Z131		Procure	Contact Rail	
	Concrete Ties	Z133		Procure	Concrete Ties	
	Special Trackwork	Z134		Procure	Specisl Trackwork	
	Cover Boards	Z135		Procure	Cover Board	
	Track Fasteners	Z136		Procure	Track Fasteners	
	Rail Welding (Service)	Z139		Service	Rail Welding (Service)	
Z210	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for a Furnish & Install Train Control System Contract for Phases Al & A2 including Yard Control and carborne equipment. Provide option specifications for Phases A3 & A4 Train Control System.	Z210		Furnish & Install	Design, Furnish, Install and Test Train Control System for Main Yard, and Central Control, through Fairfax/Beverly Station. Included sre Mainline & Yard signal equipment & control equipment for Train Control Rooms; also carborne cah signal packages are to be provided for Vehicles. Contract will contain an option for similar work for Phases A3 & A4, i.e., Fairfax/Santa Monica Station through North Hollywood Station & Tail Track.	Phases Al & A2 (Including Yard & Central Control) Option: Phases A3 & A4
Z230	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for a Furnish & Install Train Control System Contract for Phases A3 & A4 including carborne cab signal packages for Vehicles.	Z230		Furnish & Install	Design, Furnish, Install and Test Train Control System for Fairfax/ Sant Monica Station through North Hollywood Station & Tail Track. Included are Mainline signal equipment & control equipment for Train Control Rooms; also carhorne cah signal packages are to he provided for Vehicles.	Phases A3 & A4

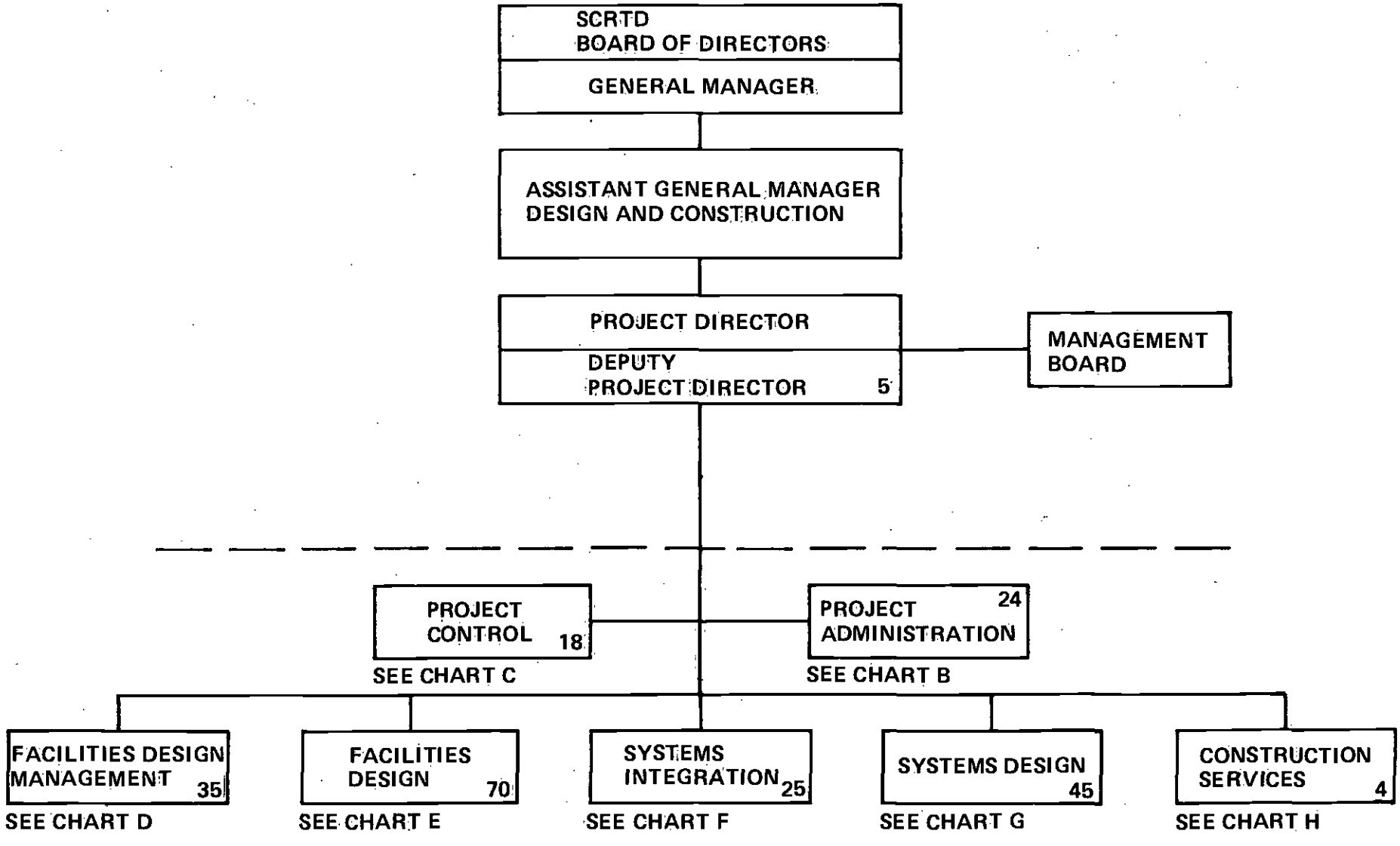
Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
310	Complete Design, Specifications and Test Parameters; Prepare Bid documents for a Traction Power Contract for Phases A1 & A2, including Yard. Provide option specifications for Phases A3 & A4, including Bid Documents for Procurement of:	Z310		Install	Install and Test District furnished Traction Power Equipment, including Switchgear, Rectifiers, Annunciator Panels, Batteries and Accessories for the Main Yard through Fairfax/ Beverly Station. Contract will contain an option for similar work for Phase A3 & A4, i.e., Fairfax/Santa Monica Station through North Hollywood Station & Tail Track.	Phases A1 & A2 (Including Yard) Option: Phases A3 & A4
	Switchgear, Rectifiers, Annunciator Panels, Batteries and Accessories.	Z311		Procure	Switchgear, Rectifiers, Annunciator Panels, Batteries and Accessories procurement. Contract will contain an option for Phases A3 & A4 equipment.	Phases A1 & A2 (Including Yard) Option Phases A3 & A4
Z330	Complete Design, Specifications and Test parameters; Prepare Bid documents for a Traction Power Contract for Phases A3 & A4, including Bid Documents for Procurement of:	Z330		Install	Install and Test District furnished Traction Power Equipment, including Switchgear, Rectifiers, Annunciator Panels, Batteries and Accessories for Phases A3 & A4, i.e., Fairfax/ Santa Monica Station through North Hollywood Station & Tail Track.	Phases A3 & A4
	Switchgear, Rectifiers, Annunciator Panels, Batteries and Accessories.	Z331		Procure	Switchgear, Rectifiers, Annunciator Panels, Batteries and Accessories procurement.	Phases A3 & A4

