Manual Notice  2014-1

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Purpose

The manual is being revised to reflect a change made in the Roadway Design Manual.

Contents

Page 1-5, Value Engineering Studies, the following paragraph was added:

A VE Study is not required on design-build projects. If the Project Manager chooses to conduct a study, this should be performed prior to the release of the Request for Proposal (RFP).

Contact

Questions can be directed to Rory Meza of the Roadway Design Section of the Design Division at (512) 416-2678 or Rory.Meza@TxDOT.gov.

Archives

Past manual notices are available in a PDF archive.
# Table of Contents

## Chapter 1 — Pre-Assembly Activities

Section 1 — Environmental, Design, Right-of-Way, and Utility: Requirements and Value Engineering Studies ................................................................. 1-2
  Non-discrimination .......................................................... 1-2
  Overview ........................................................................ 1-2
  Environmental Requirements .............................................. 1-2
  Environmental Clearances .................................................. 1-2
  Design Schematic .............................................................. 1-3
  Design Conference ........................................................... 1-3
  Attendees ....................................................................... 1-4
  Right-of-Way and Utility Status .......................................... 1-4
  Value Engineering Studies .................................................. 1-5

Section 2 — Required Legal Documents .................................. 1-6
  Overview ........................................................................ 1-6
  Agreements ...................................................................... 1-6
  Agreement Description ...................................................... 1-6
  Agreement Deadline .......................................................... 1-7
  Local Agency Agreements ................................................... 1-7
  Agreement Information References ..................................... 1-7
  Memorandum of Understanding or Memorandum of Agreement ........................................ 1-7

Section 3 — PS&E Submissions Schedules .................................. 1-9
  Overview ........................................................................ 1-9
  General Deadlines and Project Categories .......................... 1-9
  Detailed Deadlines ............................................................. 1-9

## Chapter 2 — Plan Set Development

Section 1 — Preliminary Review/Coordination .......................... 2-2
  Overview ........................................................................ 2-2
  Design Division and Bridge Division Preliminary Reviews and Approvals ................................ 2-2
  Typical Sections and Page 3 of Form 1002 .......................... 2-2
  Pavement Design .............................................................. 2-2
  Preliminary Bridge Layouts with Scour and Hydraulic Analysis ........................................ 2-3
  Preliminary Retaining Wall Layouts ................................... 2-3
  Preliminary Storm Drain Layouts ....................................... 2-4
  Airway-Highway Clearances ............................................. 2-4
  Purpose of Clearance Studies ............................................ 2-4
  Coordination with Design Division ................................. 2-4
USGS Map Requirements and Submittal ........................................ 2-5
Construction Height Requirements ........................................ 2-5
USGS Map Height Requirements and Submittal ............................. 2-5
District and Design Responsibilities ........................................ 2-6
Guidance Sources ..................................................................... 2-6
Traffic Operations Division Preliminary Reviews and Approvals .... 2-6
Signal Authorizations .............................................................. 2-6
Agreements ............................................................................ 2-7
District Review Projects .......................................................... 2-7
Roadway Projects .................................................................. 2-7
Traffic Projects ..................................................................... 2-8
Section 2 — Engineer’s Seal and TxDOT Copyright Requirements .. 2-9
Overview .............................................................................. 2-9
Sealing and Dating Construction Documents ............................... 2-9
Standard Drawing Reliability .................................................. 2-10
Standard Drawing Modification ............................................... 2-10
Plan Sheet Revisions ............................................................. 2-10
Proposal ............................................................................... 2-11
As-built Plans ........................................................................ 2-12
Document Reproduction ........................................................ 2-12
Copyright Requirement Guidelines .......................................... 2-12
Section 3 — Plan Set Preparation ............................................. 2-13
Overview .............................................................................. 2-13
General Types of Plan Sheets .................................................. 2-16
Title Sheet ............................................................................ 2-16
Project Layout ........................................................................ 2-19
Roadway Typical Sections ...................................................... 2-19
General Notes ......................................................................... 2-21
Estimate and Quantity Sheets ................................................ 2-21
Summary Sheets ..................................................................... 2-21
Traffic Control Plan .................................................................. 2-22
Traffic Control Plan (TCP) Sheets ............................................ 2-22
Traffic Standards ..................................................................... 2-23
Roadway Details .................................................................... 2-23
Alignment Data Sheets ............................................................ 2-25
Plan and Profile Sheets ........................................................... 2-26
Other Sheets .......................................................................... 2-28
Retaining Wall Details ............................................................ 2-29
Retaining Wall Layouts ............................................................ 2-29
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-31</td>
<td>Retaining Wall Standards</td>
<td></td>
</tr>
<tr>
<td>2-31</td>
<td>Drainage Details</td>
<td></td>
</tr>
<tr>
<td>2-31</td>
<td>Drainage Area Map Sheets</td>
<td></td>
</tr>
<tr>
<td>2-32</td>
<td>Hydraulic Calculation Sheets</td>
<td></td>
</tr>
<tr>
<td>2-32</td>
<td>Culvert Cross Sections, Layout and Detail Sheets</td>
<td></td>
</tr>
<tr>
<td>2-34</td>
<td>Plan and Profile Sheets</td>
<td></td>
</tr>
<tr>
<td>2-34</td>
<td>Miscellaneous Details</td>
<td></td>
</tr>
<tr>
<td>2-34</td>
<td>Drainage Standards</td>
<td></td>
</tr>
<tr>
<td>2-35</td>
<td>Utilities</td>
<td></td>
</tr>
<tr>
<td>2-35</td>
<td>Existing Utilities</td>
<td></td>
</tr>
<tr>
<td>2-35</td>
<td>Proposed Utility (P&amp;P) Layouts</td>
<td></td>
</tr>
<tr>
<td>2-35</td>
<td>Utility Standards</td>
<td></td>
</tr>
<tr>
<td>2-35</td>
<td>Bridges</td>
<td></td>
</tr>
<tr>
<td>2-35</td>
<td>Bridge Hydraulic Data</td>
<td></td>
</tr>
<tr>
<td>2-35</td>
<td>Bridge Layout</td>
<td></td>
</tr>
<tr>
<td>2-38</td>
<td>Detailed Summary</td>
<td></td>
</tr>
<tr>
<td>2-38</td>
<td>Structural Details</td>
<td></td>
</tr>
<tr>
<td>2-38</td>
<td>Bridge Standards</td>
<td></td>
</tr>
<tr>
<td>2-38</td>
<td>Traffic Items</td>
<td></td>
</tr>
<tr>
<td>2-38</td>
<td>Traffic Signal Layout</td>
<td></td>
</tr>
<tr>
<td>2-39</td>
<td>Electrical and Illumination</td>
<td></td>
</tr>
<tr>
<td>2-39</td>
<td>Signing and Delineation</td>
<td></td>
</tr>
<tr>
<td>2-39</td>
<td>Pavement Markings and Markers</td>
<td></td>
</tr>
<tr>
<td>2-39</td>
<td>Traffic Management System</td>
<td></td>
</tr>
<tr>
<td>2-39</td>
<td>Traffic Standards</td>
<td></td>
</tr>
<tr>
<td>2-39</td>
<td>Environmental Issues</td>
<td></td>
</tr>
<tr>
<td>2-40</td>
<td>Storm Water Pollution Prevention Plans</td>
<td></td>
</tr>
<tr>
<td>2-40</td>
<td>Wetland Mitigation Plan</td>
<td></td>
</tr>
<tr>
<td>2-40</td>
<td>Environmental Standards</td>
<td></td>
</tr>
<tr>
<td>2-40</td>
<td>Environmental Permits, Issues and Commitments (EPIC) Sheet</td>
<td></td>
</tr>
<tr>
<td>2-41</td>
<td>Miscellaneous Items</td>
<td></td>
</tr>
<tr>
<td>2-41</td>
<td>Removal Sheets</td>
<td></td>
</tr>
<tr>
<td>2-41</td>
<td>Landscaping/Irrigation</td>
<td></td>
</tr>
<tr>
<td>2-41</td>
<td>Railroad Plans</td>
<td></td>
</tr>
<tr>
<td>2-42</td>
<td>Section 4 — Drafting Guidelines</td>
<td></td>
</tr>
<tr>
<td>2-42</td>
<td>Overview</td>
<td></td>
</tr>
<tr>
<td>2-42</td>
<td>Drafting Conventions</td>
<td></td>
</tr>
<tr>
<td>2-42</td>
<td>Annotation Conventions</td>
<td></td>
</tr>
<tr>
<td>2-43</td>
<td>Design Files</td>
<td></td>
</tr>
<tr>
<td>2-44</td>
<td>File Management</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 3 — Specifications

Section 1 — Types of Specifications and Provisions ........................................ 3-2
Overview ........................................ 3-2
Standard Specifications ......................... 3-2
Special Specifications .......................... 3-2
Special Provisions .............................. 3-3

Section 2 — New Special Specification and Special Provision Submission Requirements . 3-4
Overview ........................................ 3-4
General Guidelines ............................ 3-4
Form 1814 and Specification Templates . ......................... 3-5
When to Submit Completed Form .................. 3-5
How to Complete Form ......................... 3-5
Accessing Specification Templates .................. 3-6
Centralized Libraries .......................... 3-6
Approval Procedure ............................ 3-7

Section 3 — Specification List ........................................ 3-8
Overview ........................................ 3-8
Specification List Components .................. 3-8
Standard Specifications ...................... 3-8
Special Provisions .............................. 3-9
Important Notice to Contractors .................. 3-9
Railroad Insurance Special Provision to Item 7 ......................... 3-10
Road User Cost Provisions ...................... 3-11
Special Specifications ...................... 3-14
Reference Items .............................. 3-14
Specification List Creation ..................... 3-14
Specification List Review ..................... 3-22

Section 4 — Specification List Checklist ........................................ 3-23

Section 5 — General Notes ........................................ 3-25
Overview ........................................ 3-25
Key Points Regarding General Notes ................. 3-25
Specification Modifications ..................... 3-26
Chapter 4 — Plans Estimate

Section 1 — Overview ................................................................. 4-2
Plans Estimate Description ..................................................... 4-2

Section 2 — Preparation of Project Estimate ............................ 4-3
Overview ................................................................................. 4-3
P1 Screen (DCIS) ..................................................................... 4-3
P5 Screen (DCIS) ..................................................................... 4-4
Determination of Bid Items ...................................................... 4-4
Standard Bid Items .................................................................. 4-5
Alternate Bid Items .................................................................. 4-5
Optional Bid Items .................................................................. 4-5
Descriptive Code Numbers ....................................................... 4-6
Requesting New Descriptive Codes .......................................... 4-7
Computer File Format (P4 Screen/ROSCOE/Estimator® Software) .................................................. 4-7
Permanent Structure Number .................................................. 4-8
P4 Screen (DCIS) ..................................................................... 4-9
ROSCOE Batch Program .......................................................... 4-15
Estimator® Software ............................................................... 4-15
Translate Program’s Output for Uploading to DCIS ................. 4-16

Section 3 — Quantities ............................................................... 4-17
Overview ................................................................................. 4-17
Bid Quantity Tolerances (Degree of Accuracy) ......................... 4-17
Participating/Non-participating Items and Accounts ............... 4-19
Participating/Non-participating Bid Items ............................... 4-19
Participating/Non-participating Special Accounts .................. 4-19
Special Accounts ..................................................................... 4-19
Description of Special Accounts ............................................. 4-20
Special Account Classification ................................................. 4-20
Force Account Work ................................................................ 4-20
State-Furnished Material .......................................................... 4-21
Special Account Codes .............................................................. 4-21
Special Account Customizing ................................................... 4-22

Section 4 — Prices ................................................................. 4-23
Overview ................................................................................. 4-23
Average Bid Price Access ........................................................ 4-23
Bid Tabs ................................................................................. 4-23
Chapter 5 — PS&E Submissions and Processing

Section 1 — Overview ........................................... 5-2
Introduction .................................................. 5-2

Section 2 — PS&E Submission Data Sheet (Form 1002) ........................................... 5-3
Overview .................................................. 5-3
Project Identification ........................................... 5-4
Supporting Papers Checklist ........................................... 5-4
State Transportation Improvement Program Information ........................................... 5-4
Environmental Status ........................................... 5-4
Financing .................................................. 5-4
Agreements .................................................. 5-5
Airway-Highway Clearance ........................................... 5-5
Contract Time .................................................. 5-5
Project Manager in Charge of Construction Contract ........................................... 5-5
District Contact Person ........................................... 5-6
Estimated Cost of Pedestrian Elements ........................................... 5-6
Comments .................................................. 5-6
Proposed Basic Design Data Information ........................................... 5-6
Proposed Standards (Design Division, Bridge Division, and Traffic Operations Division) ........................................... 5-6
Design Speed (Applicable) ........................................... 5-7
Terrain .................................................. 5-7
Traffic .................................................. 5-7
Highway Functional Class ........................................... 5-8
Design Exceptions ........................................... 5-8
Design Waivers ........................................... 5-9
ADA/TAS Design Variances ........................................... 5-9
Section Reviews ................................................................. 5-29
Bidding Document Process ........................................... 5-30

Section 7 — Addendum Process ......................................... 5-31
Overview ................................................................. 5-31
Need for Addendum .................................................... 5-31
Addendum Notice ....................................................... 5-32
Federal Oversight Project Addendum ............................... 5-33
District Review Project Addendum ................................. 5-33
Last Revision Date ..................................................... 5-34
Addendum Notice Procedure ........................................ 5-34
Addendum Information Sheet ......................................... 5-35

Chapter 6 — Pre-Letting and Post-Letting

Section 1 — Overview ................................................... 6-2
Pre-Letting Information .................................................. 6-2
Post-Letting Information ............................................... 6-2

Section 2 — Federal Project Authorization and Agreement . 6-3
Overview ................................................................. 6-3
Function of FPAA ......................................................... 6-3
Respective FPAA Duties ............................................... 6-3
FPAA Detailed Reporting Instructions ............................ 6-3

Section 3 — State Letter of Authority . .............................. 6-4
Overview ................................................................. 6-4
Function of LOA ........................................................ 6-4
Letting Management Office LOA Duties ......................... 6-4
Environmental Affairs Division LOA Duties ..................... 6-4
LOA Form Field Completion Procedure ......................... 6-5
Letting Management Section LOA Duties ....................... 6-6

Section 4 — Project Financial Clearance ............................. 6-7
Overview ................................................................. 6-7
Other Participation Field ............................................. 6-7
Additional Payments .................................................. 6-7
Financial Clearance Reference ..................................... 6-8

Section 5 — Pre-letting Checklist ..................................... 6-9
Checklist ................................................................. 6-9

Section 6 — Post-letting Guidelines ................................. 6-11
Overview ................................................................. 6-11
Letting Overrun Justification ........................................ 6-11
Overrun Justification Memorandum Guidelines ............... 6-11
Chapter 7 — Local Public Agency Let Projects
   Section 1 — Guidance for Local Governments. ................................. 7-2
Chapter 1 — Pre-Assembly Activities

Contents:

Section 1 — Environmental, Design, Right-of-Way, and Utility: Requirements and Value Engineering Studies
Section 2 — Required Legal Documents
Section 3 — PS&E Submissions Schedules
Section 1 — Environmental, Design, Right-of-Way, and Utility: Requirements and Value Engineering Studies

Non-discrimination

TxDOT policy is to ensure that no person in the United States of America shall on the grounds of race, color, national origin, sex, age or disability be excluded from the participation in, be denied the benefits of or otherwise be subjected to discrimination under any of our programs or activities.

Overview

This section covers the following:

- Environmental Requirements
- Design Conference
- Right-of-Way and Utility Status
- Value Engineering Studies

Environmental Requirements

In the early stages of planning and development of any highway project, consideration should be given to the social, economic, and environmental issues of the project. TxDOT affords the opportunity to identify any social, economic, or environmental consequences on all projects. This is accomplished in cooperation and coordination with local, state and federal agencies. During this process, decisions relative to public hearings and environmental requirements are necessary. The next subsections discuss

- Environmental Clearances
- Design Schematic

Environmental Clearances

The three major categories of environmental study are:

- Categorical Exclusion: Actions that do not individually or cumulatively have a significant effect on the environment
- Environmental Assessment: Actions in which the significance of the impact on the environment is not clearly established
- Environmental Impact Statement: Actions that may significantly affect the environment.
For the purposes of *this PS&E Manual*, it is assumed that the required environmental and schematic approvals have been obtained (see the Project Development Process Manual). For a more complete and detailed discussion of the environmental and public involvement processes, refer to the Environmental Manual.

**Design Schematic**

As part of the environmental approval process and early project development, a preliminary and/or a geometric schematic may be prepared to describe the existing and proposed general geometric features and location requirements for a project. A geometric schematic is required for new location or added capacity projects and for projects requiring control of access or an Environmental Impact Statement. A list of schematic requirements can be found in the TxDOT Roadway Design Manual. The schematic should include basic design information, which is necessary for proper review and evaluation of the proposed improvements. For a more complete and detailed discussion of the preliminary schematic or the geometric schematic, refer to the Project Development Process Manual.

**Design Conference**

The next subsections discuss these aspects of a design conference:

- **Description**
- **Attendees.**

**Description.** A design conference is an informal, working meeting to discuss, establish, determine, and finalize the following:

- Programming/funding/federal letter of authority for preliminary engineering
- Agreements
- Status of environmental approvals/public involvement process
- Geometric design elements
- Status of schematic completion
- Surveying elements/photogrammetric elements
- Right-of-way status
- Utility adjustments
- Design criteria
- Bridge data
- Hydraulic elements
- Pavement structures
Construction phasing/traffic handling

Value engineering study (for more information see the indicated subsection below).

Attendees

The meeting is recommended for all projects and should be scheduled as soon as possible after authorization for PS&E has been secured. Scheduling and moderating should be accomplished by the Project Manager directly responsible for the design and development of the PS&E. Suggested attendees are as follows:

- Staff from the Area Engineer’s office who will have construction responsibilities
- Maintenance Supervisor who will be responsible for maintenance of the roadway
- Staff from offices having primary review responsibilities
- Staff from outside agencies directly involved with the project—i.e. funding responsibilities, review responsibilities, etc.
- Staff who will be directly involved in the development of PS&E for the project

During the conference it is recommended that all design decisions are documented in a design summary report (DSRform) format for further submittal to Austin.

For a more complete and detailed discussion on how to conduct a design conference and a copy of the suggested DSR form, refer to the Project Development Process Manual, Chapter 2, Section 1.

Right-of-Way and Utility Status

During the advance planning and environmental process, a schematic of the project is usually developed for approval and exhibit purposes. As an integral part of the geometrics of the schematic, preliminary proposed right-of-way lines are established. The required right-of-way width should accommodate the design criteria and utilities, both existing and proposed. The locations indicated by the various utility companies are not intended to be exact but rather to advise the designer in advance of those facilities within the corridor. Exact locations of utilities will be determined later in project development. (See the Right of Way Collection).

Once the final right-of-way lines have been established, including temporary construction or permanent drainage easement(s), the designer should coordinate with the district’s Right-of-Way Section to verify the proper right-of-way is acquired and that it is free of encroachments. Coordination with the district’s Environmental Section should be initiated before the acquisition of the right-of-way. (See the Environmental Manual.)
Value Engineering Studies

Value engineering studies (see Chapter 2, Section 6 of the Project Development Process Manual) are required for all transportation corridors or Federal-Aid projects on the NHS with estimated costs (construction plus ROW) of $50 million or more and bridge projects of $40 million or more. These studies typically will be performed near the 30% level of project design completion.

Projects nearing the estimated amount by $10 million should be considered to account for possible scope/cost creep.

A VE Study is not required on design-build projects. If the Project Manager chooses to conduct a study, this should be performed prior to the release of the Request for Proposal (RFP).
Section 2 — Required Legal Documents

Overview

This section covers the following required preparation and paperwork topics:

- Agreements
- Memorandum of Understanding or Memorandum of Agreement
- Permits

Agreements

The next subsections discuss these aspects of agreements:

- Agreement Description
- Agreement Deadline
- Local Agency Agreements
- Agreement Information References

Agreement Description

Agreements must be executed between the department and other governmental entities when any of the following are true:

- Funds are provided by another agency.
- Other agencies agree to maintain the facility.
- Other agencies or private companies will construct facilities (e.g. driveways, utilities, etc.) on state right-of-way through their local government.
- The department works on property other than its own right-of-way (e.g. railroad crossings).
- Local entity is to let and/or manage construction or performs construction with its own workers.

Agreements between the department and these agencies are considered an important part of the complete PS&E for a project. Agreements are legally binding documents which must be accurate and in accordance with department policy.
Agreement Deadline

It is essential that all agreements are executed before any work (PS&E and construction) is performed. Negotiating agreements is a time-consuming process and should be initiated as early as possible. Funding agreements should be based on an engineer’s sound estimate.

Local Agency Agreements

If a local agency desires to let/manage construction or perform any of the construction with its own workers, it must initiate discussion with the local TxDOT district office to receive a thorough explanation of the department’s expectations and submit a written request. The local agency must clearly understand what will be required so the project is not unduly delayed during project development and requirements can be included in the written agreement. For more information, see Chapter 7, Local Public Agency Let Projects.

Agreement Information References

For more discussion of agreements, refer to the Project Development Process Manual. For assistance in the preparation of various types of agreements, contact the Contract Services Office.

Memorandum of Understanding or Memorandum of Agreement

Some projects may be governed by a Memorandum of Understanding (MOU) or a Memorandum of Agreement (MOA). A MOU/MOA is an executed understanding between TxDOT and other state and federal agencies. They are usually used to expedite the review process and minimize the required documentation for such items as:

- Funding
- Design criteria
- Construction
- Maintenance.

Agencies with which the department has a MOU/MOA include:

- Texas Historical Commission
- Texas Parks and Wildlife Department
- Texas Department of Mental Health and Mental Retardation
- Texas Natural Resource Conservation Commission
- U.S. Fish and Wildlife Service
- U.S. Forest Service.
Permits

A table of potential environmental permits is shown in the TxDOT Environmental Procedures in the Environmental Manual. Regulatory agencies have permitting requirements for proposed construction activities. Some of the conditions which will require these permits appear in Table 1-1.

<table>
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<tr>
<th>Condition</th>
<th>Permitting Agency</th>
<th>Responsible Office</th>
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</thead>
<tbody>
<tr>
<td>Changing 100-year floodplain level Conditional Letter of Map Revision (CLOMR) is needed before construction, and Letter of Map Revision (LOMR) is needed after construction</td>
<td>Federal Emergency Management Agency (FEMA)</td>
<td>District through DES-Hydraulics</td>
</tr>
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<td>Planning a project near an airport, heliport, or seaport Construction or use of an object taller than 200 ft</td>
<td>Federal Aviation Administration (FAA)</td>
<td>District through DES Field Coordination Section</td>
</tr>
<tr>
<td>When affecting waters of the U.S. (Section 404 permit)</td>
<td>U.S. Corps of Engineers</td>
<td>District or ENV (depends on CI delegation)</td>
</tr>
<tr>
<td>Bridges over navigable waters of the U.S. (Section 10 permit)</td>
<td>U.S. Corps of Engineers (Environmental Impact on Waterway)</td>
<td>District or ENV (depends on CI delegation)</td>
</tr>
<tr>
<td>Bridges over navigable waters of U.S. (U.S. Coast Guard Permit)</td>
<td>U.S. Coast Guard (Clearance concerns only)</td>
<td>District or ENV (depends on CI delegation)</td>
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<td>When construction will disturb five or more acres of soil area (NPDES General Permit)</td>
<td>Environmental Protection Agency (EPA)</td>
<td>District Design or Construction Office</td>
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<td>Building or changing vertical clearance to less than 16 ft. (4.9 m) on interstate highways</td>
<td>Federal Highway Administration (FHWA) or the U.S. Department of Defense (DOD)</td>
<td>District through DES Field Coordination Section</td>
</tr>
<tr>
<td>Planning an international bridge (Presidential Permit through TxDOT)</td>
<td>U.S. Department of State</td>
<td>Approval from Transportation Planning and Programming Division prior to submitting application to U.S. Department of State</td>
</tr>
<tr>
<td>Changing (water elevation) gauging stations</td>
<td>U.S. Geological Survey (USGS)</td>
<td>District through DES-Hydraulics</td>
</tr>
<tr>
<td>Notification of well plugging/capping</td>
<td>Texas Natural Resource Conservation Commission (TNRCC)</td>
<td>District initiates through ENV</td>
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**Section 3 — PS&E Submissions Schedules**

**Overview**

Prior to beginning detailed design on any project, the designer should determine from his/her supervisor or the district’s TP&D Section, the funding source (state or federal) for the project and any pertinent time constraints. In addition, the designer must determine if the scheduled letting date in the Design and Construction Information System (DCIS) is flexible or firm. A flexible letting schedule will allow the designer to proceed with project design and plan preparation with available resources. However, if a firm letting schedule is encountered, the designer must clearly understand the deadlines established by the Design Division. This section covers the following PS&E submission schedule topics:

- General deadlines and project categories
- Detailed deadlines.

**General Deadlines and Project Categories**

Approximately six months prior to the beginning of the coming fiscal year, the Finance Division publishes a Fiscal Year Letting Schedule (http://www.dot.state.tx.us/business/schedule.htm) for the approaching fiscal year. This schedule contains projects authorized by the Commission which have been identified as ready for letting or obligation of funds for that fiscal year by each District.

**Detailed Deadlines**

In addition to the Fiscal Year Letting Schedule, a PS&E Review and Processing Schedule is published that delineates various processing deadlines for meeting a desired letting. The deadlines are based on four distinct categories of projects:

- All federal submission projects (projects pre-determined to be federal oversight by the Federal Oversight Agreement between FHWA and TxDOT).
- All federal non-submission projects (all other federally funded projects) and state projects (state funded).
- District review projects (see Chapter 2).
- Local Public Agency (LPA) let projects (see Chapter 7).

This schedule also provides detailed dates from the time PS&E is scheduled for receipt in Austin to the scheduled letting dates for that particular month.
Chapter 2 — Plan Set Development

Contents:

Section 1 — Preliminary Review/Coordination
Section 3 — Plan Set Preparation
Section 2 — Engineer’s Seal and TxDOT Copyright Requirements
Section 4 — Drafting Guidelines
Section 5 — General Plan Set Checklist
Section 1 — Preliminary Review/Coordination

Overview

This section discusses the following aspects of preliminary review/coordination:

- Design Division and Bridge Division Preliminary Reviews and Approvals
- Traffic Operations Division Preliminary Reviews and Approvals
- District Review Projects

Design Division and Bridge Division Preliminary Reviews and Approvals

The District Design Office is responsible for submitting the following preliminary design elements to the appropriate section of the Design Division and Bridge Division for review and approval. These documents should be submitted as early as possible after approval to develop PS&E has been given. The next subsections cover the following tasks:

- Typical Sections and Page 3 of Form 1002
- Pavement Design
- Preliminary Bridge Layouts with Scour and Hydraulic Analysis
- Preliminary Retaining Wall Layouts
- Preliminary Storm Drain Layouts
- Airway-Highway Clearances

Typical Sections and Page 3 of Form 1002

Page 3 of Form 1002 (see Form 1002 and PS&E Submission Data Sheet in Chapter 5, Section 2) is entitled “Proposed Basic Design Data.” This page deals with design criteria (see the Roadway Design Manual, Chapter 2, for more information) and notes whether the project contains any design exceptions and/or waivers. This page should accompany the preliminary submission of the typical section to the Field Coordination Section of the Design Division prior to initiating detailed plan preparation. Page 3 of Form 1002 is the department’s official location where basic design criteria of each project are documented.

Pavement Design

Pavement design will also be accomplished at this early stage of project development. Responsibility for pavement design approval has been delegated to the districts. The District Pavement Engineer or the Design Division Pavement Section must approve the project pavement designs. All
pavement designs, even those approved by the district, must be submitted to the Design Division Pavement Section for reference and documentation. For more information on pavement design, please refer to the Pavement Design Manual.

Preliminary Bridge Layouts with Scour and Hydraulic Analysis

The next paragraphs deal with these preliminary bridge layout aspects:

- Submittal to Bridge Division
- Review and approval
- Final bridge layout
- For more information on preliminary bridge layouts, refer to 5480: Prepare Preliminary Bridge Layouts in the Project Development Process Manual.

Submittal to Bridge Division. For each bridge structure (including bridge class culverts), the preliminary layout and plan/profile sheet must be submitted to the Bridge Division, Bridge Planning and Programming, for review, comments, and approval. For stream crossing structures, the layout submission should also include the hydraulic report. For federal oversight projects, the Bridge Division will submit all information to the Federal Highway Administration (FHWA) for review and approval.

Review and Approval. The preliminary layout review and approval process can take a considerable amount of time. The Bridge Division recommends that the preliminary layouts should be sent in for review and approval during the early stages of the design. If the detailed design is to be done by the Bridge Division, approximately nine months lead time before the letting date is required for the complete review, design, and PS&E process. However, if there is a railroad (structure) involved, the review process takes approximately 12 months due to coordination with the railroad company.

Final Bridge Layout. Once approved, and after all comments and suggestions are incorporated into the bridge layout, the revised and/or approved layout becomes the final bridge layout. If any significant subsequent changes are made in the structure layout, the entire review process is repeated.

Preliminary Retaining Wall Layouts

All preliminary retaining wall layouts should be submitted to the Bridge Division, Bridge Planning and Programming Section, and when the height of retaining walls exceeds 25 feet (7.6 m), the preliminary retaining wall layouts must be submitted to the Bridge Division. This should be done no later than six months prior to submitting the completed PS&E to Austin. A typical section should be included. The use of the bridge foundation and soil test (BFAST) computer program is encour-
aged because a uniform representation of core-boring data will be accomplished on a statewide basis. This will result in less confusion during plan review and during construction.

The purpose of the preliminary retaining wall layout is to present the geometric and geotechnical data associated with a proposed retaining wall. This information enables an engineer to design and detail the retaining wall as well as evaluate the wall’s stability. Preliminary retaining wall layouts are submitted early to facilitate the review of the design, consideration of alternatives, and obtaining additional geotechnical data should it be needed. Usually, these preliminary layouts are used as the final layouts for design and detailing.

Preliminary Storm Drain Layouts

In cases where the districts need assistance, the hydrologic and hydraulic calculations of the storm drain system may be submitted to the Design Section of the Bridge Division for preliminary review and approval.

Airway-Highway Clearances

The following subsections cover

- **Purpose of Clearance Studies**
- **Coordination with Design Division**
- **USGS Map Requirements and Submittal**
- **Construction Height Requirements**
- **USGS Map Height Requirements and Submittal**
- **District and Design Responsibilities**
- **Guidance Sources.**

**Purpose of Clearance Studies**

During the early phases of project development, consideration must be given to the effect any proposed highway project might have on vicinity airports. Airway-highway clearances are studied to avoid encroaching upon an airfield or establishing a highway location that would be an obstruction to air navigation. Minimum airway-highway clearance requirements must be considered to avoid the creation of a safety hazard for both highway and air traffic.

**Coordination with Design Division**

It is extremely important to make these studies at the start of project development. Any airway-highway encroachment should be reported to the Design Division so it can be resolved in a timely
manner. The Design Division is responsible for coordination with the FHWA and for handling all airway-highway clearance matters with the Federal Aviation Administration (FAA).

USGS Map Requirements and Submittal

Any airports within the area of construction which require notice to the FAA should be reported to the Design Division shortly after authority is given to initiate preliminary work. In order to clear a proposed highway project, a USGS map is submitted to the Design Division showing the locations and distances from the ends of the pertinent runways to the nearest edge of highway pavement.

Should the highway project extend to within the runway approach area, the distance from the end of the runway to the nearest edge of pavement within the approach area should also be shown on the map. The map should also show the elevation at the highway centerline. Should there be a frontage road or connecting road between the main lanes and the runway, distance to such frontage or connecting roads are also be shown on the map as well as the appropriate elevations. This map should be submitted to the Design Division as soon as this information is available.

Construction Height Requirements

In addition, any construction or alteration of more than 200 feet (60 meters) in height above the ground level at its site or any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the FAA's reporting slopes must be reported during the early development of construction plans. The completed FAA Form h7460-1 is submitted to the Design Division.

It should be noted that these requirements are for any construction features which are more than 200 feet (60 meters) in height or will penetrate the FAA's reporting slopes. These requirements are not limited to illumination towers or poles. Any element of construction may affect the airway-highway clearance requirements. This includes but is not limited to illumination, signing, bridge superstructures, etc., or any mobile object that would normally traverse a roadway or bridge that could be an obstruction to air navigation.

USGS Map Height Requirements and Submittal

A USGS map is submitted showing the location of objects in relation to the airport runways. A chart is included with the map showing the ground elevation at each site and the elevation at the top of each object. Also, the distance from the nearest point on the nearest runway to each object is included in the chart as well as the angular measurement from the appropriate nearest point on the runway to each object that penetrates the reporting slopes.
District and Design Responsibilities

The district is responsible for preparation and submission of the latest version of Form 7460-1 to the Field Section of the Design Division. The Design Division is responsible for coordination with the FHWA and for handling all airway-highway clearance matters with the FAA.

