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PROCEDURES FOR IMPLEMENTATION AND ADMINISTRATION OF SCRTD METRO RAIL PROJECT CONFIGURATION MANAGEMENT PLAN WBS 14DAH

I.D. CODE: C-AP-14DAH-CM-000-000

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for

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March 15, 1983

REVISION RECORD

Document I.D. Code _____

Document Title _____

Original Approval Date _____

REVISION NO.	DATE	REVISION DESCRIPTION	AFFECTED PAGES	AUTHORIZED BY	ACCOMPLISHED BY

EXHIBIT 3

APPROVAL

This document has been officially accepted for use by all Southern California Metro Rail Project Participants.

APPROVED:

_____
Manager, Chief Engineer

Date _____

Registration No. _____

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FOREWORD

This manual of procedures is a companion document to the Configuration Mangement Plan (WBS 14 DAH) which has previously been prepared by consultants to the Southern California Rapid Transit District's Metro Rail Project. Its purpose is to identify the specific duties and responsibilities of Metro Rail Project participants during the design effort to manage and administer the production, review, distribution, and storage of Metro Rail Project design products; particularly those products which define system baselines.

The procedures manual is based upon the fundamental tenants of the configuration Management Plan which emphasize:

- Redundant review of developing design products
- Widespread dissemination of information regarding ongoing and pending design activity
- Centralized real-time monitoring of design activities
- Controlled access to approved baseline design products

Additionally, this document describes the activities to be undertaken by project management personnel to initiate design efforts and guidelines for the production of project documents.

This document is divided into eight (8) procedures. Appended to the document are examples of the various forms required for the configuration management effort.

When approved, this document will provide a handy reference for project management and participants that officially defines their duties and responsibilities to the configuration management effort.

INTRODUCTION

The preliminary engineering and subsequent design phases of the Metro Rail Project (MRP) will involve the simultaneous efforts of a large multi-disciplinary group of specialists. Control and management of these efforts are critical to:

- Assure that the efforts of all design groups are integrated and compatible
- Assure consistency and integrity in system design across Work Breakdown Structure elements
- Assure effective documentation of system design and facilitate transition to construction and operational phases

To accomplish these objectives, a Configuration Management Plan (WBS 14DAH) has been developed by consultants to the Southern California Rapid Transit District (SCRTD). The Plan is a formalized program which will enable MRP staff to control the development of documents that effect the design considerations and configuration of the Metro Rail System during all phases of system development. Specifically, the Plan:

- Identifies the design activities and products to be subjected to configuration control
- Describes the control process to be utilized
- Identifies responsible parties and their functions

This document is a manual of procedures for the implementation and administration of the Configuration Management Plan which specifically details the sequence of activities to be taken and the roles of various MRP participants necessary to meet the control objectives of the Plan.

I

PROCEDURE FOR APPROVAL OF METRO RAIL PROJECT DOCUMENTS

BACKGROUND AND PURPOSE

The preliminary engineering (PE) and final design activities of the Metro Rail Project (MRP) will result in the production of many important documents (drawings and narrative reports). Many of these documents will form design baselines by defining specific systems, functions or related parameters. Documents of this type will require the close supervision of MRP management during their preparation and a systematized distribution effort upon their completion to insure that they are placed in the hands of appropriate project participants.

In recognition of the critical need for close coordination and management of the many design efforts associated with MRP engineering activities, a Configuration Management Plan (WBS 14DAH) has been developed by consultants to the MRP. One component of the plan addresses (in broad terms) the process to be followed for Document Development and Approval. The purpose of this procedure is to detail the step-by-step sequence of activities to be followed by project participants, in the development and approval of MRP documents, to insure that:

- All MRP documentation meets overall project requirements
- The efforts of all Design Groups are integrated and compatible
- Consistency and integrity are maintained in system design across Work Breakdown Structure (WBS) elements
- The effective documentation of system baseline characteristics is achieved.

APPLICABILITY

The procedures, detailed herein, are applicable to the development and approval of all MRP documents impacting system design. A current listing of MRP documents, subject to strict and limited configuration control is presented as Appendix A to this document. In addition to the documents listed in Appendix A, such other documents that may be designated by the Manager Chief Engineer (at his discretion) shall be subject to the procedures detailed herein.

RESPONSIBILITIES

The primary participants involved in the document development and approval management process are identified (together with their functional roles) in the following narrative.

Manager, Chief Engineer (M/CE)

- o Initiates document development by issuance of Design Directives or Work Authorizations
- o Assigns document development lead role to Design Group(s)
- o Reviews developed document for compliance with Design Directive objectives
- o Determines if documents shall be subjected to strict, limited, or no configuration control
- o Determines need for Design Control Board (DCB) review
- o Approves or rejects developed document by completing Blocks B-4 and C-4 Document Approval Status Form

System Engineering Analysis Section Manager (SEA)

- o Analyzes developed products for accomplishment of design objectives, areas of hidden conflicts, and areas of impact oversight
- o Schedules conflict resolution meeting with lead Design Group Manager (if required)
- o Prepares technical report for M/CE review
- o Prepares distribution list for approved documents
- o Documents product's compliance with design objectives system specification, and analysis quality by completing Blocks B-3 and C-3 Document Approval Status Form.

Configuration Control Manager (CCM)

- o Receives Design Directive from M/CE through SEA and transmits to Document Control Center Specialist
- o Reviews developed product for interface impact
- o At the direction of the M/CE, schedules Design Control Board (DCB) review
- o Receives completed Document Approval Status Form (with original signatures) from M/CE, transmits Form to Document Control Center Specialist

Lead Design Group Manager

- o Receives Design Directive or Work Authorization from M/CE
- o Designates Document Author/Originator
- o Supervises Design Group internal review
- o Completes Blocks B-1 and C-1 Document Approval Status Form, transmits to Document Control Center Specialist

- o Distributes developed draft document to other Design Groups
- o Receives comments from other Design Groups and analyzes conflicts
- o Schedules conflict resolution meetings with other Design Group Managers
- o Compiles comments of other Design Groups and transmits comment summary together with developed draft document to SEA
- o Receives completed Document Approval Status Form from M/CE and transmits to Document Author

Other Design Group Managers

- o Receive developed draft document from lead Group Manager
- o Supervise internal group review
- o Compile comments of internal group review (See Procedure III; Procedure for Comment On MRP Documents During Approval and/or Revision
- o Complete Blocks B-2 and C-2 Document Approval Status Form and transmits to lead Group Manager and Document Control Center Specialist

Document Author/Originator

- o Receives Design Directive or Work Authorization from Design Group Manager
- o Assigns Document Identification Code (see Procedure IV, Procedure for Identification of MRP Documents) and transmits to Document Control Center Specialist
- o Develops document per Design Directive/Work Authorization Specifications
- o Revises document as required per instructions of Design Group Manager
- o Receives approval of document from M/CE through Design Group Manager
- o Transmits "hard-copy" document original to Document Control Center (Note: "Hard-copy" original is defined as camera-ready, reproducible copy and drawings and word processing diskettes where applicable.)

Document Control Center Specialist

- o Receives Design Directive from CCM and Document I.D. number from Author/Originator
- o Maintains Approval status log in accordance with Procedure V; Operational Procedures for Document Control Center Handling Approved Metro Rail Project Documents
- o Receives and files approved hard-copy originals
- o Distributes copies of approved document in accordance with distribution list supplied by SEA
- o Stores, loans, retreives, distributes, and controls Document Control Center copies in accordance with Procedure V; Operational Procedures for Document Control Center Handling Approved Metro Rail Project Documents

SEQUENCE OF ACTIVITIES

Figure I-1 (in rear pocket), is a flow chart which illustrates the sequence of activities associated with the approval of MRP documents subject to full or limited configuration control. The following narrative describes the step-by-step sequence of activities illustrated by Figure I-1.

Step 1 The M/CE distributes Design Directive or Work Authorization to Design Group Managers. At his discretion, the M/CE can designate lead authority to one Design Group (hereinafter referred to as the lead Design Group). The M/CE will also transmit a copy of the Design Directive or Work Authorization to the SEA who will route the Design Directive or Work Authorization to the Document Control Center through the CCM.

Step 2 The lead Design Group Manager will select a document Author/Originator and convey the Design Directive or Work Authorization to him/her.

Step 3 The document Author/Originator will immediately initiate a Document Approval Status Form (see Appendix B) and complete Blocks A.1 through A.5. Block A. of the Approval Status Form will be completed in accordance with Procedure III; Procedure for Identification of MRP Documents. He/She will then convey the Document Approval Status Form to the Document Control Center Specialist.

Step 4 The Document Control Center Specialist receives the Design Directive/Work Authorization from the CCM (See Step 1) and the Document Approval Status Form from the document Author/Originator (See Step 3). He/She then enters the provided information on the Document Status log (SCRTD/MRP-CM3 -- see Appendix C) and files the Document Approval Status Form and Design Directive.

Step 5 The Author/Originator prepares the document, per Design Directive/Work Authorization instructions, and conveys the product to the lead Design Group Manager.

Step 6 The lead Design Group Manager receives the developed product from the Author/Originator and circulates it for review within his Group.

Step 7 The lead Design Group Manager receives and evaluates the comments from members of his Group, reviews them, and concurs or does not concur with their findings.

A. If the developed product is needful of revision, it is re-routed to the Author/Originator with appropriate instructions.

B. If the developed product is satisfactory to the lead Group Manager, he completes Block B-1 and C-1 of the Document Approval Status Form which is transmitted to the Document Control Center through the CCM. The lead Design Group Manager then circulates the developed product to the Managers of Other Design Groups and the SEA Section Manager.

Step 8 The Document Control Center Specialist receives the Document Approval Status Form (see Step 7.B) from the CCM and updates the Status Log (CM-3). The Document Approval Status Form is then filed.

Step 9 Other Design Group Managers receive draft copies of the developed product from the lead Group Manager and distribute it to members of their group for comment. They then receive and compile their group's comments (See Procedure III; Procedure for Comment on MRP Documents During Approval and/or Revision) and complete Blocks B-2 and C-2 of the Document Approval Status Form which is transmitted to the Document Control Center Specialist through the CCM and the lead Design Group Manager.

