Southern California Rapid Transit District

METRO RAIL PROJECT

SCRTD Draft 11 Feb 6-20-89

PROPOSED AMENDMENT TO THE GENERAL CONSULTANT SERVICES CONTRACT

1989–1990 ANNUAL WORK PROGRAM

JULY 1,1989 THROUGH JUNE 30,1990

Metro Rail Transit Consultants
DMJM/PBQD/KE/HWA

MAY 25,1989

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

METRO RAIL PROJECT

GENERAL CONSULTANT SERVICES CONTRACT

ANNUAL WORK PROGRAM

VOLUME I

FOR

FISCAL PERIOD JULY 1, 1989, THROUGH JUNE 30, 1990

May 26, 1989

STATEMENT OF WORK

AND

SCHEDULES

Prepared by Metro Rail Transit Consultants

DMJM/PBQD/KE/HWA

INTRODUCTION

This document has been prepared in accordance with the provisions of Article III of the General Consultant Services Contract dated May 2, 1983, between the Southern California Rapid Transit District (District) and Daniel, Mann, Johnson, & Mendenhall/Parsons, Brinckerhoff, Quade & Douglas, Inc./Kaiser Engineers/Harry Weese and Associates, Ltd., a Joint Venture (Metro Rail Transit Consultants), to provide detailed data on work descriptions, deliverables, milestone schedules, and manpower allocations that form the basis of the Annual Work Program (AWP) Cost Estimates for the fiscal period from July 1, 1989, to June 30, 1990. The document further serves as a financial planning aid for the District in its considerations of future funding requirements for the Metro Rail Project.

Included in this document are the STATEMENT OF WORK and SCHEDULES for:

A. MOS-1 Design, consisting of continuation of final design activities and preparation of bid documents to meet the required dates shown on the MOS-1 construction schedule, Rev. 7 (dated April 13, 1989).

B. Other Design Activities required to support the work efforts of MOS-1.

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

AWP - MOS-1 ONLY

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COST AND HOUR ESTIMATES

SCHEDULE OF DELIVERABLES

COST AND PRICE ANALYSIS FORMS

ANNUAL WORK PROGRAM (AWP)- 1989/1990

MOS-1 ONLY

GENERAL SCOPE OF SERVICES

During the 1989/90 Annual Work Program, the General Consultant (GC) will continue the design of the remaining Construction Contract Units (CCU) for Metro Rail Project's MOS-1. The GC will support the District in bid and construction efforts and will provide project management and administration activities.

TASK DESCRIPTIONS

1.0 MOS-1 DESIGN

Accomplish the following design tasks as required to meet the dates shown on the MOS-1 Baseline Schedule, Revision 7 (April 13, 1989).

1.1 FACILITIES DESIGN

Complete final design and prepare bid documents for the following contracts:

1.1.1 Contract A111 - Santa Fe Avenue Restoration

Complete plans and specifications for the restoration of curbs and gutters with limited resurfacing along Santa Fe Avenue incorporating available as-built information. Process the documents through a design review cycle, incorporate design review comments and submit the documents for advertising.

1.1.2 Contract A118; Yard Site Landscaping

Revise the plans and complete the specifications for the installation of sprinkler system and landscaping around the Main Shop and the Maintenance-of-Way buildings to reflect the present site layout. Process these documents through a design review cycle, incorporate review comments and submit the final documents for advertising.

1.1.3 Contract A136; Union Station, Stage II

Complete the design activities that were begun in the previous AWP and submit final documents for review and advertising.

The design activities include, adding provisions for tiling the LAUPT passenger tunnel, incorporate review comments, make changes for compatibility with Stage I design review, and make required changes to electrical, mechanical, and architectural design to conform to code, criteria, and systems requirements.

1.1.4 Contract A147; Civic Center Station, Stage II

Complete the design activities that were begun in the previous AWP and submit final documents for review and advertising.

The design activities including, but not limited to, incorporating review comments and make changes for compatibility with Stage I design, review and make required changes to electrical, mechanical, and architectural design to conform to code, criteria, and systems requirements.

1.1.5 Contract A157; 5th/Hill Station, Stage II

Complete the design activities that were begun in the previous AWP and submit final documents for review and advertising.

The design activities including, but not limited to, incorporating review comments and make changes for compatibility with Stage I design, review and make required changes to electrical, mechanical, and architectural design to conform to code, criteria, and systems requirements.

1.1.6 Contract A760; Signing and Edgelighting

Based on the comments received, update design, incorporate review comments, and complete the plans and

specification for the fabrication of the signing and edgelighting and submit the final documents for advertising.

1.1.7 Contract A780; Furniture

Develop list of required furniture and specify catalog identification numbers and quantities for use with purchase requisition.

1.2 SYSTEMS DESIGN

Prepare procurement (bid) documents for the following Contracts:

1.2.1 Contract A672; Flat Cars

Prepare procurement specifications and drawings, as necessary, for flat cars. Quantity is to be determined.

1.2.2 Contract A675; Crane for Flat Cars

Prepare procurement specifications and drawings, as necessary, for a crane for mounting on a flat car.

1.2.3 Contract A680; Operational Graphics

Finalize technical specifications for signs to be produced in SCRTD Sign Shop. Assist the District in preparing instruction manuals showing methods of installing signs.

1.2.4 Contract A730; Fixed Shop Equipment

Prepare contract specifications and drawings as necessary under multiple contracts for advertisement for the supply, delivery, and installation of major shop equipment. Prepare technical input for purchase requisition for minor shop equipment. Contracts will include equipment for parts cleaning, air-brake shop, welding shop, and other miscellaneous fixed shop equipment.

1.2.5 Contract A735; Free-Standing Shop Equipment

Prepare procurement specifications and drawings as necessary under multiple contracts for advertisement. Contracts will include equipment for Main Shop service and inspection, heavy repair, battery shop, machine shop, and others.

1.2.6 Contract A770; Rubber-Tired Vehicles

Prepare procurement specifications for rubber-tired vehicles under multiple contracts for advertisement. Contracts include maintenance vans, supervisory sedans, lift trucks, and miscellaneous rubber-tired shop equipment.

1.2.7 Contract A775; Mobile Emergency and Maintenance Equipment

Prepare procurement specifications as necessary for rerailing equipment and portable gas detection units.

Prepare data sheets for emergency pump, portable rail grinder, and other maintenance-of-way equipment.

1.2.8 Contract A671; High Rail Car Mover

Prepare procurement specifications and drawings as necessary.

2.0 OTHER SERVICES TO SUPPORT DESIGN AND CONSTRUCTION

The following activities will be performed to support the work efforts of MOS-1.

2.1 DESIGN SUPPORT DURING CONSTRUCTION/PROCUREMENT/ INSTALLATION AND TESTING

2.1.1 Facilities

A. Modify drawings and specifications for amendments/ addenda that involve design changes.

B. Provide responses to bidders' inquiries that require responses from the designer.

C. Assist the District during Prebid Conferences to explain scope of work and answer design-related technical questions.

D. Review and comment on technical submittals when design intent or change is involved.

E. Provide technical support, as requested, on procurement contracts involving design change or intent.

F. Provide technical assistance as required by the District for certification or recertification of right-of-way.

G. Produce design drawing and specification changes to incorporate approved change requests into the contract drawings and specifications.

2.1.2 Systems

A. Automatic Train Control - (MOS-1 Support)

1. Continue interface review and coordination between Contract A620 and all other systems and facilities contracts.

2. Review and comment on A620 Contractor CDRL submittals scheduled during this AWP period.

3. Prepare responses to Contractor inquiries related to design issues and intent of the technical provisions.

4. Assist the District in preparation and review of change requests.

5. Assist the District in resolving Public Utilities Commission (PUC) issues related to the ATC System design.

6. Assist the District in the review/negotiation of Contractor's cost proposals on change requests, value engineering, and cost reductions.

7. Prepare for and attend technical meetings, interface meetings, and design reviews with the Contractor as required by the District.

8. Participate in First Article Configuration Inspection (FACI) and factory test.

9. Review and comment on Contractor's test procedure and test data.

10. Participate in planning for systems integration tests and startup procedures to be implemented during the start up of the systems.

11. Provide assistance to the Operations and Maintenance group to develop ATC operational and maintenance procedures.

B. Traction Power - (MOS-1 Support)

1. Review and comment on Contractor submittals from the Traction Power Procurement Contractors.

2. Respond to Traction Power Contractors' Field Inquiries.

3. Coordinate reviews and responses on interfaces between traction power contracts and other systems and facilities contracts.

4. Participate in preparation of test programs, in test witnessing and review of test results.

5. Participate in the preparation of change requests, related documents, and cost estimates

and impact analyses associated with the proposed changes.

6. Review the Traction Power Installation Contractor's Design Review submittals, participate in the Design Review Meetings.

C. Communications - (MOS-1 Support)

1. Maintain the MOS-1 SCADA database for stations to define and document external interfaces for station final locations as required.

2. For all MOS-1 locations, review the Internal Interface Data Sheets, which the Contractor is required to develop and coordinate.

3. Review and comment on A640 Contractor CDRL submittals scheduled during this AWP period. Research and answer field inquiries and request for information.

4. Participate in the A640 Contractor design review meetings and other coordination meetings for various stages of design submittals. Support the District in Contract 4239 activities.

5. Support the District in the implementation of the connection of Pacific Bell equipment to the District Private Line Network.

6. Provide the technical support, cost analysis, design verification and specification change preparation needed to incorporate additional Los Angeles Police Department radio coverage requirements, as directed by the District.

7. Participate in FACI and factory acceptance testing.

8. Participate in field test procedure review, witnessing of tests and review of test results.

9. Support the District in resolving Fire/Life Safety and California Public Utility Commission issues.

10. Participate in Project Management Meetings, working sessions, subcontractor reviews, quarterly status meetings and external contract review meetings.

11. Review Station Stage II contract submittals originating from MRTC Facility Designer and

incorporate communications requirements therein, and hold work sessions to assure Facilities/Systems design integration.

12. Monitor design changes that impact drawings incorporated as A640 Contract Reference Drawings.

D. Passenger Vehicles - (MOS-1 Support)

1. Support the District during the procurement of the passenger vehicles by use of the knowledge of the reasons that the District had for developing the criteria, specifications, and designs for MOS-1 to their current state.

2. Continue to maintain interface definition and control between contracts. Review and coordinate interface designs for compliance with contractual requirements and compatibility. Maintain Interface Data Sheets.

3. Review CDRL submittals and provide written comments regarding compliance with the letter and intent of the Technical Provisions.

4. Assist with Contractor technical inquiries, including requests for clarification, information and approval; change requests and exercise of the option for additional vehicles, value engineering proposals; and requests for deviation, alteration, or modification.

5. Support design reviews and FACI. Review and provide written comments on drawings; calculations; reports; lists for diagnostic-test equipment, spare parts, and special tools; and other technical data submitted by the Contractor.

6. Support of meetings that the District's holds with the Contractor and its subcontractors. Assist with preparations; provide technical support, including attendance as technical advisor; and provide follow-up support, such as assistance with action items.

7. Assist with preparation of presentations to District management, CCB, and the PUC. Draft memoranda, letters, reports, and similar documents.

8. Update the contract documents in accordance with approved change orders. Provide other services as required to maintain configuration control of the contract documents.

9. Participate in meetings related to planning, coordinating, and monitoring the vehicle procurement. Assist with meeting preparation. Prepare minutes of weekly planning meetings and minutes of other meetings if requested by the District.

10. Assist with test planning and support. Review contractor submittals of test program plans, test specifications, test procedures and test schedules. Assist with planning for equipment test. Witness tests when requested by the District. Review test reports. Assist with follow-up. Assist with planning for passenger vehicle testing at Transportation Test Center (TTC). Assist with planning for the MOS-1 system integration test.

11. Assist with the evaluation of vehicle final assembly site. Assist with the preparation of evaluation criteria and site visitation check-

list. Review support information submitted by the Contractor.

12. Maintain project files and drawing log. Retain copies of incoming and outgoing correspondence in chronological and subject files. Provide additional copies of correspondence on request, log drawing submittals by drawing number, revision, and title.