Guidance Sources

For the latest guidance in the procedures regarding Airway-Highway Clearances, see Notice of Proposed Construction or Alteration Form 7460-1 with instructions regarding coordination, criteria, and FAA Form 7460-1 requirements Form h7460-1, instruct). For an example of a completed Form 7460-1 see complete.

Traffic Operations Division Preliminary Reviews and Approvals

The next subsections cover these aspects of the Traffic Operations Division’s preliminary reviews and approvals:

◆ Signal authorizations
◆ Agreements

Signal Authorizations

The following paragraphs discuss

◆ Signal warrant process
◆ Traffic Signal Authorization Form

Signal Warrant Process. All proposed traffic signal installations must conform to the accepted warrants as listed in the Texas Manual on Uniform Traffic Control Devices (TMUTCD). A traffic signal cannot be installed unless at least one of the twelve established warrants can be met. The department’s policy on highway traffic signals was established with Commission Minute Order No. 85777 (June 29, 1982). Detailed information concerning the required data for traffic studies can be found in the Traffic Signals Manual.

Traffic Signal Authorization Form. After determining a signal is warranted and the traffic study is complete, a Traffic Signal Authorization Form must be submitted to the District Engineer for approval. A copy of the approved form should be sent to the Traffic Operations Division.

Agreements

Traffic Operations agreements include:
Railroad Agreements. When any part of a TxDOT project is within or adjacent to the railroad right-of-way, execution of an agreement with the railroad company will be required. These agreements will usually require an Exhibit A, which is a plan showing the work to be done which affects the railroad, and the responsibilities concerning who (state or railroad) will do this work. Small projects (seal coats, re-planking jobs, etc.) will generally require only a simplified letter-type agreement. Contact the District Railroad Coordinator for assistance.

The review and approval process takes a considerable amount of time (approximately one year). The Traffic Operations Division recommends that agreement negotiations begin during the early stages of the design.

Signal/Illumination Agreements. Refer to the Traffic Signals Manual for detailed explanations and copies of the agreements.

District Review Projects

PS&E review for the following types of 100% state-funded projects has been delegated to the districts:

- Roadway Projects
- Traffic Projects.

Details of these projects appear below. Division personnel are available to provide assistance and expertise to the districts during project development. The districts will be responsible for ensuring that projects submitted for letting are complete and in compliance with state law and department policies and that all necessary agreements have been executed.

Roadway Projects

- Microsurfacing
- Seal coat
- Cape seal
- Fabric underseal
- ACP overlay
- Plane asphalt pavement/milling
- Spot pavement repair (base, concrete joint, etc.)
- Install roadside barrier
• 2R projects (submit typical section and Form 1002 to DES for approval early in project development), also see Chapter 5, Section 2 PS&E Submission Data Sheet (Form 1002) for more information.

NOTE: Any 2R projects that include structural upgrades (widenings or rehabilitation) shall be submitted for division review.

Traffic Projects

• Flashing beacons
• Delineation and object markers
• Conventional signing (standard text from TMUTCD)
• Replacement of existing signs.
Section 2 — Engineer’s Seal and TxDOT Copyright Requirements

Overview

This section deals with the following topics relating to the Engineer’s Seal and TxDOT copyright requirements.

The Texas Engineering Practice Act and Rules is the authority for licenses professional engineers employed at TxDOT. Subchapter B: Sealing Requirements, §137.31 through 137.37 outlines the requirements for signing, sealing, and dating of engineering documents.

Sealing and Dating Construction Documents

Licensed professional engineers shall affix their seal and original signature or electronic seal and signature with the date on the final version of their engineering work before such work is released from their control.

Electronic Seals and Sealing Requirements

Engineering work transmitted in an electronic format that contains a computer generated seal shall be accompanied by the following text or similar wording: "The seal appearing on this document was authorized by (Example: Leslie H. Doe, P.E. 0112) on (date)." unless accompanied by an electronic signature as described in this section. A license holder may use a computer-generated representation of his or her seal on electronically conveyed work, an electronic signature of the license holder and date.

Electronic Signature Requirements

An electronic signature is a digital authentication process attached to or logically associated with an electronic document and shall carry the same weight, authority, and effects as an original signature. The electronic signature, which can be generated by using either public key infrastructure or signature dynamics technology, must be as follows:

◆ unique to the person using it.
◆ capable of verification.
◆ under the sole control of the person using it.
◆ linked to a document in such a manner that the electronic signature is invalidated if any data in the document are changed.

Standard Drawing Reliability

Plan sheets of TxDOT standard drawings are considered a product of the company which have evolved and been developed by many people over a considerable number of years and, in the case of existing standards, the details shown on the drawings have proven to be reliable through their years of use. These drawings are not required to be signed and sealed by the responsible professional unless modified during the PS&E preparation for a specific project application.

Standard Drawing Modification

When “Standard” drawings are modified, the engineer is to identify the components on the drawing that are modified, sign, seal and date the drawing. The engineer is also responsible for the changes, plus the effect of any design relationship between the revised and the original components on all other plan sheets. The responsible engineer will identify, in the Index of Sheets located on the Title Sheet, those standard drawings that he/she issues with the plans and is to add the following note or similar note with signature, seal, and date in the proximity of the Index of Sheets on the Title Sheet:

“The standard sheets specifically identified above, plus sheets _____, _____, _____, _____, _____, have been issued by me and are applicable to this project.”

Plan Sheet Revisions

After PS&E submittal to the Design Division, revisions to plan sheets will be coordinated in writing with the responsible engineer or his/her designated representative in the district. It will be the district’s responsibility to secure/affirm any approval in writing from the responsible engineer for inclusion of mutually agreeable changes or modifications under the current signature, seal, and date on the plan sheets during the Austin divisions' PS&E review. Where the content of the engineering changes is not covered by existing written policy or instructions of the administration, and changes cannot be agreed on between district and division, it is the responsibility of the appropriate reviewing engineer to identify the changes on the plan sheet and then to sign, seal, and date the plan sheet. In addition, the appropriate reviewing engineer is responsible for any design relationship between the revised and original components on all other plan sheets. It is considered good engineering practice and professional courtesy to notify the original engineer of any proposed changes.

NOTE: Plans with an electronic signature must be returned to the original engineer because changes to the plans by anyone else will render the electronic signature invalid.

Consultant Prepared PS&E. For consultant prepared PS&E, upon receipt of the PS&E from the consultant, the district will send the firm written notification that the department, as the owner, may find it necessary to make modifications to the sealed work. This written notification would only be needed one time and would satisfy the Texas Board of Professional Engineers rules for modifications made prior to letting and during the course of construction. It will be the district’s responsibility to secure/affirm any approval in writing from the responsible engineer for inclusion
of mutually agreeable changes or modifications under the current signature, seal, and date on the plan sheets during the district or Austin divisions PS&E review. Any other changes made to the plan sheets by district or division engineers is signed, sealed, and dated. The district or division engineer will be responsible for any design relationship between the revised and original components on all other plan sheets. It is considered good engineering practice and a professional courtesy in these cases to notify the original engineer of any proposed changes.

Proposal

The proposal is a bidding document that is composed of Special Provisions, Special Specifications, General Notes, and other miscellaneous forms for bid submission. Each PS&E submission to the Austin divisions are supported with two original (8½” x 11”) supplemental proposal sheets with the following statement, signed, sealed, and dated by the responsible engineer:

“The enclosed Special Specifications, Special Provisions, and General Notes in this document have been issued by me or under my responsible supervision.”

An example of the Supplemental Proposal Seal and Signature Sheet (sealsig1) shows how this note would appear.

Proposal copies. The Design Division or Traffic Operations Division will transmit to the Construction Division the original signed, sealed, and dated supplemental sheets for inclusion in the department’s and contractor’s copies of the contract. The department’s copy of the contract, with the original signed, sealed, and dated sheet, will become the official original repository reflecting Special Specifications, Special Provisions, and General Notes which have been selected by the responsible engineer and applicable to the contract. Security-controlled, computer-generated CADD Seals will be used to generate proposal copies for bidder distribution.

Changes after submittal. Changes to the bid proposal information after submittal to the Austin divisions will be handled in the same manner as described above for plan sheet changes with the following exception. Where the content of engineering changes is not covered by existing written TxDOT policy or instructions of the appropriate executive management and changes cannot be agreed upon between the district and the division, it is the responsibility of the appropriate reviewing engineer in the division to identify changes in the General Notes and be responsible for any design relationship between the revised and original. In addition, the review engineer signs, seals, and dates the following note on the supplemental proposal sheet as submitted by the district below the responsible engineer’s signature:

“The General Notes in this document have been changed or modified by me or under my responsible supervision and are identified by brackets {}.”

An example of the Supplemental Proposal Seal and Signature Sheet with Reviewing Engineer Statement (sealsig2) shows how both notes would appear.
As-built Plans

Construction engineering in accordance with the practices, methods and design requirements, as identified in the plans and contracts, is the responsibility of the registered professional engineer under whose supervision the construction work is performed. For the final as-built plan, the Title Sheet should be signed, sealed, and dated by the responsible engineer to reflect that the construction work was performed in accordance with the plans and contract.

Document Reproduction

When signing, sealing, and/or dating engineering documents, one should consider the necessity of document reproduction. Therefore, signing, sealing, and dating should be done in black ink (which reproduces far better than red or blue). Impression type seals, if made, should be shaded with graphite to enhance their reproducibility.

Copyright Requirement Guidelines

Minute Order 107306 adopted administrative rules allowing the department to protect copyrights for intellectual property. Engineering designs contained in construction and routine maintenance plans are included in the definition of intellectual property. The TxDOT’s Office of General Counsel has advised that the following notation be placed on the Title Sheet of all plans produced by or for TxDOT:

©XXXX by Texas Department of Transportation; all rights reserved. Where XXXX denotes the current year.

For all other plan sheets, the copyright symbol with current year and TxDOT logo is used. If space does not permit this notation, an abbreviated notation of ©XXXX TxDOT may be used. The year shown in the notation will depend on when the plans are produced.

The copyright notation shown above for Title Sheets must also be placed on schematic layouts. For plans not produced under contract to or by TxDOT, these copyright notations will not be required.
Overview

The plans are original drawings (or reproductions) approved by the engineer, which are part of the contract and which clearly show the location, character, dimensions, and details of all proposed work. The next paragraphs discuss

- Purposes of plans
- Result of unclear/incorrect plans
- Plan sheet sequence.

Purposes of Plans. The three main purposes of the plans are

- For prospective bidders to prepare a bid as accurately as possible
- For state construction inspector-contractor teams to oversee and perform construction efficiently and accurately
- To provide an accurate record of the construction for future reference.

Result of Unclear/Incorrect Plans. Accurate and clear plans are essential in accomplishing the purpose of accurate bids, efficient construction, and good permanent records. Unclear and/or incorrect plans usually result in increased costs and more work for State personnel for the following reasons:

- Incomplete or inaccurate plans require additional handling and processing and, therefore, cost the state more time and money to get the contract to letting.
- Data that is unclear or interpreted in more than one way could result in higher bid prices by contractors. Unclear data also could result in claims for more compensation and/or more working days by the contractor after award of the contract.
- Incorrect or incomplete plans can precipitate change-orders which require additional processing, usually increase costs, and may cause project delays.

Plan Sheet Sequence. The plan sheet sequence has been recommended by a statewide Total Quality Initiative committee.

I. General
   - Title Sheet
   - Project Layout/Index
   - Typical Section
   - General Notes
Chapter 2 — Plan Set Development

Section 3 — Plan Set Preparation

- Estimate and Quantity
- Consolidated Summaries.

II. Traffic Control Plan
- Typical Section
- Phases Narrative
- Phase Layouts
- Detour Layout and Barricade Layout sheets
- Temporary Traffic Signals, Illumination
- Standards.

III. Roadway Details
- Survey and Control Index Sheets
- Horizontal and Vertical Control Sheets
- Alignment Data Sheets (Optional)
- Plan and Profile
- Intersection Details
- Driveway Details
- Miscellaneous Details
- Standards.

IV. Retaining Wall Details
- Wall Layouts
- Standards.

V. Drainage Details
- Hydraulic/Hydrologic Data
- Culvert Layouts – All Types – Bridge Classification
- Plan and Profile
- Standards.

VI. Utilities
- Existing Utilities (P and P’s) Layout
- Proposed Utilities (P and P’s) Layout
- Standards (for each utility type).

VII. Bridges
- Bridge Hydraulic Data Sheets
- Bridge Layout, Detailed Quantity Summary, and Structural Details grouped together for each bridge
• Structural Standards.

VIII. **Traffic Items**

• Traffic Signal Layout
• Standards
• Illumination
• Standards
• Signing
• Standards
• Pavement Markings
• Standards
• Traffic Management System (TMS)
• Standards.

IX. **Environmental Issues**

• SW3P’s
• Sensitive Areas
• Wetland Mitigation Plan
• Miscellaneous.

X. **Miscellaneous Items**

• SW3P
• Landscaping/Irrigation.

This guidance can be applied to both in-house and consultant-produced plans. The rest of this section follows the outline and describes these requirements, which must be addressed during the actual production of the project plan sheets:

◆ General types of plan sheets
◆ Traffic control plan
◆ Roadway details
◆ Retaining wall details
◆ Drainage details
◆ Utilities
◆ Bridges
◆ Traffic items
◆ Environmental issues
Chapter 2 — Plan Set Development

Section 3 — Plan Set Preparation

- Miscellaneous items

General Types of Plan Sheets

These are the plan sheets discussed below:
- Title Sheet
- Project Layout
- Roadway Typical Sections
- General Notes
- Estimate and Quantity Sheets
- Summary Sheets

Title Sheet

The Title Sheet (for an example of a Title Sheet, see titlesht.) is the first sheet of the plans. It should be neat and contain all of the information as described below. The purpose of the Title Sheet is to:
- Establish the location of the project(s)
- Describe the nature of the work proposed by the plans
- Index the contents of the plans

The following are the contents of the Title Sheet:
- Title Block
- Design Speed and Average Daily Traffic (ADT) Volumes
- Length of Project
- Highway Name And Number, County And Project Number
- Limits
- Project Classification and Type of Work
- Location Map
- Index of Sheets (for an example of an Index of Sheets Sheet, see indexsht.)
- Adoption Date of Governing Specifications
- Exceptions, Equations, and Railroad Crossings
- Signature Block(s)
- Legend of Conventional Symbols
The next paragraphs discuss these contents.

**Title block.** This is located in the upper right hand corner and identifies the plans by project number, district designation, county, control-section-job number (CSJ), and highway name and number.

**Design speed and average daily traffic (ADT) volumes.** Show the design speed of the highway in miles per hour (mph) or kilometers per hour (km/h) depending on whether the project is in English or metric units. Design speed and ADT are required to be shown on the Title Sheet of all projects except those where N/A is shown on Form 1002. For detailed explanation of use of design speed and ADT refer to Chapter 5, Section 2: PS&E Submission Data Sheet (Form 1002).

**Length of project.** For each CSJ, show breakdown of roadway and bridge lengths in feet or meters truncated to two decimal places. The breakdown should also show roadway and bridge lengths in miles or kilometers truncated to three decimal places. The total length shown should match the DCIS P1 screen.

**Highway name and number, county and project number.** These are shown in large capital letters to facilitate identification and processing.

**Limits.** Show limits of proposed construction. This should match the limits shown in the project authorization and on the DCIS Project Identification (P1) Screen.

**Project classification and type of work.** The project classification text should read, “For the construction of XXXX,” where the XXXX corresponds to the project classification shown on the lower right-hand corner of the DCIS P1 screen. The type of work text should read, “Consisting of YYYY,” where the YYYY corresponds to the type of work field shown on the DCIS C1 screen. A listing of the project classification abbreviations shown on the P1 screen is located in DCIS User Manual, Appendix B. As an alternative, the type of work description can be made to match the proposal cover, which is “for work consisting of XXXX,” where XXXX corresponds to the type of work field on the DCIS C1 screen.

**Location map.** Provide a legible map of suitable size showing the location of the project in relation to physical landmarks, other highways, and/or intersections. In addition, the project limits by CSJ(s), county and city boundaries, reference markers, graphic map scale and north arrow should also be shown. The beginning and end of each project should contain the stations, CSJs, and reference markers for each CSJ.

**Index of sheets.** Show sheet numbers and title or abbreviations as they appear on the sheet. All sheets are to be listed, including OMITTED sheet numbers. Show (M) after the abbreviation for metric standard detail sheets. All standard sheets listed on the title sheet will bear the asterisk symbol (or other symbol) to identify them as standard sheets. The index of sheets is accompanied by the responsible engineer’s approval note for use of standard sheets included in the plans. (See Section 3, Engineer’s Seal and TxDOT Copyright Requirements, for more information.)
Adoption date of governing specifications. On state projects, indicate “Special Labor Provisions for State Projects.” For Federal-Aid projects, show title and date of appropriate required contract provisions.

Exceptions, equations, and railroad crossings. List by station numbers and lengths. Show as NONE if not applicable.

Exceptions are the station number limits and lengths which are excluded from a project. Equations are used to show the transition of the project from one set of station numbers to a different set.

Signature block(s). Signature blocks are typically required for the Area Engineer in charge of the plans, Director of Transportation, Planning and Development or District Design Engineer, District Engineer, and Director of the Design Division. Projects that require additional signature blocks are as follows:

- Traffic signals, signing and delineation, pavement marking and traffic management – Director, Traffic Operations Division
- Projects designed by consultants: consultant engineer
- Projects involving cities, counties, irrigation or water districts, corps of engineers, etc.: appropriate official
- Bridge replacement or rehabilitation projects – Director of Bridge Division

Legend of conventional symbols. This legend can be shown on the lower left hand corner. Most Title Sheets already contain these symbols; therefore, verify that the symbols conform to those on the plan sheets and location map.

NOTE: For projects that involve multiple CSJs, individual project lengths, or lengthy indices the above information can be included on supplemental sheets.

For projects which require inspection by the Texas Department of Licensing and Regulation (TDLR) during the construction phase, include this note:

TDLR INSPECTION REQUIRED

This serves as a reminder to construction personnel to inform the TDLR staff and coordinate an appropriate time for them to visit the project site and inspect pedestrian-related elements.

For PS&E submission requirements and policy on TDLR, go to Chapter 5, Section 6.
Project Layout

This sheet(s) (For an example of a Project Layout Sheet, see prolay.) is intended as an overview of the project. Other information that may be included is horizontal alignment data, advance project warning signing, or information not shown elsewhere in the plans.

Roadway Typical Sections

Roadway typical sections (for an example of a Roadway Typical Sections Sheet, see typsect) should be as simple as possible and still provide the necessary construction data. A general representation of the nature of construction in each portion of the project is necessary, but a multitude of details can be confusing. The purpose is to show all the components and dimensions of the roadway within the right-of-way perpendicular to the centerline for each change of existing features or proposed roadway. The following are the contents of the Roadway Typical Section Sheet:

- Existing Typical Section
- Proposed Typical Section
- Profile Grade Line (PGL)
- Station Limits
- Depths
- Roadway Cross Slopes
- Roadway Side Slopes
- Dimensions
- Unique Descriptions
- Utility Location

A discussion of these contents appears below.

Existing typical section. This section shows approximate depths, widths, and station limits of existing roadway materials.

Proposed typical section. This section shows dimensions, depths, and limits for each type of material in the proposed pavement structure. A typical section is also necessary for such features as ramps, detours, crossroads, etc. Barrier and metal beam guard fence should be shown if applicable. In addition, limits of other applicable items of work such as topsoil and seeding, curb and gutter, etc., may also be shown.

Profile grade line (PGL). The PGL shows the location of roadway that represents the grade line shown on the plan and profile sheets. Also, other needed control points such as project baseline or centerline, roadway centerline, and super-elevation pivot points should be shown.
**Station limits.** This section shows station limits for each section. Each typical section should be checked to ensure that a section has been shown for all of the project roadway and that the roadway widths correspond with those shown on the plan and profile sheets.

**Depths.** This section shows thickness in inches or millimeters of each layer in the pavement structure. The approximate quantity per station may be shown for each section. Each type of material should be clearly identified. If stabilization is proposed, indicate the type.

**Roadway cross slopes.** Show cross slopes for proposed typical sections in percent (%).

**Roadway side slopes.** Show side slopes as a ratio of vertical to horizontal distances (V:H) (Metric) or (H:V) (English).

**Dimensions.** Show dimensions for:
- Subgrade crown width
- Base crown width
- Pavement width
- Stabilized material width
- Lane widths
- Shoulder widths
- Right-of-way widths
- Side slopes and ditches
- Berm widths
- Curb and gutter
- Prime coat widths.

**Unique descriptions.** Include any unique descriptions of the pavement structure or explanatory notes such as the following:
- Disposition of old base material and, if salvaged, limits of salvage and limits of replacement
- Indicate contrasting color aggregate for shoulders if applicable
- Dimensions for calculating payment.

**Utility location.** If a utility line is predominant in a section of roadway, show line identity and approximate depth (if known). A note similar to the following should be used: “Locations of Underground Utilities are Approximate.”
General Notes

These notes (for an example of General Notes, see general), created as described in Chapter 3, Section 5, General Notes of this manual, are placed on plan sheets by the responsible Austin office, except in the case of district review projects.

Estimate and Quantity Sheets

The next paragraphs discuss these aspects of the Estimate and Quantity (E&Q) Sheets (For an example of an E&Q Sheet, see eq2):

◆ Purpose
◆ Use
◆ References.

Purpose. The purpose of E&Q Sheet is to provide a list of all the pay items and estimated quantities in the contract. This sheet also provides a space for final quantities once a project has been completed. Item numbers, descriptive codes, Special Provision numbers, item descriptions, units of measurement and bid alternates are also shown.

Use. An E&Q sheet summarizes the work to be done, if there is more than one CSJ or project in the plans or if local participation is involved. They also simplify the plans by showing the total quantities of each item of work involved in the construction of the roadway. If the quantities are accurate, the contractor will be encouraged to submit lower bid prices with minimized contingency costs.

References. The final E&Q Sheet is plotted in the Austin Office except for district review projects. The E&Q Sheet input format and plotting procedures are described in detail in the DCIS User Manual, Chapter 4, Instructions for E&Q Sheets. The District’s Automation Administrator may also be contacted.

Summary Sheets

The purpose of the Summary Sheet (see tcpsum, sumlrg, and sumsml) is to supplement or replace the summary of work totals on individual plan sheets and to bring together the quantities for all the items of work. The contents of the Summary Sheet are discussed in the paragraphs below:

◆ Work type, quantity, and location
◆ Separate quantities
◆ Contractor’s information quantities
◆ Bid items matching estimate.
Work type, quantity, and location. Summary Sheets should indicate type, quantity, and location of work for individual pay items of the proposed project.

Separate quantities. Summary Sheets should show separate quantities for each control or project, city participation, county participation, etc.

“Contractor’s information” quantities. Quantities shown on the Summary Sheet(s) “For Contractor’s Information Only” should be noted as such.

Bid items matching estimate. Description of bid items should conform with the description shown on the estimate. It is recommended that the individual item headings be kept as simple as possible. As a minimum, the item number, general description, and units of measure should be shown.

Traffic Control Plan

The next subsections discuss

- Traffic Control Plan (TCP) Sheets
- Traffic Standards

Traffic Control Plan (TCP) Sheets

The paragraphs below cover these TCP Sheet (see typseq, tcptypxs, and tcpdrvwy) topics:

- Purpose
- Standard sheets
- Sequence of work
- General notes.

Purpose. Traffic Control Plan (TCP) Sheets, in detail appropriate to the complexity of the project, should provide for moving traffic through or around the construction zone in a safe, expeditious, and clear manner. They are also used to provide for protection of the traveling public, work forces, pedestrians, construction equipment, and the work zone from accidents through the use of traffic control devices.

Standard Sheets. When practical, standard sheets developed by the divisions or districts should be used. Each work zone is different and the standard plan sheets do not cover all situations. In these cases, the standard plan sheets can be used as a starting point from which the traffic control plan can be developed.

Sequence of Work. Sequence of work sheets should be included in the plans if the proposed work causes complicated traffic movements or construction procedures within the project limits. It
should be evident from the traffic control sheets what arrangement of construction signs, pavement markings, construction pavement markings, traffic control devices, etc., are needed to control traffic at all locations in every sequence of work. The layouts should show the projects’ construction staging.

The typical cross sections of different construction phases should be included on the sequence of work sheets. These cross sections are very helpful in further clarifying the width of work zones and the method of traffic handling. The more clear and thorough the TCP is, the smoother and safer the construction will be. Explanatory narrative can be included on these sheets, in the General Notes (under Item 502), or in a triple-zero Special Provision.

For an example of a traffic control plan and sequence of work sheet, see typseq and tcptypxs. For an example of a miscellaneous traffic control plan details sheet, see tcpdrywv.

**General notes.** On minor projects, the TCP can usually be described by General Notes under Item 502. Most plans should include the Barricade and Construction Standard Sheets.

**Traffic Standards**

Work zone traffic control standard plan sheets are available on graphics from the Traffic Operations Division’s Traffic Engineering Section (TRF-TE). These sheets can be downloaded from TxDOT’s Internet site ([http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/toc.htm](http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/toc.htm)).

**Roadway Details**

The following roadway detail discussion covers

- Survey Control Index sheets
- Horizontal and Vertical Control Sheets
- Alignment Data Sheets (optional)
- Plan and Profile (P&P Sheets)
- Other sheets.

**Survey Control Index Sheets**

The next paragraphs cover these Survey Control Index Sheet topics:

- Purpose
- Guidelines
- Contents
Purpose. The purpose of the Survey Control Index Sheet is to show an overall view of the project and the relationship of primary monumentation and survey control used in preparation of the project. This sheet should be used in conjunction with the Horizontal and Vertical Control Sheet.

Guidelines. This sheet should be provided for all 4R projects. In addition, this sheet should be provided for 3R projects that involve substantial changes to the vertical grade and/or horizontal alignment of an existing facility and/or right of way acquisition.

The control points shown on the Survey Control Index Sheet should correspond with the information shown on the Horizontal and Vertical Control Sheet. The Survey Control Index Sheet should be signed and sealed by the professional engineer (PE) in direct responsible charge of the surveying. This sheet may also be signed and sealed by the responsible registered professional land surveyor (RPLS) if required by the district.

Contents. The following are the contents of the Survey Control Index Sheet:

- Overall view of the project and primary control monuments set for control of the project
- Identification of the control points
- Baseline and/or centerline
- Graphic (Bar) Scale
- North Arrow
- PE signature, seal and date.

(For an example of a Survey Control Index Sheet, see Survey Index.)

Horizontal and Vertical Control Sheets

The next paragraphs cover these Horizontal and Vertical Control Sheet topics:

- Purpose
- Guidelines
- Content

Purpose. The purpose of the Horizontal and Vertical Control Sheet is to identify the primary survey control and the survey control monumentation used in preparation of the project. This sheet should be used in conjunction with the Survey Control Index Sheet which contains an overall view of the project and the relationship of primary monumentation and survey control used in preparation of the project.

Guidelines. This sheet should be provided for all 4R projects. In addition, this sheet should be provided for 3R projects that involve substantial changes to the vertical grade and/or horizontal alignment of an existing facility and/or right of way acquisition.
The Horizontal and Vertical Control Sheet should be signed and sealed by the professional engineer (PE) in direct responsible charge of the surveying. This sheet may also be signed and sealed by the responsible registered professional land surveyor (RPLS) if required by the district. Control point location maps should be drawn to scale and provide sufficient information so that the point can be located.

**Contents.** The following are the contents of the Horizontal and Vertical Control Sheet:

- Location for each control point, showing baseline and/or centerline alignment and North arrow
- Station and offset (with respect to the baseline or centerline alignment) of each identified control point.
- Basis of Datum for horizontal control (base control monument/benchmark name/number, datum)
- Basis of Datum for vertical control (base control monument/benchmark name/number, datum)
- Date of current adjustment of the datum
- Monumentation set for Control (Description, District name/number and Location ties)
- Surface Adjustment Factor and unit of measurement
- Coordinates (SPC Zone and surface or grid)
- Survey closure information
- Relevant metadata
- Graphic (Bar) scale
- PE signature, seal and date
- TxDOT title block (District name, County, Highway No., and CSJ).

For an example of a Horizontal and Vertical Control Sheet, see [H&Vcontrol](#).

**Alignment Data Sheets**

Alignment Data Sheets shall be provided for all 4R projects. In addition this sheet should be provided for 3R projects that involve substantial changes to the vertical grade and/or horizontal alignment of an existing facility and/or right of way acquisition. The alignment data sheets should (at a minimum) include the following information:

- curve data (if applicable)
  - PC, PI, PT station and coordinates
  - curve radius and degree of curve
  - deflection angle
  - tangent bearings and lengths
stations and station equations (if applicable)
station/offset information (in relation to other alignments within the project limits)
Engineer's seal, signature and date

An imported COGO output file is recommended.

For an example of a horizontal Alignment Data Sheet, see horzalign.

Plan and Profile Sheets

The next paragraphs cover these Plan and Profile (P&P) Sheet. (For an example of a P&P Sheet, see pavplanp.) topics:

◆ Purpose
◆ Guidelines
◆ Plan view contents
◆ Profile view contents.

Purpose. The purpose of the P&P Sheets is to show the horizontal and vertical alignments and may describe other work to be done. These sheets will also show existing features which are typically obtained by aerial photography.

Guidelines. Clarity and completeness is the rule to follow in the preparation of P&P Sheets. The plan and profile views are normally shown on the same sheet but may be shown on separate sheets where plan views take up a great deal of space and it would be impractical to show the profile view on the same sheet. Graphic scales vary depending on the type and size of project and the amount of information required. For metric projects, 1:200, 1:500, and 1:1000 are the most common scales used for the plan views with respective 1:20, 1:50, and 1:100 vertical scales. For English projects, 1 inch equals 100 feet and 1 inch equals 50 feet are the most common scales used for the plan views with respective 1 inch equals 10 feet and 1 inch equals 5 feet vertical scales.

Plan view contents. The following are the contents of the plan view portion of the P&P sheets:

◆ Beginning And Ending Of Project
◆ Centerline Stationing, Tangent Bearings, And Equations
◆ Horizontal Curves
◆ Superelevation
◆ Intersecting Roads And Driveways
◆ Existing And Proposed Culverts
◆ Location Features
Sheet Totals For Roadway Items

Miscellaneous.

**Beginning and ending of project.** Show project number, station number control-section number and reference marker with arrow leader for each control break. Stations should increase from left to right on the plan sheets.

**Centerline stationing, tangent bearings and equations.** Station numbers should be indicated at 500 feet (100 meters) intervals with tick marks every 100 feet (20 meters).

**Horizontal curves.** Show points of curvature, and points of tangency on centerline with small circles/bubbles. Show the points of intersection as a small triangle. List the delta, radius curve, radius, tangent, and length somewhere on the sheet identifying each curve with the point of intersection station.

**Superelevation.** Show stationing of transitions from normal crown to full superelevation and from full superelevation to normal crown. Indicate emax used.

**Intersecting roads and driveways.** Show centerline station, name, property line widths, and proposed radii. Show limits of construction (usually to the right-of-way line of the main roadway).

**Existing and proposed culverts.** For cross drainage structures show stationing, and for parallel drainage structures show the stationing and offset.

**Location features.** Show north arrow, benchmark data, right-of-way lines, utility and channel easements, right-of-way markers, county lines, city limit lines and stations, section corners, survey lines, and control-of-access lines.

**Sheet totals for roadway items** (optional). Show item numbers, description, estimated quantities, and units of measurement. Place on right side of sheet.

Miscellaneous

- Show bridges and their beginning and ending stations.
- Show super-elevation direction, rates, and beginning and ending transition stations, and indicate axis of rotation.
- Show right-of-way widths and roadway widths at each break and at the beginning and ending of each sheet.
- Reference roadway layout sheets if applicable for details that cannot be shown on plan sheets.
- Show retaining wall locations.
- Show ditch blocks and alignment of special ditches and channels. In lieu of the plan sheets, this information can be shown on other drainage layout sheets.
Show railroad crossings, cross fences, and channels with direction of flow arrows.
Illustration of toes and tops of slopes is sometimes beneficial.

Profile view contents. The following are the contents of the profile view portion of the P&P Sheets:

- Proposed Grade Lines
- Natural Ground Profile
- Elevations
- Utilities
- Stationing And Elevations
- Structures/Culverts.

Proposed grade lines. Use a heavy solid line. Show points of vertical intersection as a small triangle. Show points of vertical curvature and points of vertical tangency with small circles/bubbles and give curve data near point of vertical intersection. Show percent grade on tangents to 3 decimal places. Give description for profile grade line (e.g., Alignment A, Rt. Gutter, Left Frontage Road).

Natural ground profile. Use a light dashed line and give description (e.g., Existing Centerline FM 76).

Elevations. Show proposed and existing elevations at 50 feet (20 meter) intervals.

Utilities. Show opposite plan view and give elevations, if known, or give depth dimensions, if known.

Stationing and elevations. Show station numbers along bottom and datum elevations along sides of sheet.