Step 10 The Document Control Center Specialist receives the Document Approval Status Forms (see Step 9) from the other Design Group Managers and updates the Document Status Log (CM3). The Forms are then filed.

Step 11 The lead Design Group Manager receives the comments of other Design Groups prepared in Step 9. He can then take either of the following actions:

A. Agree with the comments and return the developed product to the Author/Orignator for revision. The process then reverts to Step 7A.

B. Determine that the received comments do not materially impact the developed product, transmit the product to the SEA, and proceed to Step 14.

C. Determine that received comments raise issues of conflict between the developed draft product and efforts of other Design Groups. In this case, a conflict resolution meeting is scheduled and the process advances to Step 12.

Step 12 The lead Design Group Manager assembles the other Design Group Managers for the purpose of conflict resolution. The outcome of these meeting(s) will cause either of the following actions of the lead Design Group Manager:

A. Conflicts are resolved which require developed draft product revision. In this case the process reverts to Step 7A.

B. Conflicts are resolved which require no document revision. In this case the lead Design Group Manager will secure from the affected other Group Managers revised Document Approval Status Forms which are transmitted to the Document Control Specialist through the CCM. The Document Control Specialist updates the Status Log, files revised Document Approval Status Form(s), and the process advances to Step 14.

C. Conflicts remain unresolved and agreement is not achieved among the Design Managers. In this case the process would advance to Step 13.

Step 13 The lead Design Group Manager prepares a summary of other Design Group comments which is transmitted with the developed product to the CCM and the SEA Section Manager.

Step 14 The CCM reviews the system interface matrix and the developed product and prepares a listing of interfaces subject to impact by the developed product. This listing is transmitted to the SEA Section Manager.

Step 15 The SEA Section Manager receives the developed product and summary of other Group comments from the lead Design Group Manager and the listing of interface impacts from the CCM. These materials are then analyzed by the SEA Section Manager for: 1) fulfillment of the design objectives outlined by the Design Directive or Work Authorization; 2) compliance with District policies; 3) compliance with the System Specification; 4) areas of previously hidden conflict; and 5) design assumptions requiring revision or additional study. As a result of the SEA's analysis, he can take either of the following actions:

A. Determine that the submitted product is needful of revision. In this case, the SEA would complete Blocks B-3 and C-3 of the Document Approval status form and transmit a copy to the lead Design Group Manager and the Document Control Center through the CCM. The Document Control Center Specialist updates the Status Log and files the current Document Approval Status Form.

B. Determine that the submitted product is satisfactory. In this case, the SEA would complete Blocks B-3 and C-3 of the Document Approval Status Form and transmit a copy to the Document Control Center, through the CCM, where the Document Control Center Specialist would update the Status Log. Additionally, the SEA would

prepare a summary analysis and recommendation for the M/CE and the process advances to Step 19.

Step 16 The lead Design Group Manager receives and reviews the comments of the SEA (See Step 15A). Based upon his analysis, he can take either of the following actions:

A. Concur with the SEA's finding that the product is needful of revision. In this case, he would prepare the appropriate revision instructions and the process would revert to Step 7A.

B. Disagree with the SEA's findings. In this case, the lead Design Group Manager would schedule a conflict resolution meeting with the SEA and the process would advance to Step 17.

Step 17 The lead Design Group Manager (and, at his option, the Document Author/Originator) meet with the SEA for the purpose of resolving the SEA's concerns. Depending upon the outcome of this meeting, either of the following actions could be taken:

A. The conflicts remain unresolved. In this case, the SEA would transmit his findings to the M/CE and the lead Design Group Manager would transmit a copy of the developed product, together with a summary of conflicts with the SEA to the M/CE.

B. 1. Conflicts are resolved and revision of the product is required, the process would revert to Step 7A

2. Conflicts are resolved and further product revision is not required. In this case, the SEA would transmit a revised Document Approval Status Form to the Document Control Center where the Document Control Center Specialist would update the Status Log and file the revised Form. Additionally, the SEA prepares a summary analysis and recommendation which is transmitted, together with the developed product, to the M/CE and the process advances to Step 18.

Step 18 The M/CE receives the developed product, the SEA's analysis and the Document Approval Status Form containing the comments of the other Design Groups. Based upon his analysis, he can do either of the following:

A. Unilaterally approve the developed product. In this case the process then advances to Step 22A.

B. Withhold his approval pending a Design Control Board Review. In this case, he would notify the CCM and the process advances to Step 19.

C. Disapprove the developed product and order its revision. In this case, the M/CE completes Blocks B-4 and C-4 of the Document Approval Status Form and transmits copies to the lead Design Group Manager and the Document Control Center through the CCM and the process reverts to Step 7A.

Step 19 Upon notification, the CCM schedules a Design Control Board Review of the developed product. The lead Design Group Manager (and/or) his designate presents the developed product and an overview of comments to the product received from other Design Groups. The DCB can:

A. Recommend approval of the developed product with no changes. In this case the process advances to Step 22A.

B. Recommend that the developed product be revised. In this case the process advances to Step 20.

Step 20 The M/CE documents the findings of the DCB by completing Blocks B-4 and C-4 of the Document Approval Status Form which is routed to the Document Control Center Specialist through the CCM for filing and update of the Status log. The draft product and compiled DCB comments are returned to the lead Design Group Manager.

Step 21 Upon receipt of the returned draft product and DCB commentary, the lead Design Group Manager will prepare revision instructions and return the draft to the Author/Originator. The Author/Originator accomplishes the necessary changes and returns the revised draft product to the lead Design Group Manager for his review. If the revised product is satisfactory to the lead Design Group Manager, it is transmitted to the M/CE and the process advances to Step 22.

Step 22 The M/CE recieves a draft product that: 1) he has decided to unilaterally approve (Step 18A), 2) has been approved by the DCB with no revisions required (Step 19A), or 3) has been revised by the lead Design Group in accordance with instructions (Step 21).

A. If the received product is acceptable, the M/CE will complete Blocks B-4 and C-4 of the Document Approval Status Form and transmit the original Document Approval Status Form to the CCM.

B. If the received product is not acceptable to the M/CE, the process reverts to 19B.

Step 23 The CCM will obtain original signatures from all process participants on one Document Approval Status Form and convey the same to the Document Control Center where the Document Control Specialist will place the Form in the permanent file and update the Document Status Log.

Step 24 The lead Design Group Manager, upon receipt of a copy of the completed document Approval Status Form will convey the same to the document Author/Originator. The document Author/Originator will transmit the "hard-copy" original and copy of the Document Approval Status Form to the Document Control Center.

Step 25 The Document Control Center Specialist receives the "hard-copy" original of the approved document and effectuates the necessary reproduction. Copies of the approved document are distributed in accordance with procedural memo A-25 or other received instructions and the "hard-copy" original is placed in the permanent file.

II

PROCEDURE FOR CHANGE APPROVAL AND IMPLEMENTATION OF APPROVED METRO RAIL PROJECT DOCUMENTS

BACKGROUND AND PURPOSE

Continuing preliminary engineering and future system design activities, associated with the Metro Rail Project (MRP) can be anticipated to generate needs to modify some existing and yet to be developed MRP documents (drawings and narrative reports). Many of the anticipated changes will have the potential to affect the activities of design groups other than the group initiating a particular change.

To assure close coordination and the timely distribution of information which affects the over-all planning and design activity of the MRP, a Configuration Management Plan (WBS 14DAH) has been developed by consultants to the Southern California Rapid Transit District (SCRTD) MRP staff. One component of the Configuration Control Management Plan is the Document Change Approval and Implementation Process. The purpose of this procedure is to detail the step-by-step actions of project participants necessary to adhere to the change approval and implementation process as outlined by the Configuration Management Plan.

APPLICABILITY

The procedures, detailed herein, are applicable for the change of all approved MRP documents subject to strict or limited configuration control and such other documents which may be designated by the Manager Chief Engineer. A current listing of MRP documents subject to strict and limited configuration control is presented in Appendix A of this document.

RESPONSIBILITIES

The functional roles, of individuals involved in the document change approval and implementation process, are described in the following summary narrative.

Change Originator

- Identifies Need for Change
- Initiates Change Request Form (See Appendix D)

- o Delivers hard copy original of approved change to Document Control Center
- o Accomplishes distribution of approved changes that do not require strict configuration control

Orginating Group Manager

- o Evaluates change request, concurs or does not concur
- o Completes Block C-1 of Change Request Approval Form
- o Transmits change request to SEA Section Manager
- o Distributes copies of change to project participants per instructions from Configuration Control Manager
- o Participates in Design Control Board Review of proposed change

Systems Engineering Analysis Section Manager (SEA)

- o Evaluates change request, concurs or does not concur
- o Completes Block C-2 of Change Request Approval Form
- o Transmits change request to Configuration Control Manager or returns to Originating Group Manager
- o Prepares distribution list for change review

Configuration Control Manager (CCM)

- o Reviews change request for impact on other design activities. (Interface matrix impact review).
- o Assigns Change Log control number
- o Transmits Change Log Control number to Document Control Center
- o Schedules Design Control Board review when directed by M/CE
- o Transmits M/CE's findings of Design Control Board to Document Control Center and Change Request originator

Manager Chief Engineer (M/CE)

- o Chairs Design Control Board review
- o Documents findings of Design Control Board
- o Completes Blocks C-3 and C-4 Change Request Form
- o Determines if change is subject to full, limited, or no configuration control
- o Transmits Change Request Approval Form to Configuration Control Manager for implementation processing

Document Control Center Specialist

- o Receives Change Log Control number and Change Request Approval Form from Configuration Control Manager
- o Updates Document Status Log

- o Affixes copy of pending change request to Document Control Center's master copy of affected document
- o Updates Document Status Log following Design Control Board action
- o Receives hardcopy original of modified document from originator of approved change
- o Destroys old version, files new version and distributes copies of changed documents subject to full configuration control
- o Files hard copy original of changed documents subject to limited or no configuration control
- o Assures adequate storage and permanent retention of superceded microfilm/microfiche.

SEQUENCE OF ACTIVITIES

Changes to Metro Rail Project documents may be initiated by design group participants for a variety of reasons including incorporation of new technology and discoveries of opportunities to improve system operational efficiency or economy made during design.