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
Z410	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for a Furnish & Install Systemwide Communications System Contract for Phases A1 & A2, including Yard. Provide option specifications for Phases A3 & A4.	Z410		Furnish & Install	Design, Furnish, Install and Test Systemwide Communications System for Main Yard, and Central Control, through Fairfax/Beverly Station. Contract will contain an option for similar work for Phases A3 & A4, i.e., Fairfax/Santa Monica Station through North Hollywood Station & Tail Track.	Phases A1 & A2 (Including Yard) Option: Phases A3 & A4
Z430	Establish Design Criteria, Specifications and Test Parameters; Prepare Bid documents for a Systemwide Communications System Contract for Phases A3 & A4.	Z430		Furnish & Install	Design, Furnish, Install and Test Systemwide Communications System for Fairfax/Santa Monica Station through North Hollywood Station & Tail Track.	Phases A3 & A4
Z510	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for a Transit Vehicle Contract for Phases A1 & A2. Provide option specifications for Phases A3 & A4 Transit Vehicle requirements.	Z510		Furnish	Contract will require the supplier to furnish 74 vehicles (37 married pairs) along with spare parts, maintenance manuals, special tools and vehicle testing services. An option for the District to purchase up to an additional 66 vehicles will be a part of the contract. The contract will require the District to furnish the on-board Automatic Train Control (ATC) equipment, including antennas, to the vehicle supplier, to be installed on the vehicle.	Phases A1 & A2 Option: Phases A3 & A4

Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
Z530	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for a Transit Vehicle Contract for Phases A3 & A4.	Z530		Furnish	Contract will be the same as Z510 above except the contract will be for 66 cars (33 married pairs) and no option for additional cars is contemplated.	Phases A3 & A4
Z610	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for a Fare Collection Equipment Contract for Phases A1 & A2. Provide option specifications for Phases A3 & A4 Fare Collection Equipment requirements.	Z610		Furnish & Install	Design, Furnish, Install, Test and place into operation the Fare Collection Gates at those Stations included in Phases A1 & A2. Contract will contain an option for similar work for Phases A3 & A4.	Phases A1 & A2 Option: Phases A3 & A4
Z630	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for a Fare Collection Equipment Contract for Phases A3 & A4.	Z630		Furnish & Install	Design, Furnish, Install, Test and place into operation the Fare Collection Gates at those Stations included in Phases A3 & A4.	Phases A3 & A4
Z711	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for an Escalator Contract for Phases A1 & A2. Provide option specifications for Phases A3 & A4 requirements.	Z711		Furnish & Install	Furnish, Install, Test and place into operation the Station Escalators for Stations in Phases A1 & A2. Contract will contain an option for similar work for Phases A3 & A4.	Phases A1 & A2 Option: Phases A3 & A4
Z731	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for an Escalator Contract for Phases A3 & A4.	Z731		Furnish & Install	Furnish, Install, Test and place into operation the Station Escalators for Stations in Phases A3 & A4.	Phases A3 & A4

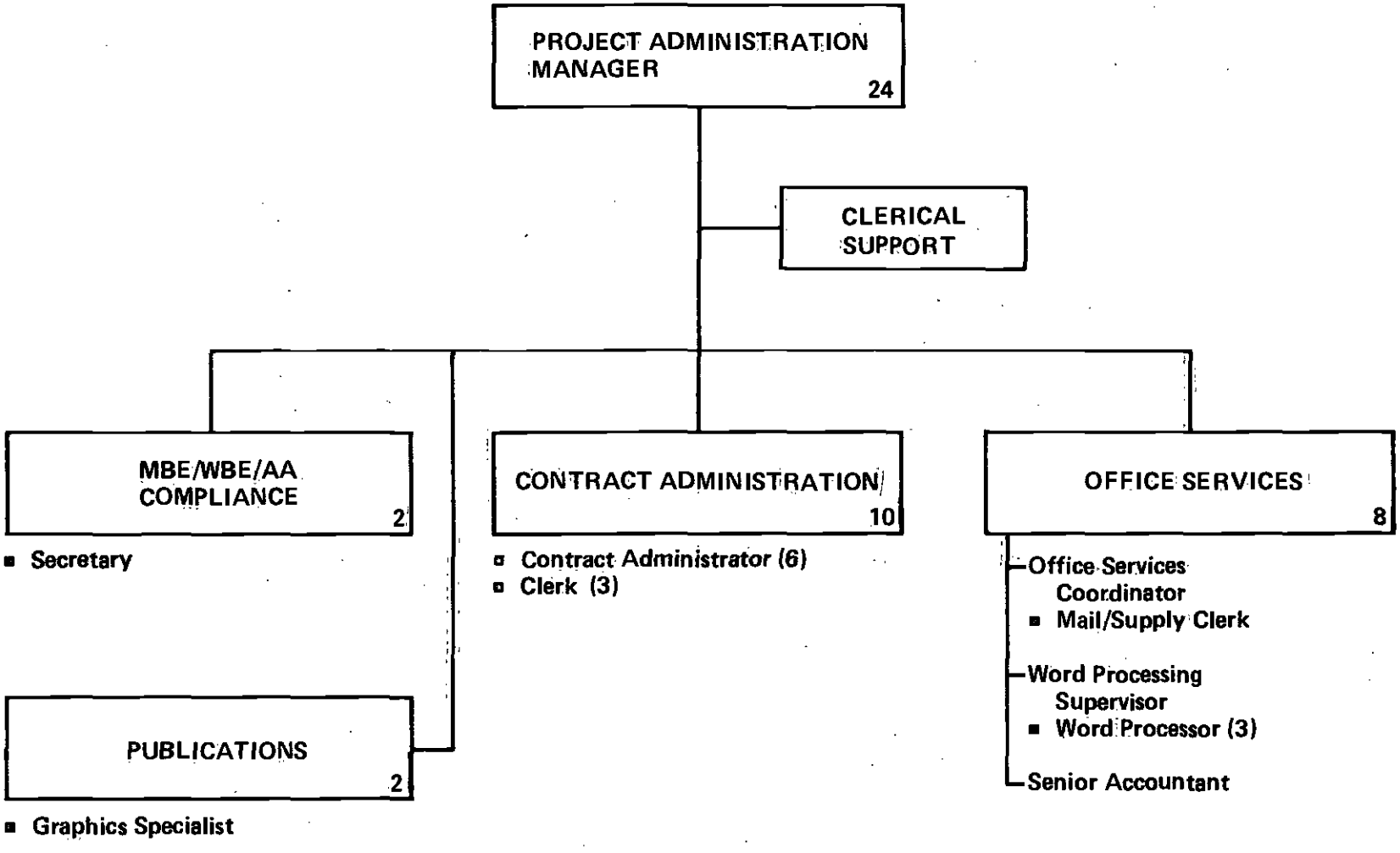
Detail Design Unit	Design Scope	Construct. Contract Unit	Length In Feet or Area(Sq.Ft.)	Contract Type	Contract Scope	Location/ Stationing From - To
Z715	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for an Elevator Contract for Phases A1 & A2. Provide option specifications for Phases A3 & A4 Elevator requirements.	Z715		Furnish & Install	Furnish, Install, Test and place into operation the Station Elevators for Stations in Phases A1 & A2. Contract will contain an option for similar work for Phases A3 & A4.	Phases A1 & A2 Option: Phases A3 & A4
Z735	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for an Elevator Contract for Phases A3 &A4.	Z735		Furnish & Install	Furnish, Install, Test and place into operation the Station Elevators for Stations in Phases A3 & A4.	Phases A3 & A4
Z800	Shop Equipment Design including preparation of Bid Documents for procurement of Shop Equipment.	Z800 Series		Furnish & Install	Multiple contracts for Shop Equipment (to be defined later).	
Z900	Establish Design Criteria, Specifications and Test parameters; Prepare Bid documents for an Equipment Installation Contract, including Bid Documents for Procurement of:					
	Mid-Tunnel Ventilation & Emergency Fans and Under-Platform Fans, Dampers & Controls.	Z916		Procure	Procure Mid-Tunnel Ventilation & Emergency Fans and Under-Platform Fans, Dampers & Controls. Contract will contain an option for similar work for Phases A3 & A4.	Phases A1 & A2 Option: Phases A3 & A4
	Mid-Tunnel Ventilation & Emergency Fans and Under-Platform Fans, Dampers & Controls.	Z936		Procure	Procure Mid-Tunnel Ventilation & Emergency Fans and Under-Platform Fans, Dampers & Controls.	Phases A3 & A4

PROJECT ORGANIZATION CHART A*

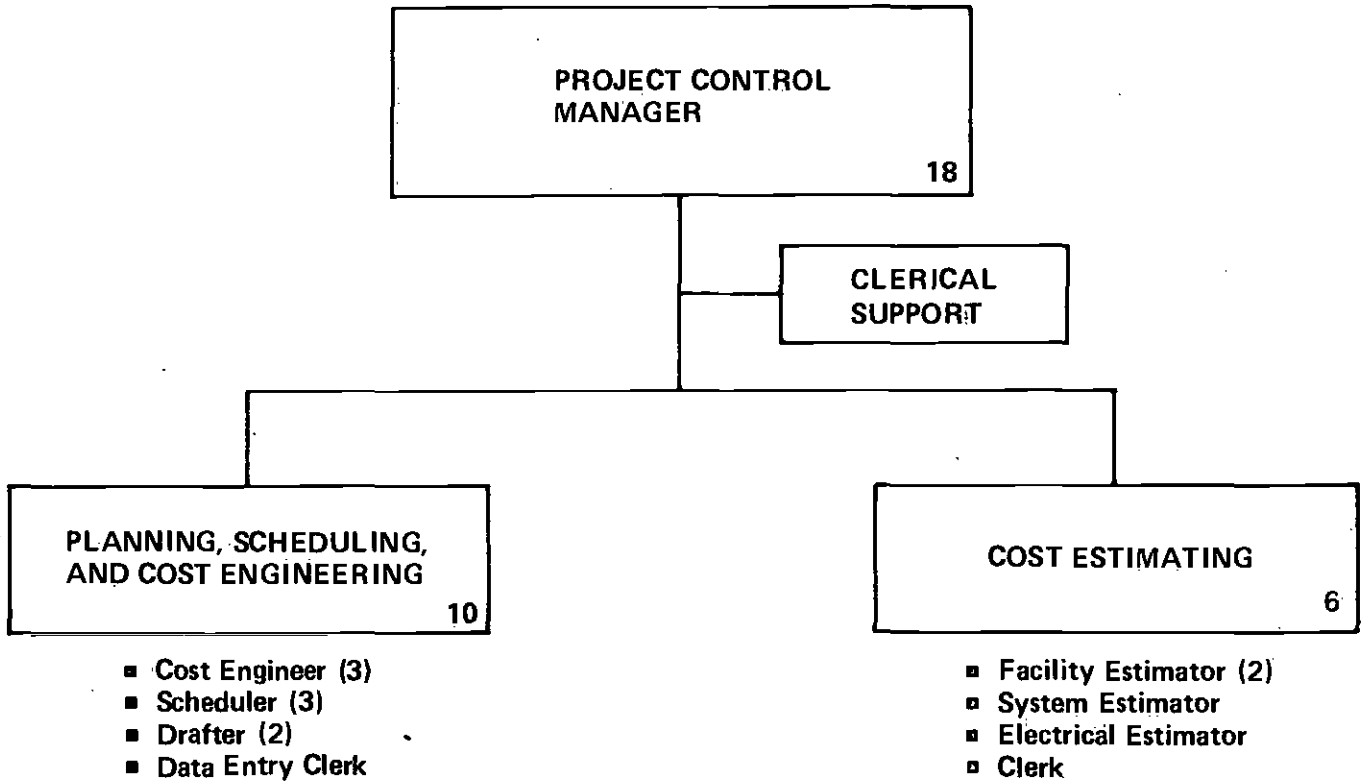


*Note: For greater detail please refer to the functonal organization chart which is located in the pocket at the back of this volume.

PROJECT ORGANIZATION CHART B



PROJECT ORGANIZATION CHART C



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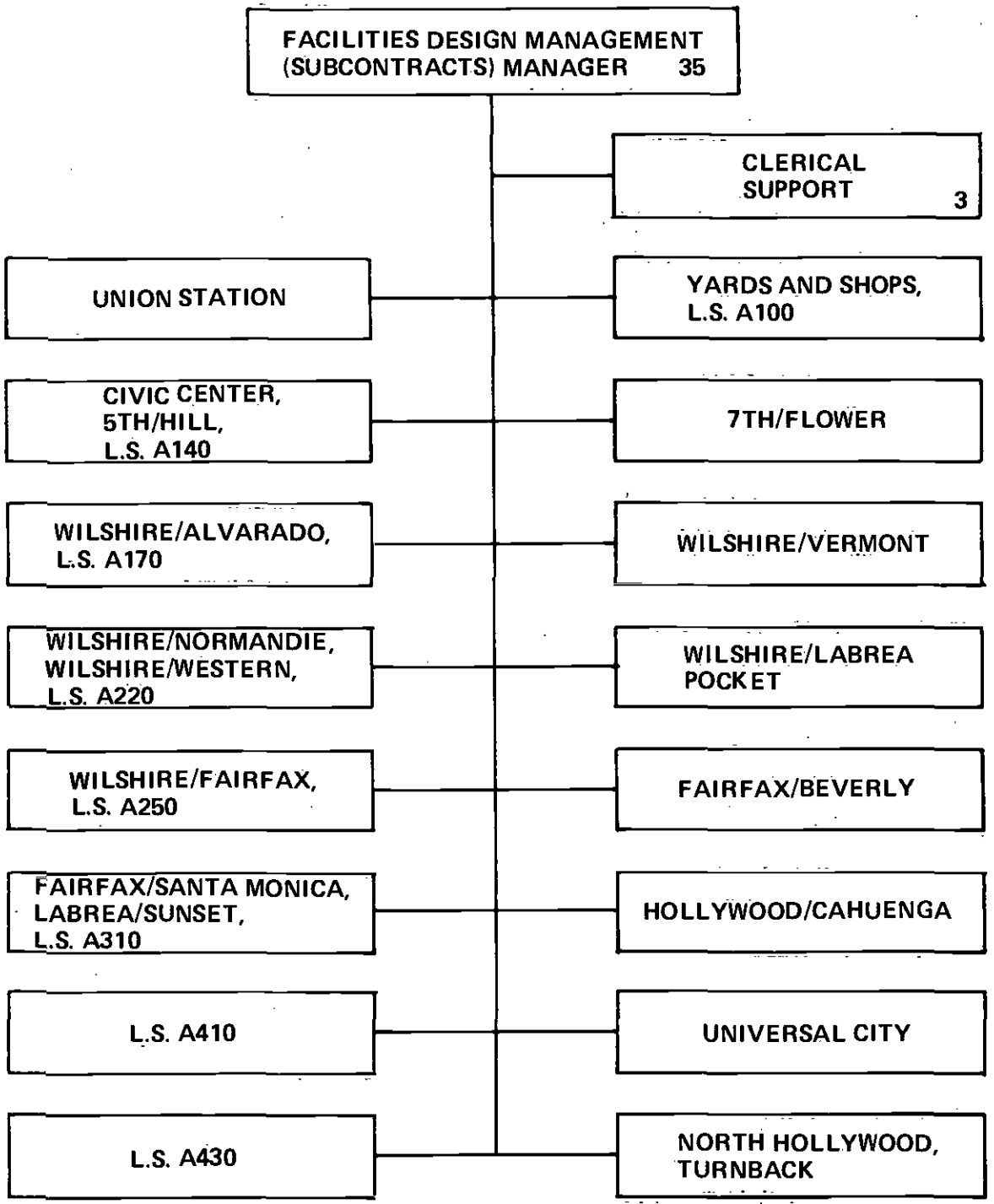

