

1.0 PURPOSE

The purpose of this procedure is to describe minimum requirements and criteria for construction specifications prepared for RTD projects. This procedure outlines processes designers shall follow for all engineering disciplines while preparing construction specifications. This procedure is meant to supplement existing RTD and local jurisdictional design criteria and requirements and is not meant to be all inclusive.

2.0 SCOPE

The minimum technical requirements and criteria outlined for construction specifications apply to both in-house and contracted design work. This procedure contains criteria for all RTD projects including, but not limited to, BRT, CRT, LRT, park-n-Rides and Maintenance Facilities. The same criterion applies to construction specifications prepared for Design-Build and Design-Bid-Build projects. This procedure offers a summary of expectations. More detailed information can be found in the applicable RTD manuals referenced below.

3.0 RESPONSIBILITY

3.1 Engineering Technical Support Staff

The ETS staff responsibilities include:

- A. Write and update this procedure.
- B. Prepare Master Specifications for use on the FasTracks projects.
- C. Revise and update the Master Specifications as required.
- D. Re-evaluate and update this procedure in a timely manner to accurately represent any new construction specification policy decisions.
- E. Review specifications prepared for RTD Fastracks projects against this procedure.

3.2 Document Control Staff

The document control staff responsibilities include:

- A. Maintains and updates library copy and distributes procedure updates to individuals issued copies of the EDG.

3.3 Contracted Consultant Team

The contracted consultant design team responsibilities include:

- A. Prepare construction specifications in accordance with this procedure.

4.0 REFERENCES

- A. ERC Design Criteria Topic list (ERCs are not to be shared with design consultants)
- B. RTD Quality Assurance Program Plan and QMO Program Manual (QMO Database for design comments).
- C. RTD Bus Transit Facility Design Guidelines and Criteria
- D. RTD Commuter Rail Design Criteria

- E. RTD Light Rail Design Criteria
- F. RTD Engineering Design Guidelines Manual
- G. RTD Guidance Manual for Technical Analysis, March 2001
- H. RTD CADD Standards Manual
- I. RTD Standard Drawings Manual

5.0 PROCEDURES

5.1 Preliminary Design

- A. Developing the Specification List for Each Discipline
Each Design Discipline on the Design Team, using the Master Specifications list identifies the specification sections that will be used on the project using the Scope of Work as the basis. Any additional specifications required that are not included in the Master Specification list are added and a complete specification list for each discipline is developed. The list must be prepared in accordance with the CSI MasterFormat™ 2004 to Level 3 at a minimum and to Level 4 as appropriate.
- B. Developing the Specification List for the Project
The Design Manager combines all discipline lists and ensures that specification sections of all design disciplines, are identified and the responsibility for preparing each section is assigned. Where specification section(s) have input from more than one design discipline the Design Manager assigns responsibility for the section(s).
- C. Master Specifications
 - Each Design Discipline shall redline their respective master specification sections on the Project List to make them project specific and submit them for RTD acceptance. Each discipline shall:
 - Delete provisions and references not applicable.
 - Act upon "Notes to Designer" or "Notes to Specifier" or other prompts.
 - Include any additional provisions required for the project, keeping in mind that they must not be proprietary or restrictive.
 - Review "Submittals" for completeness; add or delete items to be submitted to make them project specific. Make corresponding changes to the "Submittal Approval Table" at the end of the Specification Section.
 - Check that products and equipment specified and catalog numbers are current.
 - Assure all elements of work are covered by the specifications.
 - Assure that terminology used in the specifications is consistent with terminology on the drawings.
 - Assure that specifications and drawings are coordinated.
 - Reminder: The date on the left side of the footer of all master specifications is the last revision date. Do not change this date when editing master specifications.

5.2 Changes to Specifications Affecting Master Specifications

- A. Changes that are made to a Master Specification to meet the needs of a project may be applicable to other projects and should be incorporated in the Master Specification. These changes should be brought to the attention of RTD's Master Specification Coordinator who is responsible for keeping Master Specifications up to date.
- B. RTD's Master Specification Coordinator determines if the affected master specification should be revised and if so makes the revisions to the Master Specifications, changes the revision date in the specification footer and documents it by inserting the information in the Record of Changes document for that Specification Section. This requirement is also applicable during Final Design.

5.3 Developing New Project Specification Sections

- A. Where master specifications do not exist on a specific topic each design discipline affected is responsible for developing the required specifications in the 2004 3-part Master Format modified with Part 4 specifying measurement and payment provisions.

5.4 Preparing the Special Conditions and Division 1 Specifications

- A. The Special Conditions supplement the Contract Terms and Conditions to accommodate specific project requirements. The Design Manager and Discipline Managers prepare the Special Conditions and Division 1 - General Requirements in conjunction with the Construction Manager and submit them to RTD Legal staff for review.

Special Conditions contain information on:

- Permits
 - Beneficial Use
 - Specific Guarantees
 - Security
 - Asbestos Removal (when performed by RTD contractor)
 - Special software licensing requirements
 - Special provisions regarding a delay or cancellation in RTD supplied services
 - Special contractor coordination requirements
 - Other unique requirements of a project
 - Use of ultra low sulfur diesel fuel
 - Special software licensing requirements
- B. Division 1 specifications, referred to as the General Requirements, contain the administrative and procedural requirements for the project and the information contained therein is generally applicable to all the technical specification sections
 - C. (Division 2 thru 48)
Division 1 specifications may require input on (but not be limited to):
 - Scope of Work
 - Engineer's Field Office (size, location and equipment)

- Progress Photographs
- Phasing
- Scheduling
- Allowable hours of work
- Flaggers
- Diversions of Service
- Work Trains
- Mobilization
- Payment
- Construction Management Team
- Quality Management
- Safety Management

5.5 Printing and Distributing the Preliminary Specifications

- A. The Design Manager arranges for the Preliminary Specifications to be printed and distributes them for review.

The Preliminary Specification book consists of the following:

- Table of Contents
- Special Conditions
- Division 1 Specifications
- Technical Specifications

5.6 Evaluation of Comments

- A. The Design Manager, Construction Manager and each Design Discipline evaluate comments and incorporate all agreed upon comments as a result of Preliminary Engineering review and documentation of comment resolution.

5.7 Activities During Final Design

- A. Method of Payment
- During Final Design, as the specifications are finalized, a determination is made by the Construction Manager, Design Manager and other members of the Design Team as to whether the project will be bid as a single Lump Sum bid, unit price, time and materials or a combination of Lump Sum and Unit Price items or other.
- B. Lump Sum Contracts
- Contracts are normally prepared as a single Lump Sum bid. This requires that the drawings and specifications quantify the work so that all bidders are bidding on the same basis. Where portions of the work are not quantified on the drawings or in the specifications e.g. chemical grouting, repair of existing concrete or steel, an estimated quantity is stated on the contract drawings or in the specifications and all bidders will prepare their Lump Sum Bid based on the same estimated quantities. Lump sum contract should contain a clause requiring the contractor to provide a schedule of values for review and acceptance by the Construction Manager. A minimum of twenty (20) working

days prior to submission of the first (1st) application is required for progress payment.

- C. Unit Price Contracts (Items)
- If it is determined that unit price items are required for certain portions of the work, each Design Discipline, in conjunction with the Construction Manager and Design Manager, identifies any items of work to be paid as unit price items.
 - Where unit price items are used:
 - Measurement and Payment clauses must appear at the end of each affected specification section and clearly state:
 - How the work is measured
 - Identify the unit item number and describe all work included under the unit item
 - A under run / over run clause shall be included.
 - If the work in that section is all paid for at the Unit Price(s) or if a portion of the work is paid for as part of the Lump Sum Item and a portion of the work is paid for at unit price(s).
 - The Payment Section 1G lists the Unit Item(s).
 - unit Items and quantities must be listed in the Price Schedule of the Bid.

5.8 Finalizing the Specifications

- A. Each Design Discipline finalizes the specifications as the design is finalized assuring that all work is addressed in the specifications, all choices within the specifications have been acted upon and that responses to all prompts for specifiers are complete. Measurement and payment paragraphs are to be provided in each section regardless if the work is for all unit price work or not. Specifications are to be submitted to the Design Manager with a memo listing the specification sections transmitted and stating that the specifications have been reviewed and are substantially complete. Additional specification sections not included in the Preliminary Specification are added, if necessary. (see paragraph 5.5)

5.9 Compiling the Final Specifications book

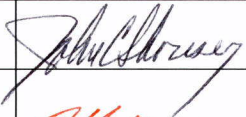

- A. Upon receipt of the Final Technical Specifications, the Design Manager incorporates:
- Division 1-General Requirements
 - Special Conditions
 - Bid (Price Schedule)
 - Checks for completeness (i.e. all Specification Sections listed in the Table of Contents are included and any additional specifications have been added to the Table of Contents)
 - Arranges for the Final Specifications books to be printed and distributed for review along with the final drawings.

- B. The Final Specifications book consists of the following:
- Table of Contents
 - Special Conditions
 - Division 1 Specifications
 - Technical Specifications (Division 2 thru 20)
 - Bid (includes Price Schedule with Payment Items) Sheets

6.0 ATTACHMENTS

None

7.0 APPROVAL

Revision Level:	Approved By:	Signature	Date
Major Revision	John Shonsey, Senior Manager Engineering		10-16-07
Minor Revision	Henry Stopplecamp, Engineering Technical Services Manager		10-16-07

8.0 REVISION RECORD

Revision Level	Revision Date	Summary	Approval Date
0	10/12/07	Initial Baseline Issue	