Figure II-1 (in rear pocket) is a flow chart which illustrates the sequence of activities associated with the change and implementation of approved MRP documents. The following narrative describes the step-by-step sequence of activities illustrated by Figure II-1.

Step 1 A change request is documented by an initiator utilizing the Change Request Approval Form (Appendix D). Blocks A, B, D, E and F are filled out by the originator of the change.

Step 2 The change request form is then routed to the Originator's Design Group Manager who, at his option, may circulate it to other participants within his Design Group for review and comment. The Design Group Manager completes Approval Block C-1 of the Change Request Approval Form and routes the change request to the SEA.

Step 3 The SEA Section Manager routes the change Request to the CCM who evaluates the request and verifies the information provided by the change originator in Block G of the Change Request Form. The CCM then prepares appropriate comments and returns the Form to the SEA

Step 4 The SEA Section Manager receives and reviews the CCM's comments and analyzes the requested change to insure that: 1) the requested change is consistent with overall project objectives and current needs and 2) that the requested change has been adequately examined and documented by the change originator. On the basis of his analysis, he can:

A. Determine that the requested change requires additional study and/or revision. In this case, the SEA completes Blocks C-2 and H of the Change Request Form and returns the Change Request to the initiating Design Group Manager.

B. Determine that the requested change is in keeping with project policies, has been adequately researched and analyzed by the change Originator, and is warranted. In this case, the SEA Section Manager completes Blocks C-2 and H of the Change Request Form and transmits it to the CCM. The process then advances to Step 11.

Step 5 The originating Group Manager receives the rejected change request from the SEA Section Manager together with the SEA's comments and reasons for rejection. He can then take either of the following actions.

A. Not concur with the SEA's findings. In this case the Originating Group manager meets with the SEA in an attempt to resolve differences or conflicts.

1. If conflicts between the SEA and the originating Design Group Manager cannot be resolved, the originating Group Manager can appeal directly to the M/CE and the process advances to Step 6.

B. Concur with the findings of the SEA. In this case the process terminates.

Step 6 The originating Design Group Manager notifies the SEA of his intent to appeal the SEA's determination (See Step 5.A.1.) to the M/CE. In this case, the originating Design Group Manager transmits the Change Request together with the SEA's analysis/comments to the M/CE.

Step 7 The M/CE recieves the Change Request and SEA analysis from the originating Group Manager. Based upon his analysis. He can:

A. Determine that the dispute is appropriate for consideration by the Design Control Board. In this case, the M/CE would direct the CCM to schedule a DCB review and the process would advance to Step 10.

B. Determine that the dispute should not be subject to DCB review and unilaterally determine which position shall prevail. In this case, the process would advance to Step 8.

Step 8 Based upon the M/CE's analysis, he can unilaterally:

A. Overrule the SEA and support the position of the originating Design Group Manager. In this case, the process would advance to Step 10.

B. Sustain the position of the SEA. In this case, the M/CE would prepare a memorandum of his findings, transmit the same to the originating Group Manager, and the process would terminate. No further action on this change request would be undertaken.

Step 9 The M/CE would chair the Design Control Board and document its findings which could:

A. Determine that the requested change is warranted (i.e. overrule the SEA). In this case, the M/CE would prepare a memorandum of the DCB's findings, transmit the same to the SEA and originating Group Manager and the process would advance to Step 10.

B. Determine that the requested change is not warranted. In this case, the M/CE would prepare a memorandum of the DCB's findings, transmit the same to the SEA and originating Group Manager, and the process would terminate (i.e. no additional action would be undertaken for this change request.

Step 10 Based upon a determination that the requested change is warranted (See Steps 4B, 8A, and 9A), the SEA transmits the Change Request Form to the CCM and directs the CCM to assign a Change Log Number. Additionally, the SEA prepares a distribution list which is transmitted to the originating Design Group Manager.

Step 11 Upon receipt of the SEA's instructions the CCM assigns a Change Log Number to the change request and transmits a copy to the Document Control Center.

Step 12 The Document Control Center Specialist updates the Document Status Log to reflect that a change is pending. Additionally, a copy of the Change Request Approval Form is affixed to the Master Copy of the affected document.

Step 13 The Originating Design Group Manager (or designate) distributes copies of the Change Request in accordance with the distribution list provided by the SEA Manager (see Step 10).

Step 14 Affected Design Groups review the Change Request and report their analysis of the proposed change's potential impact within their areas of design responsibility. This analysis should include identification of areas of impact, cost characteristics of the change (design effort,

capital/construction, operating/maintenance, etc.), and impact upon the design schedule. Affected Design Groups' analysis are conveyed to the SEA.

Step 15 Comments received, from other Design Group Managers, by the SEA are compiled and screened. The SEA prepares a Technical Report which is transmitted to the M/CE.

Step 16 The M/CE receives and reviews the SEA's Technical Report and directs the CCM to schedule a Design Control Board meeting.

Step 17 The Design Control Board, with the M/CE as Chairman, reviews the requested change and the SEA's report.

The M/CE documents the findings of the Design Control Board and causes one of the following actions to be taken.

A. Disapproval

The M/CE completes box C-3 and C-4 of the Change Request Approval Form and returns a copy to the Originator and a copy to the Document Control Center through the CCM. The Document Control Center Specialist updates the document status log and replaces the original Change Request Form (filed with the Master Copy of the affected document) with the one received from the M/CE to show that the requested change has been disapproved.

B. Approval

The Manager Chief Engineer completes Block C-3 and C-4 of the Change Approval Request Form and determines if the approved change should be subject to full, limited, or no configuration control procedures. The Change Request Form is then transmitted to the originating Group Manager CCM and the process advances to Step 20.

C. Conditional Approval

The Manager Chief Engineer completes Block C-3 and C-4 of the Change Request form and returns a copy to the originator. The process then advances to Step 18 of the procedure.

Step 18 Pursuant to the instructions of the M/CE (See Step 17C) the originating Group Manager directs the change originator to accomplish required revisions. Upon receipt of the revised request and determination that

instructions have been complied with, the originating Group Manager transmits the revised Change Request to the SEA.

Step 19 The SEA reviews the revised Change Request as submitted by the originating Design Group Manager. Based upon his analysis, he can take either of the following actions:

A. Determine that the revised Change Request does not comply with the DCB's revision instructions. In this case, the SEA notes the observed discrepancies and returns the Change Request to the originating Design Group Manager. The process then reverts to Step 18.

B. Determine that the revised Change Request adheres to the DCB's instructions. In this case, the SEA prepares a memorandum of his findings of compliance and transmits the same to the M/CE. The process then advances to Step 20.

Step 20 The M/CE determines if the approved change should be subject to full, limited, or no configuration control and transmits his decision to the originating Group Manager and the CCM together with the completed Change Request Form.

Step 21 The Configuration Control Manager obtains original signatures of all signatories to the change request on one Change Request Form and transmits the original to the Document Control Center and a copy to the change originator.

Step 22 The Document Control Specialist updates the Document Status Log and removes the pending Change Request Form from the master file copy which is replaced with the Approved Change Request Form displaying original signatures.

Step 23 The originating Design Group Manager receives a copy of the completed Change Request Form from the CCM which he transmits to the change originator. The change originator delivers a hard copy original of the approved change to the Document Control Center.

A. If the approved change is not subject to full configuration control, the originator effects distribution of 'latest version' copies as required.

Step 24 The Document Control Center Specialist receives a 'latest version' hard copy original, reflecting approved changes, from the Originator. If the approved change is subject to full configuration control, the specialist will remove and destroy the old version replacing it with the 'latest version' and effect distribution of the 'latest version' to known holders of the old document.

In all cases the document status log will be updated to reflect the presence of a 'latest version' copy in the Document Control Center.

III

PROCEDURE FOR COMMENT ON DOCUMENTS DURING APPROVAL AND/OR REVISION

BACKGROUND AND PURPOSE

Procedures defined by the Configuration Management Plan (WBS 14DAH) involve extensive commentary activities for Metro Rail Project (MRP) documents during their development, approval, and revision phases. While these procedures provide widespread opportunities for design participants to present their concerns to document authors and change originators, the resulting volume of comments can be confusing and distracting to a Document Author or Change Originator if they are presented in a nonstandardized manner.

The purpose of this procedure is to define a process for the collection and compilation of comments at the Design Group level to facilitate their review by MRP Design Management and Document Authors/Change Originators.

APPLICABILITY

The procedures, detailed herein, are applicable to MRP Design participants when commenting upon all MRP documents (narrative reports and drawings) subject to full and limited configuration control and such other documents as may be designated by the Manager Chief Engineer (M/CE).

RESPONSIBILITIES

Following are brief narrative descriptions of MRP participant's functional roles under this procedure:

Design Group Manager

- Receives review package from originator or originating Group Manager
- Assigns review responsibility to members of his group and distributes review materials to be reviewed
- Designates individual within group to consolidate comments (Project Review Coordinator)
- Reviews consolidated issue package

- Transmits consolidated issue package to document Author/Originator or originating Group Manager and to System Design Analyses (SDA) Manager or Configuration Control Manager (CCM) in accordance with procedures outlined in Procedure for Approval of Metro Rail Project Documents and Procedure for Change Approval and Implementation of Approved Metro Rail Project Documents.