Structures/culverts. Show below and in line with plan view.

Other Sheets

For larger projects, some of the information which might normally be located on P&P Sheets can be located on other plan sheets such as the roadway and bridge layout sheets in order to improve clarity and completeness. The following are defined below:

- Intersection details
- Driveway details
- Miscellaneous details
Roadway standards.

**Intersection details.** Used to show pavement contours, sidewalks, pedestrian ramps, and any details requiring a larger scale (for clarity) than the main P&P Sheets. (For an example of paving details, see intrdts.)

**Driveway details.** They are used to provide pertinent construction details such as pavement structure, grades, limits of construction, etc.

**Miscellaneous details.** For items such as curb types, standard driveways, traffic barrier modifications, sidewalk details, curb ramp details, etc. (For an example of miscellaneous paving details, see mscpav.)

**Roadway standards.** Such as guardrail, crash attenuators, concrete pavement standards, etc.

**Retaining Wall Details**

The discussion below covers these retaining wall topics:

- Retaining Wall Layouts
- Retaining Wall Standards

**Retaining Wall Layouts**

Refer to the Geotechnical Manual for more information on retaining wall layouts and foundation design. The next paragraphs deal with

- Guidelines
- Plan view contents
- Profile view contents.

For an example of a retaining wall layout sheet, go to the Geotechnical Manual, Chapter 6.

**Guidelines.** Horizontal and vertical controls for retaining walls, in plan and elevation views, with typical wall cross section. Show top-of-wall line, and proposed ground line (typically 1-foot minimum above bottom of wall) in profile view.

**Plan view contents.** The following are the contents of the plan view portion of the retaining wall layout sheets:

- Beginning And Ending Of Wall
- Controlling Roadway Stationing, Tangent Bearings, And Equations
- Horizontal Curves
Typical Wall Cross Sections

Intersecting Roads

Drainage Appurtenances

Location Features

Sheet Totals For Retaining Wall Items (optional).

**Beginning and ending of wall.** Show, begin and end stations, of retaining wall alignment including offsets.

**Controlling roadway stationing, tangent bearings and equations.** Station numbers should be indicated at 500 feet (100 meter) intervals with tick marks every 100 feet (20 meters).

**Horizontal curves.** Show points of curvature, and points of tangency on centerline with small circles/bubbles. Show the points of intersection as a small triangle. List the delta, radius curve, radius, tangent, and length somewhere on the sheet identifying each curve with the point of intersection station.

**Typical wall cross sections.** Show location of wall in relation to the sidewalk, roadways, rail, coping, and drainage details.

**Intersecting roads.** Show the location of all roads or driveways within the limits of the wall.

**Drainage appurtenances.** Show the location of all drainage appurtenances located within the limits of the wall.

**Location features.** Show north arrow, right-of-way lines, and utility and channel easements.

**Sheet totals for retaining wall items (optional).** Show item numbers, description, estimated quantities, and units of measurement. Place on right side of sheet.

**Profile view contents.** The following are the contents of the profile view portion of the retaining wall layout sheets:

- Proposed Grade Lines
- Natural Ground Profile
- Elevations
- Utilities
- Stationing And Elevations
- Drainage Appurtenances.
**Proposed grade lines.** Use a heavy solid line. Show point of vertical intersection as a small triangle. Show points of vertical curvature and points of vertical tangency with small circles/bubbles and give curve data near points of vertical intersection. Show percent grade on tangents to 3 decimal places. Show top and bottom of wall grade lines.

**Natural ground profile.** Use a light dashed line and give description (e.g., Existing Centerline FM 76).

**Elevations.** Show proposed and existing elevations at 50 feet (20 meter) intervals.

**Utilities.** Show opposite the plan view and give elevations, if known, or give depth dimensions, if known.

**Stationing and elevations.** Show station numbers along bottom and datum elevations along sides of sheet.

**Drainage appurtenances.** Show elevation and align with plan view.

**Retaining Wall Standards**

These include standards such as cast-in-place wall, mechanically stabilized earth (MSE) wall, special traffic rail, etc.

**Drainage Details**

Refer to the [Hydraulic Design Manual](#) for information on drainage design details. The drainage detail discussion below covers:

- Drainage Area Map Sheets
- Hydraulic Calculation Sheets
- Culvert Cross Sections, Layout, and Detail Sheets
- Plan and Profile Sheets
- Miscellaneous details
- Drainage standards.

**Drainage Area Map Sheets**

Drainage area maps are drawn at a convenient scale to include all of the drainage areas of the project. The purpose of this sheet is to document the size and location of the watersheds used to size each of the drainage structures and/or appurtenances. The following are the contents of Drainage
Area Map Sheets (For an example of a Drainage Area Map Sheet, see drainare. For an offsite drainage area map, see offdrain):

- Major tributaries or streams being crossed
- Major highways and/or streets should be shown for viewer orientation
- Drainage areas are to be numbered for cross-reference in the runoff table
- Location of structure and/or stream crossing.

Hydraulic Calculation Sheets

Each bridge classification stream crossing will have its own hydraulic data sheet. Hydraulic calculations for culverts consist of a runoff computation table and a culvert computation table. Additional tables will be required to show the computations for storm sewer runs and inlets if those appurtenances are included in the plans. The purpose of this sheet is to verify structure design and to document calculations. The following are the contents of the Hydraulic Calculation Sheet:

- Bridge classification structure requirements
- Runoff computations
- Standard calculation tables.

Bridge classification structure requirements. Each stream being crossed by a bridge classification structure will have on its hydraulic calculation sheet: the floodplain cross section, run-off calculations indicating the method used, an elevation vs. discharge curve, and a cumulative conveyance curve if there is a multiple flow divide. (For examples of a Bridge Class Culvert Layout Sheet, see brdgculv and cullay.)

Runoff computations. Runoff computations for culverts, storm sewers, and inlets need to indicate the method used (i.e. Rational or USGS) and the values used for intensity, coefficient of run-off, etc., used to arrive at the runoff volume for each drainage area.

Standard calculation tables. The Bridge Division’s Hydraulics Section has standard calculation tables for the culvert, storm sewer, and inlet computation that may be used in the plans. (For an example of runoff computations, see runcomp; for drainage inlet computations, see inltcomp; for storm sewer computations, see sscomp.)

Culvert Cross Sections, Layout and Detail Sheets

Each culvert involved in the proposed work should have a cross section which shows the work to be done, the description of the culvert, and a summary of estimated quantities. In addition, bridge class culverts should also have layouts that show the same information. The following are the contents of Culvert Cross Section, Layouts and Detail Sheets:
Chapter 2 — Plan Set Development

Section 3 — Plan Set Preparation

- North Arrow
- Skew Angle
- Centerline of Roadway
- Beginning and End of Structure (show begin and end stations and elevation for bridge class culverts)
- Roadway Width
- Centerline of Structure
- Direction of Flow
- Description of Existing Structure (should be included for documentation purposes)
- Roadway Cross Section
- Earthwork Slope(s)
- Flowline Elevations
- Slope of Culvert
- Wingwall Type
- Overall Length of Culvert
- Description for Proposed Culvert with Appropriate Standards
- Hydraulic Data (Headwater and Tailwater Elevations)
- Estimated Quantities shown in tabulated form
- Scale - (vertical and horizontal scales are relative to sheet size)
- Existing Ground Line
- Special Details (include details such as bill of reinforcing if the proposed work is not shown in a standard or provide location of such details elsewhere in the plans)
- Right-of-Way Lines and/or Easements.

Also, every bridge class structure throughout the nation is assigned a National Bridge Inventory Number. This is a 15-digit number with the last three digits being the permanent structure number. The National Bridge Inventory Number is composed as follows:

- The first two digits are the district number.
- The next three digits are the county number.
- The next digit is always 0.
- The next four digits are the control number.
- The next two digits are the section number.
The last three digits are the permanent structure number.

The permanent structure number (PSN) is assigned by the Bridge Division. Each bridge classification structure is assigned a separate number. This PSN should be reflected in the heading for the bridge category of work in the estimate. The user should contact the Bridge Inspection Branch of the Bridge Division to obtain a PSN for all existing or proposed structures containing bid items in the plans estimate.

**Plan and Profile Sheets**

Plan view will show locations of inlets, storm sewers, culverts, ditches, etc., with all roadway detailing not shown. Profile view will show storm sewer runs (type, size, and length) with corresponding profile of details such as

- Existing and proposed ground
- Trench excavation protection
- Existing utilities

For an example of a drainage system plan view, see `drainsht`. For a drainage system profile view, see `drainpro`.

**Miscellaneous Details**

For items such as

- Inlet modifications
- Pipe bedding details
- RC pipe connections
- Block sodding
- Flume or channel details.

For an example of miscellaneous drainage details, see `miscdrn`.

**Drainage Standards**

Drainage standards include

- Box culverts
- Wingwalls
- Inlets
- Safety end treatments.
Utilities

These utility items need to be considered:
- Existing utilities
- Proposed Utility (P&P) Layouts
- Utility Standards.

Existing Utilities

Separate sheets would be provided only if the project also includes proposed utilities. Existing utilities are usually included on the roadway P&P Sheets.

Proposed Utility (P&P) Layouts

Consider utility P&P layouts if such work is included in the project.

Utility Standards

Consider utility standards if necessary.

Bridges

For detailed information on structural detailing see the Bridge Detailing Manual. Bridge Sheets to consider include
- Bridge hydraulic data
- Bridge layout.

Bridge Hydraulic Data

These data can be shown on a separate sheet or may be included in a separate hydraulic report.

Bridge Layout

For an example of a bridge layout, go to the Bridge Detailing Manual. Each bridge to be constructed or widened has a layout which clearly illustrates the proposed work drawn at a usual scale of 1 inch equals 50 feet horizontally and 1 inch equals 5 feet vertically. (1:10 or 1:20 if the original is a full size (22x34) sheet or 1:20 or 1:40 if the original is half size (11x17) sheet). The following paragraphs deal with these aspects of bridge layout:
- National Bridge Inventory Number
Plan layout

Profile layout

Layout review considerations.

National bridge inventory number. Every structure throughout the nation is assigned a National Bridge Inventory Number. This is a 15-digit number with the last three digits being the permanent structure number. The National Bridge Inventory Number is composed as follows:

- The first two digits are the district number.
- The next three digits are the county number.
- The next digit is always 0.
- The next four digits are the control number.
- The next two digits are the section number.
- The last three digits are the Permanent Structure Number (PSN).

The PSN is assigned by the Bridge Division. Each bridge classification structure is assigned a separate number. This PSN should be reflected in the heading for the bridge category of work in the estimate. The user should contact the Bridge Inspection Branch of the Bridge Division to obtain a PSN for all existing or proposed structures containing bid items in the plans estimate.

Plan layout. The following are the contents for the plan layout:

- Reference Line, Centerline, or Profile Grade Line (bearing and location)
- Beginning and Ending Bridge Stations and Elevations
- All Bent Stations and Bearings
- Armor Joint type, Location, and Size of Seal (if used)
- Width (overall, roadway, shoulders, etc.)
- Approach Slab and Curb Returns
- Direction of traffic and/or Stream Flow
- North Arrow
- Correct Plotting of Test Holes, Identification, and Location
- Horizontal Clearances (as required, for structures, utilities, RR tracks, etc.)
- Right-of-Way (if applicable)
- Horizontal Curve Data (if applicable)
- Cross slope and/or Superelevation (if applicable)
- Limits of Riprap, Blockout Around Column
Skew angle(s) of Structure and/or Bents
Railing Type (specify rail type and show nominal face of rail)
Beam Line Numbers (consistent with span details).

Profile layout. The following are the contents for the profile layout:

- Overall Length of Structure
- Lengths and Types of Units/Spans
- Overall length, limits of payment, and Type of Railing (rail post spacing if required to clear slab joints)
- Vertical Curve Data and Grade
- Beginning and Ending Bridge Station and Elevation
- Fixed/Expansion Conditions at All Bents
- Minimum Calculated Vertical Clearances and Other Clearances as Required (structures, utilities, RR tracks, etc.)
- Existing and Proposed Ground Lines Clearly Marked
- High Water Elevation (if applicable)
- Grid Elevations and Stations
- Column Heights
- Number, Size, Length, and Type of Foundations
- Test Holes, Data, and Information
- Bent numbers must be circled
- Show Typical Transverse Section (overall roadway widths, shoulder width, sidewalks, cross slopes and railings)
- Clearance sign(s) and other signs attached to bridge
- Traffic signal detectors in bridge slab
- Permanent Structure Number (PSN)
- Limits and type of riprap
- Design Speed, Average Daily Traffic (ADT), and Functional Classification.

Layout review considerations. The following are important considerations when reviewing a bridge layout:

- Check layout against all structural details for compatibility to be sure that all features correspond.
Check foundation against structural details and special foundations notes specified by the foundation engineer to be sure spread footings or number and direction of batter of piles are in agreement.

Checker should initial sheet after checking for the corrected details.

Detailed Summary

This is a detailed summary of the bid items for all bridges, also including PSN identification and bearing seat elevations. For an example of a detailed summary sheet, go to the Bridge Detailing Manual.

Structural Details

These are details for abutments, bents, framing plan, slab details, etc.

Bridge Standards

Some of these standards are for beams, deck details, expansion joint, rails, etc. See Bridge Standards at: http://www.dot.state.tx.us/business/disclaim.htm for a complete list of standards.

Traffic Items

These traffic items are discussed below:

- Traffic signal layout
- Electrical and illumination
- Signing and delineation
- Pavement markings and markers
- Traffic Management System
- Traffic standards.

Preferably, standard sheets associated with each subsection below should be listed under each traffic item independently.

Traffic Signal Layout

Basic intersection layout showing signal pole/mast arm locations, conduit runs, loop detectors, lanes, and signal head arrangements, etc. Summary tables including all signal bid items should be shown for each signalized intersection. (For examples of Traffic Signal Layout Sheets, see siglay1 and siglay2.)
Electrical and Illumination

These are layouts of lighting pole, mounted luminaire, electrical service, and conduit run locations, etc.

Signing and Delineation

Sheets which could be necessary are Signing and Delineation Layout Sheets (showing locations of all signs and delineators), overhead sign bridge details (elevation view of sign and support), and sign details (showing sign face dimensions and text). Summary of Large Signs Sheets and Summary of Small Signs Sheets would also be included. (For an example of a Summary of Large Signs, see sumlrg; for an example of a Summary of Small Signs, see sumsmll.)

Pavement Markings and Markers

These are roadway plan views showing all proposed markings, denoting type, color, width, etc. Include standard pavement markings and raised pavement markers. (For an example of a Permanent Pavement Marking Layout Sheet, see prmpavm.)

Traffic Management System

Such sheets may be needed on large (typically freeway) projects to denote surveillance and control systems items, such as traffic cameras, changeable message signs, vehicle detection, conduit runs, and other details for smart highways type features.

Traffic Standards

Some of these standards are sign standards (IE, IM, R, etc.), sign mounting details (SMD), overhead sign bridge/support standards (OSB, etc.), pavement marking (PM), electrical details (ED), roadway illumination details (RID), signal mast arms (SMA, DMA, MA), etc.

Environmental Issues

The next subsections cover these environmental issues:

◆ Storm Water Pollution Prevention Plans
◆ Wetland Mitigation Plan
◆ Environmental Standards
◆ Environmental Permits, Issues and Commitments (EPIC) Sheet
Storm Water Pollution Prevention Plans

A Storm Water Pollution Prevention Plan (SW3P) consists of plan sheets, which primarily address temporary erosion control measures during project construction (For examples of SW3P Sheets, see swppp and swppp3p.). An SW3P is required (by 1990 Clean Water Act) for all projects. The Design Division has directed however that if there is any soil disturbance at all, at predictable locations, a SW3P sheet(s) should be included in the plans. This would as a minimum be the narrative, partially standardized sheet which is always the first sheet of the SW3P portion of the plans; the other sheets will show the locations of the various erosion control features. For jobs which disturb no soil (seal coats, overlays, etc.), a standardized General Note (and selected bid items in the estimate or by force account) will serve as the SW3P. The Temporary Erosion Control Item is required on all projects and makes reference to a SW3P in the project.

Wetland Mitigation Plan

Projects that unavoidably disrupt waters of the United States which have been further determined to be wetlands will require mitigation (replacement) of such wetlands. Approval of mitigation plans must be obtained from the Corps of Engineers such that the project can be authorized under a Section 404 permit. These plans may include layout of replacement wetlands, grading details, possible vegetation replacement, etc., and it is highly desirable to complete these documents (for submittal to the Corps) as early as possible, as these sheets are also used as part of the Section 404 permit application.

Environmental Standards

These are erosion control standards (sediment control fence, construction exits, etc.).

Environmental Permits, Issues and Commitments (EPIC) Sheet

The EPIC sheet must be completed by the district listing all environmental commitments, issues and conditional requirements affecting the contractor and their work on that specific project. The sheet can be supplemented by specific details shown on other plan sheets but the areas of concern should be shown on the EPIC for the contractor’s information. The sheet should not be used to reiterate what is already shown in environmental permits for all projects. This sheet is specific to the project it is included in, and should address areas the contractor should be aware of. Late changes to commitments that affect contractor work requirements are to be included in the PS&E by an addendum. Include everything from conditional requirements from resource agencies to environmental commitments made to landowners and other entities (e.g. tree preservation) on the EPIC sheets. EPIC sheets that affect contractor work requirements, further detail contractor obligations in the plans. Changes in commitments after letting will require either a written notice to the contractor (e.g. for identifying a restricted area) or a change order for added or reduced work.
It is not required to have an engineer sign and seal the EPIC sheets. It is a standard sheet which can be found as a design detail sheet at the department website. It can be modified electronically on a project by project basis. Click on EPIC to see a sheet.

Miscellaneous Items

These miscellaneous items appear below:

- Removal Sheets
- Landscaping/irrigation
- Railroad plans.

Removal Sheets

These sheets are usually included on major reconstruction projects when the right-of-way is cluttered with many existing features. The sheets would consist of roadway plan views showing the items for contractor removal, such as structures, pavements, guard rails, and other existing appurtenances. (For an example of Removal Sheets, see remsht.)

Landscaping/Irrigation

These include appropriate layouts and details if such aesthetics treatments are included in the project.

Railroad Plans

If railroad work is in the project, necessary plans may include Plan and Profile of new track, grade crossing layouts (planking, signal location, delineation of TxDOT/RR work responsibilities), track typical section, and track details, etc. A Railroad Bridge Layout Sheet would be included with other project bridge layouts, if any. These railroad plan sheets are not labeled as Exhibit A in final plans sets. For an example, see the Bridge Detailing Manual.
Section 4 — Drafting Guidelines

Overview

Accurate, clear and consistent plans are essential in obtaining accurate bids, efficient construction, and reliable permanent records. The consistent use of uniform drafting guidelines will increase the efficiency in which the plans are reviewed by the contractors prior to bidding and improve their understanding of the contract's intent. It is highly recommended that designers and technicians use uniform drafting styles regardless of whether the plans are prepared by hand or by CADD. The intent is to produce consistent, accurate, and legible sets of plans. Do not clutter the plans with unnecessary information.

This section discusses the following drafting guidelines:

- Drafting Conventions
- Annotation Conventions
- Design Files
- File Management
- Standard Sheet Cells
- Plotting Guidelines

Drafting Conventions

- Show existing topography at a weight of 0 and a line style of dot. (LC=1)
- Show proposed features at a weight of 1–2 and a line style of solid. (LC=0)
- Show centerlines and control lines at a weight of 0–1 and a line style of dash-dot. (LC=4)
- Show R.O.W. lines at a weight of 0–1(existing) or 2–4 (new) and a line style of dash-dot-dot. (LC=6)
- Show hidden lines at a weight of 0–1 and a line style of short dash. (LC=2)
- Show leader, dimension and extension lines at a weight of 0 and a line style of solid. (LC=0)
- Scale of drawing/sheet should be clearly shown, including not-to-scale (NTS) items.

Annotation Conventions

- Show all text with a font of 1 (Leroy). Exception: decorative fonts on Title Sheet.
- Show all text with a line style of solid. Exception: screening annotation for existing elements.
- Size all text to plot at standard scales listed below.
Chapter 2 — Plan Set Development  
Section 4 — Drafting Guidelines

- Unusually large text sizes are unnecessary. Exception: decorative fonts on Title Sheet.
- Use minimum or usual size text, font 1, left top justification for blocks of text.
- Avoid clutter. Pull annotation away from the picture.
- Line up annotation.
- Break leader lines at conflicts only where readability would be improved.
- Group leader lines at about the same angle for neatness.
- Use a circular arc for curved leaders.
- Minimize mixing of curved and straight leaders on the same page.
- Include only the annotation required for construction. Exception: hydraulic calculations.
- Additional designer’s notes may be placed above the sheet in CADD files. Exception: alignment annotation is placed in the master file.
- Place annotation in the individual sheet files rather than master design or map files.
- Avoid odd abbreviations and squeezing text to fit. Move it or shorten it instead.
- Reference file clip masking to clear annotation can be minimized by better text location.

Design Files

- Complete all design in one or more master design files, not individual sheets. Attach master design file(s) to sheets as a reference file. To avoid problems, do not copy them. This enables drafting modifications and/or updates to be performed in a single file rather than multiple sheet files. Avoid attaching reference file with save full path.
- All master design files should be 2D, unrotated, full scale, real world coordinates. All projects are to be developed using NAD83 English State Plane coordinates.
- Multiple master design files (for TOPO, ROADWAY, DRAINAGE, BRIDGE, etc.) allow several designers to work on different parts of the project at the same time while referencing each other’s work.
- Place all features at exact coordinates, not eyeballed - designers will snap to them. Since some features may be used by designers for other calculations or details features should be placed by exact coordinates to avoid errors.
- Avoid working in existing TOPO files due to the hazard of overwriting or corrupting the original file. Always keep good backups.
- Attach master design file(s) to sheets as a reference file. Do not copy them. This avoids version problems.
Attach PE's seal to sheet file as a reference file (from the shared SITE folder). Do not place a cell. This will save disk space, speed up file retrieval, and provide better control of the PE's seal.

V8 - Working units: Defined by standard unit ratios for Survey Feet within Microstation and are based on 1 Meter (1 meter = 39.37/12 or 1 meter = 3.280833333333. Labeled ft/tn with a resolution of 1000 units of resolution per foot.

Microstation V8 supports level names while V7 supports level numbers and names. Level names will be used whenever possible to differentiate features within the overall design.

V7 - Use TxDOT's GEOPAK database to place features with correct symbology and level mapping.

V8 - A default level library and GEOPAK database are supplied to establish a level naming schema. This schema may be used as delivered or modified to conform to district standards. The level library and GEOPAK database will establish a baseline of level names and element symbology.

Be sure all data is being backed up on a daily basis.

File Management

Keep an information sheet for each project. If too complex, keep a separate sheet for each file. This can be on paper. A readme file in the project folder is even better.

Keep all files (graphics, notes, PS&E, etc.) for a project in subfolders of a single folder tree. Avoid using long path names as they cause problems.

Share, do not copy files for more than one person to work on; this prevents duplicate file conflicts.

Store projects on the shared drive (usually “T”) in a folder with an obvious name. Contact ISD-CADD for suggested directory setup.

Creating an empty subfolder named after the CSJ (e.g., “0253-04-089”) makes the project easier to find in archive listings later.

When a project is completed, archive all files/data. Presently, CD media is considered the best for long term storage.

Identify a SITE folder on the “T” drive, or another shared drive. This is the best location for shared files such as cell libraries and mapping files that are used on many different projects.

Standard Sheet Cells

District and division standard cell libraries are available. Identify and use them whenever possible.
Create any new standard sheet cells (see Table 2-1 and Table 2-2) at 1" = 100' for consistency.

Table 2-1: Full Size (D) and Half-Size (B) Sheet Text

<table>
<thead>
<tr>
<th>Text Usage</th>
<th>Leroy Size (D) / (B)</th>
<th>1&quot;=10'(D)</th>
<th>1&quot;=20'(D)</th>
<th>1&quot;=20'(B)</th>
<th>1&quot;=40'(D)</th>
<th>1&quot;=40'(B)</th>
<th>1&quot;=50'(D)</th>
<th>1&quot;=100'(D)</th>
<th>1&quot;=100'(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(not used)</td>
<td>&lt; 120 / &lt; 60</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Minimum</td>
<td>120 / 60</td>
<td>0 – 1</td>
<td>1.2</td>
<td>2.4</td>
<td>3.6</td>
<td>4.8</td>
<td>6</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Usual</td>
<td>140 / 70</td>
<td>1 – 2</td>
<td>1.4</td>
<td>2.8</td>
<td>4.2</td>
<td>5.6</td>
<td>7</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Emphasized</td>
<td>200 / 100</td>
<td>2 – 3</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Sheet Title</td>
<td>240 / 120</td>
<td>3 – 4</td>
<td>2.4</td>
<td>4.8</td>
<td>7.2</td>
<td>9.6</td>
<td>12</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>(not used)</td>
<td>&gt; 240 / &gt; 120</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Table 2-2: Full-Size (D) and Half-Size (B) Sheet Dimensions

<table>
<thead>
<tr>
<th>Scale</th>
<th>*Heavy border line 21&quot; x 32&quot;</th>
<th>*Outside cut line 22&quot; x 34&quot;</th>
<th>Left margin</th>
<th>Top, Bottom, Right margins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plotted</td>
<td>16&quot; x 10.5&quot;(B)</td>
<td>34&quot; x 22&quot;(D)</td>
<td>2&quot; (D)</td>
<td>½ &quot; (D)</td>
</tr>
<tr>
<td></td>
<td>10.5&quot; x 16&quot;</td>
<td>17&quot; x 11&quot;(B)</td>
<td>1&quot;</td>
<td>¼ &quot; (B)</td>
</tr>
<tr>
<td>1&quot; = 10' (D)</td>
<td>1&quot; = 20' (B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>210 x 320</td>
<td>220 x 340</td>
<td>20</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>1&quot; = 20' (D)</td>
<td>1&quot; = 40' (B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>420 x 620</td>
<td>440 x 680</td>
<td>40</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1&quot; = 30' (D)</td>
<td>1&quot; = 60' (B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>630 x 960</td>
<td>660 x 1020</td>
<td>60</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>1&quot; = 40' (D)</td>
<td>1&quot; = 80' (B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>840 x 1280</td>
<td>880 x 1360</td>
<td>80</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>1&quot; = 50' (D)</td>
<td>1&quot; = 100' (B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1050 x 1600</td>
<td>1100 x 1700</td>
<td>100</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>1&quot; = 100' (D)</td>
<td>1&quot; = 200' (B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2100 x 3200</td>
<td>2200 x 3400</td>
<td>200</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

*Cut line only on large format devices
Plotting Guidelines

Each of the plot drivers set up by engineering support attempts to size and justify the plot on the sheet chosen, then writes the border information (file name, plot date and time, any comments) in the lower left hand corner if room is available. This does not always work perfectly. The next subsections provide

- General plotting guidelines
- Local plotting on the current network in use.

General Plotting Guidelines

- Select the correct driver for your plotter.
- Always use preview.
- Snap fence to the outside cut line.
- Verify plot area is set to FENCE in the plot dialog box.
- Use the default “B” (11’’ x 17’’) cut page for half-size plots.
- Use the “D” (22’’ x 34’’) cut page for full-size plots on applicable plotters.
- Check the scale. If the scale is correct, then the sheet was set up to the dimensions described above.
- If the scale is incorrect, make sure that entity is set to fence, not view.
- If the scale is incorrect and will not reset, the sheet cut line may be nonstandard. Correct the dimensions of the outside cut line and the heavy border line.
- Use the Roll Plot page size for non-standard plot sizes on large format DesignJet plotters.
- Adjust the length (in page size), or Long Axis will run the default length of 25 feet of media on applicable plotters.

Local Plotting on the Current Network in Use

- A port must be captured before plotting in Microstation.
- This allows the user to see a Netware print queue as a local plotter.
- Use Network Neighborhood to capture a local printer port (LPT1, LPT2, etc.) to a plotter queue. This has to be set up once for each user on a particular workstation.
  - To capture a local printer go to Start > All Programs > Novell iPrint > iPrint Client Settings > iCapture.
- When plotting in Microstation, do not enter a plot name when prompted. Instead, enter the captured port (such as LPT1). An alert message will appear stating that the file (e.g., D:\LPT1) already exists. Disregard this error message and hit OK.
To avoid typing in the local port every time, Microstation plot driver files can be edited to automatically route a plot to the local printer port. For details, contact your engineering support liaison.

Use of third party plotting may (Iplot) be supported, contact ISD-CADD unit for further information.
Section 5 — General Plan Set Checklist

Checklist

☐ Check the plan set for completeness. Make sure that all sheets (including standards) have been included in the plan set prior to submission.

☐ Make sure that the title block (district, county, highway, CSJ, and sheet number) on all plan sheets has been completed correctly.

EXAMPLE: Check the index of sheets. All sheet numbers must be listed, including all supplemental sheets (Example: 13, 13A-F as opposed to 13-13F). Each individual plan sheet must be accounted for in the index of sheets. List all omitted sheets in the index of sheets. Titles shown on the index of sheets must match the title exactly on the plan sheet.

☐ Check plan set for proper engineer’s signature, seal, and date. See Construction Documents in Section 3, Policy on Signing, Sealing and Dating Construction Documents for additional details.

☐ Check design speed and ADT shown on the Title Sheet against that shown on the approved Form 1002, Page 3. (See Page 3 of Form 1002 in Chapter 5, Section 2, for more information.)

☐ Check the governing specification note on the Title Sheet to make sure spec book year adoption date and the proper provisions (federal or state) have been referenced.

☐ Check the limits, stationing, and equations on the Title Sheet for accuracy. Make sure that the stationing, equations, and exceptions shown equate to the project length shown and match the project length(s) included on DCIS. See the DCIS User Manual; Chapter 2, Section 1; and Chapter 4, Section 1.

☐ Make sure that all necessary signatures (including other entities) have been included on the Title Sheet prior to submission.

☐ Make sure that the responsible engineer’s statement, seal, and signature have been included next to the index of sheets.

☐ Make sure there is an applicable typical section for all stations and roadways.

The following sheets should be provided for all 4R projects. In addition, this sheet should be provided for 3R projects that involve substantial changes to the vertical grade and/or horizontal alignment of an existing facility and/or right of way acquisition.

◆ Survey Control Index Sheet (signed, sealed and dated by a PE)

◆ Horizontal and Vertical Control Sheet (signed, sealed and dated by a PE)
Check the plans to make sure that the locations of existing utilities are shown. Also make sure that the locations of unacquired ROW parcels (pending acquisition prior to submission) have been shown.

- Check proposed design features such as horizontal and vertical alignments, superelevation, etc., for compliance with design standards and design speed requirements.
- Check the bridge layouts, typical sections, and P&P sheets for conformance with any previously approved preliminary design submissions.
- Confirm that environmental commitments made in the environmental assessment were addressed in the PS&E.
- Check the proposed roadside design. Make sure all safety enhancements (safety end treatments, metal beam guard fence, single guardrail terminals, etc.) have been addressed. Check layouts, typical sections, etc., for proper clear zone requirements (see Roadway Design Manual, Chapter 4, Section 3).
- Check the TCP for conformance with the TMUTCD.
- Check the index of sheets to verify all necessary current standards have been listed and that these sheets have been inserted into the plan set. All standards must be inserted into the plan set prior to submission. Make sure that the proper unit standards have been specified (Metric standards for 1995 specification projects and English standards for 1993 specification projects).
- Check all modified (MOD) standards to verify that they have been properly sealed by the responsible engineer with the modifications noted.
- Make sure that the mylar plan sheets are the same size. Refer to Chapter 2, Section 4, for permissible plan sheet sizes. Check to make sure that the plan set is drilled and bound prior to submission.
- Check sidewalks, ramps, and other pedestrian features for compliance with the Americans with Disabilities Act (ADA) and Texas Accessibility Standards (TAS) requirements. (See Roadway Design Manual, Chapter 2, Section 6).
- Check the TCP or other plan sheets to verify that the proper treatment for temporary pavement drop-offs has been provided. (See Roadway Design Manual, Appendix B, Guidelines for Pavement Drop-offs). Make sure that all ends of temporary or permanent traffic barriers have been properly end treated.
- Check signing summary and layout sheets to make sure that all signs included on the summary sheets are shown on the layout sheets.
- Check delineation layouts for proper delineator and object marker usage and spacing.
- Check pavement marking layouts for conformance with the TMUTCD.
- Check electrical and illumination sheets for service connections.
Check traffic signal layouts for accuracy. Check foundation specifications.

If bridges or bridge class culverts are involved, make sure that these lengths have been broken out on the Title Sheet and that the mileages add up to match the total project length shown.

Verify permanent structure numbers for bridges and bridge class culverts are shown for TxDOT let projects. The permanent structure number and National Bridge Inventory (NBI) number need to be shown on the bridge/culvert layout sheets and in the estimate.

Review all plan sheets for legibility and reproducibility (type, size, contrast, clarity, etc.).