E. Fare Collection - (MOS-1 Support)

1. Participate in review of contractor submittals, particularly those related to Metro Rail stations and the wiring and installation of Ticket Vending Machines. Provide comments as appropriate.

2. Review all Stage II contracts for MOS-1 stations to verify that the underfloor duct system is specified correctly and defined accurately to be compatible with the H840 Contract.

F. Operational Graphics - (MOS-1 Support)

1. Act as technical coordinator during manufacture of signs.

2. Act as technical coordinator for installation of signs in yard/shop area.

2.2 OPERATIONS AND MAINTENANCE

Participate in Operations and Maintenance (O&M) committee activities. Prepare reports and/or other documentation as required.

O&M Support - MOS-1

A. Participate in and provide O&M support to O&M committee meetings.

B. Respond to contractor inquiries.

C. Review and comment on contractor submittals such as A130 Car Wash and A640 card access control system.

2.3 SAFETY CERTIFICATION AND SYSTEM SAFETY SUPPORT AND PARTICIPATION IN FIRE/LIFE SAFETY COMMITTEE

A. In accordance with the requirements contained in the approved Safety Certifications Plan, prepare Criteria Conformance Checklists and Specification Conformance Checklists for remaining MOS-1 contracts.

B. Participate on the F/LS Committee, Security Subcommittee, and Safety Certification Review Team. Meeting agendas and meeting minutes will be prepared. Through formal meetings and informal working sessions, provide support in determining and tracking the resolution of concerns identified during design development.

C. Maintain the Safety Certification Master File in accordance with the requirements of the Safety Certification Plan.

D. Participate in the Development of Audit checklists and the performance of Safety and Assurance Audits of Systems and Facilities contractors, in support of the Safety Certification Program.

E. Participate in the review and maintenance of the Critical/Catastrophic items lists to be developed and submitted by Systems contractors, in accordance with the requirements contained in SCRTD document 5-001.

F. Continue to perform review and evaluation of contractors' submittals in the areas of Safety and Assurance. Provide comments as appropriate.

G. Participate in the continued refinement of the SCRTD Test Program Plan, based on contractor submittals of test programs/procedures for individual contractors.

H. Support the Configuration Control Board by providing input to the Director, Systems and Construction Safety on specific change requests having a potential for impact on Safety, Assurance, or Security.

I. Support the development of Emergency Operating Procedures through the review/comment process.

J. Participate in the initial development of Safety Rules, the Fire Protection Features Manual, and the Fire and Police Communications Systems Handbook, as required by the SCRTD System Safety and Security Program Plan (SSSPP).

K. Support MRTC construction services effort by providing review of and response to field information inquiries and contractor product data submittals pertaining to Safety, Assurance, and Security.

L. Support Rail Activation Planning by participating in the initial identification of required safety

procedures and training course requirements, as contained in the SCRTD SSSPP.

M. Support the development of a plan and procedures for conducting acceptance and system-level tests of safety features (sprinkler and wet standpipe systems, alarms, emergency management panels) for eventual incorporation into the Metro Rail Test Program Plan.

N. Support the initial development of a plan describing the requirements, agendas, and schedules for emergency response team training and drills, as required by the SCRTD SSSPP.

O. Participate in the initial development of an Operating and Maintenance Hazard Analysis.

P. Update reliability and maintainability numerical indices to reflect information contained in contractors' submittals of reliability analyses.

Q. Participate in the review of contractors' submittals of operating/maintenance manuals and procedures, as related to system safety and assurance.

R. Participate in the development of the design of the subway Emergency Environmental Control System. Perform review of interim data submittals and provide coordination with the F/LSC. Assist design personnel with the resolution of comments received.

S. Perform station site security analyses to identify security related issues to be considered during design development and make recommendations as to resolution.

T. Participate in the update and revision of baseline facility construction specifications, with emphasis in the areas of fire/life safety and system assurance.

2.4 PREPARATION OF PRESENTATION MATERIAL

Provide assistance to the District, on an as-needed basis, in preparation of special presentation materials. Such material is generally required throughout the year for public hearings, District Board meetings, and other agency presentations. Participate in the presentation meetings when requested to do so by the District.

2.5 DESIGN REVIEWS AND COORDINATION

A.1 Design Review -

1. Review drawings and specifications to assure quality of design as well as the control of the design. Drawings and their associated specifications shall be checked for compatibility of design intent, conformity with standards, criteria, and applicable codes. This review shall be done by personnel other than the individual who performed the design and shall occur prior to submittal to the District of the In-Progress, Prefinal, and Final Design construction systemwide systems procurement documents.

2. Perform systems review of facilities In-Progress and Prefinal Design Review submittals. Provide design input for embedments, equipment spaces, access, environment, etc.

A.2 Q.A./Q.C. Team Reviews -

1. In addition to the above, all major construction design packages as well as certain systemwide procurement documents shall be subject to

design audit review at the Prefinal submittal stage. The review will be carried out in the project office by a six-member team of Joint Venture professionals one week prior to the Prefinal submittal. Selection of the membership will be made on the basis of the type of design packages, with its agenda focused on the quality, clarity, completeness, and integration of the design.

2. The team will study the development of the design from inception to the Prefinal level to assure that the objectives and intents of the conceptual and preliminary designs have been met. The documents will be reviewed for mitigation of design changes after contract award. The Q.A./Q.C. team will also assess the construction cost estimate for the work and report any discrepancies, cost growth, contractual interface, and schedule concerns which need to be addressed in the construction bid documents.

B. Systems Design Review and Coordination

Perform systems review of facilities In-Progress and Prefinal Design Review submittals. Provide

design input for embedments, equipment spaces, access, environment, etc. Provide fire/life safety and O&M input for MOS-1 design review packages.

2.6 SPECIFICATIONS

A. Prepare specifications for contracts to be advertised by incorporating agreed upon comments into baseline sections.

B. Make approved changes and issue change documents for ongoing construction contracts when updates and field conditions dictate changes.

2.7 ESTIMATING

Estimating services will consist of the following:

A. Conduct constructibility reviews of the designs in development to identify costs.

B. Prepare estimates as required to support design.

C. Prepare estimates to correspond with design submittals.

D. Support the development and implementation of computerized systems for estimating tasks.

E. Prepare detailed Engineer's Estimates for use in bid evaluation.

F. Prepare Design Change Request Rough Order of Magnitude (ROM) estimates as required.

2.8 SPECIAL STUDIES

Produce plans, reports, cost estimates, schedules, exhibits or other items in order to document, illustrate and provide information required by special studies as authorized by the District.

2.9 PROJECT MANAGEMENT

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. Project Management will direct and control the efforts of the GC, including its staff and subcontractors.

A. Management Board -

The Management Board is responsible for overall management of GC functions. It establishes policy,

gives direction to GC Project Director in the conduct of GC activities, and acts on appropriate matters brought before it by the Project Director. It reviews and evaluates progress in achieving the objectives of the Project as set forth by the District, and responds to the resource requirements of the Project through the individual GC members.

B. Project Director -

The Project Director provides the day-to-day overall direction to and management of the GC activities in carrying out services to the District in support of the Project. He reports to and communicates to directives from the District Assistant General Manager, Transit Systems Development or his designee, for conduct of GC activities.

C. Deputy Project Director -

The Deputy Project Director provides the day-to-day direction of the Project Management team and the Project Control Division. He reports to the Project Director.

D. Project Managers -

1. Perform management of design through Project Managers designated to one or more design

contract units. Project Managers will coordinate among all involved disciplines to ensure criteria and standards are met and assist in the coordination of the design with the City of Los Angeles and other outside agencies.

2. Perform detailed reviews of the work on a regular basis, for projects they are responsible for.

3. Prepare, maintain, and update design control registers, when required.

4. Monitor budget, progress, cost and prepare monthly progress reports.

5. Conduct weekly progress meetings for coordination. Update District's project engineers for their weekly progress reports. Assist the District in outside agency coordinations when requested.

2.10 PROJECT ADMINISTRATION

Provide the management and staff needed to plan, organize, direct, supervise, control and coordinate the administrative aspects of the GC efforts, including

affirmative action, personnel administration, contract and subcontract administration, office services, auditing/accounting, publications support, configuration management, document control, plan room, and data processing support.

A. Project Auditing/Accounting - Provide Project financial management services, including maintenance of Project accounts and books, minimal audit of invoices of selected subcontractors and vendors, and payment of all accounts payable. Implement and maintain MRTC accounting data processing procedures. Prepare single monthly invoice to SCRTD and require single invoices from all subcontractors. All purchasing of supplies, materials, equipment, and services will be assumbed by joint venture firm home offices.

B. Contract and GC Subcontract Administration - Provide procurement and administration services for obtaining, administering and closing GC subcontracts for professional and general services and supplies, including the preparation of procurement documents and proposal requests. Assist SCRTD in termination of specialty and staff augmentation subcontracts.

C. Personnel Services -

1. Affirmative Action - Coordinate, monitor, evaluate, enforce and report on all matters of Equal Employment Opportunity (EEO), and Disadvantaged Business Enterprise (DBE) of the GC and its subcontractors in accordance with UMTA regulations and the objectives and goals set forth by the District. Assist the District in evaluating and implementing the EEO/DBE program and its compliance for the GC responsibilities of the Metro Rail Project. Prepare quarterly DBE reports during first six months of AWP, but cease report preparation after DBE activity falls to insignificant level.

2. Personnel Administration - Provide Project personnel services for mobilization and demobilization, relocation administration, personnel records management, personnel policy development and administration and travel services. Maintain MRTC staffing plan in accordance with the AWP.

3. Publications Support - Provide and/or coordinate word processing and printing services needed to support publication of project

reports and specifications. During last six months of AWP, all word processing will revert to typewritten input, since word processor will be discontinued.

D. Configuration Management -

Provide the staff and management needed to plan, organize, direct, supervise and control document control, drawing and storage control, data processing support, configuration control, contract services plan room, and office services.

1. Document Control - Provides correspondence control.

   a. Prepares and provides microfilm storage of correspondence and design data as time permits.

   b. Maintain baseline correspondence documents.

E. Drawing and Storage Control - Control reproduction and distribution of baseline data for the system, including all design data.

1. Continue to provide secured storage for MOS-1, post MOS-1, LPA Phase II, design data, and project historical data on and offsite.

2. Maintain baseline drawing and contract documents.

F. Data Processing Support - Maintain, and manage data processing and communication equipment and software in support of word processing, project control, accounting, engineering, and Plan Room computer requirements.

G. Configuration Control - Continue to maintain the formal change control system for baseline documents. Provide data to document and drawing control for publication of a change status and a drawing status report. Maintain a tracking system to assure closeout and distribution of all approved changes.

H. Contract Services Plan Room - Coordinate and support compilation, assembly, printing services, and distribution of print-ready construction and procurement bid packages and addenda, during the first three months of the AWP. Assist in transfer of all Plan Room activities to SCRTD.