Group Project Review Coordinator

- Receives comments from members of Design Group
- Investigates unintelligible or ambigious comments
- Consolidates comments utilizing Design Element Review/Response Sheet (See Appendix E)
- Marks up copy of reviewed material reflecting group's consolidated comments where appropriate
- Prepares Consolidated Issue Package for review by Design Group Manager

Reviewers/Commentors

- List comments on Design Element Review/Response sheet and transmit to Group Project Review Coordinator

Originating Group Manager

- Receives Consolidated Issues Package and Marked-up Copy (where appropriate) transmits to Author/Originator
- Receives report of comment conflict from Author/Originator, concurs/does not concur, directs document revisions or resolves conflicts in accordance with Procedures for Approval of Metro Rail Project Documents or Procedures for Change Approval and Implementation of Approved Metro Rail Project Documents

Author/Originator

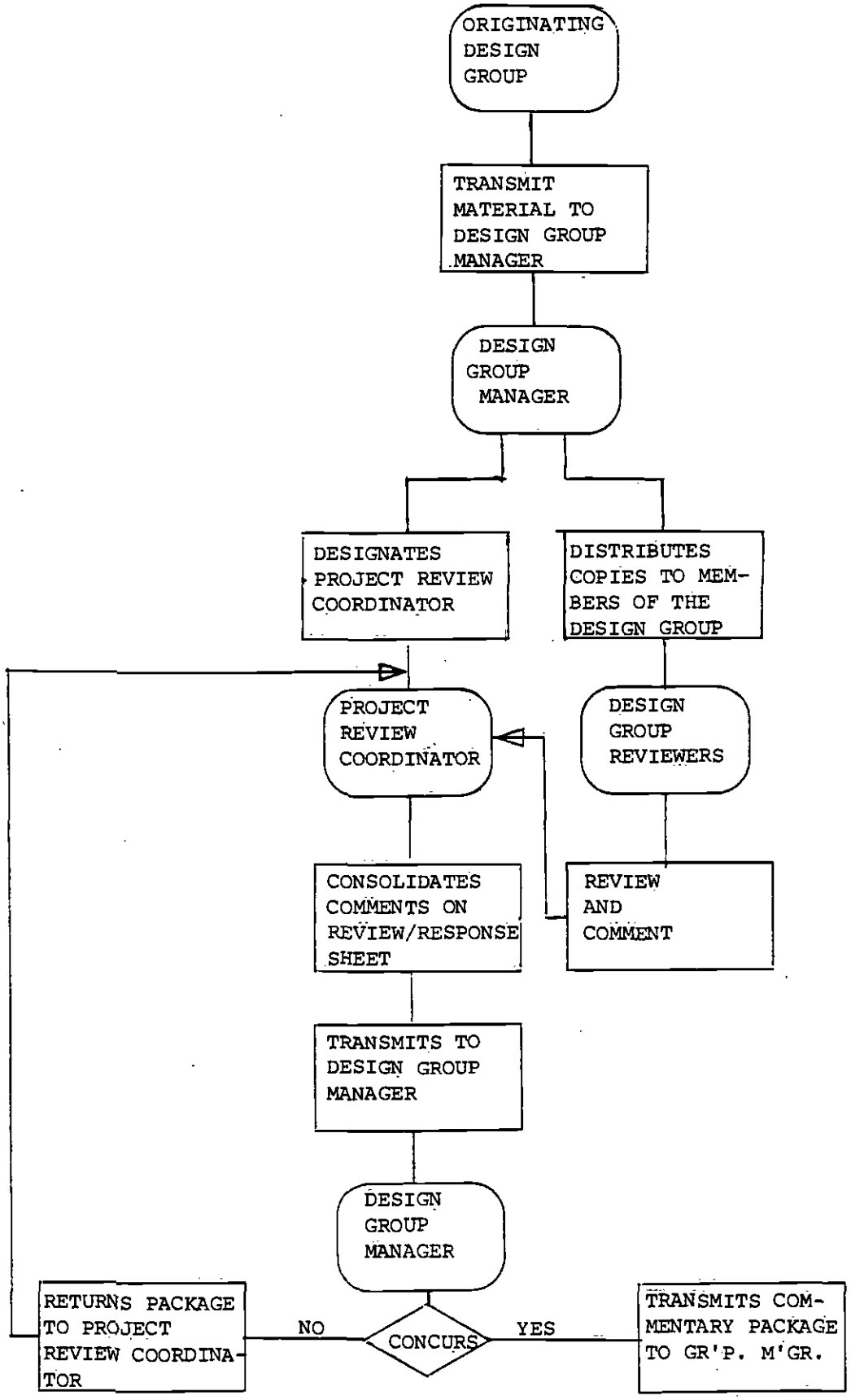
- Receives consolidated Issues Package from originating Design Group Manager
- Consults with other Design Group Review Coordinators when required
- Accomplishes changes to document where required
- Identifies areas of comment nonconcurrence and reports same to originating Design Group Manager

SEQUENCE OF ACTIVITIES

Review of Metro Rail Project Documents may be occassioned as a result of either their initial development or because of a request for change of previously approved documents. Figure III-2, which follows, is a flow chart which illustrates the sequence of activities associated with the internal review of MRP documents by Design Groups.

Figure III-1

DOCUMENT REVIEW COMMENTARY FLOWCHART



Step 1 The Design Group Manager receives a package of materials from the originating Design Group (or, if his Group is the Lead Group, from the Document Author/Change Originator).

Step 2 The Design Group Manager designates a Project Review Coordinator

Step 3 The Design Group Manager distributes copies of the material to be reviewed to members of his Group with directions detailing the time allocated for return of comments to the Project Review Coordinator.

Step 4 Designated members of the Design Group review the materials and list their comments on the Design Element Review/Response Sheet (See Appendix F). These sheets are then forwarded to the designated Project Review Coordinator.

Step 5 The Project Review Coordinator receives comments from members of his/her project team and compiles them on a master Design Element Review/Response Sheet for his Group. If appropriate, a single copy of the reviewed material may be marked up to reflect received comments. This consolidated Issue Package is then transmitted to the Design Group Manager.

Step 6 The Design Group Manager receives the Consolidated Issue Package, from the Project Review Coordinator, which he reviews. If he does not concur with the Issue Package prepared by the Project Review Coordinator, he issues instructions for its revision. If he concurs, the Consolidated Issues package is transmitted to the originating Group Design Manger and/or System Design Analysis Manager in accordance with procedures outlined in Procedure for Approval of Metro Rail Project Documents and Procedure for Change Approval and Implementation of Metro Rail Project Documents.

IV

PROCEDURE FOR CODE IDENTIFICATION OF SCRTD METRO RAIL PROJECT DOCUMENTS

BACKGROUND AND PURPOSE

Continuing preliminary engineering (PE) and final design activity, associated with the Metro Rail Project (MRP) will result in the production of many documents (drawings and narrative reports) which will be utilized as references and documentation of design activity. In recognition of the critical need to closely coordinate and manage the production, distribution, storage, and retrieval of these design products, a Configuration Management Plan has been developed by consultants to the Southern California Rapid Transit District (SCRTD) MRP staff. One component of the Configuration Management Plan involves the development of document identifier codes which shall be assigned to all MRP documents to facilitate their recognition, storage and retrieval.

APPLICABILITY

The procedure, detailed herein, is applicable to all MRP documents subject to strict or limited configuration control and to such other design products which may be designated by the Manager Chief Engineer (M/CE). Appendix A presents a current listing of MRP documents subject to strict and limited configuration control.

RESPONSIBILITIES

It is the responsibility of each document Author/Originator to assign a Document Identifier Code to each MRP document, change, or revision immediately upon receipt of notice to proceed with its preparation (see Procedures I and II).

SEQUENCE OF ACTIVITIES

Step 1 The Document Originator will assign an identification code immediately upon receipt of a Design Directive/Work Authorization or at the commencement of document preparation.

Step 2 The Originator will submit the marked document to the originating Group Manager for subsequent reviews and approval. The Originator will also convey the identifier code to the DCCS.

Step 3 The DCCS will mark the identifier code into the appropriate status log and place approved documents in storage facilities labelled by appropriate WBS reference.

Coding Methodology

The identifier code will be composed of 6 segments, containing no more than 21 alphanumeric characters. A hyphen follows each segment except segment 6.

Narrative Reports

	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6
	1 alpha character	2 alpha characters	Up to 9 alphanumeric characters	2 alpha characters	3 numeric characters	3 numeric characters
Example:	A	AP	11DAA3116	TC	001	001

Definition of Segments (Reports)

Segment 1 - Type of Report

Alternative Analysis	A
Criteria	C
Report	R
Cost Estimate	E
Milestone	M
Preliminary Specification	P
Final Specification	F

Segment 2 - Line Identification and Engineering Design Phase

Starter Line	A
All Other Lines	*
Preliminary Engineering	P
Final Design	F

*Future lines will be assigned successive letter designation (B-Z) which will be announced.

Segment 3 - Work Breakdown Structure (WBS) Task

See detailed WBS listing

Segment 4 - Design Discipline (Subject/Code)

Structural Engineering	SE
Civil Engineering	CE
Mechanical Engineering	ME
Electrical Engineering	EE
Utilities (Civil)	UC
Architectural	AR
Trackwork (Civil)	TC
General Information	GI
General Drawings (Key Plan, Index, etc.)	GE
Right-of-Way	RW
Soil and Geology	SG
Control Surveys	CS
Landscaping (Architectural)	LA
Transit Vehicle	TV
Traction Power	TP
Train Control	TC
Communications	CO
Aerial Structure	AS
At-Grade Structure-Civil	AG
Subway Structure	SS
Elevators (Architectural)	EL
Escalators (Architectural)	ES
Graphics	GR
Station Furniture	SF
Lighting	LT
Unit Substations	US
Station Attendant's Booth	AB
Fire Intrusion/Clock	FI
Cableway	CW
Fare Collection Equipment	FC
Maintenance Equipment	MA
Traffic and Signalization	TE
Tree Survey	TS
Station Area Design	SA
Interface	YY
Configuration Management	CM

Segment 5 - Report Page Number

Segment 6 - Revision Number

Drawings

	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6
	2 alpha characters	2 alpha characters	Up to 9 alphanumeric characters	2 alpha characters	3 numeric characters	3 numeric characters
Example:	DD	AP	18BAH1342	SE	001	001

Definition of Segments (Drawings)

Segment 1 - Drawing Type

Conceptual Drawing	CD
Directive Drawing	DD
Standard Drawing	SD
Preliminary Drawing	PD
Contract Drawing	CC

Segment 2 - Line identification and Engineering Design Phase

Starter Line	A
All Other Lines	*
Preliminary Engineering	P
Final Design	F

*Future lines will be assigned successive letter designations B-Z, which will be announced.

Segment 3 - Work Breakdown Structure (WBS) Task

Segment 4 - Design Discipline (Subject/Code)

Same as for narrative reports

Segment 5 - Drawing Page Number

Segment 6 - Revision Number

V

OPERATIONAL PROCEDURES FOR DOCUMENT CONTROL CENTER HANDLING APPROVED METRO RAIL PROJECT DOCUMENTS

BACKGROUND AND PURPOSE

Over 250 drawings or narrative reports, subject to configuration control processes, will be developed during the preliminary engineering (PE) phase of the Metro Rail Project (MRP).