For all district review projects, the E&Q and General Notes sheets must be plotted and inserted into the plan set. The information on the E&Q sheet must match the data on DCIS. For all other projects, these sheets will be plotted by the responsible Austin division.
Chapter 3 — Specifications

Contents:

Section 1 — Types of Specifications and Provisions
Section 2 — New Special Specification and Special Provision Submission Requirements
Section 3 — Specification List
Section 4 — Specification List Checklist
Section 5 — General Notes
Section 6 — General Notes Checklist
Section 1 — Types of Specifications and Provisions

Overview

This section discusses:

- Standard Specifications
- Special Specifications
- Special Provisions

Standard Specifications

The Standard Specifications are those specifications listed in the department’s specifications book entitled *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* (2004 version English, 1995 version Metric). The General Requirements and Covenants (Items 1–9) are required for all contracts. Specifications for construction bid items or reference items usually address five areas: description, materials, construction methods, method of measurement, and method of payment. The Standard Specifications must be used unless alternative Special Specifications or Special Provisions have been approved for use through the CST Construction Section. Modifications to Standard Items 1 through 9 require the approval of the administration.

Special Specifications

Special Specifications are methods and/or items of work that are not covered by Standard Specifications. They may introduce a new description, materials, miscellaneous classification, construction methods, equipment, measurement, and/or payment articles. Special Specifications may be completely new specifications or the modification of previously approved specifications. Three types of Special Specifications exist:

- Statewide Special Specifications
- Districtwide Special Specifications
- One-time use Special Specifications

After descriptions of these types, a paragraph appears giving information about a Special Specifications index and references.

**Statewide Special Specifications.** These Special Specifications have been approved for statewide use by the Specifications Committee.

**Districtwide Special Specifications.** These Special Specifications have been approved for a specific district(s). If a district desires to use another district’s specification, it must be submitted for
approval to the appropriate division. For detailed information on the submission process, refer to Section 2, New Special Specification and Special Provision Submission Requirements.

**One-time use Special Specifications.** These Special Specifications are those approved for one-time use on individual projects. These may be used on projects other than the originally approved project, using the submission process described in Section 2, New Special Specification and Special Provision Submission Requirements.

**Special Specifications index and references.** For an index of these Special Specifications, and the Special Specifications themselves, the designer is directed to the libraries maintained by the Construction Division on the internet at: [http://www.txdot.gov/apps/specs toc.asp?year=3&type=SP&list=all](http://www.txdot.gov/apps/specs toc.asp?year=3&type=SP&list=all).

**Special Provisions**

Special Provisions modify Standard Specifications or Special Specifications. Additionally, there are Special Provisions (Triple Zero Special Provisions) which describe, in narrative form, conditions included in a contract which do not relate directly to a work item specification. For more information regarding Special Provisions refer to Section 3, Specification List.

There are three types of Special Provisions:

- **Statewide Special Provisions**
- **Districtwide Special Provisions**
- **One-time use Special Provisions**

**Statewide Special Provisions.** These Special Provisions have been approved by the Specifications Committee for statewide use.

**Districtwide Special Provisions.** These Special Provisions have been approved for a specific district(s). If a district desires to use another district’s provision, it must be submitted for approval to the appropriate division. For detailed information on the submission process, refer to Section 2, New Special Specification and Special Provision Submission Requirements.

**One-time use Special Provisions.** These Special Provisions are those approved for one-time use on individual projects. These may be used on projects other than the originally approved project, using the submission process described in Section 2, New Special Specification and Special Provision Submission Requirements.
Section 2 — New Special Specification and Special Provision Submission
Requirements

Overview

In the early stages of design, the basic nature and character of work should be established, so that
bid items may be selected. Also, this allows the designer to establish if any special circumstances
may require Special Specifications or provisions. Special Provisions and Special Specifications
should be submitted only when it has been determined that construction under the Standard Specifi-
cations will not achieve the desired results or will not prove to be economical. If new Special
Provisions or specifications are needed, the early identification will allow time for them to be
reviewed and approved by the Construction Division Specifications section prior to the submission
of the PS&E.

General Guidelines

Special Provisions should modify the Standard Specification only to the extent necessary to accom-
plish the desired results. When voiding portions of an article, void only the sentences requiring
removal/replacement and the remainder of the Article is exactly as it appears in the Standard Spec-
ification. While condensation and simplification may result in a more concise Special Provision,
this practice has too often resulted in misinterpretation and important Standard Specification
requirements being unintentionally omitted.

The same general format and wording used in the Standard Specifications should be followed in
preparing Special Specifications. This can most readily be accomplished by using a similar stan-
dard item as a guide and substituting the desired wording where appropriate. The measurement and
payment paragraphs in particular should be essentially the same as similar standard items. This is
necessary since conflicts or vagueness in these paragraphs are often the basis for claims against the
department.

During the preparation of both Special Provisions and Special Specifications, considerable thought
should be given toward requirements and wording which will permit the use of the Special Provi-
sions or Special Specifications on other projects having slightly different conditions. By relegating
certain features such as density and gradation requirements to the plans and exercising foresight in
preparing the measurement and payment paragraphs this end can be achieved. The repeated use of
desirable Special Provisions and Special Specifications is most beneficial in that it results in prog-
ress in construction methods and materials, and uniform interpretation of specification
requirements.

This section covers

◆ Form 1814 and Specification Templates
Chapter 3 — Specifications

Section 2 — New Special Specification and Special Provision Submission Requirements

Form 1814 and Specification Templates

The next subsections discuss these Form 1814 and Specification topics:

- When to Submit Completed Form
- How to Complete Form
- Accessing Specification Templates

When to Submit Completed Form

To submit a new Special Provision or Special Specification, the Form 1814 must be filled out completely by the district. The form may be downloaded from 1814.pdf. The District Engineer must submit the completed Form 1814 directly to the CST Construction Section to receive a new Special Provision or Special Specification number.

For all projects, districtwide use status of a Special Provision or Special Specification is encouraged when the item has been used three (3) or more times. When the district determines they want a proposed Special Provision or Special Specification for districtwide use, the district must submit Form 1814. These districtwide use Special Provisions or Special Specifications are submitted to the Specifications Committee for review and approval in their monthly meeting. Statewide use status for an item is usually submitted by a division.

How to Complete Form

The Form 1814 Proposed Special Provision or Special Specification needs to be filled out completely (see Table 3-1, below). Use the latest version of Form 1814. The Form is located at http://www.dot.state.tx.us/business/specifications.htm. This form must accompany the Proposed Special Provision or Special Specification.

Table 3-1: How to Complete Form

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>List the Specification book year.</td>
</tr>
<tr>
<td>2</td>
<td>Indicate whether the submittal is for Statewide, Districtwide, or One Time Use.</td>
</tr>
<tr>
<td>3</td>
<td>For Statewide Use, indicate whether the submittal is construction and/or maintenance use and if its use is to be required or optional.</td>
</tr>
<tr>
<td>4</td>
<td>For Districtwide Use, list the district.</td>
</tr>
<tr>
<td>5</td>
<td>For One Time Use, list the County, Project, District, CSJ, etc.</td>
</tr>
<tr>
<td>6</td>
<td>Provide the title of the submittal.</td>
</tr>
<tr>
<td>7</td>
<td>Indicate if the submittal is identical or similar to a previously approved specification or provision. If it is identical or similar, then list most recent number.</td>
</tr>
</tbody>
</table>
Table 3-1: How to Complete Form

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Give a through summary of the need for, and details of the submittal. If the submittal is similar to a previously approved specification or provision, list the changes and provide and electronic copy with tracked changes.</td>
</tr>
<tr>
<td>9</td>
<td>For Districtwide or Statewide special provisions or special specifications, include guidance on when and how the special provision or special specification will be used.</td>
</tr>
<tr>
<td>10</td>
<td>List any reference items.</td>
</tr>
<tr>
<td>11</td>
<td>Indicate who created the submittal, who e-mailed the submittal, phone numbers for both and the dates the submittal was created and e-mailed.</td>
</tr>
<tr>
<td>12</td>
<td>Indicate if bid codes will be needed for the item and list them.</td>
</tr>
</tbody>
</table>

When received at the CST Construction Section, the Form 1814 is logged in. Processing time varies depending on the content of the Special Provision or Special Specification and the information given on Form 1814. Preference is given to Special Provisions or Special Specifications that let first. Many one-time use proposed Special Provisions or Special Specifications are forwarded to other divisions for review and comments (usually a two week turn around time).

Accessing Specification Templates

In order to post Specifications and Provisions to the updated website, templates have been developed and must be used. The templates are found at the Specifications web page at [http://www.dot.state.tx.us/business/templates.htm](http://www.dot.state.tx.us/business/templates.htm). The templates open with a .doc extension and must be saved with an .rtf extension prior to emailing the file to CST_RDWY_SPECS. Once the document is opened, the information has been typed in and it’s ready to be saved, click on File/Save As, then click on Save As Type, select Rich Text Format (*.rtf). No formatting is lost.

Specifications and Provisions cannot be accepted for submittal and review unless they are in the correct format.

Click here for an example of a [Specification](#) and an [1814](#).

Centralized Libraries

The approved Special Provision or Special Specification is stored on the appropriate centralized library. The centralized libraries are used to build bid proposals. Contact the CST Construction Section for questions about these libraries.

(Refer to the Construction Division’s Internet site at [http://www.dot.state.tx.us/business/specifications.htm](http://www.dot.state.tx.us/business/specifications.htm) for the proper formatting of triple zero Special Provisions.)
Approval Procedure

Any Special Provision to Items 1 through 9 must receive approval from the Administration. All other proposed Special Provisions and Special Specifications (statewide and districtwide) must be submitted to the Specifications Committee composed of Division Heads from the Design Division, Bridge Division, Maintenance Division, Traffic Operations Division, and Construction Division; the section head of Materials and Pavements of the Construction Division; and three District Engineers. One-time-use Special Provisions or Special Specifications are approved through the Construction Division specifications section.

One purpose of the Specifications Committee is to carefully screen all Special Provisions and Special Specifications for conformance with departmental policies and construction practices and to approve only those deemed essential. The Committee also approves Special Provisions or Special Specifications affecting Departmental policy. The Committee also has liaison with legitimate highway industry associations and representatives for the purpose of discussing and/or clarifying specifications affecting those institutions.
Section 3 — Specification List

Overview

Each Standard Specification item, Special Provision, and Special Specification proposed for a project must be listed using a standard format. This listing is called the List of Governing Specifications and Special Provisions, more commonly referred to as the “Specification List” or “spec list.” This Specification List is used to assemble the bidding proposal through automated computer programs. Special Provisions and Special Specifications contained in the Specification List are assembled in the bidding proposal. The bidding proposal is a legal document on which the contractor bases bids for a project. Hence, the completeness and accuracy of the Specification List is important.

This section covers:

◆ Specification list components
◆ Specification list creation
◆ Specification list review
◆ Specification list checklist

Specification List Components

Components of the Specification List are:

◆ Standard specifications
◆ Special provisions
◆ Special specifications
◆ Reference items

Standard Specifications

This portion of the Specification List always contains Items 1 through 9, which are “General Requirements and Covenants.” (See Specification List (speclist) example.) It also always contains the items “Mobilization,” “Barricades, Signs, and Traffic Handling” and “Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control.” The Specification List provides a listing of the items shown in the estimate. See Chapter 4, Section 2, determination of bid items. Reference items are shown adjacent to their respective standard and Special Specifications, as applicable.
Special Provisions

This section of the Specification List will contain all the required and optional provisions. Different contract Special Provisions are used on federally funded and state-funded contracts. Under the present system only one Special Provision to any bid item can be used, with the following exception: An alternate bid item description may have different Special Provisions from its base bid item.

Required Triple Zero Provisions also vary between state and federally funded contracts. Other Triple Zero Provisions are project specific irrespective of the funding. Examples of these would be “Detours, Barricades, Warning Signs, Sequence of Work, etc.,” or an “Important Notice to Contractors” which may list unclear utilities and/or right-of-way parcels. The following subsections discuss:

- Important Notice to Contractors
- Railroad insurance Special Provision to Item 7
- Road User Cost Provisions and accelerated construction strategies through Special Provision 008---069 or 008---070 which consolidate accelerated construction strategy provisions to the contract.

Important Notice to Contractors

This provision is a Triple Zero Special Provision and directs the attention of the contractor to any of the following as may be necessary:

- Outstanding utilities
- Outstanding right-of-way
- Outstanding right-of-way encroachments
- Relocation assistance
- Other (contamination information, local materials sources, etc.)

These Special Provisions need to be included with the PS&E when sent to Austin.

Outstanding utilities. A notice will be included when utility adjustments required for the construction of the project are still remaining at the time of letting. The contractor is invited to review the list of outstanding utility adjustments with the Area Engineer. The list includes the owner of the utility, a description of the utility, the location of the utility and an estimated completion date of the outstanding adjustment. An example of Important Notice to Contractors regarding Outstanding Utilities can be found at (internal use only) http://crossroads/org/des/fs/OutstandingUtilities.rtf.

Outstanding right-of-way. A notice will be included when right-of-way acquisition required for the construction of the project has not been completed at the time of letting. The contractor is
invited to review the list of outstanding right-of-way with the Area Engineer. The list includes the parcel number, the owner, the location and an estimated acquisition date of the outstanding parcel. An example of Important Notice to Contractors regarding Outstanding Right-of-Way Acquisition can be found at (internal use only) [http://crossroads/org/des/fs/OutstandingROWandUtilities.rtf](http://crossroads/org/des/fs/OutstandingROWandUtilities.rtf).

**Outstanding right-of-way encroachments.** A notice will be included when existing improvements within the project right-of-way remain which would conflict with the contractor’s operations. Estimated date of removal would be included for the contractor’s information. An example of Important Notice to Contractors regarding ROW Encroachments can be found at (internal use only) [http://crossroads/org/des/fs/OutstandingROWEncroachments.rtf](http://crossroads/org/des/fs/OutstandingROWEncroachments.rtf).

**Relocation assistance.** A notice will be included when former property owners or tenants have not vacated the property. Estimated dates of relocation will be supplied in this Special Provision. An example of Important Notice to Contractors regarding Unvacated ROW Parcels (Relocation Assistance) can be found at (internal use only) [http://crossroads/org/des/fs/RelocationAssistance.rtf](http://crossroads/org/des/fs/RelocationAssistance.rtf).

**Railroad Insurance Special Provision to Item 7**

The following paragraphs deal with

- Contractor requirement
- Special Provision to Item 7 preparation
- Estimated cost of work formula

**Contractor requirement.** Special Provision to Item 7, Legal Relations and Responsibilities to the Public, describes the contractor’s requirement for obtaining railroad protective insurance. If the project crosses or is in close proximity to the railroad tracks, this provision is required. The estimated cost of the work to be performed by the contractor within the operating track or tracks and number of regularly scheduled trains per day passing the site of work has a direct bearing on the premium rates for the above-mentioned insurance. This Special Provision contains details specific to the project regarding railroad operations and the contractor’s work. The following information is provided to the contractor in this Special Provision:

- Name and address of the railroad company
- Number of regular train movements
- Number of switching movements
- % estimated cost of work

**Addendum preparation.** Individual districts are responsible for preparing the Special Provision. The Special Provision is prepared by using the Microsoft Word template. The districts coordinate with the CST Construction Section to get this Special Provision approved and a number assigned. For information on how to prepare Special Provisions using the Microsoft Word template, see [DCIS User Manual], Chapter 5, How to Prepare Special Provisions/Specifications. References to
Addendum, or Addendum 1 to Item 7 need to be removed and replaced with Railroad Insurance Provision to Item 7 or Special Provision. These are forwarded to the Construction Division specification section. The Railroad Division may assist the districts in preparing the Special Provision to Item 7. Please contact the rail highway section for assistance.

Additionally, there may be General Notes specific to individual railroads that are required. To obtain the most current information required for drafting this Special Provision and information on General Notes, contact the Railroad Division.

**Estimated cost of work formula.** The following formula is used to determine the estimated cost of work. This cost is always 0.1% or greater.

\[
\% \text{ Estimated Cost of Work} = \frac{\left( \frac{W}{L} \right) C}{TC} \times 100
\]

- \(W\) = Length of individual roadway (CSJ) on the railroad ROW (generally 100 feet)
- \(L\) = Length of individual roadway in feet (CSJ)
- \(C\) = Cost of individual CSJ (not including E&C)
- \(TC\) = Total cost of project (not including E&C; \(TC = C\) in projects with one CSJ)

**Road User Cost Provisions**

In the past, on most TxDOT projects, the contractor’s progress towards project completion was controlled by specifying the number of working days and then assessing contract administration liquidated damages when construction went beyond the contract time allowed. Contract administration liquidation damages were based on the daily cost incurred by the state to continue administering the contract beyond the time established in the contract.

Section 223.012(a)(1) of the Transportation Code requires TxDOT to “develop a schedule of liquidated damages that accurately reflects the costs associated with project completion delays, including administrative and travel delays.” Travel delay costs are commonly referred to as road user costs.

The next paragraphs cover these topics relating to road user cost provisions:

- Use of road user cost
- Incentives
- Road user cost application
- A+B bidding description
Function of part “B”

A+B bidding use

**Use of road user cost.** The guidelines outlined herein are to be used as an aid when making decisions on whether to require road user cost on projects. Road user cost, in addition to contract administration costs, should be considered for the following types of projects:

- Projects that add capacity (may include grade separations)
- Projects where construction activities are expected to have an economic impact to local communities and businesses
- Rehabilitation projects in very high traffic volume areas

In addition to meeting at least one of the above, a secondary evaluation should be made considering the following:

- Conflicting utilities will be relocated prior to construction and the right-of-way is clear.
- There is an adequate inspection force available.
- 25% of the estimated road user cost is greater than the contract administration liquidated damages.

If any of the secondary criteria is not met, the district should re-evaluate the proposed use of road user cost liquidated damages before making the decision.

Other considerations when increasing liquidated damages over the standard amounts are as follows:

- If liquidated damages exceed $10,000/day, a daily bonus incentive equal to the daily liquidated damages (with a cap on the number of days) should be offered.
- It is important to have a good estimate of the contract time.
- Calendar day/working day definition should be used.
- The working day definition needs to clearly specify the allowable work hours.
- The beginning and ending of each phase must be clearly defined.
- The maximum bonus amount must be specified.

**Table 3-2: Table of Road User Cost Guidelines**

<table>
<thead>
<tr>
<th>Suggested Road User Requirements</th>
<th>Type of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+B Bidding Strategy</td>
<td>May be used on projects with high volumes that have a significant impact on the local business or create road user cost in excess of $40,000.00. A+B bidding should be used on a very limited basis (CPM required). The maximum number of days that may be bid must be specified.</td>
</tr>
</tbody>
</table>
Incentives Using CALD

**Incentives.** When the decision has been made to use road user cost, districts should include incentives with the disincentive. There may be occasions when the potentials of discovery of unknown utilities during construction make it prudent to include road user cost as disincentives only. When including incentives, a maximum bonus (number of days) is included in the project proposal. Further, only 25% of the calculated road user cost should be used for the rates shown in the plans. Calendar day definitions should also be used for all incentive projects and may be used on road user cost projects without incentives.

**Road user cost application.** The daily rate for road user cost may only be applied to the point of completed (end phase) stated in the plans for each phase or substantial completion for the total project. Substantial completion is defined as occurring when all project work requiring lane or shoulder closures or obstructions is completed, and traffic is following the lane arrangement as shown on the plans for the finished roadway or phase.

**A+B bidding description.** Another strategy for encouraging timely project completion is A+B bidding. A+B bidding involves setting up the contract so that bidders bid the normal bid items (Part A), and also bid the number of working days (Part B). The value of a day is established by the designer based on contract administration costs and road user costs. The objective in A+B bidding is, by having the contractors competitively bid the contract time, to have the cost to the traveling public be accounted for in the bidding process.

**Function of part “B.”** The “B” part of the contract does not result in monthly progress payments to the contractor. It is used only to determine the low bidder. However, to the extent that the contractor completes the project in advance, or in excess of the number of working days bid, the liquidated damages (contract administration costs plus road user costs) used in the calculation of Part “B” becomes the basis for bonus incentives or disincentive.

**A+B bidding use.** A+B bidding should only be used on projects with very high road user cost and where the contractor has a maximum degree of control over the project. For example, all right-of-

---

**Table 3-2: Table of Road User Cost Guidelines**

<table>
<thead>
<tr>
<th>Suggested Road User Requirements</th>
<th>Type of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road User Cost with Incentive</td>
<td>There are new requirements for use of CPM scheduling (1002 page 5 of 5), and Amadeo Saenz’ Accelerated Construction Memo 7-12-04. Special Provisions 008---069 and 008---070 consolidate accelerated construction strategies.</td>
</tr>
<tr>
<td>Road User Cost without Incentive</td>
<td>May want to use road user cost without incentives on projects where the risk of having utility conflicts is high, such as projects in older urban areas.</td>
</tr>
<tr>
<td>Contract Administration Liquidated Damages (CALD) Only</td>
<td>Majority of TxDOT projects.</td>
</tr>
</tbody>
</table>
way is acquired and all utilities are adjusted prior to construction. When specifying A+B bidding, it’s important that nothing impedes the operation beyond the contractor’s control. Special Provisions to Items 1, 2, 3, 8, 9 and a customized Schedule of Liquidated Damages may be required in order to properly set up road user costs or A+B bidding.

Special Provisions to Items 1, 2, 3, 8, 9 and a customized Schedule of Liquidated Damages may be required in order to properly set up road user costs or A+B bidding.

The decision to utilize any of these strategies is within the authority of the district engineer. For assistance in drafting the necessary Special Provisions, contact the appropriate Design Division, Field Section representative. For technical assistance in performing a road user cost analysis, contact the Traffic Operations Division.

Special Specifications

All Special Specifications under which payment is to be made or which are used as reference items must be listed by number and title. Particular attention should be given to insure that any standard items or other Special Specifications referred to in the Special Specifications are indicated as reference items.

Reference Items

Reference items are standard or Special Specifications used to supplement other specifications. They are noted, mentioned, or referenced in the specification itself or in a plan or general note or by provision. Reference items must be referred to in the Specification List to verify that subsidiary work is performed in accordance with them. Special Specifications used as reference items will be listed under the Special Specifications so a copy of the Special Specification will be included in the proposal. In order for a non-pay item to be included in the executed contract, it must be shown as a reference to one of the items listed.

Specification List Creation

The DCIS Specification List cannot be prepared until the DCIS estimate (P4) has been input (see P4 in Chapter 4, Section 2). Accordingly, the Specification List should be the last part of the PS&E to allow the designer the opportunity to incorporate all changes to the estimate into the Specification List. Each district is responsible for the creation of the Specification List on DCIS.

The "C3" screen in DCIS is used to create the Specification List. To prepare the Specification List on DCIS, the project identification screen (P1) and the project estimate screen (P4) must be complete. To reach the (C3) screen, sign on to DCIS and on the menu screen, enter the tag of C3, enter the contract CSJ, and then press the ENTER key. For more information on the C3 screen see DCIS User Manual Chapter 4, Section 3. The next subsections give procedure and guidelines for:
Chapter 3 — Specifications

Section 3 — Specification List

- Specification list preparation
- Specification list editing
- Specification list printing

**Specification list preparation.** The Specification List should be the last part of the PS&E to be prepared to verify that any last minute changes were incorporated into the Specification List. The items contained in the plans, estimate, and General Notes must be shown on the Specification List.

To prepare the Specification List, the project identification (P1) screen and the project estimate (P4) screen on DCIS must be complete. Refer to Chapter 4, Section 3 in the *DCIS User Manual*. The SPEC BOOK YEAR field on the P1 screen must have “95” keyed in to create a Specification List using the 1995 specifications or have “04” keyed in to create a Specification List using the 2004 specifications. Each district is responsible for the creation of the Specification List records in DCIS. The Specification List becomes part of the bidding proposal so that each Standard Specification Item, Special Provision, and/or Special Specification proposed for the project(s) is listed and identified in the contract. Table 3-3 details steps to create a Specification List on DCIS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sign on to DCIS. The screen shown in Figure 3-1 will appear.</td>
</tr>
<tr>
<td>2</td>
<td>Key in “C3” for the BUILD SPECIFICATIONS LIST and enter the contract or controlling CSJ. Press ENTER. The screen shown in Figure 3-2 will appear.</td>
</tr>
<tr>
<td>3</td>
<td>On the SPECIFICATION LIST BUILD MENU screen, enter “A” in the PROGRAM OPTION field and press ENTER.</td>
</tr>
<tr>
<td>4</td>
<td>Press the F10 key to build and save the Standard Specifications.</td>
</tr>
<tr>
<td>5</td>
<td>Press the F2 key to return to the SPECIFICATION LIST BUILD MENU screen.</td>
</tr>
<tr>
<td>6</td>
<td>On the SPECIFICATION LIST BUILD MENU screen, enter “B” in the PROGRAM OPTION field and press ENTER.</td>
</tr>
<tr>
<td>7</td>
<td>Press the F10 key to build and save the Special Specifications.</td>
</tr>
<tr>
<td>8</td>
<td>Press the F2 key to return to the SPECIFICATION LIST BUILD MENU screen.</td>
</tr>
<tr>
<td>9</td>
<td>On the SPECIFICATION LIST BUILD MENU screen, enter “C” in the PROGRAM OPTION field and press ENTER.</td>
</tr>
<tr>
<td>10</td>
<td>Press the F10 key to build and save the Special Provisions.</td>
</tr>
<tr>
<td>11</td>
<td>Press the F2 key to return to the SPECIFICATION LIST BUILD MENU screen.</td>
</tr>
<tr>
<td>12</td>
<td>On the SPECIFICATION LIST BUILD MENU screen, enter “D” in the PROGRAM OPTION field and press ENTER.</td>
</tr>
<tr>
<td>13</td>
<td>Press the F10 key to build and save the 000’s provisions.</td>
</tr>
</tbody>
</table>
Table 3-3: Specification List Creation Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Press the F2 key to return to the SPECIFICATION LIST BUILD MENU screen.</td>
</tr>
<tr>
<td>15</td>
<td>On the SPECIFICATION LIST BUILD MENU screen, enter “E” in the PROGRAM OPTION field and press ENTER. Figure 3-3 shows the system response.</td>
</tr>
<tr>
<td>16</td>
<td>Make the necessary changes and press the F3 key then the F10 key to update the information.</td>
</tr>
<tr>
<td>17</td>
<td>Press the F12 key to exit the program and return to the DCIS menu screen.</td>
</tr>
</tbody>
</table>

Table 3-3: Specification List Creation Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DCIS MENU</td>
</tr>
<tr>
<td></td>
<td>SELECT DESIRED SCREEN AND ENTER REQUIRED INFORMATION — ( ___ )</td>
</tr>
<tr>
<td></td>
<td>ADD/UPDATE PROJECT SCREENS</td>
</tr>
<tr>
<td>(P01) PROJECT IDENTIFICATION</td>
<td>PF1</td>
</tr>
<tr>
<td>(P02) FINANCE SCREEN</td>
<td>PF2</td>
</tr>
<tr>
<td>(P03) PROJECT EVALUATION</td>
<td>PF3</td>
</tr>
<tr>
<td>(P04) PROJECT ESTIMATE</td>
<td>PF4</td>
</tr>
<tr>
<td>(P05) CONTRACT SUMMARY</td>
<td>PF5</td>
</tr>
<tr>
<td>(P06) UTP UPDATE SCREEN</td>
<td>PF6</td>
</tr>
<tr>
<td>(P07) STIP UPDATE SCREEN</td>
<td>PF7</td>
</tr>
<tr>
<td>(P08) COST ESTIMATE HIST SCREEN</td>
<td>PF8</td>
</tr>
<tr>
<td>(P09) TOTAL PROJ COST (BY CORRIDOR)</td>
<td>PF9</td>
</tr>
<tr>
<td>(P10) TOTAL PROJ COST (BY CSJ)</td>
<td>PF10</td>
</tr>
<tr>
<td>(P11) PE COST</td>
<td>PF11</td>
</tr>
<tr>
<td>(XX) EXIT DCIS MENU</td>
<td>(S02) REVIEWING ENGINEER UPDATE</td>
</tr>
<tr>
<td></td>
<td>(S03) SEALING AND DATING INQUIRY</td>
</tr>
</tbody>
</table>

NOTE: PF12 KEY EXITS WITHOUT UPDATING IN ALL FUNCTIONS.

Figure 3-3. DCIS Menu Screen

**Specification list editing.** To edit an existing Specification List, sign on to DCIS and enter “C3” for the BUILD SPECIFICATIONS LIST and enter the contract or controlling CSJ. The steps shown in Table 3-4 explain how to edit the Specification List at the SPECIFICATION LIST BUILD MENU screen.
**Chapter 3 — Specifications**

**Section 3 — Specification List**

**Figure 3-2. DCIS Specification List Build Menu Screen**

<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
</tr>
</thead>
</table>
| 1    | On the SPECIFICATION LIST BUILD MENU screen, enter “A” in the PROGRAM OPTION field and press ENTER to edit Standard Specifications.  
**NOTE:** (NOTE: Only reference items can be changed on this screen. To add or delete a bid item, edit the estimate on the project estimate (P4) screen.) |
| 2    | Enter a “C” in the CHG IND field, then tab to the reference item to be deleted or to a blank field to enter a new reference number. Press the ENTER key after all changes are made. Press the F10 key to update the Standard Specifications. |
| 3    | Press the F2 key to return to the SPECIFICATION LIST BUILD MENU screen. |
| 4    | On the SPECIFICATION LIST BUILD MENU screen, enter “B” in the PROGRAM OPTION field and press ENTER to edit Special Specifications. The highlighted items in the bid item column are Special Specifications that were listed under the standard or Standard Specification items as reference items, or as bid items on the estimate, so that they can be included in the proposal. To edit these highlighted items, change the standard or Standard Specification items to which they are referenced, or the item on the estimate.  
**NOTE:** (Only reference items can be changed on this screen. To add or delete a bid item, edit the estimate on the project estimate (P4) screen.) |
| 5    | Enter a “C” in the CHG IND field, then tab to the reference item to be deleted or to a blank field to enter a new reference number. Press ENTER after all changes are made. Press the F10 key to update the Special Specifications. |
Table 3-4: Specification List Editing Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Press the F2 key to return to the SPECIFICATION LIST BUILD MENU screen.</td>
</tr>
<tr>
<td>7</td>
<td>On the SPECIFICATION LIST BUILD MENU screen, enter “C” in the PROGRAM OPTION field and press ENTER to edit Special Provisions. The highlighted items can be changed or deleted.</td>
</tr>
</tbody>
</table>
| 8    | To change the Special Provision number, enter a “C” in the CHG IND field, then tab to the Special Provision number to be changed or deleted, or tab to a blank field to enter a new number. Press ENTER after all changes are made. Special Provisions that affect bid items need to be updated through the engineer’s estimate.  
   **NOTE:** (Entering “C” in the CHG IND field, allows changing only one line at a time.) |
| 9    | To delete all optional Special Provisions to an item, enter a “D” in CHG IND field. Press ENTER. |
| 10   | To add a Special Provision, enter an “A” in the CHG IND field and press ENTER. Then enter the item number and Special Provision number to be added, and press ENTER. |
| 11   | After all changes have been made to the Special Provisions, press the F10 key to update and save the Special Provisions. |
| 12   | Press the F2 key to return to the SPECIFICATION LIST BUILD MENU screen. |
| 13   | On the SPECIFICATION LIST BUILD MENU screen, enter “D” in the PROGRAM OPTION field and press ENTER to edit 000’s provisions. |
| 14   | To change the 000’s provisions, enter a “C” in the CHG IND field and make the necessary changes. Press ENTER. |
| 15   | To delete 000’s provisions, enter a “D” in the CHG IND field. Then press ENTER. |
| 16   | To add a 000’s provisions, enter an “A” in the CHG IND field and press ENTER. Then enter the 000’s provisions title and number to be added, and press ENTER. |
| 17   | After all changes have been made to the 000’s provisions, press the F10 key to update the changes. |
| 18   | Press the F12 key to exit the program and return to the DCIS menu. |

Contact your Field Section reviewer in the Design Division to delete the Specification List.
Figure 3-3. DCIS Specification List Build Menu - Program Option E Screen

**Specification list printing.** Once all the information for the Specification List on DCIS is entered, print a copy of the Specification List. Table 3-5 provides useful information for printing the Specification List.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sign on to your ROSCOE account.</td>
</tr>
<tr>
<td>2</td>
<td>Type “RJEJCL 10 2” and press ENTER (see Figure 3-4 for system response).</td>
</tr>
<tr>
<td>3</td>
<td>Key in necessary JOB CARD INFORMATION. (Your AA should be able to answer any questions about this screen.) Press ENTER (see Figure 3-5 for system response).</td>
</tr>
<tr>
<td>4</td>
<td>Key in “19” for Automatic Specifications List and press ENTER (see Figure 3-6 for system response).</td>
</tr>
<tr>
<td>5</td>
<td>Key in the contract or controlling CSJ and press ENTER (see Figure 3-7 for system response).</td>
</tr>
<tr>
<td>6</td>
<td>Key in “X” by Submit the job using JSUB. Press ENTER twice.</td>
</tr>
</tbody>
</table>
Figure 3-4. ROSCOE Job Card Information Screen

P1002 DCIS Reports DCIS.REPORTS
Select the RPT desired.

1 - 414426 Work Program Submission Report
2 - 414433A Proposal Insert Report (Via DOTS)
3 - 414433 Proposal Insert Report
4 - 414475 Project List Reports
5 - 414475 Project List Reports
6 - 414475 Project List Reports
7 - 414475 Project List Reports
8 - 414475 Project List Reports
9 - 414475 Project List Reports
10 - 414475 Project List Reports
11 - 414475 Project List Reports
12 - 414475 Project List Reports
13 - 414475 Project List Reports
14 - 414475 Project List Reports
15 - 414475 Project List Reports
16 - 414475 Project List Reports
17 - 414475 Project List Reports
18 - 414475 Project List Reports
19 - 414475 Project List Reports
20 - 414475 Project List Reports

Depress the ENTER key to continue ANY PF key to abort

Figure 3-5. ROSCOE DCIS Reports Menu Screen
Chapter 3 — Specifications
Section 3 — Specification List

Figure 3-6. ROSCOE Specification List Report Screen

Figure 3-7. ROSCOE RJEJCL Submission Screen
Detailed instructions on building the Specification List may be found in the *DCIS User Manual*, Chapter 4. Detailed instructions on printing the Specification List may be found in Chapter 5, under Report Program Selections in the *DCIS User Manual*.

**Specification List Review**

After completing the Specification List, a detailed examination should be performed to verify that all necessary items have been included.

- In addition to the items listed in the estimate, Items 1 through 9, Mobilization, Barricades, Signs, and Traffic Handling, and Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control, must always be included.

- If a field laboratory or field office is desired, Facilities for Field Office and Laboratory, must also appear on the Specification List along with a note in the General Notes specifying the type of laboratory or field office required.

A check of reference items should be made.

Reference items are included in the Specification List to inform the contractor that other subsidiary items of work is performed in compliance to the referenced item. For all projects, go to the Construction Division’s Internet site at [http://www.dot.state.tx.us/business/specifications.htm](http://www.dot.state.tx.us/business/specifications.htm) for a checklist of 95 specs (metric units) and for 04 specs (English units). If these reference items are the result of a reference in the Standard Specifications, no additional note needs to be added to the PS&E. If however, the reference item is specified by the designer and not specified in the appropriate specification, it should be the result of a note in the General Notes or the plans.

- The appropriate Special Provisions should be included.


- The automatic Specification List system will take care of the majority of your required Specification List items.

Your primary task will be to add new specifications and provisions, and to remove items that may not apply to your particular project. Refer to the *DCIS User Manual*, Chapter 4, Section 3, for details on the creation and modification of Specification Lists. The CST Construction Section issues updated checklists which should be used immediately before submission of PS&E to Austin.
The following checklist provides some additional information:

- Make sure that all pay items in the estimate are included on the Specification List. If not, update the Specification List.

- Check listed reference items. All reference items must either be mentioned within the specification or provision or in the plans or General Notes.


- If any new Special Provisions or Special Specifications are required, make sure the Specification has been created in Microsoft Word using the correct template. (See the Construction Division’s Internet site at [http://www.dot.state.tx.us/business/specifications.htm](http://www.dot.state.tx.us/business/specifications.htm)). For all projects, obtain provision number from the Construction Division prior to submission and add to the Specification List.

- Check provision titles (as listed on the spec list) closely to verify they match the provision titles (as shown on the current listing issued by the CST Construction Section) exactly. Also be sure to check quotation marks and the number of dashes. The format must be either (XXX--XXX), (XXX--XXXX), and (XXX--XXX). These errors can cause the automated proposal assembly system to create an incomplete proposal.

- Make sure that the first provision listed is either FHWA Form 1273 for Federal-Aid projects, or State Labor Provisions for state projects. Wage Rates is the second provision listed.

- Make sure the item “Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control” is on all Specification Lists.

- Make sure all referenced Special Specifications are listed under the Special Specification section of the Specification List.

- If a railroad agreement is involved, make sure all applicable Special Provisions to Item 7 and the Addendum I are listed. Check with Railroad Division to verify requirements for the particular railroad company and project locations.

- For signing, illumination, and signal projects, make sure that the proper Special Provision has been included to allow the contractor lead time to accumulate materials.

- If working day definition is to be modified, check that the proper Special Provision to Item 1 has been included on the Specification List.

- Make sure the dates and other information included on all 000 Special Provisions regarding right-of-way acquisition, utility adjustments, relocation assistance, and/or right-of-way
encroachments match the information included on the corresponding certifications and are current.

☐ For projects with an engineer’s estimate of less than $300,000, check to make sure that the required Special Provision to Item 2 has been included which waives pre-qualification of bidders (unless otherwise approved by the Construction Division).

☐ If changes have been made to the Specification List as a result of this checklist, print a new copy and verify that changes were updated in DCIS and appear on the new Specification List.

☐ For projects that require accelerated construction strategies, ensure that the appropriate Special Provision to Item 8 is included in the Specification List.
Chapter 3 — Specifications

Section 5 — General Notes

Overview

The purpose of the General Notes to provide, in one section of the plans, the various supplemental data required by the specifications. This can consist of information such as base material requirements, gradation requirements, density requirements, and surface treatment data. The General Notes sometimes includes the basis of estimate. The basis of estimate is necessary for plans preparation and review, for basis of bid preparation, and for control of construction. It should show the basis for estimating each of the pay quantities of the contract, which cannot be directly measured from the plans. These include such items as sprinkling, rolling, blading, lime, fertilizer, asphalt, aggregate, etc., and should include compaction factors and unit weight for flexible base and embankment items when this information is needed for estimating purposes. Sometimes these items are subsidiary and should be indicated as such.

The sheets are also intended for general design notes such as variations in slopes, superelevation of curves, concrete surface finish, paint price list, protection system for structures, and type of bedding for concrete pipe. (The type of bedding for concrete pipe should be shown in the Culvert Summary where different structures require different bedding). This use of General Notes has successfully provided for the recording of such data as closed season dates for the application of asphaltic materials and minor modification of gradation requirements which are available in acceptable usage. General Notes are included in bidding proposals for ready reference by contractors, materials suppliers, etc.

The rest of this section discusses:

- Key points regarding General Notes
- Specification modifications
- Creating General Notes.

Key Points Regarding General Notes

- General Notes must be set up in the Microsoft Word "General Notes" template prior to the submission of the PS&E to the Austin divisions.

- The use of notes furnishing quantities that are subject to change because of sequence of construction operations, such as designating portions of unclassified road excavation as rock excavation or foundation course, has resulted in confusion in interpretation and in some cases litigation in which the department has been successfully contested.

Where quantities for subsidiary items are available and are accurate, they should be shown but should be labeled for the contractor’s information only.
All proposed plans notes should be worded so that they are clear, concise and can have only one meaning.

**Specification Modifications**

Modification of Specifications by General Note is **not** allowed. General Notes are to be used to give information when allowed by the specification by the use of terms such as “as shown on the plans,” “as directed by the engineer,” or others. Or, they may be used to supplement information by the specification such as the closed season an asphaltic materials and curing required for based materials. In no case are General Notes to be used to change, revise or modify the requirements of a specification, Special Specification, or Special Provision. Special Provisions are necessary for revisions to specifications or Special Specifications. All notes should be referred to the specification to which they apply.

Special Provisions take precedence over the General Notes, in case of a conflict, in accordance with Article 5.4 of the Standard Specifications, which is available at this address: [http://www.dot.state.tx.us/business/specifications.htm](http://www.dot.state.tx.us/business/specifications.htm).

The General Notes should not be used to reiterate that which is already covered in the Standard Specification, Special Provision and/or Special Specification. The use of these sheets should be minimized.

Each of the Standard Specifications, Special Provisions and Special Specifications used in a project as a direct pay item or reference item must be examined carefully. Those specifications that require “as shown on the plans” information **must** be completed by plan notes in the General Notes sheets. There are some instances where such terms are in the specifications to allow flexibility. But, there are also those that must be shown in the General Notes in order to have the complete information. This may consist of material specifications, design criteria, gradation requirements, density requirements and surface treatment data.

In cases of disagreement, figured dimensions shall govern over scaled dimensions, plans shall govern over standard and Special Specifications, and Special Provisions shall govern over both standard and Special Specifications and plans. This is in accordance with Article 5.4 of the 2004 and 1995 Standard Specifications Books. See this address: [http://www.dot.state.tx.us/business/specifications.htm](http://www.dot.state.tx.us/business/specifications.htm).

**Creating General Notes**

Section 6 — General Notes Checklist

☐ Make sure that all notes required to supplement the specifications, provisions, and standards have been included. Notes should not conflict with the plans or specifications.

☐ General Notes should only be used to supplement the standard items, Special Provisions, Special Specifications, and standards and are usually mentioned in the specifications and standards. General Notes cannot be used to modify measurement and payment articles. Changes to specifications must be done by submittal of Special Provisions or Special Specifications.

☐ Check the notes for clarity, grammatical errors, and/or misspellings.

☐ Make sure all items appearing in the General Notes are included on the Specification List.

☐ Make sure that any material or construction methods notes specified are provided for by the specification and do not require Special Provisions.

☐ Make sure the descriptions of items in the Basis of Estimate agree with the specification.

☐ Make sure all modified standards are listed in the notes.

☐ If Item 504 has been included on the Specification List, make sure that the type of structure required has been specified by note.

☐ Check notes specifying minimum aggregate class for surface aggregate.

☐ When manufacturer’s names are listed as examples, always list at least two names plus the words “Or Equivalent.”

☐ Any proprietary or sole source items included in the notes or in the specifications must be justified. Prepare and send a letter of public interest to the responsible Austin division.

☐ Make sure that all computer hardware and software referenced in the notes or specifications are in compliance with state law and TxDOT/FHWA policies.

☐ If state-furnished equipment or materials are specified by note, a Public Interest Statement must be prepared and submitted to the responsible Austin division.

☐ Check to make sure that there are no General Notes included which establish contractor qualifications.

☐ Check to make sure that there are no General Notes which imply legal responsibilities of the contractor regarding traffic safety beyond the requirements of the Standard Specifications.
Chapter 4 — Plans Estimate

Contents:

Section 1 — Overview
Section 2 — Preparation of Project Estimate
Section 3 — Quantities
Section 4 — Prices
Section 5 — Funding Program Overruns
Section 6 — Estimate Checklist
Section 1 — Overview

Plans Estimate Description

The plans estimate is a tabulated listing of construction bid items that documents the project's total estimated construction cost. The listing includes the description, unit bid price and quantity of each bid item for the major categories of work. The major categories of work for a project are separated into roadway items, bridge items or items for other categories as defined by the district. Bridges and bridge classified culverts along with all pertaining items, should be separated from roadway items in the estimate.

NOTE: For each bridge and bridge classified culvert breakout, header information should include name of structure, existing and proposed structure identification numbers, clear roadway and overall deck widths, length of structure, and beginning and ending station numbers.

A properly prepared construction estimate will also identify all different types of work that are to be included in the contract. This includes work to be performed by state or other forces, work eligible or ineligible for federal participation, and local government work such as utility work, storm sewer, sidewalk, landscaping, etc., that may be desired to be let in the project. The designer needs to carefully consider all aspects of design requirements, project agreement obligations, and federal requirements in identifying and composing the item of work in a construction contract. It is better to do the job correctly before the letting than to negotiate a dispute or item of work with a contractor unprepared to do the work after signing the contract.
Section 2 — Preparation of Project Estimate

Overview

The preparation of a project estimate is a constantly evolving process that begins when the plan preparation begins and continues throughout the course of the project. The following are procedures for the preparation of a project estimate.

Determine the correct items of work necessary to perform the proposed construction. The units of measurement and method of payment must be established so that the quantities can be calculated in the correct units.

- Unit bid prices must be estimated using all of the current trends and pricing information so that an accurate estimate can be made.
- Alternates to bid items must be studied and used if they are appropriate.
- Special accounts should be established to pay for work done with state maintenance forces or other agencies.

All of the above information must be entered into the Design and Construction Information System (DCIS) in order to be submitted with the PS&E for further processing by the Austin divisions. The next subsections discuss these aspects of project estimate preparation:

- **P1 Screen (DCIS)**
- **P5 Screen (DCIS)**
- **Determination of Bid Items**
- **Computer File Format (P4 Screen/ROSCOE/Estimator® Software)**

P1 Screen (DCIS)

The project identification screen (P1) is the first screen required to set up a control-section-job (CSJ) in DCIS. This screen is established by the district’s TP&D section in the early stages of the project. Prior to beginning the plans estimate input process in DCIS, the designer should verify the following items are correctly shown on the P1 Screen:

- Description of location
- Classification of work
- Length of project
- Specification Book Year.
Once the information has been verified, the user should input a contract CSJ in the CONTRACT CSJ field of the P1 screen. For projects containing more than one CSJ, the designer should obtain the proper CONTRACT CSJ from the district’s TP&D section. Refer to DCIS User Manual for details regarding the P1 screen information (see DCIS User Manual, Chapter 2, Section 1).

P5 Screen (DCIS)

The contract summary screen (P5) is created when the nine digit CONTRACT CSJ field is entered on the P1 screen. When the contract summary screen is created by the district, the ‘EST CODE’ field shows a default of P indicating that only the district can update the estimate screen and the contract summary screen. Once the estimate is complete and the district is ready to submit this project to the Austin division office (Design or Traffic), the district must change this field ‘EST CODE’ to 8. An 8 allows only the Austin division office to update the estimate screen and the contract summary screen. When the ‘EST CODE’ is an 8, the district cannot change the estimate screen or the contract summary screen.

On district review projects, the process is different. The district builds the proposal and releases to the Design Division in order to turn ESTIMATE to an 8. This happens automatically when the proposal is built.

Prior to releasing the estimate to the division, the responsible engineer must seal the project using the DCIS (S1) screen (see DCIS User Manual Chapter 4, Section 4). The information to be input on the contract summary screen (P5) at the district level for release of control to the Austin division office includes:

- Estimate code for release of estimate
- Responsible Area Engineer information
- Number of working days in contract
- Division responsibility for PS&E review
- Use of combined flag for multiple CSJs.

The use of combined flags attached to CSJs in the lower portion of the P5 screen will allow those CSJs to be included in combined estimates for construction and accounting purposes. Refer to DCIS User Manual Chapter 4, Section 2, for more information regarding the P5 screen.

Determination of Bid Items

The work to be performed by the contractor and to be paid for directly is described by what are known as construction bid items. The bid items used must be either standard specifications or Special Specifications. It is important to choose the correct bid item so the work performed by the contractor will achieve the results intended by the designer. The selection of the bid item and the method of measurement and payment is not based only on the actual work called for in the specifi-
cation, but the process should also take into account the nature of the project and its location, the experience and resources of the local contractors likely to bid on the project, and area engineer’s preferences. These are the different aspects of a project estimate:

- **Standard Bid Items**
- **Alternate Bid Items**
- **Optional Bid Items**
- **Descriptive Code Numbers**
- **Requesting New Descriptive Codes**

### Standard Bid Items

Each bid item is assigned a number that represents a certain category of work to be performed by the contractor. A description of the work to be accomplished under a bid item is available in the Texas Department of Transportation’s (TxDOT) *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* (otherwise known as the Spec Book) for standard specification items. In order to achieve the results intended, the specification for each bid item should be read carefully before selecting the appropriate bid item. Minor changes and clarifications to the specifications should be noted and placed in the General Notes. Major changes to a specification requires a Special Provision be submitted to the department’s Specification Committee for review and approval.

### Alternate Bid Items

An alternate is a bid item that may be substituted for the primary base bid item of work. For example, in some instances the bid item Limestone Rock Asphalt Pavement may be used as an alternate to the bid item Hot Mix Asphaltic Concrete Pavement. Having more than one choice gives the prospective bidders more opportunities to streamline their bids and affords the state with a more competitive bid. It is the designer’s discretion to consider alternate work items and to include such items in the plans estimate when practical.

The designer must make sure that the primary bid item and the alternate are equivalent in quality and performance and that one does not have an inherent advantage over the other. Alternates are shown in the project estimate, and the total estimated construction cost must be the same for the primary bid item and its alternate. Furthermore, if accompanying items (such as structural excavation) are affected, they must also appear in the alternate with the adjusted quantity.

### Optional Bid Items

Optional bid items are similar to alternates, in that they allow prospective bidders the opportunity to bid an item that they are more familiar with. As an example, if Retained Earth Walls and Double-
wall Retaining Walls are included as alternatives, the contractor must decide what item he will use and bid that item at letting. With options, the contractor can bid Retaining Wall and does not have to decide which type of retaining wall to use until he is ready to do the work. Again, the designer makes the decision of whether or not to include options in the plans estimate.

Descriptive Code Numbers

The next paragraphs cover these descriptive code topics:

- Descriptive code use
- Descriptive code example
- Bid item and descriptive code listings

Descriptive code use. Each bid item number is accompanied by a descriptive code which is a four-digit number representing different ways to bid an item whether it be different units of measurement, different sizes of the item, different types of the item, etc. It is important that the correct descriptive code be selected because it becomes a part of the Estimate and Quantity (E&Q) sheet in the project plans and bid inserts in the proposal. Contractors use the bid inserts to prepare their bids, thus an erroneously selected descriptive code can result in costly change orders and negotiations with the contractor.

Descriptive code example. Consider the following example using the 2004 Specification Items 247-2001 and 247-2061. Item 247 designates Flexible Base. The descriptive codes are 2001 and 2061. Both descriptive codes call for identical material to be delivered to the project site; however, the methods of measurement and payment are different for each item. Item 247-2001, Flexible Base (Complete in Place) (Type A Grade 2 Class 1), requires payment for the base by the loose cubic yards in vehicles delivered to the job site as specified by Class 1 Measurement. Item 247-2061, Flexible Base (Complete in Place) (Type A Grade 1 Fin 6”), requires payment by the ton of dry mass and requires that the contractor determine the weight of each load by the use of truck scales. It further implies the need for ticket writers and/or certified public weighers to verify that the state is receiving the appropriate quantity of the material. Thus, it is important that the designer evaluate each situation before selecting a certain descriptive code, because one item may require more personnel and paperwork or place unnecessary restrictions on the contractor that will result in higher bid prices.

Bid item and descriptive code listings. A listing of current bid items and descriptive codes can be obtained through an automated mainframe procedure or the internet. The instructions for both methods are shown Table 4-1 and Table 4-2.

Table 4-1: Mainframe Procedure to Obtain Listings

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sign onto a regional ROSCOE account.</td>
</tr>
</tbody>
</table>
Chapter 4 — Plans Estimate

Section 2 — Preparation of Project Estimate

The user is cautioned that descriptive code listings are very lengthy.

 requesting New Descriptive Codes

If there are no suitable descriptive codes for existing bid items, the designer can submit a code request to the CST - Specifications Section at CST_RDWY_SPECS. If a new Special Specification is needed, the designer should send the Form 1814 http://crossroads/org/des/tools/forms/index.asp along with the supporting documentation to the CST - Specification Section. Refer to Chapter 3, Section 2, of this manual for more information regarding the specification/provision approval process.

In either case, the designer should submit documentation for new codes to the CST - Specification Section as early as possible in the PS&E development. This will allow the designer to create a complete estimate in DCIS with minimal delay.

Computer File Format (P4 Screen/ROSCOE/Estimator® Software)

The development of a project estimate is a constantly evolving process that begins when the plan preparation begins and continues throughout the course of the project. When the district user has enough information, the district should create the CSJ estimate in DCIS. Some important items need to be determined in order for a project estimate to be prepared in DCIS. The items include the following:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log onto the TxDOT Homepage. (<a href="http://www.txdot.gov/">http://www.txdot.gov/</a>)</td>
</tr>
<tr>
<td>2</td>
<td>Click on Business with TxDOT.</td>
</tr>
<tr>
<td>3</td>
<td>Click on Specifications. (<a href="http://www.dot.state.tx.us/business/specifications.htm">http://www.dot.state.tx.us/business/specifications.htm</a>)</td>
</tr>
<tr>
<td>4</td>
<td>Click on the applicable DESCRIPTIVE CODES listing (1995, 1993 or 2003).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Type RJECL 10 2 then &lt;enter&gt;.</td>
</tr>
<tr>
<td>3</td>
<td>Hit &lt;enter&gt; again at the Job Card Information screen.</td>
</tr>
<tr>
<td>4</td>
<td>Select option 6 from the menu then &lt;enter&gt;.</td>
</tr>
<tr>
<td>5</td>
<td>Follow the instructions shown on the screen then &lt;enter&gt;.</td>
</tr>
<tr>
<td>6</td>
<td>Place an X next to Submit the job using JSUB then &lt;enter&gt;.</td>
</tr>
<tr>
<td>7</td>
<td>Retrieve and print the output through the normal JOUT process.</td>
</tr>
</tbody>
</table>

The user is cautioned that descriptive code listings are very lengthy.

Table 4-2: Internet Procedure to Obtain Listings

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Log onto the TxDOT Homepage. (<a href="http://www.txdot.gov/">http://www.txdot.gov/</a>)</td>
</tr>
<tr>
<td>2</td>
<td>Click on Business with TxDOT.</td>
</tr>
<tr>
<td>3</td>
<td>Click on Specifications. (<a href="http://www.dot.state.tx.us/business/specifications.htm">http://www.dot.state.tx.us/business/specifications.htm</a>)</td>
</tr>
<tr>
<td>4</td>
<td>Click on the applicable DESCRIPTIVE CODES listing (1995, 1993 or 2003).</td>
</tr>
</tbody>
</table>
Chapter 4 — Plans Estimate

Section 2 — Preparation of Project Estimate

- Bid items and descriptive codes
- Quantities
- Unit bid prices
- Alternates and/or options to base bid items
- Special accounts
- In addition to the above items the designer also needs to determine the appropriate categories of work and/or any permanent structure numbers.

Plans estimates are divided into separate sections. Normally these sections are roadway, bridge, or other categories of work as defined by the district. Items of work that are to be paid for by other entities may be placed in a separate category. Each estimate must contain at least one category of work. The next subsections discuss:

- Permanent structure number
- P4 screen (DCIS)
- ROSCOE batch program
- Estimator® Software.

Permanent Structure Number

Every structure throughout the nation is assigned a National Bridge Inventory Number. This is a 15-digit number with the last three digits being the Permanent Structure Number (PSN). The National Bridge Inventory Number is composed as follows for on-system bridges:

- The first two digits are the district number.
- The next three digits are the county number.
- The next digit is always 0.
- The next four digits are the control number.
- The next two digits are the section number.
- The last three digits are the PSN.
- For off-system bridges the control number and section number is replaced by a six-digit alphanumeric route number.

The PSN is assigned by the Bridge Division. Each bridge classification structure is assigned a separate number. This PSN should be reflected in the heading for the bridge category of work in the estimate. The user should contact the Bridge Division Inspection Section to obtain a PSN for all existing or proposed structures containing bid items in the plans estimate.
In order to create an estimate in DCIS on the project estimate screen (P4), the project must be in DCIS as a CSJ with information on the screens for project identification (P1), project finance (P2), project finance - percent, and project evaluation (P3).

On the project identification screen, enter the field Contract CSJ. The project estimate screen (P4) can then be obtained, and the project estimate created in DCIS by entering the estimate information online. An alternate way of creating an estimate in DCIS is to copy from a similar estimate by using the DCIS copy function.

The next subsections cover these aspects of the P4 Screen:

- Data card types
- Creating estimate on DCIS
- Helpful hints
- Online updating of DCIS estimates
- Project estimate printing procedure
- General P4 Screen guidelines

**Data card types.** In all of the above methods, five card types must be used. These five types of data cards are used for adding information to the estimate. Table 4-3 lists the five types and a description of each.

<table>
<thead>
<tr>
<th>Card Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Card Type 2</td>
<td>Work Category</td>
</tr>
<tr>
<td>Card Type 3</td>
<td>Description (Comments)</td>
</tr>
<tr>
<td>Card Type 4</td>
<td>Item-Price-Quantity</td>
</tr>
<tr>
<td>Card Type 5</td>
<td>Description for Special Accounts or Unique Items</td>
</tr>
<tr>
<td>Card Type 9</td>
<td>End of Money (Item-Price-Quantity)</td>
</tr>
</tbody>
</table>

**Card type 2.** The card type 2 is used for entering the different categories of work to be done. One card type 2 must be provided for each different work categories in the estimate. Any number of work category cards can be used within a CSJ. Category of work cards must be used to separate roadway and bridge items of work. At least one card type 2 must be included in each project estimate. Additional definitions of work categories can be defined by the district. A subtotal will automatically be tabulated and listed for each category of work. This tabulation will be printed after the items of work under that category of work.
Card type 3. The card type 3 is used for entering a comment or descriptive information card. It is the primary device for supplying descriptive information and for tailoring the style of the estimate listing to suite the individual user. Use of the card type 3 is optional but often desirable. They can be used anywhere in the estimate, except between a card type 4 that is a special account or unique item and its accompanying card type 5. There are 50 spaces set aside for comments. These spaces may be blank, or they may contain alphanumeric characters. Generally, when the program encounters a type 3 card, the comments are printed on the estimate in the same order as shown in the file.

Card type 4. The card type 4 is used to enter regular bid items, alternate bid items (if any exist), unique items in each category of work, and special account items. This card constitutes the bulk of entries for an estimate. There must be one type 4 card for each item in each work category. These items can be either regular bid items, special account items, or unique items.

Card type 5. The card type 5 is used to describe a special account item or unique item. For both unique and special account items, the card type 5 must be preceded by a card type 4. Each card type 5 is equivalent to one printed line when used with a special account item. These cards are required for all special account items. When using more than one card type 5 consecutively, only the last card type 5 should contain the unit of measurement.

Card type 9. The card type 9 is used to indicate that the estimate is complete. It will automatically update the latest estimated cost and proposal guarantee fields on Contract Summary Screen (P5); therefore, the type 9 card should only be input when the estimate is essentially complete and ready for submission to Austin and Proposal preparation for district review projects.

For any further explanation or examples of uses for these card types, refer to the DCIS User Manual.

Creating estimate on DCIS. Now we are ready to create an estimate on DCIS. We will use the DCIS copy function to create an estimate. This procedure assumes that the project identification (P1) screen, the project finance (P2) screen, and the project evaluation (P3) screen have already been filled out correctly. Refer to the DCIS User Manual for this procedure if the screens have not been created.

1. Sign onto DCIS (see Figure 3-1).
2. Select a CSJ in DCIS that has a project estimate similar to the one to be prepared.
3. Retrieve the project estimate (P4) screen for the selected CSJ to be copied. Press ENTER.
4. Key in the CSJ of the estimate to be prepared over the CSJ field selected on the project estimate (P4) screen. Press ENTER.
5. The user is prompted to press the PF7 key to continue.
6. DCIS will copy the original estimate selected to the CSJ of the new estimate keyed in. All bid items will be copied, except that the quantity fields will contain zero. Retrieve the new estimate, add in the new quantities and, if necessary, change the unit bid prices. Also, new items
can be added and other items can be deleted using an add screen by pressing the PF10 key (see Figure 4-1).

![Figure 4-1. DCIS blank project estimate (P4) screen](image)

**Helpful hints.**

- Use the tab key to move from column to column, left to right.
- For a card type 2, use the bottom line of the line pair only. This card type, as previously stated, is to group and subtotal the bid items in the estimate, such as Roadway and Bridge items.
- For card type 3, use only the bottom line of the line pair.
- The card type 4 can be used for regular bid items, alternate bid items, special account numbers, or unique items.
- For card type 4, use only the top line of the line pair. For unique items and special account items, the card type 5 uses the bottom line of the line pair and must be preceded by a card type 4. These cards are required for all special account items.
- If a regular bid item descriptive code is used elsewhere in the contract or on another CSJ of a combined estimate, the same price must be entered or an error will be shown on the combined estimate report.
- For a project that has a regular bid item with an alternate bid item, the alternate field should consist of a number and an alphabetic character (i.e.-1A, 1B, 2A, etc.) on the same line as the regular bid item.
- For a project that has a special account number, the special account number field, quantity field, and unit price field must be filled in.
For unique items, the user needs to enter an item that does not have an item number or descriptive code, a unique item can be created by typing “000” in the bid item number field and “0000” in the descriptive code field and a card type 5 must be added. Then, enter the quantity and unit price in their respective fields for the card type 4.

When using more than one card type 5 consecutive, only the last card type 5 should contain the unit of measurement in the unit of measurement field. Only ten (10) type 5 cards can be used with a card type 4 for a special account number, and only one (1) card type 5 can be used with a card type 4 for a unique item. The information typed in on the card type 5 should be placed on the bottom line of the line pair.

Mobilization is a lump sum bid item that must be included in all estimates. For contracts that include one project, handle the mobilization bid item like any other bid item. For contracts that combine two or more Federal-Aid projects, prorate this item, rounding to the nearest hundredth of a unit, to each project. For contracts that combine one or more Federal-Aid projects with one or more state projects, prorate this item, rounding to the nearest hundredth of a unit, to each project. For contracts that combine two or more state projects, this item may be prorated to each project or included in the controlling CSJ only (especially if the projects are combined on the C1 screen). In all cases, as with any lump sum bid item, the combined contract total must be exactly 1.

Engineering and contingencies (E&C) is a percentage that is input at the top of the DCIS P4 screen to account for and estimate the cost of construction engineering and unknown contingencies.

This information is updated yearly and is populated automatically in DCIS. Districts can override E&C percentages on the P4 screen. This will allow the obligation of federal funds for these costs. These district administrative indirect cost rate percentages are distributed each year by memorandum to all district engineers.

For a card type 9, use the bottom line of the line pair only. This card should be placed at the end of the project estimate. This card is not added until the estimate is complete in DCIS.

**Online updating of DCIS estimates.** There are three (3) ways of updating data online in DCIS project estimates.

- Changing data through the online DCIS project estimate screen. Key in “C” in the CHG IND (Change Indicator) field and tab to the field that needs to be changed, (i.e. - the line number field, the item number field, the unique description field, etc.). Press ENTER to update the estimate.

- Adding or copying data to the online DCIS project estimate screen. To add one line of data, key in an “A” in the CHG IND field and add any information that is needed in their respective fields. Press ENTER to update the estimate.

To copy one line of data, key in an “A” and the LINE NUMBER and press ENTER to update. Now, all the card data will be added to the new line without deleting the old line. To add more
than one line of data, press the PF10 key to get a blank screen. Once the data is entered, press ENTER to update the estimate.

- Deleting data from the online DCIS project estimate screen. Key in a “D” on the CHG IND field. Press ENTER to update the estimate.

NOTE: Make sure to delete all associated card type 5’s when deleting card type 4’s.

**Project estimate printing procedure.** Once all the information is entered on the online DCIS project estimate screen, print a copy of the project estimate. Table 4-4 provides useful information for printing the estimate.

**Table 4-4: Project Estimate Printing Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sign on to your ROSCOE account.</td>
</tr>
<tr>
<td>2</td>
<td>Type “RJEJCL 10 2” and press ENTER (see Figure 3-4)</td>
</tr>
<tr>
<td>3</td>
<td>Key in necessary JOB CARD INFORMATION. (Your Automation Administrator (AA) should be able to answer any questions about this screen.) Press ENTER (see Figure 3-5).</td>
</tr>
<tr>
<td>4</td>
<td>Key in “2” for Estimate Reports (Eng, Plans, Low Bid, Combined) and press ENTER (see Figure 4-2).</td>
</tr>
<tr>
<td>5</td>
<td>Review the REPORT TYPES key in either “1, 2, 3, etc.” for the DESIRED REPORT TYPE and key in the DESIRED CONTRACT CSJ. If this contract is a combined estimate, key in the controlling CSJ or CCSJ (see Figure 3-7).</td>
</tr>
<tr>
<td>6</td>
<td>Key in “X” by Submit the job using JSUB and your DCIS password. Press ENTER twice.</td>
</tr>
</tbody>
</table>
Chapter 4 — Plans Estimate  
Section 2 — Preparation of Project Estimate

General P4 Screen Guidelines.

- The project estimate screen can be obtained from the DCIS menu screen by inputting P4 and the CSJ. Alternately, the PF4 key can be used to reach the project estimate screen (P4) from the P1 screen for the input CSJ.

- On the first line of the estimate screen, the estimate code field is displayed. The code of P indicates that the estimate is controlled by the district. A code of 8 indicates that the estimate is controlled by the responsible Austin division office.

- Use the tab key to move from left to right along the line pairs on the estimate screen.

- Line numbers must be entered on the estimate screen for every card type used. Number the lines with ample number spacing, so additional lines can be inserted later if necessary. (Suggestion: 10, 20, 30, 40, 50, 60, etc. or 25, 50, 75, 100, 125, 150, etc.)

- A card type 2 is used for entering the different categories of work. A card type 3 is optional and may be used for entering a comment or descriptive information.

- A card type 4 is used for entering the bid item number, quantity, and price. A card type 5 is used for a special account item or a unique item that does not have a bid item number or descriptive code. An item number including the descriptive code must be obtained for all construction bid items.

- A card type 9 is used to indicate the estimate is complete and is entered at the end of the plans estimate. This card causes the estimated cost on the P1 screen to be automatically updated.
Once an estimate is in DCIS, an authorized user can change, add, or delete items. Any user can view an estimate after it is in DCIS. Press the ENTER key to page through an estimate, or use the line number field at the top of the estimate screen.

A printed copy of the estimate can be obtained by using the RJEJCL procedures on ROSCOE. Refer to Chapter 5 of the *DCIS User Manual* for more information.

For additional information and a more detailed discussion, see the *DCIS User Manual*.

**ROSCOE Batch Program**

Some districts use a ROSCOE batch program to create a plans estimate. In this method, the estimate data is input into a specific ROSCOE file format and is then batched over to DCIS. The ROSCOE batch is also used to convert output from the Estimator® software. Users should contact their district staff for more information regarding the batch program method.

**Estimator® Software**

Estimator® is an AASHTO cost estimating program. It is available for preparing estimates on a personal computer. Check with your automation administrator for access to this program, which requires a catalog of bid items and bid prices to do the price calculations. The latest catalogs are posted on the TxDOT Internet Website under “Business: Construction and Maintenance Letting Information: Supplemental Information: Estimator Converter and Catalog” and are named MMYYMET for Metric items and MMYYENG for English items, where MMYY indicates the month and year it was created.

To prepare a construction estimate using Estimator®, follow the procedure outlined in Table 4-5.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Open the latest catalog.</td>
</tr>
<tr>
<td>2</td>
<td>Pick a bid item from the lookup list.</td>
</tr>
<tr>
<td>3</td>
<td>Enter the quantity, and the program’s suggested price will appear.</td>
</tr>
<tr>
<td>4</td>
<td>The program’s prices can be changed using alternate sources, such as bid tabulations (bid tabs) or bid averages.</td>
</tr>
<tr>
<td>5</td>
<td>Next, translate the program’s output for uploading to DCIS.</td>
</tr>
</tbody>
</table>

1. Open the latest catalog.
2. Pick a bid item from the lookup list.
3. Enter the quantity, and the program’s suggested price will appear.
4. The program’s prices can be changed using alternate sources, such as bid tabulations (bid tabs) or bid averages.

**Translate Program’s Output for Uploading to DCIS**

- After exporting the estimate to a CSV file, use a utility program called Converter; Converter lays out the estimate in the ROSCOE card format and saves it in a TXT file editable in any word process. Check the TxDOT website where the Estimator® catalogs are located for the latest version of Converter.
- After converting the estimate layout, use FTP to transfer it to D59.XFER.SHR.your ACID.
- Login to ROSCOE and enter XO.XFER.
- Upload the estimate file to your directory.
- Fetch/attach it to view and edit as needed.
- Run RJEJCL to transfer the estimate to DCIS.

The output from the software is arranged in the required ROSCOE file format. The district is responsible for batching the file to DCIS. Users should contact their district staff for more information regarding the batch program method. For more information about the Estimator® and assistance in using this program, please contact the DES, Geometric Section.
Section 3 — Quantities

Overview

The Quantities for each item of work are provided for in the DCIS estimate, the Quantity Summary Sheets, and the Estimate and Quantity Sheets in the plans. All bid items are included in the E&Q sheets.

Occasionally, it may be desirable to specify work that is not to be paid for directly. Work handled in this manner should be insignificant in the scope of the overall project. These are items which are referred to as subsidiary or incidental. Their use should be minimal. When subsidiary or incidental items of work are specified, it is necessary that the work be explained in sufficient detail, possibly even including referencing specifications, and a quantity should be shown in the plans but marked with the following statement:

“This item will not be paid for directly but shall be considered subsidiary to Item _____. The quantity is shown here for contractors’ information only.”

This is necessary in order for contractors to be able to accurately account for this work in their bids. The next subsections discuss these Quantities topics:

- **Bid Quantity Tolerances (Degree of Accuracy)**
- **Participating/Non-participating Items and Accounts**
- **Special Accounts**

Bid Quantity Tolerances (Degree of Accuracy)

Table 4-6 shows the greatest degree of accuracy that should be shown in the estimate for the various items. Quantities should be shown on the ENGINEER’S ESTIMATE to no greater accuracy than is given below.

Table 4-6: Bid Quantity Tolerances

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ENGLISH</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthwork Items (including Structural Excavation &amp; Backfill)</td>
<td>0.01 STA 0.001 KM</td>
<td>0.01 AC 0.01 HA</td>
</tr>
<tr>
<td></td>
<td>0.01 CY 1 M³</td>
<td>1 SY 1 M²</td>
</tr>
<tr>
<td></td>
<td>1 YH 1 M³H</td>
<td></td>
</tr>
<tr>
<td>Watering and Sprinkling</td>
<td>0.1 MG 0.01 KL</td>
<td></td>
</tr>
<tr>
<td>ITEM</td>
<td>SHOW TO NEAREST</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td><strong>Blading, Rolling &amp; Traffic Control</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 HR 1 HR</td>
<td></td>
</tr>
<tr>
<td><strong>Base and Base Treatment Items</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.01 STA 0.001 KM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 CY 1 M³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 SY 1 M²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 TON 1 MGR</td>
<td></td>
</tr>
<tr>
<td><strong>Asphalts, Oils and Emulsions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 GAL 1 L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.01 TON 0.01 MGR</td>
<td></td>
</tr>
<tr>
<td><strong>Asphaltic Pavements &amp; Surface Treatment Aggregates/Materials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 TON 1 MGR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 CY 1 M³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 SY 1 M²</td>
<td></td>
</tr>
<tr>
<td><strong>Concrete Pavement Items</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(also to include Riprap &amp; Structure Approach Slabs)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 CY 1 M³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 SY 1 M²</td>
<td></td>
</tr>
<tr>
<td><strong>Cleaning, Sealing Joints, Sealed Expansion Joints Preformed Joint Sealers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LF 0.1 M</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.01 LM 0.01 LKM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LB 1 KG</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 GAL 1 L</td>
<td></td>
</tr>
<tr>
<td><strong>Planning, Texturing, Fabric Underseal &amp; Surface Rehab</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 SY 1 M²</td>
<td></td>
</tr>
<tr>
<td><strong>Trench Excavation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LF 0.1 M</td>
<td></td>
</tr>
<tr>
<td><strong>Pilings &amp; Drilled Shafts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LF 0.1 M</td>
<td></td>
</tr>
<tr>
<td><strong>Structural Concrete</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(including Structural Repairs, Concrete Overlay of Structure Decks, Pre-cast Concrete Pipe, Pipe, Culverts &amp; Drains)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1 CY 0.1 M³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1 SY 0.1 M²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 SF --- ---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LF 0.1 M</td>
<td></td>
</tr>
<tr>
<td><strong>Retaining Wall</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 SF 0.1 M²</td>
<td></td>
</tr>
<tr>
<td><strong>Reinforced Concrete Slabs &amp; Traffic Signs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 SF 0.1 M²</td>
<td></td>
</tr>
<tr>
<td><strong>Pre-stressed Concrete Beams</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.01 LF 0.001 M</td>
<td></td>
</tr>
<tr>
<td><strong>Structural Steel (including Armor Joint &amp; Sign Support)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(nearest 10 lb or 100 lb if 1% accuracy is maintained)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LB 1 KG</td>
<td></td>
</tr>
<tr>
<td><strong>Bridge Railing (including Removal)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1 LF 0.01 M</td>
<td></td>
</tr>
<tr>
<td><strong>Jacking, Boring or Tunneling</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LF 0.1 M</td>
<td></td>
</tr>
<tr>
<td><strong>Timber Structures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 MFB 0.01 M³</td>
<td></td>
</tr>
<tr>
<td><strong>Detours</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1 STA 0.01 KM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 SY 1 M²</td>
<td></td>
</tr>
<tr>
<td><strong>Traffic Barrier &amp; Pavement Markings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LF 0.1 M</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 4 — Plans Estimate

Section 3 — Quantities

The next subsections cover:

- Participating/Non-participating Bid Items
- Participating/Non-participating Special Accounts

Participating/Non-participating Bid Items

On Federal-Aid projects, it is often necessary to distinguish the items that are not eligible for federal funds. Historically, examples of items for which the FHWA will not provide reimbursement are replacement concrete, traffic barrier hardware, and maintenance activities such as cleaning of culverts.

Bid items that are non-participatory in federal funds must be grouped together in their own category of work and indicated as such in the category of work heading, e.g., CTB Hardware (Non-Part).

Participating/Non-participating Special Accounts

Similarly, special accounts (see the subsection below) which are not direct bid items but which are used to account for certain project costs (such as railroad flagging, state-furnished traffic signal controllers, off duty patrolman, etc.) may or may not be federally participating.

Those special accounts that are not federally participating must be distinguished from those that are by including (Non-Part) or (Part) as part of heading.

Special Accounts

The next subsections deal with these aspects of special accounts:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SHOW TO NEAREST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb, Gutter, C&amp;G, Sidewalks, Walkways, Driveways, Medians &amp; Islands</td>
<td>1 LF SY 1 M</td>
</tr>
<tr>
<td>Fencing, MBGF, Underdrains, Conduit, Conductors, Cable &amp; Detectors</td>
<td>1 LF 1 M</td>
</tr>
<tr>
<td>Mobilization*</td>
<td>1.00 LS</td>
</tr>
</tbody>
</table>

* All Items measured by the Month, Each or Lump Sum should be in whole units. If mobilization is broken out into several CSJs for any one contract, the resulting quantities should be carried to the hundredth place.

Table 4-6: Bid Quantity Tolerances
Description of Special Accounts

Special accounts are accounts that are set up to cover costs of various items of work or the supply of materials that are not provided for in the estimate as ordinary bid items. Other special accounts may cover the participation in the contract by other entities for work not funded by TxDOT. Some examples of special accounts are State Force Account Work, Material Furnished by the State, Railroad Force Account, and Contractor Force Account. The project estimate must include the special account number, a brief description of the item of work, and an estimated cost. The unit of a special account is usually lump sum, and the price should be determined by consulting with maintenance personnel, from past experience, or the best available information and method depending on the item of the account.

Special Account Classification

Special accounts are classified as either Participating or Non-participating on federally funded projects. Participating (Part) refers to special accounts that the FHWA will participate in the cost of the work and Non-Participating (Non-Part) refers to accounts for which the FHWA will not participate in the cost of the work.

Force Account Work

Force account work in general is either additional work over and above the work described by the standard bid items or work that will be done by work forces other than the contractor. This work may be ordered, performed, and accepted on a Force Account basis. Force Accounts are a type of special account. The next three paragraphs discuss:

- State Force Account Work
- Railroad Force Account Work
- Contractor Force Account Work.

State force account work. State Force Account Work is work that is to be done by state maintenance forces on the project, such as striping and the removal of temporary sediment control fence.
The inclusion of these types of accounts allows the district to charge the costs of the work items to the project and not to their maintenance budget.

**Railroad force account work.** Railroad Force Account Work is work that will be done by a railroad company during the construction of a project. This includes items such as signal relocation, planking work, and flagging at railroad crossings that will be done by railroad personnel.

**Contractor force account work.** Contractor Force Account Work is potential work that might be done by the contractor and which has not been estimated and included as a bid item but might be required on the project. An example is temporary erosion, sediment and water pollution control on a project such as an asphaltic concrete pavement overlay.

**State-Furnished Material**

Material furnished by the state is another type of special account that covers materials used on the project but furnished by the state. An example of materials furnished by the state are traffic signal controllers and traffic paint. Materials furnished by the state usually include those materials that are difficult to obtain on the open market, small quantities and expensive, or what the state prefers to use and have in stock.

**Special Account Codes**

Most projects will require some work to be done by state maintenance forces or other agencies. Therefore, special accounts should be established so the state maintenance forces or other agencies can properly account for their work and charge to the project. Special accounts are identified in the project estimate by special account code numbers, and Table 4-7 is a list of some special accounts and their item number.

**Table 4-7: Special Accounts**

<table>
<thead>
<tr>
<th>Code Number</th>
<th>Special Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>State Force Account Work (Non-part)</td>
</tr>
<tr>
<td>02</td>
<td>Railroad Force Account Work</td>
</tr>
<tr>
<td>06</td>
<td>Material Furnished By State</td>
</tr>
<tr>
<td>08</td>
<td>Contractor Force Account Work</td>
</tr>
<tr>
<td>11</td>
<td>State Force Account Work (Part)</td>
</tr>
<tr>
<td>12</td>
<td>Railroad Force Account Work (Part)</td>
</tr>
<tr>
<td>16</td>
<td>Material Furnished By State (Part)</td>
</tr>
<tr>
<td>18</td>
<td>Contractor Force Account Work (Part)</td>
</tr>
<tr>
<td>22</td>
<td>Contractor Force Account Or Agreed Unit Price</td>
</tr>
</tbody>
</table>
Table 4-7: Special Accounts

<table>
<thead>
<tr>
<th>Code Number</th>
<th>Special Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Contractor Force Account Or Agreed Unit Price (Part)</td>
</tr>
<tr>
<td>27</td>
<td>State Force Account Work</td>
</tr>
<tr>
<td>28</td>
<td>Stockpile Account Number</td>
</tr>
<tr>
<td>29</td>
<td>Participation by City of</td>
</tr>
<tr>
<td>30</td>
<td>Participation by County of</td>
</tr>
</tbody>
</table>

Special Account Customizing

All of these special accounts can be customized for descriptions which vary slightly. In order to customize any of the special account code numbers, first identify which special account most closely fits the need. Then add 50 to the code number.

EXAMPLE: For participation by the city, the code number is 29. Add 50 to this number: 29 + 50 = 79. So the code number to enter on the DCIS estimate (P4 screen) is 79. Then use a card type 3 on the estimate to describe the city (or insert any description needed). For additional information refer to the DCIS User Manual.
Section 4 — Prices

Overview

This section gives guidelines on the following aspects of prices:

- Average bid price access
- Project specific adjustments
- Factors affecting unit bid prices.

Average Bid Price Access

Unit prices are usually determined by locating previously submitted low bid prices or average low bid prices and adjusting them to fit the project being estimated. All projects are different, and the prices bid for one project can vary substantially from prices bid on others. Previously submitted bid prices or average low bid prices should only be used as a starting point from which a more accurate unit bid price can be derived with good engineering judgment.

The next subsections cover these areas when accessing average bid prices:

- Bid tabs
- Average low bid unit prices.

Bid Tabs

Each month during and after letting, the Construction Division inputs all of the bids received for every item on every project into the DCIS database. A tabulation of bids, or bid tabs, is generated and verified for each bidder on every project. This information is made available to the various divisions and districts on a Data on Terminal (DOTS) File once the bids have been verified by the Construction Division. An estimator could use a tabulation of bids report for a recent contract similar in scope and location to the project being estimated in conjunction with the average low bid unit price reports to derive unit prices.

Average Low Bid Unit Prices

After the Commission awards the low bids, the Construction Division accumulates the letting’s low bids and the previous 12 months’ low bids for each district and inputs this information on the database. This information is available on TxDOT’s Internet site at [http://www.dot.state.tx.us/business/prepostletting.htm](http://www.dot.state.tx.us/business/prepostletting.htm). Statewide averages and averages by TxDOT district can be found under the Business section of the TxDOT Internet at [http://www.dot.state.tx.us/business/Avgd.Htm](http://www.dot.state.tx.us/business/Avgd.Htm).
Project Specific Adjustments

When making project specific adjustments, consider the following factors:

- Unit bid determination
- Unbalanced bidding
- Project variations
- Importance of good estimating
- Factors affecting unit bid prices.

Unit Bid Determination

The determination of unit bid prices is based on experience and past trends. The designers should gather all the statistical data and information available and then study it with their knowledge and experience to establish the most accurate estimated unit bid price.

Unbalanced Bidding

Since the TxDOT low bid prices are actual contract bid prices, the estimator must realize that if a contractor has unbalanced a bid, only the estimator’s experience and judgment can identify if the prices truly reflect the conventional bid prices for the items. Unbalanced bidding is the somewhat common practice of a contractor setting higher-than-conventional bid prices on items which will yield large payouts early in the construction process. The front-end loading represented by the higher bid prices are then compensated for by the contractor with lower-than-conventional bid prices for items to be accomplished later in the project. It will be to the estimator’s advantage to keep a running record of the unit bid prices received on projects by area office.

Project Variations

The estimator can use the average low bid unit prices in arriving at a base price, but should keep in mind that every project will differ from all other projects in some way. These variations must be identified by the estimator and considered during the price selection process.

Importance of Good Estimating

As will be noted later, the consequences of poor estimating can be substantial. No one can predict exactly how the low bidder will bid, but by using effective estimating aids and good judgment, reasonably accurate unit prices can be determined. Each project requires individual consideration, and the estimating aids provide a starting point from which unit prices suitable for a project can be derived.
Factors Affecting Unit Bid Prices

Consider the following rules of thumb when making adjustments to unit bid prices:

**Project size.** Projects with large quantities will tend to have lower unit bid prices than a project with small quantities.

**Project location.** The location of a project, such as a rural project with long material hauls and no commercial asphaltic concrete hot-mix plants or ready-mix concrete plants available, most likely will have higher unit bid prices than an urban project where these facilities are readily available.

**Traffic conditions.** Traffic conditions quite frequently have a significant effect on bid prices. Due to difficulties, dangers and expenses caused by traffic, contractors will typically raise prices to reflect these conditions. Projects with complex sequences of work and high traffic volumes will command higher prices than uncomplicated projects with low traffic volumes.

**Construction season.** The time of year that a project is to be let for contract and the estimated time required for completion may be significant in price selection. Factors, such as if the project will have to be suspended or delayed by inclement weather, will have an effect on bid prices.

**Accessibility.** Accessibility to the work area and the existing terrain are important factors. For example, construction on an existing interchange may require long out of direction movements by men and equipment. If material hauling must be accomplished under these conditions, it can be unusually expensive.

The type of terrain where the project is located may have a bearing on bid prices. Work that is normally easy to accomplish on level terrain or gentle slopes may be almost impossible on steep slopes.

**Restrictive conditions.** Restricting the working hours or method of work on a project can have a great effect on prices. If the specifications limit work to nighttime or short shifts, unit prices may need to be increased to reflect the higher costs involved.

**Availability of materials.** The availability of materials also influences bid prices. An example is the fluctuation of bid prices received for asphalt over the years which is directly related to the availability or use of crude oil.

**Experimental or research items.** Projects which include experimental or research items usually receive higher bids. Since the bidders cannot foresee all the difficulties associated with these items, they usually pad their bids to allow for contingencies, thus resulting in higher bids.

**Specifications.** The estimator must also be aware of Special Specifications and Special Provisions which may dictate materials or procedures more costly to the contractor than the conventional items.
**Construction time.** Projects requiring long periods of construction, a year or longer, will quite likely reflect higher bid prices for items which must be purchased from suppliers. Especially noteworthy are large quantity items or expensive items which will be constructed during the later stages of the project, since suppliers are usually unwilling to guarantee prices for extended periods of time. The Contractor(s), for protection against any increase in prices, will usually hedge their bid on this type of item, resulting in higher prices than in projects with shorter completion times.

**Plan clarity.** Plans which are neat, clear, and accurate will usually contribute to lower overall unit bid prices.

**Bidder competition.** The number of bidders bidding on a project has been shown to be directly related to the unit bid prices received. The general rule is the greater the number of bidders to bid on a project, the lower the bids received. This is due to the increased competition necessary among bidders in order to be awarded the low bid. In determining the unit bid prices, the designer should account for the anticipated amount of bidding competition.
Section 5 — Funding Program Overruns

Overview

This section discusses

- Project selection process description
- Implications of erroneous estimates
- Pre-letting overrun approval.

Project Selection Process Description

The Commission authorizes projects in the Unified Transportation Program (UTP) in several different ways. One way is to authorize program amounts (usually once a year) for activities which reflect the Commission’s intentions to address a specific activity such as rehabilitation or preventative maintenance. The program amounts for a particular program may be allocated to the districts by a formula (with the formula also approved by the Commission), with eligible projects selected by the districts or by the MPO on an as-needed basis within their allocation. For other programs, such as safety or railroad signals, the program amounts are distributed on a statewide basis by the TxDOT division office responsible for the administration of that program after the division office has evaluated, ranked, prioritized, and selected projects for the program. For more information on the funding process, see the Transportation Programming and Scheduling Manual in the Transportation Planning and Programming Collection.

Specific projects listed in the UTP are ranked by indices such as cost per vehicle mile, congestion relief index, bridge condition, or fatalities/injuries. Generally, the lower the ranking index calculated for the project the higher the priority or rank that project will receive in its program since it will be considered more cost effective. Most of these indices require the estimated cost as part of their calculation.

Implications of Erroneous Estimates

During the programming stage, funds are earmarked for specific projects. An inaccurate estimate significantly exceeding what will actually be bid (underrun) will appear less cost effective in the program. The projects which appear to be more cost effective will be scheduled and let, whereas the project which is actually more cost effective may be delayed.

An inaccurate estimate less than what will actually be bid (overrun) will appear more cost effective than it actually is by causing the ranking index to be lower than it actually should be. This project will be ranked higher than it should be and, as a consequence, could jeopardize the letting of more cost-effective projects. An inaccurate preliminary estimate may also cause the designer to under-
design or over-design a project in order to arrive at approximately the same overall cost as the preliminary estimate.

Pre-Letting Overrun Approval

The current governing procedures for approving construction estimate increases as approved by the Texas Transportation Commission (Commission) on June 29, 2000, by Minute Order 108241, needs to be revised to address new categories established in the 2004 Unified Transportation Program (UTP).

The following outlines the specific categories and the appropriate level of approval for the amount of construction cost estimate increase as compared to total programmed amount prior to letting:

- **Category I - Preventive Maintenance and Rehabilitation and Category II - District Discretionary** are categories whose projects are selected by the districts and limited by the allocation of funds for specific programs. All programmed project estimate increases/decreases are credited/debited to the district programs. These categories will have the following approval criteria:
  - The District Engineer may approve all increases that do not exceed the district’s authorized funding in these categories.

- **Category 2 - Metropolitan Area (TMA) Corridor Projects, Category 3 - Urban Area (Non-TMA) Corridor Projects, Category 4 - Statewide Connectivity Corridor Projects and Category 6 - Structures Replacement and Rehabilitation** are categories whose projects are approved by the Commission as part of the UTP. These categories will have the following approval criteria:
  - The appropriate division director may approve all increases not to exceed $2.5 million. The Executive Director may approve all increases up to an amount not to exceed $25 million. The Commission will consider all increases in excess of $25 million.

- **Category 5 - Congestion Mitigation and Air Quality Improvement and Category 7 - Surface Transportation Program, Metropolitan Mobility Rehabilitation** are projects selected by specific Metropolitan Planning Organizations (MPO). All programmed project estimate increases/decreases are credited/debited to the program’s allocation. These categories will have the following approval criteria:
  - The District Engineer may approve all increases within the limits outlined in the MPO’s Transportation Improvement Program, otherwise only with MPO approval not to exceed the MPO’s allocation for these categories.

- **Category 8 - Safety, Category 9 - Transportation Enhancements (Safety Rest Areas) and Category 10 - Supplemental Transportation Projects** are categories whose projects are selected by the responsible district engineer, division director or agency director based on applicable program criteria approved by the Commission for that Program. All pro-
grammed project estimate increases/decreases are credited/debited to the program’s allocation. These categories will have the following approval criteria:

- The appropriate district engineer, division director or agency director may approve all increases that do not exceed the program’s allocation.

Category 9 - Transportation Enhancements and Category 12 - Strategic Priority are categories whose projects are selected by the Commission based on specific program criteria. These categories will have the following approval criteria:

- All increases require Commission approval.
Section 6 — Estimate Checklist

The project estimate should be created in DCIS prior to the spec list. The automated spec list program pulls most of its information from the estimate. Refer to the DCIS User Manual for further details on the creation and modification of the estimate and associated information that needs to be input at the same time.

☐ Check quantities, descriptions, and units of measurement in the estimate against those shown in the plans.

☐ Verify that all descriptive codes used are valid and can still be used. (See memorandum to all DE’s from DES dated August 19, 1996, and refer to the payment articles in the specifications or Special Provision) Valid codes can be found at http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/usfe/2004/usfe0101.htm.

☐ Make sure Special Provision numbers are listed with all applicable bid items.

☐ For all projects, make sure that all new descriptive codes have been obtained through the DES Roadway Design Section prior to submittal to Austin.

☐ Check estimated unit prices.

☐ Make sure that all items measured by lump sum have a quantity of 1.0. On projects with multiple CSJs, the combined lump sum quantity must total 1.0. No quantities should be 0.0.

☐ Make sure that the same Item/Descriptive Codes have the same unit price throughout the estimate (all CSJs, categories of work, etc.). Discrepancies can be quickly determined by printing a combined estimate. The combined estimate will print an error message for different bid prices.

☐ Check the mileage on the DCIS P1 screen(s), category of work cards (P4 screen) and Title Sheet to make sure they all match.

☐ The type of work on the DCIS C1 screen (CCSJ) should match the type of work description on the Title Sheet.

☐ Make sure the limits on DCIS P1 screen(s) and on the Title Sheet match.

☐ Make sure the proper force account codes are used. If eligible for Federal-Aid, make sure that PART is used.

☐ Make sure all items of work not eligible for Federal-Aid are broken out into a separate NON-PARTICIPATING category of work.

☐ Include all required comment cards.

☐ Make sure all items of work to be paid for by other entities are broken out into a separate category of work.
- For projects that include lump sum contributions from other entities, add comment card(s) (Type 3), after the Type 9 card at the end of the estimate, that explain in detail the funding amount contributed and the contributor. This information will be used by the Finance Division to properly set up the funding for the contract. This notation is not necessary for participation in specific bid items (which should be broken out in the estimate) or for projects with local matching funds.

- Check base bid and alternate items. Make sure that they are properly entered. Check to verify that the total dollar amounts of the base bid items and the corresponding alternate bid items are the same for the entire contract.

- Make sure all Type 9 cards have been included at end of all CSJs.

- Check measurement and payment articles of specifications and provisions to verify that all necessary bid items have been included in the estimate.

- If State force account work is proposed on Federal-Aid project, the district prepares a Public Interest Justification and will forward to the responsible Austin division. The responsible Austin division will approve on Federal-Aid State oversight projects. The FHWA will approve on Federal-Aid Federal oversight projects.

- For projects involving structural steel, prestressed products and/or epoxy-coated reinforcing steel, the Bridge Division Planning/Programming Section will prepare and submit material bills to fabricators.

- If bridges or bridge class culverts are involved, make sure that all bridge-related items have been broken out into separate categories of work. National Bridge Inventory and Permanent Structure Numbers must be listed on the bridge cost information card (12 card).

- After the estimate(s) is finalized, place the 9 card and the correct proposal guaranty amount will be automatically calculated and placed on the DCIS P5 screen based on Minute Order No. 108851 (March 28, 2002). If the estimate has been updated then remove and replace the 9 card. The guaranty amount will be recalculated. Highway improvement contracts estimated at $25,000 or less will not require a proposal guaranty. The amount of the proposal guaranty for those contracts estimated to involve more than $25,000 will be 2 percent of the department’s engineer’s estimate as of the proposal release date, rounded to the nearest $1,000 and not to exceed $100,000. For district review projects, the district will be responsible for verifying that the correct proposal guaranty amount is on the DCIS P5 screen.

### Table 4-8: Proposal Guaranty

<table>
<thead>
<tr>
<th>Total Estimate (-E&amp;C Force Accounts)</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25,000 or less</td>
<td>0</td>
</tr>
<tr>
<td>$25,001 up to $4,999,000</td>
<td>2% rounded up or down to the nearest $1,000*</td>
</tr>
<tr>
<td>$5,000,000 or above</td>
<td>100,000</td>
</tr>
</tbody>
</table>
### Table 4-8: Proposal Guaranty

<table>
<thead>
<tr>
<th>Total Estimate (-E&amp;C Force Accounts)</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>If 2% of your “Total Bid Items” is $3,503.00, then your proposal guaranty will be $4,000.00</em></td>
<td></td>
</tr>
<tr>
<td><em>If 2% of your “Total Bid Items” is $3,493.00, then your proposal guaranty will be $3,000.00</em></td>
<td></td>
</tr>
</tbody>
</table>
Chapter 5 — PS&E Submissions and Processing

Contents:

Section 1 — Overview
Section 2 — PS&E Submission Data Sheet (Form 1002)
Section 3 — Supporting Papers Checklist
Section 4 — PS&E Checklists
Section 5 — District Level PS&E Review Process
Section 6 — Division Level PS&E Review Process
Section 7 — Addendum Process
Introduction

This chapter covers some of the activities required to prepare a PS&E package for submission to Austin and the processing that occurs prior to letting. The components of the PS&E Submission Data Sheet Form 1002 and the information that is placed on these forms are covered in detail. PS&E checklists outline what documents must be sent to Austin for processing on division review projects and district review projects. The review processes necessary at the district and division levels are described. The final section outlines the process used to prepare and process addenda to prospective bidders.
Section 2 — PS&E Submission Data Sheet (Form 1002)

Overview

When PS&E is submitted to the Austin Office for review, it is necessary for the PS&E Submission Data Sheet Form 1002 to be sent in with the submission. Form 1002 serves several purposes:

- It is a supporting papers checklist to be used by the designer in preparing the PS&E.
- It is to provide the Austin divisions with a record of all supporting papers contained in the submission.
- Page 3 of Form 1002 is the department’s official location where basic design criteria of each project are documented.
- Page 3 of Form 1002 provides a request/approval document for design exceptions/design waivers and ADA/TAS design variances.
- Page 4 of Form 1002 describes the types of projects that will require the use of accelerated construction contract provisions and serves as documentation of the type of accelerated contract provision included in the project. (Refer to Construction Strategies for more information.)

This form should be completed and carefully checked when preparing the submission to avoid overlooking any of the supporting papers. There are 13 sections on the first three pages of the five-page form which must be completed:

1. Project Identification
2. State Transportation Improvement Program Information
3. Supporting Papers Checklist
4. Financing
5. Environmental Status
6. Agreements
7. Airway-Highway Clearance
8. Contract Time
9. Project Manager in Charge of Construction Contract
10. District Contact Person
11. Estimated Cost of Pedestrian Elements
12. Proposed Basic Design Data Information
13. Comments
Subsections covering each of these items, with step-by-step instructions to complete the form, follow.

**Project Identification**

Information on the first four lines of the form relate to identifying important data relative to the project location, the controlling CSJ, the project number, length of project, limits of work and the proposed letting date. This information should be retrieved from the Project Identification Screen (P1) in the Design and Construction Information System (DCIS) (the project length would also match that shown on the plans Title Sheet).

**Supporting Papers Checklist**

The checklist portion of the form assists and guides the designer in providing the necessary supporting papers to the Austin divisions. See Section 3 for more information regarding the Supporting Papers Checklist.

**State Transportation Improvement Program Information**

The appropriate State Transportation Improvement Program (STIP) year and STIP page number should be shown. This information will be used to verify if the project has been properly included in the STIP, thereby showing that funding has been set aside for the project. A copy of the STIP page should be included in the PS&E submission.

**Environmental Status**

Appropriate information on environmental status entered here.

**Financing**

A detailed accounting of authorized funding should be shown under this section. Projects from the same program should be listed under the controlling CSJ. The work program number should also be shown along with the authorized amount and the estimated cost. The estimated cost should reflect only the regular bid items, materials supplied by the state, state force account work, and the like. It should not include engineering and contingencies or portions of work financed by other governmental bodies. Estimated costs should then be subtracted from authorized funds to obtain an underrun or overrun. When overruns are encountered, reasons should be stated. This is necessary if additional funds are to be requested. Reasons stated should be significant enough to completely explain the overrun. Reasons such as “an underestimation of work” should be expanded to explain specific quantities and items.
Other participation, such as that supplied by a local government, should be noted here. If other participation has been included, specify what county, city, or other entity the agreement should be with, the amount of their participation (including preliminary engineering charges), and indicate if it is fixed sum or actual cost amount and minute order number if applicable. As noted, a copy of the agreement should be attached.

Agreements

If a railroad agreement is required, place a check by the “yes” space and fill in the name of the railroad. The agreement should be executed prior to PS&E submission. If, however, the agreement has not yet been executed, the date the request was made to the Railroad Division should be listed.

If a Section 404 Permit, Nationwide Permit, United States Coast Guard Permit, or other agreements are required, the appropriate “Yes/No” spaces should be selected along with other requested data.

Airway-Highway Clearance

If airway-highway clearance is required, place a check by the “yes” space and indicate the date it is approved. For more information, see Chapter 2, Part A of the Airway-Highway Clearances (see h7460-1).

Contract Time

Careful consideration should be given to the number of working or calendar days set up for the contractor’s working time. The number of working days should be the same number of working days shown on the contract time determination summary. The number of working days set up in the contract will be the number that is input on the Contract Summary (P5) Screen on DCIS.

