



## *Local Programs Procedures*

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### **LPP 05-01 Manual Update**

**Subject: Americans With Disabilities Act (ADA)**

Reference: *Local Assistance Procedures Manual*, Chapter 7, *Field Review*, Chapter 11, *Design Standards*, and Chapter 12, *Plans, Specifications & Estimate*

Effective Date: October 7, 2005

Approved: Original Signed By  
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Division of Local Assistance

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### **WHAT IS AN LPP?**

LPPs are Local Programs Procedures. These documents are used for the rapid deployment of new procedures and policies on updates of Local Assistance manual, guidelines and programs. They are numbered according to calendar year and order in which released. This is the 1<sup>st</sup> LPP issued in 2005; hence, it is LPP 05-01.

### **PURPOSE**

The purpose of this LPP is to update Chapter 7, *Field Review*, Chapter 11, *Design Standards*, and Chapter 12, *Plans, Specifications & Estimate*, of the Local Assistance Procedures Manual (LAPM) with current information on the Americans with Disabilities Act (ADA). The entire Chapter 11 is being re-issued, deleting most of the existing exhibits, removing ADA design details for pedestrian facilities and referring users to the current federal and state websites for ADA design standards and details. In addition, minor revisions have been made to Chapters 7, 11, and 12, mostly identifying pedestrian facilities and other areas of the project that could be subject to ADA design standards.

This LPP will delete all references in the above chapters (7, 11, and 12) related to Traffic System Management (TSM), State/Local Transportation Partnership Program (SLTPP), and Flexible Congestion Relief (FCR) since these transportation programs have been discontinued. It will also address in these specific chapters the terms “Exempt” and “non-Exempt”. The terms “Exempt” and “Non-Exempt” will be eliminated and replaced with “State-Authorized” and “Full Oversight” for consistency with the Stewardship Agreement to avoid misinterpretation. Other minor administrative changes have also been made.

(Another LPP is being prepared, which will revise various parts of the entire LAPM and LAPG relating to Certification Acceptance, the terms “Exempt and Non-Exempt,” FCR, TSM, and SLTPP.)

## **BACKGROUND**

Previously, Chapter 11, *Design Standards*, included typical ADA design details and guidance for use by local agencies. The ADA design details and guidance have been removed from Chapter 11 and replaced with federal and state websites that provide ADA design assistance and guidance. Chapter 7, *Field Review*, and Chapter 12, *Plans, Specifications & Estimate*, did not include the ADA requirements that could be applicable during “Field Reviews” and in the “Plans, Specifications & Estimate” phase of the project; however, in this revision these requirements have been added.

The Department of Transportation (Caltrans) requested delegation of authority and oversight from FHWA for certain activities on federal-aid projects, as provided in Section 106 (b) of Title 23 United States Codes, as amended by the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.

The Department and FHWA signed a Stewardship Agreement on May 12, 1992, pursuant to Title 23 USC, Section 106 (c), which gave Caltrans delegation of authority and oversight for state-authorized projects.



## **USER-FRIENDLY FEATURES**

- These new procedures are incorporated in the electronic version of the LAPG and LAPM that are available at the Division of Local Assistance Home page on the Internet at: <http://www.dot.ca.gov/hq/LocalPrograms/>. Once there, click on “Publications” and then click on <http://www.dot.ca.gov/hq/LocalPrograms/lam/lapg.htm> for “Local Assistance Program Guidelines” or <http://www.dot.ca.gov/hq/LocalPrograms/lam/lapm.htm> for “Local Assistance Procedures Manual.” You may also purchase a Compact Disc (CD), which acts as a one-stop shop for information and promotes flexible access to helpful information for local project delivery at: <http://www.dot.ca.gov/hq/LocalPrograms/lam/LApubsCD.htm>
- Additional user-friendly features were developed to make the manual easier to edit and to access on the DLA website. The added features will allow the users to navigate more quickly through the manual. Chapter formatting has been changed to enhance user-friendliness and reduce overall document size. Internal bookmarks allow for direct access to chapters and subheadings from the table of contents. Right justification has been eliminated, resulting in tighter text, more compact paragraphs and an overall reduced chapter size.

- This LPP releases an entire new Chapter 11, which supersedes the previous version of Chapter 11 of the LAPM. The affected pages of Chapter 7 and Chapter 12 can easily be inserted into the existing hard copy of the LAPM. **Sidebar have been added to indicate where the revisions were made.**
- To receive an electronic notification when new information is posted on the DLA web site, please subscribe to the DLA list server at:  
<http://www.dot.ca.gov/hq/LocalPrograms/sub.htm>
- Comments and suggestions for improvements to the manual or the processes and procedures are welcome. They may be submitted to:

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Division of Local Assistance, MS 1  
Attention: **Cathy Felkins**  
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### **SUMMARY OF CHANGES**

<b>LAPM Item</b>	<b>Change</b>
<b>Chapter 7 Table of Contents</b>	Revised Table of Contents to reflect the changes made.
<b>Section 7.1 (Introduction) page 7-3, 3a</b>	Under “ <i>Introduction</i> ,” added this website at: <a href="http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm">http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm</a>  Added “. . . <i>local agency</i> ...” in the first bullet item.  Defined the acronym (AASHTO) in the 4 <sup>th</sup> bullet.  A fifth bullet item was added to ensure pedestrian facilities within the project area would be brought up to current ADA standards.  In the sixth bullet item, the words “. . . <i>or earmark</i> ...” were deleted from the sentence. Rather than earmark being a 3 <sup>rd</sup> category, it will be treated as major or minor category based on major or minor definition.

<p><b>Cont.</b> <b>Section 7.1</b> <b>(Introduction)</b> <b>page 7-3, 3a</b></p>	<p>In the seventh bullet item, reference to “<i>Local Assistance Environmental Manual</i>” was corrected to Caltrans “<i>Standard Environmental Reference (SER)</i>” and added the website at: <a href="http://www.dot.ca.gov/ser/vol1/vol1.htm">http://www.dot.ca.gov/ser/vol1/vol1.htm</a>. Established the acronym (AAA) for advertises, awards, administers on the 10<sup>th</sup> bullet.</p>
<p><b>Section 7.2</b> <b>(Type and Requirement for Field Review) page 7-3a</b></p>	<p>This section heading was moved to page 3a.  Added in the 1<sup>st</sup> paragraph reference to “<i>State-Authorized or FHWA Full Oversight.</i>”</p>
<p><b>Section 7.3</b> <b>(Notification)</b> <b>page 7-5, 6</b></p>	<p>Minor revisions were made in the 2nd paragraph under “<i>Required Reviews.</i>”  References to “<i>exempt and not-exempt</i>” were changed to “<i>State-Authorized and Full Oversight</i>” per Stewardship Agreement between FHWA and Caltrans.</p>
<p><b>Exhibit 7-A</b> <b>pages 7-11</b></p>	<p>Minor revisions were made in the 1<sup>st</sup> paragraph under “<i>Instructions For Field Review Form</i>”.</p> <p>Under Item no. 2, added “<i>pedestrian features</i>” as one of the major components of the proposed work.</p> <p>Under Item no. 3, added in the enclosed parenthesis ...(<i>Emergency Relief [ER] unless additional capacity is being added</i>)...</p> <p>Under Item no. 5 “<i>Stewardship Category</i>” eliminated the use of “<i>exempt</i>” and replaced with “<i>State-Authorized</i> and added “<i>Full Oversight</i>”.</p> <p>Revised Item no. 8 “<i>Proposed Funding,</i>” deleting references to FCR, TSM and STLPP. These programs had been terminated.</p> <p>Under Item no. 12 “<i>List of Attachments</i>” added “<i>All existing federal, state, or local....</i>”</p>

<p><b>Exhibit 7-B</b>  <b>pages 7-13, 14</b></p>	<p>Reformatted the form.</p> <p>Under Item no. 2 “<i>Work Description,</i>” deleted the 3<sup>rd</sup> category, “<i>or earmark ITS.</i>” Rather than earmark being a 3<sup>rd</sup> category, it will be treated as major or minor category based on major or minor definition. Deleted the word “<i>Major</i>” for it is misleading. If the ITS project is major, it will be “<i>Yes</i>” and if it is minor, it will be “<i>No.</i>”</p> <p>Under Item no. 5 “<i>Stewardship Category</i>” eliminated the use of “<i>exempt and non-exempt</i>” and replaced with “<i>State-Authorized</i>” and “<i>Full Oversight</i>”. Added check marks for “<i>DLAE oversight</i>” and “<i>District Construction oversight.</i>”</p> <p>Under Item 7, changed “<i>Grand Total Cost</i>” to “<i>Total Cost.</i>”</p> <p>Under Item no. 8 “<i>Proposed Funding</i>” deleted reference to TSM and the question on whether the project is underfunded.</p> <p>Under Item no. 11 “<i>Project Manager’s Concurrence</i>” replaced “<i>Title</i>” with “<i>Signature &amp; Title.</i>”</p> <p>Under Item no, 12 “<i>List of Attachments</i>” added check mark to include “<i>Existing federal and local ADA deficiencies not listed on the other Attachments.</i>”</p> <p>Deleted any references to “<i>TSM</i>” since this program has been terminated. Under type of work involved, “<i>TEA Application Document</i>” was corrected to “<i>TE Application Document</i>”. The “<i>A,</i>” which stands for “<i>Activities</i>” has been dropped off.</p> <p>Added, “<i>Distribution</i>” at the bottom of the page.</p>
<p><b>Exhibit 7-C</b>  <b>page 7-15</b></p>	<p>Under Item no. 3 “<i>Deficiencies of Existing Facility,</i>” ADA accessibility requirements have been added.</p>
<p><b>Exhibit 7-D</b>  <b>page 7-17</b></p>	<p>At the bottom of the page, added “<i>federal ADA, state or local accessibility requirements</i>” on the discussion of any special condition or proposed design exceptions.</p>
<p><b>Exhibit 7-H</b>  <b>pages 7-25, 26</b></p>	<p>Deleted this exhibit, for it was no longer applicable.</p>
<p><b>Exhibit 7-I</b>  <b>pages 7-27, 28</b></p>	<p>Under list no. 1 established the acronym (RA) for Regional ITS Architecture.</p> <p>Added this instruction (<i>Attachment to Field Review Form</i>).</p>
<p><b>Chapter 11,</b>  <b>Table of Contents</b></p>	<p>Revised the Table of Contents to reflect the changes made.</p>

<b>Section 11.1 (Introduction) pages 11-1, 2</b>	<p>Under “<i>Definitions</i>” added the definition of “<i>Alteration.</i>”</p> <p>Minor change was made to the definition of “<i>Specifications.</i>”</p>
<b>Section 11.2 (Statewide Design Standards for Local Assistance Projects), pages 11-3 thru 21</b>	<p>Established the acronym (SHS) for State Highway System under the section heading.</p> <p>Spelled out the acronym (AASHTO) under “<i>Geometric Standards for New and Reconstruction Projects.</i>”</p> <p>Spelled out the acronym (ADT) under “<i>Lane and Shoulder Widths.</i>”</p> <p>Under “<i>Horizontal Clearance,</i>” Item list no. 1, replaced the criteria “<b>3:1</b>” to “<b>1(v):4(h)</b>”. Minor changes to the second paragraph.</p> <p>Under “<i>Signs and Markings</i>” minor revisions were made to the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> paragraphs. Reference to Caltrans Traffic Manual was changed to “<i>Manual on Uniform Traffic Control Devices (MUTCD)</i>” and also added reference to websites at: <a href="http://mutcd.fhwa.dot.gov/ser-pubs.htm">http://mutcd.fhwa.dot.gov/ser-pubs.htm</a> and at: <a href="http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/index.htm">http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/index.htm</a></p> <p>Under “<i>Intelligent Transportation Systems/Traffic Signal Controllers</i>” added reference to websites at: <a href="http://www.dot.ca.gov/hq/LocalPrograms/lam/lapg.htm">http://www.dot.ca.gov/hq/LocalPrograms/lam/lapg.htm</a> and at: <a href="http://www.walkinginfo.org/pedsmart/home.htm">http://www.walkinginfo.org/pedsmart/home.htm</a></p> <p>Made revisions to the listed publications under “<i>Safety</i>”.</p> <p>Deleted the following headings in this section:</p> <ul style="list-style-type: none"> <li>• Accessible Route</li> <li>• Sidewalks and Walks</li> <li>• Curb Ramps (Wheelchair Ramps)</li> <li>• Grooves</li> <li>• Utility Facilities</li> <li>• Detectable Warning Surfaces</li> <li>• Curb Cuts Through Islands</li> <li>• Pedestrian Ramps</li> <li>• Drainage Inlet Grates</li> <li>• Driveway Design</li> <li>• Width Criteria for Wheelchair Passage</li> </ul> <p>Added the following new headings:</p> <ul style="list-style-type: none"> <li>• Transition Plan</li> <li>• ADA Compliance of Project Plans and Specifications</li> <li>• ADAAG Exceptions</li> <li>• Encroachment Permits</li> <li>• Applicable Facilities</li> <li>• ADA Design Assistance</li> <li>• Clear Width</li> </ul>

<p><b>Cont.          Section 11.2          (Statewide          Design          Standards for          Local          Assistance          Projects),          pages 11-3          thru 21</b></p>	<p>These additional new headings mentioned above explained the following changes:</p> <ul style="list-style-type: none"> <li>• The “General Policy” paragraph was revised explaining Caltrans’ role regarding accessibility for local agency projects.</li> <li>• The “Transition Plan” paragraph explains what and why local agencies need a transition plan.</li> <li>• The “Accessibility” paragraph includes examples of federal and California standards for curb ramps as well as alterations and added websites at:  <a href="http://www.usdoj.gov/crt/ada/reg2.html">http://www.usdoj.gov/crt/ada/reg2.html</a>  <a href="http://www.usdoj.gov/crt/ada/reg3a.html">http://www.usdoj.gov/crt/ada/reg3a.html</a></li> <li>• The “ADA Compliance of Project Plans and Specifications” paragraph includes California Government Code 4450 requiring state funded local agency projects with pedestrian facilities to have the plans and specifications reviewed by the California Division of State Architect (DSA). Added the website at:  <a href="http://www.access-board.gov/adaag/html">http://www.access-board.gov/adaag/html</a></li> <li>• ADA definitions of “Equivalent Facilitation,” “Structurally Impracticable,” and “Maximum Extent Feasible” have been included.</li> <li>• Minor changes to “Encroachment Permits” and “Applicable Facilities” paragraphs.</li> <li>• Addresses of state and federal websites have been included for ADA design assistance.</li> <li>• The “Clear Width Design” paragraph addresses safe shoulder widths across bridges.</li> </ul> <p>Under “<i>Bridge Design Procedures</i>” added reference to the website at:  <a href="http://www.dot.ca.gov/hq/esc/techpubs/updates/page/bds-toc.pdf">http://www.dot.ca.gov/hq/esc/techpubs/updates/page/bds-toc.pdf</a>.</p> <p>2<sup>nd</sup> paragraph under “<i>Flood Plain Encroachments</i>” added reference to “<i>final environmental NEPA document</i>” The reference cited, “<i>Local Assistance Environmental Manual</i>” was changed to “<i>Standard Environmental Reference (SER)</i>” included the website at: <a href="http://www.dot.ca.gov/ser/vol1/vol1.htm">http://www.dot.ca.gov/ser/vol1/vol1.htm</a>.</p> <p>Made minor revisions under “<i>Level of Evaluation</i>”. Cited Chapter 6 as reference and included the website at:  <a href="http://www.dot.ca.gov/hq/LocalPrograms/lam/lapm.htm">http://www.dot.ca.gov/hq/LocalPrograms/lam/lapm.htm</a>.</p>
<p><b>Section 11-3          (Locally          Developed          Design          Standard),          page 11-24</b></p>	<p>Added 3<sup>rd</sup> bullet item under “<i>Local Geometric Standards.</i>”</p>

**LPP 05-01**  
**Americans With Disabilities Act (ADA)**  
**Page 8**

<p><b>Section 11.4 (Design Exceptions), page 11-25, 26</b></p>	<p>Revised “<i>Pedestrian Facilities</i>” to explain the documentation of deviations from the state pedestrian standards and federal pedestrian standards.</p> <p>Revised “<i>Signs and Markings</i>” to further explain deviations from Mandatory Standards.</p> <p>Under “<i>Local Projects on the State Highway System</i>” added the website at: <a href="http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm">http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm</a></p> <p>Made minor revisions to the 4<sup>th</sup> paragraph under “<i>Local Projects <u>not</u> on the State Highway System.</i>”</p>
<p><b>Section 11-5 (References), pages 11-28, 29</b></p>	<p>Updated the list of references.</p>
<p><b>Exhibits 11-E page 11-45</b></p>	<p>Under d. <i>Floodplain Encroachments</i>, Item no.1 deleted the word “<i>Title</i>” before 23 CFR....; also added in letter d (2) “23” before CFR 650A.</p>
<p><b>Exhibits 11-F page 11-51</b></p>	<p>“Instructions For “Design Exception Fact Sheet” Item no. 5 added “..... <i>in the future</i>”.</p>
<p><b>Exhibits 11-G thru R</b></p>	<p>Deleted Exhibits 11-G thru 11-R for they are no longer applicable.</p>
<p><b>Chapter 12 Table of Contents</b></p>	<p>Revised the Table of Contents to reflect the changes made.</p>
<p><b>Section 12.1 (Introduction) page 12-1</b></p>	<p>Under “<i>Definitions</i>,” added the definition of “<i>Cost-Effectiveness/Public Interest Finding</i>.” Revised the definition of “<i>Specifications</i>.”</p>
<p><b>Section 12.3 (Environmental Procedures) page 12-3</b></p>	<p>Under “<i>Final Design</i>,” added at the end of the 1<sup>st</sup> paragraph “...Upon final environmental approval....”.</p> <p>In the 3<sup>rd</sup> paragraph established the acronym [MMRR] for... <i>mitigation monitoring, reporting record</i>.</p>
<p><b>Section 12.4 (Method of Construction), page 12-4</b></p>	<p>Under “<i>Contracting Method</i>” reference to “<i>not exempt</i>” was corrected to “<i>Full Oversight</i>.”</p>
<p><b>Section 12.7 (Plans) pages 12-9, 11a</b></p>	<p>Revised title from “<i>Plan Sheet Signatures</i>” to “<i>Plan Sheet and Specification Signatures</i>.” Revised the signatory requirements for plan sheet.</p> <p>Added section on “<i>Americans with Disabilities Act (ADA) Compliance Plans</i>,” reiterating that new construction or an alteration must comply with ADA within the limits of the project.</p>



<p><b>Section 12-8 (Standard Specifications) page 12-12, 13</b></p>	<p>In the second paragraph, corrected, “<i>Exhibit 12-C</i>” to “<i>Exhibit 12-D PS&amp;E Checklist.</i>”</p> <p>First paragraph under “<i>Sample Boiler Plate Contract Documents on the Internet,</i>” corrected the reference cited from “<i>Caltrans Local Programs Home Page</i>” to <a href="http://www.dot.ca.gov/hq/LocalPrograms/public.htm">http://www.dot.ca.gov/hq/LocalPrograms/public.htm</a>.</p> <p>Updated Caltrans Standard Specifications and Standard Plans from “July 1995” to “July 1999.”</p>
<p><b>Section 12.9 (Required Federal Contract Provisions), pages 12-23, 24</b></p>	<p>Third paragraph under “<i>Disadvantaged Business Enterprise</i>” corrected “ ... <i>Part 23...</i>” to ...<i>Part 26..</i>”; and “<i>See. ...((Part V, 4.) to See .... (Part XII)</i>”.</p> <p>Added paragraph requiring bidders list from local agency in accordance with Section 9.4 Local Agency DBE Program.</p> <p>Under “<i>Federal Trainees (On the Job Training)</i>” corrected the 1<sup>st</sup> sentence “...(<i>included in Exhibit 12-F</i>)...” to “ ... (<i>included in Exhibit 12-E, Attachment N</i>).”</p> <p>8<sup>th</sup> bulleted item under topic “<i>The major components of an OJT program include:</i>” replaced the “ ...<i>with Federal Intermodal Surface Transportation Efficiency Act (ISTEA) funds</i>” with “... <i>Federal Requirement Training Special Provisions.</i>”</p>
<p><b>Section 12.12 (Materials and Equipment),</b></p>	<p>Under “<i>Proprietary Items</i>” clarified the requirements that are not applicable to projects off the NHS.</p>
<p><b>Section 12.13 (Estimates), page 12-36</b></p>	<p>Third paragraph under “<i>Construction Engineering</i>” added “<i>HES</i>” and corrected “<i>Office of Local Programs</i>” to “<i>Division of Local Assistance.</i>”</p>
<p><b>Section 12.15 (PS&amp;E Certification), page 12-38</b></p>	<p>Under “<i>Special Provisions Review By Caltrans</i>” clarified responsibilities of DLAE in the review of Special and Federal Contract Provisions.</p>
<p><b>Section 12.16 (Projects without Traditional PS &amp;E), page 12-39</b></p>	<p>Reference to TEA was corrected to “<i>TE.</i>” The word “<i>Activities</i>” was dropped when the TEA program was dropped as a stand-alone program by the CTC. The federal Transportation Enhancement (TE) funds will be continued and programmed in the STIP.</p>
<p><b>Section 12.17 (References), page 12-40</b></p>	<p>Updated the list of references.</p>
<p><b>Exhibit 12-B page 12-43</b></p>	<p>Eliminated reference to “<i>TSM</i>” and corrected “<i>TEA</i>” to “<i>TE.</i>”</p>

<p><b>Exhibit 12-D</b>  <b>page 12-47</b>  <b>thru 56</b></p>	<p>All references to “<i>exempt</i>” and “<i>non-exempt</i>” were corrected to “<i>State-Authorized</i>” and “<i>Full Oversight</i>.”</p> <p>Under Item II “<i>Functional Classification</i>” deleted “<i>Other</i>” which was in the check box for “<i>Rural Principal Arterial</i>.”</p> <p>Revised 2<sup>nd</sup> box on “<i>Traffic Control Plans</i>.”</p> <p>Revised the title of Item X. “<i>Project Plans</i>” to “<i>Project Plans and Specifications</i>”. Added new check boxes regarding cover sheets of plans and specifications and for ADA compliance.</p> <p>Under Item XII “<i>Required Federal Contract Provision</i>,” made changes to the following items:</p> <ul style="list-style-type: none"> <li>- B. FHWA Form 1273, no. 2. Modification of FHWA Form 1273, 2.a thru 2.d modified instructions for completing the form</li> <li>- E. Disadvantaged Business Enterprises (DBE) Subcontracting, revised the DBE data to be completed and added new check boxes.             <ul style="list-style-type: none"> <li>- Under letter b. of Item No. 1 “<i>Contracts with Specific goals</i>,” added in the 3<sup>rd</sup> check box ...(<i>optional Exhibit 12-G</i>).</li> <li>- Under letter b of Item 2. <i>Contracts without Specific goals</i>,” added in the 3<sup>rd</sup> check box...(<i>optional Exhibit 12-G</i>)</li> </ul> </li> </ul>
<p><b>Exhibit 12-E</b>  <b>page 12-57</b>  <b>thru 64</b></p>	<p>All references to “<i>exempt</i>” and “<i>not exempt</i>” were revised to “<i>State-Authorized</i>” and “<i>Full Oversight</i>” per Stewardship Agreement between FHWA and Caltrans.</p> <p>Under letter A and B of Item 1V “<i>Method of Construction</i>” added reference to “<i>Exhibit 12-F</i>”.</p> <p>Revised Item X. “<i>Project Plans</i>” to “<i>Project Plans and Specifications</i>” added paragraph addressing requirements for project plans and specifications to comply with ADA requirements for newly constructed or altered areas.</p> <p>Under Item XII “<i>Required Federal Contract Provisions</i>” made changes to the following:</p> <ul style="list-style-type: none"> <li>- Item no.2. <i>Modification of FHWA Form 1273</i> (2.a thru 2.b) added information in completing this form.</li> <li>- D. <i>Liquidated Damages</i>, added in the 1<sup>st</sup> sentence “... <i>on the NHS</i>”.</li> <li>- E. <i>Disadvantaged Business Enterprise (DBE)</i>, Item no. 1 “<i>Projects with Specific Goals</i>,” added in the 2<sup>nd</sup> paragraph ... (<i>Exhibit 12-E Attachment H, also in...</i>).</li> </ul>

**LPP 05-01**

**Americans with Disabilities Act (ADA)**

**Page 11**

<b>Exhibit 12-E, Attachment H page 12-93, 94</b>	Under 2-1.02 <i>Disadvantaged Business Enterprise (DBE)</i> , letter H. replaced “ <i>Credit for DBE...</i> ” with “ <i>Use the following factors to determine.....</i> ” and added factors to determine whether DBE trucking company is performing a commercially useful function and credit for the DBE trucking company.  Added the website: <a href="http://www.dot.ca.gov/hq/bep/partners.htm">http://www.dot.ca.gov/hq/bep/partners.htm</a> - consultant
<b>Exhibit 12-E Attachment L page 12-103, 104</b>	Deleted Attachment L “ <i>Local Agency Bidder-DBE Information</i> ” and “ <i>Instructions-Local Agency Bidder-DBE (Construction Contracts) Information Form</i> ” which is no longer needed.
<b>Exhibit 12-F Page 12-109</b>	Added Exhibit 12-F “ <i>Request for Approval of Cost-Effectiveness/Public Interest Finding.</i> ”
<b>Exhibit 12-G pages 12-111, 112</b>	Added Exhibit 12-G “ <i>Bidder’s List of Subcontractors (DBE and Non-DBE) Part I and Part II,</i> ” which local agencies may choose to use for compiling a Bidder’s List for federal-aid projects.

**CHAPTER 7 FIELD REVIEW****CONTENTS**

Section	Subject	Page Number
7.1	INTRODUCTION .....	7-3
7.2	TYPE AND REQUIREMENT FOR FIELD REVIEW .....	7-3
	Formal Field Review .....	7-4
	Informal Field Review .....	7-4
	Required Review .....	7-4
	PS&E and Construction Administration Procedures .....	7-5
	Optional Review .....	7-5
7.3	NOTIFICATION .....	7-5
	Required Reviews .....	7-5
	Optional Field Reviews .....	7-6
7.4	TENTATIVE PLANS .....	7-6
7.5	PREPARATION OF FIELD REVIEW FORM .....	7-6
	Field Reviews Attended by Caltrans and the FHWA .....	7-7
	Optional Field Reviews Not Attended by Caltrans or the FHWA ..	7-7
7.6	FIELD REVIEW DATA .....	7-7
	Scope .....	7-7
	Environmental Process .....	7-8
	Right of Way .....	7-8
	Project Cost .....	7-8
	Project Administration .....	7-8
	Project Schedule .....	7-9
7.7	SUBMITTAL OF FIELD REVIEW FORM .....	7-9

**FLOW CHARTS**

Chart	Description	Page Number
7-1	FIELD REVIEW PROCEDURES FOR DEVELOPING FEDERAL-AID PROJECTS ..	7-1

**EXHIBITS**

Exhibit	Description	Page Number
7-A	INSTRUCTIONS FOR FIELD REVIEW FORM .....	7-11
7-B	FIELD REVIEW FORM .....	7-13
7-C	ROADWAY DATA .....	7-15

## EXHIBITS CONTINUED

Exhibit	Description	Page Number
7-D	MAJOR STRUCTURE DATA .....	7-17
7-E	RAILROAD GRADE CROSSING DATA .....	7-19
7-F	AIRPORT DATA .....	7-21
7-G	FIELD REVIEW ATTENDANCE ROSTER .....	7-23
7-H	EXHIBIT DELETED (BLANK FOR FUTURE USE).....	7-25
7-I	SYSTEMS ENGINEERING REVIEW FORM .....	7-27

## CHAPTER 7 FIELD REVIEW

### 7.1 INTRODUCTION

In conjunction with the preliminary environmental investigation, an important early action in developing a local transportation project financed with federal-aid funds is the methodical and systematic collection of initial engineering and related project data and information. For this manual, this data gathering project-scoping step is called the “Field Review.”

Each agency should establish a process for clearly defining the location, scope, cost, and the other parameters considered when developing a project. This step is very important in guiding the project development team to the successful production of the Plans, Specifications and Estimate (PS&E).

The field review for local agency transportation projects off the State Highway System (SHS) serves the same purpose as the Project Study Report serves for state highway projects. It is intended to bring together all interested parties and come to an agreement on the project requirements necessary to comply with federal and state laws and regulations. For local agency projects on the SHS, consult the Caltrans *Project Development Procedures Manual* (<http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm>), the District Local Assistance Engineer (DLAE), and the project manager to coordinate development responsibilities.

The field review process considers and documents the following actions:

- Assigns a local agency project manager to oversee the project studies, PS&E development and/or construction.
- Brings together representatives from various involved or interested agencies, including, but not limited to, the agency, Caltrans, other regional and local agencies, transit districts, other state or federal permitting agencies, public utilities, and railroads. FHWA may also be represented.
- Affords an opportunity for discussions of alternative proposals.
- Secures agreement on general design features and exceptions to American Association of State Highway and Transportation Officials (AASHTO) standards, or 3R, or local standards selected for the project.
- Identifies pedestrian facilities within the project area that will or may need to be brought up to current federal, state and/or local standards to be Americans with Disabilities Act (ADA) compliant.
- Determines if the project is a federal-aid Intelligent Transportation Systems (ITS) project. If so, determines if it is a major, or minor ITS project.
- Determines timing and costs associated with preparing and processing required technical studies and the NEPA document (see “Environmental Procedures” included in Chapter 6, *Environmental Procedures* of the *Local Assistance Procedures Manual* (LAPM) and Caltrans *Standard Environmental Reference* [SER] at this website: <http://www.dot.ca.gov/ser/voll/voll.htm>).
- Determines right of way and relocation assistance requirements.

- Discusses and evaluates proposed funding, eligibility requirements, and federal or state participation.
- Determines who advertises, awards, administers (AAA), and maintains the proposed project.
- Defines the project schedule and target advertising date.
- Discusses value analysis; if appropriate (required for NHS projects with an estimated cost of \$25 million or more. For more information on this subject, please see Chapter 12, *Plans, Specifications & Estimate*, Section 12.5 *Value Analysis* of this manual.).

## 7.2 TYPE AND REQUIREMENT FOR FIELD REVIEW

The type of field review chosen for a project depends on many factors including: highway system, project type (State-Authorized or FHWA Full Oversight on Interstate projects), project complexity, total cost and type of funds. The two types of field reviews are formal and informal.

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## FORMAL FIELD REVIEW

A formal field review can be accomplished by:

- A site (field) inspection, or
- An office meeting, or both.

All parties involved in the project development decisions should be invited to a formal field review. The DLAE should take the lead in the field reviews, take Minutes of the Field Review and circulate the notes to all affected parties afterward.

## INFORMAL FIELD REVIEW

Informal field reviews can be accomplished by:

- Small group meetings
- Interagency correspondence
- Phone discussions
- Individual research and data gathering

Exception: Emergency Relief (ER) projects use the FHWA Damage Assessment Form (DAF) in lieu of any other field review form. An on-site field assessment is required for all these projects.

## REQUIRED REVIEW

Caltrans will determine if a field review is required for all projects on the National Highway System (NHS). Generally, a field review will only be required for major NHS projects. A project will be considered to be major if:

- The total cost is over \$10 million, or
- It involves an unusual structure (see definitions in Section 2.4 of this manual), or
- It involves multiple projects on a corridor involving more than one agency, or
- Any other complicating factors require a field review.

All required reviews would be formal. In consultation with the local agency, the Caltrans DLAE determines how the formal field review will be accomplished.

Exceptions to the above are as follows:

- A site visit, or “early coordination meeting” may be required, on the grounds of environmental sensitivity for protected resources, controversy, or consequences (impacts) of the proposed action (see Chapter 6, *Environmental Procedures*). This meeting may be part of the formal or informal field review discussed in this chapter or held separately.
- For seismic safety retrofit projects, a field review is mandatory as described in Section 7.8 of the *Local Assistance Program Guidelines (LAPG)*

## PS&E AND CONSTRUCTION ADMINISTRATION PROCEDURES

When Caltrans requires a field review for major NHS projects, PS&E and construction administration procedures (standards, agencies involved, use of consultants, project management, value analysis, specifications, materials testing, etc.) will be discussed. The PS&E procedures will be put in writing for Caltrans' and FHWA's approval before the local agency starts final design (see Chapter 12, Plans, Specifications & Estimate of the LAPM).

The construction administration procedures will also be put in writing. The procedures must be approved by Caltrans and FHWA before construction will be authorized (see Chapter 15, Advertise and Award Project of the LAPM).

NHS projects that are not considered "major" will not require these approvals.

### OPTIONAL REVIEW

A field review is optional for all projects off the NHS (non-NHS). The field review is also optional for all NHS projects determined by Caltrans to be minor in nature. It is a suggested practice for all projects.

## 7.3 NOTIFICATION

The local agency contacts the DLAE to discuss when and how they wish to proceed with project implementation, if this was not already done as part of the initial project authorization process.