To assure the control, approval, and release of approved design products, having the potential to impact MRP baseline characteristics, a Configuration Management Plan (WBS 14DAH) has been developed by consultants to the Southern California Rapid Transit District's MRP staff. One component of the Configuration Management Plan addresses the document storage, distribution and status monitoring requirements of the MRP and establishes a Document Control Center. The purpose of this procedure is to detail the step-by-step actions of project participants necessary to accomplish the objectives of the document storage, loan/retrieval, and distribution requirements outlined by the Configuration Management Plan.

APPLICABILITY

The procedures detailed herein are applicable to all MRP documents subject to strict or limited configuration control and such other MRP documents as may be designated by the Manager/Chief Engineer. A current listing of documents subject to strict and limited configuration control is presented in Appendix A of this document.

RESPONSIBILITIES

The responsibilities of various MRP participants, to provide approval information and hard-copy materials to the Document Control Center, have been described in procedures I and II to which the reader is referred. The responsibilities, described in the following, are applicable to the Document Control Center Specialist (DCCS) only.

SUMMARY OF DUTIES

The duties of the Document Control Center Specialist(s) (DCCS) include involvement in the following configuration management activities:

- o Document Status Monitoring
- o Document Storage
- o Document Updating
- o Document Loan and Retrieval
- o Reproduction Coordination and Distribution of Documents Subject to Full Configuration Control

Document Status Monitoring

The DCCS is/are responsible for maintaining current information regarding the status of all MRP documents (i.e., in preparation, approved, pending revision). This information is recorded in the Document Status Log (SCRTD/MRP - CM-3) which appears as Appendix C.

Inputs to the Document Status Log are provided by information from completed Document Approval Status Forms (Appendix B) and Change Request Forms (Appendix D). Upon receipt of one of these forms, from the CCM, the DCCS updates the log and files the forms in either the permanent files or with the master copy of the affected document.

The Document Status Log should be current at all times. Periodically, and at the request of the CCM, summaries of the Log shall be prepared and circulated to MRP management by the DCCS.

Document Storage

The DCCS is/are responsible for establishing and maintaining an orderly storage system for MRP documents. The ultimate system (to be adopted) will be keyed to document code identification numbers and will employ open shelf storage for narrative documents and flat files for the storage of drawings, schedules, and charts.

Master copies of MRP documents shall be secured in a separate DCC area and shall be made available only to Change Originators after full approval of the change has been authorized (see Procedure II).

It is possible that the DCC will also store micro-fiche of MRP drawings, schedules, and charts. If this option should be utilized, micro-fiche will be stored in aperture card files.

Document Updating

The DCCS shall be responsible for maintenance of all DCC MRP documents in a current condition. Moreover, the DCCS shall be responsible for the updating of documents subject to full configuration control in the hands of project participants.

Upon receipt of an approved change, the DCCS shall secure a hard-copy original from the Change Originator (Note: This may require the temporary release of the DCC master copy to the Change Originator), effect the necessary duplication, and physically accomplish the exchange of superceded material with the current version.

Document Loan and Retrieval

Documents will be made available for loan by the DCC in accordance with the following sequence of activities:

Step 1 Borrowers will initiate the process by completing blocks 1, 2, 3, and 5 of the Document Loan Request Form (see Appendix F).

Step 2 The DCCS will review the Form and complete Block 4.

Step 3 Two (2) copies of the form will be produced. One copy will be placed in the storage location of the document requested and one copy will be stapled to the cover of the document requested. The original Request Form will be placed in a tickler file at the date corresponding to the "due back" date recorded by the DCCS in Block 4.

Step 4 Documents returned on or before the due back date are logged in, checked for markings and returned to the circulation inventory. Returned documents are destroyed if they have sustained extensive markings or if changes to them have been approved.

Step 5 Borrowers failing to return documents by the due back date are notified by the DCCS by telephone. If the telephone notification fails to result in the document's return, a written reminder is generated by the DCCS.

Reproduction Coordination and Distribution

The DCCS shall be responsible for the reproduction and circulation of MRP documents subject to full configuration control and authorized changes to documents subject to full configuration control. Moreover, the DCCS shall distribute MRP documents subject to full configuration control in accordance with distribution lists provided by the Systems Engineering Analysis Section Manager. Subsequent changes to full configuration control documents are circulated to document holders by the DCCS.

Authors and Change Originators of MRP documents subject to limited or no configuration control are responsible for the provisions of adequate copies of these documents to the DCC and for the distribution of these documents to project participants.

VI

PROCEDURE FOR ISSUANCE AND USE OF DESIGN DIRECTIVES FOR METRO RAIL PROJECT

BACKGROUND AND PURPOSE

Continuing preliminary design (PE) and subsequent final engineering efforts on the Metro Rail Project (MRP) will, from time to time, necessitate the issuance of specific design direction beyond that achievable through work authorizations or contract scopes. Pursuant to the Configuration Management Plan (14 DAH), Design Directives are to be utilized to convey information and provide direction beyond work authorizations and/or contract work scopes.

Design direction is the process of providing specific guidance to a design group for the analysis of selected approaches or alternatives and for the resolution of conflicts among design groups. Design Directives will be utilized to authorize technical work and related activities to be performed by design groups. Their scope may include but are not limited to:

- o Definition of study areas and alternatives to be analyzed
- o Identification of the depth to which analysis will be taken
- o Specification of time and cost limitations
- o Determinations of methods to be used in presentation of study results.

Design Directives are not to be used to supercede signed contracts.

APPLICABILITY

The procedures outlined herein are applicable for the issuance, documentation and processing of MRP Design Directives.

RESPONSIBILITIES

Manager Chief Engineer

It is the responsibility of the Manager Chief Engineer (M/CE) to approve, by signature, all MRP Design Directives. Design Directives may be initiated by Design Group Managers; however, they are unofficial until signed by the M/CE.

Systems Design Analysis Manager

The System Design Analysis Manager (SDA) will perform a support function to the M/CE by issuance of an identification number for Design Directives.

Configuration Control Manager

The Configuration Control Manager (SEA) will perform a support function to the M/CE by providing a preliminary analysis of interface impacts associated with a Design Directive contemplated for issuance by the M/CE.

Design Group Managers

Design Group Managers will provide appropriate written responses to instructions contained within Design Directives.

Document Control Center Specialist

The Document Control Center Specialist will receive a copy of all Design Directives for placement within the permanent MRP files.

SEQUENCE OF ACTIVIITES

Step 1 The M/CE prepares (or causes the preparation of a draft Design Directive - see Appendix G). This draft will contain:

- o Subject
- o Purpose and background of the directive
- o Specific instructions for the completion of the directive to include schedule for completion, design effort to be expanded, responsibility for implementation (where appropriate) description of anticipated product, and level of configuration management control for the anticipated product.

Step 2 The SDA reviews the draft Design Directive and assigns an identification number. The draft Directive is then returned to the M/CE.

Step 3 The SEA receives and reviews the draft Directive. He then conducts a preliminary analysis of the interface impacts associated with the scope of activities called for by the Directive. This analysis is transmitted to the M/CE.

Step 4 The M/CE reviews the SEA's analysis and, if appropriate in his judgement, revises the draft Directive. He then issues the Design Directive to Design Group Managers, the SDA, and the CCM.

Step 5 The CCM transmits a copy of the Design Directive to the Document Control Center Specialist who handles it in accordance with Operational Procedures for Document Control Center Handling Approved Metro Rail Documents.

Step 6 Design Group Managers respond to the Design Directive in accordance with its instructions. See also Procedure for Approval of Metro Rail Documents and Procedure for Change Approval and Implementation of Approved Metro Rail Project Documents.

VII

PROCEDURE FOR RESPONSE TO SCRTD POLICY DESIGN DETERMINATIONS

BACKGROUND AND PURPOSE

Throughout the preliminary and final engineering phases of the Metro Rail Project (MRP) policy determinations, by the SCRTD Board of Directors may have the potential to affect past, ongoing, or future design activity. Official communication of such policy determinations will be transmitted to the MRP via a Policy Design Determination issued by the SCRTD General Manager (see Appendix H).

It is anticipated that the General Manager (GM) will intimately involve appropriate MRP participants prior to issuance of Policy Design Determinations; however, the scope for this procedure is limited to the response by MRP personnel to an issued Policy Design Determination. Pre-issuance consultations, between the GM and MRP personnel are properly within the purview of the GM's administrative discretion and are therefore not addressed by this procedure.

APPLICABILITY

The procedures outlined herein are applicable to all Policy Design Determinations issued by the GM to the MRP.

RESPONSIBILITY

It is the responsibility of the Manager, Chief Engineer (M/CE), in consultation with the Systems Engineering Analysis Section Manager (SEA) and the Configuration Control Manager (CCM), to determine the impact of issued Policy Design Determinations upon completed, ongoing, or future MRP design activity and to initiate appropriate activities to integrate policy determinations within the overall MRP design.

SEQUENCE OF ACTIVITIES

Step 1 The M/CE receives from the GM a completed Policy Design Directive which he reviews and transmits to the SEA.

Step 2 The SEA receives the Policy Design Directive from the M/CE. He then consults with the CCM to determine potential system interface impact and reviews completed, on-going, and planned design activity to determine the need for: revision of completed work, modification of on-going design activities, and changes in the schedule and/or scope of design activities not yet underway.

Step 3 The SEA prepares a technical report, summarizing his Step 2 findings and transmits it to the M/CE.

Step 4 The M/CE receives and reviews the SEA's report. Based upon his analysis he can:

A. Determine that the subject Policy Design Determination has no impact upon completed, on-going, or future MRP design activities and is appropriate for information distribution only. In this case, the procedure advances to Step 5.

B. Determine that the subject Policy Design Determination impacts completed, on-going, or future MRP design activity. In this case, the process would advance to Step 6.

Step 5 The M/CE would transmit the subject Policy Design Determination to the CCM for information distribution to MRP participants.