Project Manager in Charge of Construction Contract

The project manager number for the responsible person in charge of construction should be listed here. This should not reflect the manager number of the person responsible for the preparation of the plans. As shown on the form, this number should match that shown on the Contract Summary (P5) Screen on DCIS. When checking DCIS, one should also verify that the project manager number shown on the Contract Summary (P5) Screen is in fact the person responsible for the construction of the project(s). The project manager number shown on the Project Identification (P1) Screen is the project manager responsible for the design of each specific project.
District Contact Person

Specify the name of the responsible district reviewer and list the person’s telephone and fax number.

Estimated Cost of Pedestrian Elements

The cost of any pedestrian elements (such as sidewalks, extra bridge width or curb ramps, pedestrian signals, crosswalks, entire cost of hike and bike trail projects, and building and enhancement projects) should be noted here.

Comments

Any additional remarks regarding this project should be indicated here and on attached sheets when necessary.

Proposed Basic Design Data Information

Though it may appear to be another form, this is the third page of Form 1002. Its primary purpose is to secure an early approval of the basic design criteria used on the project. This page must be completed for all contracts, regardless of the need for a design exception. If a design exception is not necessary, complete the form and submit as early as possible. If an exception is necessary, fill out the form and submit in accordance with the instructions presented for “Design Exception Requests” in the discussion that follows. Some of the information in this page/form are:

- Proposed Standards (Design Division, Bridge Division, and Traffic Operations Division)
- Design Speed (Applicable)
- Terrain
- Traffic
- Highway Functional Class
- Design Exceptions
- Design Waivers
- ADA/TAS Design Variances

A brief discussion of each appears in the subsections below.

Proposed Standards (Design Division, Bridge Division, and Traffic Operations Division)

Proposed Design Standards refers to the basic criteria for structures, roadways, and traffic which form the basis of the project design. The designer will list the standards chosen in the spaces pro-
vided. For example, the proposed Traffic standard may be the *Texas Manual on Uniform Traffic Control Devices*, the roadway standard may be that for “Standards of Design for Multilane Rural Highways” (see *Roadway Design Manual*, Chapter 3, [Multi-Lane Rural Highways](#)) and the structures standard may be “HS 20” loading or a hydraulic design frequency.

The roadway design criteria shown will generally be stated as “2R”, “3R” (see Chapter 4 of the *Roadway Design Manual*), or “4R” (see Chapter 3 of the *Roadway Design Manual*) with additional specificity listed whenever possible. 2R design guidelines (standards) are only used on non-free-way related projects (see the *Roadway Design Manual*, Chapter 5). Notations that certain standards are not applicable to the project should be entered on the form as necessary. For example, a 2R project may only use the TMUTCD and “BC” standard sheets as a design standard (in addition to “2R” as the roadway standard) and a “Transportation Enhancement” project (architectural work) may only reference the Americans with Disabilities Act (ADA) and Texas Accessibility Standards (TAS) requirements as a structures standard. Such notation of non-applicability may also apply to the other Form 1002, Page 3 entries, discussed below.

### Design Speed (Applicable)

The applicable design speed is the speed chosen to design the highway facility. The design speed criteria is outlined in the *Roadway Design Manual*, Chapter 2, and is a result of highway functional classification, terrain, and traffic. Variation from these criteria requires a design exception. The speed selected should be entered in this space. There may be more than one value entered, depending on the different types of highway facilities involved in the project.

### Terrain

Terrain refers to the general vertical lay of the land on which the highway facility was/is designed. The type of terrain was determined prior to the preparation of the PS&E and was used in selecting other design criteria, such as design speed and level of service. Terrain classifications are flat, rolling, and mountainous. The selected terrain should be entered in this space.

### Traffic

Traffic refers to the average daily traffic on an existing or proposed facility. Existing traffic is that traffic which presently exists on a facility or which is projected for new facilities. Twenty-year projected traffic is the average daily traffic estimated for a facility twenty years from current year. Traffic volumes can be obtained from county traffic maps or from the Transportation Planning and Programming (TPP) Division. The traffic must be entered in the spaces provided for each project. If multiple highways or projects are encountered in a contract, data should be given for each highway in the contract. This data is used for several purposes, which include the selection of pavement, cost overrun justification, congestion relief indices, etc.
Highway Functional Class

Functional classification is a description of a roadway system’s usage. These classifications are selected prior to PS&E preparation and are used in the selection of design criteria. Functional classifications may be found on functional classification maps, which are obtained from the TPP Division. The proper classification should be entered in the appropriate space (urban or rural). For functional class maps see: http://www.dot.state.tx.us/apps/statewide_mapping/statewideplanningmap.html.

Due to the ever changing nature of land use on the fringes of urban areas, we often encounter locations that are functionally classified as rural but have either begun to take an urban characteristics due to new development or are expected to do so in the near future. In these cases, districts will typically use urban design standards in lieu of rural design standards. We recommend that districts use an asterisk on the classification with a corresponding note similar to the following: “Urban street guidelines were used for this area because of existing and anticipated development.”

Design Exceptions

The next paragraphs discuss these design exception topics:

◆ Requirements for design exceptions
◆ Controlling criteria

Requirements for design exceptions. A design exception is required whenever the guidelines for certain controlling criteria specified in the department design manuals are not met. Although design and construction of projects that do not meet the recommended guidelines are sometimes justifiable, districts are responsible for documenting such cases and receiving approval prior to construction. An example of a Form 1002, Page 3 and Request for Design Exception can be found at: Form 1002 and hreques~1. A design exception is not required when values exceed the guidelines for controlling design criteria. See Roadway Design Manual Notice 2010-1, Chapter 1, Section 2, for details on design exception approval.

Controlling criteria. For new construction and reconstruction projects, the Federal Highway Administration (FHWA) has designated 12 controlling categories of roadway design criteria which will require design exceptions. When the minimum standard for any of these controlling criteria cannot be met, a design exception request must be made. The 12 controlling categories are as follows:

◆ Design speed
◆ Lane width
◆ Shoulder width
◆ Bridge width
◆ Structural capacity
- Horizontal alignment
- Vertical alignment
- Grades
- Stopping sight distance
- Cross slope
- Super-elevation
- Vertical clearance.

See Roadway Design Manual Notice 2010-1, Chapter 1, Section 2, for details on design exception approval.

**Design Waivers**

When criteria in the *Roadway Design Manual*, Chapter 1 are not met in a non-controlling category, a design exception is not required. However, variations from the guidelines in these cases are handled by design waivers prepared and approved at the district level. Design waivers will be granted as the district authorizes in accordance with sound engineering judgment. The complete documentation should be retained in the district project file but documented on this form with the original signature. They can also be sent to DES for permanent filing.

For a complete list of non-controlling criteria for each project category, see Design Waivers section of the *Roadway Design Manual*, Chapter 1.

**ADA/TAS Design Variances**

With the issuance of Stand-alone Manual Notices 99-5 design variances to the Texas Accessibility Standards (TAS) are now to be submitted to the Texas Department of Licensing and Regulation (TDLR) through the reviewing division (DES or TRF). The Department of Justice (DOJ) has certified TAS as equivalent to Americans with Disabilities Act Accessibility Guidelines (ADAAG)/PROWAG. Therefore, approval of a TAS variance by TDLR will be accepted by TxDOT as approval of a variance to the same criteria contained in ADAAG. Where a difference in criteria exists between TAS and ADAAG, the two variances will be handled individually, with TxDOT’s ADA Design Variance Committee being responsible for the ADAAG variance approval.

Districts are to complete page 2, section I, and page 3 of Form 1002, and include all information detailed in the Request for ADA/TAS Design Variance sheet (see [http://crossroads/org/des/tools/forms/index.asp](http://crossroads/org/des/tools/forms/index.asp)). Requests for design variances should be submitted to the responsible division (DES or TRF), as soon in the design process as it’s determined that a standard design value can not be met. This holds for any minimum design standard, ADA/TAS related or not.
Alternative Construction Strategies

This is page 4 of Form 1002. Its primary purpose is to identify the acceleration provisions used for the project. This page must be completed for all contracts.

Time requirements for each project is a critical construction component. Because of increased traffic and congestion we must address non-continuous prosecution of the work. In addition, reduced construction time is a department goal that can be achieved through sound engineering. Utilities and other conflicts will be encountered during construction, however, across-the-board exceptions for using acceleration provisions will not be given for these expected conflicts. Coordinate utility and other third party work early in the project life, during the planning and design stages.

We have identified the types of projects that will require acceleration provisions and have developed guidelines for different strategies to reduce construction time. The projects described are considered critical for timely completion.

The strategies provided for accelerating construction may be used alone or in combination for each project. Strategies for acceleration need to be discussed during the Design Concept Conference.

On page 4 of Form 1002, for each project, the district will be required to identify the acceleration provision(s) used for the project. Projects that do not include an acceleration provision are considered an exception. Exceptions will require advance approval by the Design Division.

Time Determination

When determining time, the first emphasis should be continuous prosecution of work. Time requirements for accelerated completion should be considered for areas that have a significant impact to businesses and traffic flow. Time determination for PS&E should be accomplished to a degree of sophistication needed for the complexity of the project. Districts may use tools ranging from simple hand diagrams to critical path method (CPM) for the analysis. A project schedule shall be included with each PS&E submission to DES. The schedule shall be signed by the responsible Engineer in accordance with the Engineering Board rules and should undergo district review. Include the same requirement for consultant PS&E.

The following types of projects will require the use of accelerated construction contract provisions. On Form 1002, page 4 of 4, check all that apply to each project:

- Interstate or freeway project with lane closures during one or more phases of construction
- Bridge closure (either as the entire project or a portion of a larger project)
- Road closure
- Added Capacity projects
- Non-freeway with ADT>10,000 and lane closures during one or more phases of construction
Provides access to a nearby school, emergency services (hospital, fire, etc.), or major traffic generator

Project affects access to adjacent businesses

Other (Projects that are time critical such as traffic signal work at high accident locations)

Explain:

The project is not characterized by the above.

None of the above (Monetary Acceleration provisions are not required) Explain the type of work:

The following is a listing of individual strategies for construction acceleration that can be used alone or in combination.

- **Calendar Day (CD) Definition for Working Day** – Use alone with standard contract administrative liquidated damages (CALD) with time calculated the final acceptance date. A five-day per week definition for working day is recommended for most applications. Calendar day definition for working day is required with all acceleration strategies.

- **Incentive Using Contract Administrative Cost** – Pay for early completion at the standard CALD rate. Use calendar day definition and calculate days to the final acceptance date. This technique can be used for maintenance overlay and pavement repair projects. Set a maximum allowable bonus payment. Include a no excuse bonus provision for incentives. A “no excuse bonus” provision disallows time adjustments for the bonus time requirement when factors outside the contractor’s control delay completion.

- **Milestones with Incentives/Disincentives (I/D)** – Identify specific project phases that have a significant impact on traffic or businesses. Include I/D for those phases only. Base the I/D on road user cost (RUC). Increased disincentives may be used alone, without incentives. Use CD definition for working day. Time is based on substantial completion of the phase. Set a maximum allowable bonus payment. Include a no excuse bonus provision for the incentives.

- **Substantial Completion I/D** – Use I/D for early completion of the project. Calculate time to the substantial completion date. Use calendar day definition for working day and set a maximum bonus for early completion. Base the I/D on RUC. Increased disincentive may be used alone, without incentives. Include a no excuse bonus provision for the incentive.

- **Lane Rental Disincentive** – Use for pavement maintenance work and managing intermittent lane closures to minimize impact to traffic for construction projects. Base the disincentive on RUC. Consider varying RUC values for daytime and nighttime work.

- **A+B Provisions** – Consider for large and or highly critical projects where early completion should be a consideration for award. Include I/D for milestones or final substantial completion. Use calendar day definitions for working day. Set a maximum allowable bonus payment.

NOTE: Both lane rental and liquidated damages cannot be imposed at the same time.
Other Tools for Minimizing Construction Time

- Use a 60, 90, 120, 180-day or other lead-time start date special provision in conjunction with acceleration provisions. The lead-time will allow the contractor to fully ramp up before work begins in the ROW. The lead-time provisions may be modified to address lead-time allowances for work in the ROW but off the roadway when said work does not create travel delay.

- Work with local communities to make use of total intersection or road closure for isolated construction locations. Use milestones, calendar day definition for working day and I/D.

- Use nighttime work in urban areas and cities to reduce congestion for payment operations. Consider construction noise, material delivery and traffic and worker safety in the decision.

- Use good sign management. Display signs only when needed. Place barricades just before work in the ROW is to begin. Place work zone speed limit signs only when speed reduction is needed. Use reasonable speed reduction (i.e., no more than 10 mph below the regulatory speed) during construction and therefore provide for reasonable construction speed zones in design. Remove construction barricades when the only work remaining is vegetation and plant establishment and performance periods and use a barricade set up such as those shown on TCP (1-Series) when work is performed under establishment and performance periods.

- Consider removal of barricades when time is suspended in the winter for final surface placement and all other work is substantially complete, a durable full width safe pavement surface is provided, permanent markings and final safety work are complete and the only work remaining is the final surface. Utilize a full barricade setup when the final pavement work is performed the following season.

- Maintenance projects should include standard CALD for work that is time dependent. Consider using lane rental provisions in high traffic areas when working on the pavement or lane closures are required.
Section 3 — Supporting Papers Checklist

Overview

The checklist portion of the form assists and guides the designer in providing the necessary supporting papers to the Austin divisions. The number of copies of the supporting papers and plans prints are outlined on the form by project type and are important to the smooth processing of the PS&E prior to letting. The specified number of copies are then distributed to the various divisions and sections which are responsible for reviewing different parts of the PS&E. This section discusses the following checklist items:

- List of governing specifications and Special Provisions
- General Notes
- Plans estimate
- New Provisions/Special Specifications
- Triple Zero Special Provisions
- Engineer’s sign, seal, and date supplemental sheets
- Contract Time Determination Summary
- Significant Project Procedures Form
- Right-of-way and utilities certifications
- Temporary road closure request
- Construction speed zone request
- Review Plans Prints.

List of Governing Specifications and Special Provisions

Verify that the correct number of copies of the governing specifications and Special Provisions have been included in the submission package.

General Notes

Verify that the correct number of copies of the General Notes have been included in the submission package.

Plans Estimate

Verify the correct number of plans estimate have been included in the submission package.
New Provisions/Special Specifications

If the completed PS&E required a new Special Provision or Special Specification, then Form 1814, Proposed Special Provisions or Special Specifications should be included in the supporting papers. Such new Special Provision and/or Special Specification requests should have been submitted by the district to CST at least two months prior to final PS&E. (See the example of a completed Form 1814.)

Triple Zero Special Provisions

Use correct format for Triple Zero Special Provisions for “Detours, Barricades, Warning Signs, Sequence of Work, etc.” or “Important Notice to Contractors” (such as for unclear right-of-way or unclear utilities or others). See the information on the Design Division’s Intranet site at http://crossroads/org/des/tools/props/index.asp under shared documents for formatting instructions.

Engineer's Sign, Seal, and Date Supplemental Sheets

Two original copies of the supplemental sheets with the responsible engineer's signature, seal, and date must be included with the PS&E package. These are eventually used in the respective final construction contract proposals (i.e., the state's and the contractor's).

Contract Time Determination Summary

The required Contract Time Determination Summary is also included as a “supporting paper.” It consists of a brief summary of the projected production rates used for major work items, to arrive at the final estimate of construction time (measured in either work days or calendar days) It is required to be signed and dated by the responsible engineer.

Right-of-Way and Utilities Certifications

One original signed copy of the certifications and two copies of the original signed copies must be submitted with the PS&E package as supporting papers. These certifications are

- Right-of-way certification
- Relocation advisory assistance certification
- Right-of-way encroachment certification
- Utility clearance certification.

A discussion of each follows.
Right-of-way Certification

A right-of-way and a relocation advisory assistance certification are submitted for every project. These certifications will be signed by the district engineer and submitted with the PS&E package in the quantity indicated. If the right-of-way is clear and no right-of-way acquisition was necessary, a Certification for Clear ROW (Acquisition not necessary) (clrrow1) form should be used and submitted with the PS&E. If acquisition of right-of-way was necessary and was completed before PS&E submission, a Certification for Clear ROW (Acquisition complete - State Project) or Certification for Clear ROW (Acquisition complete - Federal Project) form (clrrow2 and clrrow3) should be used and submitted with the PS&E depending if it is State or Federally funded. If right-of-way is necessary but not completely acquired (unclear) at the time of PS&E submission, a certification [shown in Certification for Unclear ROW - State Project (unclr1)] and Certification for Unclear ROW - Federal Project (unclr2) (desirably) and a Triple Zero Special Provision are submitted which will list the unclear parcels, their owners, their locations, and their estimated acquisition dates. These are supplemented (on Federal-Aid projects only) by status form(s) listing the unclear parcels and their possible effects on delays to construction [see the example of ROW Status Form (rowstat)]. The certification and status forms may be updated later if necessary, to provide the current information two weeks prior to the project’s Letter of Authority (for construction) date, which is shown on the Design Division’s PS&E review and processing schedule.

If right-of-way was not clear at submission but is clear two weeks prior to the Letter of Authority date, the district should then submit the appropriate Certification for Clear ROW. If right-of-way is still unclear two weeks prior to the Letter of Authority date, a Certification for Unclear ROW and status form should be resubmitted listing the remaining parcels, owners of the parcels, locations, and estimated dates of clearance. Choose the appropriate form depending on whether the project is state or federally funded. For federal oversight projects, this information will be forwarded to the FHWA for issuance of the Letter of Authority. Significant changes to parcel status might need to be conveyed to the bidders by addendum.

Relocation Advisory Assistance Certification

A relocation advisory assistance certification is submitted for every project. If any right-of-way was acquired, certification of proper relocation assistance is necessary. If right-of-way was acquired, and displacement of people was not required, use the appropriate form shown in Certification for Relocation Assistance (No Displacements) - State Project (reloc1) or Certification for Relocation Assistance (No Displacements) - Federal Project (reloc2) and submit with the PS&E. If relocation has not been completed prior to submission of PS&E but was completed two weeks prior to the Letter of Authority date, then the appropriate form should be submitted. [See Certification for Relocation Assistance (Relocation Completed) (reloc3)].

If relocation is not completed by the Letter of Authority date, the appropriate form shown in Certification for Relocation Assistance (Relocation Not Completed) - State Project (reloc4) or
Certification for Relocation Assistance (Relocation Not Completed) - Federal Project needs to be submitted.

Right-of-Way Encroachment Certification

The right-of-way encroachment certification is required for each project. An encroachment is typically an instance of privately-owned improvements existing on the State’s project right-of-way. The certification will be signed by the district engineer and submitted with the PS&E package with updates, if necessary, submitted at least two weeks prior to the Letter of Authority. There are two requirements that must be met to properly address right-of-way encroachments. The next paragraphs cover

- Requirements for federally funded projects
- Requirements under state law
- Examples.

Requirements for federally funded projects. In order to advance a federally funded project, we must deal with encroachments as outlined in the Federal-Aid Policy Guide, Section 1.23. To meet these guidelines, the district can provide support documentation that leaving the encroachment in place will not impair the highway or interfere with the free flow of traffic. When an encroachment is discovered on a project, this certification documentation may be sent to the Design Division with copies to the Construction Division and the Right-of-Way Division. If this cannot be certified, then the encroachment must be addressed otherwise, which may involve removal or safety treatment, in order for the federal project to proceed and utilize federal funding.

Requirements under state law. The state requirements are derived from broad state laws involving the use of public property for private use. The current TxDOT interpretation applies this to highway ROW. The interpretation is that TxDOT must have a formal agreement with the owner of the encroachment to allow the encroachment to exist in the right of way. The options to comply with the state law have been determined to be: (1) remove the encroachment; (2) sell the area of the ROW to the owner of the encroachment; or (3) lease the area of the ROW to the owner of the encroachment. These options must be pursued even if approval has been obtained in compliance with the above Federal Regulation (CFR Sec. 1.23). To address these requirements, the district should work with the Right-of-Way Division with copies of this information sent to the Design Division and the Construction Division. These options must be pursued even if approval has been obtained in compliance with the Federal-Aid Policy Guide as discussed above.

Examples. If there are no right-of-way encroachments or the right-of-way encroachments have been cleared before the PS&E package is submitted or two weeks prior to the letter of authority date, then a Certification for ROW Encroachments (None or Clear) should be used. If the right-of-way encroachment needs to be removed or if it will remain in place, then a Certification for ROW Encroachment (Not Clear or To Remain in Place) form is used and the
“status” column should specify if the encroachment will be removed and by whom or if it will remain in place.

Utility Clearance Certification

The utility clearance certification should be handled in much the same manner as the right-of-way certification and submitted for every project. If no utility adjustments are required or they are completed prior to PS&E submission, a Certification for Utility Adjustment (None or Clear) (utiladj1) should be sent in with the PS&E. If utility adjustments are incomplete (unclear) at the time of PS&E submission a certification, a Certification for Utility Adjustment (Not Clear) (utiladj2) and a triple zero Special Provision are submitted which list the unclear utilities, their owners, their locations, and their estimated clear dates. These are supplemented (on Federal-Aid projects only) by Utility Status (utilstat) data sheet(s) listing the unclear utilities and their possible effects on delays to construction. The certification and status form may be updated later if necessary, to provide the current information two weeks prior to the project’s Letter of Authority (for construction) date, which is shown on the Finance Division's review and processing chart at http://crossroads/org/fin/Guidance/ProgLetting.htm.

The status of all these items is shown in this same section of the Form 1002. [The designer simply checks off the appropriate status (“Clear” or “To be Clear”).]

Temporary Road Closure Request

The documentation and district engineer approval for temporary roadway closure must be included with the PS&E submission to the Design Division. As stipulated in Task 5740, the district has authority for roadway closures and the process. The entire process is outlined in 5740.

If the roadway closure is approved, consideration should be given to an agreement with the local government that clearly outlines each entity’s responsibilities in the event the detour uses other than state highways. In addition, if increased liquidated damages in the construction project can be calculated as a result of the increased detour travel time (based on roadway user costs), then the increased damages should be identified as a Special Provision in the PS&E submission.

Construction Speed Zone Request

If construction speed zoning is desired for projects or portions of a project outside the limits of incorporated cities, the Request for Construction Speed Zone forms (cszfmrq) should be prepared and submitted to TRF division to coordinate for commission action. The form is self-explanatory with instructions contained on the reverse side. Cities have the authority to establish construction speed zones within their corporate limits, and this should be encouraged since the city will likely be responsible for enforcement. If, however, a city desires the commission to establish the zones, then a written statement from the city is required.
Review Plan Prints

Verify that the correct number of plan review prints for the specific type of project have been included in the submission package.
Section 4 — PS&E Checklists

Overview

This section presents the following checklists:

◆ Pre-submission checklist
◆ PS&E checklist for division review projects
◆ PS&E checklist for district review project.

Pre-Submission Checklist

☐ Make sure all approved preliminary submissions agree with the design proposed in the plans.

☐ Check the proposed design to see if any design exceptions and/or design waivers are necessary. If so, check to see if all necessary design exception request(s) have been approved.

☐ Check to see if any new specifications, provisions or descriptive codes are needed. If so, make sure that all applicable Form 1814’s have been sent to the CST for processing at least two months prior to submission.

☐ Check the Form 1002, Page 3, to see if it has been properly filled out. Ensure that it has been forwarded, signed and approved by the appropriate Austin division. Make sure that the proposed design standards are suitable for the type of work and funding category proposed. For the most current guide to design criteria, go to http://crossroads.org/des/fs/docs/utprestructure.pdf.

☐ Check to see if any road closures are proposed. If so, check to see if letters of concurrence from the affected local entities have been obtained and that documentation indicating district engineer’s approval is prepared and submitted.

☐ Check to see if a railroad agreement is necessary. A railroad agreement is necessary if any work is proposed within railroad right-of-way. If so, check to see if a request has been sent to the Railroad Division (desirably one year prior to letting). Check to see if an agreement has been executed prior to submission. For all projects, railroad agreements must be executed (and approved by the FHWA for federal oversight projects) prior to receipt of bids. Certain projects are authorized to proceed to Letting and be conditionally awarded if the Railroad Division determines that an executed agreement will be received in a timely manner for construction to proceed.

☐ Check to see if airway-highway clearance is involved. If so, make sure that the proper documentation has been sent to the Design Division for coordination with the Federal Aviation Administration (FAA) and/or FHWA. (See memorandum to all DE’s from the Transportation Planning and Programming Division, dated June 13, 1996.)
If a construction speed zone is required, make sure that Form 1204 has been properly filled out and forwarded to the TRF for processing. For district review projects the district needs to notify TRF and submit the form to that division. For division review projects the district may submit the form with the PS&E package to DES, and it will be forwarded to TRF.

If increased liquidated damages (above normal provision) or incentive/disincentive provisions are proposed, submit memorandum indicating district engineer’s approval to the Design Division. On projects not reviewed by the Austin divisions, send this memorandum along with the necessary provisions and Form 1814 to the DES Roadway Design Section at least two months prior to submission.

For all traffic signals involved, prepare and submit one copy of each executed authorization form to the Traffic Operations Division. Temporary traffic signals used during construction also require an executed authorization form even though warrants are not required to be met.

If guarantees and/or warranties are required in the specifications or plans, check for compliance with 23 CFR 635.413. If necessary, prepare and submit to the responsible Austin division a memorandum requesting approval. The responsible Austin division reviews and approves the Federal-Aid State oversight projects or coordinates with the FHWA to obtain approval for Federal-Aid Federal oversight projects.

If experimental features or items of work are proposed, prepare and submit to the responsible Austin division a proposed work plan for approval. Work plans are reviewed by the responsible Austin division for Federal-Aid State oversight projects or submitted to the FHWA for approval on Federal-Aid Federal oversight projects.

Execute all necessary traffic signal or illumination agreements.

If escrow agreements are involved, check to make sure that the agreements have been executed and the proper advance funds are in hand 45 days prior to letting. Districts are required to certify receipt of funds (financial clearance) prior to letting and prior to award.

**PS&E Checklist for Division Review Projects**

The following documentation should be submitted to the Design Division:

- Letter of Transmittal to be used when issues to be discussed other than on Form 1002 are in the job
- Form 1002 (all pages - preferably with Page 3 previously approved), see the Robert L. Wilson Memo, 2/17/95
- Plans Estimate
- Specifications List
- General Notes
- Sealed engineer’s certifications (2 originals)
Sealed copy of hydraulic report cover page
Pre-approved Special Provisions and/or Special Specifications (Form 1814)
Construction speed zone requests
Letters from cities regarding construction speed zone request if within incorporated city limits, and city desires for TxDOT to pass a commission minute order
ROW parcel, utility adjustment, encroachment and relocation certifications
Any new Triple Zero Special Provision (for unclear ROW, Utilities or Sequence of Work)
Supplementary data sheets for both unclear ROW parcels and unclear utilities (i.e. unclear past letting date), which describe the effects on construction (required for Federal-Aid projects only)
Highway traffic signal recommendation(s)
Financial clearance statement for Maintenance contracts
Miscellaneous: material source and archeological certification
Escrow agreements (execution information)
State Transportation Improvement Program (STIP) page (required on Federal projects)
Time worksheet
Public interest justification for proprietary Items
Plans tracings (i.e. mylars bound with all Title Sheet signatures)
Review plans prints stamped “Preliminary” and bound
Extra set of electrical work plan sheets
Copies of applicable agreements.

PS&E Checklist for District Review Projects

As previously defined in Chapter 2, Section 1, the District Review Projects subsection, district review projects refers to certain limited-in-scope projects. The division field section areas will not review these jobs, they will simply process the district’s final PS&E package. The need for complete PS&E readiness can therefore not be overemphasized.

Regarding PS&E submissions, the following differences (with respect to the previous section) apply for district review projects:
- The submittal (to Austin) date of the final PS&E will be as noted on the Design Division’s “PS&E Review and Processing Schedule,” which can be accessed at [http://crossroads/org/fin/Guidance/ProgLetting.htm](http://crossroads/org/fin/Guidance/ProgLetting.htm) (see Chapter 1, Section 3, PS&E Submissions Schedules, of this manual) by picking the schedule for the applicable fiscal year.
The approval of basic design criteria (for Form 1002) and of the typical sections must be secured early for these projects, in advance of the final PS&E submittal.

The Form 1814, for approval of new Special Provisions or Special Specifications, must also have been submitted at least two months prior to the PS&E submittal, such that the project estimate and Specification List must be completed in order to build a proposal by the District.

The Title Sheet of the plans must show “Approved For Letting” at the district engineer’s signature location. The standard Austin approval signature blocks may be deleted or left blank if included.

It is the responsibility of the district staff to include a plot of the E&Q sheet in the final plans. Once the estimate has been entered onto the DCIS P4 screen, this E&Q plot can be obtained by creation of a ROSCOE input file (see DCIS User Manual, Chapter 4, Instructions for E &Q Sheets, for detailed instructions) which is then used within the RJEJCL process (RJEJCL 10 1, program option #8, or new DCIS option M5).

It is also the responsibility of the district to include a plot of the General Notes sheets in the final plans. Once these notes have been created (see Chapter 3, Section 5, General Notes and 6, General Notes Checklist for more information).

A “Check” copy of the bid proposal must be built by the district. This is to verify the accuracy and completion of the Spec List and to verify readiness for final handling by the Field Coordination Sections. Once the General Notes, Spec List, and project estimate (on DCIS P4) have been completed, the check proposal is obtained by performing the following:

- Logging onto CICS
- Selecting the CMCS application (must have this automation access capability), inputting of “B13” at “select option”
- Following the screen-by-screen instructions.

Two required inputs in this process are:

- The “Bids Received Until” date on the DCIS P5 screen (if blank, contact Letting Management, for a “Bid Received Until” date)
- The Proposal Guaranty amount on the P5 screen (amount set by project cost according to Minute Order # 108851 [Chapter 4, Section 6]).

For the final PS&E package, only the Proposal Submittal Sheet (discussed below) and the printed proposal cover page are transmitted to Austin, rather than the entire printout of the check proposal itself. Upon completion of an accurate check bid proposal, the DCIS estimate code will be changed from “P” to “8”, after the proposal is built and released to the Design Division by entering "Y."

Hard copy documents for District Review projects are submitted as follows:

- Original plan set, including General Notes sheets and E&Q sheet(s), and a fully signed Title Sheet (no review plans prints necessary)
- One set of original supporting papers, including Form 1002 (3 pages), General Notes, Specification List, Estimate, signed Certifications, and (for the Field Coordination Sections) the two original Engineer sealed supplemental sheets and signed Construction Time Sheet

- One copy of the Certifications and a copy of the engineer’s sealed supplemental sheet (for Field Coordination Sections)

- One Proposal Submittal Sheet and one Pre-letting Checklist.
  
The Proposal Submittal Sheet can be obtained on the Design Division’s Intranet site at [http://crossroads/org/des/tools/props/index.asp](http://crossroads/org/des/tools/props/index.asp). The data on this form is for the most part self-explanatory. However, “Waived” refers to the waiver of pre-qualification of bidders for projects under $300,000, and “attachments” (usually “no”) refers to the presence of supplementary data attached to a project Special Specification, such as outside entity requirements for work contained in the project.

Section 5 — District Level PS&E Review Process

Overview

The process by which plans and specifications are developed and reviewed varies from district to district. Whether the PS&E is prepared in an area office, by a consultant, or in the District Design Office, it should be thorough, accurate, and clearly understandable.

Clarity and accuracy in the plans will help to achieve timely completion of construction with a reduced probability of having change orders or claims for additional compensation by the contractor. In order to prepare accurate and legible PS&E, it is strongly recommended that each district establish a section dedicated to the independent review and processing of PS&E packages. This section should be staffed with personnel who are current with the latest design guidelines, policies, and procedures and knowledgeable in PS&E preparation, as the review is typically more efficient when performed by individuals not involved in the development of the project.

A thorough review of plans and specifications must take place before PS&E packages are forwarded to the Design Division for further review and processing prior to letting. The next subsections discuss these aspects of district-level review:

- Process for District Review Projects
- Checklist of Required Items
- Submission Dates

Process for District Review Projects

The review process at the district level is of the utmost importance for District Review projects (see Chapter 2, Section 1, District Review Projects subsection). All projects, regardless of the review type, must be complete prior to being submitted to Design Division. This facilitates the review process and prevents projects from being delayed to a later letting date.

Checklist of Required Items

In the course of the review process for all projects, these items should be checked and/or verified:

- Previous approval of
  - Typical sections
  - Geometrics
  - Pavement design
  - Design exceptions
The reviewer should check for previous approval of these items. Checks should be made to see if all required agreements have been executed.

- **Clarity of information on plan sheets**
  
  Plan Sheets should be checked for clarity of information. All quantities should be checked item by item. Refer to the General Plan Set Checklist in Chapter 2.

- **Use of correct bid codes and method of measurements**
  
  Estimate should be checked to make sure the correct bid codes and method of measurements are used. All quantities from the plan sheets should be reflected on the estimate. Estimated unit bid prices should reflect the recent prices. Refer to the Estimate Checklist in Chapter 4.

- **Specification List**
  

- **General Notes for clarity, redundancy, and conflicts**
  
  General Notes should be reviewed for clarity, redundancy, and conflicts. Refer to the General Notes Checklist in Chapter 3.

**Submission Dates**

The completed PS&E package should be submitted to the Design Division by the due dates noted in the published “PS&E Review and Processing Schedule.” Refer to the PS&E Submission Date Form http://crossroads/org/des/tools/forms/index.asp, Pre-Submission Checklist in Chapter 5, and PS&E Checklist for Division Review Projects Chapter 5 for submission process and required documentation for district and division review projects.
Section 6 — Division Level PS&E Review Process

Overview

The division review process begins when the districts submit for approval preliminary submittals for such things as typical sections with Form 1002, Page 3, design summary reports, schematics, preliminary bridge layouts, etc. See Preliminary Review/Coordination in Chapter 2 of this manual for more information on these types of submittals. The purpose of these reviews is to insure that the proposed designs meet the applicable design standards and comply with all current state and federal requirements. Preliminary reviews and submittals provide a means to discover and eliminate potential design problems prior to PS&E submission. The next subsections discuss these aspects of division-level review:

◆ Submission Due Dates
◆ Design Division - Field Coordination Sections/Bridge Division - Planning Programming Section
◆ Design Division – Landscape/Enhancements Section
◆ Traffic Operations Division - Field Area
◆ Additional Copies of the PS&E Package
◆ Division Review Goals
◆ Section Reviews
◆ Bidding Document Process

Submission Due Dates

PS&E submission occurs between 2–3 months prior to the scheduled letting. These due dates are published in the PS&E Review and Processing Schedule. The purpose for the multiple sets of plans and paperwork that are sent with the PS&E package as shown on Page 1 of Form 1002, is to allow sufficient copies of the material to be distributed for review. The type of project and type of work proposed determines the responsible division that will coordinate the processing of the project. Regardless of what division and section will be responsible for the coordination, districts will mail the PS&E submission to the appropriate Field Coordination Section in the Design Division. For projects that are not primarily of roadway geometric nature, the Field Coordination Section forwards the entire package to the appropriate office for further handling.
Design Division - Field Coordination Sections/Bridge Division - Planning Programming Section

The Design Division - Field Coordination Sections are responsible for coordinating the processing of projects that consist mainly of roadway and structural items of work. The Design Division – Field Coordination Section reviews proposed work involving the Items 100, 200, 300, 500, 1000, 2000, 3000 and 5000 series. The Bridge Division - Bridge Planning and Programming Section is responsible for reviewing proposed work involving the Items 400 and 4000 series. If the project includes work on a bridge class structure, two copies of the package are sent to the Bridge Division for review.

Design Division – Landscape/Enhancements Section

The Design Division – Landscape/Enhancements Section coordinates the processing of projects that consist of landscape/enhancements projects only. The Design Division – Landscape/Enhancements Section reviews proposed work involving these items:
- Irrigation system
- Roadside planting and establishment
- Landscape maintenance
- Enhancements.

Traffic Operations Division - Field Area

The Traffic Operations Division - Field Area are responsible for coordinating the processing of projects that consist mainly of signing, pavement markers, and signal and illumination work. The Traffic Operations Division reviews proposed work involving the Items 600 and 6000 series. The Traffic Operations Division – Illumination Section reviews proposed work involving illumination items and is provided their own set of the PS&E if the project includes this type of work. An extra copy of the PS&E is provided to the Traffic Operations Division - Traffic Safety Section for hazard elimination (HES) and safety projects.

Additional Copies of the PS&E Package

Upon receipt, the responsible division review processor looks over the PS&E package to determine which sections in the various division offices needs to review the package. Once all of the responsible review sections have been identified, the review processor makes the necessary distributions.

Federal oversight projects require an additional copy of the PS&E package. The responsible division forwards this copy to the FHWA.

Projects which include pedestrian elements (sidewalks, curb ramps, pedestrian signals, pedestrian railing, crosswalks, etc.) with an estimated cost of $50,000 or more, or projects for buildings or...
hike and bike trail improvements (regardless of cost) must be submitted to the Texas Department of Licensing and Regulation (TDLR) for review and approval. The responsible division office delivers a copy of the PS&E package to the TDLR.

**Division Review Goals**

The division review process is similar to the district review process. The primary goal is to make sure that the proposed work is in compliance with department, state and federal guidelines, standards, and procedures. A secondary benefit is to eliminate errors, discrepancies and omissions which might result in uncertainty or confusion in the field or which become a basis for claims by contractors. To achieve these goals, the review process involves the following:

1. Check previously approved preliminary submittals to make sure they match the proposed plans and meet the required design standards. Deviations from the design standards must be documented through the design exception or waiver process.

2. Check specifications and provisions to make sure all that are required have been included on the Specification List. Check to make sure obsolete specifications or provisions have not been used. See the Specifications List in Chapter 3, Section 4 of this manual for additional information.

3. Check General Notes provided to make sure all necessary information has been included. Check to make sure things that are not supposed to be modified by note are not, such as changing measurement and payment articles, schedules and testing requirements, and contract covenants covered by Items 1 through 9. See Specifications List for additional information on the General Notes.

4. Look for discrepancies in the pay item descriptions, unit of measure and quantity between the plans and estimate, and eliminate. Check to make sure all necessary pay items have been included in the estimate.

5. Check estimate to make sure that the quantities shown on DCIS match the plans and are accurate. Check the estimated unit prices for accuracy. See Quantities and Prices in Chapter 4 for additional information.

6. Check the plans to make sure all proposed work has been shown. Check to make sure all necessary standard plan sheets have been included and that the plan set is complete. Check to make sure the proper engineer’s signature, seal, and date has been placed on all required sheets. See Engineer’s Seal in Chapter 2 for proper engineer sealing procedures.

7. Check to make sure all data on the DCIS P1 and P5 screens, used to generate the Notice to Contractors and the advertisements, are accurate.

8. Make sure all necessary advanced funding agreements with cities and counties have been executed and the estimate and DCIS accurately reflect the funding situation.

9. Check authorized funding and arrange for additional funding as necessary. See Funding Program Overruns in Chapter 4 for an overview of the funding and approval of overrun processes.
10. For federal oversight projects, coordinate any comments received from the FHWA with the district. After formal submission is made, inform the FHWA representative of all changes made and request their concurrence.

11. For federal aid projects, prepare the Federal Project Authorization and Agreement (FPAA) (see Chapter 6, Section 2).

12. For federal aid - state oversight projects, prepare the State Letter of Authority (LOA) in Chapter 6.

Section Reviews

Each reviewing section conducts an independent review pertaining to their area of responsibility and coordinates their comments directly with the district contact person listed on the (Form 1002, Page 2). Once the comments are addressed, each section provides the responsible division reviewer with a copy of all agreed-upon changes that need to be incorporated into the PS&E. As previously discussed, projects involving mainly roadway, bridge and landscaping items are handled by the Design Division. Projects involving mainly striping, pavement markers, signals and illumination items are handled by the Traffic Operations Division. The responsible division reviewer provides for all of the necessary mainframe corrections to estimate, Specification List, and General Notes.

Each reviewer generally takes care of his/her own approved plan changes or makes arrangements with the district to make the necessary changes. Once all changes have been made, the E&Q sheets and General Notes sheets are plotted and inserted into the plan set. The goal is to have all comments addressed and corrections made prior to the submission deadline to the Design Division – Field Coordination Section as shown on the published PS&E Review and Processing Schedule.

Once the PS&E is corrected, the responsible division reviewing section will take the following items to the Design Division – Field Coordination Section for further processing:

- Complete original plan set (including plots of General Notes and E&Q sheets)
- 3 Copies of final corrected Combined Plans Estimate (4 copies for Federal Oversight Projects)
- Copy of final corrected Specification List
- 5 copies of transmittal memorandum to the district
- Proposal Submittal Sheet (see explanation in Chapter 5, Section 4)
- Pre-Letting Checklist (see explanation in Chapter 5, Section 4)
- If applicable, copies of hard copy attachments to Special Specifications
- For Federal Oversight Projects, original certifications for ROW, relocation assistance, utility adjustments and ROW encroachments along with, if applicable, unacquired ROW parcel and outstanding utility status forms for submission to the FHWA
Two original engineer-sealed supplemental sheets will be retained for future transmission to the CST.

Bidding Document Process

Upon receipt, the Design Division – Field Coordination Sections initiate the preparation of the bidding proposal. They also send the original plan set to the General Services Division for reproduction. Copies of the half-scale plans and proposal are mailed to the division and district offices from the General Services Division. Prospective bidders obtain copies of the plans from commercial printers and proposals from the Construction Division.
Section 7 — Addendum Process

Overview

This section covers the following aspects of the addendum process:

- Need for addendum
- Addendum notice
- Federal oversight project addendum
- District review project addendum
- Last revision date
- Addendum notice procedure
- Addendum information sheet.

Need for Addendum

After the PS&E package has been submitted and processed through the Design Division – Field Coordination Section (see the PS&E Processing Schedule for more information), copies of the assembled contract proposal and half-scale copies of the plans are forwarded to the responsible district and division offices. Personnel in these offices should recheck these documents to make sure that all necessary changes or corrections have been made. For various reasons, it is sometimes necessary to make changes to the plans or proposal. Any changes to these documents that must be made at this stage must be documented by the responsible office in the form of an addendum notice.

Addenda to be processed for a particular project are performed after the proposal release date as shown on the PS&E Processing Schedule.

An addendum should be submitted for processing only when:

- The competitiveness of the bid would be in jeopardy if the changes were not made
- The quantities are in error to a degree that could place the department at a disadvantage in negotiating significant corrections after contract award
- The bid documents would not be substantially representative of the project unless the change is made. This could include special design standard sheets, Special Specification, etc.; however, if a regularly used statewide standard sheet was omitted, it would not be considered significant and an addendum would not be released. A change order should be used to add the missing statewide standard sheet.
To help identify changes to PS&E that should and should not be addenda, following are a few examples of addenda that should not be pursued:

- To renumber sheets on the title sheet or to add sheet numbers that were omitted. This is not critical to bidders.

- To change the title sheet to include one now signed by local officials in all released copies (having the original is adequate). It is not critical to the bidders to have that signature.

- If a sheet or so in the PS&E that was released was not signed and sealed, it is necessary to get the original corrected, but it is not critical to the bidders to release an addendum.

- To change the quantity of riprap or add a few feet of curb and gutter is generally not critical so as to risk the project by issuing an addendum.

These are only a few examples, but keep in mind that to risk a project by issuing an addendum, it must be critical to the bidders that they have this information. Otherwise, those changes should be handled after the project is awarded.

There are also concerns when a potential error in the plans is brought to the attention of TxDOT by a potential bidder/contractor/supplier. When this occurs, there shouldn’t be any indication that this will be changed prior to letting or by a change order. If this is stated to anyone and not to all, then the potential exists that all bids may be thrown out. TxDOT should issue a thank you to the potential bidder/contractor/supplier for notification of the error and state that it will be looked into and if a change is required, an addendum will be issued. Otherwise, they are to bid the project just as they see it presented in the PS&E bid package.

Please note, no addenda will be processed prior to the proposal release date. In accordance with the PS&E Review and Processing Schedule, addenda are due in Austin approximately ten working days prior to letting. This addendum will be marked as Addendum #1. Any subsequent modifications to the bidding package should be a rarity; however, when this situation occurs, the second and/or any subsequent addenda will be numbered appropriately. An addendum at this late date will also require contacting each contractor by the divisions to notify them, but may easily mean pulling the job from the letting. Addenda will require authorization, by the CST division director, requested by district engineer.

Addendum Notice

This addendum notice provides a written summary of all changes that are made to the plans and proposal after the PS&E package has been processed and submitted to the Design Division – Field Coordination Section. For exact dates, please see Monthly Processing Schedule. The preparation of the addendum notice is described later in this section. In order to process an addendum, the district needs to provide a written summary of all changes to be made to the plans. The district should either provide replacement sheets that incorporate all of the necessary changes or should arrange with the responsible division to obtain the plans and make the changes in Austin. If the plan
changes can be quickly made and if the workload permits, some minor plan changes can be made by division personnel. Any changes to the estimate, General Notes, and Specification List must also be documented. The district needs to provide mark-ups of these documents showing all changes to be made. Based on these mark-ups, the responsible division office makes the necessary changes to the estimate and Specification List on DCIS, and the General Notes.

**Federal Oversight Project Addendum**

On federal oversight projects, any changes which must be made during the advertising period after issuance of the federal letter of authority must be forwarded to the FHWA for approval. Once FHWA approves the changes, the responsible division will complete the addendum process.

**District Review Project Addendum**

For District Review projects, the addendum process is slightly different in that the district is responsible for making all of the DCIS and ROSCOE mainframe changes as well as any necessary plan changes. In addition, the district is responsible for preparing the addendum notice and the addendum information sheet. The preparation of these documents is described later in this section. In order to make the DCIS and ROSCOE changes, the district needs to contact the Design Division – Field Coordination Section to have the estimate released back to the district’s control on the DCIS P5 screen. After all changes have been made and the district has prepared the addendum notice, the estimate must be released back to division control by changing the P to an 8 on the DCIS P5 screen (re-printing the proposal (building it) automatically changes P to an 8). The addendum package must then be forwarded to the Design Division – Field Coordination Section for further handling. The paperwork for the addendum package consists of:

- Addendum notice
- Addendum information sheet
- Copy of the estimate
- One copy of the Specification List
- Revised Plan Sheets.

District should send in a complete copy of addenda for Design Division’s file copy.

Once the Design Division – Field Coordination Section receives the addendum package, the revised plan sheets are sent out for reproduction. The addendum notice file is accessed and transferred to the proper location. Once processing is complete, the addendum notice is released to the Construction Division for distribution to prospective bidders. All prospective bidders must acknowledge receipt of addenda on the acknowledgment sheet of their bidding proposal. Failure to do so will cause their bid to be considered non-responsive.
Last Revision Date

Due to the number and size of changes received for processing, there is the possibility that changes provided on this date might not be able to be processed in time to be delivered to all parties involved.

This results in the removal of the project from the letting. For this reason, it is recommended that only necessary changes be requested and that they be requested as early as possible. Processing numerous addenda, particularly at the last minute, requires extensive manpower which, in turn, delays the processing of future projects.

Addendum Notice Procedure

The procedure for completing the addendum notice is shown in Table 5-1.

Table 5-1: Addendum Notice Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sign onto your regional ROSCOE. (ROSCP for divisions.)</td>
</tr>
<tr>
<td>2</td>
<td>Type PC.NOTICE and enter.</td>
</tr>
<tr>
<td>3</td>
<td>On the main menu screen, input a filename for your library where the addendum data should be stored (such as IHI0REV).</td>
</tr>
<tr>
<td>4</td>
<td>On the addendum notification screen, input all the necessary data as follows:</td>
</tr>
<tr>
<td>5</td>
<td>For TO: input the district that the project is in, CST and DES.</td>
</tr>
<tr>
<td>6</td>
<td>For FROM: input the name of the district or division preparing the notice and the section and initials.</td>
</tr>
<tr>
<td>7</td>
<td>For CONTROL: input all nine digits of the controlling CSJ.</td>
</tr>
<tr>
<td>8</td>
<td>Input an addendum date MM/DD/YY.</td>
</tr>
<tr>
<td>9</td>
<td>Put an X under proposal if the addendum changes the proposal cover, such as the contract time or proposal guaranty amount.</td>
</tr>
<tr>
<td>10</td>
<td>Input the page number of all BID INSERT sheets that will change due to the addendum, such as due to quantity changes, item or descriptive code changes, provision number changes, etc.</td>
</tr>
<tr>
<td>11</td>
<td>Input the sheet number of any General Note and sheets that change due to the addendum. Users with access rights will place a revised General Notes PDF file in Miramo set up in a TxDOT directory. Notes must be submitted for update prior to completion of addenda for printing revisions.</td>
</tr>
<tr>
<td>12</td>
<td>Input the page number of any Specification List pages that change due to the addendum.</td>
</tr>
<tr>
<td>13</td>
<td>Input the numbers of any Special Provisions or Special Specifications that are added or deleted.</td>
</tr>
<tr>
<td>14</td>
<td>Under OTHER: list the plan sheet numbers of all sheets that change due to the addendum and list estimate if applicable.</td>
</tr>
<tr>
<td>15</td>
<td>Once all of the above fields have been input, hit ENTER.</td>
</tr>
</tbody>
</table>
Addendum Information Sheet

In addition to the addendum notice, an addendum information sheet must be filled out before the package can be turned in to the Design Division – Field Coordination Section. For division review projects, the responsible division personnel complete this. For district review projects, the district must fill out this form. The addendum information sheet includes:

- County name
- Letting date
- CCSJ
- Sequence Number (Refer to DCIS P5 Screen (P5))
- ROSCOE key number and filename for the addendum notice
- Forward updated General Notes file

See example of an addendum information sheet (addinfo) which has been completed as a sample.

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<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>A Description of Above Changes screen will appear. Describe changes. All changes must be summarized in sufficient detail so that prospective bidders can see what has changed. Proposal cover changes should be described in narrative form, if applicable. Bid Insert changes must be described. General Note changes are described next. The changes to the Specification List must be summarized. Changes to all plan sheets must be described in narrative form. Estimate changes should also be summarized except for unit price changes. See example of an addendum notice that has been filled out (addnotic).</td>
</tr>
<tr>
<td>17</td>
<td>Once all data has been input, the main menu can be accessed by hitting PF1.</td>
</tr>
<tr>
<td>18</td>
<td>A check copy of the addendum notice can be printed by hitting PF11 from the main menu.</td>
</tr>
<tr>
<td>19</td>
<td>Submit Addendum by hitting PF12 from the main menu</td>
</tr>
</tbody>
</table>

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Table 5-1: Addendum Notice Procedure
Chapter 6 — Pre-Letting and Post-Letting

Contents:

Section 1 — Overview
Section 2 — Federal Project Authorization and Agreement
Section 3 — State Letter of Authority
Section 4 — Project Financial Clearance
Section 5 — Pre-letting Checklist
Section 6 — Post-letting Guidelines
Section 1 — Overview

Pre-Letting Information

This chapter covers some of the activities that occur after all PS&E packages have been submitted to and processed through the Design Division prior to letting. Activities prior to letting include

- Filing of the Notice to Contractors
- Preparation and submission of the Federal Project Authorization and Agreement (FPAA) form (for all projects with federal project numbers)
- Preparation of the state letter of authority (LOA) (on all projects with federal project numbers and locally let projects)
- Publishing of advertisements and release of proposals to prospective bidders.

In addition, the project financial clearance process for projects involving participation by other entities is described.

Post-Letting Information

Post-letting issues include

- Letting overrun justification memorandum criteria
- Bid validity determination.
Section 2 — Federal Project Authorization and Agreement

Overview

This section covers the following Federal Project Authorization and Agreement (FPAA) and state LOA topics:

- Function of FPAA
- Respective FPAA Duties
- FPAA Detailed Reporting Instructions

More information on the FPAA can be found in Task 6030: Obtain Funding and Approval of PS&E in the Project Development Manual.

Function of FPAA

The FPAA form is required for each federally funded project. The primary function of this form is to obligate federal funds for the project by phases. By completion of the FPAA form, federal funds are obligated and an agreement is entered into with the Federal Highway Administration (FHWA).

Respective FPAA Duties

Division personnel are responsible for completing and submitting the FPAA to the Letting Management Section of the Finance Division when the project estimate is complete. The Letting Management Section checks the forms for accuracy and completeness with regard to federal fund source, STIP information, environmental clearance, etc. For state oversight projects, Letting Management forwards these forms to the FHWA for approval. For federal oversight projects, these forms are submitted, along with the PS&E, to the FHWA by the responsible field section. FHWA personnel sign the first page of the form and return. This serves as the federal LOA for the project.

FPAA Detailed Reporting Instructions

The Detailed Reporting Instructions packet for inputting data into a form FPAA can be obtained from the Letting Management Section of the Finance Division. The packet includes

- Step-by-step instructions
- Copy of the FPAA form
- Federal apportionment code listings which are not currently published in manual format.
Section 3 — State Letter of Authority

Overview

This section discusses

◆ Function of LOA
◆ Letting Management Office LOA Duties
◆ Environmental Affairs Division LOA Duties
◆ LOA Form Field Completion Procedure

Function of LOA

The state LOA is a form that must be issued on all projects, including all projects let or work performed by local public agencies (LPA). State LOAs must be completed and dated prior to advertisement of the project. Federal-aid projects require a three-week advertisement period. State law prescribes that state-funded projects be advertised for two consecutive weeks prior to receipt of bids. The LOA issue dates are reflected in the PS&E Review and Processing Schedule. However, state law also requires that any project $25,000 or more must be advertised 3 weeks on the Texas Department of Economic Development Electronic Bulletin Board or the contract is not valid.

Letting Management Office LOA Duties

Approximately one week after the letting schedule has been approved for any given letting, the Finance Division – Letting Management Section prints all necessary state letters of authority. The forms include all identifying information such as district, county, highway, CSJ, project number, functional classification, work program, limits, and type of work from the corresponding information from the various DCIS screens. The Letting Management section prints out a form for all CSJs including projects that are to be locally let by an LPA or for projects to be constructed by LPAs. Letting Management will indicated on the form if a FPAA is required and the responsible section. The forms are then sent to the Environmental Affairs Division.

Environmental Affairs Division LOA Duties

Personnel in the Environmental Affairs Division complete the portions of the form pertaining to their area of responsibility. This includes the following fields: Corps of Engineers Section 404/10:IND/NW, Coast Guard Section 9, TWC/WPAP, Texas Historical Commission, Texas Parks and Wildlife Department, Type of Environmental Clearance, FHWA Clearance Date, Remarks and Signature. The Environmental Affairs Division certifies a project’s environmental clearance status.
Projects that are not environmentally clear cannot be authorized for letting and are subsequently removed and rescheduled.

LOA Form Field Completion Procedure

The form is then sent to the same responsible division office that handled the processing of the project for further handling. The Design Division handles all projects that are mainly roadway, structure, or landscaping. The Traffic Operations Division handles all projects that are mainly signing, pavement markers, signal or illumination. The remaining fields on the form are completed as shown in Table 6-1.

Table 6-1: LOA Form Field Completion Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Letting management will complete the FPAA fields on the form which indicates if a FPAA should be submitted and the responsible division/section.</td>
</tr>
<tr>
<td>2</td>
<td>Check if the STIP is clear or not, and input the FHWA clearance date from the DCIS P7 screen (view-only screen).</td>
</tr>
<tr>
<td>3</td>
<td>Check if the Right-of-way, Right-of-way Encroachments, Relocation Assistance, and Utilities are clear or not clear based on the latest certifications and status forms provided by the district. Input the dates of the latest certifications.</td>
</tr>
<tr>
<td>4</td>
<td>Verify if a Railroad Agreement is necessary. If necessary, input the date that the agreement was executed. If an agreement is necessary but has not yet been executed, this should be noted on the form. The project may have to be removed from the letting if railroad agreement coordination is not complete. In certain instances, the project may be conditionally awarded pending execution of the railroad agreement. The LOA must be conditioned as noted below in #8.</td>
</tr>
<tr>
<td>5</td>
<td>If the project involves an advanced funding agreement, the escrow field should be checked yes, and the date that the agreement was executed should be entered under rec’d. If the agreement has not been executed, this should be noted on the form.</td>
</tr>
<tr>
<td>6</td>
<td>Under other, any other types of agreements or permits that may be required must be entered. If not applicable, enter no.</td>
</tr>
<tr>
<td>7</td>
<td>Under design approval, the initials and dates of all sections that reviewed the project are input.</td>
</tr>
</tbody>
</table>
Once the LOA has been signed, the Finance Division - Letting Management Section forwards a copy with attachments to all necessary divisions and districts. Approximately four days after the LOA date shown in the PS&E processing schedule, the first advertisements are normally published. See the example of a state LOA with Conditions of Approval (stateloa) that has been filled out with attachments.

### Table 6-1: LOA Form Field Completion Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 8    | The conditions of approval field are applicable if certain conditions exist at the time of authorization. These conditions are:  
- outstanding right-of-way acquisition  
- outstanding utility adjustments  
- railroad agreement execution, etc.  
The following are some examples of conditions of approval:  
- Authorization is given with the condition that an executed railroad agreement is submitted prior to the opening of bids.  
- This project is being authorized without all utility adjustments and/or right-of-way acquisition and/or relocation assistance being clear.  
This authorization is given with the understanding that Federal-Aid funds will not participate in time extensions or suspensions which are necessitated by utility interference, right-of-way clearance and/or relocation assistance. |
| 9    | The design is checked clear or not clear. The design is checked clear if the proposed design meets the applicable design standards or if all necessary design exceptions or waivers have been approved. The design is checked not clear if the proposed design does not meet the applicable standards and if design exceptions or waivers are pending or not approved. The status of any pending issues is stated under conditions. |
| 10   | A copy of the signed and approved Form 1002, Page 3 is attached to the state LOA. |
| 11   | After the reviewer has completed inputting all required data onto the form, the section director signs. |
| 12   | The section director reviews the information on the form and either approves, approves with conditions, or does not approve the project for letting. Any conditions of approval will be stated. |
| 13   | One week prior to letting, the conditional LOAs are reviewed by the Letting Management Office for compliance. If an executed railroad agreement has not been received, a determination is made based on information received from the Railroad Division, if the project should be removed from letting or conditionally awarded. If it is determined that a project should be conditionally awarded, an Amendment to the State LOA is prepared by Letting Management and signed by the responsible director reflecting the conditional award status. After signature, Letting Management distributes copies of the Amendment to the responsible district and divisions. Division personnel responsible for the Conditional Award List provided to the Commission are also notified so that the project may be included. |

**Letting Management Section LOA Duties**

Once the LOA has been signed, the Finance Division - Letting Management Section forwards a copy with attachments to all necessary divisions and districts. Approximately four days after the LOA date shown in the PS&E processing schedule, the first advertisements are normally published. See the example of a state LOA with Conditions of Approval (stateloa) that has been filled out with attachments.
Section 4 — Project Financial Clearance

Overview

This section contains the following pre-letting information:

- Other Participation Field
- Additional Payments
- Financial Clearance Reference.

Other Participation Field

The funding for any project involving participation by another agency, county, city, etc., must be checked prior to and after letting. For more information on inputting this information, see the DCIS User Manual, Chapter 1, Section 2, Fields and Chapter 2, Section 1 of this manual. Most funding agreements require the entity to pay their share of the costs 45 days prior to the proposed letting date. The district personnel who coordinated the agreement with the entity normally receive these payments. Once the total estimated payments are received, the district must prepare and submit a Notice of Financial Clearance For Bid Opening and Award form. This form certifies that all of the necessary estimated payments from the entity have been received.

Additional Payments

After letting, the entity’s participation needs to be recalculated based on the apparent low bidder’s unit prices. If the entity’s participation increases based on the apparent low bid, the district must contact the entity to request payment of the additional costs. The project is conditionally awarded, pending receipt of any additional funds from the participating entities. Once the district has received the additional payments, the district should prepare and submit the financial clearance form to the Contract Services Office. This office verifies that the necessary funds have been received and has the Construction Division issue a letter of award of contracts to the contractor. Once the contract is executed the work order by which construction can commence is issued. This entire process should be initiated and completed as soon as possible so that construction is not delayed. Long delays have resulted in the apparent low bidder electing to withdraw from the contract, and in some instances, filing claims against the department to recover financial losses resulting from the delay.
Financial Clearance Reference

For more information about the financial clearance process, see the Contract Management Manual, Chapter 9, Advanced Funding Agreements. Contact the Contract Services Office for additional information.
Section 5 — Pre-letting Checklist

Checklist

The following checklist contains activities normally performed by the responsible division personnel prior to letting. For district review projects, the activities denoted with an asterisk must be completed by the responsible district personnel prior to submission of the PS&E to Austin.

☐ Check to see if pre-bid conferences are shown. Administrative approval is required for mandatory pre-bid conferences. If so, make sure the DCIS C1 screen (PF 11 Pre-Bid screen) with pre-bid meeting information has been completely and accurately filled out. Also, pre-bid dates should be checked to allow sufficient advertising prior to meeting date.

☐ If the project is less than $300,000 (total bid items excluding E&C and force accounts), check to make sure the required Special Provision to Item 2, has been included which waives pre-qualification of bidders (unless approved otherwise by the Construction Division). Make sure WAIVER FLAG on the DCIS C1 screen is Y.

☐ Once the estimate is complete and all corrections have been made (including revisions), run the pre-letting update and report. Send a copy of pre-letting report to FIN-Letting Management Section at least one week prior to letting.

☐ Check the DCIS C1 screen for accuracy. Make sure the number of working days is accurate and in agreement with the contract time estimate worksheet. Always show the contract time on the DCIS C1 screen as W (C for calendar days is no longer used.) Check the area engineer’s name (last name, first name), address, and phone number for accuracy.

☐ Check the amount of authorized funds (DCIS P2 screen[s] and UTP). Compare the current total engineer’s estimate to the amount authorized. If insufficient funds, check Minute Order No. 106788 to identify who is authorized to approve the necessary additional funds. Prepare and send the necessary memorandums/justification.

☐ If participation by others is involved, check to see if the appropriate agreements have been prepared. Check to make sure the total participation by other entities has been input on the other participation field on the DCIS P1 screen. See the DCIS User Manual, Chapter 2, Section 1 Fields for more information.

☐ For Federal-Aid projects, the responsible division prepares an FPAA form and submit to FIN-Letting Management Section. The project must be environmentally clear (by the FHWA) and in an approved STIP before this form can be submitted to the FHWA.

☐ If the project is Federal-Aid state oversight, the responsible division fills out the state LOA provided by FIN-Letting Management Section (through Environmental Affairs Division (ENV) and return to FIN-Letting Management Section. Make sure all applicable conditions of approval are included (outstanding ROW, utilities, railroad agreements, etc.).
- Design Division Field Section prepares draft of proposal for review by district.
- Design Division Field Section develops final proposal, and CST issues proposals to interested bidders.
Section 6 — Post-letting Guidelines

Overview

This section includes the following post-letting guidelines:

- Letting overrun justification
- Local participation.

Letting Overrun Justification

The next subsections discuss:

- Overrun justification memorandum guidelines
- Construction Division determination of bid validity
- District review responsibilities.

Overrun Justification Memorandum Guidelines

Accurate estimating is essential in determining the validity of bids. The following are the latest guidelines for overrun justification memorandums for federal aid and state-funded construction projects.

Letting overrun justification memorandums are required for all types of projects where the apparent low bid is 20% or more over the engineer’s estimate and there are two or more bidders, regardless of project cost. Projects with only one bidder require justification when the apparent low bid exceeds the engineer’s estimate by more than 10%. These memorandums are prepared by the district and submitted to the responsible division office for further handling and coordination with the letting management office of the Finance Division. This office submits all memorandums to the Construction Division director for ultimate approval of the recommended bid award or rejection by the Texas Transportation Commission.

For more information, refer to the Project Development Process Manual, Task 6210.

Construction Division’s Determination of Bid Validity

The aforementioned letting overrun justification memorandums are used by the Construction Division to determine the validity of the bids. The following items are checked:

- Errors in plans or engineering estimate
- Adequate competition
Indications of collusion among bidders

Unbalanced bidding.

Once these points have been considered, the Construction Division recommends award or rejection of the bid overruns to be acted on by the Texas Transportation Commission during the same month’s scheduled Commission meeting.

For more information, refer to the *Project Development Process Manual*, Task 6200.

**District Review Responsibilities**

For district review projects, the district is responsible to prepare and submit to the Finance Division Letting Management Section the letting overrun justification memo with their recommendation as described above.

See examples of Letting Overrun Justification Memorandum - Division Review Project (lojmemo1) and Letting Overrun Justification Memorandum - District Review Project (lojmemo2) for sample project bid overruns on regular review projects and District Review projects, respectively.

**Local Participation**

- Update other participation Field on P2C Screen.

As noted in the Additional Payments subsection in Section 4, the district personnel that coordinated the funding agreements with the local entity should update this information. The Contract Services Office (CSO) and the Construction Division uses this information when issuing the construction work order.

- Prepare a Financial Clearance Analysis

Projects with outside funds are conditionally awarded, and contracts are released only after all terms as outlined in the project’s Advance Funding Agreement (AFA) have been met. The responsibility for the financial clearance function has been delegated to the district Engineer (DE). The Notice of Financial Clearance for Bid Opening and Award form signed by the DE needs to be sent to CSO once 30 days prior to bid opening and once prior to award. If a project overruns after letting, the district needs to discuss the bid prices with the local entity or Metropolitan Planning Organization (MPO) participating in the funding of the project and insure that the outside entity concurs with the acceptance of the higher costs. If they do not concur, the contract is not to be recommended to the Commission for award.
Chapter 7 — Local Public Agency Let Projects

Contents:

Section 1 — Guidance for Local Governments
Section 1 — Guidance for Local Governments

The PS&E Preparation Manual no longer requires this chapter as part of the contents. For information on local public agency let projects please refer to the new Local Government Project Procedures (LGPP) which are posted on TxDOT's website at http://www.dot.state.tx.us/business/business.htm.