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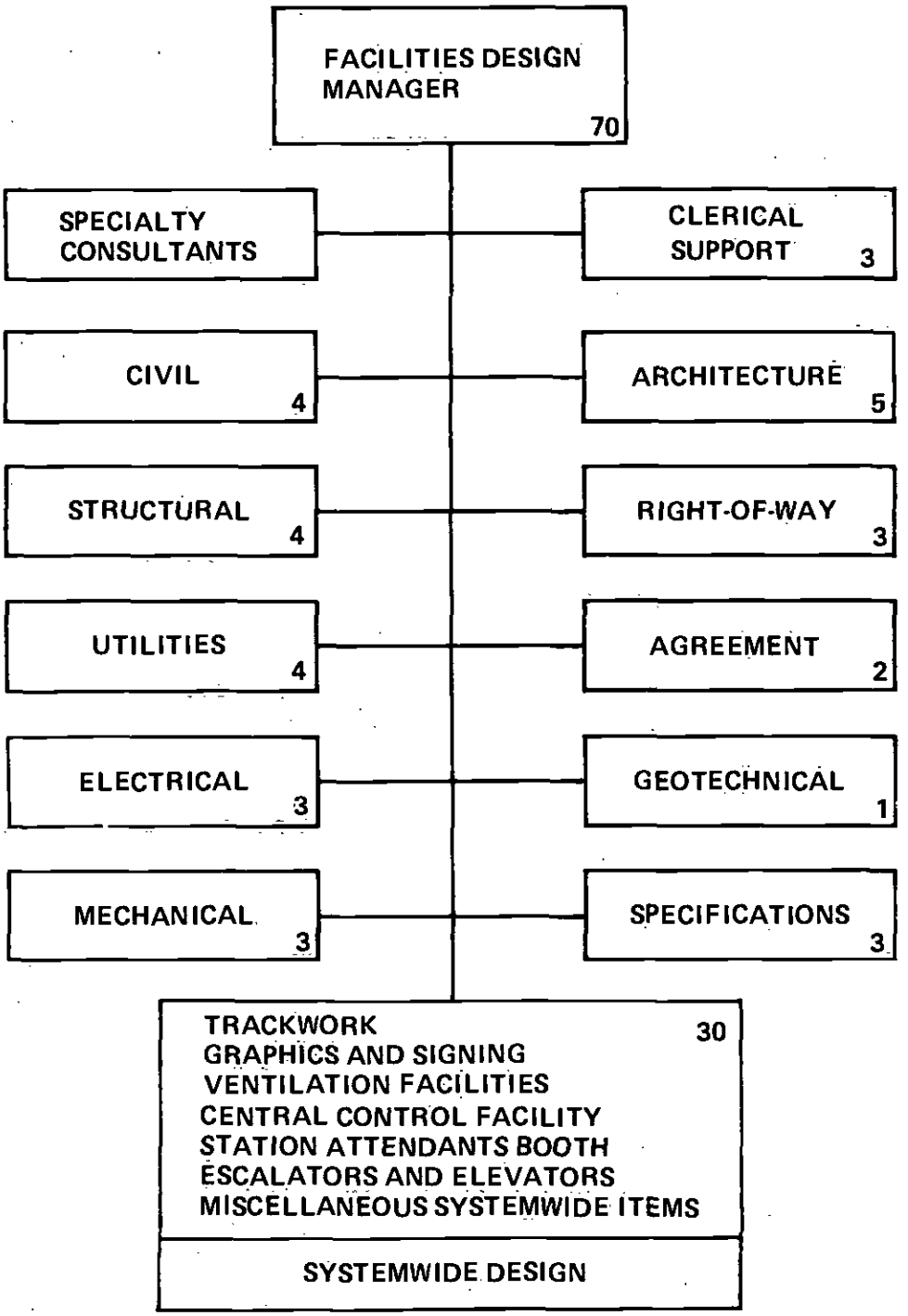

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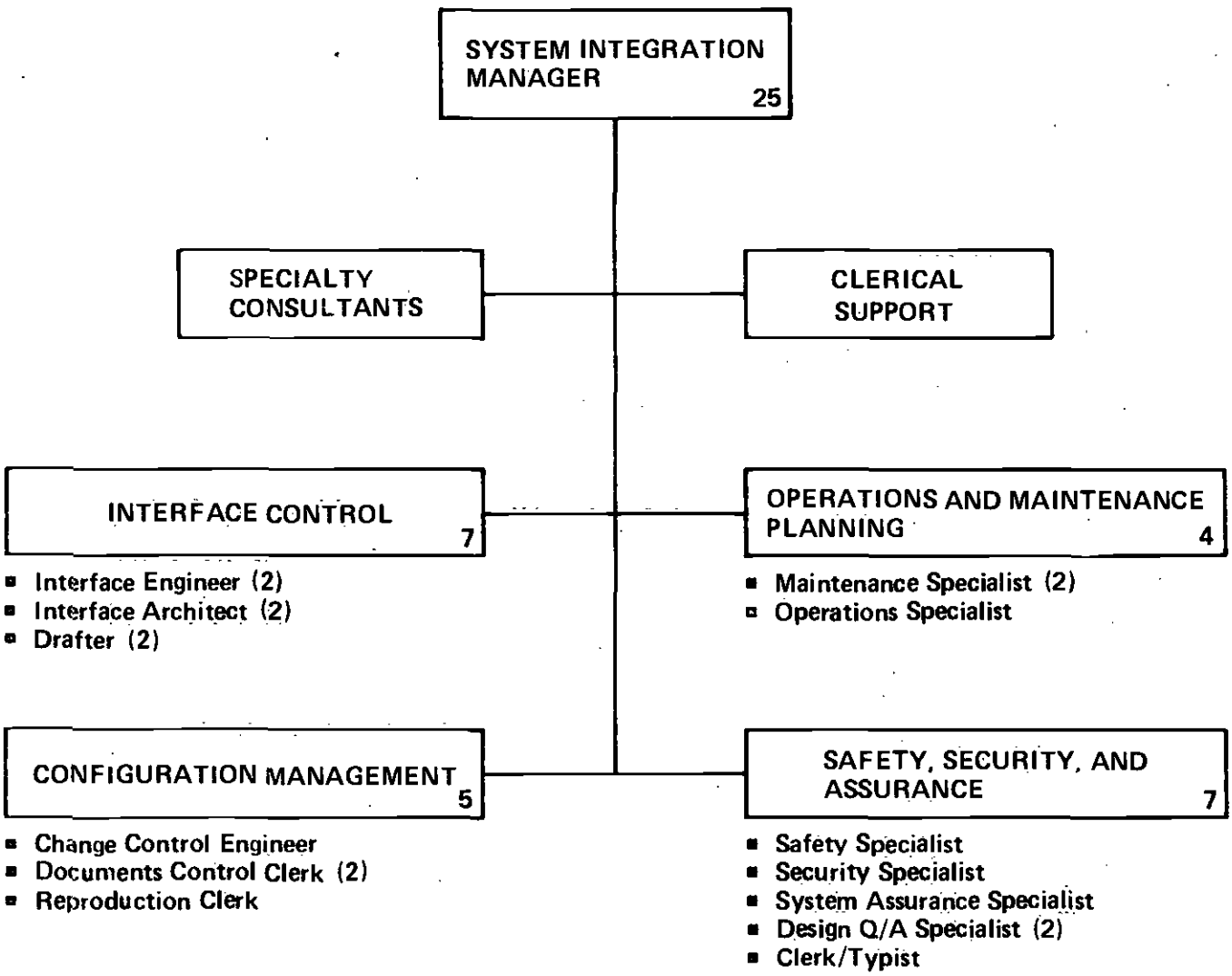
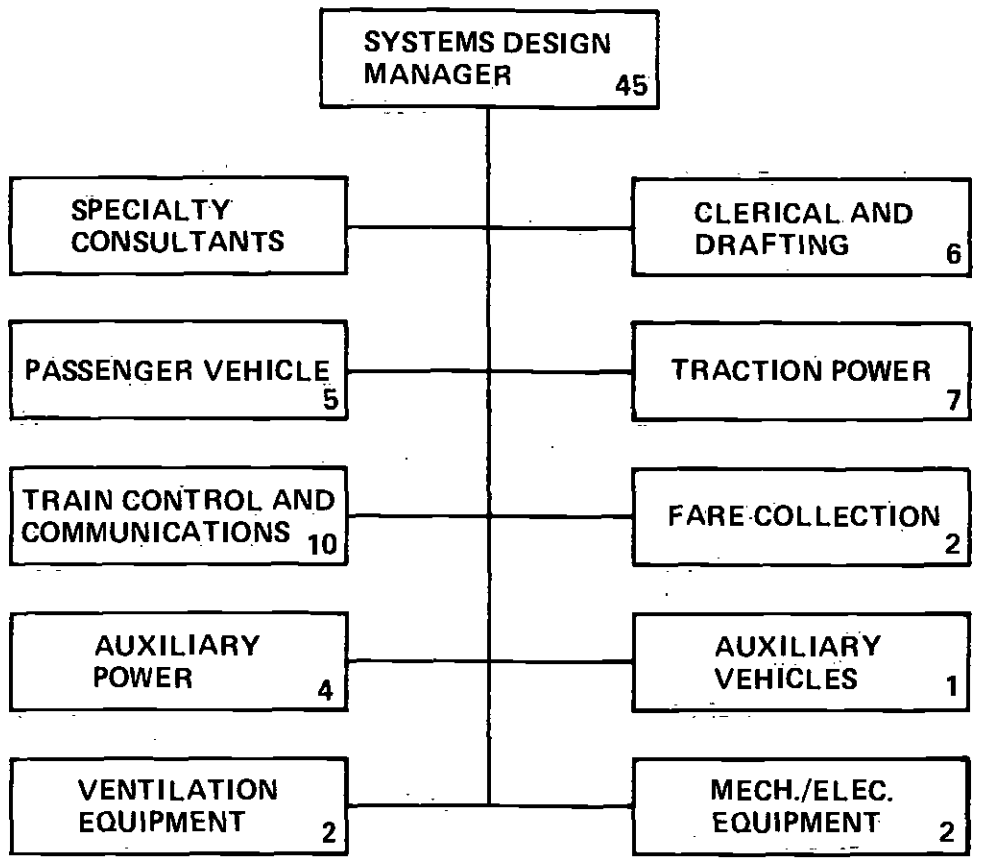
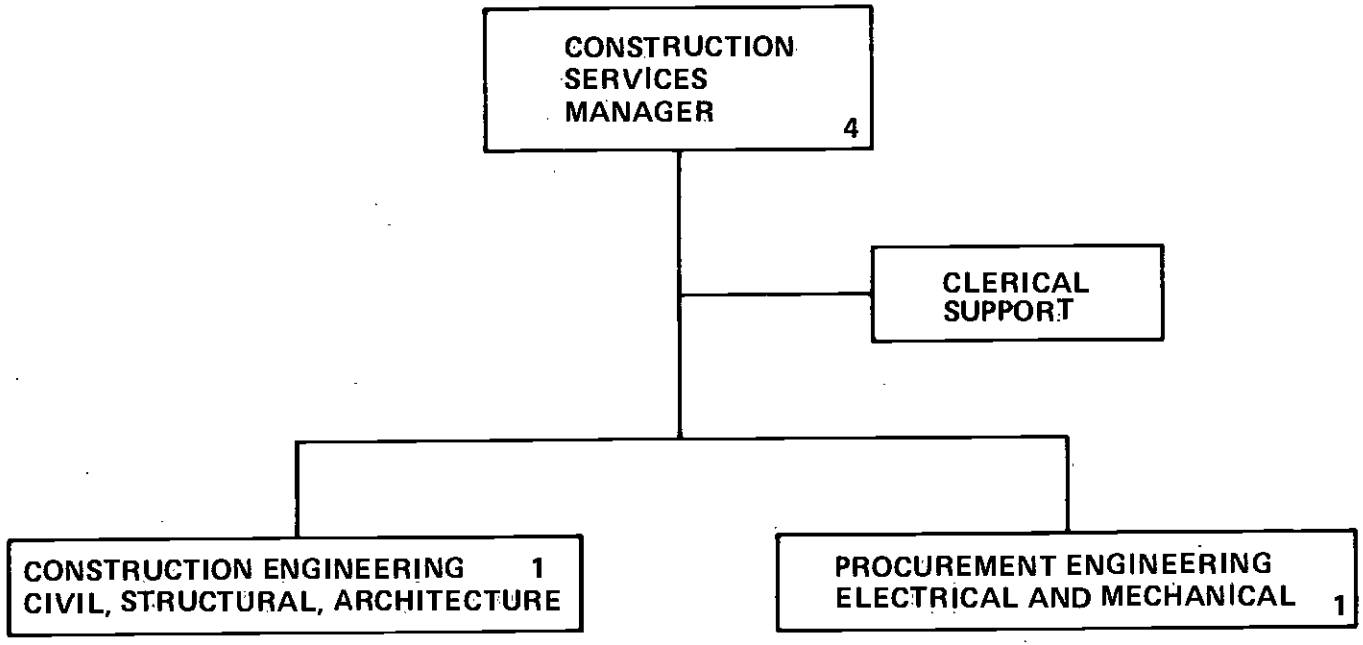


PROJECT ORGANIZATION CHART G



PROJECT ORGANIZATION CHART H



ARTICLE VII. AGREEMENT

This document embodies the entire Contract and understanding between the parties hereto pertaining to the subject matter hereof, and there are no other agreements or understandings, oral or written, pertaining to the subject matter hereof that are not merged herein and superseded hereby. No alteration, change or modification of the terms of this Contract shall be valid unless made in writing and signed by all parties hereto.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed on the date first hereinabove written.

DANIEL, MANN, JOHNSON, & MENDENHALL

WITNESS:

By _____

By _____ Title _____

Date _____

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.

WITNESS:

By _____

By _____ Title _____

Date _____

KAISER ENGINEERS (CALIFORNIA) CORPORATION

WITNESS:

By _____

By _____ Title _____

Date _____

HARRY WEESE & ASSOCIATES LTD.

WITNESS:

By _____

By _____ Title _____

Date _____

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

WITNESS:

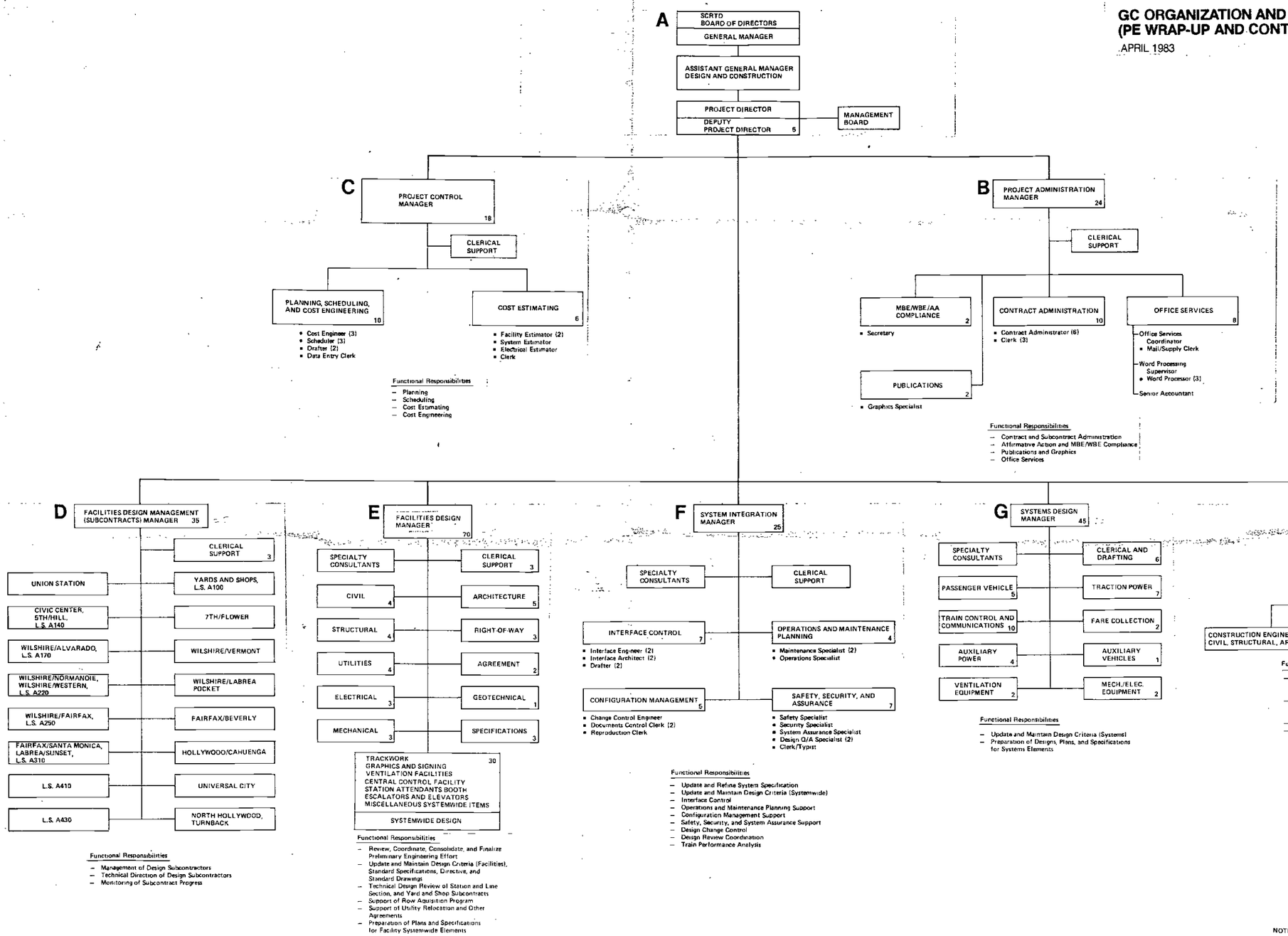
By _____

By _____ Title _____

Date _____

GC ORGANIZATION AND FUNCTIONAL RESPONSIBILITIES (PE WRAP-UP AND CONTINUING PE)

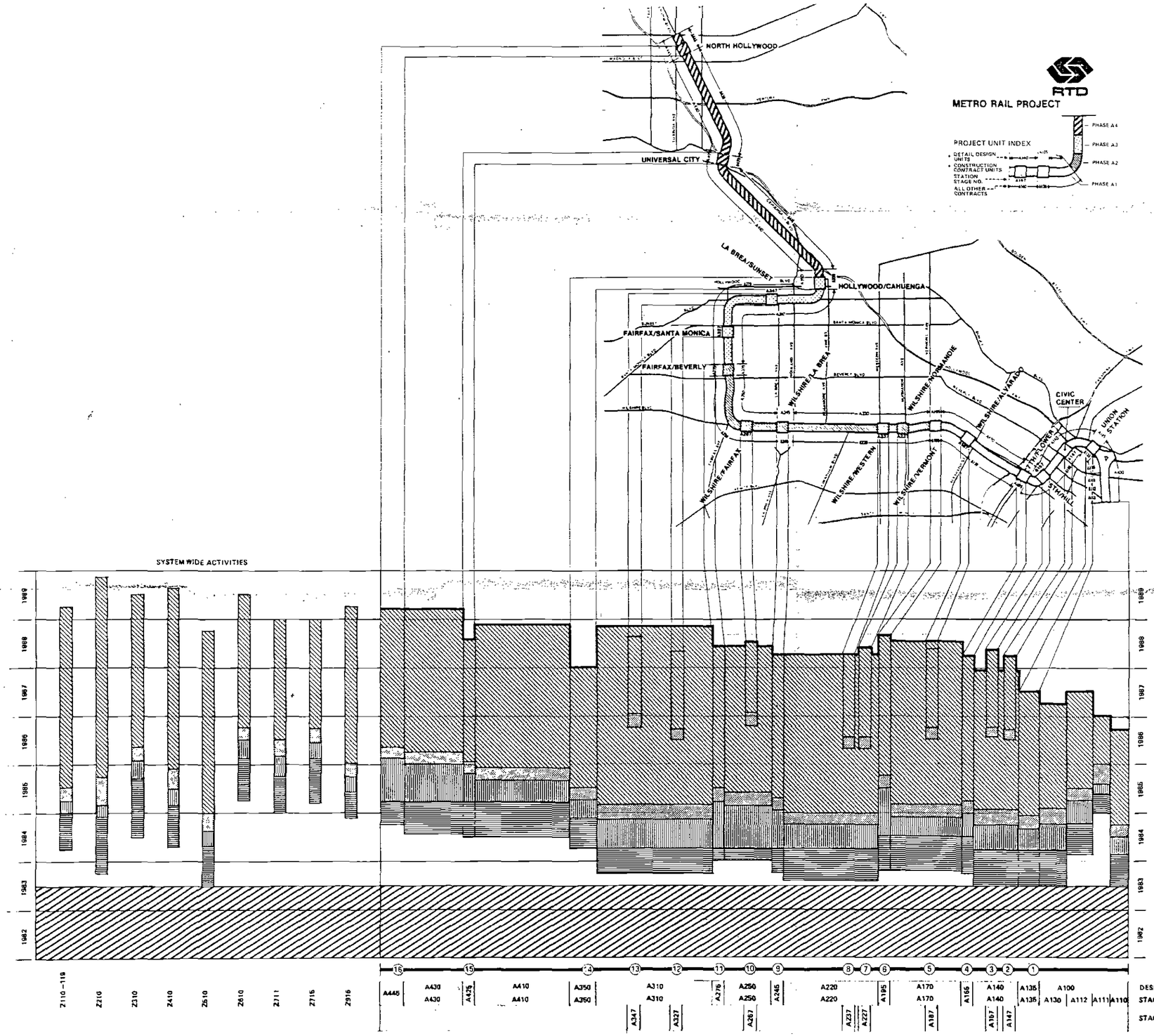
APRIL 1983



NOTE: MANPOWER LEVELS SHOWN ARE END OF FISCAL PERIOD LEVELS.

RTD

METRO RAIL PROJECT



A110 YARD CONSTRUCTION
A111 TEST TRACK
A112 SHOPS: S&I, MAJOR REPAIR, M. OF W. WASHERS, LIGHT REPAIR, TPSS, ETC.
A130 YARD LEADS & LINE SECTION
A112 OPERATIONS CONTROL BLDG.
A135 UNION STATION
A136 UNION STATION PARKING STRUCTURE
A140 LINE SECTION INCLUDING STAGE I OF CIVIC CENTER & 5TH/HILL STATIONS
A147 CIVIC CENTER STATION – STAGE II
A157 5TH/HILL STATION – STAGE II
A167 7TH/FLOWER STATION COMPLETE
A170 LINE SECTION INCLUDING STAGE I OF WILSHIRE/ALVARADO
A187 WILSHIRE/ALVARADO STATION – STAGE II
A195 WILSHIRE/VERMONT STATION – COMPLETE
A227 WILSHIRE/NORMANDIE STATION – STAGE II
A220 LINE SECTION INCLUDING STAGE I OF WILSHIRE/WESTERN AND WILSHIRE/ NORMANDIE STATIONS
A237 WILSHIRE/WESTERN STATION – STAGE II
A245 WILSHIRE/LA BREA STATION – COMPLETE
A250 LINE SECTION INCLUDING STAGE I OF WILSHIRE/FAIRFAX STATION
A267 WILSHIRE/FAIRFAX STATION – STAGE II
A275 FAIRFAX/BEVERLY STATION – COMPLETE
Z110 TRACK WORK INSTALLATION
Z310 TRACTION PWR. EQUIP. INSTALLATION
Z210 TRAIN CONTROL FURNISH & INSTALL
Z410 COMMUNICATIONS FURNISH & INSTALL
Z510 VEHICLES
Z610 FARE COLLECTION FURNISH & INSTALL
Z711 ESCALATORS FURNISH & INSTALL
Z715 ELEVATORS FURNISH & INSTALL
Z916 FARE PROCUREMENT
A310 LINE SECTION INCLUDING STAGE I OF FAIRFAX/ SANTA MONICA & LA BREA – SUNSET STATIONS
A327 FAIRFAX/SANTA MONICA STATION – STAGE II
A347 LA BREA – SUNSET STATION – STAGE II
A350 LINE & HOLLYWOOD – CAHUENGA STATION COMPLETE
A410 LINE SECTION
A425 UNIVERSAL CITY STATION COMPLETE
A426 UNIVERSAL CITY STA. PARKING STRUCT.
A430 LINE SECTION
A446 NORTH HOLLYWOOD STA. COMPLETE & TAIL TRACKS

PRELIMINARY ENGINEERING

CONTINUING PRELIMINARY ENGINEERING

FINAL DESIGN

ADVERTISE AND AWARD

MANUFACTURE, TEST AND INSTALL OR CONSTRUCTION

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
METRO RAIL PROJECT

CONSTRUCTION PROCUREMENT STAGING SCHEDULE

MLK	3-24-83	SHEET 1 OF 1	REV. 0