Step 6 Based upon the M/CE's determination that the subject Policy Design Determination impacts completed, on-going, or future MRP design activities, the following actions can be taken:

A. If the policy determination impacts completed work, the M/CE would select the appropriate design group and direct that a Change Request be initated. In this case, the process would revert to Procedure II, Procedure for Change Approval and Implementation of Approved Metro Rail Project Documents.

B. If the policy determination impacts on-going or future MRP design activity, the M/CE could either cause the modification of existing work authorizations or issue a Design Directive. In the latter case, the process would revert to Procedure VI, Procedure for Issuance and Use of Design Directives for Metro Rail Project.

VIII

STANDARD FORMATS FOR METRO RAIL PROJECT DOCUMENTS

BACKGROUND AND PURPOSE

The preliminary, continuing preliminary, and final engineering phases of the Metro Rail Project (MRP) will result in the production of numerous documents (drawings and narrative reports). Preparation of these documents will involve the efforts of several individuals from various organizations which may routinely employ differing methodologies in the preparation of drawings and narrative reports.

The criteria, presented within this procedure, are intended to standardize the construction of MRP documents to:

- Provide for uniform appearance
- Assure the inclusion of information vital to the review, approval, and change processes
- Prevent the inclusion of unnecessary embellishments.

APPLICABILITY

The criteria, herein presented, are applicable to all MRP docuements subject to strict or limited configuration control and to such other MRP documents as may be designated by the Manager, Chief Engineer (M/CE).

RESPONSIBILITIES

It is the responsibility of all document authors/originators to comply with the requirements outlined herein.

NARRATIVE REPORTS

INTRODUCTION

It is recognized that MRP narrative reports will span a wide spectrum of subject matter and will be intended for several audiences of differing levels of technical sophistication for which alternative presentation methodologies may be appropriate and/or commonly accepted. It is not the intent of this procedure's criteria to so rigidly constrict narrative report authors as to stifle creativity; rather, the requirements presented below are designed to assure the inclusion of certain materials, vital to the recognition and processing of MRP narrative documents, and to detail the placement of these materials to facilitate their expeditious referencing by MRP personnel responsible for their storage, distribution, and revision.

I. COVERS

Metro Rail Project Documents will be bound in a standard 8-1/2 X 11, glossy-finished, two-hole ACCO™ binder with 4-3/4 X 2-3/8 cut-out (supplied by RTD).

II. FRONT MATTER

Front matter (or preliminaries) are those pages of a document which precede text materials. They are of particular importance to MRP narrative documents as they provide keys to the Document Control Center Specialist and the Configuration Control Manager regarding the current status of a given document.

Front pieces will be numbered in lower case Roman Numerals commencing with ii. All front pieces will appear on recto (right-handed pages).

Title Page - ii

The title page will be the first recto page of narrative documents and will be numbered ii. The following document information will appear on the title page and be visable through the cover cutout:

- Document title
- Document I.D. code
- Originating (lead) Group

Additionally, the title page will present:

- Document status (i.e. draft, final, revision)

- Document date (day, month and year of printing).

Exhibit 1 which follows, is an example of a properly formatted title page.

Revision Record - iii

The revision record will be the second recto page of narrative documents and be numbered iii. This page will provide a running record of document pages that have been revised. Exhibit 2, which follows displays the revision page.

Approval Page - iv

The approval page will appear only in documents that have cleared the configuration management approval process (See Procedure I) and will display the Manager Chief Engineer's signature and the date of approval. Exhibit 3, which follows, is a sample Approval Page.

Preceding the approval page, for documents undergoing change (See Procedure II), the Change Approval Status Form (Appendix D) will be inserted in the document by the Document Control Center Specialist until such pending changes have either been approved or rejected.

Change Approval Status Forms will not be numbered (paginated) as they are temporary.

Table of Contents - v

The table of contents will commence with lower case Roman Numeral v and continue for as long as necessary. If the Author determines that his/her document's bulk justifies the printing of text on both sides of a page, then this pattern should commence with the Table of Contents. Notwithstanding, all preceding pages (Title page, Revision Record, Approval Page, and the first page of the Table of Contents) shall appear on recto (right-hand) pages and numbered accordingly (i.e., Title Page ii, Revision Record iv, Approval Page -vi, Table of Contents viii).

Chapters or section numbers should appear in the left-hand vertical column in the Table of Contents. The use of either Arabic or upper-case Roman Numerals is acceptable for chapter/section numbers.

The middle column of the Table of Contents should list chapter or section titles, major subjects, within chapters/sections, are indented.

The right-hand column lists page numbers. Pages are numbered sequentially with Arabic numerals.

EXHIBIT 1

REVISED
DRAFT

PROCEDURES
FOR
IMPLEMENTATION AND ADMINISTRATION
OF
SCRTD METRO RAIL PROJECT
CONFIGURATION MANAGEMENT PLAN
WBS 14DAH

I.D. CODE: C-AP-14DAH-CM-000-000

Prepared by

JORDAN/AVENT & ASSOCIATES

for

BOOZ, ALLEN & HAMILTON, INC.

March 15, 1983

EXHIBIT 2

REVISION RECORD

Document I.D. Code _____

Document Title _____

Original Approval Date _____

REVISION NO.	DATE	REVISION DESCRIPTION	AFFECTED PAGES	AUTHORIZED BY	ACCOMPLISHED BY

EXHIBIT 3

APPROVAL

This document has been officially accepted for use by all Southern California Metro Rail Project Participants.

APPROVED:

_____
Manager, Chief Engineer

Date _____

Registration No. _____

Bound appendices are treated similarly and are listed following text material information. Separately-bound appendices are also listed with the notation "bound separately" placed in the right-hand column.

List of Tables

The List of Tables should appear on the first available recto page following the Table of Contents. The listing of tables should conform to the style utilized to present the Table of Contents.

List of Figures/Exhibits

The list of figures and/or exhibits should appear on the first available recto page following the List of Tables. The listing of Figures/Exhibits should conform to the style utilized to present the Table of Contents materials.

List of Abbreviations

The utilization of a list of abbreviations is at the option of the Author. Common modern practice is to spell out the item when first used in the text and to place the abbreviation or acronym in following parentheses. From then on, the abbreviation or acronym is utilized. However, if the list of abbreviations is lengthy and in fairly common use, the author may choose to precede the text with such a list and eliminate the previously described practice.

If the Author chooses to utilize a list of abbreviations or acronyms. This list should commence on the first available recto page following the list of Figures/Exhibits.

Foreword/Preface

The foreword/preface should appear on the first available recto page following the List of Figures/Exhibits or List of Abbreviations (if used). It should be limited to no more than two (2) pages of material and should provide a rough overview of the document.

Other Front Matter

Other front matter such as Executive Summary, Conclusions and Recommendations, etc. can be included. The utilization of and placement of these materials is at the discretion of the document's author.

III. TEXT MATERIALS

Introduction

The first chapter/section of MRP narrative documents should be the Introduction. This chapter/section should contain, at a minimum:

- Purpose of the document
- Scope of the document
- Organization of the document

Pagination

Text pages will be sequentially numbered utilizing Arabic numerals and in correspondence to the document identifier code (See Procedure IV).

The first four segments of the document I.D. code will commence at the bottom left-hand margin of each page. Segment 5, commencing with 001 will be displayed centered at the bottom and segment 6 will be aligned with the right-hand margin of each page.

Full Page Tables and Figures/Exhibits

To the extent practical, full-page Tables and Figures/Exhibits should appear on the first available recto page following mention in the text. Tables and Figures/Exhibits displayed on a horizontal plane should be oriented with the top nearest to the spine of the document.

Full page Tables and Figures/Exhibits need not be numbered but may be listed in the front matter as preceding or following a numbered text page.

Type Style and Size

Final documents should be typed single-spaced in 12 pt. type. Margins should be sufficient to permit binding without interference and to provide a pleasing appearance.

Documents in preliminary or draft form may be prepared in 1-1/2 or 2 space formats to facilitate their review and annotation.

IV BACK MATTER

Back matter includes the Appendix(es), Notes, Glossary, Bibliography, and Index. The utilization and placement of these materials is at the discretion of the author.

MRP DRAWINGS

INTRODUCTION

The following criteria for MRP drawings are applicable to design drawings at all levels of their development. These criteria are intended to assure that all MRP drawings: 1) display uniform appearance, 2) can be easily reviewed, and referenced by MRP personnel and 3) are easily recognizable by DCCS personnel who are responsible for drawing storage and distribution.

GENERAL

All drawing sheets will be 27" by 34" and lettering will be vertical, upper-case single stroke, commercial gothic style, with a height of 4/16ths." Standard SCRTD/MRP title-blocks will be utilized.

Scales will be noted by numbers e.g., 1" = 40' - 0 or 1/4" = 1'- 0. Drawings not drawn to scale will be marked "NOT DRAWN TO SCALE" in the scale block.

Original drawings will be submitted on photo-reproducible vellums. All drawing ink utilized will be undiluted permanent draft ink.

DRAWING SETS

Drawing sets will at a minimum consist of:

- Cover sheet
- Title sheet
- Detail sheet(s)
- Plan and profile sheet (s)

(Cover Sheet)

The cover sheet will include space for project title, project number, date (day, month and year) of submittal, section designer's name.

(Title)

The title sheet will include space for a general site plan, key map, and standard SCRTD/MRP title block. The signature block will include consultant design group (abbreviated) and date, originator's name and date, and name of checker and date.

A. Title Block

The title block will include space for Revisions, design group, names of designer and checker, approval recommendation signatures and space for license stamp, Manager, Chief Engineer's signature and date. Also included will be the contract number, drawing number, scale designation, sheet number.

Additionally, the title block will include in bold print, the identifier code to be located in the drawing title section.

B. Revision Box

The revision box of the title block will include revision date, change originator's initials and approver's initials and a brief description of revisions. The block will consist of several lines to enter a running record of pages that have been previously revised.

(Detail Sheet(s)

The detail sheet will include title block index and symbols, boring logs, plans, elevations, sections, and detail. Also included will be appropriate legends and other notes.

(Plan and Profile Sheet(s)

The plan and profile sheet will include title block and profile grid on the lower half of the sheet.