1. Print and distribute conformed contract documents and all approved updates.

2. Provide plan room services including sale of a associated construction documents, maps, and special publications.

I. Office Services - Provide a range of centralized services to the GC organization in support of the Project including but not limited to:

1. Moving and storage of furniture equipment

2. Storage and issue of office supplies

3. Messenger service

4. Relief of receptionist

5. Coordination of use of pool vehicles

6. Mail and telecommunications distribution and support.

2.11 PROJECT CONTROL

Cost Engineering - Cost Engineering services will consist of the following tasks:

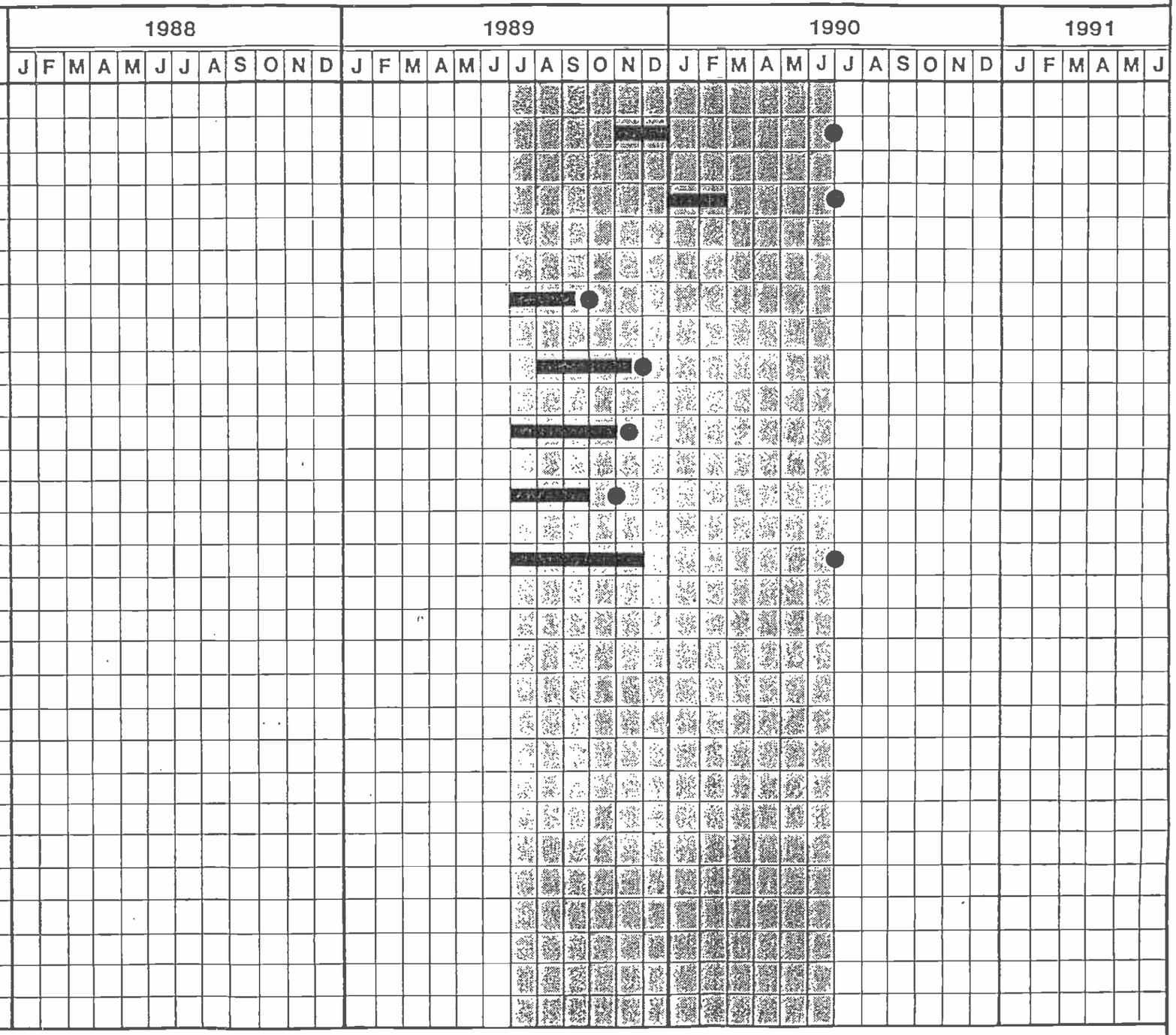
A. Collect, analyze and report actual and prepare forecast project costs and labor hours.

B. Coordinate the preparation of, edit, prepare graphics, review, and publish the Monthly Progress Report for design support activities.

C. Prepare special studies, reports, analyses of labor and cost expenditures and impact analyses due to changes.

ANNUAL WORK PROGRAM FY 89-90

TASK NO.	DESCRIPTION	DCU	CCU
1.1.1	SANTA FE AVE RESTORATION	A100	A111
1.1.2	YARD SITE LANDSCAPING	A100	A118
1.1.3	UNION STATION – STAGE II	A135	A136
1.1.4	CIVIC CENTER STA – STAGE II	A140	A147
1.1.5	5TH/HILL STATION – STAGE II	A140	A157
1.1.6	SIGNS,GRAPHICS & EDGELIGHTS		A760
1.1.7	FURNITURE		A780

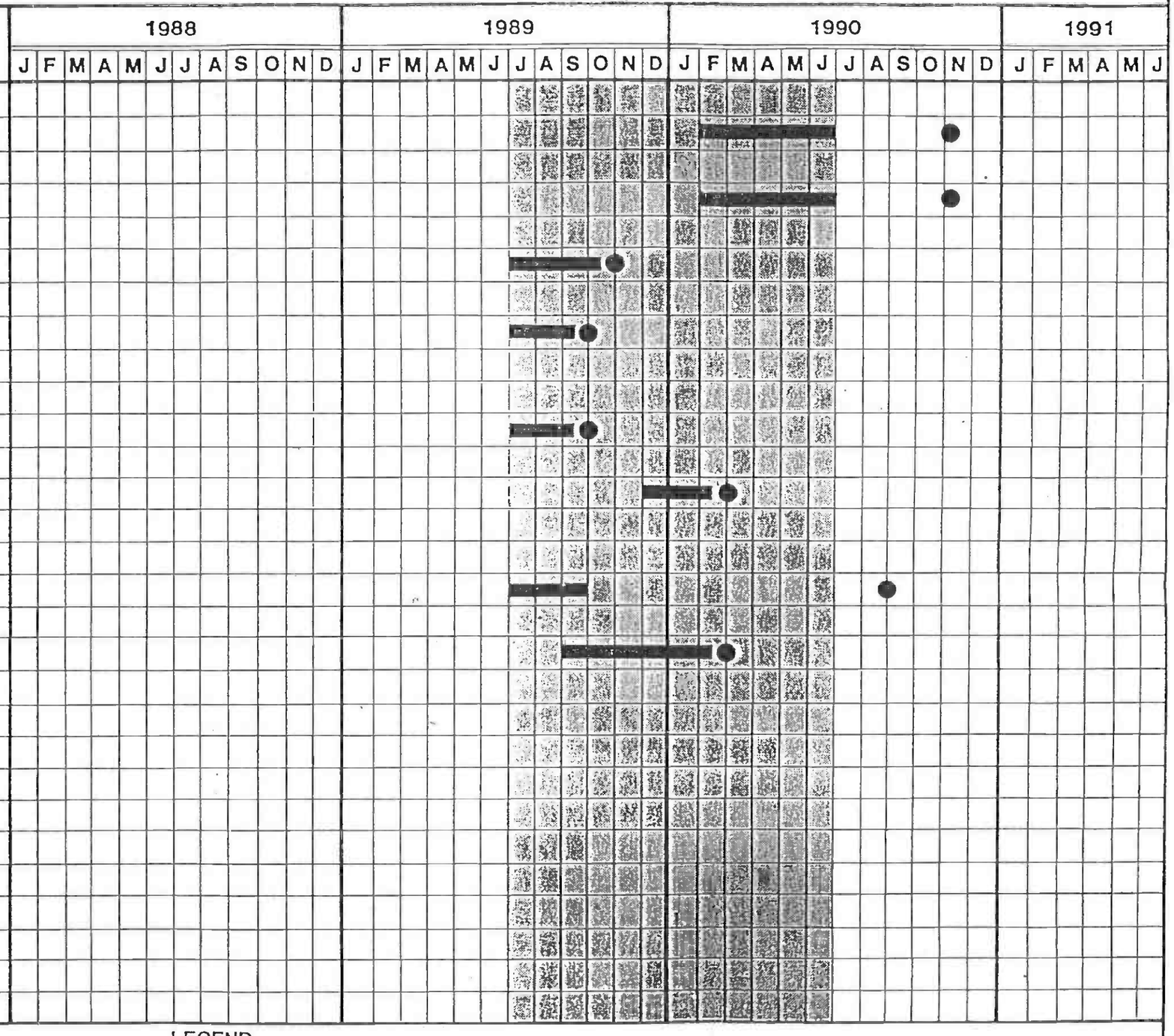


METRO RAIL TRANSIT CONSULTANTS
DMJM/PBQD/KE/HWA

LEGEND
FINAL DESIGN
ADVERTISE FOR BID

ANNUAL WORK PROGRAM FY 89-90

TASK NO.	DESCRIPTION	DCU	CCU
1.2.1	FLAT CARS		A672
1.2.2	CRANE FOR FLAT CAR		A675
1.2.3	OPERATIONAL GRAPHICS		A680
1.2.4	SHOP EQUIPMENT – FIXED		A730
1.2.5	SHOP EQUIPMENT – FREE		
	STANDING		A735
1.2.6	RUBBER TIRED VEHICLES		A770
1.2.7	MOBILE EMERGENCY &		
	MAINTENANCE EQUIPMENT		A775
1.2.8	HIGH RAIL CAR MOVER		A671



METRO RAIL TRANSIT CONSULTANTS
DMJM/PBQD/KE/HWA

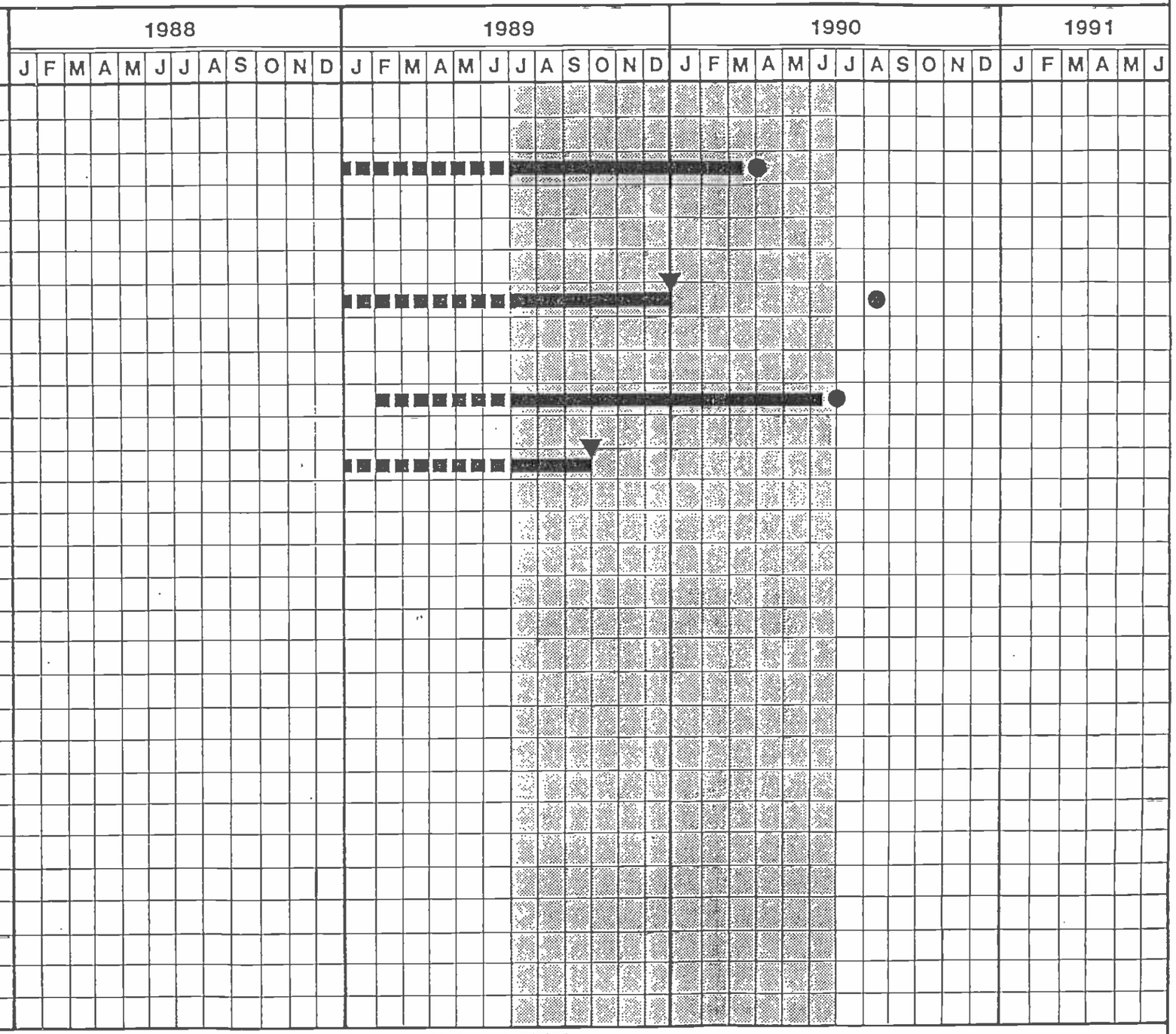
LEGEND

FINAL DESIGN

ADVERTISE FOR BID

ANNUAL WORK PROGRAM FY 89-90

TASK NO.	DESCRIPTION	DCU	CCU
2.1.1	WILSHIRE/ALVARADO TO		
	WILSHIRE/VERMONT LINE	B200	B201
2.1.2	WILSHIRE/VERMONT TO		
	WILSHIRE/WESTERN LINE &		
	WILSHIRE/NORMANDIE STA	B220	B221
2.1.3	WILSHIRE/WESTERN STATION		
	& X-OVER	B230	B231
2.1.4	WILSHIRE/VERMONT STATION	B210	B211