### REQUIRED REVIEWS

For required field reviews, the DLAE determines the type of field review required and coordinates, as appropriate, with the local agency on scheduling. The DLAE notifies Caltrans and FHWA attendees. The local agency is responsible for making other review preparations and notifying other interested parties. Each attendee should receive a copy of the draft Field Review Form before the actual field review.

In addition to the district local assistance representative, Caltrans attendees, when applicable, should include an environmental reviewer, a right of way reviewer, and a representative from the Office of Structure Design (if a structure is involved). In order to optimize their value to the local agencies, these Caltrans specialists should become familiar with the project prior to attending the field reviews. Others may attend as appropriate. If the project involves a state highway, a representative from the appropriate District Project Development or Traffic Branch must be contacted to determine their involvement in the project development, and the need for a Project Report and encroachment permit.

A representative from FHWA should be consulted for all projects on the NHS for which FHWA has Full Oversight, and those which may require an environmental document more complex than a Programmatic Categorical Exclusion (PCE). Request for FHWA consultation should be coordinated through the DLAE (see Chapter 2, *Roles and Responsibilities* and Chapter 6, *Environmental Procedures*, for further details).

## OPTIONAL FIELD REVIEWS

For projects that Caltrans has determined, a field review is not required. The local agency is responsible for deciding whether to perform a field review (formal or informal) and for notifying all potentially affected agencies, utility companies, etc., and making arrangements for any on-site or office meetings. In deciding whether and how to conduct a review, an agency should consider the following factors: functional classification, project type and State-Authorized/FHWA Full Oversight status, project complexity, total cost, interested, and affected parties and type of funds.

If a local agency wishes Caltrans (or FHWA) staff to participate in the field review process, a request must be made to the DLAE. Caltrans' participation is based on the following factors:

- Availability of Caltrans staff and time requirements
- Experience of local agency staff
- Complexity of project, type of structures
- Funding program
- Environmental, right of way and design issues

For railroad crossing projects, the PUC participates in the review process.

Discussions with the DLAE should also indicate whether Caltrans' participation in any subsequent phases of the project is expected. This is especially important if PS&E reviews are needed for structures. Caltrans and the agency should reach a clear agreement early in the process on the extent of Caltrans' staff participation in any phase of project development.

## 7.4 TENTATIVE PLANS

The local agency should have a tentative plan as well as horizontal and vertical alignment sketches available for review by participants, either prior to, or at the field review. On projects that involve bridges, the agency should also provide preliminary hydrologic and hydraulic data (see Exhibit 11-D). This information need not be in great detail, but sufficient to make an engineering review of the proposal.

## 7.5 PREPARATION OF FIELD REVIEW FORM

The local agency shall prepare and complete the Field Review Form (Exhibit 7-B [or DAF for ER projects]) for all federal-aid projects, even if a Field Review were not required. (For ER projects, the DAF is used in lieu of the Field Review Form-see Chapter 11 of the LAPG) The field review form documents the results and decisions of the field review and other initial project research. It also provides data necessary to prepare the "Request for Authorization" and the Program Supplement Agreement.

The field review process and documents should be completed, as early as possible. For HBRR funded (Bridge) projects, the field review documents, including major structure data sheets, must be completed prior to any request for authorization. For other types of projects, authorization for preliminary engineering may be granted prior to submittal of the field review to Caltrans when federal reimbursement is needed, to hire consultants or others in order to obtain information needed to complete the field review. The field review document must be completed and submitted prior to, or concurrently with the first occurrence of either step below:

- Initial submittal of the PES form (completed and with supporting information attached) for Caltrans and/or FHWA approval (see Chapter 6, “Environmental Procedures”)
- Submittal of the Agreements Checklist requesting a Supplemental Agreement

## **FIELD REVIEWS ATTENDED BY CALTRANS AND THE FHWA**

For projects on the NHS, early review and discussions should be held with the DLAE and the FHWA engineer. Similar early discussions should occur for HBRR funded (Bridge) projects to ensure funding eligibility.

If a field review is required, Caltrans and the FHWA will attend. Caltrans and the FHWA may also attend optional field reviews if requested. The local agency shall fill out the Field Review Form as completely as possible prior to the field review, and send a copy with a location map to each of the interested parties attending the field review. This allows the participants to come to the meeting prepared to discuss the specific issues and methodologies, which can lead to successful project implementation. The earliest date for the field review should be two weeks after the receipt of the draft Field Review Form by the district. Copies for the FHWA, Division of Local Assistance, and Office of Structure Design must be submitted to the district for further transmittal.

Caltrans has delegated design exception approval authority to the City/County Public Works Director (see Chapter 11, “Design Standards” of this manual). However, proposed design exceptions should be identified and discussed at the field review.

The Field Review Form should be updated and signed by the local agency, district, and FHWA representatives, as appropriate, at the field review even if some of the questions remain unanswered. Information determined after the field review is to be provided by the local agency as a supplement to the Field Review Form and may require FHWA concurrence.

## **OPTIONAL FIELD REVIEWS NOT ATTENDED BY CALTRANS OR THE FHWA**

If the field review is optional and Caltrans and the FHWA will not be attending, the local agency may complete the Field Review Form without a formal or informal review or meeting. An on-site visit by the project engineer and project manager is recommended as good practice to verify the data and information used to complete the forms. The forms should be transmitted to the DLAE as soon as they are complete.

## **7.6 FIELD REVIEW DATA**

### **SCOPE**

The project must be defined in sufficient detail to accurately specify where it is, why it is necessary and what will be done. This process of project definition began with the planning and programming process. Now, further details are needed to clarify the limited FSTIP information with the specific project location, system and conditions as they currently exist and as they will be upon project completion. If the scope changes significantly from the approved FSTIP description, now or at any time during project development, a FSTIP amendment may be necessary. Items 1 to 5 on the “Field Review Form” (Exhibit 7-B) and Exhibits 7-C (“Roadway Data”), 7-D (“Major Structure Data”), 7-E (“Railroad Grade Crossing Data”), vicinity maps, typical

section(s), alternative sketches, signal warrants, and collision diagrams, as appropriate, provide data related to the general scope of the project. For non-roadway projects, the Field Review Form and attachments would be modified as appropriate for the project activity and scope, e.g., site plans, work plans, building sketches.

## ENVIRONMENTAL PROCESS

All federal-aid projects must undergo a documented environmental review and receive a federally approved environmental document before proceeding to final design, right of way acquisition or construction. The documentation of how the decision was made to perform a particular technical study or recommend a specific class of action (CE, EA, EIS) under NEPA is equally as important as environmental approval. Environmental requirements and procedures for processing required technical studies and the NEPA document are discussed in Chapter 6 of this manual. Specific information regarding the format and content of required technical studies and NEPA documents (CE, EA, EIS) is contained in the SER.

The “Preliminary Environmental Study (PES) Form,” Exhibit 6-A is designed to identify:

- The existing condition of the project area
- The potential existence of sensitive environmental resources within the project area
- Required technical studies
- The responsible or regulatory agencies where early coordination or consultation is necessary or where approvals and permits are needed

## RIGHT OF WAY

The need to acquire right of way or relocate utilities can significantly affect project development, especially costs and scheduling. Activity within Caltrans right of way requires coordination and an encroachment permit. Federal laws and regulations must be followed if there is FHWA participation in any project phase, whether in R/W phase or only in the construction phase. The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended (42 US Code 4801, et. seq.). Item 7 of the “Field Review Form” (Exhibit 7-B) highlights the possible right of way activities with a cost estimate breakdown. The need for utility relocation should be identified.

## PROJECT COST

Good initial estimates are needed to define whether there are sufficient funds available to implement the project. Item 7 of the Field Review Form provides for an overview by phase and anticipated Federal participation. Item 8 can be used to further break this down by federal fund type and state funding. State or local funds are normally required to match the federal funds. To the greatest extent possible, FHWA funded projects should be funded at the full federal participating ratio (see Chapter 3, “Project Authorization,” Section 3.2, “Underfunding Policy”).

## PROJECT ADMINISTRATION

The agency submitting the request is normally responsible for administering all phases of the project. If another arrangement is expected, this should be noted. If the agency plans to hire a consultant to assist with any phase, this should be noted. This

allows the agency to work sufficient time into their schedule for consultant selection (see Chapter 10, “Consultant Selection”). If the state is expected to administer any phase or to review the PS&E, hold early discussions with the appropriate Caltrans district to ensure that the required staff is available when needed. A cooperative agreement is needed to define work and cost sharing responsibilities.

## PROJECT SCHEDULE

A federal project is normally scheduled for a specific year in the FHWA approved FSTIP document. While the funds are usually carried forward into new FTIP and FSTIP adoptions, this is at the discretion of the MPO. For State funded projects, the specific program guidelines define the year or years the program funds are available. The delivery schedule for advertising should be reviewed to see if the project could be developed in a timely manner. The items discussed above define some of the critical steps in this effort. For federally funded projects, if there will be significant delays, the agency should work with the MPO to reschedule the work through a current FSTIP amendment or into the next FSTIP. State program guidelines define the appropriate actions for the State funded projects. In non-MPO areas, contact the Caltrans District FSTIP coordinator for necessary amendments.

## 7.7 SUBMITTAL OF FIELD REVIEW FORM

As soon as formal or informal discussions and review are complete, the local agency prepares the final Field Review Form and attachments (see Section 7.5 above for the latest times for completion). If a field review is required for NHS projects, all appropriate forms and attachments shall be completed. If the field review is optional, the two page Field Review summary (Exhibit 7-B) must be completed, as a minimum. See the brackets (“[ ]”) notation under Item 12 of Exhibit 7-B for additional attachments.

The local agency consults with the district regarding the number of copies to be sent. The district forwards a Field Review Form (two if a bridge is involved) with the required attachments to the Division of Local Assistance. The local agency may wish to provide copies to their MPO and other interested parties.

The project engineer and project manager should periodically review the Field Review Form and data to ensure that the project development is proceeding as initially proposed or that significant changes have been approved.

The field review document must be completely filled out and submitted prior to or concurrently with the first occurrence of either step below:

- Initial submittal of the PES form (completed and with supporting information attached) for Caltrans and/or FHWA approval (see Chapter 6, “Environmental Procedures”)
- Submittal of the Agreements Checklist requesting a Supplemental Agreement

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## INSTRUCTIONS FOR FIELD REVIEW FORM

The Applicant shall complete the Field Review Form in accordance with Chapter 7, *Field Review* of this manual. The District Local Assistance Engineer (DLAE) should be consulted for clarification. If Caltrans or other interested parties are to be involved in meetings, to assist in completion; the applicant should fill out the form as completely, as possible prior to any meeting(s). The form must be completely filled out prior to submission of the PES Form.

### Item 1. PROJECT LIMITS

Briefly describe the physical limits or nature of project. Attach a list, as needed, for multiple or various locations. Indicate length of project to nearest one-tenth of kilometer or mile. Use 0.1, if a spot location. Include additional sheets, if needed, to clearly define the project location or scope of work.

### Item 2. WORK DESCRIPTION

Briefly describe major components of the proposed work, e.g., signals, bridge replacement, ridesharing, pedestrian features, etc.

### Item 3. PROGRAMMING DATA

All federal-aid funded projects (except Emergency Relief [ER], unless additional capacity is being added) are required to be on the most current FHWA/FTA approved FSTIP. If project is within an MPO area, indicate the MPO or RTPA's FTIP<sup>1</sup> that includes project and the fiscal years of FTIP. Also list the page of FTIP or Amendment Project Planning Number (PPNO), if available and FHWA/FTA approval date. For non-MPO areas include same information from FSTIP.

Indicate the federal funds and phases listed in the FTIP/FSTIP. For CMAQ projects name the Air Basin.

### Item 4. FUNCTIONAL CLASSIFICATION

For a roadway project, check appropriate functional classification category. See the discussions of specific fund programs in the *Local Assistance Program Guidelines* (LAPG) for system eligibility. Indicate N/A for projects not related to a specific road or street system.

### Item 5. STEWARDSHIP CATEGORY

For roadway projects, indicate if project is on the National Highway System (NHS), and whether project is State-Authorized or a FHWA Full Oversight project on the Interstate per stewardship agreement. With some exceptions, projects on the State Highway System are subject to Caltrans Oversight, and on the Interstate are subject to FHWA Full Oversight; otherwise, the project is subject to DLAE oversight. Refer to Figure 2-1, "Required FHWA Oversight Federal-Funded Projects" in Chapter 2 of this manual .

### Item 6. CALTRANS ENCROACHMENT PERMIT REQUIRED

An encroachment permit is required for projects encroaching within the state highway right of way. The applicant should contact the District Permit Officer early in the process.

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<sup>1</sup> The FTIP must be incorporated into an FHWA approved FSTIP.



**Item 7. COST BREAKDOWN ESTIMATE**

List estimated breakdown of all project phases and indicate phases for which federal participation will be requested. Include all known costs, but include each cost in only one group. (For structures related projects financed with Highway Bridge Replacement and Rehabilitation [HBRR] funds; the current HBRR operating procedures limit preliminary engineering costs, including environmental costs to 25% of the total construction cost. Any exceptions must be approved in writing by the HBRR program manager.)

**Item 8. PROPOSED FUNDING**

Fill in total cost of federal-funded project, type, and amount of federal-aid funds, i.e. STP, CMAQ, etc., and the matching-fund breakdown.

If state funds are involved, indicate source such as STIP.

**Item 9. PROJECT ADMINISTRATION**

Indicate name of agency that will be responsible for administering each project phase. Also indicate the use of a consultant for any phase. Indicate if Caltrans' review of PS&E will be requested. If yes, begin discussions with DLAE on availability of staff. All PS&E documents to be reviewed must be in Caltrans format.

**Item 10. SCHEDULES**

The local agency should indicate their proposed advertisement date. This will give the involved parties a date for scheduling. However, the discussion of requirements and time frames may require adjustment of the advertisement date. Critical dates in the schedule should be noted in the remarks.

**ITEM 11. PROJECT MANAGER'S CONCURRENCE**

The local agency project manager shall sign and date the field review form to signify agreement on the parameters proposed for development of the project. The DLAE and FHWA representative shall sign the document when attending field reviews. This document is then a guidance reference for further development of the project to assure that it adheres to the programmed concept, or that any changes are approved by the manager (and/or DLAE and FHWA, if appropriate).

**Item 12. LIST OF ATTACHMENTS**

The first two items are appropriate for all reviews. Others to be added depend on the type of project. For required field reviews, all applicable attachments must be submitted. For optional field reviews, see the "[ ]" notations for attachments required for specific types of projects. All existing federal, state, or local Americans with Disabilities Act (ADA) deficiencies, if not identified on other Attachments, should be listed here

Note: The Federal Damage Assessment Form (DAF) shall be used as the field review document for Emergency Relief projects.

**FIELD REVIEW FORM**

Local Agency \_\_\_\_\_ Field Review Date \_\_\_\_\_  
 Project Number \_\_\_\_\_ Locator \_\_\_\_\_  
 \_\_\_\_\_ (Dst/Co/Rte/PM/Agncy) \_\_\_\_\_  
 Project Name \_\_\_\_\_ Bridge No.(s) \_\_\_\_\_

1. PROJECT LIMITS (see attached list for various locations) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ Net Length \_\_\_\_\_ (km ) or (mi)

2. WORK DESCRIPTION \_\_\_\_\_

ITS project or element: Yes \_\_\_ No \_\_\_ If yes, is it a Major ITS \_\_\_ or a Minor ITS \_\_\_  
 3. PROGRAMMING DATA FTIP (MPO/RTPA) \_\_\_\_\_ FY \_\_\_\_\_ Page \_\_\_\_\_  
 Amendment No. \_\_\_\_\_ FTIP PPNO \_\_\_\_\_ FHWA/FTA Approval Date \_\_\_\_\_  
 Federal Funds \$ \_\_\_\_\_ Phases PE \_\_\_\_\_ R/W \_\_\_\_\_ Const \_\_\_\_\_  
 Air Basin: \_\_\_\_\_ (CMAQ only)

4. FUNCTIONAL CLASSIFICATION:  
 URBAN \_\_\_\_\_ RURAL \_\_\_\_\_  
 Principal Arterial: \_\_\_\_\_ Principal Arterial: \_\_\_\_\_  
 Minor Arterial: \_\_\_\_\_ Minor Arterial: \_\_\_\_\_  
 Collector: \_\_\_\_\_ Major Collector: \_\_\_\_\_  
 Local: \_\_\_\_\_ Minor Collector: \_\_\_\_\_  
 Rural Local: \_\_\_\_\_

5. STEWARDSHIP CATEGORY  
 FHWA Full Oversight (Stewardship): Yes \_\_\_ No \_\_\_  
 State-Authorized (Stewardship): Yes \_\_\_ No \_\_\_ (a) DLAE oversight: Yes \_\_\_ No \_\_\_  
 (b) District Construction oversight: Yes \_\_\_ No \_\_\_  
 ITS project or element requiring FHWA oversight per stewardship: Yes \_\_\_ No \_\_\_

6. CALTRANS ENCROACHMENT PERMIT Is it required? Yes \_\_\_ No \_\_\_

7. COST ESTIMATE BREAKDOWN	\$1,000's	Fed. Participation	
(Including Structures)		Yes ___	No ___
PE Environmental Process	_____	Yes ___	No ___
Design	_____	Yes ___	No ___
System Manager/Integrator	_____	Yes ___	No ___
CONST Const. Contract	_____	Yes ___	No ___
Const. Engineer.	_____	Yes ___	No ___
R/W Preliminary R/W Work	_____	Yes ___	No ___
Acquisition:		Yes ___	No ___
(No. of Parcels _____)	_____	Yes ___	No ___
(Easements _____)	_____	Yes ___	No ___
(Right of Entry _____)	_____	Yes ___	No ___
RAP (No. Families _____)	_____	Yes ___	No ___
RAP (No. Bus. _____)	_____	Yes ___	No ___
Utilities (Exclude if included in contract items)	_____	Yes ___	No ___

**TOTAL COST** \$ \_\_\_\_\_

8. PROPOSED FUNDING

Grand Total	Total Cost	Cost Share	
	\$ _____		
Federal Program #1 _____	\$ _____ Fed.	\$ _____	Reimb. Ratio _____
(Name/App. Code) #2 _____	\$ _____ Fed.	\$ _____	Reimb. Ratio _____
Matching Funds Breakdown	Local:	\$ _____	_____ %
	State:	\$ _____	_____ %
	Other:	\$ _____	_____ %
State Highway Funds? Yes _____	Source _____	No _____	
State CMAQ/RSTP Match Eligible	Yes _____	No _____	Partial _____
Is the Project Underfunded? (Fed \$ < Allowed Reimb.)		Yes _____	No _____

9. PROJECT ADMINISTRATION

	Agency	Consultant	State
PE	Environ Process _____	_____	_____
	Design _____	_____	_____
	System Man./Integ. _____	_____	_____
R/W	All Work _____	_____	_____
CONST ENGR	Contract _____	_____	_____
CONSTRUCTION	Contract _____	_____	_____
MAINTENANCE	_____	_____	_____

Will Caltrans be requested to review PS&E? Yes \_\_\_\_\_ No \_\_\_\_\_

10. SCHEDULES: PROPOSED ADVERTISEMENT DATE \_\_\_\_\_  
 Other critical dates: \_\_\_\_\_  
 \_\_\_\_\_

**11. PROJECT MANAGER'S CONCURRENCE**

Local Entity \_\_\_\_\_ Date: \_\_\_\_\_  
 Signature & Title \_\_\_\_\_ Phone No. \_\_\_\_\_

Is field review required? Yes \_\_\_\_\_ No \_\_\_\_\_

Caltrans (District) \_\_\_\_\_ Date \_\_\_\_\_  
 Signature & Title \_\_\_\_\_

**12. LIST OF ATTACHMENTS** (Include all appropriate attachments if field review is required. See the "[ ]" notation for minimum required attachments for non-NHS projects)

- \_\_\_\_\_ Field Review Attendance Roster or Contacts Roster
- \_\_\_\_\_ Vicinity Map (Required for Construction Type Projects)

**IF APPLICABLE** ( Complete as required depending on type of work involved)

- \_\_\_\_\_ Roadway Data Sheets [Req'd for Roadway projects]
- \_\_\_\_\_ Typical Roadway Geometric Section(s) [Req'd for Roadway projects]
- \_\_\_\_\_ Major Structure Data Sheet [Req'd for HBRR] \_\_\_\_\_ Signal Warrants
- \_\_\_\_\_ Railroad Grade Crossing Data Sheet \_\_\_\_\_ Collision Diagram
- \_\_\_\_\_ Airport Data Sheet (if within 3 kilometers) \_\_\_\_\_ Protection of Wetlands Statement
- \_\_\_\_\_ Sketch of Each Proposed Alternate Improvement \_\_\_\_\_ CMAQ/RSTP State STIP Match
- \_\_\_\_\_ TE Application Document \_\_\_\_\_ Systems Engineering Review Form
- \_\_\_\_\_ Existing federal, state, and local ADA deficiencies \_\_\_\_\_ (SERF) (Req'd for ITS projects)
- not included on other Attachments.



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## ROADWAY DATA

1. TRAFFIC DATA

Current ADT \_\_\_\_\_ Year 19 \_\_ Future ADT \_\_\_\_\_ Year 19 \_\_ DHV \_\_\_\_\_ Trucks \_\_ %  
 Terrain (Check One) \_\_\_\_\_ Flat \_\_\_\_\_ Rolling \_\_\_\_\_ Mountainous  
 Design Speed \_\_\_\_\_  
 Proposed Speed Zone \_\_\_\_\_ Yes \_\_\_\_\_ mi or km/h \_\_\_\_\_ No \_\_\_\_\_

2. GEOMETRIC INFORMATION

ROADWAY SECTION

Facility	Year Constr.	Min. Curve Radius	Thru Traffic Lanes			Shoulders		Median Width
			No. of Lanes	Total Width	Type	Each Width Lt/Rt	Type	
Exist.								
Prop.								
Min. Stds. selected: AASHTO _____ 3R _____ Local _____								
	N/E Contig. Sect.							
	S/W Contig. Sect.							

Remarks (If design standard exception is being sought, cite standard and explain fully how it varies):

\_\_\_\_\_

\_\_\_\_\_

3. DEFICIENCIES OF EXISTING FACILITY (Mark appropriate one(s))

_____ Pavement Surface _____ Alignment _____ Crossfall _____ Pavement Structure	_____ Drainage _____ Bridge _____ Safety (Attach collision diagram or other documentation) _____ Federal Americans w/ Disabilities Act (ADA), State or Local accessibility requirements _____ Other (describe below)
--	--

Remarks \_\_\_\_\_

\_\_\_\_\_

4. TRAFFIC SIGNALS \_\_\_\_\_ Yes \_\_\_\_\_ New (attach warrants) \_\_\_\_\_ Modified \_\_\_\_\_ No

5. MAJOR STRUCTURES Structure No.(s) \_\_\_\_\_ (attach structure data sheet)

\_\_\_\_\_

6. OTHER TRANSPORTATION FACILITIES (Name)

_____ None		
_____ Railroad	_____	(attach railroad data sheet)
_____ Airports	_____	(attach airport data sheet)
_____ Transit	_____	
_____ Bicycle	_____	

7. AGENCIES AFFECTED

Utilities [mark appropriate one(s)]    \_\_\_\_\_ Telephone    \_\_\_\_\_ Electrical    \_\_\_\_\_ Gas  
  \_\_\_\_\_ Water                    \_\_\_\_\_ Irrigation  
  \_\_\_\_\_ Other                    \_\_\_\_\_ Sanitary

Major Utility Adjustment: \_\_\_\_\_  
  \_\_\_\_\_

High Risk Facilities: \_\_\_\_\_  
  \_\_\_\_\_

Other: \_\_\_\_\_  
  \_\_\_\_\_

Remarks: \_\_\_\_\_  
  \_\_\_\_\_

(Attachment to Field Review Form)

**MAJOR STRUCTURE DATA**  
(Attach a separate sheet for each structure)

Project Number \_\_\_\_\_

Bridge Name (facility crossed) \_\_\_\_\_

State Br. No. \_\_\_\_\_ Date Constructed \_\_\_\_\_ Historical Bridge Inv. Category \_\_\_\_\_

Road Name \_\_\_\_\_ Location \_\_\_\_\_

**STRUCTURE DATA**

	Existing		Proposed		Minimum AASHTO Standards	
Structure Type	_____	_____	_____	_____	_____	_____
Structure Length	_____	_____	_____	_____	_____	_____
Spans (No. & Length)	_____	_____	_____	_____	_____	_____
Clear Width (Curb to curb)	_____	_____	_____	_____	_____	_____
Shoulder Width	_____ Lt	_____ Rt	_____ Lt	_____ Rt	_____ Lt	_____ Rt
Sidewalks or bikeway width	_____ Lt	_____ Rt	_____ Lt	_____ Rt	_____ Lt	_____ Rt
Total Br. Width	_____	_____	_____	_____	_____	_____
Total Appr. Rdwy. Width	_____	_____	_____	_____	_____	_____

1. Preliminary Engineering by \_\_\_\_\_

2. Design by \_\_\_\_\_

3. Foundation Investigation by \_\_\_\_\_

4. Hydrology Study by \_\_\_\_\_

Detour, Stage construction, or Close Road \_\_\_\_\_

Length of Detour \_\_\_\_\_

Resident Engineer for Bridge Work: \_\_\_\_\_ Agency \_\_\_\_\_ Consultant (On Retainer as City/County Engineer)

Responsible Local Official \_\_\_\_\_

Discuss any special conditions; for example, federal ADA, state or local accessibility requirements, or proposed design exceptions.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



ESTIMATED STRUCTURE AND RELATED COSTS:

		Federally Participating	
		Yes	No
Bridge Cost			
Construct Bridge	_____	_____	_____
Bridge Removal	_____	_____	_____
Slope Protection	_____	_____	_____
Channel Work	_____	_____	_____
Detour - Stage Construction	_____	_____	_____
Approach Roadway	_____	_____	_____
Preliminary Engineering	_____	_____	_____
Construction Engineering	_____	_____	_____
Right of Way Costs	_____	_____	_____
Utility Relocation	_____	_____	_____
Mobilization	_____	_____	_____
Total	_____	_____	_____

Type of HBRR funds: Check one (Major type if more than one)

<input type="checkbox"/> Seismic/Voluntary (88.53% Fed. Share)	<input type="checkbox"/> Painting (88.53%)
<input type="checkbox"/> Rehabilitation (80%)	<input type="checkbox"/> Painting (80%)
<input type="checkbox"/> Replacement (80%)	<input type="checkbox"/> Special (80%)
<input type="checkbox"/> Railing (88.53%)	<input type="checkbox"/> Low Water Xing (80%)

Summarize HBRR funded costs of above estimate:  
(HBRR Federal-aid + local match for HBRR only)

Indicate the estimated date for Federal-aid  
Authorization & Obligation or Check the box:

Prelim. Eng. \$ _____	_____	<input type="checkbox"/> Not needed for this project
Right of Way \$ _____	_____	<input type="checkbox"/> Not needed for this project
Construction. \$ _____	_____	<input type="checkbox"/> Not needed for this project
Total \$ _____		

Remarks \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\* The following must be attached if the project is funded by the HBRR Program:

1. Plan view of proposed improvements.
2. Typical Section.

\*\*\*\*\* The following is recommended:

1. Right of way map to determine whether right of way acquisition or construction easements are necessary.

(Attachment to Field Review Form)

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### SYSTEMS ENGINEERING REVIEW FORM

This form needs to be filled out for all ITS projects. For major all ITS projects, this completed form needs to be submitted to FHWA for review and approval prior to PE authorization (Phase 1 PE authorization).

*For all major ITS projects, a System Engineering Management Plan (SEMP), which includes the seven items below, must be submitted to FHWA for review and approval prior to PE authorization for final or detailed design (Phase 2 PE authorization. The 2-phased authorization only applies to Major ITS projects.*

For guidance in filling out the seven items below, see last part of this exhibit.

- 1. Identification of portions of the Regional ITS Architecture (RA) being implemented:

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- 2. Identification of participating agencies roles and responsibilities:

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- 3. Requirements definitions:

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- 4. Analysis of alternative system configurations and technology options to meet requirements:

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- 5. Procurement options:

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- 6. Identification of applicable ITS standards and testing procedures:

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- 7. Procedures and resources necessary for operations and management of the system:

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**Address the above items to the degree possible at Field Review stage and acknowledge commitment to address during system design in the early stages of the SE process.**

1. Identification of portions of the RA being implemented:

(Identify which user services; physical subsystems, information flows, and market packages are being completed as part of the project, and how these pieces are part of the RA.)

2. Identification of participating agencies roles and responsibilities (concept of operations):

(For the user services to be implemented: define the high-level operations of the system, including where the system will be used; functions of the system capabilities; performance parameters; the life cycle of the system; and who will operate and maintain the system. Establish requirements or agreements on information sharing and traffic device control responsibilities. The RA Operational Concept is a good starting point for discussion.)

3. Requirements definitions:

(Based on the concept of operations in 2. above, define the “what” and not “how” of the system. During early stages of the Systems Engineering [SE] process, they will be broken down into detailed requirements for eventual detailed design. The applicable high-level functional requirements from the RA are a good starting point for discussion. A review of the requirements by the project stakeholders is recommended.)

4. Analysis of alternative system configurations and technology options to meet requirements:

(The analysis of system alternatives should outline the strengths and weaknesses, technical feasibility, institutional compatibility, and life cycle costs of each alternative. The project stakeholders should have input in choosing the preferred solution.)

5. Procurement options:

(Some procurement [contracting] options to consider include: consultant design/low bid contractor, systems manager, systems integrator, task order, and design/build. Deciding on the best procurement option should consider the level of agency participation, compatibility with existing procurement methods, role of system integrator, and life cycle costs.)

6. Identification of applicable ITS standards and testing procedures:

(Include documentation on which standards will be incorporated into the system design and justification for any applicable standards not incorporated. The standards report from the RA is a good starting point for discussion.)

7. Procedures and resources necessary for operations and management of the system:

(In addition to the concept of operations in 2. above, document any internal policies or procedures necessary to recognize and incorporate the new system into their current operations and decision processes. Resources necessary to support continued operations, including staffing and training must also be recognized early and be provided. Such resources must also be provided to support necessary maintenance and upkeep to ensure continued system viability.)

| (Attachment to Field Review Form)

**Chapter 11 Design Standards****Contents**

SECTION	SUBJECT	PAGE NUMBER
11.1	INTRODUCTION .....	11-1
	GENERAL .....	11-1
	DEFINITIONS .....	11-1
11.2	STATEWIDE DESIGN STANDARDS FOR LOCAL ASSISTANCE PROJECTS .....	11-3
	ROADWAY AND APPURTENANCES .....	11-3
	Geometric Standards for New and Reconstruction Projects .....	11-3
	Geometric Standards for 3R Projects .....	11-3
	Pavement Structural Section .....	11-6
	Signs and Markings .....	11-6
	Intelligent Transportation Systems/Traffic Signal Controllers .....	11-7
	Safety .....	11-7
	Bikeway Standards .....	11-8
	PEDESTRIAN FACILITIES .....	11-8
	General Policy .....	11-8
	Accessibility .....	11-8
	ADA Compliance of Project Plans and Specifications .....	11-10
	ADAAG Exceptions .....	11-11
	Encroachment Permits .....	11-12
	Applicable Facilities .....	11-12
	ADA Design Assistance .....	11-12
	BRIDGES .....	11-12
	Definitions .....	11-12
	Bridge Design Procedures .....	11-13
	Clear Width Design .....	11-14
	Seismic Design .....	11-14
	Railroad Bridges .....	11-14
	Bridge Railing .....	11-14
	Bridges to Remain in Place .....	11-15
	Design of Large Culverts .....	11-16
	Foundation Investigation for Design .....	11-16
	DRAINAGE .....	11-17
	General .....	11-17
	Definitions .....	11-17
	Hydraulic Design Criteria .....	11-18
	Flood Plain Encroachments .....	11-20
	Level of Evaluations .....	11-21
	Scour Evaluations .....	11-21
	General Design Considerations for Bridges and Culverts .....	11-22
	Documentation .....	11-22
	STANDARD PLANS .....	11-23
	STANDARD SPECIFICATIONS .....	11-23

**Contents continued**

<b>SECTION</b>	<b>SUBJECT</b>	<b>PAGE NUMBER</b>
<b>11.3</b>	<b>LOCALLY DEVELOPED DESIGN STANDARDS.....</b>	<b>11-23</b>
	<b>LOCAL GEOMETRIC STANDARDS .....</b>	<b>11-23</b>
	<b>LOCAL PAVEMENT STRUCTURAL SECTION .....</b>	<b>11-24</b>
<b>11.4</b>	<b>DESIGN EXCEPTIONS .....</b>	<b>11-24</b>
	<b>STANDARDS FOR WHICH DEVIATIONS ARE PERMITTED .....</b>	<b>11-24</b>
	<b>STANDARDS FOR WHICH DEVIATIONS ARE NOT PERMITTED .....</b>	<b>11-25</b>
	<b>DESIGN EXCEPTION APPROVAL PROCEDURES.....</b>	<b>11-26</b>
	<b>Local Projects on the State Highway System .....</b>	<b>11-26</b>
	<b>Local Projects not on the State Highway System .....</b>	<b>11-26</b>
	<b>Design Exception Fact Sheet .....</b>	<b>11-26</b>
	<b>Tracking of Design Exceptions .....</b>	<b>11-27</b>
<b>11.5</b>	<b>REFERENCES .....</b>	<b>11-28</b>

**EXHIBITS**

<b>SECTION/SUBJECT</b>	<b>PAGE NUMBER</b>
<b>EXHIBIT 11-A GEOMETRIC DESIGN STANDARDS FOR LOCAL 3R PROJECTS.....</b>	<b>11-31</b>
<b>EXHIBIT 11-B AASHTO PUBLICATIONS ORDER FORM.....</b>	<b>11-37</b>
<b>EXHIBIT 11-C FOUNDATION INVESTIGATIONS FOR DESIGN .....</b>	<b>11-39</b>
<b>EXHIBIT 11-D PRELIMINARY HYDROLOGIC/HYDRAULIC REVIEW SUMMARY .....</b>	<b>11-43</b>
<b>EXHIBIT 11-E CHECKLIST FOR DRAINAGE STUDIES AND REPORTS.....</b>	<b>11-45</b>
<b>EXHIBIT 11-F DESIGN EXCEPTION FACT SHEET.....</b>	<b>11-51</b>

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## CHAPTER 11 DESIGN STANDARDS

### 11.1 INTRODUCTION

#### General

Project construction plans and specifications must provide for a facility that will adequately meet the existing and probable future traffic in a manner conducive to safety, project economics, durability and economy of maintenance. The design standards used for any project should equal or exceed the minimum standards given in this chapter. Taking into account costs, traffic volumes, traffic and safety benefits, right of way, socio-economic; and environmental impacts allows for the use of lower standards only when such use best satisfies the given situation. All exceptions from accepted standards must be justified, documented and retained in the project files.

The purpose of this chapter is to:

- Designate “Statewide” design standards, criteria, specifications, procedures, guides, and references that are acceptable for application in the geometric, structural, drainage and pavement design of local federal-aid projects both on and off the National Highway System (NHS).
- Describe the procedures to allow the use of “certain locally developed” design standards, including standard specifications and standard plans, as acceptable alternatives to “Statewide” design standards for local federal-aid projects off the NHS.
- Outline the “Design Exception” approval procedures for local federal-aid projects on and off the NHS.

#### Definitions

Alteration – An alteration, as applicable to Americans with Disabilities Act (ADA) is a change to a building or facility including roadway made by, on behalf of, or for the use of a public accommodation or commercial facility that affects, or could affect the usability of the building or facility, or part thereof. Alterations include, but are not limited to, remodeling, renovation, rehabilitation, reconstruction, historic restoration, changes or rearrangement of the structural parts or elements, and changes or rearrangement in the plan configuration of walls and full-height partitions. Normal maintenance including filling potholes, reroofing, painting or wallpapering, or changes to mechanical and electrical systems are not alterations unless they affect the usability of the building or facility.

Design Standards -- The standards, specifications, procedures, guides and references listed herein that are acceptable for application in the geometric, structural, pavement and hydraulic design of local federal-aid projects.

Controlling Criteria -- The specific minimum criteria and controls contained in the design standards that are of primary importance for safety. Deviations from these controlling criteria require design exception approval in accordance with Section 11.4 of this chapter.

Design Exception Approval -- A process to justify, approve, and document allowable deviations from controlling criteria.



Specifications -- The directions, provisions, and requirements contained in the contract documents for a specific construction project. Included are various proposal conditions, contract administration provisions, required construction methods, and technical requirements for materials.

Standard Specifications -- A published document that contains commonly used specifications developed for use as a reference for construction contract documents.

Standard Plans -- A collection of plan details developed for use as a reference for construction contract documents. Included are standard abbreviations, symbols, design notes, design conditions and data, construction details, specifications, layouts, and measurement and payment details.

Types of Construction:

New Construction - Is defined as a new transportation facility that did not previously exist in the corridor or as the addition of an interchange. The addition of appurtenances to an existing facility, such as striping, signs, signals, noise barriers, etc. is not considered new construction.

2. Reconstruction (as defined for Stewardship purposes)- Involves the following:
  - Addition of a lane (except climbing or auxiliary lanes)
  - Significant change in horizontal and/or vertical alignment
  - Reconstruction of an interchange by adding moves or relocating ramps (widening ramps for storage, turning movements or ramp metering are not included)
  - Replacement of an entire bridge or the major parts of an existing bridge (in such a manner that it is effectively a new bridge)
  - Seismic retrofit projects for the following:
    - a) Major or unusual structures (all tunnels, unusual and movable bridges, unusual hydraulic or geotechnical structures, or bridges with a total deck area greater than 125,000 square feet), or
    - b) Construction cost greater than \$5 million per structure
  - Major modifications to Traffic Management Centers
3. Preventive Maintenance -- Includes, but is not limited to, roadway activities such as joint and shoulder rehabilitation, heater re-mix, seal coats, corrective grinding of PCC pavement, and restoration of drainage systems.
4. 3R Work -- All other work which do not fall into the above defined categories for new construction, reconstruction or preventive maintenance and typically involves the improvement of highway pavement surfaces through resurfacing, restoration, or rehabilitation. Specifically, 3R Work is defined as the following:
  - Resurfacing generally consists of placing additional asphalt concrete over a structurally sound highway or bridge that needs treatment to extend its useful service life.
  - Restoration means returning a road, structure, or collateral facility to the condition existing after original construction.
  - Rehabilitation implies providing some betterments, such as upgrading guardrail or widening shoulders.

The 3R work is generally regarded as heavy, nonroutine maintenance designed to achieve a ten-year service life. The 3R work does not involve major realignment or major upgrading of geometric standards. However, the work may include selective improvements to highway geometry and other roadway features including safety appurtenances, and still be considered 3R work.

## 11.2 Statewide Design Standards for Local Assistance Projects

The following statewide design standards are acceptable for design of local federal-aid projects both on and off the NHS.

Locally funded projects on the State Highway System (SHS) must be designed in accordance with SHS standards as defined in various Caltrans manuals.

### Roadway and Appurtenances

#### Geometric Standards for New and Reconstruction Projects

New and reconstruction projects shall be designed in accordance with American Association of State Highway and Transportation Officials (AASHTO) Standards as defined in the current edition of *A Policy on Geometric Design of Highways and Streets* (often referred to as the *AASHTO Green book*).

The Federal Highway Administration (FHWA) has designated twelve (12) geometric controlling criteria with a primary importance for safety in the selection of design standards. These criteria are:

- Design Speed
- Lane Width
- Shoulder Width
- Bridge Width
- Horizontal Alignment
- Vertical Alignment
- Grades
- Stopping Sight Distance
- Cross Slopes
- Superelevation
- Horizontal Clearance
- Vertical Clearance

The FHWA has indicated that any deviations from these geometric controlling criteria requires formal approval. Such deviations from the above criteria requires that a local agency obtains design exception approval in accordance with the procedures described in Section 11.4, *Design Exceptions*, in this chapter.

#### Geometric Standards for 3R Projects

The minimum standards for geometric design of local federal-aid resurfacing, restoration and rehabilitation (3R) projects, are shown in Tables 1 through 10 of Exhibit 11-A, *Geometric Standards for Local 3R Projects*. Designs using better than minimum standards should be used when feasible especially in areas of high traffic volume; when design speeds exceed 80 km/h; and when significant truck volumes are expected.

The primary purpose of 3R projects is to preserve and extend the service life of existing facilities and enhance highway safety, normally, without major improvements to existing geometric features. However, a reasonable effort should be made, to provide uniform geometric standards for a substantial length of roadway. Therefore, the work may include upgrading of geometric features, such as minor roadway widening, flattening curves or improving sight distances and still be considered as 3R work.

**Lane and Shoulder Widths**-- Tables 1, 2 and 3 of Exhibit 11-A present the minimum 3R standards for widths of traffic lanes and shoulders on roadways classified as arterials, collectors and local roads and streets.

Table 4 presents the minimum 3R standards for traffic, turning, parking, and bicycle lanes for urban streets and roads with curb and gutter.

Wide lanes and shoulders give motorists: 1) increased opportunity for safe recovery when their vehicles run off the road, and 2) increased lateral separation between overtaking and meeting vehicles. Added safety benefits include improved sight distance at critical horizontal curves, reduced interruption from emergency stopping and road maintenance activities, less wear at the lane edge, and better roadway surface drainage.

Traffic volumes influence the cost-effectiveness of lane and shoulder widening, because the number of accidents eliminated by lane and shoulder widening increases almost in proportion to an Average Daily Traffic (ADT), whereas the costs are not affected significantly by ADT. Lane and shoulder widening can also produce timesavings for highway users, which can be an important consideration for highways with an ADT greater than 2,000 vehicles per day.

**Bridge Widths** -- The minimum bridge width values for 3R projects involving bridges to remain in place on arterial, collectors, and local streets and roads are shown in Tables 5, 6, and 7 of Exhibit 11-A. The 3R projects on such bridges involve mainly roadway resurfacing and improvements to railings. More significant work, such as structural strengthening, or deck replacement is classified as reconstruction and must meet AASHTO standards.

The relationship between bridge width and the width of approach lanes influences bridge safety; roadway constriction at narrow bridges reduces the opportunity for safe recovery by out-of-control vehicles, and may result in collisions with bridge abutments.

Thus, the safety cost-effectiveness of bridge width improvements depends upon the usable width of the bridge, the width of the approach lanes, traffic volumes, and the length of bridge.

**Horizontal Clearance** – Side slope and clear zone improvements on 3R projects should meet the following criteria:

1. Flatten side slopes of **1(v):4(h)**, or steeper at locations where run-off-the-road accidents are likely to occur, such as on the outside of sharp horizontal curves.
2. Whenever possible, side slopes should not be steepened when widening lanes and shoulders.
3. Remove, relocate, or shield isolated roadside obstacles.

Roadside characteristics are important in determining the overall level of safety provided by a highway. Accident rates are lower, and accidents are less severe on highways with gentle side slopes and fewer obstacles near the roadway.

Removing isolated trees, and relocating utility poles can be more safety cost-effective than widening lanes or flattening horizontal curves.

**Horizontal Alignment** -- Values for stopping sight distance and horizontal curves for 3R projects are shown in Tables 8, 9 and 10 of Exhibit 11-A.

Safety often can be improved at horizontal curves without costly reconstruction. Local agencies should evaluate other safety measures when reconstruction is unwarranted. Such measures might include widening lanes, widen and paving shoulders, flattening steep side slopes, removing or relocating roadside obstacles, and installing traffic control devices, raised pavement markings and reflective guideposts.

Accidents are more likely to occur on horizontal curves than on straight segments of roadway because increased demands are placed on the driver and vehicle, and centrifugal force tends to cause a vehicle to run-off-the road. The safety effect of an individual curve is influenced not only by the curve's geometric characteristics, but also by the geometry of adjacent highway segments. Safety considerations are important especially when a curve is unexpected, such as when it follows a long straight approach, or when it is hidden from view by a hillcrest.

Depending on site conditions; improvements to curves can be an inexpensive and effective means of reducing the severity and frequency of accidents.

**Vertical Alignment** -- Values for superelevation, grades and stopping sight distances are included in Tables 8, 9 and 10 of Exhibit 11-A. For sustained downgrades, consideration should be given to increasing the minimum stopping sight distances shown in the above tables.

The Transportation Research Board recommends that local agencies evaluate the option of reconstructing hillcrests when:

1. The hillcrest hides from view such conditions as: intersections, sharp horizontal curves or narrow bridges.
2. The Average Daily Traffic is greater than 1,500 vehicles per day.
3. The design speed of the hillcrest (based upon the minimum sight distance provided) is more than 30 kph below the 85th percentile speeds of vehicles on the crests.

Whether, or not the reconstruction of a hillcrest is necessary, designers should examine the nature or potential hazards hidden by a hillcrest, and consider other options such as removing potential hazards or providing warning signs.

Sight obstructions at hillcrests can be corrected only by changing the vertical alignment to lengthen the existing vertical crest curve.

Generally, to be safety cost-effective, vertical alignment improvements must correct a substantial sight distance restriction that affects a driver's ability to anticipate difficult situations, such as turning vehicles, sharp curves, or other conditions that demand specific driver responses.

**Pavement Crown and Edge Drops** -- Local agencies performing resurfacing projects should consider constructing pavement overlays with pavement crowns that match AASHTO standards for new construction.

Resurfacing projects offer opportunities to improve surface drainage and vehicle control in wet weather, by correcting deficient cross slopes at little or no additional cost.

Pavement edge drops result either from resurfacing activity unaccompanied by desirable shoulder improvement, or from wear, or erosion of weak shoulder material. Resurfacing can increase the likelihood that edge drops will develop later and require repeated maintenance to correct.

Consideration should be given to paving shoulders selectively to improve all-weather use and prevent edge drop problems from occurring on either the inside or outside of a short radius curve.

### Pavement Structural Section

The design of a pavement structural section is not an exact science. The design guidelines and standards referenced herein are based on a wide range of factors. The final pavement design must be based on a thorough investigation of specific project conditions including materials, environmental conditions, projected traffic, life-cycle economics, and the performance of other like pavement structural sections under similar conditions in the same area.

The structural section of the roadbed should conform to:

- Section 600 of the *Caltrans Highway Design Manual*,
- *Caltrans Flexible Pavement Structural Section Design Manual*, or
- *Flexible Pavement Structural Section Design Guide for California Cities and Counties*, published by Caltrans in cooperation with County Engineers Association of California and the League of California Cities.

### Signs and Markings

Guidance, regulatory, warning and temporary traffic control signs, curb and pavement, or other markings, markers, and traffic signals installed, or placed on any project constructed with federal funds shall conform to the *Manual on Uniform Traffic Control Devices* (MUTCD) and *MUTCD California Supplement*.

The FHWA has indicated that school crosswalks and other school markings should conform to the MUTCD in the interest of national uniformity when transverse crosswalk lines are used. The crosswalk markings shall be solid white or yellow; as required by California law and as stated in the *MUTCD California Supplement, Part 7, Traffic Controls for School Areas*. The MUTCD and *MUTCD California Supplement* are respectively available at:

<http://mutcd.fhwa.dot.gov/ser-pubs.htm>

<http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/index.htm>

Deviations from the “Mandatory Standards” for signs markings, and traffic signals as defined and shown in the MUTCD and the *MUTCD California Supplement* are not permitted; unless a proposal to experiment with non-standard devices is submitted to the California Traffic Control Devices Committee and approved for experimental use.

### Intelligent Transportation Systems/Traffic Signal Controllers

Per 23 Code of Federal Regulations (CFR), Part 940, *Intelligent Transportation System Architecture and Standards*, effective April 8, 2001, all Intelligent Transportation Systems (ITS) projects must adhere to ITS Standards. The choice of ITS Standards hinges on the development of a Regional ITS Architecture. See *Local Assistance Program Guidelines* (LAPG), Chapter 12.6 *Intelligent Transportation Systems*, section for details on ITS Standards, or website at: <http://www.dot.ca.gov/hq/LocalPrograms/lam/lapg.htm>.

Assembly Bill 3418 (1995) which amended Section 21401 of the *California Vehicle Code*, requires “any traffic signal controller that is newly installed or upgraded by the Department of Transportation or a local authority after January 1, 1996, shall be of a standard traffic signal communication protocol capable of two-way communications.” Communication standards for traffic signal controllers are available from the National Transportation Communications for ITS Protocol. This information may be accessed through the Internet at: <http://www.ntcip.org/>. Other ITS elements to enhance pedestrian safety at intersections can be found at: <http://www.walkinginfo.org/pedsmart/home.htm>

### Safety

The following publications have also been developed to aid the designer in improving highway safety:

- *Manual on Uniform Traffic Control Devices* (MUTCD)
- *MUTCD California Supplement*
- *Designing Safer Roads, Special Report 214*, Transportation Research Board
- *Roadside Design Guide, 1995* (available through AASHTO)

These publications are primarily informational or guidance in nature, and serve to assist local agencies in knowing the information valuable to attaining good designs. All designers should be familiar with these documents. Although the principles contained are written primarily for high-speed highway facilities, consideration should be given to their application on other types of projects regardless of traffic volumes and design speed. Project-by-project deviations from the criteria in these publications do not require handling in accordance with design exception approval procedures cited in Section 11.4 of this chapter. However, any deviations should be justified and documented in the project files.

Evaluating accident records is an integral step in developing highway projects and often reveals problems requiring special attention and corrective action. Accident records are available from the Statewide Integrated Traffic Records System (SWITRS) for analysis. Relative accident rates can influence the priorities of projects and ensure that project objectives and the scope of design are related to accident causes. In addition, it may be necessary to use a cost/benefit study and an investigation of accident experience, to determine, if the correction of an identified safety problem is cost-effective. Significant safety problems, such as narrow bridges or culverts, railroad crossings or fixed objects which are not cost-effective to correct, must be provided with suitable warning and traffic control devices. For example, no bridges may be left in place which have a width narrower than the surfaced approach roadway, unless suitable signing, marking and parapet protection are provided.

On many local agency projects, right of way considerations may limit the extent to which side slopes may be flattened and roadside clearances obtained. In such situations, it is expected that the desired smooth and obstacle-free roadside will be obtained to the extent feasible.

### **Bikeway Standards**

The standards for bikeway projects shall conform to Chapter 1000 of the *Caltrans Highway Design Manual*. Deviations from the “mandatory” bikeway standards stated therein require approval in accordance with the design exception approval procedures described in Section 11.4 of this chapter.

## **Pedestrian Facilities**

### **General Policy**

Caltrans has the responsibility to ensure that all local agency projects, for which the local agency receives federal financial assistance from the US Department of Transportation, fully comply with 49 CFR (Code of Federal Regulations), Part 27 entitled, *Nondiscrimination on the Basis of Disability in Programs and Activities receiving or Benefiting from Federal Financial Assistance*. 49 CFR, Part 27 applies to each recipient of federal assistance from the US Department of Transportation, and to each program or activity that receives or benefits from such assistance.

Specifically, Caltrans’ role is to ensure that all new and existing altered facilities such as, but not limited to highway rest area facilities, sidewalks, pedestrian cross walks, pedestrian over-passes, under-passes and ramps shall be made accessible to disabled persons in accordance with federal and state (the state should provide equal or greater accessibility) standards on all local agency federal-aid projects meeting the criteria for the ADA compliance as explained below.

In addition, local agencies are encouraged to adopt appropriate policies of the FHWA and Caltrans, e.g., *Accommodating Bicycle Pedestrian Travel: A Recommended Approach*, and Deputy Directive 64, *Accommodating Non-Motorized Travel*. This will help assure that the needs of non-motorized travelers are met in all programming, planning, construction, maintenance, operations, and project development activities and products.

### **Accessibility**

Title II of the ADA of 1990 (<http://www.usdoj.gov/crt/ada/reg2.html>) prohibits discrimination on the basis of disability by public entities. This means that a public entity may not deny the benefits of its programs, activities, and services to individuals with disabilities because its facilities are inaccessible to these individuals. A public entity’s services, programs, or activities when viewed in their entirety, must be readily accessible to, and usable by individuals with disabilities. This general requirement known as “program accessibility” applies to all existing facilities of a public entity. Under Title III (<http://www.usdoj.gov/crt/ada/reg3a.html>), public entities are not required to make each of their existing facilities accessible; as long as persons with disabilities have “equal access” to the goods and services provided to persons without disabilities.

Public entities may achieve program accessibility by a number of methods. In many situations, providing access to facilities through structural methods, such as alteration of existing facilities and acquisition or construction of additional facilities, may be the most efficient and equitable method of providing program accessibility. For example, to help achieve or maintain program accessibility, some local agencies have established an ongoing procedure for installing curb ramps upon request by individuals with disabilities.

The state and local governments are required to comply with either 28 CFR, Part 35, *Nondiscrimination on the Basis of Disability in State and Local Government Services*, or 28 CFR, Part 36, *Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities*, for all new construction and altering of existing improvements with or without federal-aid funds. Within the project limits, the design of the improvements shall comply with the current federal ADA regulations (*ADA Standards for Accessible Guidelines for Buildings and Facilities* (ADAAG) at Appendix A to 28 CFR, Part 36), and with the California and local building codes. For example, if a local agency is performing a pavement overlay (defined as an “alteration”) of a street that has existing curb ramps; it will be necessary at that time to ensure that the curb ramps within the project limits are in compliance with current federal ADA standards. This is required in 28 CFR, Part 35, Section 35.151, *New Construction and Alterations*, and under current law even though the curb ramps may be scheduled to be modified at a later date in the local agency’s transition plan.

If discrepancies are found between federal, state, or local requirements; the discrepancies should be brought to the attention of the District Local Assistance Engineer (DLAE). Generally, federal ADA requirements will prevail, unless the state or local requirements provide greater accessibility.

The “Accessible Parking” and “Curb Ramp” plans for disabled persons included in the *Caltrans Standards Plans* were developed for the use of Caltrans and are available to local agencies. The *Caltrans Standard Plans* are updated periodically to ensure compliance with both federal and state ADA standards. The curb ramps include a detectable warning surface (truncated domes).

### **Transition Plan**

Where structural modifications are required to achieve program accessibility, a public entity (city, county, or State of California) with 50 or more employees is required by 28 CFR, Part 35, Section 150, *Existing Facilities*, to develop a transition plan within 6 months from January 26, 1992, setting forth the steps necessary to complete such modifications. A public entity shall also provide an opportunity to interested persons, including individuals with disabilities or organizations representing the same, to participate in the development of the transition plan by submitting comments. A copy of the transition plan must be made available for public inspection for a period of three years. If a public entity has responsibility or authority over streets, roads or walkways; its transition plan shall include a schedule for providing curb ramps or other sloped areas where pedestrian walkways cross curbs; giving priority to walkways serving local government offices and facilities, transportation and places of public accommodation, followed by walkways serving other areas.



In cases of administrative burden and undue financial hardship, which must be documented by a Department Head having budgetary authority and responsibility for spending decision making; the transition plan related to sidewalks and curbs might include some accessible transportation; as an option to fully meet all program compliance obligations. For example, designated accessibility arrival areas could be fully accessible in business districts with the remainder of the need relying on accessible transportation like accessible taxis and/or light rail service. The relational balance should be validated via the public participation process.

### ADA Compliance of Project Plans and Specifications

State and local governments regardless of whether they receive federal funds are required to comply with the federal ADA Standards (ADAAG at: <http://www.access-board.gov/adaag/html/adaag.htm>), Title 24 of the California Code of Regulations which contain California building regulations, or local codes whichever provides the greatest access. Private-funded improvements within the public right of way are also required to comply with, whichever code offers the greatest access or protections to individuals with disabilities. The State of California has adopted regulations specifying that all buildings, structures, sidewalks, curbs and related facilities constructed in California by the use of state, county or municipal funds, or the funds of any political subdivision of the State; shall be accessible to and usable by persons with disabilities. The California Division of the State Architect (DSA), under the Department of General Services, is given responsibility for developing regulations and standards to ensure full accessibility. The intent of these regulations and standards are to prescribe no lesser a standard of accessibility or usability than provided by the federal ADA standards.

California Government Code Section 4450 and subsequent sections are designated as Chapter 7, *Access to Public Buildings by Physically Handicapped Persons.* Section 4454 entitled, *Approval of Plans and Specifications*, requires:

(a) *“Where state funds are utilized for any building or facility subject to this chapter, or where funds of counties, municipalities, or other political subdivisions are utilized for the construction of elementary, secondary, or community college buildings and facilities subject to this chapter, no contract shall be awarded until the Department of General Services has issued written approval stating that the plans and specifications comply with the intent of this chapter.”*

(b) *Notwithstanding subdivision (a), for all transportation facilities, other than rail or transit stations, located within state highway rights of way, the Department of Transportation is authorized to issue the required written approval stating that the plans and specifications comply with intent of this chapter. If the Department of General Services, Division of the State Architect establishes a certified access specialist program, as described in Section 4459.5, specific to standards governing access to transportation facilities, the Department of Transportation shall within 180-days of establishment of the program begin using engineers certified through that program to verify that the Department of Transportation's standards, guidelines, and design exceptions comply with the intent of this chapter.*

Local agency plans and specifications with pedestrian facilities to be constructed with state funds (federal funds are not considered state funds) must be reviewed and approved by DSA with one exception. The one exception is local agency plans and specifications of pedestrian facilities within the state highway rights of way, if not for rail and transit systems, can be reviewed and approved (certified) by Caltrans in place of DSA. Approval of the plans and specifications by DSA will require fees be paid directly to DSA. DSA regional offices can be found at this website:

<http://www.dsa.dgs.ca.gov/UniversalDesign/default.htm>

### ADAAG Exceptions

The following provisions mentioned in part, are contained in ADAAG, Appendix A of 28 CFR, Part 36 and are available for the use of local agencies:

- *Paragraph 2. General*

*2.2. Equivalent Facilitation. Departures from particular technical and scoping requirements of this guideline by the use of other designs and technologies are permitted where the alternative designs and technologies used will provide substantially equivalent or greater access to and usability of the facility.*

- *Paragraph 4.1.1 Application*

*(5) General Exceptions. (a) In new construction, a person or entity is not required to meet fully the requirements of these guidelines where that person or entity can demonstrate that it is structurally impracticable to do so. Full compliance will be considered structurally impracticable only in those rare circumstances when the unique characteristics of terrain prevents the incorporation of accessibility feature. If full compliance with the requirements of these guidelines is structurally impracticable, a person or entity shall comply with the requirements to the extent it is not structurally impracticable. Any portion of the building or facility which can be made accessible shall comply to the extent that it is not structurally impracticable.*

- *Paragraph 4.1.6 Accessible Buildings: Alterations*

*(1)General. (j) Exception: In alteration work, if compliance with 4.1.6 is technically infeasible, the alteration shall provide accessibility to the maximum extent feasible. Any elements or features of the building or facility that are being altered and can be made accessible, shall be made accessible within the scope of alteration.*

*Technically Infeasible means with respect to an alteration of a building, or a facility that has little likelihood of being accomplished, because of existing structural conditions that would require removing or altering a load-bearing member which is an essential part of the structural frame; or because other existing physical or site constraints prohibit modification or addition of elements, space; or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.*

## Encroachment Permits

Should an encroachment permit from Caltrans be needed by a local agency for a project; ADA compliance of the plans and specifications in accordance with *Caltrans Design Information Bulletin 82-01* will be required before an encroachment permit is issued.

## Applicable Facilities

Based on federal and state laws and regulations, all newly constructed facilities must allow full accessibility with few exceptions. Facilities, defined in 28 CFR and 49 CFR Part 28, include but are not limited to all, or any portion of buildings, structures, roads, walks, passages, parking lots, etc. When existing facilities are being reconstructed or modified, the contract must also include work to make these facilities fully accessible. *Title II-6.6000* of the Department of Justice's, *Technical Assistance Manual*, further defines this, by stating that when streets, roads, or highways are newly built or altered; they must have ramps or sloped areas wherever there are curbs or other barriers to entry from a sidewalk or path. Likewise, when new sidewalks or paths are built, or are altered, they must contain curb ramps or sloped areas wherever they intersect with streets, roads, or highways.

## ADA Design Assistances

DSA's regulations and building standards generally prescribe a standard of accessibility, or usability equal, or greater than provided by the federal *ADA Standards for Accessible Design* adopted by the United States Department of Justice and the Department of Transportation, to implement the Americans with Disabilities Act of 1990 (Public Law 101-336). DSA's website, including a current version of the "*DSA's California Access Compliance Reference Manual*," is located at:

<http://www.dsa.dgs.ca.gov/universaldesign/default.htm>

The U.S. Department of Justice and the Federal Access Board both have very comprehensive websites committed to accessible design. The websites include ADA design standards and a design guide. The websites are respectively located at:

<http://www.ada.gov/>, and <http://www.access-board.gov/indexes/pubsindex.htm>

## Bridges

### Definitions

Bridge -- A structure including supports erected over a depression or an obstruction, such as a waterway, highway or railway, and having a track or passageway for carrying traffic, or other moving loads, and having an opening measured along the center of the roadway of more than 6.1 meters between undercroppings of abutments, or spring lines of arches or extreme ends of openings for multiple boxes—may include multiple pipes where the clear distance between openings is less than half of the smallest contiguous opening.

Bridge Length -- The greater dimension of a structure measured along the center of the roadway between backs of abutment backwalls or between ends of bridge floors.

Bridge Roadway Width -- The clear width of structure measured at right angles to the center of the roadway between the bottom of curbs or, if curbs are not used, between the inner faces of parapet or railing.

This definition is the minimum acceptable to the FHWA and is generally more restrictive than the state's definition, which is included as follows for reference.

The Office of Structures Maintenance and Investigation assigns an official bridge number and name to all "Bridges" meeting the following minimum criteria:

- Structures of more than 6.1 meter length, measured parallel to the roadway centerline (facilities which come within the limits of the bridge classification only because of their skew, shall not be carried as bridges).
- Other structures where periodic inspection with written reports are desired. This includes items such as very large retaining walls, large culverts not qualifying as bridges, and special structures.

### Bridge Design Procedures

All local bridges on and off the NHS shall be designed in accordance with the current edition of the Caltrans *Bridge Design Specifications* manual available at this website:

<http://www.dot.ca.gov/hq/esc/techpubs/updates/page/bds-toc.pdf>

In addition to the twelve geometric controlling criteria discussed in the Caltrans *Bridge Design Specifications* manual, the FHWA has designated "bridge structural capacity" as the thirteenth controlling criteria with a primary importance for safety in the selection of design standards. Deviations from standards relating to "bridge structural capacity" are not permitted.

It is desirable that a minimum appraisal rating (code) of 6 be attained for bridges, as defined by Item 68 in the Appraisal Section of the U.S. DOT/FHWA publication entitled *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*; or justification provided, as to why the minimum appraisal rating (code) of 6 was not attained.

The following Caltrans publications are also available to assist local agencies in designing their bridges:

- *Bridge Design Practice Manual*
- *Bridge Design Details*
- *Bridge Design Aids*
- *Bridge Memo to Designers*

The above publications may be purchased through the Caltrans' Publication Distribution Unit located at 1900 Royal Oaks Drive in Sacramento, California, 95815-3800, Phone: (916) 445-3520, Fax: (916) 342-8997 or website at:

<http://caltrans-opac.ca.gov/publicat.htm>.

### Clear Width Design

For continuity and safety, the curb-to-curb corridor width should be continued across a bridge. Additional shoulder width should be also considered for pedestrian and bicyclist safety on the bridge. This additional shoulder width for safety is particularly important on urban collectors and arterials.

### Seismic Design

The *Caltrans Bridge Design Specifications* manual reflects the requirements of the current edition of *AASHTO Standard Specifications for Highway Bridges*, modified by Caltrans to incorporate California seismic design as well as other requirements.

In addition to the above-referenced Caltrans bridge manuals and publications, the following design references are also available to those involved in seismic and retrofit design:

- *Seismic Design References* - Excerpts for the Caltrans Division of Structures Technical manuals compiling seismic design requirements
- *Memo to Designers 20-4, – Earthquake Retrofit Guidelines for Bridges*
- Various publications of design notes and research results by the University of California at Berkeley, San Diego and others. This information is used extensively in current practice and enables the industry to keep up with the very latest research results.
- Various computer programs have been developed by Caltrans personnel to assist in the analysis required in retrofit design. These programs are available to local agencies and consultants involved in retrofit design:
  - a) Beams304      b) Col604n      c) WFrame      d) Frame407
  - e) Nfoot          f) Col702r      g) XSection

The references discussed above which are not available from Caltrans' Publication Distribution Unit, are available from the Caltrans Structure Local Assistance Office at (916) 227-8038.

### Railroad Bridges

Design loadings and geometrics for bridges carrying railroads and clearances for highway bridges spanning railroads shall conform to the *Caltrans Bridge Design Specifications*.

### Bridge Railing

Bridge railing shall be designed in accordance with the current edition of *AASHTO's Guide Specifications for Bridge Railings*.

Although the FHWA has not designated bridge railing as a “controlling criteria” for safety (requiring formal approval), nevertheless, all deviations from accepted bridge railing standards and procedures in this publication should be justified and documented in the project files. Project-by-project deviations from the criteria in this publication do not require handling, in accordance with design exception approval procedures discussed in Section 11.4 of this chapter.

However, consideration should be given to the long-term effects as to the bridge traffic safety features. This is part of data to be collected and retained for FHWA’s use per CFR Section 650.311. Specifically, this data is included in the Sufficiency Rating (see the *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Bridges*, published by FHWA), which is used in the HBRR Program as a basis for establishing eligibility and priority for replacement and rehabilitation of bridges (CFR 650.409).

Refer to the above section entitled “Safety” for additional references and guidelines on the design of bridge approach guardrail and other safety features.

### **Bridges to Remain in Place**

When local agencies make highway improvements, they must often decide whether or not to upgrade existing bridges. If the structures are otherwise compatible with the proposed work, the following criteria should be used:

- AASHTO’s *A Policy on Geometric Design of Highways and Streets* provides the criteria for minimum structural capacities and minimum roadway widths for bridges to remain in place (refer to the table *Minimum Structural Capacities and Minimum Roadway Widths for Bridges to Remain in Place*). This table is applicable only when no modifications are made to the superstructure (asphalt concrete blankets of 0.03 meter thickness or less, attachment of guardrails at bridge approaches, and deck seals are not considered superstructure modifications). When changes to the superstructure are required, refer to the table entitled, *Minimum Clear Roadway Widths and Design Loadings for New and Reconstructed Bridges*.
- The structure clear width (traveled way plus shoulders) should be determined in conformance with AASHTO standards.
- Asphalt concrete thin blanket overlay (thickness of 0.03 meter or less) projects that cross structures without increasing the width of the approach roadway do not affect the geometric or design standards of an existing structure. A “cumulative or total” asphalt concrete overlay thickness of more than 0.075 meter, or any significant increase in width of pavement of any thickness requires that the structure be reviewed, to comply with all AASHTO design and geometric criteria. A total asphalt concrete thickness of more than 0.03 meter, but less than or equal to 0.075 meter, as well as, membrane deck seals should be considered on a case-by-case basis. Bridge rail height is one of design criteria that needs to be checked with overlays between 0.03 and 0.075 meter.
- All bridges within project limits or immediately adjacent to the project, shall be provided with standard approach railings.
- Timber structures may not be widened.

### Design of Large Culverts

Reinforced concrete cast-in-place box culverts, concrete arch culverts, structural plate vehicular undercrossings, and structural plate arch culverts with cast-in-place footings and inverts require favorable foundation conditions. When the *Caltrans Standard Plans* are used for these culverts, the foundation material must be capable of supporting footing pressures indicated on the plan.

Special culvert designs are required when:

- Fill heights exceed those on the *Caltrans Standard Plans*.
- Fill heights exceed those in the tables of the *Caltrans Highway Design Manual*.
- Corner pressure exceeds values in Tables 854.3E and 854.4C of the *Caltrans Highway Design Manual*.
- Foundation material will not support the design soil pressure in the *Caltrans Standard Plans*.
- Culverts are subjected to unequal lateral pressures.
- Culverts exceed the sizes in the *Caltrans Standard Plans*.

All structures shall be proportioned for loads and forces outlined in the *Caltrans Bridge Design Specifications, Section 3, Loads*.

The loading conditions outlined in this chapter have been developed for California to provide adequate capacity for all anticipated seismic loading conditions on underground structures. No additional allowances are required.

### Foundation Investigation for Design

A foundation investigation and report by an Engineering Geologist or Civil Engineer specializing in soils engineering should be completed for all bridge and large culvert sites. This requirement may be waived, if the engineer in responsible charge of design determines that site conditions clearly indicate the report is unnecessary. This requirement for a foundation investigation and report must be waived on a project-by-project basis. The waiver must be signed by a California registered Civil Engineer and retained in the project files. Federal funds shall not participate in any construction change orders or claims relating to inadequate foundation investigations when such a waiver has been exercised. In addition, federal participation in future repair costs resulting from the inadequate foundation investigation will be made on a project-by-project basis.

All reports shall contain recommendations by the Soils Engineer or Engineering Geologist for specific design considerations for the site (see Exhibit 11-C, *Foundation Investigations*, in this chapter).

Where pile support is anticipated in design, specific attention is directed to the *Caltrans Bridge Design Specifications, Section 4.3.3, Design Loads*. The report should contain the data called for in Section 4.3.5, *Required Subsurface Investigations*.

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## Drainage

### General

The goal of hydraulic design for bridges and culverts is to convey surface and stream waters originating upstream of the drainage facility to the downstream side without causing objectionable backwater, excessive flow velocities, excessive scour, or unduly affecting traffic safety. The hydraulic drainage design criteria contained or referenced in this manual have been developed to accomplish this goal. However, state-of-the-art methods and procedures for the hydrologic analysis required to determine the severity and probability of occurrence of flood events are inherently ambiguous. Therefore, the drainage design criteria contained in this manual section is provided for guidance only and is not intended to establish legal, or design standards which must be strictly adhered to. The local agency must use discretion in applying the drainage criteria in order to design the most cost-effective drainage facility considering the importance of the transportation facility, safety, legal obligations, ease of maintenance and aesthetics. For example, the selection of a design flood with a lesser or greater peak discharge may be warranted and justified by economic analysis (except that the approach roadway should not be inundated by the design storm).

An exception to the above discussion is the evaluation of encroachments on the base flood plain. Federal regulations (23 CFR 650.115) state that all such encroachments shall be evaluated to assess the costs and risks associated with the base flood (Q100) or overtopping flood, whichever is greater.

### Definitions

Action - Any highway construction, reconstruction, rehabilitation, repair, or improvement.

Backwater - The rise in water surface elevation due to encroachment.

Base Flood - The flood or tide having only a one percent (1%) probability of being equaled or exceeded in any given year. It is also referred to as the 100-year flood (Q100).

Convey - Passage through, or bypass of, the structure without significant damage to encroachments within the flood plain.

Design Flood - The peak discharge (volume, if appropriate), stage or wave crest elevation selected for the design of a facility located within a base flood plain. By definition through lanes will not be inundated by the design flood.

Encroachment - A facility and/or appurtenant feature located within the limits of a base flood plain.

Flood of Record - The greatest recorded flood in the drainage basin.

Flood Plain - Any of the following: (1) the valley area adjacent to a stream or river subject to inundation during periods of high water that exceed normal bank flow elevation; (2) an area adjacent to a lake, estuary, ocean or similar body of water subject to inundation by high water, high tides, surges, tsunamis or any combination of these; (3) an area where the path of the next flood flow is unpredictable, as within the limits of a debris cone, an alluvial deposit, cone, or fan, a debris slope or a talus.



Flood Plain Values - Fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, groundwater recharge, etc.

Freeboard - (1) The vertical distance between the lowest structural member of a bridge superstructure and the water surface elevation of the design flood. (2) The vertical distance between the water surface elevation of the design flood, and the tops of the sides of an open conduit designed to allow for floating debris, or any other condition, or emergency without overtopping the structure.

Overtopping Flood - The magnitude of flood at which the water ceases to be conveyed totally through the drainage structure. Flow may be over the highway through overflow channels, or structures provided for emergency relief, or escape to another flood plain.

Regulatory Floodway - The flood plain area that is reserved in an open manner by federal, state or local requirements, i.e., unconfined or unobstructed either horizontally or vertically; to provide for the discharge of the base flood so that the cumulative increase in water surface elevation is no more than a designated amount (not to exceed 0.3 meter as established by the Federal Emergency Management Agency [FEMA] for administering the National Flood Insurance Program). The physical limits of the floodway will however, vary based on federal, state, or local definition.

Risk - The consequences associated with the probability of flooding attributable to an encroachment. It shall include the potential for property loss and hazard to life during the service life of the highway.

Risk Analysis - An economic comparison of design alternatives using expected total costs (construction costs plus risk costs), to determine the alternative with the least total expected cost to the public. It shall include probable flood-related costs during the service life of the facility for highway operation, maintenance and repair for highway-aggravated flood damage to other property, and for additional or interrupted highway travel.

Significant Encroachment - A highway encroachment and any direct support of likely base flood plain development that would involve one or more of the following construction or flood related impacts: (1) a facility which provides a community's only evacuation route or one that is needed for emergency vehicles; (2) a facility in an unstable stream bed or other dangerous location; (3) a facility that might have a significant adverse impact on natural beneficial flood plain values. It is federal policy to discourage any proposal that includes a significant encroachment.

## Hydraulic Design Criteria

### ***BRIDGES:***

- The basic rule for hydraulic design of bridges is that; they should be designed to pass the two percent (2%) probability flood or tide (Q50) or the flood-of-record, whichever is greater without causing objectionable backwater, excessive flow velocities, or encroaching on through traffic lanes. Sufficient freeboard, the vertical clearance between the lowest structural member, and the water surface elevation of the design flood should be provided. A minimum freeboard of 0.6 meter is often assumed for preliminary bridge design. An evaluation should be performed to determine, if horizontal and vertical driftway requirements warrant a modified freeboard. The freeboard for controlled flow waterways, such as irrigation canals, shall be required by the regulatory agency having jurisdiction.

- The final design should be able to convey the base flood, Q100.
- The base flood (Q100) or overtopping flood, whichever is greater shall be used to evaluate the costs, risks and impacts associated with encroachments on the 100-year base flood plain.
- The minimum design flood for foundation analysis should be the base flood (Q100). Bridges with scourable beds should withstand the effects of the base flood (Q100) without failure. The top of pier footing should be placed at, or below the calculated total scour condition including anticipated lateral channel migration. Pile extensions and pile shafts should have sufficient embedment depth for the potential scour conditions.
- Consideration should be given to the long-term effects as to the bridge waterway adequacy. This is part of data to be collected and retained for FHWA's use per CFR Section 650.311. Specifically, this data is included in the Sufficiency Rating (see the *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*, published by FHWA), which is used in the HBRR Program, as a basis for establishing eligibility and priority for replacement, and rehabilitation of bridges (CFR 650.409).

***CULVERTS:***

There are two primary design frequencies that should be considered in the design of drainage culverts. A culvert should convey:

- The ten percent (10%) probability flood or tide (Q10) without causing the headwater elevation to rise above the inlet top of culvert.
- The one percent (1%) probability flood (Q100) without damage to the facility or adjacent property.

***OPEN CHANNELS/CONDUITS:***

- Open channels/conduits should be designed according to the above bridge criteria with appropriate freeboard.

***ROADSIDE DRAINAGE:***

- The spacing of roadway inlets for pavement drainage vary with the desirable limits or water spread, which in turn depend on the: type of facility; design storm frequency; traffic volume; design speed; and any local requirements. The recommended limits for water spread on various types of roadway facilities are provided in Chapter 800 of the *Caltrans Highway Design Manual*.

Additional information on the design of culverts including: hydrologic and hydraulic design considerations; height of fill limitations; protection from abrasion and corrosion; as well as, other economic, construction and maintenance considerations are included in the *Caltrans Highway Design Manual*.

## Flood Plain Encroachments

Proposed actions which encroach on a base flood plain or support incompatible flood plain development must be evaluated in a location Hydraulic Study to assess impacts on natural and beneficial flood plain values in accordance with 23 CFR 650A. The location hydraulic study must provide the following information:

- A brief description of the project hydrology
- A description of the types of traffic
- Emergency access data, availability of detours, etc.
- Comments on constraints which influence selection of available alternatives
- The location of property at risk
- An estimate of potential damage to property at risk
- A discussion of the environmental impacts

A summary of the location hydraulic study shall be included in the environmental document. When there is a significant encroachment within the base flood plain, a finding that the project is the only practical alternative (the local agency must assure the opportunity for early public involvement) shall be included in the final environmental "NEPA" document and concurred with by the FHWA.

Encroachments within regulatory floodways are generally not permitted. Local agencies should consult the appropriate federal, state or local regulatory agency for more information.

The design selected for the encroachment must be supported by an analysis of design alternatives, with consideration given to capital costs, risks, and other economic, engineering, social, and environmental concerns. Refer to 23 CFR 650.117 for the required content of the design studies. Upon completion of the environmental process, a hydraulic design study is required as part of the final design process.

The above technical engineering reports shall be prepared by a registered Civil Engineer in the State of California. The reports shall bear the registration seal, signature, license number and registration certificate expiration date of the California Registered Professional Engineer responsible for preparing the report.

When there is a potential for extensive disruption of essential services or incurring losses due to implementation of the proposed action; a comprehensive risk and cost analysis may be advisable during the final design stage. If a risk/cost analysis is anticipated, it is recommended that the results of preliminary studies be reviewed with the FHWA to confirm the need for the analysis.

For additional information on analysis of encroachments onto a flood plain, refer to Chapter 17, *Flood Plains*, of the *Standard Environmental Reference* (SER) and at this website: <http://www.dot.ca.gov/ser/vol1/vol1.htm>.

### Level of Evaluations

It is the policy of Caltrans and FHWA that the level of evaluation comply with federal and state mandated procedures and be commensurate with the risks and environmental impacts involved. An initial level of evaluation based on preliminary project data, may be established during the Preliminary Environmental Study (PES) (see Chapter 6, *Environmental Procedures*, of the LAPM and at this website:

<http://www.dot.ca.gov/hq/LocalPrograms/lam/lapm.htm>).

Refer to Exhibit 11-D entitled *Preliminary Hydrologic/Hydraulic Summary*, of this chapter for the information to be provided by a local agency “prior to or at” the early coordination meeting. The actual level of evaluation may change due to unforeseen conditions or impacts revealed during the environmental review and detailed design stage of project development. A less comprehensive evaluation is appropriate for encroachments at locations where the risk of property damage or damage to the facility is small. A decision to raise or lower the level of evaluation should be made in consultation with the FHWA.

A rehabilitation project including widening represents a significant financial investment and must be evaluated for compliance with current hydraulic design criteria for the project location. Any deviations must be justified and documented in the project files.

A comprehensive list of items to be considered for inclusion in drainage studies and reports is included in Exhibit 11-E, *Checklist for Drainage Studies and Reports*, in this chapter. This exhibit also includes an excellent list of references for background information.

### Scour Evaluations

A scour evaluation should be conducted for all bridges over water. The scour evaluation should include consideration of long-term aggradation/degradation, contraction scour, local scour and lateral migration. The details of the scour evaluation shall be commensurate with the risk associated with the structure.

The FHWA has developed Hydraulic Engineering Circular (HEC) #18 *Evaluating Scour at Bridges* to aid in proper development of the necessary scour evaluations. Calculations similar to those in HEC #18 may be used for evaluating scour at bridges. The scour evaluation should be done by an interdisciplinary team consisting of hydraulic, geotechnical and structural engineers. Bridges with scourable beds should withstand the effects of the  $Q_{100}$  flood without failure. HEC #20 entitled *Stream Stability at Highway Crossings* is another resource for evaluating stream stability at design locations. For existing bridges that are susceptible to scour, refer to HEC #23, *Bridge Scour and Stream Instability Countermeasure*, for suggested preventative measures.

Consideration should be given to the effect of aggregate mining contributing to scour at bridge foundations. Mining without proper monitoring and regulation could jeopardize federal funding for a damaged structure, if a local agency is aware of severe degradation due to mining and does nothing to mitigate the loss of material.

**General Design Considerations for Bridges and Culverts**

The effect on all permanent flood control structures, either under construction or in place shall be considered in determining the effects of the design flood. Runoff estimates should be based on the land development expected in the watershed twenty years hence.

The effect of bedload, drift, ice, upstream and downstream mining operation, etc., should be considered for all structures; and where appropriate, adequate armor, debris racks, clearance, etc., should be provided.

Typically, proposed construction which is capable of impounding water to the extent that it meets the legal definition of a dam must be approved by the Department of Water Resources (DWR), Division of Safety of Dams. The legal definition of a dam is given in Sections 6002 and 6003 of the *State Water Code*. Generally, any facility 7.6 m or more in height, or capable of impounding 61 700 m<sup>3</sup> or more, is considered a dam. However, any facility 1.8 m or less height, shall not be considered a dam. Additionally, Section 6004 of the *State Water Code* states "... and no road or highway fill or structure ... shall be considered a dam." Therefore, except for large retention or detention facilities, there is rarely a need for involvement by the DWR.

Although most designs will be exempt from DWR approval, caution should always be exercised in the design of high fills that could impound large volumes of water. Even partial plugging of a cross drain could lead to high pressures on the upstream side of the fill, creating seepage throughout the fill and/or an increased potential for piping.

**Documentation**

Whenever a waterway is involved, hydraulic studies must be performed and documented. The location hydraulic studies, which determine the selection of design alternatives; evaluate favorable or adverse effects of the facility on the stream environment; analyze other economic, engineering, and environmental concerns and detailed design studies, must be documented and retained in the local agency's permanent project design files. Upon request, these studies must be made available to the public, Caltrans, or FHWA. The documentation of the FHWA finding regarding the floodplain also must be retained in the files.

The following hydrologic data shall be shown on the contract plans:

Drainage Area _____	(square kilometers)			
	Design Flood	Base Flood	Overtopping Flood	Flood of Record
Frequency (years)	_____	_____	_____	_____
Discharge (cubic meters/second)	_____	_____	_____	_____
Water Surface at Elevation Bridge (meters)	_____	_____	_____	_____

## Standard Plans

The following standard plans are acceptable for use on all local federal-aid projects not located on the SHS:

- The current edition of *Caltrans Standard Plans*
- The current edition of the *Standard Plans for Public Works Construction* (commonly referred to as “*the Green Book*”), developed and promulgated by the American Public Works Association, Southern California Chapter, and the Associated General Contractors of California, Southern California Districts

For locally sponsored projects on the SHS, the *Caltrans Standard Plans* must be used.

## Standard Specifications

The following standard specifications are acceptable for use on all local federal-aid projects not located on the SHS:

- The current edition of *Caltrans Standard Specifications*
- The current edition of the *Standard Specifications for Public Works Construction* (commonly referred to as the “*Green Book*”), written and promulgated by the American Public Works Association, Southern California Chapter, and the Associated General Contractors of California, Southern California Districts
- Local standard specifications may be used for projects on the NHS, provided they have been reviewed and approved for such use by Caltrans.

For locally sponsored projects on the SHS, Caltrans Standard Plans and Specifications must be used.

## 11.3 Locally Developed Design Standards

Plans and specifications for federal-aid highway projects shall provide for a facility that adequately meets the existing and probable future traffic conditions in a manner conducive to safety, durability, and economy of maintenance. Section 109, *Standards*, of Title 23 of the U.S. Code also requires that projects shall be designed and constructed to conform to the particular needs of each locality.

Since statewide standards do not always meet the particular needs of each locality, local design standards that meet the following requirements are allowed on local federal-aid projects off the SHS.

### Local Geometric Standards

Local geometric design standards that have been developed for use on locally funded new and reconstruction, or 3R projects, may be used on federal-aid projects off the NHS if:

- The standards have been approved by the County Board of Supervisors or the City Council,

- The standards must be signed by the City/County Public Works Director if he/she is a California registered Civil Engineer. If not, they may be signed by the City/County Engineer if registered. If the City/County Engineer is not registered, the delegation can be made to the highest level engineer in the agency who is registered. Locally adopted design standards may be signed by a consultant on retainer as City/County Engineer if such individual is registered and is responsible directly to the Public Works Director or City/County Manager, and
- Locally adopted design standards are reviewed for possible updating whenever the applicable AASHTO standards are updated.

## Local Pavement Structural Section

Pavement structural section design methods or standards developed by a local agency for their own locally funded projects may be used for all local federal-aid projects off the NHS.

## 11.4 Design Exceptions

Occasionally, project conditions may warrant an exception to certain accepted standards or procedures. Such conditions might include: extreme difficulties or high cost of obtaining right of way; cost of construction; or the mitigation of environmental impacts.

Although all deviations from accepted standards and procedures must be justified and documented in some manner and retained in the project files; not all design exceptions must adhere to the formal design exception procedures as described below.

## Standards For Which Deviations Are Permitted

Deviations from accepted standards are permitted as follows:

**Geometric Criteria** - The FHWA has determined that deviation from the following geometric control criteria for highways and bridges require formal approval:

- Design speed
- Cross slope
- Lane and shoulder width
- Superelevation
- Horizontal and vertical alignment
- Horizontal and vertical clearance
- Stopping sight distance
- Bridge width
- Grades

Any deviation from standards related to the above geometric criteria require that the local agency comply with the design exception approval procedures described below.

It is important to note that design exceptions that would result in the construction of a federally funded new bridge that would result in a Sufficiency Rating (SR) of less than 80 are not allowed. The controlling criteria for bridge width, vertical and horizontal over and under bridge clearances, and approach roadway alignment are among the factors that are rated during each biennial bridge inspection. Explanation of the rating factors can be found in the publication entitled *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*.

**Safety** - Deviations from the above geometric control criteria related to safety must be handled in accordance with the procedures outlined below. Deviations from the criteria contained in the other safety-related publications referenced in Section 11.2 do not require special handling.

**Pavement Structural Section** - Deviations from the pavement structural section design criteria referenced herein must be justified and documented in some manner, but do not require approval in accordance with the design exception approval procedures described below.

**Drainage** - The hydrologic and hydraulic criteria contained herein is for guidance only. Deviations should be justified and documented, but do not require approval in accordance with the design exception approval procedures described below.

**Bridge Railings** - Deviations from the nonstructurally related design criteria referenced herein do not require approval in accordance with the design exception approval procedures described below. Bridge rail on NHS projects let after August 16, 1998, must meet crash test requirements of NCHRP 350.

**Bikeways** - Deviations from the "Mandatory Standards," as defined and indicated in the *Caltrans Highway Design Manual*, require approval in accordance with the design exception approval procedures described below.

**Pedestrian Facilities** - Deviations from the state pedestrian standards shall be documented in a form of a memo and retained in the project files. This memo shall discuss the justification and reasoning for not meeting the applicable standards. Deviation from federal pedestrian standards shall be documented in accordance with the federal *ADA Standards for Accessible Guidelines for Buildings and Facilities*.

## Standards For Which Deviations Are Not Permitted

**Bridge Structural Capacity** - Deviations from the criteria contained herein for the structural capacity of bridges and other structures are not allowed. Deviations from bridge design details in the various Caltrans bridge design manuals and publications referenced herein are permitted as long as they do not impact structural capacity.

**Signs and Markings** - Deviations from the "Mandatory Standards" for signs and markings as defined and indicated in the *Manual on Uniform Traffic Control Devices* (MUTCD) and the *MUTCD California Supplement* are not allowed, unless a proposal to experiment with non-standard devices is submitted to the California Traffic Control Devices Committee and approved for experimental use.



## Design Exception Approval Procedures

### Local Projects on the State Highway System

Local projects on the SHS must follow the design exception approval procedures outlined in the Caltrans *Project Development Procedures Manual*. Refer to this website at: <http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm>

### Local Projects not on the State Highway System

The following design exception approval procedures are to be followed.

The FHWA has delegated Caltrans approval authority for design exceptions on local projects not on the SHS. However, since local agencies are in a better position to assess applicability to any given situation on local roads; design exception approval authority (for those standards from which deviations are permitted) is now delegated to the City and County Public Works Directors. Public Works Directors may delegate this approval authority within their local agency, if the Public Works Director is not a registered civil engineer in the State of California, or if the local agency has a large engineering staff with multiple layers of responsibility. The person with approval authority must be a registered civil engineer in the State of California. Approval of design exceptions on local federal-aid projects shall be signed by the Public Works Director or the person to whom approval authority has been delegated.

The approval authority for design exceptions may be delegated to a private consulting firm that is on retainer as City or County Engineer.

To facilitate process reviews (see Chapter 19, *Process Reviews*, of the LAPM), local agencies are required to keep copies of design exceptions prepared for their projects in their project files. If any local agency fails to complete and retain the completed and approved project design exception; their delegation to approve future design exceptions may be rescinded.

### Design Exception Fact Sheet

The standard *Design Exception Fact Sheet* (Exhibit 11-F in this chapter) must contain the following information:

- Existing conditions
- Proposed work and nonstandard features
- Standard for which the exception is required
- Accidents - if applicable
- Design year traffic volumes - if applicable
- Added cost to make standard
- Description of any additional work to enhance safety
- Reason for requesting exception
- Reviews

The *Design Exception fact Sheet* must be signed, stamped with engineer's seal, and approved by Director of Public Works, or the person whom approval authority has been delegated.

### **Tracking of Design Exceptions**

A tracking system for design exceptions should be implemented by local agencies to retrieve project information quickly and accurately. The data should include:

- Project description.
- Project location
- Nonstandard features approved
- Indication if future commitments have been made
- Brief description of commitments to upgrade the project to design standards at a future date

## 11.5 References

### 1. American Association of State Highway and Transportation Officials (AASHTO)

- *A Policy on Geometric Design of Highways and Streets, current edition (2004)*
- *Guide Specifications for Bridge Railings, current edition*
- *Roadside Design Guide, current edition (2002)*
- *Standard Specifications for Highway Bridges, current edition*

### 2. California Department of Transportation (Caltrans)

- *Bank and Shore Protection, 1970*
- *Bridge Design Aids, current edition*
- *Bridge Design Details, current edition*
- *Bridge Design Details, current edition*
- *Bridge Design Practice Manual, current edition*
- *Bridge Design Specifications, current edition*
- *Bridge Memo to Designers, current edition*
- *Vehicle Crash Tests of Steel Bridge Barrier Rail Systems for Use on Secondary Highways, Final Report # FHWA/CA/TL-93/01, Division of New Technology, Materials and Research*
- *Flexible Pavement Structural Section Design Manual*
- *Flexible Pavement Structural Section Guide for California Cities and Counties*
- *Highway Design Manual*
  - Chapter 80 - Application of Design Standards
  - Chapter 600 - Design of the Pavement Structural Section
  - Chapter 800 - Highway Drainage Design
  - Chapter 1000 - Bikeway Planning and Design
- *Local Assistance Procedures Manual (LAPM)*
- *MUTCD (Manual on Uniform Traffic Control Devices) California Supplement*
- *Standard Environmental Reference (SER)*
- *Project Development Procedures Manual, current edition*
- *Standard Plans*
- *Standard Specifications*

### 3. FEDERAL OR FEDERAL HIGHWAY ADMINISTRATION (FHWA)

- *FHWA Internet Home Page: <http://www.fhwa.dot.gov>*
- *23 USC Standards*

- *Designing Sidewalks and Trails for Access (Part 2), FHWA-EP-01 027*
- *Federal-Aid Policy Guide, Subchapter G, Engineering and Traffic Operations, Part 625 - Design Standards for Highways*
- *28 CFR Part 36 Nondiscrimination on Basis of Disabilities by Public Accommodations and in Commercial Facilities, Appendix A Standards For Accessible Design*
- *28 CFR Part 35 Nondiscrimination on the Basis of Disability in State and Local Government Services*
- *41 CFR Part 101*
- *23 CFR Part 650 Bridges, Structures and Hydraulics*
- *Hydraulic Engineering Circulars*
  - *Design of Riprap Revetment - Hydraulic Engineering Circular #11,*
  - *Evaluating Scour at Bridges - Hydraulic Engineering Circular #18,*
  - *Stream Stability at Highway Crossings - Hydraulic Engineering Circular #20,*
- *Manual on Uniform Traffic Control Devices (MUTCD), current edition*
- *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridge, Report No. FHWA-ED-89-044*
- *FHWA Contract Administration Core Curriculum, Guide 2001*

#### 4. OTHER

- *Designing Safer Roads - Practices for Resurfacing, Restoration and Rehabilitation, Special Report 214, Transportation Research Board*
- *Roadside Safety, Transportation Research Record 1065, Transportation Research Board*
- *Recommended Procedures for the Safety Performance Evaluation of Highway Appurtenances, National Cooperative Highway Research Program Report 230*
- *Multiple-Service-Level Highway Bridge Railing Selection Procedures, National Cooperative Highway Research Program Report 239*
- *Standard Plans for Public Works Construction, developed and promulgated by the American Public Works Association, Southern California Chapter, and the Associated General Contractors of California, Southern California Districts*
- *Standard Specifications for Public Works Construction, developed and promulgated by the American Public Works Association, Southern California Chapter, and the Associated General Contractors of California, Southern California Districts*
- *Recommended Procedures for the Safety Performance Evaluation of Highway Features, Report 350*

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**EXHIBIT 11-A GEOMETRIC DESIGN STANDARDS FOR LOCAL 3R PROJECTS****GEOMETRIC DESIGN STANDARDS FOR LOCAL 3R PROJECTS****Table 11-1: Lane and Shoulder Widths Arterial Roads and Streets**

Design Year Volume (ADT)	Design Speed (km/h)	Lane Width (meter)	Shoulder Width [a] (meter)	Total Roadway Width (meter)
Low Volumes:				
1 - 750 ADT	All	3.0	0.6	7.2
High Volumes:				
751 - 2,000 ADT	All	3.6	0.6 [b]	8.4 [c]
Over 2,000 ADT	All	3.6	1.8 [b]	10.8 [c]

[a] All shoulders on rural and urban arterials to be paved.

[b] Reduce by 0.3 meter for highways on mountainous terrain.

[c] Reduce by 0.6 meter for highways on mountainous terrain.

**TABLE 11-2: LANE AND SHOULDER WIDTHS COLLECTOR ROADS AND STREETS**

Design Year Volume (ADT)	Design Speed [a] (km/h)	Lane Width (meter)	Shoulder Width [b] (meter)	Total Roadway Width (meter)
Low Volumes:				
1 - 750 ADT	All	3.0	0.6	7.2
High Volumes:				
751 - 2,000 ADT	Under 80	3.0	0.6 [c]	7.2 [d]
	80 and over	3.6	0.6 [c]	8.4 [d]
Over 2,000 ADT	All	3.6	1.2 [c]	9.6 [d]

[a] Highway segments should be classified as “under 80” only if most vehicles have an average speed of less than 80 km/h over the length of the segment

[b] All shoulders on collector roads and streets to be paved.

[c] Reduce by 0.3 meter for highways on mountainous terrain.

[d] Reduce by 0.6 meter for highways on mountainous terrain.

**TABLE 11-3: LANE AND SHOULDER WIDTHS LOCAL ROADS AND STREETS**

Design Year Volume (ADT)	Design Speed [a] (km/h)	Lane Width (meter)	Shoulder Width (meter)	Total Roadway Width (meter)
Low Volumes:				
1 - 750 ADT	All	3.0	0.6	7.2
High Volumes:				
751 - 2,000 ADT	Under 80	3.0	0.6 [b]	7.2 [c]
	80 and over	3.6	0.6 [b]	8.4 [c]
Over 2,000 ADT	All	3.6	1.2 [b]	9.6 [c]

[a] Highway segments should be classified as “under 80” only if most vehicles have an average speed of less than 80 km/h over the length of the segment

[b] Reduce by 0.3 meter for highways on mountainous terrain.

[c] Reduce by 0.6 meter for highways on mountainous terrain.

**TABLE 11-4: LANE WIDTHS URBAN ROADS AND STREETS**

TYPE OF LANE	MINIMUM WIDTH(METER)
Curb Lane	
No Parking Anytime [a]	<b>3.3</b>
Part-time Use (peak hour/high volume/low speed)	<b>2.7</b>
With Parking	<b>5.1</b>
Interior Lane	<b>3.0</b>
Lane Adjacent to Median	
Raised Curb	<b>3.0</b>
Painted Median	<b>3.0</b>
Left-Turn Lane	
One-Way (one lane only)	<b>3.0</b>
Two-Way (continuous)	<b>3.0</b>
Bicycle Lane (Within Roadway)	
One-Way	<b>1.2</b>
Bicycle Lane and Parking (One-Way)	<b>3.6</b>

[a] A 3.0 meter curb lane, with up to 0.6 meter wide gutter, may be used at intersections.

**TABLE 11-5: BRIDGES ON ARTERIAL ROADS AND STREETS**

Design Year Volume (ADT)	Minimum Usable Bridge Width [a]
1 - 750	Width of approach lanes [b]
751 - 2,000	Width of approach lanes plus 0.6 meter each side
2,001 - 6,000	Width of approach lanes plus 1.2 meter each side
Over 6,000	Width of approach lanes plus 2.4 meter each side

[a] If lane widening is planned as part of a 3R project, the usable bridge width should be compared with the planned width of the approaches after they are widened.

[b] Minimum usable bridge width to be 7.2 meter.

**TABLE 11-6: BRIDGES ON COLLECTOR ROADS AND STREETS**

Design Year Volume (ADT)	Minimum Usable Bridge Width [a]
1 - 750	Width of approach lanes [b]
751 - 2,000	Width of approach lanes plus 0.6 meter each side
2,001 - 6,000	Width of approach lanes plus 1.2 meter each side
Over 6,000	Width of approach lanes plus 2.4 meter each side

[a] If lane widening is planned as part of a 3R project, the usable bridge width should be compared with the planned width of the approaches after they are widened.

[b] Minimum usable bridge width to be 7.2 meter.

**TABLE 11-7: BRIDGES ON LOCAL ROADS AND STREETS**

Design Year Volume (ADT)	Minimum Usable Bridge Width [a]
1 - 750	Width of approach lanes
751 - 2,000	Width of approach lanes plus 0.6 meter each side
Over 2,000	Width of approach lanes plus 1.2 meter each side

[a] If lane widening is planned as part of a 3R project, the usable bridge width should be compared with the planned width of the approaches after they are widened.



**TABLE 11-8: HORIZONTAL AND VERTICAL ALIGNMENT ARTERIAL ROADS AND STREETS**

Design Speed (km/h)	Minimum Stopping Sight Distance (meter)	Minimum Radius of Horizontal Curve (meter)		Maximum Grade					
		Super-Elevation 10% (a)	Super-Elevation 8% (b)	Rural			Urban		
				Level	Rolling	Mountains	Level	Rolling	Mountains
50	57.4	75	80	...	...	...	8	9	11
60	74.3	115	125	5	6	8	7	8	10
70	94.1	160	175	5	6	7	6	7	9
80	112.8	210	230	4	5	7	6	7	9
90	131.2	275	305	4	5	6	5	6	8
100	157.0	360	395	3	4	6	5	6	8

- [a] Generally, superelevation should not exceed 10 percent.
- [b] Superelevation should not exceed 8 percent where snow and ice conditions prevail.

**TABLE 11-9: HORIZONTAL AND VERTICAL ALIGNMENT COLLECTOR ROADS AND STREETS**

Design Speed (km/h)	Minimum Stopping Sight Distance (meter)	Minimum Radius of Horizontal Curve (meter)		Maximum Grade					
		Super-elevation 10% (a)	Super-elevation 8% (b)	Rural			Urban		
				Level	Rolling	Mountains	Level	Rolling	Mountains
30	29.6	25	30	7	10	12	9	12	14
40	44.4	45	50	7	10	11	9	12	13
50	57.4	75	80	7	9	10	9	11	12
60	74.3	115	125	7	8	10	9	10	12
70	94.1	160	175	7	8	10	8	9	11
80	112.8	210	230	6	7	9	7	8	10
90	131.2	275	305	6	7	9	7	8	10
100	157.0	360	395	5	6	8	6	7	9

- [a] Generally, superelevation should not exceed 10 percent.
- [b] Superelevation should not exceed 8 percent where snow and ice conditions prevail.

**TABLE 11-10: HORIZONTAL AND VERTICAL ALIGNMENT LOCAL ROADS AND STREETS**

Design Speed (km/h)	Minimum Stopping Sight Distance (meter)	Minimum Radius of Horizontal Curve (meter)		Maximum Grade		
		Super-Elevation 10% (a)	Super-elevation 8% (b)	Level	Rural Rolling	Mountains
30	29.6	25	30	8	11	16
40	44.4	45	50	7	11	15
50	57.4	75	80	7	10	14
60	74.3	115	125	7	10	13
70	94.1	160	175	7	9	12
80	112.8	210	230	6	8	10
90	131.2	275	305	6	7	10
100	157.0	360	395	5	6	...

[a] Generally, superelevation should not exceed 10 percent.

[b] Superelevation should not exceed 8 percent where snow and ice conditions prevail.

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**EXHIBIT 11-B AASHTO PUBLICATIONS ORDER FORM**

**AASHTO PUBLICATIONS ORDER FORM**

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**EXHIBIT 11-C FOUNDATION INVESTIGATIONS FOR DESIGN****FOUNDATION INVESTIGATION  
FOR DESIGN**

A foundation investigation and report is required for all proposed structure sites. The study and report shall be made by a California licensed Engineering Geologist or Civil Engineer, who specializes in foundations. The report shall, at a minimum, address all “applicable” topics shown in the following Caltrans checklist.

Specific attention is directed to appropriate sections of the *Caltrans Bridge Design Specifications*, Section 4-*FOUNDATIONS*. All driven pile support recommendations shall consider the use of Caltrans Standard Class 400 or Class 625 piles using design loads of 400 and 625 kilonewtons respectively.

A Log of Test Borings sheet shall be drafted and included as part of the foundation report, and as part of the structure plans.

**CHECKLIST FOR STRUCTURE FOUNDATION STUDIES  
AND REPORTS****LOG OF TEST BORINGS SHEET**

A log of Test Borings sheet (similar to Caltrans’ sheet) shall be included as part of the Foundation Report. Show the location of each boring or test pit in plan view. Logs of all borings shall be shown in an elevation or profile view on the sheet. Information which should be shown on plots of test borings is as follows:

1. Diameter, type, and date of boring.
2. Location of borings with respect to stationing along survey lines for the proposed project.
3. Elevation of the top of each boring, etc.
4. Description of samplers, sampling methods, and in-situ tests.
5. Test results including Standard Penetration Test. Results of the Standard Penetration Test (ASTM D-1586-84) shall be presented so that quick correlation with the Caltrans data base may be made.
6. Soil or rock descriptions and elevations of strata.
7. Groundwater elevation and date of measurement should be shown adjacent to the boring or test pit where taken.
8. Location, description, and elevation of the benchmark used for determining the top-of-hole elevations shown on the Log of Test Borings.
9. Name and position or title of person conducting the field study.
10. Name and position or title of the registered Engineering Geologist or Civil Engineer approving the “Log of Test Boring Sheet”.

## WRITTEN REPORT

A written report shall be prepared, which shall contain an interpretation and analysis of the foundation conditions based upon all available sources of data. Data may come from new or previous exploration programs, laboratory testing, and nearby construction experience, performance of nearby structures, etc. A short description of site topography geology should be included. Emphasis should be placed on slope stability of cuts and excavations, unusual groundwater conditions, springs, etc. All sources of information should be cited. The materials and conditions, which may be encountered during construction, shall be discussed. Problems involving design and construction should be anticipated and recommendations made for their solution. The recommendations shall be brief, concise, and definite. Reasons for recommendations and their supporting data shall always be included. Methods used for calculating pile capacities and soil-bearing capacities should be mentioned for ease of review. Extraneous data, which are of no use to the designer or Resident Engineer, should be omitted.

The written report shall include, but not limited to, information and recommendations regarding applicable items in the following lists:

### 1. TYPING OF FOUNDATION

#### A. Pile Support (Driven or Cast-In-Drilled-Hole)

1. Method of support (skin friction and/or end bearing) in rock or soil or both.
2. Suitable pile type(s) – reasons for choice and/or exclusion or types. When appropriate, Caltrans' standard piles should be used.
3. Pile tip elevation
  - a. Specified (use of "indicator piles" is not acceptable.)
  - b. Probable
  - c. Need for pre-drilling or jetting
4. Pile Design Load and Ultimate Capacity in compression and tension. Specify the Safety Factor.
5. Reduction of pile capacity due to negative skin friction.
6. Requirement for load test. Specify which portion of the structures' foundation will be controlled by the test.
7. Effects on adjacent existing structures.
8. Corrosion effects of various soils and waters, and possibility of galvanic reaction from stray currents.
9. Scour depth (elevation) and method of determination.

#### B. Footing Support

1. Elevation of bottom footing.
2. Allowable and ultimate footing pressure (include Safety Factor). Approximate settlement at uniformly distributed allowable load.
3. Brief Description of materials on which the footing is to be placed.
4. Scour depth (elevation).

## C. Drilled Shafts/Pier Columns (Mined Shafts)

1. Geologic description of foundation materials
2. Diameter (or dimensions)
3. Design Load, ultimate loads, and Safety factor
4.
  - a. Top of shaft elevation
  - b. Bottom of shaft elevation
  - c. Minimum shaft length into load carrying stratum
  - d. Estimate of shaft wall stability and possible shoring requirements
5. Soil or rock weight and strength parameters for determining end bearing capacity, lateral load capacity and point of shaft/column fixity.

## 11. APPROACH FILL REQUIREMENTS

1. Predicted amount of settlement and time delay required prior to beginning foundation construction. Predicted post construction settlement. Possibility of negative friction on pile foundations.
2. Special Requirement:
  - a. Controlled rates of embankment placement.
  - b. Fill height limit on untreated foundation.
  - c. Stripping of unsuitable foundation materials.
  - d. Use of lightweight fills to reduce amount of settlement.
  - e. Use of surcharge, wick drains, or other methods to shorten the required time delay period.
  - f. Specify embankment side slopes.
  - g. Unusual compaction requirements (i.e. 95% relative compaction) where abutments on spread footings are used.

## 111. CONSTRUCTION CONSIDERATIONS

1. Water table - seasonal or long term fluctuations, data for possible control in excavations (i.e. pumping, well points, trim seals, amounts of groundwater, etc.).
2. Adjacent structures – protection against damage from excavations, pile driving , etc.
3. Pile driving – difficulties, clearance, overhead or underground utilities, other unusual conditions, etc.
4. Excavation – control of earth slopes including shoring, sheet piles, bracing, and safety requirements.

## IV SEISMIC DATA

The foundation report should contain the following information, so that an evaluation of seismicity can be made per the Caltrans Bridge Design Specifications.

Maximum credible rock acceleration (from CDMG MS-45\*)

Magnitude of the maximum credible event.

Name of the causative fault and distance from the site.

4. Depth to rock or rock-like material ( $V_s > 762$  m/s). Provide supporting evidence for depth (i.e. boring log or geologic reference)



5. Liquefaction potential.
6. Need for “seismic approach slab.

**V. REVIEW OF FINAL STRUCTURE PLANS.**

The foundation consultant should review the structure plans to ensure that the foundation recommendations have been followed, and provide revised recommendations, if required by design changes, etc.

**\*MUALCHIN, LALLIANA (1987) CALIFORNIA DIVISION OF MINES AND GEOLOGY MAP SHEET 45, ROCK ACCELERATION FROM MAXIMUM CREDIBLE EARTHQUAKES IN CALIFORNIA.**

**EXHIBIT 11-D PRELIMINARY HYDROLOGIC/HYDRAULIC REVIEW SUMMARY**

**PRELIMINARY HYDROLOGIC/HYDRAULIC REVIEW SUMMARY**

**Bridge Name** (facility crossed) \_\_\_\_\_

**State Bridge No.** \_\_\_\_\_ **Road Name** \_\_\_\_\_

**Hydrologic and Hydraulic Data**

1. Size of drainage basin \_\_\_\_\_

2. Design flows and water surface elevations (USGS)

a. Q<sub>10</sub> \_\_\_\_\_ elevation \_\_\_\_\_ (culverts only)

b. Q<sub>50</sub> \_\_\_\_\_ elevation \_\_\_\_\_

c. Q<sub>100</sub> \_\_\_\_\_ elevation \_\_\_\_\_

3. High water marks \_\_\_\_\_ (Elevation/Year)

4. Structure opening size \_\_\_\_\_ Date Constructed \_\_\_\_\_

a. Existing \_\_\_\_\_

b. Upstream \_\_\_\_\_

c. Downstream \_\_\_\_\_

5. Description of property risks \_\_\_\_\_

6. Summary of upstream development \_\_\_\_\_

7. Importance of structure \_\_\_\_\_

8. Description of risks to life \_\_\_\_\_

9. Effects of facility on stream environment \_\_\_\_\_

10. Are there any channel restrictions or controlled flow? \_\_\_\_\_

11. Has this basin been studied before? Date of study? \_\_\_\_\_ Is the Study recognized by Caltrans? \_\_\_\_\_

12. Is there a potential debris problem? (describe) \_\_\_\_\_

13. Are there any mining operations within one-kilometer upstream and/downstream? \_\_\_\_\_

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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**EXHIBIT 11-E CHECKLIST FOR DRAINAGE STUDIES AND REPORTS****CHECKLIST FOR DRAINAGE STUDIES AND REPORTS**

This is a checklist of items to be considered for inclusion in hydraulic studies and reports. For definition of terms see section entitled “*Definitions*” of this chapter.

**1. PRELIMINARY**

- a. Review of basic guidelines
  1. A floodplain cannot be altered in any way until it has been shown that such alteration will pass the base flood without significant damage to either the floodplain or surrounding property. This requirement is often referred to as “conveyance of the base flood.” (Conveyance may be through structures, over the roadway, through escapements, through overflow channels, or any combination of the above.)
  2. Approval for actions within a floodplain cannot be given until various options of alignments, grade, and waterway area have been appraised.
  3. No bridge abutments or embankment shall encroach on a regulatory floodway.
- b. Collect appropriate and readily available published data such as:
  1. USGS quadrangle maps
  2. NFIP maps - Floodplain maps may be obtained from the National Flood Insurance Program (NFIP), or the Local Caltrans District office
  3. Aerial photos - Check with Caltrans
  4. Runoff records - USGS water supply papers
  5. Rainfall records- Various sources
  6. Prior hydrology reports including photos and plans
- c. Coordinate with other agencies
  1. Determine whether permits are required.
  2. Determine how the area is zoned.
  3. Investigate possibility of cooperative projects.
  4. Determine whether there exist or proposed water resource projects that will influence the design, and summarize details (Watershed area, storage capacity, etc., when pertinent).
  5. Determine whether there is ongoing or proposed clearing, construction, land leveling, land development, aggregate mining, etc., that would affect flow in or the stability at the stream.
- d. Floodplain Encroachments
  1. Executive order 11988 establishes the federal policy on floodplain management. This policy has been implemented by 23 CFR, Part 650A (23 CFR 650A).
  2. CFR 650A requires all encroachments and all actions, which affect an area, subject to flooding by flood or tide having a one-percent chance of being exceeded in any given year, to comply with a floodplain management policy. Repairs made to existing facilities with emergency funds (see *Local Programs Manual* which discusses Emergency Relief) during or immediately following a disaster are exempt from this policy.

e. The hydrology and hydraulics report shall:

1. Only be as comprehensive as the conditions warrant. Calculations with short comments are sufficient for a culvert in a well-defined drainage environment. A complete comprehensive document is required for a major stream crossing in an ecological setting.
2. Generally be structured along these guidelines with:
  - a. Background data and estimates of future flood.
  - b. Calculations to determine velocities, water surface elevations, backwater and scour depth (the lead agency should provide a disk with the data used to run HEC-2 or WSPRO. If a program other than these is used, that program should be provided on a disc along with the data used).
  - c. Illustrative photos.
  - d. Comments on selection of design flood, conveyance of 100-year flood, channel change, effect on stream stability, and provisions for fish passage.

f. Suggested desirable hydraulic features

1. The following features should be considered in the design of a bridge or culvert:
  - a. Use of warped wingwalls
  - b. No open vents
  - c. No piers in main channel
  - d. Use of energy dissipaters
  - e. Extending pier walls to edge of deck
  - f. No piers in navigable channel

2. **FIELD RECONNAISSANCE** -- Should be made by the engineer making the hydrologic and hydraulic analysis

a. Channel stability

1. Estimate the erodability of streambed material.
2. Document bends, meanders, and any eroded areas.
3. Is the existing protection providing adequate erosion control, and if so, is it fragile?
4. Are there signs of aggradations or degradation? Other scour considerations?
5. Are there any upstream or downstream mining operations?

b. Potential problems

1. Consideration of the value of the property that would be damaged by the base flood or overtopping flood.
2. Size and amount of drift.
3. Ice, snow
4. Banks that would erode if flow is accelerated or redirected.
5. Check adequacy of abutment protection.

c. Environmental considerations

1. Beauty of area.
2. Fish habitat and wildlife cover.
3. Will local water supply or sanitation treatment facility be affected?
4. Is it within a park or recreation area?
5. See *Flood Plain Values* (see *Standard Environmental Reference (SER)*, Chapter 17, *Flood Plains*).

## d. Alternative sites

1. Locate suitable alternative sites.
2. What are the advantages and disadvantages of the alternative sites?

## e. Existing structures (including relief or overflow structures)

1. Locate existing nearby upstream or downstream structures with respect to proposed crossing or encroachment.
2. For each existing nearby structure note the type, number of spans, span lengths, vertical clearance, bent design or pier orientation.
3. For each nearby existing culvert estimate the size and number of cells.

## f. Hydraulic data

1. Locate high water marks (give date and elevation).
2. Document both the flood history and source of information.
3. Document the damage to existing structures including abrasion, corrosion, wingwall failure, culvert entrance failure, pier settlement, or excessive aggradations or degradation.
4. Note the use of bank protection, drop structures, or any other sign of corrective work at existing structures.

## g. Factors affecting water stage

1. Determine whether flood flow can escape to, or enter from, other watersheds during floods.
2. Determine whether any of the flow can bypass the site.
3. Determine whether backwater or tides affect the flow.
4. Determine what will control an overtopping flood.

**3. ECONOMIC ANALYSIS**

- a. Make an economic analysis of all the reasonable alternatives based on construction cost, aesthetic cost, ecological cost, flood damage cost, loss of traffic service, etc.
- b. Reject from further considerations those options that are not economically suitable alternatives.

**4. FIELD SURVEY**

- a. Obtain topographic data for the suitable site alternatives. Extend limits to include overflows where practicable.
- b. Locate, sketch, and record significant features such as buildings, levees, walls, fences, ditches, trees, boulders, etc., and where significant, record elevations.
- c. Record water surface elevation, the elevation of the path of greatest depth as in a stream channel (thalweg elevation), and estimate velocity of flow.
- d. Set tidal gages where tidal influence is possible and record data hourly throughout the survey.
- e. Obtain channel cross-sections 150 and 300 meters upstream and downstream where necessary.
- f. Obtain data on boat traffic.
- g. Take ample photographs at each site to illustrate the hydraulic and ecological features.
- h. Take physical measurements of the existing structure and/or any other bridge or culvert with similar characteristics either upstream or downstream.
- i. Where possible determine the foundation type (spread footings, piles) and foundation depth of all nearby structures.

## 5. SITE MAP CONSTRUCTION

- a. Purpose: For use in estimating flood flow distribution; to locate cross section of stream; to show location of proposed encroachment and structures, alignment of piers, skew of crossing, stream controls, existing encroachments, existing highway structures, etc.
  1. A specially prepared site map showing .25- or .50-meter contours, vegetation, and manmade improvements is normally required. In some cases cross-sections normal to flood flow are acceptable in lieu of the map. A minimum of 3 cross sections is required including one upstream, one at the crossing, and one downstream.
  2. The site map should include the limits of the overtopping flood when practical.
  3. Where there are two or more suitable alignments, a site map must be prepared for each.

## 6. HYDROLOGIC ANALYSIS

- a. Hydrologic considerations
  1. Determine drainage area above the proposed encroachment. Subdivide where runoff characteristics are or will be significantly different.
  2. List available flood records at the encroachment and/or at nearby hydraulically similar watersheds.
  3. Calculate the flow at the proposed encroachment for the base flood and the design flood, if different. Include any other flow within the floodplain that affects the design of the project. The flood calculations should be made by using at least two widely used methods. Nearby stream gage data may be used, if the data is adequate to furnish the above.
  4. Plot the flood frequency curve.
  5. Plot the stage discharge curve.
- b. Establish the existing flow conditions
  1. Determine the distribution of flow and velocities for several discharges or stages in the natural channel for existing conditions. USCE, USGS, FEMA, etc., studies may be used as a general case.
  2. Establish the maximum permissible upstream water surface for base flood.
- c. Hydraulic design for bridges
  1. Compute the water surface profile for various trial bridge lengths and discharges at each of the alternative sites. If alternate alignments are proposed, compute the water surface profile for various trial bridge lengths and discharges at each of the alternative sites.

(The Lead Agency should provide a disc with the data used to run the HEC-2 or WSPRO water surface profile computer programs. If a program other than HEC-2 or WSPRO is used that program should be provided on a disc along with the data used.)

(For the base flood, backwater caused by the encroachment together with that caused by all other man-made obstructions is limited to 0.3 meter above the water surface of the base flood.) Design must be in accordance with 23 CFR 650A. The local agency must comply with FEMA's regulatory floodplain rules or they may lose their federal flood insurance.
  2. Select alignment, grade, bridge type and size waterway openings, etc., on the basis of overall economic calculations and freeboard requirements (see section 10, *Design Standards*).

3. Check “conveyance of base flood.
  4. Calculate scour depth at piers. (Recommended reference HEC-18 *Evaluating Scour at Bridges*, FHWA)
  5. Design pertinent features such as riprap for bank protection, cross channel stabilizers for streambed control, energy dissipaters to reduce downstream velocities, spur dikes to equalize flow, etc. (Recommended references are HEC - 18 *Evaluating Scour at Bridges* and HEC - 20 *Stream Stability at Highway Structures*).
- d. Hydraulic design for culverts (Recommended reference; Caltrans *Highway Design Manual*)
1. Determine allowable headwater elevation.
  2. Compute and plot performance curves for trial culvert sizes at alternate alignments.
  3. Evaluate erosion, abrasion, and corrosion potentials.
  4. Select alignment, grade, and culvert design on the basis of overall economic calculations related to the design standards appropriate to the project.
- e. Hydraulic design for longitudinal encroachments
1. Determine the effect of the proposed encroachment on water surface profile using various roadway design, alternatives, and the base flood.
  2. Evaluate the effects on scour and deposition in the channel.
  3. Select roadway design on the basis of overall economic calculations.
  4. Design pertinent features such as bank protection, etc. (Recommended reference HEC-11 *Design of Riprap Revetment, FHWA and/or Bank and Shore Protection*, Caltrans)

## 7. CONTRACT PLANS

The following data shall be shown on the contract plans, and may be shown in tabular form. List the frequency, magnitude and pertinent water surface elevations for:

- a. Minimum Design Flood
- c. Base Flood
- d. Overtopping Flood
- e. Flood of Record, if available

The data used for design must be designated and if different from the above, the data must be shown on the plans.



## HYDRAULIC REFERENCES

- *Guidelines for Hydraulic Considerations in Highway Planning and Location, Volume I, Highway Drainage Guidelines, AASHTO, 1990.*
- *Guidelines for Hydrology, Volume II, Highway Drainage Guidelines, AASHTO, 1992.*
- *Highway Hydrology, HDS No.2, FHWA-SA-96-067, 1996.*
- Flood-frequency analysis, such as those of U. S. Geological Survey or other water-resources agencies, for the region in which the structure is located.
- *Highways in the River Environment Hydraulic and Environmental Design Considerations, U.S. Department of Transportation, FHWA, 1983*
- *Stream Stability at Highway Structures, HEC-20, FHWA-0IP-90-014, 1991*
- Bradley, J. N., 1979, *Hydraulics of Bridge Waterways, Hydraulic Design Series No. 1, Federal Highway Administration, U.S. Government Printing Office, Washington, DC, 1978, 111 p.*
- *Evaluating Scour at Bridges, Second Edition, HEC-18, FHWA-IP-90-017, 1993.*
- *Highway Research Board, 1979, Scour at Bridge Waterways, National Cooperative Highway Research Program Synthesis 5, Highway Research Board, National Academy of Sciences, 2101 Constitution Avenue, Washington, DC 20418.*
- *Hydraulic Design of Highway Culverts, September 1985, Hydraulic Design Series No.--, Report No. FHWA-1P-85-15.*
- *Circular Memorandum, G. M. Williams, July 21, 1966 Plans for Pipe Culvert Inlet and Outlet Structures, Federal Highway Administration.*
- *Guidelines for Hydraulic Design of Culverts, Volume IV, Highway Drainage Guidelines, AASHTO, 1992.*
- Searcy, J. K., *Design of Roadside Drainage Channels, 1985, Federal Highway Administration, Hydraulic Design Series No. 4, U.S. Government Printing Office, Washington, DC.*
- *Bridge Deck Drainage Systems, HEC-21, FHWA-SA-92-010, 1993*
- *Standard Environmental Reference (SER), Chapter 17 "Flood Plains"*
- *Design of Encroachments on Flood Plains Using Risk Analysis, HEC 17, FHWA-EPD-86-112, 1981*
- For information regarding flood plain delineation studies, write to: Department of Housing and Urban Development, Federal Insurance Administration, Assistant Administrator for Flood Insurance, 451 7th Street, SW, Washington, DC 20410
- *Design of Rip rap Revetment, HEC-11, FHWA-1P-89-016, 1989.*
- *CALTRANS Highway Design Manual*
- *AASHTO Model Drainage Manual*

Instructions: To be used as guide for Hydraulic Studies and Reports

**EXHIBIT 11-F DESIGN EXCEPTION FACT SHEET**

**DESIGN EXCEPTION FACT SHEET**

Dist: \_\_\_\_\_  
Co: \_\_\_\_\_  
Rte: \_\_\_\_\_  
Project Cost: \_\_\_\_\_

Date: \_\_\_\_\_  
Prepared by: \_\_\_\_\_

**1. Existing Conditions**

**2. Proposed Work and Non-Standard Features**

**3. Standard for Which Exception is Required**

**4. Accidents**

**3-year Period**

Total F F+I

Actual Rate

Expected Rate

Describe type(s) of accidents that are occurring and what effect the design exception is expected to have on them.

**5. Design Year Traffic Volumes**

**6. Added Cost to Make Standard**

**7. Description of Any Additional Work to Enhance Safety**

**8. Reason for Requesting Exception**

**EXCEPTION APPROVED:** \_\_\_\_\_ **DATE:** \_\_\_\_\_  
*PUBLIC WORKS DIRECTOR (OR DELEGATE TITLE)*

## INSTRUCTIONS FOR “ DESIGN EXCEPTION FACT SHEET’

### 1. Existing Conditions

Describe existing facility. Number of lanes, median width, shoulder width, etc. Describe width of adjoining sections if that information is relevant, for example on 3R projects.

### 2. Proposed Work and Non Standard Features

Describe work to be done. Resurfacing, shoulder widening, bridge widening, etc. Describe the non-standard design element that required the exception.

### 3. Standard for Which Exception is Required

Be specific. Name the source, i.e., 3R Criteria, *Instructions for AASHTO Green Book Implementation*, or *Highway Design Manual*.

### 4. Accidents

#### 3-year Period

Total F F+I

Actual Rate

Expected Rate

### 5. Design Year Traffic Volumes

If 3R project, use construction year. Otherwise, use design year usually 20-years in the future.

### 6. Added Cost to Make Standard

Show what it would cost to meet the standard for which the exception is being requested. If more than one quadrant is involved in the approach rail design request, cost shall be broken down on a per quadrant basis.

The Fact Sheet should also be accompanied with a detailed drawing of the bridge site along with topographical features (right of way lines, side road widths, physical obstructions, etc.) 30m from beginning and ending of the bridge.

### 7. Description of Any Additional Work to Enhance Safety

Mention any additional work which would qualify for safety enhancement such as median barrier, guardrail upgrade, slope flattening, super correction, elimination of roadside obstacles, additional lane and shoulder width, alignment improvement, etc.

### 8. Reason for Requesting Exception

Be thorough, but brief. These are some, but not all of the reasons exception has been granted in the past: high cost, environmental sensitivity, low accident rates, and postponement of bridgework.

**CHAPTER 12 PLANS, SPECIFICATIONS & ESTIMATE****CONTENTS**

Section	Subject	Page Number
12.1	INTRODUCTION .....	12-1
	Definitions .....	12-1
12.2	PS&E PROCEDURES FOR MAJOR NHS PROJECTS .....	12-2
12.3	ENVIRONMENTAL PROCEDURES .....	12-2
	Compliance with Environmental Laws .....	12-2
	Preliminary Design .....	12-3
	Final Design .....	12-3
	Permits .....	12-3
	Documentation .....	12-4
12.4	METHOD OF CONSTRUCTION .....	12-4
	Contracting Method .....	12-4
	Force Account (Day Labor) .....	12-4
	Emergency Work .....	12-6
12.5	VALUE ANALYSIS .....	12-6
	Introduction .....	12-6
	Definitions .....	12-7
	Procedures .....	12-7
12.6	METRICATION .....	12-7
	Implementation .....	12-7
	Conversion to Metric Units .....	12-8
12.7	PLANS .....	12-8
	Design Standards .....	12-9
	Design Exceptions .....	12-9
	Plan Sheet and Specification Signatures .....	12-9
	Standard Plans .....	12-9
	Erosion Control Plans .....	12-10
	Traffic Control Plans .....	12-10
	Transportation Management Plans .....	12-11
	Americans With Disabilities Act (ADA) .....	12-11
12.8	STANDARD SPECIFICATIONS .....	12-12
	Acceptable Standard Specifications and Special Provisions .....	12-12
	Caltrans Specifications on the Internet .....	12-13
	Sample "Boiler Plate" Contract Documents on the Internet ..	12-13
12.9	REQUIRED FEDERAL CONTRACT PROVISIONS .....	12-14
	General Federal Requirements .....	12-14
	Form FHWA 1273 .....	12-14

**CONTENTS CONTINUED**

Section	Subject	Page Number
	I. General .....	12-14
	II. Nondiscrimination .....	12-15
	III. Nonsegregated Facilities .....	12-16
	IV. Payment of Predetermined Minimum Wages .....	12-16
	V. Statements and Payrolls .....	12-17
	VI. Record of Materials, Supplies, and Labor .....	12-17
	VII. Subletting or Assigning the Contract .....	12-17
	VIII. Safety: Accident Prevention .....	12-18
	IX. False Statements Concerning Highway Projects .....	12-18
	X. Clean Air Act and Water Pollution Control Act .....	12-18
	XI. Debarment, Suspension and Ineligibility Certification .....	12-19
	XII. Lobbying Certification .....	12-19
	Contract Time .....	12-19
	Liquidated Damages .....	12-20
	Buy America .....	12-21
	Disadvantaged Business Enterprise .....	12-22
	Noncollusion Certification .....	12-23
	Federal Trainees (On-the-Job Training) .....	12-23
	Federal Wage Rates .....	12-25
	Relations with Railroad .....	12-25
	Changed Condition Clauses .....	12-26
	Differing Site Conditions Clause .....	12-26
	Suspensions of Work Ordered by the Engineer .....	12-26
	Material Changes in the Scope of the Work .....	12-27
<b>12.10</b>	<b>RESTRICTED CONTRACT PROVISIONS .....</b>	<b>12-27</b>
	Indian Preference .....	12-27
	Bonding and Prequalification .....	12-28
	Price Adjustment Clauses .....	12-28
	Project Labor Agreements .....	12-29
<b>12.11</b>	<b>OPTIONAL CONTRACT PROVISIONS .....</b>	<b>12-30</b>
	Alternate Bids .....	12-30
	Incentive/Disincentive (I/D) Provisions .....	12-30
	Quality-Price Adjustment Clauses .....	12-31
	Innovative Contracting Practices .....	12-31
<b>12.12</b>	<b>MATERIALS AND EQUIPMENT .....</b>	<b>12-31</b>
	Publicly-Owned Equipment .....	12-31
	Contractor-Purchases for Local Ownership .....	12-32
	Convict Produced Materials .....	12-32
	Local Preferences .....	12-32
	Warranty Clauses .....	12-32
	Proprietary Items .....	12-33
	Equipment Rental Rates .....	12-33

**CONTENTS CONTINUED**

Section	Subject	Page Number
12.13	ESTIMATES .....	12-34
	Nonparticipating Work .....	12-34
	Contract Items .....	12-35
	Local Agency Furnished Materials .....	12-35
	Supplemental Work .....	12-35
	Contingencies .....	12-36
	Construction Engineering .....	12-36
	Federal Trainee Program .....	12-36
	Estimates for Force Account (Day Labor) .....	12-36
12.14	OPTIONAL BRIDGE REVIEW .....	12-37
12.15	PS&E CERTIFICATION .....	12-37
	PS&E Checklist .....	12-38
	Checklist Review by Caltrans .....	12-38
	Special Provisions Review by Caltrans .....	12-38
	DLAE Acceptance of the Checklist .....	12-39
	Submittal of Plans, Specifications and Estimate (PS&E) .....	12-39
	Process Review .....	12-39
12.16	PROJECTS WITHOUT TRADITIONAL PS&E .....	12-39
12.17	REFERENCES .....	12-40

**EXHIBITS**

Exhibit	Description	Page Number
12-A	PRELIMINARY ESTIMATE OF COST .....	12-41
12-B	SCOPE OF WORK - CMAQ/ TE PROJECTS .....	12-43
12-C	PS&E CERTIFICATION .....	12-45
12-D	PS&E CHECKLIST .....	12-47
12-E	PS&E CHECKLIST INSTRUCTIONS .....	12-57
	Attachment A Section 14. Federal Requirements for Federal-Aid Construction Projects .....	12-65
	Attachment B Required Contract Provisions Federal-Aid Construction Contracts .....	12-67
	Attachment C Equal Employment Opportunity Certification .....	12-79

---

Attachment D	Noncollusion Affidavit .....	12-81
Attachment E	Debarment and Suspension Certification .....	12-83
Attachment F	Nonlobbying Certification for Federal-Aid Contracts ..	12-85
Attachment G	Disclosure of Lobbying Activities .....	12-87
Attachment H	Section 2. Proposal Requirements and Conditions ..	12-91
Attachment I	Section 3. Award and Execution of Contract .....	12-97
Attachment J	Subcontractor and DBE Records .....	12-99
Attachment K	Performance of DBE Subcontractors and Suppliers	12-101
Attachment L	(Exhibit Deleted) Blank .....	12-103
Attachment M	Buy America Requirements .....	12-105
Attachment N	Federal Requirement Training Special Provisions ...	12-107
12-F	REQUEST FOR APPROVAL OF COST-EFFECTIVENESS/PUBLIC INTEREST FINDING	12-109
12-G	BIDDER'S LIST OF SUBCONTRACTORS (DBE AND NON-DBE).....	12-111

## CHAPTER 12 PLANS, SPECIFICATIONS, & ESTIMATE

### 12.1 INTRODUCTION

For locally sponsored projects on the State Highway System (SHS), the local agency must enter into a cooperative agreement with Caltrans to establish the responsibility for project PS&E (see Caltrans *Cooperative Agreement Manual*).

The preparation of the plans, specifications, and estimate (PS&E) for local federal-aid projects off the SHS is the responsibility of the local agency.

Except for major NHS projects, local agencies will certify that their project PS&E complies with all applicable federal and state regulations and procedures. A PS&E checklist form is included as Exhibit 12-D and summarizes the items requiring local agency compliance. The local agency's project PS&E certification checklist must be submitted to the Caltrans District Local Assistance Engineer (DLAE) along with their "Request for Authorization" to proceed with construction. Local agency PS&Es are reviewed on a periodic basis as part of Caltrans' process review program.

The policies and procedures contained in this chapter reflect current federal requirements for the PS&E phase of local federal-aid projects. These instructions do not necessarily address the relevant state laws and local regulations with which a local agency must also comply.

### DEFINITIONS

Design Standards - The standards, specifications, procedures, guides and references listed herein that are acceptable for application in the geometric and structural design of federal-aid projects.

Controlling Criteria - The specific minimum criteria and controls contained in the design standards for highway projects that are considered of primary importance for safety. Deviations from these controlling criteria require design exception approval.

Cost-Effectiveness/Public Interest Finding – A written document outlining the basis for a proposed deviation from a standard procedure as required in Title 23 of the Code of Federal Regulations. The finding contains supporting documentation such as cost /benefit analysis, product compatibility, etc., and it includes reasons that the proposed deviation is considered to be cost-effective or for the public's best interest. Exhibit 12-F is a preprinted blank form that should be used by local agencies to prepare a "Cost-Effectiveness/Public Interest Finding". FHWA approval is required for local agency projects that are "FHWA Full Oversight," and Caltrans' approval is required for local agency projects that are "State-Authorized" on the State Highway System. The City or County Public Works Director's approval is required for local agency projects that are "State-Authorized" off the State Highway System or NHS.



Design Exception Approval - A process to justify, approve and document allowable deviations from controlling criteria.

Specifications - The directions, provisions and requirements contained in the contract documents for a specific construction project. Included are various proposal conditions, contract administration provisions, required construction methods, and technical requirements for materials.

Standard Specifications - A published document that contains commonly used specifications developed for use as a reference for construction contract documents.

Standard Plans - A collection of plan details developed for use as a reference for construction contract documents. Included are standard abbreviations, symbols, design notes, design conditions and data, construction details, specifications, layouts, and measurement and payment details.

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## 12.2 PS&E PROCEDURES FOR MAJOR NHS PROJECTS

For major projects on the NHS, the local agency's written PS&E procedures must be approved by Caltrans before final design is started. The DLAE will determine which projects require this approval at the field review (see Chapter 7, *Field Review*, of this manual). The procedures should identify changes from the procedures described in this chapter and as a minimum cover the following items:

- Project Management personnel and procedures
- Highway Design Standards (and any other Technical standards as appropriate)
- Consultant Selection procedures
- Project DBE goal setting procedures
- Review and approval procedures
- Oversight procedures if a State highway is involved
- Maintenance of records and Access

The DLAE should consult with headquarters Division of Local Assistance (DLA) for assistance with the review of the local agency procedures.

## 12.3 ENVIRONMENTAL PROCEDURES

The Code of Federal Regulations, Title 23 (Highways), Part 771.113 (23 CFR 771.113) prohibits starting work on the final design phase of a federally funded project until after approval of the final environmental document (see Chapter 6 "Environmental Procedures" of this manual). Failure to comply with this requirement will make a project ineligible for federal reimbursement.

### COMPLIANCE WITH ENVIRONMENTAL LAWS

The local agency is responsible for insuring that mitigation measures presented as commitments in environmental documents, and that conditions and restrictions, associated with regulatory permits, are incorporated into appropriate contract documents, plans, specifications and estimates prior to proceeding with major construction activities such as land acquisition or construction. Environmental documents referred to here may be a Categorical Exclusion (CE), Environmental Assessment (EA), or Environmental Impact Statement (EIS).

**Failure to meet mitigation commitments may render the project ineligible for federal reimbursement.**

Omission or modification of a mitigation commitment, thereby creating new significant environmental effects will result in the need to prepare a re-evaluation (if three years have passed since approval of the environmental document) to assess any changes that have occurred and their effect on the validity of the environmental document. Changes in project design, applicable laws or regulations, or environmental impacts may also require environmental re-evaluation, including additional studies, consultation and public involvement. If the document is an EIS, a Supplemental EIS may be required.

## PRELIMINARY DESIGN

Local agencies may complete all necessary design work needed to complete the environmental document or to comply with other environmental laws during the NEPA process. This should not be construed as an authorization to proceed with final design for the entire project, but only for those aspects of the project necessary to consider specific environmental concerns. An example of this is where such work is necessary to permit the full evaluation of environmental impacts and to permit the consideration of appropriate mitigation measures, e.g., impacts to wetlands, Section 4(f) areas and resources covered by Section 106 of the National Historic Preservation Act.

## FINAL DESIGN

Local agencies may not proceed with final design activities until FHWA has approved the final environmental document and signed the CE, Finding of No Significant Impact (FONSI) or Record of Decision (ROD); or Caltrans has approved the Programmatic CE. Granting approval to proceed with final design prior to final environmental approval would be a premature commitment to one alternative at a time when other alternatives, including the alternative of taking no action, are still being actively considered in the environmental process. Upon final environmental approval, it is incumbent upon the DLAE to immediately provide notification to the local agency and a copy of the approved environmental documents.

A summary of required mitigation measures can be found in the FONSI for projects processed with an Environmental Assessment, or in the ROD for projects processed with an Environmental Impact Statement, but detailed descriptions must be gleaned from the Final EA and EIS documents or from mitigation and/or monitoring plans (as appropriate).

Unique environmental commitments including but not limited to, excavation of historic sites, protection of public-owned public parklands, removal and disposal of hazardous materials, and the establishment of sensitive plant communities or wetland mitigation sites, are often complex and require technical expertise in the translation and transfer into final design. Projects cleared with a CE may have environmental mitigation measures, mitigation monitoring, reporting record [MMRR] associated with resources and impacts that must also be incorporated into project planning. In some cases, a plant establishment period or monitoring period is necessary and must be addressed during final design.

For complex projects, Caltrans staff is available to assist in the translation and proper transfer of environmental commitments into the final design.

Caltrans assures that mitigation measures and any required ongoing maintenance of mitigation are implemented by conducting periodic process reviews.

## PERMITS

The local agency is also responsible for translating permit conditions and restrictions into the final design. Permits include, but are not limited to, Army Corps of Engineers, Section 404 (discharge of Fill) Nationwide or Individual, Section 10 Waterways and Navigable Waters, Water Quality Certification, California Department of Fish and Game Section 1601/03 Stream Encroachment, Pollution Discharge Elimination System, or U.S. Coast Guard. Typical mitigation includes hay bales, silt fencing, dust control, riprap, soil stabilization matting, slope drain, turbidity barrier, etc.

Local agencies should work closely with the permitting agency to ensure accurate translation and proper transfer of permit conditions and restrictions (as appropriate) into final design. Conversations with regulatory agencies regarding translation of permit conditions and restrictions should be well documented.

## DOCUMENTATION

Well documented records, referencing the page numbers and/or plan sheets on which commitments are illustrated, should be maintained by the local agency, as this information will be necessary when certifying PS&E. This information will also be useful during process reviews.

## 12.4 METHOD OF CONSTRUCTION

### CONTRACTING METHOD

Except as noted below, all federal-aid construction projects must be completed by contracts awarded to the lowest responsible bidder of a competitive bid process (23 CFR 635.104). In addition, local agencies may not, under any circumstances, negotiate with a bidder prior to award to reduce the price of a construction contract.

Occasionally, situations arise which may support the use of a contracting method other than competitive bidding. Noncompetitive construction contracting may be approved under the following conditions:

- When an emergency exists of such magnitude that work cannot be delayed
- There is only one organization qualified to do the work
- Competition is deemed inadequate after soliciting bids
- When it is more cost effective to do the project by “force account” (defined below)

The use of a non-competitive contracting method must be thoroughly justified in writing, documented in the project files and retained for future reference. For local federal-aid projects that are subject to FHWA Full Oversight (see Chapter 2, *Roles and Responsibilities*), justification must be submitted to the DLAE for FHWA’s review and approval.

### FORCE ACCOUNT (DAY LABOR)

Federal regulations (23 CFR 635.203) defines “force account” as the direct performance of construction work by a local agency, railroad, or public utility using labor, equipment, materials and supplies furnished by them and under their direct control. Payment under force account is based on the actual cost of labor, equipment, and materials furnished, with consideration for overhead and profit.

Since work by force account is an exception to the normal contract method, which is based on competitive bidding, each local agency must also look to its own charter and applicable state code(s) when considering work by force account.

contract plans. This manual is available from Caltrans Central Publications and Distribution Unit at 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone No. (916) 445-3520.

## DESIGN STANDARDS

Standards for design of federal-aid highway projects are contained in Chapter 11, *Design Standards* of this manual.

## DESIGN EXCEPTIONS

The Public Works Director or the person to whom approval authority has been delegated shall sign approval for design exceptions. The person with approval authority must be a registered Civil Engineer in the State of California. Additional procedures concerning documentation requirements and delegation of this approval authority shall be in accordance with Chapter 11, *Design Standards*, of this manual.

## PLAN SHEET AND SPECIFICATION SIGNATURES

On local agency federal-aid projects, the title sheet of the plans and specifications shall bear the signature and seal or stamp, the date of signing and sealing or stamping, and the expiration date of the licensed professional engineer in the State of California, who is the local agency's responsible person in charge for the type of plans and specifications being signed. Additional local agency signatures on the title sheet are optional. Plans and specifications for projects advertised, awarded and administered by the local agency do not include the State Engineer's signature, except as required for a state encroachment permit and/or cooperative agreement. The title sheets of the plans and specifications must also show the federal-aid project number.

Other plan sheets (including typical section sheets) must bear the signature of the professional engineer under whose direction the sheets were prepared. Signature of the sheets may be delegated to a California registered engineer retained by the local agency to prepare the plans.

## STANDARD PLANS

Caltrans *Standard Plans* shall be used for locally sponsored projects on the SHS.

The following standard plans are acceptable for use with local federal-aid projects off the SHS:

- The current edition of the Caltrans *Standard Plans*
- The current edition of the *Standard Plans for Public Works Construction*, developed and promulgated by the American Public Works Association - Southern California Chapter and the Associated General Contractors of California - Southern California Districts

In addition to the above, standard plans which are developed locally for non-federally

funded projects may be used on local federal-aid projects. The local standard plans shall be signed (with registration number) by the local agency's responsible person in charge who must be registered in California in the professional field for the type of standard plan being signed. Details included in local standard plans used for projects on the NHS shall meet statewide geometric standards.

Bridge construction details included in local standard plans shall meet the Caltrans' bridge design standards.

When a local agency requests structure-review assistance from Caltrans, Caltrans *Standard Plans* must be used, as appropriate, for the structure portion of the project. However, Caltrans' review will be contingent upon availability of staff.

## EROSION CONTROL PLANS

Erosion control measures and practices shall be taken to inhibit the dislodging and transporting of soil particles by water or wind, including actions that limit the area of exposed soil and minimize the time the soil is exposed.

Emphasis shall be placed on erosion control in the preparation of PS&E. All reasonable steps shall be taken to ensure that highway project designs for the control of erosion and sedimentation and the protection of water quality comply with applicable standards and regulations of other agencies.

The AASHTO *Highway Drainage Guidelines*, Volume III, and *Erosion and Sediment Control in Highway Construction*, 1992, are guidelines to be followed on all construction projects. These guidelines are not intended to preempt any local requirements or State law if such requirements are more stringent.

Federal-aid funds shall not be used in erosion and sediment control actions made necessary because of contractor oversight, carelessness, or failure to implement sufficient control measures.

## TRAFFIC CONTROL PLANS

A "traffic control plan" is a plan or procedure for handling traffic through or around a specific highway, street work zone or project to provide safety for motorists and workers. A traffic control plan shall be included in the PS&E for all federal-aid highway construction projects.

A traffic control plan must be developed specifically for each construction project and must be consistent with the *Standard Plans* and the *Manual of Traffic Controls for Construction and Maintenance Work Zones* (published by Caltrans) or Part VI - "Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility, and Incident Management Operations" of the *Manual of Uniform Traffic Control Devices* (MUTCD) (published by the FHWA).

The degree of detail in the traffic control plan depends on the project's complexity and degree to which construction activity interferes with traffic. The scope of the traffic control plan should be determined during the preliminary design phase of the project. Caltrans uses the following guidelines to establish the scopes of traffic control for

state highway projects:

- For expressway work requiring lane closures or shifting of traffic, drawings are required (a Caltrans standard plan sheet has been developed for such lane closures).
- For conventional multi-lane highways, where widening or reconstruction requires lane closures or shifting traffic for stage work, drawings are preferred. The Caltrans standard plan sheet shows a typical lane closure.
- For resurfacing and minor repair or reconstruction work on two-lane highways requiring one-way traffic control, a reference to standard plans or a manual is adequate for most projects. Where special problems are apparent, additional special provisions may be written (e.g., restricting hours of lane closures, etc.) and a plan showing the placement of signs, positioning of flagger, etc., may be added provided the plan does not reduce the established standards.

Contract provisions may permit contractors to develop and use their own traffic control plans and if the local agency finds that these plans are better than those provided in the PS&E. Any changes to the traffic control plans included in the approved PS&E must be reviewed and approved by the local agency's Resident Engineer, if registered, or at a higher level as required to satisfy the need for registration.

The PS&E should specify the method of payment for providing, installing, moving, replacing, maintaining, and cleaning traffic control devices required by the Traffic Control Plan. Suitable force account procedures may be utilized for traffic control items. The lump sum method of payment should be used only on very small projects and projects of short duration. Payment for traffic control items incidental to other items of work should be discouraged.

All persons responsible for the development, design, implementation and inspection of traffic control shall be adequately trained. Local agency engineers may contact the Caltrans DLAE for information concerning the availability of traffic control training.

## TRANSPORTATION MANAGEMENT PLANS

In general, a Transportation Management Plan (TMP), formerly called "Traffic Management Plans," is needed if construction work on an existing roadway already experiencing recurrent delays (or is expected to experience delays due to construction activity) causes a significant increase in recurrent delays over an extended period of time. "Significant traffic delay" is any additional delay beyond the existing conditions normally experienced by travelers through the traffic corridor as determined by the Traffic Engineer or project engineer. TMPs may be complex or may be very simple, with one or two activities added to the traditional traffic-handling practices. TMPs consist of activities, which are normally eligible for reimbursement with federal-aid funds, as normal construction expenditures. Project planning can include other considerations, such as special construction materials and incentive/disincentive provisions, which are also permitted on federal-aid projects.

Typical activities include (but are not limited to): 1) media outreach, 2) public information/relations, 3) operational improvements through traffic engineering including signs, signals (installation and upgrade, interconnect and actuated control) and markings,



lighting improvements, changeable message signs, restricted moves during peak hours, 4) telecommuting incentives, 5) ridesharing, carpooling, and vanpooling activities, 6) enhancements for transit service and parking facilities, 7) intersection widening, 8) detour paving, 9) traffic control officers, and 10) comparable improvements on alternate and parallel roadways used for detour or diversion.

TMPs are required for all reconstruction, rehabilitation, and other projects (including projects on the SHS not funded by the state), if significant traffic delays are anticipated. Determination of "significance" should be made on a project-by-project basis. Factors involved in this decision should include: 1) cost-effectiveness, 2) safety, 3) public reaction, 4) expected delays, 5) availability of detours and alternate routes, and 6) duration of project.

Additional information on TMPs can be obtained from the TMP Coordinator in headquarters, Caltrans, Traffic Operations Program, or by reference to the Caltrans *Transportation Management Plan Guidelines*.

## AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE PLANS

Within the project limits, the plans (and specifications if applicable) must comply with the federal ADA and the California and Local Building Codes. For construction or alteration that commenced after January 26, 1992, *Title 28 Code of Federal Regulations, Part 35 "Nondiscrimination on the Basis of Disability in State and Local Government Services"* or *Title 28 Code of Federal Regulations, Part 36 "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities,"* including "Appendix A" require each new or altered facility (includes roads and streets) or part of a facility constructed or altered by, on behalf of, or for the use of a public entity shall be designed and constructed or altered in such manner that the facility or part of the facility is readily accessible to and usable by individuals with disabilities. Each altered facility shall to the maximum extent feasible, be altered in such manner that the altered portion of the facility is readily accessible to, and usable by individuals with disabilities. As mentioned in Chapter 11 "Design Standards," "Title II-6.6000" of the Department of Justice's "Technical Assistance Manual," states that when streets, roads, or highways are newly built or altered, they must have ramps or sloped areas wherever there are curbs, or other barriers to entry from a sidewalk, or path. Likewise, when new sidewalks or paths are built or are altered, they must contain curb ramps or sloped areas wherever they intersect with streets, roads, or highways. The "Curb Ramp Details" included in the Caltrans "Standard Plans" fully comply with both the federal and state requirements for curb ramps. It is the local agency's responsibility to determine, other than for resurfacing, when the project is considered to be an "alteration".

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## 12.8 STANDARD SPECIFICATIONS

The specifications for a construction contract include the requirements contained in the standard specifications and special provisions written specifically for a contract. The special provisions provide the technical contract requirements applicable to the specific project construction features as well as legal and administrative requirements peculiar to the project.

A list of federally required contract provisions, contractor certifications, as well as contract provisions requiring prior justification/approval for local federal-aid construction projects is included in Exhibit 12-D *PS&E Checklist* in this chapter. A complete description of these contract provisions/requirements and their application is provided in this section

### ACCEPTABLE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS

The local agency must use Caltrans *Standard Specifications* and *Standard Special Provisions* for locally sponsored projects on the SHS.

The following standard specifications are acceptable for use on all local federal-aid projects off the SHS:

- The current edition of the Caltrans *Standard Specifications and Standard Special Provisions*,
- The current edition of the *Standard Specifications for Public Works Construction* (commonly referred to as the “*Green Book*”), developed and promulgated by the American Public Works Association, Southern California Chapter and the Associated General Contractors of California, Southern California Districts.

In addition to the above, standard specifications, which are developed locally for non-federally funded projects may be used for local federal-aid projects that are off the NHS. However, the use of local standard specifications and standard special provisions are subject to the following conditions:

- In the event that any conflict arises between the local standard specifications and the local assistance procedures contained in this manual or elsewhere, the local assistance procedures shall apply
- Bridge construction methods and materials specifications included in local standard specifications shall meet the bridge requirements of the Caltrans *Bridge Design Specifications*.

## CALTRANS SPECIFICATIONS ON THE INTERNET

Electronic files containing Caltrans' standard specifications, standard special provisions, and federal contract "boilerplate" (Form FHWA 1273 and other Required Federal Contract Provisions) are available from the Caltrans Engineering Service Center (ESC). The ESC operates a World Wide Web (WWW) site accessible via the Internet.

- First access the Caltrans Home Page at [www.dot.ca.gov](http://www.dot.ca.gov)
- Then call up the ESC Home Page, and
- Finally, call up the Office of Office Engineer Home Page. Then go to "Master" at <ftp://trescftp.dot.ca.gov/pub/Highway-Specs/SSPs/Boilers/Masters>.

For further assistance in connecting with the Internet, local agencies should contact their Internet service provider.

Caltrans also provides a sample set of highway contract provisions for local assistance projects as explained in "Sample 'Boiler Plate' Contract Documents on the Internet" below.

For local agency projects to be advertised, awarded and administered by Caltrans, Caltrans boilerplate specifications are inserted by Caltrans.

### SAMPLE "BOILER PLATE" CONTRACT DOCUMENTS ON THE INTERNET

Microsoft Word versions of a complete sample set of "Boiler Plate" construction contract documents are available on the Internet, in the Caltrans Local Assistance Home Page at:

<http://www.dot.ca.gov/hq/LocalPrograms/public.htm>

Follow the directions on the Home Page to "Sample Boiler Plate Contract Documents." The file can be downloaded and edited, and includes a sample Notice to Contractors & Special Provisions as well as a sample Proposal and Contract. These documents are in accordance with the *July 1999 Caltrans Standard Specifications and Standard Plans*. They are edited versions of the *Caltrans Office Engineers Standard Special Provisions* and other contract documents, which are used for Caltrans highway construction contracts.

## Contents

The Notice to Contractors & Special Provisions are combined into one document. The Notice to Contractors provide prospective bidders with the bid opening date, time and location where bids will be received and opened; a brief description of the project; the Disadvantaged Business Enterprise (DBE) goals, time and location of pre-bid meetings on DBE participation; notice that the project is subject to Buy America provisions, the Engineer's Estimate, location for purchase of plans and specifications, as well as reference to federal wage rate information.

The Special Provisions (along with the Caltrans Standard Specifications) specifies to the contractor the terms of the contract including, but not limited to, when the contractor is to start, number of working days, liquidated damages, payment, work operations and items of work.

The Proposal and Contract are also combined into one document. The Proposal is for the bidder to complete. In addition to the name, address, etc., it contains the Engineer's Estimate, list of subcontractors, EEO certification, Public Contract Code requirements, Noncollusion Affidavit, Debarment and Suspension Certification, Nonlobbying Certification, and Bidders Bond. The Contract includes an agreement, Engineer's Estimate, payment bond, performance bond, local agency DBE information, federal wage rates, and Disclosure of Lobbying Activities.

This package is based on the way Caltrans prepares and administers construction contracts. It contains specifications that may not be required on locally administered projects. Therefore, the Home Page will include appropriate disclaimers for the use of this "Boiler Plate."

For local agency projects to be advertised, awarded and administered by Caltrans, Caltrans Boiler Plate specifications are inserted by Caltrans.

## 12.9 REQUIRED FEDERAL CONTRACT PROVISIONS

### GENERAL FEDERAL REQUIREMENTS

A general special provision is required to reference FHWA Form 1273, Performance on Previous Contract, Noncollusion Provision, and Participation by Minority Business Enterprises In Subcontracting. Caltrans standard special provision (Section 14) is required or equivalent provision may be used.

### FORM FHWA 1273

Form FHWA 1273 (included in Exhibit 12-E) is a package of federally required contract provisions that must be included as special provisions for all federal-aid projects.

#### I. GENERAL

This section sets forth the general provisions of Form FHWA 1273.

- Records and Reporting Requirements

Contracts, which do not contain specific goals, shall contain special provisions stating that it is the local agency's policy to comply with Part 26 of Title 49, Code of Federal Regulations (CFR) and specify the contractor's obligation under these regulations. See Exhibit 9-A *Model DBE Program For Local Agencies (Part XII)* of the LAPM.

If Caltrans' standard specifications will be used and no DBE goal is specified, appropriate editing of the *Sample Boiler Plate Contract Documents* will be necessary (see "*Sample Boiler Plate Contract Documents on the Internet*" in Section 12.8 of this chapter).

In accordance with Section 9.4 *Local Agency DBE Program*" of Chapter 9, *Civil Rights and Disadvantaged Business Enterprises*, each local agency is required to create and maintain a bidders list containing information about all DBE and non-DBE firms that bid or quote on the local agency's federal-aid construction contracts. The required bidders list is to include the name, address, DBE/non-DBE status, date established and annual gross receipts of the firms. Exhibit 12-G *Bidder's List of Subcontractors (DBE and Non-DBE)* in this chapter consists of sample forms that local agencies may choose to use in their solicitations to compile a bidders list as follows:

- (a) "Bidder's List of Subcontractors (Part 1)" is required in accordance with Section 2-1.054 of the Caltrans Standard Specifications, and
- (b) "Bidder's List of Subcontractors (Part 2)" of those providing a quote or bid, but not selected, which is needed to compile a bidders list.

## NONCOLLUSION CERTIFICATION

On all federal-aid construction projects, a noncollusion certification protects the integrity of the federal-aid highway program and serves as a tool in prosecuting construction contract bid rigging cases. A noncollusion certification is required from all bidders as part of the bid proposal package (see Exhibit 12-E, Attachment D). Failure to submit the certification will render the bid ineligible for award.

## FEDERAL TRAINEES (ON-THE-JOB TRAINING)

On selected federal-aid highway construction projects, "Federal Trainee" or "On-the-Job (OJT) Training" special provisions (included in Exhibit 12-E, Attachment N) must be included in the contract provisions to establish the number of trainees for the construction contract.

The main objectives of the Federal Trainee/OJT Program are to:

- Provide training for women and minorities which will upgrade their job skills, thereby increasing their access to higher-paying trade jobs and journeyman-level positions and
- Ensure that a diverse work force will meet future labor needs in the construction industry.

A majority of training positions on each project must be for women and minorities. If a contractor cannot meet the OJT objectives, direct recruitment efforts must be documented to show an effort at OJT compliance.

The major components of an OJT program include:

- The local agency must include the required federal training special provisions in the PS&E package if the project size and duration warrant an OJT program.
- The local agency should select contracts that contribute to the “Contract Training Goals.” These contracts must show the number of trainees, number of trainees upgraded to journeyman and level of skills.
- The local agency must review the training programs proposed by contractors. Approval or rejection is based on the legitimacy of the job-skill classifications proposed and the number of training hours specified.
- Caltrans must determine if statewide OJT is effective.
- The contractor is responsible for recruitment and selection of trainees.
- The contractor must evaluate training based on an approved training program.
- The contractor shall report the number of trainees and jobs using Form PR1391 “Federal-aid Highway Construction Contractors EEO Report” to the local agency. The local agency shall forward Form PR1391 to the Caltrans District Labor Compliance Officer (see Exhibit 16-O of this manual).
- OJT provision costs are reimbursed by the FHWA in accordance with the Federal Requirement Training Special Provisions” included in selected contracts. Required trainees/apprentices are to be funded on the bidding schedule or by change order at \$0.80/hour; or the training program can be a bid item with the same reimbursement ratio as the construction project. OJT support services include recruiting, counseling, remedial training, and OJT program administration by others.
- If the contractor does not show a good faith effort to provide acceptable training to the trainees specified, a sanction may be applied. Sanctions may include withholding progress payments if effective on-the-job training is not provided.

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In California, federal “trainees” are considered registered apprentices. There are relatively few crafts in highway work, which utilize apprentices—bricklayers, carpenters, cement masons, electricians, equipment operators, ironworkers, pile bucks, and a few others. There are no apprentice teamsters or laborers. The ratio of journeymen to apprentices is generally 5 to 1.

With these thoughts in mind, the number of trainees established for a project should be determined by examining the extent of only that work which will be done by the apprenticeable crafts. The following procedure may be used as a guide for establishing the number of trainees for a federal-aid project.

1. If the job has less than 100 working days---no trainees.
2. Add the individual totals for the following items in the Engineer’s Estimate:
  - Excavation of all kinds
  - Embankment and backfill (but not imported borrow)
  - Portland cement concrete, all classes except precast items
  - Bar reinforcing steel and prestressing steel
  - Drive piling
  - Sound walls, masonry blocks
  - Retaining walls, bin walls, etc.
  - Concrete box culverts
  - Highway lighting
  - Signal systems, loop detectors
  - Electrical work for pumps, landscaping, etc.
  - Erect structural steel (but not “Furnish”)
  - L.S. items for buildings, restrooms, etc.
3. Using the total obtained above, determine the number of trainees from the following table:

- No warranty requirements shall be approved which may place an undue obligation on the contractor for items over which the contractor has no control.

The local agency shall provide documentation of these conditions in the project files. Local agencies are advised that items of maintenance are not eligible for federal participation. Including maintenance items results in the items being considered non-participating and requiring pay back of the federal funds involved.

## PROPRIETARY ITEMS

It is the policy of the FHWA not to participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project on the NHS, unless:

- The item is purchased or obtained through competitive bidding with equally suitable unpatented items.
- The local agency certifies either that the proprietary or patented item is essential for synchronization with the existing highway facilities or that no equally suitable alternative exists, or
- The item is used for research or for a special type of construction on relatively short sections of road for experimental purposes.

This FHWA policy is not applicable to local agency projects off the NHS.

The primary purpose of this policy is to have competition in selection of materials and allow for development of new materials and products. The policy further permits:

- Materials and products that are judged equal may be bid under generic specifications. If only patented or proprietary products are acceptable, they shall be bid as alternatives with all, or at least a reasonable number of acceptable materials or products listed.
- The local agency may approve a single source if it can be found that its utilization is in the public interest. The approved public interest finding shall be fully documented and retained in the project files.

Trade names are generally the key to identifying patented or proprietary materials. Trade name examples include 3M, Corten, etc. Generally, products identified by their brand or trade name are to be used all or at least a reasonable number of these materials or products should be listed. The licensing of several suppliers to produce a product does not change the fact that it is a single product and should not be specified to the exclusion of other equally suitable products.

## EQUIPMENT RENTAL RATES

Federal policy requires that actual costs be used to determine extra work payments; however, actual equipment costs are not readily available. Therefore, the FHWA permits the local agencies to specify in their construction contract specifications the use of predetermined rate guides as well as equipment rates schedules development by the local agency which are in conformance with the federal cost principles and the FHWA's policy

contained in the *Contract Administration Core Curriculum*, published by the FHWA. Caltrans' Equipment Rental Rates are in conformance with these requirements.

## 12.13 ESTIMATES

The estimate used to authorize the construction phase of a federal-aid project shall reflect the anticipated cost of the project in sufficient detail to provide an initial prediction of the financial obligations to be incurred by the local agency and FHWA and to permit an effective review and comparison of the bids received.

Initially, a preliminary estimate is prepared by the local agency, which includes the basic items that a contractor will be asked to bid. This is a confidential document, which represents the local agency's best estimate of a fair and reasonable price for the items or work to be performed. As such, the Engineer's Estimate should not be made available to contractors and the general public prior to opening bids. This estimate must be prepared in a format, which describes the item of work, unit amount, quantity, unit price, amount, a subtotal, contingencies and a total. (Exhibit 12-A, *Preliminary Estimate of Cost*, or equivalent.)

Other estimates must also be prepared, if appropriate, for local agency furnished materials, supplemental work, construction engineering, the Federal Trainee program, and force account (day labor) work performed by the local agency. The estimates must be segregated by major construction categories. Furthermore, any items of work, which are ineligible for federal participation in a category, must be segregated from the eligible items of work.

These estimates are used to prepare the Finance Letter and the "Request for Authorization for Construction." After bids are opened and the project has been awarded, a Detail Estimate is prepared by the local agency, which upgrades the preliminary estimate by using actual bid amounts rather than estimates. For more information on detail estimates, refer to Chapter 15. *Advertise and Award*, of this manual.

### NONPARTICIPATING WORK

On all federal-aid construction projects, work which is not within the limits of the project must be segregated under a category called "Not Part of Federal Project" for purposes of the preliminary and detail estimates (work funded by others is most generally nonparticipating).

Work within the federal-aid project limits, but ineligible for federal funding, is referred to as "nonparticipating work." Items considered "nonparticipating work" include but are not limited to the following:

- Betterment work such as capital outlay, safety improvements, or operational improvements that goes beyond restoring a site to its original condition or to the current standard (for emergency relief work)
- Right of way obligations when right of way is nonparticipating
- Maintenance related activities
- Spare parts not incorporated in the work

The above work must also be identified and segregated for the purposes of the preliminary and detail estimates.

Quantities for each structure shall be shown separately with an appropriate structure code. Miscellaneous work, such as utility adjustments by a utility company, shall also be separate.

## CONTRACT ITEMS

In order to determine which contract items should be included in the preliminary estimate, the work is broken down into the basic types of construction, such as excavation, concrete and steel. Each type and each classification of a type of construction comprises one bid item. Each contract item must be measured accurately. After September 30, 1996, metric units shall be used for all items of work for projects on the SHS. For projects off the SHS, the local agency has the option of using English or metric units until October 30, 2000. However, the local agency must use metric units if the local agency project uses Caltrans' contract documents (*Standard Plans, Standard Specifications, etc.*) or when it is requested that Caltrans review the structure portion of a project.

When practical, work performed by a different subcontractor should also be segregated into separate contract items.

The list of contract items should be analyzed to be sure that all phases of the work are included in the estimate. Care should also be taken to ensure that there is no overlap of contract items, which could result in a duplication of payments.

The *Coded Contract Item List* published by Caltrans may be used by the local agency with or without the item code number. The contract item list should be used if the local agency is using Caltrans *Standard Specifications* as the item descriptions are matched with the specifications.

## LOCAL AGENCY FURNISHED MATERIALS

Local agency furnished materials are a part of the total cost of the project and should be subtotaled and included in the total project cost.

To be eligible for federal participation, any material (other than local natural material) purchased by the local agency and furnished to the contractor for mandatory use in the project must be acquired on the basis of competitive bidding, except when there is a finding of public interest justifying the use of another method of acquisition. The unit cost eligible for federal participation is limited to the unit cost of such material to the local agency.

## SUPPLEMENTAL WORK

“Supplemental work” is work that is anticipated and required but cannot be described and quantified for delivery on a unit-price or lump sum basis.

Such work must be included in the project estimates and should follow the “Subtotal Contract Items.” Supplemental work should include extra work, additional work, right of way obligations, traffic control (if required) or other work to be performed by the contractor and charged to the contract work order. Supplemental work can be listed and included in the total project cost, as a separate line item, or included in the contingencies section of the preliminary estimate. Supplemental work must be included in the contingencies of the Detail Estimate (see Exhibit 15-M).

For additional information on the use of supplemental work as an item of work, refer to the Caltrans *PS&E Guide*, available from the Caltrans Publications Distribution Unit.

## CONTINGENCIES

Estimates may include contingencies, including supplemental work, of five to ten percent of the total estimate. Contingency amounts should be adjusted to give the total contract a round number. If there is a large amount of supplemental work, ten percent may be exceeded, but contingencies should always be at least five percent.

## CONSTRUCTION ENGINEERING

The Code of Federal Regulations defines construction engineering as the supervision and inspection of construction activities; additional staking functions considered necessary for effective control of the construction operations; testing materials incorporated into construction; checking shop drawings; and measurements needed for the preparation of pay estimates.

Construction engineering costs should be shown on the Estimate, if federal reimbursement is desired.

Federal participation in construction engineering is generally limited to 15 percent of the federal participating construction costs. However, for the HBRR, HES, and other programs, the Division of Local Assistance (DLA) may approve request for reimbursement of construction engineering costs in excess of 15%.

## FEDERAL TRAINEE PROGRAM

Estimates for federal-aid projects may include an estimated amount for the federal Trainee Program. It is up to the local agency to establish the number of trainees for each project. For additional information on the Federal Trainee Program refer to the “Other Required Contract Provisions” section of this chapter.

## ESTIMATES FOR FORCE ACCOUNT (DAY LABOR)

If force account work (day labor) is to be included in the project, it must be listed in the estimate as a separate item. Such work must be justified and documented as described in Section 12.4 of this chapter.

## 12.14 OPTIONAL BRIDGE REVIEW

When a bridge or major structure is involved, the local agency may request a cursory review of the structural designs by Caltrans Division of Structures, Local Assistance. Caltrans' review and comments will be advisory only. If requested, Caltrans' decision to review structural plans will be based on:

- Experience of local agency staff
- Complexity of project, type of structure
- Availability of Caltrans staff

If the local agency requests a cursory review, they must submit checked plans to Caltrans Division of Structures. The checker's signature or initials must appear on each sheet of the structure plans. Unsigned plans will be returned to the local agency. The project special provisions and engineering reports must have the engineer's stamp, signature and registration number on the title sheet.

For major federal-aid construction projects on the NHS, involving a bridge or major structure, the bridge review shall be in accordance with PS&E procedures described in Section 12.2 of this chapter.

When transmitting the project documents to the Division of Structures for review, the local agency must identify the following:

- Agency advertising the project
- Estimated advertising date
- Type of funding
- Expenditure authorization number on State-advertised projects

When structure design documents are to be reviewed by Caltrans, the following number of copies as appropriate, are to be submitted to the Division of Structures. These figures represent the minimum number of copies required.

<b>Document Submitted</b>	<b>Number Required</b>
Plans (reduced or full size prints) .....	3
Special provisions (for bridge portion) .....	3
Hydraulic report .....	2
Foundation report .....	2

## 12.15 PS&E CERTIFICATION

Local agencies must certify their PS&E. A PS&E Checklist that identifies the critical federal requirements is provided to assist the local agency. The local agency must submit the local agency PS&E Certification, the PS&E Checklist, along with the PS&E package to the Caltrans DLAE when making their "Request for Authorization" to proceed with construction.

The “PS&E Certification” (Exhibit 12-C) must be signed by the local agency engineer in charge of the project. This person must be a professional civil engineer registered to practice in California and either a public employee or consultant on retainer as the City/County Engineer.

In the certification, the local agency certifies that the PS&E has been prepared in accordance with this chapter and that any necessary design exceptions have been approved by the Public Works Director or his/her designee. The certification must also acknowledge that review of PS&E will not be performed by Caltrans. By this certification, the local agency accepts responsibility for compliance with applicable design standards, Title 23 of the United States Code, and other applicable federal requirements (DBE, EEO, federal and state wage rates, license requirements, etc.). Failure to comply with any of these requirements may cause withdrawal of funds.

## PS&E CHECKLIST

Local agencies will complete the “PS&E Checklist” (Exhibit 12-D) and attach it to all PS&E Certification Letters submitted to the DLAE. The checklist has been developed to address the flexibility allowed under federal regulations and still ensure that the minimum required provisions are included in each set of contract documents. For instance, some provisions included in FHWA Form 1273 may not apply to some projects. This will depend on estimated cost, functional classification of the road, and whether the project is on the National Highway System (NHS). However, if any of the required provisions are left out of a construction contract, the project will not be eligible for federal reimbursement.

“PS&E Checklist Instructions” (Exhibit 12-E) are included in order to lead the local agency through the checklist and determine which of the various federal contract provisions are required. Samples of each required federal contract provision are attached. These samples are based on Caltrans *Standard Specifications*, however, the local agency may use equivalent provisions based on other standard specifications as long as the intent of the federal requirement is met.

## CHECKLIST REVIEW BY CALTRANS

The DLAEs will review each checklist to ensure that the local agency has completed the form in accordance with the instructions in this manual. Except as discussed below, this review will be limited to the actual checklist and will not involve a review of the PS&E package.

## SPECIAL PROVISIONS REVIEW BY CALTRANS

The DLAE has the responsibility to confirm that the correct Special and Federal Contract Provisions are included in the contract provisions as indicated on the checklist. The DLAE should ensure that at least one set of Special and Federal Contract Provisions is reviewed per year for each local agency that submits a PS&E. Also, the DLAE will decide if additional documents will be reviewed based on past experience with the agency, the number of federal-aid projects the agency has done since the reengineering of Local Assistance Procedures, and the amount of resources the district can direct to this effort. Local agencies requesting reviews will be accommodated to the extent that resources are available.

The checklist has been designed to facilitate this review by providing space for the local agency to indicate the page numbers of the appropriate federal provisions. This review will help the local agencies become familiar with the use of the checklist and the corresponding federal contract provisions. It will not, however, relieve the local agency of responsibility for compliance with all federal requirements.

### **DLAE ACCEPTANCE OF THE CHECKLIST**

The DLAE will indicate acceptance of the checklist by checking the type of review (i.e., whether the checklist review included a review of the special provisions) and signing the form. The local agency's "Request for Authorization" for the construction phase of a project will not be forwarded to the Division of Local Assistance (DLA) for approval prior to acceptance by the DLAE.

### **SUBMITTAL OF PLANS, SPECIFICATIONS AND ESTIMATE (PS&E)**

As a minimum, local agencies will submit the contract special provisions and the preliminary estimate with the PS&E Certification Letter. At the discretion of the DLAE, a set of plans will be also required. The plan requirement may be waived based on past experience with the agency and the number of federal-aid projects the agency has completed previously. As soon as the project is advertised, the local agency shall furnish the DLAE one copy of the "as advertised" plans and special provisions or two copies if structures (bridges) are involved.

### **PROCESS REVIEW**

Process reviews of a random sample of the local agency PS&E packages will be conducted as needed. The process reviews will be conducted on a "post audit" basis.

Local agencies should be aware that if deficiencies are found during a process review, it may be too late to make corrections and the loss of all or a portion of the project federal funding will result.

## **12.16 PROJECTS WITHOUT TRADITIONAL PS&E**

Some projects, on or off the NHS, such as Congestion Mitigation and Air Quality (CMAQ) and Transportation Enhancement (TE) may consist of studies and other nonconstruction type projects. Examples include: Traffic Demand Management (TDM) studies relating to regional air quality, ride sharing, commuter incentives and commuter computer centers.

These projects will not have a set of plans or PS&E, but may only consist of a consultant contract agreement. The local agency shall submit the following to DLAE (see Exhibit 12-B *Scope of Work-CMAQ/TE Projects* in this chapter):

- Work plan
- Budget, with schedule
- Consultant agreement
- "Request for Authorization" form (prior to consultant approval)



Unlike the traditional PS&E, these studies are submitted for preliminary engineering, only. The project work plan, budget, and consultant agreement are submitted in lieu of PS&E and a detailed estimate. If the project is part of a regional study done by a Metropolitan Planning Organization (MPO), then the local federal-aid portion of the work plan must be segregated to show the project costs associated with each local agency.

## 12.17 REFERENCES

- |  |   |
|--|---|
| The Civil Rights Act of 1964                     | 23 CFR 230.111  |
| ISTEA Section 1041(a)                            | 23 CFR 627.1  |
| ISTEA Section 1048(a)                            | 23 CFR 627.3  |
| STAA Section 165                                 | 23 CFR 627.5  |
| 23 USC 106(b)(2)                                 | 23 CFR 630.1010(a)(2)   |
| 23 USC 112                                       | 23 CFR 633  |
| 23 USC 113                                       | 23 CFR 771.113  |
| 23 USC 114                                       | 28 CFR 35   |
| 23 USC 140                                       | 29 CFR 1,3,5  |
| 23 USC 140(b)                                    | 29 CFR 1630   |
| 23 USC 315                                       | 29 CFR 1926   |
| 23 USC 324                                       | 41 CFR 60   |
| 40 USC 276 (a) Davis-Bacon &<br>(c) Copeland Act | 48 CFR 31<br>49 CFR 1.48                                      |
| 40 USC 333                                       | 49 CFR 20   |
| 23 CFR 200                                       | 49 CFR 21   |
| 23 CFR 230                                       | 49 CFR 23   |
| 23 CFR 230 A&D                                   | Section 6730-6749 California<br>Business and Professions Code |
- Presidential Executive Order 13202 “Preservation of Open Competition and Government Neutrality Towards Government Contractors’ Labor Relations on Federal and Federally Funded Construction Projects” dated February 17, 2001 (Federal Register: February 22, 2001; Volume 66, Number 36, Presidential Documents, Pages 11225-11226)
- Presidential Executive Order 13208 “Amendment to Executive Order 13202 Preservation of Open Competition and Government Neutrality Towards Government Contractors’ Labor Relations on Federal and Federally Funded Construction Projects,” dated April 6, 2001 (Federal Register: April 11, 2001; Volume 66, Number 71, Presidential Documents, Pages 18717-18718)
- Caltrans Memorandum to “All District Directors” dated June 12, 2000; Subject: Delegation of Authority for Use of A+B Bidding and Incentive/Disincentive (I/D) Provisions
- Stewardship Agreement known as “Project Approval and Oversight” between FHWA and Caltrans, dated December 2002
- [http://www.dot.ca.gov/hq/LocalPrograms/lam/prog\\_p/p09crdbe.pdf](http://www.dot.ca.gov/hq/LocalPrograms/lam/prog_p/p09crdbe.pdf)
- <http://www.dot.ca.gov/hq/LocalPrograms/public.htm>
- <http://www.ada.gov/stdspdf.htm>
- [http://www.access.gpo.gov/nara/cfr/waisidx\\_04/28cfr35\\_04.html](http://www.access.gpo.gov/nara/cfr/waisidx_04/28cfr35_04.html)

**SCOPE OF WORK - CMAQ/ TE Projects**

**BASIC ELEMENTS**

The scope of work should be one page long and include:

- project description
- major objectives
- project locations
- project components
- project milestones
- special conditions
  
- target populations

**PROJECT MILESTONES**

Provide all completion dates and deliverables including:

- quarterly progress reports
- final report
- marketing plans
- Request for Proposal (RFP)
- notice of completion
- equipment procurement & purchase
- beginning of operation

**PROPOSED BUDGET**

Provide a budget and work plan with costs that include:

- capital costs
- non-capital costs
- donations
- all private & public \$
- administrative costs
- line items for marketing, training, and data collection
- work plan costs by task

SAMPLE WORK PLAN FOR A TRAFFIC DEMAND CENTER (shows all tasks and associated costs)

TASK DESCRIPTION	COST	SCHEDULE	
		Start Date	Completion Date
A Building Space	\$45,000		
B Telephones	\$75,000		
C Cabling and Wiring	\$12,000		
D Communications	\$30,000		
E Security	\$16,000		
F Furniture	\$60,000		
G Hardware	\$17,000		
H Software	\$85,000		
I Teleconferencing	\$90,000		
J Marketing	\$32,000		
K Administration	\$30,000		
L Project operations	\$60,000		
M Evaluations	\$10,000		
<b>TOTAL</b>	<b>\$562,000</b>		

SAMPLE BUDGET FOR A TRAFFIC DEMAND CENTER (shows all fund sources and private contributions)

CAPITAL COSTS	Local	Private	MPO	Measure	Total
Equipment	\$177,000	\$ 70,000	\$42,000	\$40,000	\$329,000
Lease		\$ 45,000			\$ 45,000
Construction				\$28,000	\$ 28,000
Subtotal					\$402,000
<b>NON-CAPITAL COSTS</b>					
Construction Engineering				\$30,000	\$ 30,000
Design	\$ 10,000				\$ 10,000
Administration			\$30,000		\$ 30,000
K Operations		\$ 60,000			\$ 60,000
L Project Implementation	\$ 30,000				\$ 30,000
<b>TOTAL COSTS</b>	<b>\$217,000</b>	<b>\$175,000</b>	<b>\$72,000</b>	<b>\$98,000</b>	<b>\$562,000</b>

Rev.05/27/05

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**PS&E CHECKLIST**

Agency \_\_\_\_\_

Federal Project No. \_\_\_\_\_

This form is to be completed by the local agency and attached to the PS&E Certification. See Exhibit 12-E for instructions and the referenced attachments.

**I. HIGHWAY SYSTEM**

- On the National Highway System (NHS)  
 Off the NHS

**II. FUNCTIONAL CLASSIFICATION** (Check as many as appropriate)On the Federal-aid System

- |   |   |
|---|---|
| <input type="checkbox"/> Urban Principal Arterial - Fwy or Expwys | <input type="checkbox"/> Rural Principal Arterial |
| <input type="checkbox"/> Urban Principal Arterial - Other         | <input type="checkbox"/> Rural Minor Arterial     |
| <input type="checkbox"/> Urban Minor Arterial                     | <input type="checkbox"/> Rural Major Collector    |
| <input type="checkbox"/> Urban Collector                          |   |

Off the Federal-aid System

- |                                      |  |
|--------------------------------------|--|
| <input type="checkbox"/> Urban Local | <input type="checkbox"/> Rural Minor Collector |
|                                      | <input type="checkbox"/> Rural Local           |

**III. TYPE OF CONSTRUCTION** (Check appropriate box)

- New or Reconstruction  
 Resurfacing, Restoration and Rehabilitation (3R)  
 Preventive Maintenance

**IV. METHOD OF CONSTRUCTION****A. Contracting Method** (Check appropriate box)

- Competitive bidding  
 Other than competitive bidding

(If the contracting method is other than competitive bidding, check appropriate box below.)

- The project is State-Authorized. A Public Interest Finding is on file in the contract records justifying the method.  
 The project is subject to FHWA Full Oversight. A Public Interest Finding justifying the method has been submitted and approved by Caltrans and FHWA.

**B. Force Account (Day Labor)** (Check appropriate box)

- The entire work will be constructed by contract as indicated above.  
 Some work (incidental to the main purpose of the project) will be constructed by Force Account. A Public Interest Finding is on file in the contract records justifying the work.  
 The entire project will be constructed by Force Account (Day Labor).

(If the entire project will be constructed by Force Account (Day Labor)

- The project is State-Authorized and not subject to FHWA oversight. A Public Interest Finding is on file in the contract records justifying the work.  
 The project is subject to FHWA Full Oversight. A Public Interest Finding justifying the method has been submitted and approved by Caltrans and FHWA.

**V. ENVIRONMENTAL ANALYSIS** (Check box if requirement is met)

- The PS&E is fully responsive to the necessary actions called for by the environmental document, permit conditions and other agreements.

**VI. VALUE ENGINEERING (VE) ANALYSIS** (Check appropriate box if the project is on the NHS)

- VE analysis been performed on this project and a copy of the analysis has been forwarded to the Caltrans District Value Analysis Coordinator).
- VE analysis has not been performed; the estimated project cost is <\$25 million.

**VII. GEOMETRIC DESIGN STANDARDS** (Complete this section if project changes existing geometrics)

**A. Geometric Design Standards Used** (Check appropriate box)

- Caltrans Design Standards (on State Highway System)
- Current AASHTO Standards
- 3R Projects - Minimum Standards for Geometric Design of Federal-Aid Resurfacing, Restoration, and Rehabilitation Projects on Local Streets and Roads, *Local Assistance Procedures Manual*, State of California Department of Transportation.
- Local Agency Design Standards                      Date approved \_\_\_\_\_

**B. Deviations from Controlling Criteria** (check appropriate box for each controlling criteria)

Criteria Met	Design Criteria Not Met	Design Exception Approval Date	Controlling Criteria
<input type="checkbox"/>	<input type="checkbox"/>	_____	Design Speed
<input type="checkbox"/>	<input type="checkbox"/>	_____	Lane Width
<input type="checkbox"/>	<input type="checkbox"/>	_____	Shoulder Width
<input type="checkbox"/>	<input type="checkbox"/>	_____	Bridge Width
<input type="checkbox"/>	<input type="checkbox"/>	_____	Horizontal Alignment
<input type="checkbox"/>	<input type="checkbox"/>	_____	Vertical Alignment
<input type="checkbox"/>	<input type="checkbox"/>	_____	Grades
<input type="checkbox"/>	<input type="checkbox"/>	_____	Stopping Sight Distance
<input type="checkbox"/>	<input type="checkbox"/>	_____	Cross Slopes
<input type="checkbox"/>	<input type="checkbox"/>	_____	Super elevation
<input type="checkbox"/>	<input type="checkbox"/>	_____	Horizontal Clearance
<input type="checkbox"/>	<input type="checkbox"/>	_____	Vertical Clearance

**VIII. BRIDGE DESIGN PROCEDURES** (Check the appropriate box)

All bridges have been designed in accordance with the current edition of the Caltrans *Bridge Design Specifications Manual*

YES                      DOES NOT APPLY (Bridge construction not included in the project)

                    

**IX. STANDARD PLANS** (Check appropriate box)

- Caltrans *Standard Plans*                       *Standard Plans for Public Works Construction*
- Local Approved Standard Plans:

\_\_\_\_\_ Date signed (on behalf of the local agency) by a person in responsible charge and who is registered professional engineer licensed to practice in the State of California.

**X. PROJECT PLANS AND SPECIFICATIONS** (Check box if requirements met)

- Cover sheet of plans and specifications signed and stamped on behalf of the local agency by the person in responsible charge, and who is a registered professional engineer licensed to practice in the State of California.
- Traffic Control Plans or reference to Standard Plan and Signs/Striping Plans Included (Note: Additionally, Traffic Management Plans are required to be on file for all reconstruction, rehabilitation, and other projects [including projects on the State Highway System not funded by the state], if significant traffic delays are anticipated and as a result from project activities).
- Erosion Control Plan
- ADA is being fully complied with including *Federal ADA Standards for Accessible Guidelines for Buildings and Facilities (ADAAG)*, *Title 24 of the California Code of Regulations*, and local codes.

**XI. STANDARD SPECIFICATIONS** (Check Standards used)

- Caltrans *Standard Specifications*
- Standard Specifications for Public Works Construction* (Green Book)
- Locally Approved Standard Specifications

**XII. REQUIRED FEDERAL CONTRACT PROVISIONS**

**A. General Federal Requirements** (Check appropriate box and indicate page number)

- Caltrans SSP - *SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS* (Attachment A, FR-1 & FR-2) is included.....                      Page No.
- Equivalent provisions are included. ....

**B. FHWA Form 1273**

**1. Incorporation of FHWA Form 1273 into Contract** (Check appropriate box and indicate page number)

- An unmodified copy of FHWA Form 1273 *REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS* (Attachment B, FR-3 thru FR-14) has been physically incorporated into this contract .....                      Page No.
- A modified copy of FHWA Form 1273 *REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS* has been physically incorporated into this contract.....

2. **Modification of FHWA Form 1273** (If the provisions contained in FHWA Form 1273 will be modified, fill in the required project information before completing Sections 2.a thru 2.d.)

Estimated Construction Contract Cost \_\_\_\_\_

**a. Section IV. Payment of Predetermined Wages** (Check appropriate box)

This section applies to all federal-aid highway construction projects exceeding \$2,000 and to all related subcontracts, except for projects not located on the Federal-aid System (roadways classified as local roads or rural minor collectors), which are exempted. If exempted, this section may be crossed out, removed, or may be specified elsewhere in the contract that it does not apply.

- Section IV has not been modified.  
 Section IV has been *crossed out/removed/ specified elsewhere in the contract that it does not apply* (indicate type of modification).

**b. Section V. Statements and Payrolls** (Check appropriate box)

This section applies to all federal-aid highway construction projects exceeding \$2,000 and to all related subcontracts, except for projects not located on the Federal-aid System (roadways classified as local roads or rural minor collectors), which are exempted. If exempted, this section may be crossed out, removed, or may be specified elsewhere in the contract that it does not apply.

- Section V has not been modified.  
 Section V has been *crossed out/ removed/ specified elsewhere in the contract that it does not apply* (indicate type of modification).

**c. Section VI. Record of Materials, Supplies, and Labor** (Check appropriate box)

This section applies to all federal-aid highway construction projects exceeding \$2,000 and to all related subcontracts, except for projects not located on the Federal-aid System (roadways classified as local roads or rural minor collectors), which are exempted. If exempted, this section may be crossed out, removed, or may be specified elsewhere in the contract that it does not apply.

- Section VI has not been modified.  
 Section VI has been *crossed out/ removed/ specified elsewhere in the contract that it does not apply* (indicate type of modification).

**d. Section VII. Subletting or Assigning the Contract** (Check appropriate box)

This section applies to all federal-aid highway construction projects exceeding \$2,000 and to all related subcontracts, except for projects not located on the Federal-aid System (roadways classified as local roads or rural minor collectors), which are exempted. If exempted, this section may be crossed out, removed, or may be specified elsewhere in the contract that it does not apply.

- Section VII has not been modified.  
 Section VII has been *crossed out/ removed/ specified elsewhere in the contract that it does not apply* (indicate type of modification).

- C. Certification/Disclosure Forms** (Check if included and indicate page number) Page No.
- EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION* (Exhibit 12-E, Attachment C) \_\_\_\_\_
  - NONCOLLUSION AFFIDAVIT* (Exhibit 12-E, Attachment D) ..... \_\_\_\_\_
  - DEBARMENT AND SUSPENSION CERTIFICATION* (Exhibit 12-E, Attachment E) ..... \_\_\_\_\_
  - NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS*  
(Exhibit 12-E, Attachment F) ..... \_\_\_\_\_
  - DISCLOSURE OF LOBBYING ACTIVITIES* (Exhibit 12-E, Attachment G)..... \_\_\_\_\_
  - 2-1.015—FEDERAL LOBBYING RESTRICTIONS* (Exhibit 12-E, Attachment H) ..... \_\_\_\_\_
  - Equivalent provisions (Attach complete listing, including page numbers)

- D. Liquidated Damages** (Check appropriate box and indicate page number) Page No.
- Caltrans SSP *SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES* (Exhibit 12-E, Attachment I) is included in this contract..... \_\_\_\_\_
  - Equivalent provisions are included. .... \_\_\_\_\_

**E. Disadvantaged Business Enterprise (DBE)/Subcontracting**

A. Local Agency Overall Goal (comprising all contracts) \_\_\_\_\_

B. Specific Contract Goal \_\_\_\_\_

The Specific Contract Goal consist of:

- a) Race Conscious (shown in bid documents) \_\_\_\_\_
- b) Race Neutral (portion not shown, but expected) \_\_\_\_\_

C. Example:

Local Agency Overall Goal is 10% (comprised of this contract 5% goal and another contract's 15% goal)  
Specific Contract Goal 5% = Race Conscious 4% + Race Neutral 1%

(Note: Only the 4% goal will appear in the bid documents. Good Faith Effort will be based on this 4%. All documentation of decisions made with regard to Goals/GFE shall be kept on file by the local agency.)

- This contract has a specific DBE goal to meet the intent of the DBE Program and the Overall Goal
- This contract has no specific DBE goal, as it has been determined that one is not appropriate. Documentation verifies this determination and is on file.



If contract has a specific race conscious goal, complete Section 1 below. If contract does not have a specific race conscious goal, complete Section 2 below.

**1. Contracts with Specific goals ( Check if included and indicate page number)**

**a. The following applicable Caltrans Standard Special Provisions (SSPs) to the Caltrans Standard Specifications or their equivalent are included in the contract Special Provisions with page numbers noted (editing may be required)**

- |  | Page No. |
|--|----------|
| <input type="checkbox"/> 2-1.01 GENERAL Required Listing of Proposed Subcontractors and Required Contract Assurance Statement (Exhibit 12-E, Attachment H) or <i>Equivalent Provisions</i> ..... | _____    |
| <input type="checkbox"/> LISTING OF SUBCONTRACTORS ( Form in Sample Proposal and Contract) or <i>Equivalent Form</i> .....   | _____    |
| <input type="checkbox"/> 2-1.02 DISADVANTAGED BUSINESS ENTERPRISE (DBE) (Exhibit 12E, Attachment H) or <i>Equivalent Provisions</i> .....  | _____    |
| <input type="checkbox"/> 2-1.02A DBE GOAL FOR THIS CONTRACT (Exhibit 12-E, Attachment H) or <i>Equivalent Provisions</i> .....   | _____    |
| <input type="checkbox"/> 2-1.02B SUBMISSION OF DBE INFORMATION (Exhibit 12-E, Attachment H) or <i>Equivalent Provisions</i> .....  | _____    |
| <input type="checkbox"/> 3- AWARD AND EXECUTION OF CONTRACT (Exhibit 12-E, Attachment I) or <i>Equivalent Provisions</i> .....   | _____    |
| <input type="checkbox"/> Caltrans SSP 5-1.- SUBCONTRACTOR AND DBE RECORDS (Exhibit 12-E, Attachment J) or <i>Equivalent Provisions</i> .....   | _____    |
| <input type="checkbox"/> Caltrans SSP 5-1.- DBE CERTIFICATION STATUS CHANGE (Exhibit 17-O) or <i>Equivalent Provisions</i> .....   | _____    |
| <input type="checkbox"/> Caltrans SSP 5-1.- PERFORMANCE OF DBE SUBCONTRACTORS AND SUPPLIERS (Exhibit 12-E, Attachment K) or <i>Equivalent Provisions</i> .....                                   | _____    |
| <input type="checkbox"/> Caltrans SSP 5-1. SUBCONTRACTING or <i>Equivalent Provisions</i> .....  | _____    |
| <input type="checkbox"/> Caltrans SSP 5-1. PROMPT PROGRESS PAYMENTS TO SUBCONTRACTORS or <i>Equivalent Provisions</i> .....  | _____    |
| <input type="checkbox"/> Caltrans SSP 5-1. PROMPT PAYMENT OF WITHHELD FUNDS TO SUBCONTRACTORS. or <i>Equivalent Provisions</i> .....   | _____    |

**b. The following forms are applicable with the above SSP's.**

- |   |       |
|---|-------|
| <input type="checkbox"/> LOCAL AGENCY BIDDER-DBE INFORMATION Form (Exhibit 15-G) or <i>Equivalent Provisions</i> .....  | _____ |
| <input type="checkbox"/> FINAL REPORT UTILIZATION OF DISADVANTAGED BUSINESSES (Exhibit 17-F) or <i>Equivalent Provisions</i> .....  | _____ |
| <input type="checkbox"/> Bidder's List (49 CFR, Part 26.11) List data for all firms that bid as prime, or bid ,or quote subcontracts for this contract (optional Exhibit 12-G). ..... | _____ |

2. Contracts without specific goals (Check if included and indicate page number

a. The following applicable Caltrans Standard Special Provisions (SSPs) to the Caltrans Standard Specifications or their equivalent are included in the contract Special Provisions with page numbers noted (editing may be required)

Page No.

- 2-1.01 GENERAL - Required Listing of Proposed Subcontractors and Required Contract Assurance Statement (Exhibit 12-E, Attachment H) or Equivalent Provisions .....
- LISTING OF SUBCONTRACTORS (Form in Sample Proposal and Contract) or Equivalent Form .....
- 2-1.02 DISADVANTAGED BUSINESS ENTERPRISE (DBE) (Exhibit 12-E, Attachment H) or Equivalent Provision.....
- 3- AWARD AND EXECUTION OF CONTRACT (Exhibit 12-E, Attachment I) or Equivalent Provisions.....
- Caltrans SSP 5-1.- SUBCONTRACTOR AND DBE RECORDS (Exhibit 12-E, Attachment J) or Equivalent Provisions.....
- Caltrans SSP 5-1. DBE CERTIFICATION STATUS CHANGE (Exhibit 17-O) or Equivalent Provisions.....
- Caltrans SSP 5-1. SUBCONTRACTING or Equivalent Provisions.....
- Caltrans SSP 5-1. PROMPT PROGRESS PAYMENTS TO SUBCONTRACTORS or Equivalent Provisions.....
- Caltrans SSP 5-1. PROMPT PAYMENT OF WITHHELD FUNDS TO SUBCONTRACTORS. or Equivalent Provisions .....

b. The following forms are applicable with the above SSP's.

- LOCAL AGENCY BIDDER-DBE INFORMATION (Exhibit 15-G) or Equivalent Provisions.....
- FINAL REPORT UTILIZATION OF DISADVANTAGED BUSINESSES (Exhibit 17-F) or Equivalent Provisions .....
- Bidder's List (49 CFR, Part 26.11) List data for all firms that bid as prime, or bid or quote subcontracts for this contract (optional Exhibit 12-G). .....

F. Buy America Specification (Check appropriate box and indicate page number if requirement applies. See Section 12.9 of the Local Assistance Procedures Manual for requirement.)

Page No.

- Caltrans SSP 5-1- BUY AMERICA REQUIREMENTS (Exhibit 12-E, Attachment M).....
- Equivalent provisions are included. ....

- Buy America specifications are not included in contract.
- Waiver for the following has been approved by FHWA: \_\_\_\_\_ Date \_\_\_\_\_.

**G. Federal Trainees** (Check appropriate box and indicate page number if requirement applies)

- The project has less than 100 working days. A Federal Trainee goal and special provisions are not required.
- Analysis of the Engineers Estimate has the dollar value under \$200,000. A Federal Trainee goal and special provisions are not required.
- Caltrans SSP - *FEDERAL REQUIREMENT TRAINING SPECIAL PROVISIONS* (Exhibit 12-E, Attachment N, FR-15 and FR-16) are included. (The Trainee goal is \_\_\_\_\_.) ..... \_\_\_\_\_ Page No.
- Equivalent provisions are included (The Trainee goal is \_\_\_\_\_.)..... \_\_\_\_\_

**H. Federal Wage Rates** (Check appropriate box and indicate page number if Federal Wages Rates are included) \_\_\_\_\_ Page No.

- Federal Wages Rates are physically incorporated in this contract. .... \_\_\_\_\_  
**Note: By checking the above box, the local agency is indicating that they are aware of the Federal-aid "10-day rule" requirement.**
- This project is not located on a Federal-aid Route. Federal Wage Rates are not required.

**I. Relations with Railroad** (Check appropriate box and indicate page number if special provisions are included) \_\_\_\_\_ Page No.

- The required provisions are included. .... \_\_\_\_\_
- This project does not involve the use of railroad properties or adjustments to railroad facilities.

**XIII. RESTRICTED CONTRACT PROVISIONS (CHECK APPROPRIATE BOX)**

**A. Indian Preferences** (Check appropriate box and provide required information)

- Not included
- Included. The project is on or near the \_\_\_\_\_ Indian Reservation.

**B. Bonding and Prequalification** (Check box if requirement met)

- Bonding or prequalification, if required, will not be used to restrict competition, prevent submission of a bid by or prohibit consideration of a bid submitted by any responsible contractor, whether a resident or nonresident of the State of California.

**C. Price Adjustment Clauses** (Check appropriate box)

- Price adjustment clauses are not included.
- Price adjustment clauses are included. The federal conditions restricting the use of these clauses have been met and are documented in the project files

**D. Warranty Clauses** (Complete this section if project is on the NHS)

- Warranty Clauses are not included.
- Warranty Clauses are included. Documentation of the required conditions on the use of these clauses is in the project files.

**E. Proprietary Items** (Complete this section if project is on the NHS)

- Proprietary Items are not included.
- Proprietary Items are included. A Public Interest Finding justifying the use has been approved and is documented in the project files.

**XIV. MATERIALS & EQUIPMENT** (Check appropriate box)**A. Publicly Owned Equipment (for use by Contractor)** (Check appropriate box)

- Not included
- Included. A Public Interest Finding justifying this use is in project files and the project specifications meet the requirements for federal participation listed in Chapter 12.

**B. Equipment Purchases for Local Ownership** (Check appropriate box)

- Not included
- I included. Amount charged to construction engineering will be limited to amortized equipment cost (over its useful life) attributable to the time the equipment is used on the project.

**C. Convict Produced Materials**

- Not included
- Included. The conditions placed on the use of these materials by the contractor meet federal requirements and are included in the contract specifications.

**D. Local Agency Furnished Materials** (Check appropriate box)

- Local Agency Furnished Materials are not included.

(If Local Agency Furnished Materials are included check appropriate box.)

- Local Agency Furnished Materials have been acquired on the basis of competitive bidding.
- A Public Interest Finding is on file in the contract records justifying another method of acquisition.

**XV. PRELIMINARY ESTIMATE** (Check boxes if requirements met)

- Exhibit 12-A, or equivalent has been completed and is attached.

- The estimate is broken down into items sufficient in detail to provide an initial prediction of the financial obligation to be incurred by the local agency, state and FHWA and to permit an effective review and comparison of the bids received.
- Non-participating items of work have been identified and segregated from the estimated cost of work eligible for federal-aid.

(If project is funded with more than one type of federal-aid, check box if requirement met.)

- The estimate has been segregated by fund types for use in preparing the "Request for Authorization for Construction" (Detail Record) and the Finance Letter.

**XVI. LOCAL AGENCY SIGNATURE**

This Federal Contract Provisions checklist has been prepared in accordance with Chapter 12 "PS&E" of the *Local Assistance Procedures Manual*.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

**XVII. CALTRANS ACCEPTANCE:**

Check appropriate acceptance statement:

- I have not personally inspected the subject project PS&E package but I am aware of the scope of the project. I have reviewed this "PS&E CHECKLIST" and agree it is complete and appears to have been prepared in accordance Chapter 12 "PS&E" of the *Local Assistance Procedures Manual*.
- I have inspected the specifications portion of the subject project PS&E package and I am aware of the scope of the project. I have reviewed this "PS&E CHECKLIST" and agree it is complete and appears to have been prepared in accordance with Chapter 12 "PS&E" of the *Local Assistance Procedures Manual*. I have also verified that the indicated Required Federal Contract Provisions are included in the specifications.

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Distribution:

- Original submitted to DLAE with PS&E Certification.
- Original "Accepted" copy to be retained in DLAE file with PS&E Certification.
- One "Accepted" copy to be returned to local agency

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## PS&E CHECKLIST INSTRUCTIONS

The PS&E Checklist is to be completed by the local agency in accordance with the following instructions and attached to the PS&E Certification.

### I. HIGHWAY SYSTEM

Some PS&E requirements depend on whether the project is on or off the National Highway System (NHS). See *Local Assistance Program Guidelines* (LAPG) Chapter 3, *Federal-Aid Routes and Functional Classifications*, for a listing of the local agency NHS routes.

Check the appropriate box indicating on which system the project is located.

### II. FUNCTIONAL CLASSIFICATION

Federal-aid eligibility, design standards as well as some PS&E requirements depend on the functional classification of the route the project is on. See LAPG, Chapter 3, *Federal-Aid Routes and Functional Classifications*, for a discussion of the functional classification system.

Check the appropriate box

### III. TYPE OF CONSTRUCTION

Design standards as well as some oversight responsibilities depend on the type of construction. See Chapter 2 of this manual for definitions and check the appropriate box.

### IV. METHOD OF CONSTRUCTION

#### A. CONTRACTING METHOD

Unless justified by a Public Interest Finding (Exhibit 12-F in this chapter), all federal-aid construction contracts must be awarded to the lowest responsible bidder of a competitive bid process. For State-Authorized projects that are not subject to FHWA Full Oversight, the local agency may approve the Public Interest Finding if it meets the conditions described in Chapter 12. Caltrans and FHWA must approve the Public Interest Finding for projects that are subject to FHWA Full Oversight before accepting the local agency's PS&E Certification.

Check the appropriate box.

#### B. FORCE ACCOUNT (DAY LABOR)

A Public Interest Finding (Exhibit 12-F in this chapter) must justify any force account construction work performed by the local agency. When the entire project will be constructed by the local agency, and the project is subject to Full Oversight by Federal Highway Administration (FHWA), the Public Interest Finding shall be submitted to District Local Assistance Engineer (DLAE) for Caltrans and FHWA approval before accepting the local agency's PS&E Certification. The Public Interest Finding will be approved by the local agency for all other force account (day labor) work.

Check the appropriate boxes and process the Public Interest Finding as required.

## V. ENVIRONMENTAL ANALYSIS

The preparation of PS&E must reflect findings of the environmental analysis performed for the project. By checking the box, the agency certifies that the necessary actions called for by the environmental documents have been responded to in the PS&E. Failure to check the box will result in denial of the Request for Authorization.

## VI. VALUES ENGINEERING (VE) ANALYSIS

The application of values engineering (VE) is required for all federal-aid highway project on the NHS with an estimated cost of \$25 million or more. If the project is on the NHS, check appropriate box.

## VII. GEOMETRIC DESIGN STANDARDS

If the project does not change existing geometrics, Section A and B do not apply and the local agency is not required to check any boxes in these sections.

### A. GEOMETRIC DESIGN STANDARDS USED

New and reconstruction projects on the NHS shall be designed in accordance with Standards as defined in the current edition of *A Policy on Geometric Design of Highways and Streets*, published by the American Association of State Highway and Transportation Officials (AASHTO). The minimum standards for geometric design of local federal-aid resurfacing, restoration and rehabilitation (3R) projects on the NHS are shown in Tables 11-1 through 11-10 in Exhibit 11-A. Local geometric design standards that have been developed for use on locally funded new and reconstruction, or 3R projects off the NHS, may be used subject to the conditions listed in Chapter 11, *Design Standards*.

Check appropriate box if this section applies.

### B. DEVIATIONS FROM CONTROLLING CRITERIA

The controlling criteria listed are considered to be of primary importance for highway safety, and deviations require design exception approval procedures as described in Chapter 11, *Design Standards*. Check whether the criteria have been met on this project. If a design exception has been approved, indicate the approval date. Documentation shall be retained in the project files.

## VIII. BRIDGE DESIGN PROCEDURES

All bridges shall be designed in accordance with the current edition of the Caltrans *Bridge Design Specifications Manual*. Check if requirement met, or if the project does not include any bridge construction indicate requirement does not apply.

## IX. STANDARD PLANS

For projects off the State Highway System, the local agency may use Caltrans *Standard Plans*, *Standard Plans for Public Works Construction*, or subject to the conditions described in Chapter 11, *Locally approved Standard Plans*. Check appropriate box.

**X. PROJECT PLANS AND SPECIFICATIONS**

Project plans shall be signed and stamped on behalf of the local agency by the person in responsible charge and who is a registered professional engineer licensed to practice in the State of California. A traffic control plan shall be included in the PS&E for all federal-aid highway construction projects. Check boxes to indicate requirements are met. Failure to check both boxes will result in denial of the "Request for Authorization".

Erosion control plans may be required; see Section 12.7 *Plans*, in the *Local Assistance Procedures Manual* (LAPM). If required, check box.

Project plans and specifications may be required to meet the Americans with Disabilities Act (ADA) requirements under federal 28 CFR Part 35 or Part 36. Whenever applicable, project plans will need to comply with the federal 28 CFR Part 35 or Part 36, and the California and Local Building Codes within the project limits. In accordance, with 28 CFR Sec. 35.151, curbs ramps must meet current ADA standards if the project includes streets that are to be newly constructed or altered (includes repaving). For ADA requirements, see Chapter 11 *Design Standards*, and Section 12.7 of this chapter of LAPM. If ADA requirements apply and will be complied with, check box.

**XI. STANDARD SPECIFICATIONS**

For projects off the State Highway System, the local agency may use Caltrans *Standard Specifications, the Standard Specifications for Public Works Construction*, or subject to the conditions described in Chapter 11, *Locally approved Standard Specifications*. Check appropriate box.

**XII. REQUIRED FEDERAL CONTRACT PROVISIONS (SEE ATTACHMENTS A thru N, THIS EXHIBIT)****A. GENERAL FEDERAL REQUIREMENTS**

General provisions must be included to reference FHWA Form 1273, Performance of Previous Contract, Noncollusion Provision, and Participation by Minority Business Enterprises In Subcontracting. Caltrans SSP - SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS (Attachment A, pages FR-1 & FR-2) or equivalent provisions shall be used.

Check appropriate box (i.e., Caltrans SSP or equivalent) and indicate page number.

**B. FHWA FORM 1273****1. Incorporation of FHWA Form 1273 into Contract**

FHWA Form 1273- *REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS, (Exclusive of Appalachian Contracts)* (Attachment B, pages FR-3 thru FR-14) shall be made a part of, and physically incorporated into all contracts as well as appropriate subcontracts and purchase orders. The provisions contained in FHWA Form -1273 are generally applicable to all federal-aid construction projects. Except as described below, the form may not be modified.

Check the appropriate box, (i.e., unmodified or modified), and indicate page number.

**2. Modification of FHWA Form 1273**

If the provisions contained in FHWA Form 1273 will be modified, fill in the required project information before completing Sections 2.a. thru 2.d.



**a. Section IV. Payment of Predetermined Wages**

This section applies to all federal-aid highway construction projects exceeding \$2,000 dollars and to all related subcontracts, except for projects not located on the Federal-aid System (roadways classified as local roads or rural minor collectors), which are exempted. If exempted, this section may be crossed out, removed, or it may be specified elsewhere in the contract that it does not apply.

Check the appropriate box, (i.e., not modified or modified). If this section has been modified, indicate how the section was modified (i.e., crossed out, removed or specified elsewhere in the contract that it does not apply).

**b. Section V. Statements and Payrolls**

This section applies to all federal-aid highway construction projects exceeding \$2,000 dollars and to all related subcontracts, except for projects not located on the Federal-aid System (roadways classified as local roads or rural minor collectors), which are exempted. If exempted, this section may be crossed out, removed, or it may be specified elsewhere in the contract that it does not apply.

Check the appropriate box, (i.e., not modified or modified). If this section has been modified, indicate how the section was modified (i.e., crossed out, removed or specified elsewhere in the contract that it does not apply).

**c. Section VI. Record of Materials, Supplies, and Labor**

This section applies to all federal-aid projects in excess of \$1 million, except for projects off the NHS. If exempted, this section may be crossed out, removed, or it may be specified elsewhere in the contract that it does not apply.

Check the appropriate box (i.e., not modified or modified). If this section has been modified, indicate how the section was modified (i.e., crossed out, removed or specified elsewhere in the contract that it does not apply).

**d. Section VII. Subletting or Assigning the Contract**

This section applies to all federal-aid projects except for projects off the NHS. If exempted, this section may be crossed out, removed, or it may be specified elsewhere in the contract that it does not apply.

Check the appropriate box (i.e., not modified or modified). If this section has been modified, indicate how the section was modified (i.e., crossed out, removed or specified elsewhere in the contract that it does not apply).

**C. CERTIFICATION/DISCLOSURE FORMS**

The following certification/disclosure forms shall be included in all federal-aid projects. Except for the Disclosure of Lobbying form and instructions, equivalent provisions may be used.

*EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION* (Attachment C)

*NONCOLLUSION AFFIDAVIT* (Attachment D)

*DEBARMENT AND SUSPENSION CERTIFICATION* (Attachment E)

*NONLOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS* (Attachment F)

*DISCLOSURE OF LOBBYING ACTIVITIES* (Attachment G)

Check appropriate box (i.e., Attachments or equivalents) and indicate page number.

**D. LIQUIDATED DAMAGES**

Provisions for liquidated damages shall be included in all federal-aid contracts on the NHS (see Chapter 12 *Plans, Specifications & Estimate*, of the *LAPM* for requirements.). Caltrans SSP *SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES* (Exhibit 12-E, Attachment I, also in *Sample Notice to Contractors & Special Provisions*) or equivalent provisions shall be used.

Check appropriate box (i.e., Caltrans SSP or equivalent) and indicate page number.

**E. DISADVANTAGED BUSINESS ENTERPRISE (DBE)**

Fill in the required project information before completing this section.

It is the policy of the FHWA that disadvantaged business enterprises shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with federal funds. Individual project goals will be established based on the criteria for establishing project goals identified in the local agency's DBE Program. Complete evaluation documentation is required and shall be retained for each project (see DBE references in the *LAPM*).

In some cases, a specific goal may not be appropriate due to the extremely limited subcontracting opportunities for DBEs or the lack of certified DBEs in the geographic area in which work is to be performed. If this project has a specific goal, complete Section 1. If project the does not have a specific goal, complete Section 2.

**1. PROJECTS WITH SPECIFIC GOALS.**

For projects that contain a specific goal, Caltrans SSPs (and the referenced Caltrans *Standard Specifications*), or equivalent provisions, are required to describe DBE Program Policy, the contract goal, eligibility criteria, good faith effort requirements, sanctions on failure to comply, procedures for counting DBE participation, award documentation procedures, post award compliance procedures, and required records and reporting.

Caltrans SSP *SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS* (Exhibit 12-E, Attachment H, also in *Sample Notice to Contractors & Special Provisions*) includes requirements for DBE subcontractor listing, Federal Lobbying Restrictions, Disadvantaged Business requirements, and DBE Goal for project.

Check appropriate boxes (i.e., Caltrans SSPs or equivalent provisions) and indicate page number. If equivalent provisions are used, attach a complete listing, including page numbers.

## 2. PROJECTS WITHOUT SPECIFIC GOALS.

Documentation is required that verifies the local agency has determined that a specific project goal is not appropriate. Special provisions for projects without goals are then required as described in the boxes to be checked.

### F. BUY AMERICA SPECIFICATION

Current Buy America regulations are discussed in Section 12.9 of the *LAPM*. Buy America requirements do not apply to minimal use of the material such that the cost, delivered to the project site, is less than \$2,500 or one-tenth-of-one-percent of the contract amount, whichever is greater. (Attachment M)

If the Buy America requirement applies, check the appropriate box (i.e., Caltrans SSP or equivalent) and indicate page number. If the requirement does not apply, check the last box.

### G. FEDERAL TRAINEES

Chapter 12, *Plans, Specifications & Estimate*, of the *LAPM* includes information for On-the-Job Training. If a Federal Trainee goal is not required, check the appropriate box. If a goal is required, check appropriate box (i.e., Caltrans SSP or equivalent), indicate the trainee goal and the page number. (Attachment N)

### H. FEDERAL WAGE RATES

If payment of federal predetermined wages are required per instructions in Section B.2.a, "Section IV. *Payment of Predetermined Wages*, they shall be physically incorporated into the contract and in all related subcontracts

Check appropriate box (i.e., Federal Wages Rates are included or not required) and indicate page number if included.

By checking the box the local agency is indicating that they are aware of the federal-aid "10-day rule" for federal wage rates. See section 12.9 *Required Federal Contract Provisions – Federal Wage Rates* for local agency requirements under the "10-day rule."

### I. RELATIONS WITH RAILROAD

Where construction of a federal-aid project requires use of railroad properties or adjustments to railroad facilities, there shall be an agreement in writing between the local agency and the railroad company. The pertinent portions of the agreement applicable to any protective services required during performance of the work shall be included in the project specifications and special provisions.

Check appropriate box (i.e., provisions are included or not required). If provisions are included, indicate page number.

## XIII. RESTRICTED CONTRACT PROVISIONS

Unless otherwise noted, see Section 12.10 of Chapter 12 for detailed guidance.

**A. INDIAN PREFERENCES**

Generally, local agencies may not use local hiring practices. However, ISTEA permits an Indian employment preference provision for projects on or near Indian reservations or Indian lands. Check the appropriate box.

**B. BONDING AND PREQUALIFICATION**

Bonding and prequalification procedures are not required for federal-aid projects. However, any procedures or requirements for bonding, insurance, prequalification, qualification, or licensing of contractors shall not be used which may operate to restrict competition, prevent submission of a bid by or prohibit consideration of a bid submitted by any responsible contractor, whether a resident or nonresident of California. Check appropriate boxes and if bonding and/or prequalification are used check the last box to indicate the requirement will be met.

**C. PRICE ADJUSTMENT CLAUSES**

Price adjustment clauses may be implemented if certain conditions are met. If these clauses are used, the local agency must provide documentation of the required conditions in the project files. Check the appropriate box.

**D. WARRANTY CLAUSES (COMPLETE THIS SECTION IF PROJECT IS ON THE NHS)**

Warranty clauses may be implemented if the conditions described in Section 12.12 of Chapter 12 are met. The local agency must provide documentation of the required conditions in the project files. Check the appropriate box.

**E. PROPRIETARY ITEMS (COMPLETE THIS SECTION IF PROJECT IS ON THE NHS)**

The use of proprietary items is restricted as described in Section 12.12 in Chapter 12. If the use does not meet these restrictions, a Public Interest Finding justifying the use must be approved by the local agency and documented in the project files. Check the appropriate box.

**XIV. MATERIALS AND EQUIPMENT**

Unless otherwise noted, see Section 12.12 of Chapter 12 for details.

**A. Publicly Owned Equipment (for use by Contractor)**

The use of publicly owned equipment on a project going to bid must be justified with a Public Interest Finding. The local agency may approve the use provided it meets conditions described in Chapter 12. Check the appropriate box.

**B. Equipment Purchases for Local Ownership**

The cost of equipment purchased by the local agency or by the contractor with ownership transferred to the local agency for construction engineering is limited. Check the appropriate box.

**C. Convict Produced Materials**

Materials produced by convict labor may be used on any federal-aid project if they meet certain conditions. Check appropriate box.

**D. Local Agency Furnished Materials**

The use of local agency furnished materials not acquired on the basis of competitive bidding must be supported by a Public Interest Finding justifying the use (see Section 12.13 of Chapter 12). The justification must be approved by the local agency and documented in the project files. If these materials are included, check the appropriate box indicating the method of acquisition.

**XV. PRELIMINARY ESTIMATE**

An estimate of the contract items of work must be prepared in a format which describes the items of work, unit amount, quantity, unit price, amount, a subtotal, contingencies and a total. (Exhibit 12-A, or equivalent). The estimate must be broken down into items sufficient in detail to meet the stated requirements. Check boxes if these requirements are met.

If the project is funded with more than one type of federal-aid it must be segregated by fund types (see Chapter 3, *Project Authorization*, of the LAPMI). Check box if this requirement is met.

**XVI. LOCAL AGENCY SIGNATURE**

The Federal Contract Provisions Checklist shall be signed by the person preparing the contract specifications. The checklist shall be signed even if prepared by the same person who will sign the PS&E Certification.

**XVII. CALTRANS ACCEPTANCE**

Caltrans will indicate the appropriate acceptance statement based on the type of review, as described in Chapter 12, *Plans, Specifications & Estimate*, of the LAPM, and sign the bottom of the form.

2. If the materials or supplies are purchased from a DBE regular dealer, 60 percent of the cost of the materials or supplies will count toward the DBE goal. A DBE regular dealer is a firm that owns, operates or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a DBE regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a DBE regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in this paragraph G.2., if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not DBE regular dealers within the meaning of this paragraph G.2.
  3. Credit for materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer will be limited to the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, provided the fees are reasonable and not excessive as compared with fees charged for similar services.
- H. Use the following factors to determine whether a DBE trucking company is performing a commercially useful function and the amount of credit for the DBE trucking company:
1. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract; and there cannot be a contrived arrangement for the purpose of meeting DBE goals.
  2. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
  3. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
  4. The DBE may lease trucks from another DBE firm including an owner-operator, who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
  5. The DBE may also lease trucks from a non-DBE firm including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit for the total value of transportation services provided by the non-DBE lessees not to exceed the value of transportation services provided by DBE-owned trucks on contract. Additional participation by non-DBE lessees receives credit only for the fee or commission it received as a result of the lease agreement. If a recipient chooses this approach, it must obtain written consent from the Caltrans DLAE.

*Example to paragraph 5:* DBE Firm X uses two of its own trucks on a contract. It leases two trucks from DBE Firm Y and six trucks from non-DBE Firm Z. DBE credit would be awarded for the total value of transportation services provided by Firm X and Y, and may also be awarded for the total value of transportation services provided by four of the six trucks provided by Firm Z. In all, full credit would be allowed for the participation of eight trucks. With respect to the other two trucks provided by Firm Z, DBE credit could be awarded only for the fees or commissions pertaining to those trucks Firm X receives as a result of the lease with Firm Z.

6. For the purposes of this paragraph H, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.
- I. Noncompliance by the Contractor with the requirements of the regulations constitutes a breach of this contract and may result in termination of the contract or other appropriate remedy for a breach of this contract;
- J. Bidders are encouraged to use services offered by financial institutions owned and controlled by DBEs.

*(Use the following if no DBE goals are specified)*

Bidders shall be fully informed respecting the requirements of the Regulations and are urged to obtain DBE participation in this project, although there is no specific goal for DBE participation.

Caltrans has engaged the services of a contractor to provide supportive services to contractors and subcontractors to assist in obtaining DBE participation on federally funded construction projects. Bidders and potential subcontractors should check the Caltrans website at [www.dot.ca.gov/hq/bep](http://www.dot.ca.gov/hq/bep) to verify the current availability of this service.

*(Use the following section if DBE goals are specified)*

#### **2-1.02A DBE GOAL FOR THIS CONTRACT**

The City/County has established the following goal for Disadvantaged Business Enterprise (DBE) participation for this contract:

Disadvantaged Business Enterprise (DBE): \_\_\_percent

Caltrans has engaged the services of a contractor to provide supportive services to contractors and subcontractors to assist in obtaining DBE participation on federally funded construction projects. Bidders and potential subcontractors should check the Caltrans website at: <http://www.dot.ca.gov/hq/bep/partners.htm#consult> to verify the current availability of this service.

*(Use the following section if DBE goals are specified)*

#### **2-1.02B SUBMISSION OF DBE INFORMATION**

The required DBE information shall be submitted on the "LOCAL AGENCY BIDDER - DBE INFORMATION" form included in the Proposal. If the DBE information is not submitted with the bid, the DBE Information form shall be removed from the documents prior to submitting the bid.

It is the bidder's responsibility to make enough work available to DBEs and to select those portions of the work or material needs consistent with the available DBEs to meet the goal for DBE participation or to provide information to establish that, prior to bidding, the bidder made adequate good faith efforts to do so.

If DBE information is not submitted with the bid, the apparent successful bidder (low bidder), the second low bidder and the third low bidder shall submit DBE information to the City/County of \_\_\_\_\_ (address) so the information is received by the City/County of \_\_\_\_\_ no later than 4:00 p.m. on the fourth day, not including Saturdays, Sundays and legal holidays, following bid opening. DBE information sent by U.S. Postal Service certified mail with return receipt and certificate of mailing and mailed on or before the third day, not

including Saturdays, Sundays and legal holidays, following bid opening will be accepted even if it is received after the fourth day following bid opening. Failure to submit the required DBE information by the time specified will be grounds for finding the bid or proposal nonresponsive. Other bidders need not submit DBE information unless requested to do so by the City/County of \_\_\_\_\_.

The bidder's DBE information shall establish that good faith efforts to meet the DBE goal have been made. To establish good faith efforts, the bidder shall demonstrate that the goal will be met or that, prior to bidding, adequate good faith efforts to meet the goal were made.

Bidders are cautioned that even though their submittal indicates they will meet the stated DBE goal, their submittal should also include their adequate good faith efforts information along with their DBE goal information to protect their eligibility for award of the contract in the event the City/County, in its review, finds that the goal has not been met.

The bidder's DBE information shall include the names, addresses and phone numbers of DBE firms that will transaction, and a written confirmation from the DBE that it is participating in the contract. A copy of the DBE's quote will serve as written confirmation that the DBE is participating in the contract. When 100 percent of a contract item of work is not to be performed or furnished by a DBE, a description of the exact portion of that work to be performed or furnished by that DBE shall be included in the DBE information, including the planned location of that work. The work that a DBE prime contractor has committed to performing with its own forces as well as the work that it has committed to be performed by DBE subcontractors, suppliers and trucking companies will count toward the goal.

The information necessary to establish the bidder's adequate good faith efforts to meet the DBE goal should include:

- A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder.
- B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested.
- C. The items of work which the bidder made available to DBE firms, including, where appropriate, any breaking down of the contract work items (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to meet the DBE goal was made available to DBE firms.
- D. The names, addresses and phone numbers of rejected DBE firms, the firms selected for that work, and the reasons for the bidder's choice.
- E. Efforts made to assist interested DBEs in obtaining bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work, which was provided, to DBEs.
- F. Efforts made to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate.
- G. The names of agencies contacted to provide assistance in contacting, recruiting and using DBE firms.
- H. Any additional data to support a demonstration of good faith efforts.



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U.S DEPARTMENT OF TRANSPORTATION	FEDERAL HIGHWAY ADMINISTRATION	CALIFORNIA DEPARTMENT OF TRANSPORTATION	
<b>REQUEST FOR APPROVAL OF COST-EFFECTIVENESS/PUBLIC INTEREST FINDING</b>			
<b>COST-EFFECTIVENESS DETERMINATION REQUIRED</b>		<b>PUBLIC INTEREST DETERMINATION REQUIRED</b>	
<input type="checkbox"/> Experimental Contracting methods (23 CFR 635.204) <input type="checkbox"/> Informal Bid (Less than three week advertisement) (23 CFR 635.112)* <input type="checkbox"/> Use of force account (day labor) (23 CFR 635.201) <input type="checkbox"/> Use of publicly owned equipment (23 CFR 635.106) <input type="checkbox"/> Other: _____ * NHS Projects Only		<input type="checkbox"/> Use of State-furnished materials (23 CFR 635.407)* <input type="checkbox"/> Mandatory use of borrow/disposal sites (23 CFR 635.407)* <input type="checkbox"/> Use of patented and proprietary materials (23 CFR 635.411)* <input type="checkbox"/> Waiver of Buy America Requirements (23 CFR 635.410) <input type="checkbox"/> Other: _____ * NHS Projects Only	
FEDERAL-AID PROJECT	CLASS OF FEDERAL FUNDS:	<input type="checkbox"/> IM <input type="checkbox"/> NH <input type="checkbox"/> STP <input type="checkbox"/> OTHER:	
	STEWARDSHIP:	<input type="checkbox"/> STATE AUTHORIZED <input type="checkbox"/> FULL OVERSIGHT	
EA	DIST-CO-RTE- PM	ESTIMATED COST	FEDERAL FUNDS
GENERAL LOCATION		GENERAL DESCRIPTION OF WORK:	
REASONS THAT REQUESTED APPROVAL IS CONSIDERED TO BE COST-EFFECTIVE OR IN THE PUBLIC'S BEST INTEREST (STATE):			
REMARKS (STATE) :			
APPROVED BY LOCAL AGENCY'S REPRESENTATIVE (State Author. Projects)		REPRESENTATIVE NAME AND TITLE:	DATE:

Distribution: Local Agency File (Original), DLAE (Copy), Caltrans Project Manager (Copy if on the SHS)

## INSTRUCTIONS

1. Check appropriate box under “Cost-Effective Determination Required” or “Public Interest Determination Required.” Items noted with an ( \* ) **asterisk** apply only to projects on the National Highway System (NHS) and no “Finding” is required for projects off the NHS.
2. Check “Class of Funds” as follows: IM-Interstate Maintenance, NH-National Highway, STP-State Transportation Program, Other (all other classes).
3. Provide the Federal-aid Project EA number in first column.
4. Identify Caltrans District-County-State Route-Post Mile, or City and street in second column.
5. List Estimated Cost of the portion of the project subject to this “Finding”.
6. List the amount of the Federal Funds in the portion of the project subject to this “Finding.”
7. Describe “General Location” applicable to this “Finding.”
8. Provide “General Description of Work” affected by this “Finding.”
9. Explain and give “Reasons that requested approval is considered to be cost-effective, or in the public’s best interest.” Provide cost analysis or comparison as evidence of cost-effectiveness.
10. “Remarks” is for the Local Agency Representative approving the Finding.
11. Signature, Name, and Title of Local Agency Representative approving “Finding.”
12. Date of Local Agency Representative’s signature.

### NOTES:

- a. Local agency “State Authorized” Projects **off** the State Highway System (SHS) or NHS requires the signature of the City or County Public Works Director.
- b. Local agency “State Authorized” Projects on the State Highway System, or NHS also requires Caltrans approval.
- c. Local agency “State Authorized” Projects on the Interstate requires both Caltrans and FHWA approval.
- d. One exception to the foregoing is the local agency “Waiver of Buy America Requirements” which requires both Caltrans and FHWA approval, **off** and **on** the State Highway System, or NHS.
- e. Questions, the local agency should check with the DLAE for projects **off** the SHS, and the Caltrans Project Manager for projects on the SHS or Interstate.

**BIDDER'S LIST OF SUBCONTRACTORS (DBE and NON-DBE)- PART 1**

The bidder shall list all subcontractors (both DBE and non-DBE) in accordance with Section 2-1.054 of the Standard Specifications and per Title 49, Section 26.11 of the Code of Federal Regulations. This listing is required in addition to listing DBE Subcontractors elsewhere in the proposal. **Photocopy this form for additional firms.**

Firm Name/ Address/ City, State, ZIP	Phone/ Fax	Certified by Caltrans as a DBE?	Annual Gross Receipts	Description of Portion of Work to be Performed Bidder's List of Subcontractors (DBE and Non-DBE)
<i>Name</i>	<i>Phone</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> < \$1 million <input type="checkbox"/> < \$5 million	
<i>Address</i>	<i>Fax</i>	<i>If YES list DBE #:</i>	<input type="checkbox"/> < \$10 million <input type="checkbox"/> < \$15 million	
<i>City State ZIP</i>		<i>Age of Firm (Yrs.)</i>	<input type="checkbox"/> > \$15 million	
<i>Name</i>	<i>Phone</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> < \$1 million <input type="checkbox"/> < \$5 million	
<i>Address</i>	<i>Fax</i>	<i>If YES list DBE #:</i>	<input type="checkbox"/> < \$10 million <input type="checkbox"/> < \$15 million	
<i>City State ZIP</i>		<i>Age of Firm (Yrs.)</i>	<input type="checkbox"/> > \$15 million	
<i>Name</i>	<i>Phone</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> < \$1 million <input type="checkbox"/> < \$5 million	
<i>Address</i>	<i>Fax</i>	<i>If YES list DBE #:</i>	<input type="checkbox"/> < \$10 million <input type="checkbox"/> < \$15 million	
<i>City State ZIP</i>		<i>Age of Firm (Yrs.)</i>	<input type="checkbox"/> > \$15 million	
<i>Name</i>	<i>Phone</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> < \$1 million <input type="checkbox"/> < \$5 million	
<i>Address</i>	<i>Fax</i>	<i>If YES list DBE #:</i>	<input type="checkbox"/> < \$10 million <input type="checkbox"/> < \$15 million	
<i>City State ZIP</i>		<i>Age of Firm (Yrs.)</i>	<input type="checkbox"/> > \$15 million	

**BIDDER'S LIST OF SUBCONTRACTORS (DBE and NON-DBE)- PART II**

The bidder shall list all subcontractors (both DBE and non-DBE) who provided a quote or bid but were not selected to participate as a subcontractor on this project. This is required for compliance with Title 49, Section 26 of the Code of Federal Regulations. **Photocopy this form for additional firms.**

Firm Name/ Address/ City, State, ZIP	Phone/ Fax	Certified by Caltrans as a DBE?	Annual Gross Receipts	Description of Portion of Work to be Performed
<i>Name</i>	<i>Phone</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> < \$1 million <input type="checkbox"/> < \$5 million	
<i>Address</i>	<i>Fax</i>	<i>If YES list DBE #:</i>	<input type="checkbox"/> < \$10 million <input type="checkbox"/> < \$15 million	
<i>City State ZIP</i>		Age of Firm (Yrs.)	<input type="checkbox"/> > \$15 million	
<i>Name</i>	<i>Phone</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> < \$1 million <input type="checkbox"/> < \$5 million	
<i>Address</i>	<i>Fax</i>	<i>If YES list DBE #:</i>	<input type="checkbox"/> < \$10 million <input type="checkbox"/> < \$15 million	
<i>City State ZIP</i>		Age of Firm (Yrs.)	<input type="checkbox"/> > \$15 million	
<i>Name</i>	<i>Phone</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> < \$1 million <input type="checkbox"/> < \$5 million	
<i>Address</i>	<i>Fax</i>	<i>If YES list DBE #:</i>	<input type="checkbox"/> < \$10 million <input type="checkbox"/> < \$15 million	
<i>City State ZIP</i>		Age of Firm (Yrs.)	<input type="checkbox"/> > \$15 million	
<i>Name</i>	<i>Phone</i>	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> < \$1 million <input type="checkbox"/> < \$5 million	
<i>Address</i>	<i>Fax</i>	<i>If YES list DBE #:</i>	<input type="checkbox"/> < \$10 million <input type="checkbox"/> < \$15 million	
<i>City State ZIP</i>		Age of Firm (Yrs.)	<input type="checkbox"/> > \$15 million	

Distribution: Local Agency File (Original)