APPENDIX A

LIST OF DOCUMENTS SUBJECT TO CONFIGURATION MANAGEMENT

1. DOCUMENTS SUBJECT TO STRICT CONFIGURATION MANAGEMENT

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Preliminary Engineering Project Management Plan	11A	SA	
Configuration Management Plan	14DAH	SA	BAH
Utility Relocation Plans and Estimates (Stations)	16BAK	STA	City
System Specification Initial Version	13DAL	SA	BAH
System Specifications Update #1	15F	SA	BAH
Update #2	15F	SA	BAH
Final System Specification	16DAM	SA	BAH
Outline Specifications	16AAN	W & S	DMJM/PBQD
PRELIMINARY DESIGN SPECIFICATIONS FOR:			
Passenger Vehicle	16CAA	SUBS	KE
Train Control	16CAB	SUBS	KE
Communications	16CAC	SUBS	KE
Traction Power & Distribution	16CAD11	SUBS	KE
Auxiliary Power	16CAD12	SUBS	KE
Fare Collection	16CAE11	SUBS	KE
Mechanical & Electrical Equipment	16CAE12	SUBS	KE
Auxiliary Vehicles	16CAE13	SUBS	KE
Proposed Alternative Horizontal and Vertical Alignments, Plans and Profiles	14AAA	W & S	DMJM/PBQD
Stations Planning Drawings (as required)	14BAM	STA	HWA
Contract Packaging Drawings	16AAR	W & S	DMJM/PBQD

1. DOCUMENTS SUBJECT TO STRICT CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Directive and Standard Drawings	16AAW	W & S	DMJM/PBQD
Framing Plans and Sections	16BAC	W & S	DMJM/PBQD
Mechanical Plans and Sections	16BAD	STA	HWA
Electrical Plans and Sections	16BAE	STA	HWA
Elevator/Escalator Drawings	16BAJ	STA	HWA
Stations Planning Drawings (as required)	16BAY	STA	HWA
PRELIMINARY DESIGN DRAWINGS FOR:			
Passenger Vehicles	16CAA	SUBS	KE
Train Control	17CAB	SUBS	KE
Communications	16CAC	SUBS	KE
Traction Power and Distribution	16CAD11	SUBS	KE
Auxiliary Power	16CAD12	SUBS	KE
Fare Collection	16CAE11	SUBS	KE
Mechanical and Electrical Equipment	16CAE12	SUBS	KE
Auxiliary Vehicles	16CAE13	SUBS	KE
Civil Criteria	13AAA	W & S	DMJM/PBQD
Structural Criteria	13AAB	W & S	DMJM/PBQD
Track Work Criteria	13AAC	W & S	DMJM/PBQD
Yards and Shops Criteria	13AAD	W & S	DMJM/PBQD
Ventilation Criteria	13AAE	W & S	DMJM/PBQD
Corrosion Control Criteria	13AAG	W & S	PSG/WATERS
Noise and Vibration Criteria	13AAH	W & S	WIA
Station/Architectural Criteria	13BAA	STA	HWA

1. DOCUMENTS SUBJECT TO STRICT CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Standard Directives and Drawings	13BAB		
Passenger Vehicle Criteria	13CAA	SUBS	KE
Train Control Criteria	13CAB	SUBS	KE
Communications Criteria	13CAC	SUBS	KE
Traction Power Criteria	13CAD11	SUBS	KE
Auxiliary Power Criteria	13CAD12	SUBS	KE
Mechanical/Electrical Criteria	13CAE12	SUBS	KE
Auxiliary Vehicle Criteria	13CAE13	SUBS	KE
Elevator and Escalator Criteria	13CAE14	SUBS	KE
Energy Management Study Report	13DAA	SA	BAH
System Safety, Assurance and Security Criteria	13DAD	SA	BAH
Yards and Shops Operating Criteria	13DAJ	SA	BAH
Fire Protection Criteria	13DAK	SA	KE/GBA
Fare Collection Criteria	14CAE11	SA	BAH
Life Cycle MODEC Report and Users Manual	14DAA	SA	BAH
Report on Preferred System Configuration and Basis for Selection	15B	SA	BAH
Criteria and Methodology for Selection of Preferred System Configuration	15A	W&S, SA	BAH
System Safety, Assurance and Security Plans	16DAD	SA	BAH
Civil/Structure Plans	16AAA	W & S	DMJM/PBQD
General Yards and Shops Plans	16AAB	W & S	DMJM/PBQD
Trackwork Design Report and Plans	16AAC	W & S	DMJM/PBQD

1. DOCUMENTS SUBJECT TO STRICT CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Construction Staging Report and Plans for Lines and Stations	16AAG	W & S	DMJM/PBQD
Right-of-way Plans	16AAH11	W & S	DMJM/PBQD
General Plans	16AAV	W & S	DMJM/PBQD
Floor Plans, Sections and Elevations for Each Section	16BAA	STA	HWA
Site Plan(s) for Each Station	16BAB11	STA	HWA
Preliminary Street Plans	16BAB12	W & S	City
Station Utility Relocation Plans	16BAK	STA	City
System Operating Plan	16DAA	SA	BAH
Interface Matrices (Configuration Control)	16DAH	SA	BAH
System Maintenance Plan	16DAJ	SA	BAH
Configuration Management Plan for Final Design	16DAL	SA	BAH
Milestone 12, Preliminary Engineering System Plan	16DAK	SA	BAH
Operating and Maintenance Cost Estimates	17BAB	SA	BAH
Master Final Design and Construction Schedule and Project Criteria Path Plan	17E	PC	

2. DOCUMENTS SUBJECT TO LIMITED CONFIGURATION MANAGEMENT

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Procedural Memos	11DAA1112	MCE	
Work Breakdown Structure	11DAA3112	PC	
Current SCRID Fare Structure	13CAE11	SA	BAH
Rail Transit Fare Collection State of the Art	13CAE11	SA	BAH
Design Control Plan	13DAG	SA	BAH
Project Definition and Objectives	13DAG	SA	BAH
Procedures for Capital, Operating and Maintenance Cost Estimates	14AAE	W & S	DMJM/PBQD
Capital, Operating and Maintenance Cost for the Most Promising Alternatives	14AAE	W & S	DMJM/PBQD
Fare Collection Design and Specification Review	14CAE11	SA	BAH
Capital, Operating and Maintenance Cost Estimates for the Most Promising Station Alternatives	14BAE	STA	HWA
Capital, Operating and Maintenance Cost Estimates for the Most Promising Alternatives	14CAF	SUBS	KE
Property Acquisition Costs	16AAH12	W & S	Spec. Consul
Relocation Plan and Costs	16AAH13	W & S	Spec. Consul
Ways and Structures Cost Estimates	16AAK	W & S	DMJM/PBQD
Station Cost Estimates	16BAM	STA	HWA
Subsystem Cost Estimates	16CAF	SUBS	KE
Reports on Constructability and Review of Capital Costs and Contract Packaging	17A	W & S	Spec. Consul
Capital Cost Estimates	17BAA	W & S	DMJM/PBQD
Cost Estimates for Construction of Alternative Operable Segments	17C	W & S	DMJM/PBQD

2. DOCUMENTS SUBJECT TO LIMITED CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Preliminary Drawings, Tunnels, Stations	14AAB	W & S	DMJM/PBQD
Tentative Layouts for Authorized Yards and Shops Alternatives	14AAG12	W & S	DMJM/PBQD
Alternative Station Diagrammatics	14BAB	STA	HWA
Geotechnical Report	12AAC	W & S	CWDD
Seismic Design Criteria Report	12AAD	W & S	CWDD
Corrosion Control Report	12AAH	W & S	PSG/WATERS
General Noise and Vibration Report	12AAJ	W & S	WIA
System Wide Signage and Graphics Report	12AAK	STA	
Phase 1 and 2 System Patronage Forecasts	12B	SCRTD Planning	BA
Operating Alternatives Analysis Report	13DAA	SA	BAH
Preliminary Property Identification Report	14AAC	W & S	DMJM/PBQD
Construction Methods, Report on Authorized Alternatives	14AAF	W & S	DMJM/PBQD
Report on Functional Plans for Yards and Shops	14AAG11	W & S	DMJM/PBQD
Site Specific EIS, Report on Authorized Alternatives	14AAH	W & S	DMJM/PBQD
Report on Authorized Ventilation System	14AAJ	W & S	DMJM/PBQD
Trackwork, Report on Authorized Alternatives	14AAK	W & S	DMJM/PBQD
Tunnel Arrangements, Report on Authorized Alternatives	14AAM	W & S	DMJM/PBQD
Muck Disposal, Report on Authorized Alternatives	14AAN	W & S	DMJM/PBQD

2. DOCUMENTS SUBJECT TO LIMITED CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Alternative Station Locations Report	14BAA	STA	HWA
Preliminary Property Identification	14BAC	STA	HWA
Utilities and Street Work Considerations, Report on Authorized Alternatives	14BAD	W & S	City
Station Construction Methods	14BAF	W & S	DMJM/PBQD
Escalators and Elevators	14BAG	STA	HWA
Site Specific EIS	14BAH	STA	HWA
Reports on Special Studies of Stations (as required)	14BAK	STA	HWA
Lighting	14BAL	STA	HWA
Station Planning Reports (as required)	14BAM	STA	HWA
Passenger Vehicles Alternatives Report	14CAA	SUBS	KE
Train Control Alternatives Report	14CAB	SUBS	KE
Communications Alternatives Report	14CAC	SUBS	KE
Traction Power and Distribution Alternatives Report	14CAD11	SUBS	KE
Auxiliary Power Alternatives Report	14CAD12	SUBS	KE
Fare Collection Alternatives Report	14CAE11	SA	BAH
Auxiliary Vehicles Alternatives Report	14CAE13	SUBS	KE
System Safety, Assurance and Security, Reports on Compatibility of Authorized Alternatives	14DAD	SA	BAH
Report on Preferred System Configuration and Basis for Selection	15B	SA	BAH