METRO RAIL TRANSIT CONSULTANTS
DMJM/PBQD/KE/HWA

LEGEND
PRELIMINARY DESIGN
FINAL DESIGN
ADVERTISE FOR BID

9MAY89

METRO RAIL TRANSIT CONSULTANTS
FORECAST OF EXPENDITURES FOR 1989/1990 MOS-1 ANNUAL WORK PROGRAM

Description	Total
MRTC Labor	$4,728,712
Special Consultants (Staff Augmentation)	1,182,178
Subtotal - Labor	$5,910,890
Special Consultants	348,000
Direct Reimbursable Expense	800,000
Total GC Cost	$7,058,890
Fixed Fee	490,000
Grand Total GC Cost Plus Fixed Fee	$7,548,890
Demobilization Cost (Not Included in Total)	1,200,000

SPECL-A

SPECIALTY SUBCONTRACT BUDGET SUMMARY
1989/1990 MOS-1 ANNUAL WORK PLAN

TASK	ASSIGNMENT		89/90 BUDGET
1.	SUBSURFACE INVESTIGATION	THE EARTH TECHNOLOGY CORP/CONVERSE CONSULTANTS	$ 25000
2.	SPECIAL STRUCTURAL CONSULTING	DEGENKOLB; PECK; BREKKE	10000
3.	CORROSION CONTROL	PSG WATERS	10000
4.	SCADA	MACRO CORP.	180000
5.	FIRE PROTECTION	ROLF JENSEN & ASSOC.	30000
6.	HVAC	RICHARDS	3000
7.	ESTIMATING	O.G. REE/KAL KRISHNAN	90000
		TOTAL: $	348000

OLDFORM

1989/1990 GC AWP PROPOSAL
TABLE 1

DATE OF ISSUE: 05/17/89

TASK NO.	SUMMARY BY DIVISION	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	TOTAL MOS-1 (MANMONTHS)	104.1	105.1	104.8	51.3	50.2	49.0	42.1	42.3	42.2	42.1	41.9	41.8	716.9
	TOTAL MOS-1 (MANHOURS)	17701	17866	17811	8713	8538	8338	7158	7188	7178	7153	7130	7100	121874
	FACILITIES DESIGN	8328	8513	8508	2215	2215	2195	2195	2195	2195	2195	2175	2175	45104
	SYSTEMS DESIGN	3463	3443	3433	2758	2753	2573	2073	2103	2093	2068	2065	2035	30860
	PROJECT CONTROL	1960	1960	1960	1020	850	850	680	680	680	680	680	680	12680
	PROJECT ADMINISTRATION	2845	2845	2805	2125	2125	2125	1615	1615	1615	1615	1615	1615	24560
	PROJECT MANAGEMENT	1105	1105	1105	595	595	595	595	595	595	595	595	595	8670

OLDFORM

1989/1990 GC AWP PROPOSAL
TABLE 2

DATE OF ISSUE: 05/17/89

TASK NO.	FACILITIES DESIGN		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	TOTAL MOS-1 (MANMONTHS)		49.0	50.1	50.0	13.0	13.0	12.9	12.9	12.9	12.9	12.9	12.8	12.8	265.3
	TOTAL MOS-1 (MANHOURS)		8328	8513	8508	2215	2215	2195	2195	2195	2195	2195	2175	2175	45104
1.1.1	CCU A111 - SANTA FE AVENUE RESTORATION	BUDGET	0	170	170	0	0	0	0	0	0	0	0	0	340
1.1.2	CCU A118 - YARD SITE LANDSCAPING	BUDGET	187	207	206	0	0	0	0	0	0	0	0	0	600
1.1.3	CCU A136 - UNION STATION STAGE II	BUDGET	2370	2370	2370	0	0	0	0	0	0	0	0	0	7110
1.1.4	CCU 147 - CIVIC CENTER STATION STAGE II	BUDGET	673	658	654	0	0	0	0	0	0	0	0	0	1985
1.1.5	CCU A157 - 5TH/HILL STATION STAGE II	BUDGET	953	963	963	0	0	0	0	0	0	0	0	0	2879
1.1.6	CCU A760 - SIGNS & GRAPHICS	BUDGET	570	570	570	0	0	0	0	0	0	0	0	0	1710
1.1.7	CCU A780 FURNITURE (PROCUREMENT PACKAGE)	BUDGET	20	20	20	20	20	0	0	0	0	0	0	0	100
2.5	DESIGN REVIEW AND COORDINATION	BUDGET	680	680	680										2040
2.8	SPECIAL STUDIES	BUDGET	50	50	50	50	50	50	50	50	50	50	50	50	600
2.9	PROJECT MANAGERS	BUDGET	340	340	340	170	170	170	170	170	170	170	170	170	2550
2.9	FACILITIES DESIGN MANAGER	BUDGET	170	170	170	170	170	170	170	170	170	170	170	170	2040
2.9	TUNNEL ENGINEER	BUDGET	85	85	85	85	85	85	85	85	85	85	85	85	1020
2.6	SPECIFICATIONS	BUDGET	510	510	510	170	170	170	170	170	170	170	170	170	3060
2.4	PRESENTATION MATERIALS	BUDGET	20	20	20	20	20	20	20	20	20	20			200
2.9	FACILITIES CLERICAL	BUDGET	340	340	340	170	170	170	170	170	170	170	170	170	2550
2.1	DESIGN SERVICES DURING CONSTRUCTION	BUDGET	1360	1360	1360	1360	1360	1360	1360	1360	1360	1360	1360	1360	16320

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1989/1990 GC AWP PROPOSAL
TABLE 3

DATE OF ISSUE: 05/17/89

TASK NO.	SYSTEMS DESIGN		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
TASK NO.	SYSTEMS DESIGN		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	TOTAL MOS-1 (MANMONTHS)		20.4	20.3	20.2	16.2	16.2	15.1	12.2	12.4	12.3	12.2	12.1	12.0	181.5
	TOTAL MOS-1 (MANHOURS)		3463	3443	3433	2758	2753	2573	2073	2103	2093	2068	2065	2035	30860
1.2	SYSTEMS DESIGN	BUDGET	225	215	230	45	85	60	40	85	75	50	50	25	1185
1.2.1	CCU A672 - FLAT CARS	BUDGET								25	25	25	25		100
1.2.2	CCU A675 - CRANE FOR FLAT CARS	BUDGET								25	25	25	25	25	125
1.2.3	CCU A680 OPERATIONAL GRAPHICS	BUDGET	100	100	100										300
1.2.4	CCU A730 SHOP EQUIPMENT - FIXED	BUDGET	40	30	30										100
1.2.5	CCU A735 SHOP EQUIPMENT - FREE STANDING	BUDGET	60	60	55										175
1.2.6	CCU A770 RUBBER TIRED VEHICLES	BUDGET					40	40	20						100
1.2.7	CCU A775 - MOBILE EMERGENCY AND MAINTENANCE EQUIPMENT	BUDGET	25	25	25	25	25			25	25				175
1.2.8	CCU A671 - HIGH RAIL CAR MOVER	BUDGET			20	20	20	20	20	10					110
2.1.2	DESIGN SUPPORT DURING CONSTRUCTION	BUDGET	2215	2205	2180	1790	1745	1590	1110	1095	1095	1095	1095	1090	18305
	TRACTION POWER	BUDGET	480	480	480	320	320	250	170	170	170	170	170	170	3350
	AUTO TRAIN CONTROL	BUDGET	380	380	380	240	240	170	170	170	170	170	170	165	2805
	COMMUNICATIONS	BUDGET	600	600	600	510	510	510	340	340	340	340	340	340	5370
	PASSENGER VEHICLES	BUDGET	425	415	390	390	345	330	170	170	170	170	170	170	3315
	FARE COLLECTION	BUDGET	40	40	40	40	40	40	40	40	40	40	40	40	480
	OPERATIONAL GRAPHICS	BUDGET	35	35	35	35	35	35	35	35	35	35	35	35	420
	DRAFTING	BUDGET	255	255	255	255	255	255	185	170	170	170	170	170	2565
2.2	OPERATIONS & MAINTENANCE	BUDGET	30	30	30	30	30	30	30	30	30	30	30	30	360
2.3	SAFETY CERTIFICATION/FLS/ SYSTEM SAFETY SUPPORT	BUDGET	510	510	510	510	510	510	510	510	510	510	510	510	6120

OLDFORM

1989/1990 GC AWP PROPOSAL
TABLE 3

DATE OF ISSUE: 05/17/89

TASK NO.	SYSTEMS DESIGN		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
2.5.2	DESIGN REVIEW AND COORDINATION	BUDGET	100	100	100										300
2.9	SYSTEMS DESIGN MANAGEMENT	BUDGET	170	170	170	170	170	170	170	170	170	170	170	170	2040
2.9	CLERICAL	BUDGET	170	170	170	170	170	170	170	170	170	170	170	170	2040
2.9	WORD PROCESSING	BUDGET	43	43	43	43	43	43	43	43	43	43	40	40	510

OLDFORM

1989/1990 GC AWP PROPOSAL
TABLE 4

DATE OF ISSUE: 05/17/89

TASK NO.	PROJECT CONTROL		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	TOTAL MOS-1 (MANMONTHS)		11.5	11.5	11.5	6.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0	74.6
	TOTAL MOS-1 (MANHOURS)		1960	1960	1960	1020	850	850	680	680	680	680	680	680	12680
2.11	MANAGER	BUDGET	170	170	170	170	170	170	170	170	170	170	170	170	2040
2.11	CLERICAL	BUDGET	170	170	170	170	170	170	170	170	170	170	170	170	2040
2.7	ESTIMATING	BUDGET	1280	1280	1280	510	340	340	340	340	340	340	340	340	7070
2.11	COST CONTROL	BUDGET	340	340	340	170	170	170	0	0	0	0	0	0	1530

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1989/1990 GC AWP PROPOSAL
TABLE 5

DATE OF ISSUE: 05/17/89

TASK NO.	PROJECT ADMINISTRATION		JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	TOTAL MOS-1 (MANMONTHS)		16.7	16.7	16.5	12.5	12.5	12.5	9.5	9.5	9.5	9.5	9.5	9.5	144.5
	TOTAL MOS-1 (MANHOURS)		2845	2845	2805	2125	2125	2125	1615	1615	1615	1615	1615	1615	24560
2.10	PROJECT ADMIN MANAGER	BUDGET	170	170	170	170	170	170							1020
2.10	ACCOUNTING/PURCHASING	BUDGET	380	380	340	340	340	340	340	340	340	340	340	340	4160
2.10	CONTRACTS	BUDGET	170	170	170	170	170	170	170	170	170	170	170	170	2040
2.10	PERSONNEL/TECH EDITOR/WORD PROCESSING MANAGER	BUDGET	340	340	340	340	340	340	170	170	170	170	170	170	3060
2.10	CONFIGURATION MANAGEMENT	BUDGET	510	510	510	340	340	340	340	340	340	340	340	340	4590
2.10	LIBRARY/DOC CONTROL	BUDGET	510	510	510	340	340	340	170	170	170	170	170	170	3570
2.10	PLAN ROOM	BUDGET	340	340	340										1020
2.10	OFFICE SERVICES	BUDGET	340	340	340	340	340	340	340	340	340	340	340	340	4080
2.10	CLERICAL	BUDGET	85	85	85	85	85	85	85	85	85	85	85	85	1020

OLDFORM

1989/1990 GC AWP PROPOSAL
TABLE 6

DATE OF ISSUE: 05/17/89

TASK NO.	PROJECT MANAGEMENT	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
	TOTAL MOS-1 (MANMONTHS)	6.5	6.5	6.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	51.0
	TOTAL MOS-1 (MANHOURS)	1105	1105	1105	595	595	595	595	595	595	595	595	595	8670
2.9	PROJECT DIRECTOR	255	255	255	255	255	255	255	255	255	255	255	255	3060
2.9	DEPUTY PROJ DIRECTOR	170	170	170										510
2.9	CHANGE CONTROL	170	170	170	170	170	170	170	170	170	170	170	170	2040
2.9	CLERICAL	510	510	510	170	170	170	170	170	170	170	170	170	3060

ANNUAL WORK PROGRAM (AWP) - 1989/1990

PHASE II

2.0 PHASE II DESIGN

The Scope of Services for Phase II design, which consists of Part "A" and Part "B" was previously negotiated and included here for reference only. The Notice-to-Proceed for Part "A" with a not-to-exceed cost and fee of $6,400,000 was issued on January 3, 1989 (copy attached). The negotiated Scope of Work for Part "A" will essentially be complete by June 30, 1989, except for certain subconsultant tasks and closeout activities.

The Phase II Part "B" proposed activity includes design and support functions for which the scope is established and negotiated as a part of Amendment No. 13 (copy attached). The work on Part "B" will not commence without specific written Notice-to-Proceed from the District. At that time certain clauses and attachments to Amendment No. 13 will require modifications to be consistent with the current proposal and schedule.

Upon approval of the FEIS and Full Funding Grant Agreement, additional funds will be required during Fiscal

Year 1990 AWP to complete final design in accordance with the approved schedule.

RTD

88-06545

December 21, 1988

12/23/88

RECEIVED
DEC 23 1988
D.C.C.

Mr. K. N. Murthy
Project Director
Metro Rail Transit Consultants
548 South Spring Street, 7th Floor
Los Angeles, CA 90013

CONTRACT NO. 2997
FOR GENERAL CONSULTANT SERVICES
AMENDMENT TO FY 1989 ANNUAL WORK PROGRAM
FOR PHASE II ENGINEERING DESIGN SERVICES

L I M I T E D N O T I C E T O P R O C E E D

Dear Mr. Murthy:

Effective January 3, 1989, you are authorized to proceed on the following tasks contained in Amendment No. 13 of Contract No. 2997. This authorization is limited to a not-to-exceed cost and fee of $6,400,000. Where applicable, the limits of authorized work are identified below:

Task No.	Task Description
1.A	Preliminary Engineering of line tunnel segments and six stations (Vermont/Beverly, Vermont/Santa Monica, Vermont/Sunset, Hollywood/Western, Hollywood/Vine, Hollywood/Highland)
1.B	Initiate General Engineering Design of the line tunnel segment from the Wilshire/Alvarado Station to the Wilshire/Vermont Station.
1.C	Initiate the Engineering Design of the Wilshire/Vermont Station.
1.F	Refine construction/procurement descriptions.
1.G	Initiate systems requirements and interface design.
1.H	Provide assistance to the District in preparation of engineering and construction schedules.
1.I	Initiate design support tasks.

This Limited Notice to Proceed is issued with the following understandings:

1. No work shall begin on any final design task until such time as the NEPA environmental process for Phase II is complete and the District issues a full Notice to Proceed.

2. All tasks or portions thereof are contained in the negotiated Work Program for Phase II Engineering Design Services, dated October 13, 1988, and approved by the District Board of Directors on November 10, 1988 as Amendment No. 13 to Contract No. 2997 for General Consultant Services.

3. No other costs are added to the negotiated Phase II Work Program as a consequence of limiting several tasks.

4. The estimated costs associated with this limited Notice to Proceed, when added to the estimated costs of the tasks to be commenced at a later date, shall equal the estimated costs of the tasks in the negotiated Phase II Work Program.

The District looks forward to your successful performance of the work covered herein. If you have any questions on contractual matters, feel free to call Robert Sechler at (213) 972-6867.

Sincerely,

Paul L. Como

Paul L. Como, Director
Office of Contracts,
Procurement & Materiel

cc: W. Rhine
J. Crawley

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

METRO RAIL PROJECT

GENERAL CONSULTANT SERVICES CONTRACT AMENDMENT

PHASE II WORK PROGRAM AND COST ESTIMATE

PROGRAM TO BEGIN DURING 88/89 AWP AND CONTINUE FOR NINE MONTHS AFTER NTP

September 9, 1988

Prepared by Metro Rail Transit Consultants

DMJM/PBQD/KE/HWA

PHASE II

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INTRODUCTION

This document has been prepared in accordance with the provisions of Article III of the General Consultant Services Contract dated May 2, 1983, between the Southern California Rapid Transit District (District) and Daniel, Mann, Johnson, & Mendenhall/Parsons, Brinckerhoff, Quade & Douglas, Inc./Kaiser Engineers/Harry Weese and Associates, Ltd., a Joint Venture (Metro Rail Transit Consultants), to provide detailed data on work descriptions, deliverables, milestone schedules, and manpower allocations that form the basis of the Phase II Work Program and Cost Estimates for the nine month period following NTP on this Program. The document further serves as a financial planning aid for the District in its considerations of future funding requirements for the Metro Rail Project.

Included in this document are the WORK PROGRAM and COST ESTIMATE for:

Phase II Engineering Design, consisting of:

1. Completion of the preliminary engineering design of the six stations located at Vermont/Beverly, Vermont/Santa Monica, Vermont/Sunset, Hollywood/Western, Hollywood/Vine, and Hollywood/Highland including the adjacent line segments in tunnel.

2. Completion of the final engineering design of the line tunnel segment between the Wilshire/Alvarado Station and the Wilshire/Vermont Station.

3. Initiation and completion to the In-Progress level the final engineering design of the Wilshire/Vermont Station.

4. Completion of the engineering design of the Wilshire/Western Station and crossover.

5. Completion of the engineering design of the Wilshire/Normandie Station and adjacent line tunnel segments to the Prefinal level.

1.0 GENERAL SCOPE OF SERVICES

A. Preliminary Engineering of Line Tunnel Segments and Six Stations

Based on the "Limited Preliminary Engineering" concept plans, drawings will be developed depicting the preliminary design of the Vermont/Beverly Station, Vermont/Santa Monica Station, Vermont/Sunset Station, Hollywood/Western Station, Hollywood/Vine Station and Hollywood/Highland Station. These stations are all in cut-and-cover subway configuration and are connected by twin-bore line sections in tunnel. The designs developed for each station will include drawings for a site plan, a civil site plan, a utility plan, a longitudinal section and details and transverse sections and details. These drawings reflect the study of such factors as compatibility with adjacent property uses, property acquisition impacts; traffic flow requirements; bus/rail interfaces; kiss/ride facilities; entrance locations and concourse, platform and ancillary room layouts; and TPSS locations.

B. Complete Engineering Design of the Line Tunnel Segment from the Wilshire/Alvarado Station to the Wilshire/Vermont Station

Based on the alignment, design and construction parameters established and approved during the "Limited Preliminary Engineering," the final engineering design

of the line section extending from the termination of MOS-1 at the Wilshire/Alvarado Station to the proposed Phase II station at Wilshire/Vermont will be initiated. The line segment consists of a cut-and-cover section of pocket track beginning at the Westerly end of the Wilshire/Alvarado Station and extending to the west side of MacArthur Lake. This cut-and-cover section includes design of the pocket track and the structure required for the transition to the twin bore line section in parallel tunnels. The parallel tunnels continue westerly, and transition to an over/under configuration, terminating at the Easterly end of the Wilshire/Vermont station. The design will be advanced toward completion in all disciplines including, but not limited to, civil, utilities, architectural, and structural items of work to an in-progress level of design (approximately 60% of design) for review and agency coordination. The in-progress design will provide a clear indication of progress toward design solutions for problems that have been identified and will consist of completed, mathematized horizontal and vertical track alignment; sizing of structural members; utility rearrangements; substantial design of mechanical subsystems such as fire protection, plumbing, fans and pumps; and substantial design of electrical subsystems such as lighting, cable schedules, equipment layout and riser diagrams. The specifications will be compatible with the in-progress level of design. The design will continue, and a prefinal submittal (approximately 85% complete) will follow the in-progress submittal. The plans and specifications for all disciplines shall be complete except for detail checking and will show necessary details for construction. Upon completion of the prefinal review and incorporation of mutually agreed-upon comments, the final submittal of contract documents will be completed.

C. Initiate and Complete to the In-Progress Level Engineering Design of Wilshire/Vermont Station

Based on the conceptual design developed and approved during the "Limited Preliminary Engineering" phase the engineering design of this station and development of the plans to the in-progress level (approximately 60%) of design will be initiated, and processed for design review and agency coordination. The Wilshire/Vermont Station is an "over/under," cut-and-cover three level box structure, including two side platforms, ancillary rooms, and trainway turnouts. Also included are entrances and public plazas linking RTD bus operations, principal street intersections, and potential future joint development. The in-progress submittal will indicate progress towards solutions to problems which have been identified, and the design level will be such that the horizontal and vertical track alignment will be mathematized, the station layout will be defined, the structural members will be sized and mechanical and electrical subsystems will be defined and located. The specifications will be at a compatible level with development of design.

D. Complete Engineering Design of the Wilshire/Western Station, Crossover, and Tail-Track

During the design of the previously adopted alignment the design of the Wilshire/Western Station was advanced to a level of design between the In-Progress and Prefinal. As a part of this work program the above documents will be reviewed for those items of work which specifically need further design and those elements of the previous design requiring design modifications, including revisions to the station design resulting from the addition of a new crossover located adjacent to and

east of the station and a new tail-track west of the station. Included in the complete final design of the new crossover and tail-track are civil engineering design of alignment plan and profiles; trackwork engineering and design; utility relocation design to accommodate additional cut-and-cover construction; right-of-way and underpinning requirements; structural configuration, calculations, and construction details; safety walkway and crosswalk layouts and details; provisions for mechanical, electrical, communications, and automatic train control requirements; coordination with Fire/Life Safety and Operations and Maintenance Committees to resolve and incorporate their comments; and verification of equipment tolerances and facility clearances. Based on the reviews of the previous design work and the new crossover and tail-track design, design development and contract documents will be completed. Previous review comments from outside agencies will be discussed and incorporated into design per District's direction.

E. Complete Engineering Design to the Prefinal Level of the Wilshire/Normandie Station and the Adjacent Line Segments In Tunnel

During the design of the previously adopted alignment, the design of Wilshire/Normandie Station and the tunnel line segment between Wilshire/Normandie and Wilshire/Western were advanced to a level between In-Progress and Prefinal. As a part of this work program the above documents will be reviewed for those items of work which specifically need further design and those elements of the previous design that requires design modifications. In addition, the design of the tunnel line segment between Wilshire/Vermont Station trainway turnout and the Wilshire/Normandie Station will be advanced to

include the new over/under configuration and alignment at the Wilshire/Vermont Station, and the transition to a parallel twin tunnel configuration proceeding westward under Wilshire Boulevard to Wilshire/Normandie Station. Based on the reviews of the previous design work and the new over/under line segment configuration, design development will be completed to the Prefinal level. Previous review comments from outside agencies will be discussed and incorporated into design per District's direction.

F. **Refine Contract Unit Descriptions and Develop Procurement Plan and Strategy for Contract Advertising**

The preliminary Contract Unit Descriptions developed during the Limited Preliminary Engineering phase will require refinement to add definition to the design task descriptions and to the construction/procurement contract descriptions. A procurement strategy will be developed for each contract considering any option quantities in MOS-1 contracts and the schedule constraints imposed in exercising options. Procurement plans, including contract type (performance or detailed hardware), interface control methods, contract size and design and procurement schedules will be provided for proceeding into final design. Results will be documented in an equipment procurement packaging plan.

G. **Systems Requirements and Interface Design**

The Systems Requirements established during Limited Preliminary Engineering will be adhered to and expanded, leading to preliminary engineering milestone submittals of equipment designs to accommodate operation of the Phase II system. Systems design services include the

supervision and coordination of traction power, communications, automatic train control, passenger vehicles, auxiliary vehicles, maintenance equipment and fare collection. Systems engineers will also perform systems support services including system safety, assurance, security, operations and maintenance. Support will also be provided to cost estimating, scheduling, preparation of equipment CUDs and specialty subconsultants.

The following tasks are common to all subsystems and will be performed in close cooperation with facilities and other interfacing design groups within MRTC. Coordination with the District will be continuous with periodic review of all tasks.

1. Preliminary Design Specifications

   The equipment specifications developed for MOS-1 will be reviewed for applicability and interface with Phase II procurements. The CUDs developed for Phase II will be refined as required. Development of preliminary specifications will be initiated for each identified contract. Requirements for compatibility with MOS-1 equipment will be listed and an equipment interface listing will be established for each contract.

2. Design Review and Coordination

   (See Paragraph 1.I.1.)

3. Contract Packaging Analysis

   (See Paragraph 1.F.)

4. Specific Discipline Tasks

4.1 Traction Power

a. Prepare preliminary design for distribution of D.C. power and installation of 34.5 KV feeders for tunnels and stations.

b. Perform computer simulation runs (TOM runs) to establish power requirements and refine substation locations and capacity ratings for Phase II alignment.

c. Define electric substation and utility entrance minimum sizes and coordinate incorporation of equipment room requirements into facility design planning.

d. Establish the emergency backup power requirements for the Phase II alignment taking into account critical load demands for systems and facilities equipment.

e. Review facility electric power loads for stations and vent shafts to establish required ratings of auxiliary power transformers.

4.2 Automatic Train Control

a. Establish power, grounding and equipment mounting space requirements on the wayside as well as in the Train Control and Communications rooms and verify incorporation into Phase II facility design.

b. Refine and analyze block designs for combined MOS-1 and Phase II six car train

operation at minimum headway taking into consideration operations on trunk and branch lines. Prepare analysis report utilizing ATC Block Design Computer Program.

c. Refine design requirements for Phase II interlockings, including crossovers, pocket tracks, turnouts and the turn back at terminal stations based on Phase II configuration. Incorporate requirements in preliminary specifications.

4.3 Communications

a. Incorporate Limited Preliminary Engineerings requirements for radio, CCTV, and PA into preliminary specifications.

b. Establish and refine emergency management, intrusion detection and access control system requirements for Phase II station and vent shafts and develop compatible design for integration into voice and SCADA subsystem.

c. Establish and incorporate Phase II seismic and gas detection requirements into preliminary specifications.

d. Analyze potential requirements for redundant communications during RCC down time.

e. Perform analysis of SCADA software and hardware modifications needed for addition

of the Phase II system to existing MOS-1 equipment.

4.4 Auxiliary Vehicles and Maintenance Equipment

a. The MOS-1 Auxiliary Vehicles Plan and Maintenance Equipment Plans will be examined to determine adequacy for maintenance of the extended Phase II system. Options for maintenance will be identified, alternate equipment will be listed and a cost effective course(s) of action recommended in a maintenance equipment summary report.

4.5 Fare Collection

a. Review revenue collection procedures and possible modification of requirements for cash counting with Phase II stations in operation.

b. Interface with facilities, architecture, and electrical engineering to ensure adequate space and proper conduit requirements are incorporated into the station directive and general arrangement drawings to accommodate fare collection equipment at each Phase II station.

5. System Assurance and Safety

Systems engineers will perform support services in the areas of system safety, assurance and security for all Phase II facilities and systems equipment. The following specific tasks will be performed.

a. Attend Fire/Life Safety Committee (F/LSC) work sessions and coordinate application of F/LS and safety design criteria with SCRTD Systems and Construction Safety staff.

b. Provide guidelines for security access control at stations vent shafts and other facilities on mainline. Identify access controlled areas. Coordinate finalization and approval of requirements with SCRTD System and Construction Safety.

c. Participate in review of preliminary mechanical design for ventilation and fire protection systems and preliminary electrical design for emergency lighting, parking lot lighting, fire and intrusion alarm and security systems.

d. Perform emergency exiting analysis for each station based on projected patronage data, and review architectural design of each station with respect to emergency exiting and required fire-rated separations. Consider exiting at vertical crosspassages and midline vent shafts.

e. Support and review communications system development with respect to CCTV camera locations, public address coverage, emergency management devices, intrusion detection/access control systems and fire detection/suppression requirements.

f. Participate in update of safety and system assurance program plans to incorporate

hazard identification, safety issues and maintainability concerns unique to Phase II alignment and configuration.

g. Update design review checklist for the requirements contained in the fire/life safety, system safety and security design criteria.

h. Perform initial hazard identification analysis of tunnels and stations based on preliminary engineering design.

i. Perform analyses and evaluation of preliminary engineering drawings and specifications for each design discipline. Apply design review checklist, document comments and attend design review meetings.

j. Assist designers, MRTC/SCRTD management and the Fire/Life Safety Committee in assessing system safety and fire/life safety characteristics for trade-offs in the design of stations and line sections.

k. Perform preliminary analysis of city water supply availability at each station site to determine the need, if any, for modifications to the existing DWP distribution system to meet station and line section fire protection system flow/pressure demands.

1. Perform preliminary security analysis for each station site to determine the existence of any unique security considerations which should be addressed during design.

6. Operations and Maintenance

The following specific tasks will be performed.

a. Participate in and support Operations and Maintenance Committee meetings. Prepare special reports as required to address and resolve maintenance issues.

b. Perform maintainability analysis of the Phase II alignment for line sections and structures. Prepare report summarizing maintenance requirements to be incorporated into final design of facilities and equipment.

c. Provide operational requirements and coordinate with facilities group to optimize location of special track work in the selected alignment. Provide liaison between design groups and the O&M committee.

d. Provide support for development of operating plans for Phase II operating segments.

e. Review and comment on operations and maintenance reports and correspondence.

H. Engineering and Design Schedule Support to District

Provide design schedule input to the District to support their scheduling activities for the Phase II alignment and stations. Schedule input will be based on corresponding Phase II segments of the alignment and the required sequence of tasks and completion times required for the project elements. Descriptions will be provided for each system element in the CUD defining design schedules and recommended construction/procurement methodology.

I. Design Support Tasks

1. Design Review

Review plans and specifications and prepare documentation to conform to requests and comments from outside agencies such as LADOT and coordinate the documentation for the agencies' acceptance. Perform internal review of plans and specifications for compliance with criteria, codes, standards, and equipment interfaces.

2. Right-of-Way Certification

Based on the preliminary and detail design, provide preliminary right-of-way certification of properties required for the construction of Phase II. Review completed documents to verify that the structures are within the acquired property lines and the easement agreements as reflected in the contract documents.

3. Utility Coordination and Relocation Plans

Coordinate the design with the City of Los Angeles and other agencies whose utilities are affected by the construction of Phase II. Review the designs performed by utility agencies to verify that their design is not in conflict with other utilities. Where required, develop preliminary design for the agencies review to minimize impacts to facilities owned by others.

Drawings will be developed superimposing the selected alignment on City of Los Angeles substructure maps. The accuracy of these drawings will be verified with the utility owners and relocation plans for the relocation of major utilities will be developed.

4. Ventilation Study (ECS)

Perform ventilation studies to account for the MOS-1/Phase II interface, taking into account changes in system elements that may affect emergency ventilation requirements in MOS-1. In addition, prepare the ECS analysis for the balance of the Phase II line extension. Prepare a ventilation report to demonstrate that requirements are met.

5. Special Studies

Produce plans, reports, cost estimates, schedules, exhibits or other items in order to document, illustrate and provide information concerning special studies concerning Phase II segments of the system.

6. Project Management

Perform management of design through Project Managers designated to one or more design contract units. Project Managers will coordinate among all involved disciplines to ensure criteria and standards are met and assist in the coordination of the design with the City of Los Angeles and other outside agencies.

7. Specifications

The Baseline Specifications will be updated to assure all the improvements from MOS-1 are incorporated and to include additional Specifications Sections required for Phase II. In addition, preliminary specifications will be prepared and coordinated with the various disciplines as engineering work progresses on the various Contracts.

8. Special Consultants

Secure special consultants to provide engineering services in such areas as:

a) Soils and Subsurface Investigation

Conduct boring investigations to determine soil conditions and groundwater depth and perform laboratory tests as required to obtain engineering properties. Analyze all results and prepare and submit a complete geotechnical report on the findings recommending design values, and discussing construction alternatives. Where required, install and monitor wells to evaluate the presence of hydrocarbon gasses in the ground along the alignment.

Develop and recommend design measures to exclude gas from the final structures.

b) Special Structural Consulting (Including Underpinning)

Investigate building construction and existing design for buildings along the proposed alignment and develop designs for building protection to limit movements as required. Perform structural consulting and design for special conditions, including underpinning, compaction grouting, tunneling techniques and soil stabilization. Prepare design/exhibits as required for meetings with government and regulatory agencies.

c) Noise and Vibration

Review the design of the stations and guideway to determine that proposed materials and finishes meet the required noise levels, and that the construction methods used will not be affected by vibration. The consultant will also be required to review, as needed, shop drawings pertaining to noise attenuation measures in the stations.

d) Corrosion Control

Develop corrosion control measures for the stations and guideway designs.

2) Contract and GC Subcontract Administration

Provide procurement and administration services for obtaining, administering and closing GC subcontracts for professional and general services and supplies, including the preparation of procurement documents and proposal requests. Coordinate and support compilation, assembly and disposition of print-ready MOS-1 construction and procurement bid packages. Support and process completion of and settlement of interim and final audits conducted by SCRTD.

3) Document Control

a) Continue to maintain the baseline documents and data

b) Continue to provide secured storage for MOS-1 post-MOS-1, design data, and store project historical data

c) Control reproduction and distribution of baseline data and for the system, including design data

d) Provide microfilm storage of design data

e) Continue to maintain disaster vault

f) Provide correspondence control.

e) Surveying

Provide field surveying for specific problem areas.

f) SCADA

Provide support for Phase II conceptual development related to SCADA.

g) Fire Protection

Review conceptual station designs for conformance to emergency exiting requirements and provide support for the development of Fire/ Life Safety design criteria.

h) Other Special Contracts

To assist in developing designs, lighting, and EMI, and to provide additional estimating help which requires special cost considerations, and assistance to prepare renderings and models on an as-required basis.

9. Project Control

Project Control tasks for Phase II include the preparation of construction cost estimates, and developing, maintaining and publishing cost information.

a. Estimating

Estimating services will consist of the following tasks:

1) Conduct constructibility reviews of the designs in development to identify costs.

2) Prepare estimates for special studies as required to support the design.

3) Prepare conceptual and detailed estimates to correspond with design submittals.

4) Support the development and implementation of computerized systems for estimating tasks.

b. Cost Engineering

Cost Engineering services will consist of the following tasks:

1) Collect, analyze and report actual and prepare forecast project costs and labor hours for Phase II in accordance with the Work Breakdown Structure.

2) Coordinate the preparation of, edit, prepare graphics, review, and publish the Monthly Progress Report for design support activities.

3) Maintain and publish the Phase II Contract Unit Descriptions.

4) Prepare special studies, reports, analyses of labor and cost expenditures and impact analyses due to changes.

5) Prepare and update on a monthly basis a Design Control Register for Tasks A through E included in this Scope of Services.

10. Configuration Management and Document Control

a. Definition of Work to be Accomplished

Provide the management and staff needed to plan, organize, direct supervise, control and coordinate configuration control, contract administration, document control and bid package sales.

b. Detailed Description of Work

1) Configuration Control

a) Continue to maintain change control system, publish change status report, provide data to document control for configuration status report and maintain tracking system to assure closeout of all approved change actions.

b) Provide support efforts to review all packages for quality; coordinate with design activity to affect corrections; maintain design review action list and act as focal point for distribution of comments, responses and review schedules. Assist in all document control efforts required to issue drawings for revision and check incoming drawings for procedural compliance.

4) Change Control Support

Provide MRTC support to document change control requirements for both internal controlled documents as well as contract changes with SCRTD.

11. Management

a. 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. Project Management will direct and control the efforts of the GC, including its staff and subcontractors.

b. Detailed Description of Work

1) Management Board

The Management Board is responsible for overall management of GC functions. It establishes policy, gives direction to GC Project Director in the conduct of GC activities, and acts on appropriate matters brought before it by the Project Director. It reviews and evaluates progress in achieving the objectives of the Project as set forth by the District, and responds to the resource requirements of the Project through the individual GC members.

2) Project Director

The Project Director provides the day-to-day overall direction to and management of the GC activities in carrying out services to the District in support of the Project. He reports to and communicates directives from the District Assistant General Manager, Transit Systems Development, for conduct of GC activities.

12. Project Administration

a. 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 affirmative action, Project personnel administration, office services, Project auditing/accounting and publications/graphics support.

b. Detailed Description of Work

1) Affirmative Action

Coordinate, monitor, evaluate, enforce and report on all matters of Equal Employment Opportunity (EEO), and Disadvantaged Business Enterprise (DBE) of the GC and its subcontractors in accordance with UMTA regulations and the objectives and goals set forth by the District. Assist the District in evaluating and implementing the EEO/DBE program and its compliance for the

GC responsibilities of the Metro Rail Project.

2) Personnel Administration

Provide Project personnel services for mobilization and demobilization, recruitment, relocation administration, employee orientation, personnel records management, personnel policy development and administration and travel services. Maintain MRTC staffing plan in accordance with the AWP.

3) Office Services

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

a) Coordination of furniture and equipment

b) Purchasing and supplies

c) Coordination of space utilization and maintenance

d) Receptionist/clerk

e) Messenger service

f) Mail and telecommunications

4) Project Auditing/Accounting

Provide Project financial management services, including maintenance of Project accounts and books, audit of invoices of selected subcontractors and vendors, and payment of all accounts payable. Implement and maintain MRTC data processing equipment and procedures. Support pre-award, interim and and closeout audits of MRTC and its subcontractors.

5) Publications/Graphics Support

Provide and/or coordinate editorial, graphics, word processing and printing services needed to support publication of project reports and specifications.

2.0 ENGINEERING DESIGN HOURS AND COST ESTIMATES

This Section describes the design hours and cost to complete the Engineering Design Tasks required for the Phase II segment of the Metro Rail project. This information is summarized on Tables 1 through 10.

3.0 SCHEDULE OF DELIVERABLES

(Months after NTP)

Facilities Design:

	Month
Preliminary Design Submittals:	
Vermont/Beverly and Vermont/Santa Monica Stations	3
Vermont/Sunset and Hollywood/Western Stations	6
Hollywood/Vine and Hollywood/Highland Stations	9
In-Progress Design Submittals:	
Wilshire/Alvarado to Wilshire/Vermont Line Segment	3
Wilshire/Vermont Station	9
Prefinal Design Submittals:	
Wilshire/Alvarado to Wilshire/Vermont Line Segment	6
Wilshire/Western Station w/Crossover	6
Wilshire/Normandie Station and Adjacent Line Segments	9
Final Design Submittals:	
Wilshire/Alvarado to Wilshire/Vermont Line Segment	6
Wilshire/Vermont Station	9
Other:	
Ventilation (ECS) Report	9
Soils and Subsurface Investigation (Geotechnical Report)	9

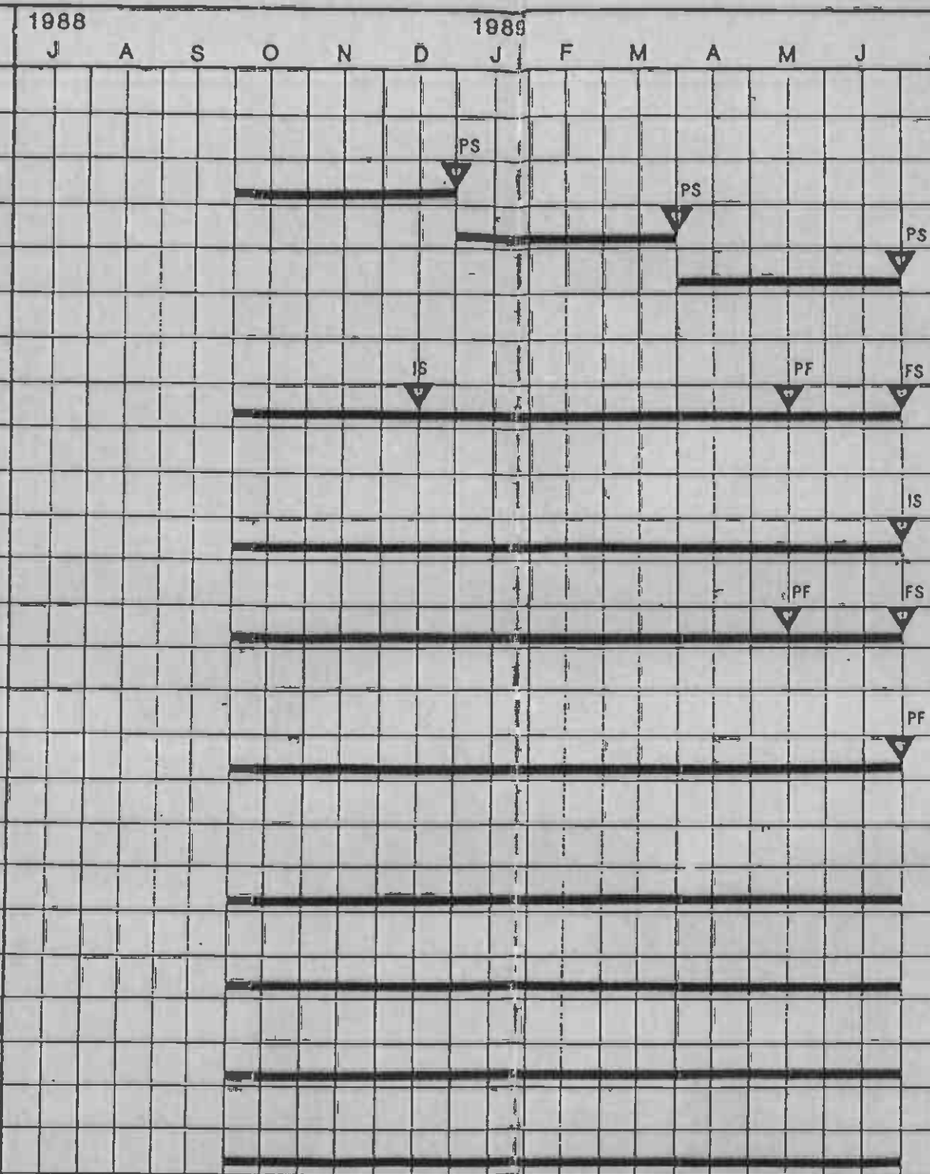
Systems Design:		Month
Equipment Procurement Packaging Plan		7
Traction Power Transit Operating Model Analysis		9
Emergency Backup Power Analysis		7
Automatic Train Control Block Design Analysis		9
Maintenance Equipment Summary Report		9
Emergency Exiting Analysis		8
Preliminary Analysis - Fire Protection Water Supply		7
Project Control:		
Cost Control:		
Progress Reports		Monthly
Design Control Registers		Monthly
Contract Unit Descriptions		As Required
Estimating:		
Segment "A"		
B211	Wilshire/Vermont Station - In-Progress Estimate	9
B241	Wilshire/Vermont to Vermont/Beverly Line Incl. Vermont/Beverly Station - Preliminary Estimate	9
B251	Vermont/Beverly to Vermont/Sunset Line Incl. Vermont/Santa Monica Station - Preliminary Estimate	9
B261	Vermont/Sunset Station Incl. Line to Hollywood/Western - Preliminary Estimate	9
B271	Hollywood/Western Station - Preliminary Estimate	9

		Month
B281	Hollywood/Western to Hollywood/ Highland Line Incl. Hollywood/Vine Station - Preliminary Estimate	9
	Segment "B"	
B301	Hollywood/Highland Station - Preliminary Estimate	9
B311	Hollywood/Highland to Universal City Line - Preliminary Estimate	9
	Systems Estimates	
B610	Trackwork - Update Estimate	9
B612	Contact - Update Estimate	9
B615	Coverboard - Update Estimate	9
B620	Automatic Train Control - Update Estimate	9
B630	Traction Power Equipment - Update Estimate	9
B631	Traction Power Installation - Update Estimate	9
B640	Communications - Update Estimate	9
B710	Escalator/Elevator - Update Estimate	9
B740	Ventilation Equipment - Update Estimate	9
B745	Air Handling Equipment - Update Estimate	9
B840	Fare Collection - Update Estimate	9

METRO RAIL PROJECT
PHASE II ENGINEERING (1988/1989 AWP)

SEPTEMBER 09, 1988

TASK	DESCRIPTION
A.	PRELIM ENGINEER'G DESIGN OF TUNNEL
	SEGMENTS & SIX STATIONS
	VERMONT/BEVERLY & VER/SANTA MONICA
	VERMONT/SUNSET & HOLLYWOOD/WESTERN
	HOLLYWOOD/VINE & HOLLYWOOD/HIGHLAND
B.	INITIATE ENGINEERING DESIGN, TUNNEL
	SEGMENT WIL/ALVARADO TO WIL/VERMONT
C.	INITIATE ENGINEERING DESIGN OF
	WILSHIRE/VERMONT STATION
D.	ENGINEER'G DESIGN OF THE WIL/WESTERN STA
E.	ENGINEER'G DESIGN WIL/NORMANDIE STA & THE
	ADJACENT LINE SEGMENTS
F.	REFINED CONSTRUCT/PROCUREMENT
	DESCRIPTIONS
G.	SYSTEMS REQUIREMENT/INTERFACE DESIGN
H.	ENGINEER'G DESIGN/CONSTRUCT SCHEDULE
I.	DESIGN SUPPORT TASKS



LEGEND:

PS – PRELIMINARY SUBMITTAL

IS – IN-PROGRESS SUBMITTAL

PF – PRE-FINAL SUBMITTAL

FS – FINAL SUBMITTAL

Phase II sum
October 10, 1988

TABLE 1

SUMMARY BY DIVISION
Phase II

PHASE II	(Months after Notice to Proceed) 1	2	3	4	5	6	7	8	9	TOTAL
FACILITIES DESIGN	13,110	13,330	13,330	13,325	13,305	13,306	13,337	13,346	13,342	119,951
SYSTEMS DESIGN	1,638	1,660	1,728	1,842	1,956	1,880	1,927	1,927	1,922	16,480
PROJECT CONTROL	1,248	1,248	1,248	1,248	1,257	1,257	1,433	1,497	1,497	11,981
PROJECT ADMINISTRATION	1,869	1,869	1,869	1,869	1,869	1,869	1,869	1,877	1,877	16,837
PROJECT MANAGEMENT	193	193	193	193	193	192	192	192	192	1,733
TOTAL PHASE II (MHS)	18,270	18,292	18,368	18,469	18,580	18,512	18,758	18,839	18,830	166,910
TOTAL PHASE II (MMS)	107.5	107.6	108.0	108.6	109.3	108.3	110.1	110.8	110.8	981.8

Phase II Fact
October 10, 1988

TABLE 2

FACILITIES DESIGN
Phase II

PHASE II DESIGN	(Months after Notice to Proceed) 1	2	3	4	5	6	7	8	9	TOTAL
A. Prelim. Engr. of Line Tunnel Segments & Six Stations	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	13,770
B. Final Design of Line Tunnel Segment, W/A to W/V	2,720	2,720	2,720	2,720	2,720	2,720	2,720	2,720	2,720	24,480
C. Final Design of W/V Station to In-Progress Level	1,983	1,983	1,983	1,983	1,983	1,983	1,983	1,983	1,986	17,850
D. Final Design of W/W Station	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	30,600
E. Final Design of W/N Station & Adjacent Line Sections to Prelimal Level	1,578	1,578	1,578	1,578	1,578	1,578	1,578	1,578	1,576	14,200
F. Refined Construction/Procurement Descriptions	40	40	40	40	40	40	40	40	40	360
H. Engineering Design & Construct Coordination	40	40	40	40	40	40	40	40	40	360
PHASE II DESIGN SUPPORT:										
DESIGN REVIEW	200	200	200	200	200	200	200	200	200	1,800
ROW CERTIFICATION	200	200	200	200	180	180	180	180	180	1,780
UTILITY COORDINATION	170	170	170	170	170	170	170	170	170	1,530
VENTILATION REPORT(ELS)	377	377	377	377	377	377	377	377	377	3,393
SPECIAL STUDIES	40	40	40	40	40	40	40	40	40	360
PROJECT MANAGEMENT	155	155	155	150	150	150	150	150	145	1,360
MANAGEMENT	180	180	180	180	180	180	210	210	210	1,710
TUNNEL ENGINEER	82	82	82	82	82	82	82	92	92	758
ELECTICAL	340	340	340	340	340	340	340	340	340	3,060
SPECIFICATIONS:										
SUPERVISOR	113	113	113	113	113	113	114	114	114	1,020
SPEC WRITER	94	94	94	94	94	95	95	95	95	850
WORD PROCESSOR	88	88	88	88	88	88	88	87	87	790
TOTAL PHASE II (Manhours)	13,330	13,330	13,330	13,325	13,305	13,306	13,337	13,346	13,342	119,951
TOTAL PHASE II (Manmonths)	78.4	78.4	78.4	78.4	78.3	78.3	78.5	78.5	78.5	705.6

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TABLE 3

SYSTEMS DESIGN
PHASE II

Proposal Section 1.8 G

PHASE II DESIGN	(Months after Notice to Proceed) 1	2	3	4	5	6	7	8	9	TOTAL
PRELIMINARY ENGINEERING										
1. Prelim. Design Specs:										
Traction Power							85	85	80	250
Auto Train Control							170	170	170	510
Communications							170	170	170	510
Aux. Vehicles & Maint. Equip.							34	34	34	102
2. Design Review & Coord.	136	136	136	136	136	136	136	136	136	1,224
3. Contract Packaging Analysis	340	340	340	340	340	340				2,040
Subtotal	476	476	476	476	476	476	595	595	530	4,636
4. Specific Tasks:										
Traction Power	170	170	170	250	250	250	170	170	170	1,770
Auto Train Control	108	130	110	130	130	130	130	130	130	1,140
Communications	170	170	170	170	190	170	170	170	170	1,530
Aux Veh & Maint Equip				34	34	34	34	34	34	204
Fare Collection			68	68	68	68	68	68	68	476
Subtotal	448	470	538	652	652	652	572	572	572	5,120
PHASE II DESIGN SUPPORT										
Management	85	85	85	85	85	85	85	85	85	765
Clerical	68	68	68	68	120	120	120	120	120	872
Drafting	85	85	85	85	130	130	130	130	130	990
Word Processing	68	68	68	68	85	85	85	85	85	697
System Assurance & Safety	170	170	170	170	170	170	170	170	170	1,530
Operations & Maintenance	85	85	85	85	85	85	85	85	85	765
Contract Work Description	68	68	68	68	68					340
Special Studies	85	85	85	85	85	85	85	85	85	765
Subtotal	714	714	714	714	828	760	760	760	760	6,724
TOTAL PHASE II (Manhours)	1,638	1,660	1,728	1,842	1,956	1,888	1,927	1,927	1,922	16,480
TOTAL PHASE II (Manmonths)	9.6	9.8	10.2	10.8	11.5	11.1	11.3	11.3	11.3	97.0

Phase1ipc
October 5, 1988

TABLE 4

PROJECT CONTROL
PHASE II

PHASE II DESIGN SUPPORT	(Months after Notice to Proceed) 1	2	3	4	5	6	7	8	9	TOTAL
MANAGEMENT/CLERICAL:										
MANAGER	85	85	85	85	85	85	85	99	99	793
CLERICAL	85	85	85	85	85	85	85	100	100	795
WORD PROCESSOR	85	85	85	85	85	85	85	100	100	795
SUBT. MGMT/CLERICAL	255	255	255	255	255	255	255	299	299	2,383
ESTIMATING:										
SUPERVISON	68	68	68	68	85	85	85	85	85	697
CIVIL/STRUCTURAL/ARCHITECTURAL	340	340	340	340	340	340	516	516	516	3,588
ELECTRICAL	85	85	85	85	85	85	85	85	85	765
MECHANICAL	85	85	85	85	85	85	85	85	85	765
SYSTEMS	165	165	165	165	165	165	165	165	165	1,485
SUBT. ESTIMATING	743	743	743	743	760	760	936	936	936	7,300
COST CONTROL:										
SUPVR. COST CONTROL	85	85	85	85	85	85	85	85	85	765
SR. COST CONTROL ENGR.	72	72	72	72	72	72	72	92	92	688
COST CONTROL ENGR	85	85	85	85	85	85	85	85	85	765
SUBT. COST CONTROL	242	242	242	242	242	242	242	262	262	2,218
SUBTOTAL PHASE II (Manhours)	1,240	1,240	1,240	1,240	1,257	1,257	1,433	1,497	1,497	11,901
SUBTOTAL PHASE II (Manmonths)	7.3	7.3	7.3	7.3	7.4	7.4	8.4	8.8	8.8	70.0

Phase IIpa
October 18, 1988

TABLE 5

PROJECT ADMINISTRATION
PHASE II

PHASE II DESIGN SUPPORT	(Months after Notice to Proceed) 1	2	3	4	5	6	7	8	9	TOTAL
MANAGEMENT	83	83	83	83	83	83	83	95	95	771
ACCOUNTING/PURCHASING	513	513	513	513	513	513	513	580	580	4,591
CONTRACTS	170	170	170	170	170	170	170	170	170	1,530
PERSONNEL/TECH EDITOR/ WORD PROCESSING MGR	340	340	340	340	340	340	340	340	340	3,060
CONFIGURATION MANAGEMENT:										
MANAGER	85	85	85	85	85	85	85	85	85	765
CHANGE CONTROL	85	85	85	85	85	85	85	85	85	765
DOCUMENT CONTROL/LIBRARY	340	340	340	340	340	340	340	340	340	3,060
OFFICE SERVICES	253	253	253	253	253	253	253	262	262	2,295
SUBTOTAL CONFIGURATION MANAGEMENT	763	763	763	763	763	763	763	772	772	6,885
TOTAL PHASE II (M$)	1,869	1,869	1,869	1,869	1,869	1,869	1,869	1,877	1,877	16,837
TOTAL PHASE II (Manmonths)	11	11	11	11	11	11	11	11	11	99

Phase II mgmt
October 10, 1988

TABLE 6

PROJECT MANAGEMENT
PHASE II

PHASE II DESIGN SUPPORT	(Months after Notice to Proceed) 1	2	3	4	5	6	7	8	9	TOTAL
MANAGEMENT	108	108	108	108	108	107	107	107	107	968
CLERICAL	85	85	85	85	85	85	85	85	85	765
TOTAL PHASE II (Manhours)	193	193	193	193	193	192	192	192	192	1,733
TOTAL PHASE II (Manmonths)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	10.2

pecost
November 3, 1988

TABLE 7

METRO RAIL TRANSIT CONSULTANTS

FORECAST OF EXPENDITURES FOR 1988/1989 ANNUAL WORK PROGRAM
Phase II
(6 x 1,000)

DESCRIPTION	(Months after Notice to Proceed) 1	2	3	4	5	6	7	8	9	TOTAL
MRTC LABOR	520	520	522	525	529	527	534	536	536	$ 4,749
SPECIAL CONSULTANTS (Staff Augmentation)	302	303	304	306	307	306	310	312	312	2,762
SUBTOTAL - LABOR	822	823	826	831	836	833	844	848	847	7,511
SPECIAL CONSULTANTS	300	300	300	300	300	300	300	300	303	2,703
DIRECT REIMBURSIBLE EXPENSE	61	61	61	61	61	61	61	61	61	550
TOTAL GC COST	1,183	1,184	1,187	1,192	1,197	1,194	1,205	1,209	1,211	10,764
FIXED FEE	80	80	80	80	80	80	79	79	79	717
GRAND TOTAL GC COST PLUS FIXED FEE	1,263	1,264	1,267	1,272	1,277	1,274	1,284	1,288	1,290	$ 11,481

Phase1spec
October 10, 1988

TABLE 8

SPECIALTY SUBCONTRACT BUDGET SUMMARY
PHASE II

ASSIGNMENT		88/89 BUDGET
SUBSURFACE INVESTIGATION	The Earth Technology Corp.	$2,235,000
SPECIAL STRUCTURAL CONSULTING	Degenkolb; Peck; Brekke	65,000
SURVEYS	Kemmerer Engineering	100,000
CORROSION CONTROL	PSG Waters	35,000
NOISE & VIBRATIONS	Wilson, Ihrig	130,000
LIGHTING	Marlene Lee	10,000
MODELS	Glenn Johnson	28,000
HANDLRAILS	Gene Streett (HWA)	15,000
EMI	Comstock Engineering	25,000
FIRE PROTECTION	Holl Jensen & Assoc.	18,000
SCADA	MACHO Corp.	17,000
ESTIMATING	O. G. Nee	25,000
TOTAL		$2,703,000

preaugment
November 3, 1988

TABLE 9

STAFF AUGMENTATION SUBCONTRACT BUDGET SUMMARY
Phase II

ASSIGNMENT	CONSULTANT	88/89 BUDGET
B210 ARCHITECTURE	Kennard Design Group	152,379
B210 ELECTRICAL/MECHANICAL	Hayakawa	650,000
B210/220/230 STRUCTURAL	Benito Sinclair	255,607
B220 ARCHITECTURE	Escudero-Fribourg	155,817
B230 ARCHITECTURE	The Environmental Collaborative	150,000
B200 CIVIL/UTILITIES	Unassigned	134,295
DOCUMENT CONTROL	Sharon Clark Associates	76,202
ESTIMATING	Kal Krishnan	249,950
SYSTEMS ASSURANCE	Gardner & Nolman	73,469
ELECTRICAL ENGINEERING	ACG Environments	550,000
UTILITIES ENGINEERING	Unassigned	75,000
STRUCTURAL ENGINEERING	Unassigned	230,000
TOTAL		$2,761,523

Phase I todc
October, 10, 1988

TABLE 10

DIRECT REIMBURSABLE EXPENSE BUDGET SUMMARY
PHASE II

ITEM		BUDGET	
OFFICE EXPENSES:			
		$ 104,850	8.43
Materials & Supplies	34,000		
Communications & Shipping	38,125		
Equipment & Tools	4,250		
Automobile Costs	5,100		
Publications & Subscriptions	4,250		
Maintenance & Repairs	19,125		
PERSONNEL COSTS:			
		20,750	
Travel & Subsistence	12,250		
Relocation & Demobilization	8,500		
COMPUTER SERVICES		38,975	
MODELS & RENDERINGS		3,400	
LEGAL		4,250	
EQUIPMENT RENTAL		21,250	
REPRODUCTION & PRINTING		108,250	
GROSS RECEIPTS TAX		14,880	
MISCELLANEOUS		3,400	
SUBTOTAL		331,125	
OFFICE RENT		178,500	
TELEPHONE EQUIPMENT LEASE		12,750	
FURNITURE & EQUIPMENT UTILIZATION		8,500	
EMPLOYEE MORALE, HEALTH, WELFARE		6,375	
INSURANCE		2,125	
OFFICE MOVING/STORAGE/REHAB		6,375	
PROFESSIONAL DUES/MEMBERSHIPS		2,125	
PROPERTY TAXES		2,125	
SUBTOTAL		218,875	
TOTAL		$ 550,000	