2. DOCUMENTS SUBJECT TO LIMITED CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Preliminary Constructability Review Reports	15C		
Long Lead Procurement Report	16AAP	W & S	DMJM/PBQD
Long Lead Procurement Report	16BAQ	STA	HWA
Long Lead Procurement Report	16CAH	SUBS	KE
Contract Packaging Report	16AAR	W & S	DMJM/PBQD
Contract Packaging Report	16BAY	STA	HWA
Contract Packaging Report	16CAL	SUBS	KE
Report on Planning for Final Design	16AAS	W & S	
Muck Disposal Report	16AAT	W & S	DMJM/PBQD
Elevator/Escalator Requirement Report	16BAJ	STA	HWA
Design Reports on Each Station	16BAR	STA	HWA
Lighting Design Report	16BAS	STA	HWA
Station Planning Reports (as required)	16BAY	STA	HWA
Test and Evaluation Recommendations	16CAJ	SUBS	KE
Reports on Constructability and Review of Capital Costs and Contract Packaging	17A	W & S	Spec. Consul
Support Analysis Reports (as required)	17F	SA	BAH
Facilities Rearrangement Atlantic Co.-Four Corners Pipeline	12G	W & S	
Facilities Rearrangement Cal Trans	12G	W & S	
Facilities Rearrangement City of Los Angeles	12G	W & S	
Facilities Rearrangement County of Los Angeles	12G	W & S	

2. DOCUMENTS SUBJECT TO LIMITED CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Facilities Rearrangement Dept. of Water and Power - Water	12G	W & S	
Facilities Rearrangement Dept. of Water and Power - Power	12G	W & S	
System Power (City Area) Dept. of Water and Power - Power	11DAF	SUBS	
System Power (County Area)	11DAF	SUBS	
So. Calif. Edison-Power	11DAF	SUBS	
Facilities Rearrangement LACFCD - Flood Control	12G	W & S	
Facilities Rearrangement Pacific Telephone and Telegraph	12G	W & S	
Facilities Rearrangement Santa Fe Railraod	12G	W & S	
Facilities Rearrangement Southern Calif. Edison Co. - Power	12G	W & S	
Facilities Rearrangement Southern Calif. Gas Co.	12G	W & S	
Facilities Rearrangement Southern Pacific Railroad Co.	12G	W & S	
Facilities Rearrangement Western Union Telegraph Co.	12G	W & S	
Facilities Rearrangement County Sanatation District	12G	W & S	
Facilities Rearrangement LAUPT Union Station (SP, UP, Santa Fe, RRS)	12G	W & S	
Preliminary System Operating Plan	13DAA	SA	BAH
Preliminary Maintenance Plan	14DAG	SA	BAH
Train Performance Simulation Model and Users Manual	13DAA	SA	BAH

2. DOCUMENTS SUBJECT TO LIMITED CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Train Performance Simulation Model and Users Manual	16DAA	SA	BAH
Final Design and Construction Schedule	16AAM	W & S	DMJM/PBQD
Final Design and Construction Schedule	16BAP	STA	HWA
Final Design and Contruction Schedule	16CAG	SUBS	KE
EIS Draft (Print and Distribute)	18CAC12	STA	S/C
EIS Preliminary Final	18CAC12	STA	S/C
Final EIS/EIR; Record of Decision, Certification	18CAA13	STA	S/C
Milestone 1, Preliminary System Definitin and Operating Plan	12H	S/A	BAH
Milestone 2, System Design Criteria	12H	S/A	BAH
Milestone 3, Route Alignment and Alternatives		W & S	DMJM/PBQD
Milestone 4, Station Location and Alternatives		STA	HWA
Milestone 5, Right-of-Way Acquisition and Relocation Policy		Legal	VECMA Marshal
Milestone 6, Development and Land-Use Policy		PLNE	
Milestone 7, Safety, Security and System Assurance Plan	15D	S/A	BAH
Milestone 8, System and Subsystem Configuration	15D	S/A/SUBS	BAH/KE
Milestone 9, Supporting Service Plan		STA (and Bus Planning Div.	

2. DOCUMENTS SUBJECT TO LIMITED CONFIGURATION MANAGEMENT (continued)

TITLE	WBS REFERENCE	PREPARATION RESPONSIBILITY STAFF	CONSULTANT
Milestone 10, Fixed Facilities Plans		STA, W&S, SUBS	DMJM/PBQD
Milestone 11, Cost Estimate		STA, W&S, SUBS, S/A	DMJM/PBQD

APPENDIX B

DOCUMENT APPROVAL STATUS FORM

DOCUMENT APPROVAL STATUS FORM

A. BACKGROUND INFORMATION (to be completed by originator)

1. document title: _____
2. document title: _____
_____
3. authorization:
   a. design directive _____
   b. work authorization _____
   c. other (specify) _____
4. identifier code: _____
5. other affected mrp documents (list) _____
_____
_____
6. originating party:
   a. individual(s) _____
   _____
   _____
   b. organization _____

B. APPROVAL PROCESS (insert comments in Section C as required)

		action (check one)	
		approved	revision required
1. Originating Group review	a. orginazition _____		
	b.	[ ]	[ ]
	c. group manager signature _____		
	d. date _____		
2. Other Group review			
I	a. organization _____		
	b.	[ ]	[ ]
	c. group manager signature _____		
	d. date _____		
II	a. organization _____		
	b.	[ ]	[ ]
	c. group manager signatures _____		
	d. date _____		
3. SEA Manager review	b.	[ ]	[ ]
	c. signature _____		
	d. date _____		
4. Design Control Board review (optional)	b.	[ ]	[ ]
	c. signature _____		
	d. date _____		

SCRTD/MRP:

C. DOCUMENT REVIEW COMMENTS:
(use addtional sheet if more space is needed)

1. Internal Group: _____

_____

_____

_____

2. Other Group (I) _____

_____

_____

_____

Other Group (II) _____

_____

_____

_____

3. SEA _____

_____

_____

_____

4. M/CE _____

_____

_____

_____

APPENDIX C

DOCUMENT STATUS LOG
(SCRTD/MRP - CM-3)

DOCUMENT STATUS FORM

Document Type:	PAGE REV.				
Title	Document Identifier Code	Initial Approved Date	Revision/ Change		Page with Change Data CM 4
			Type	Date	

APPENDIX D

CHANGE REQUEST FORM

Change Log No._____

CHANGE REQUEST FORM

A. CHANGE ORIGINATOR (To be completed by originator)

1. Name: _____ 2. Date: _____

3. Organization: _____

4. Telephone: _____ 5. Location _____

B. DOCUMENT (to be completed by originator)

1. Title (Specify Narrative or Drawing) _____

2. Identifier Code: _____

3. Originating Group: _____

4. Date of Initial Document Approval: _____

5. Latest Approved Revision: _____

C. APPROVAL PROCESS AND DECISIONS

1. ORIGINATOR'S DESIGN MANAGER (Check One)

_____ Approved _____ Disapproved

2. SYSTEMS ENGINEERING ANALYSIS SECTION MANAGER (Check One)

_____ Approved _____ Disapproved

3. MANAGER/CHIEF ENGINEER (Check One)

_____ Approved _____ Disapproved

_____ Revision required: See Comments

4. DESCRIPTION OF APPROVED CHANGE: _____

_____

_____

_____

D. CHANGE REQUEST (To be completed by originator)

1. Change Type: _____

2. Description: _____

_____

_____

_____

3. Justification for Change: _____

_____

_____

_____

4. Supporting Analysis: _____

_____

E. EXPECTED IMPLICATIONS OF CHANGE REQUEST (To be completed by originator)

1. Metro Rail Preliminary Engineering Phase Project Cost: _____

_____

_____

_____

2. Metro Rail System Cost: _____

_____

3. Impact on Time Schedule: _____

_____

4. Impact on Other Groups: _____

_____

_____

_____

_____

F. AFFECTED DOCUMENTS/ORGANIZATION (To be completed by originator)

1.a. Title (Specify Narrative or Design): _____

2.b. Identifier Code: _____

c. Organization: _____

d. Impact on Document: _____

_____

_____

e. Page Replacements: _____

1.a. Title (Specify Narrative or Drawing): _____

2.b. Identifier Code: _____

c. Organization: _____

d. Impact on Document: _____

_____

_____

e. Page Replacements: _____

1.a. Title (Specify Narrative or Drawing): _____

2.b. Identifier Code: _____

c. Organization: _____

d. Impact on Document: _____

_____

_____

e. Page Replacements: _____

(USE ADDITIONAL SHEET IF MORE SPACE IS NEEDED)

G. INTERFACE AFFECTED (To be completed by CCM): _____

_____

_____

_____

H. SEA SECTION MANAGER'S COMMENTS:

APPENDIX E

DESIGN ELEMENT REVIEW/RESPONSE SHEET

RTD

DOCUMENT REVIEW/COMMENT SHEET

TITLE: _____

DOCUMENT No.: _____ REVIEWER _____ DATE _____

SECTION NUMBER	PAGE NUMBER	PARAGRAPH NUMBER	LINE NUMBER	C O M M E N T S

APPENDIX F

DOCUMENT LOAN REQUEST FORM

Request Number _____

DOCUMENT LOAN REQUEST

(Print all information except entry 5)

1. DOCUMENT IDENTIFIER CODE _____

2. DOCUMENT TITLE

3. REQUESTOR

Name:	
Organization:	
Telephone: ( )	Extension
Location/Room:	

4. DATES

Date Released:
Date DUE Back:

5. REQUESTOR'S SIGNATURE

6. RETURNED

Date:	Document Clerk:

APPENDIX G

DESIGN DIRECTIVE

METRO RAIL PROJECT
DESIGN DIRECTIVE

RTD

DIRECTIVE NO. _____ DATE _____

SUBJECT:

PURPOSE/
BACKGROUND:

DIRECTIVE:

ATTACHMENTS:

REFERENCES:

SCHEDULE

EFFECTIVE DATE: _____

COMPLETION DATE: _____

APPROVAL

INITIATING DIVISION MGR. _____

MANAGER/CHIEF ENGINEER _____

METRO RAIL PROJECT
DESIGN DIRECTIVE

RTD

DIRECTIVE NO. _____

Page _____ of _____

SUBJECT:

APPENDIX H

POLICY DESIGN DETERMINATION

RTD

John A. Dyer
General Manager

METRO RAIL

POLICY DESIGN DETERMINATION

	No:
	Effective:
	Revision No:

Subject:

Determination:

REFERENCES:	RECOMMENDED:
	APPROVED: