

Chapter 12 **Plans, Specifications & Estimate**

Contents

Section/Subject	Page
12.1 Introduction	1
Definitions	1
12.2 PS&E Procedures for Significant NHS Projects	2
12.3 Environmental Procedures.....	3
Compliance with Environmental Laws	3
Preliminary Design	3
Final Design	4
Permits	4
Documentation	5
12.4 Method of Construction.....	5
Contracting Method	5
Force Account (Day Labor)	5
Emergency Work	7
12.5 Value Engineering Analysis	7
Federal Requirements	7
Procedures	8
12.6 Plans.....	8
Design Guidance.....	9
Design Decisions.....	9
Plan Sheet and Specification Signatures	9
Standard Plans.....	9
Erosion Control Plans	10
Work Zone Safety and Mobility.....	10
Local Agency Policy	10
Significant Projects	10
TMP	11
TTC Plan.....	11
Transportation Operations (TO).....	12
Public Information.....	12
Work Zone Implementation and Improvement Procedures.....	13

Americans with Disabilities Act (ADA) Compliance Plans13

12.7 Standard Specifications 14

 Acceptable Standard Specifications and Special Provisions14

 Caltrans Specifications15

12.8 Federal Contract Requirements 15

 Required Federal Contract Language.....15

 Disadvantaged Business Enterprise (DBE).....15

 Contract Time16

 Changed Condition Clauses17

 Differing Site Conditions17

 Suspensions of Work Ordered by the Engineer17

 Material Changes in the Scope of the Work18

 Liquidated Damages18

 LIQUIDATED DAMAGES TABLE (L%)19

 Buy America19

 Form FHWA 127320

 Cargo Preference Act Requirements.....21

 Federal Trainee Program.....21

 FEDERAL TRAINEE SCHEDULE.....23

 Federal Wage Rates.....23

 Relations with Railroad24

 Sample Bid.....24

12.9 Restricted Contract Provisions 25

 Indian Preference25

 Bonding and Prequalification25

 Price Adjustment Clauses.....26

 Project Labor Agreements.....27

12.10 Optional Contract Provisions 28

 Additive or Deductive Bid Items.....28

 Alternate Bids29

 Incentive/Disincentive (I/D) Provisions.....30

 Quality – Price Adjustment Clauses30

 Innovative Contracting Practices.....31

12.11 Materials and Equipment..... 31

 Publicly Owned Equipment31

 Contractor Purchases for Local Ownership.....31

 Convict-Produced Materials.....32

 Local Preferences32

Warranty Clauses32

Proprietary Items33

Public Interest Finding.....34

Certification.....34

Other Proprietary Item Considerations.....35

Equipment Rental Rates.....35

12.12 Estimates 36

 Nonparticipating Work.....36

 Contract Items.....37

 Local Agency Furnished Materials.....37

 Supplemental Work.....37

 Contingencies38

 Construction Engineering.....38

 Federal Trainee Program.....38

 Optional Bridge Review38

12.13 PS&E Certification 39

 PS&E Checklist.....39

 Checklist Review by Caltrans.....40

12.14 Projects Without Traditional PS&E 41

12.16 References42

Exhibits

Exhibits applicable to this chapter can be found at:

<http://www.dot.ca.gov/hq/LocalPrograms/lam/forms/lapmforms.htm#goHere8>

[Exhibit 12-A Preliminary Estimate of Cost](#)

[Exhibit 12-B Bidder’s List of Subcontractors \(DBE and Non-DBE\)](#)

[Exhibit 12-C PS&E Certification](#)

[Exhibit 12-D PS&E Checklist](#)

[Exhibit 12-E PS&E Checklist Instructions](#)

[Exhibit 12-F Request for Approval of Cost-Effectiveness/Public Interest Finding](#)

[Exhibit 12-G Required Federal-aid Contract Language](#)

[Exhibit 12-H Sample Bid](#)

Chapter 12 Plans, Specifications & Estimate

12.1 INTRODUCTION

The policies and procedures contained in this chapter reflect current federal requirements for the Plans, Specifications and Estimate (PS&E) phase of local projects off the State Highway System (SHS). These instructions are not intended to federal-aid address the relevant state laws and local regulations with which a local agency must also comply.

The preparation of the PS&E for local federal-aid projects off the SHS is the responsibility of the local agency. Local agencies will certify on Exhibit 12-C *PS&E Certification* that their project PS&E complies with all applicable federal and state regulations and procedures. Exhibit 12-D *PS&E Checklist* summarizes the items required for local agency compliance. The local agency's project *PS&E Certification* and *PS&E Checklist* must be submitted to the Caltrans District Local Assistance Engineer (DLAE) along with their "Request for Authorization to Proceed with Construction." Local agencies' PS&Es are reviewed on a periodic basis as part of the Caltrans process review program.

Federal-aid projects in which the total project costs are expected to be \$100 million or more, require that an annual Financial Plan be prepared when all elements of the plan are fully known, but not later than the request for authorization of federal financial assistance for construction. Financial Plans for projects of \$100 million or more must be submitted to the Caltrans DLAE. Submittal of the Financial Plan and a Project Management Plan are required for projects of \$500 million or more. Major federal-aid projects of \$500 million or more require that a draft Project Management Plan be prepared and submitted to Caltrans/Federal Highway Administration (FHWA) prior to the environmental determination. FHWA also requires that a Cost Estimate Review be performed prior to National Environmental Policy Action (NEPA) completion and prior to construction authorization. The Final Project Management Plan must be submitted within 90 days after the environmental determination. For more information see Chapter 2 *Roles and Responsibilities* of the Local Assistance Procedures Manual (LAPM).

For locally administered projects on the SHS, the local agency must enter into a cooperative agreement with Caltrans to establish the responsibility for project PS&Es (see Chapter 1 "*Cooperative Agreement of Caltrans Project Development Procedures Manual*").

Definitions

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 decision approval (see Chapter 11 *Design Guidance* of the LAPM).

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 (CFR). The finding contains supporting documentation such as cost/benefit analysis, product compatibility, etc., and includes reasons that the proposed deviation is considered to be cost-effective or for the public's best interest. Exhibit 12-F

Request for Approval of Cost-Effectiveness/Public Interest Finding, is a preprinted blank form that should be used by local agencies to prepare a “Cost-Effectiveness/Public Interest Finding.” Caltrans and FHWA approval is required for local agency projects that are “High Profile.”

Design Decision Approval – A process to justify, approve and document deviations from established standards.

Design Standards – The established standards, specifications, procedures, guides and references listed herein that are acceptable for application in the geometric and structural design of federal-aid projects (see Chapter 11 *Design Guidance* of the LAPM).

Final Design – The phase of the transportation project development process that occurs after environmental approval that involves the preparation of detailed working drawings, as well as specifications and estimates for approved transportation projects.

Project – A portion of a highway or local road that a local agency proposes to construct, reconstruct or improve as described in the Federal State Transportation Improvement Program (FSTIP) and Regional Transportation Improvement Program (RTIP). A project may consist of several contracts or phases over several years.

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 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.

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

Value Engineering Analysis – The systematic application of recognized techniques by a multi-disciplined team to identify the function of a product or service; establish a worth for that function; generate alternatives through the use of creative thinking; and provide the needed functions to accomplish the original purpose of the project, reliably, and at the lowest life-cycle cost without sacrificing safety, necessary quality, and environmental attributes of the project.

12.2 PS&E PROCEDURES FOR SIGNIFICANT NHS PROJECTS

For significant projects (as defined in LAPM Section 7.2) 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 written PS&E 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 participation 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 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 ensuring 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 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

23 CFR 636.103 defines preliminary design as the general project location and design concepts. It includes, but is not limited to, preliminary engineering and other activities and analyses, such as environmental assessments, topographic surveys, metes and bounds surveys, geotechnical investigations, hydrologic analysis, hydraulic analysis, utility engineering, traffic studies, financial plans, revenue estimates, hazardous materials assessments, general estimates of the types and quantities of materials, and other work needed to establish parameters for the final design. In addition to the activities specified in the definition, [Appendix A of FHWA Order 6640.1A](#) provides examples considered to be preliminary design. Prior to completion of the

NEPA review process, any such preliminary engineering and other activities and analyses must not materially affect the objective consideration of alternatives in the NEPA review process.

Final Design

Local agencies may not proceed with final design activities until Caltrans District Senior Environmental Planner and the DLAE have signed the CE Form, Caltrans Deputy District Director has signed the Finding of No Significant Impact (FONSI), or Caltrans District Director has signed the Record of Decision (ROD). 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 determination or documents.

Local agencies are required to provide a list of mitigation commitments to the DLAE (for projects processed with a CE), provide a list of mitigation commitments in the FONSI (for projects processed with an EA), and provide a list of mitigation commitments in the ROD (for projects processed with an EIS).

Unique mitigation commitments including but not limited to preservation of historic sites, protection of public-owned 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. Any plant establishment and monitoring periods must also be addressed during final design.

For complex projects, Caltrans staff is available to assist in the translation and proper transfer of mitigation commitments into the final design. Caltrans assures that mitigation commitments 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 Nationwide Permit; Section 404 Individual Permit; NEPA/404 Integration MOU, Section 10 Permit; United States Coast Guard Bridge Permit; Regional Water Quality Control Board Section 401 Water Quality Certification and National Pollution Discharge Permit; California Department of Fish and Wildlife Streambed Alteration Agreement; California Coastal Commission Coastal Development Permit, and Bay Conservation and Development Commission Permit. 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 the 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 (23CFR 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)
- When using some design-build methods of procurement

The use of a non-competitive contracting method must be thoroughly justified in writing (generally by the use of a Public Interest Finding), submitted to the Caltrans DLAE for approval, documented in the project files, and retained for future reference. For local federal-aid projects that are “High Profile” (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.

The performance of work by force account on a federal-aid project may be appropriate when:

- It is determined that the rights or responsibilities of the community are so affected as to require a special course of action, including a lack of competition or unreasonable bids (must be documented).

- By the inherent nature of the operation, it is deemed cost-effective to perform minor adjustments of railroad and utility facilities while the major work is still accomplished by competitive bidding (the use of force account work under this circumstance has been predetermined to always be cost-effective without further documentation or authorization).
- It is deemed cost-effective to perform some work (incidental to the main purpose of the project and other than minor adjustments of railroad and utility facilities), while the major work is still accomplished by competitive bidding.
- It is necessary for emergency relief.

A public interest finding fully justifying the use of force account work on a local federal-aid project must be prepared by the local agency. The documentation should include:

- An identification and description of the project and the kinds of work to be performed.
- A comparison of the detailed cost estimates for work by force account versus a competitive bid contract.
- An estimate of federal funds to be provided based on the reimbursement ratio of the qualifying costs.
- The reason(s) the use of work by force account is considered to be cost-effective or an emergency.
- An authorization by the City or County Public Works Director authorizing local agency forces to perform the work and certifying that the documentation reflects the true and current estimates of costs to perform the work.

The cost estimates for competitive bidding may be based on unit prices, including any engineering and administrative costs necessary to prepare, monitor, and close-out the project. Unit prices must be based on the estimated actual cost of performing the work, but shall not exceed unit prices currently being obtained by competitive bidding on comparable construction work in the same general locality.

Incidental force account work must be carefully incorporated into a project's PS&E package. The local agency must keep precise project records documenting: the date(s) of authorization, actual work performed, date of performance, and costs for personnel, materials and equipment. Documentation of costs should include:

- PERSONNEL
 - Time sheets
 - Salaries and payrolls
 - Foreman's reports
- MATERIALS
 - Invoices for materials and supplies, and for any special services
 - Cost of producing materials supplied by the local agency

- EQUIPMENT
 - Time and cost for using equipment owned by the local agency
 - Time and rates for using rented equipment

Project records must be kept at least three years after the federal government completes a final voucher of the project.

Emergency Work

In an emergency situation competitive bidding may be waived on any of the federal-aid programs, and the work may be performed by either force account or negotiated contract. For projects that are exempt from FHWA oversight, the waiver shall be approved by the DLAE. An emergency is a situation that requires emergency repair work, as provided under the Emergency Relief Program (see Local Assistance Emergency Relief Program Webpage at: <http://www.dot.ca.gov/hq/LocalPrograms/erp/erp.html>), or when a major element or segment of a highway system has failed and the situation is such that competitive bidding is not possible or is impractical. Competitive bidding under such circumstance may not be possible or practical because immediate action is necessary to:

- Minimize the extent of the damage,
- Protect remaining facilities, or
- Restore essential travel.

As an example: A local agency has a bridge programmed for replacement using Highway Bridge Program (HBP) funds and has begun preliminary engineering on the bridge replacement project. A major storm causes damage to the bridge before the local agency completes the design of the bridge, such that repairing the bridge is not practical. At this point, for projects that are exempt from FHWA oversight, the local agency can contact their DLAE to be granted a waiver (“Authorization to Proceed”), so as to begin negotiations with contractor(s) to replace the bridge using HBP funds and using the plans that have been completed to date.

It should be noted that this waiver to competitive bidding only applies to emergency repairs as defined above, reconstruction work and permanent repairs that can be separated from emergency repairs, are to be performed using the competitive bidding process.

12.5 VALUE ENGINEERING ANALYSIS

Federal Requirements

Federal requirements mandate that a Value Engineering Analysis (VA) be performed on (1) all federal-aid highway projects on the NHS with a total estimated project cost of \$50 million or more; and (2) all federal-aid bridge projects on the NHS with a total estimated project cost of \$40 million or more. Design-Build projects are excluded. The VA consists of a systematic process of review and analysis of the project during the concept and design phases, by a multi-disciplined team of persons not involved in the project.

The local agency administering the project has been delegated the responsibility to ensure that VA is performed under Caltrans delegation authority. For each project, the local agency shall indicate in the appropriate checkbox on Exhibit 12-D *PS&E Checklist* whether VA was performed.

Procedures

The multi-disciplined team can be qualified local agency staff, qualified personnel from the current design consultant contract, or qualified personnel from a certified VA consultant contractor. The most important factor is that the multi-disciplined team be qualified and not involved in the project in which they are performing the VA.

The multi-disciplined team performing VA shall provide recommendations:

- To improve the value and quality of the project
- To provide the needed functions safely, reliably, and at the lowest overall cost
- To reduce the time to complete the project
- To combine or eliminate otherwise inefficient use of costly parts of the original proposed design for the project
- To completely redesign the project using different techniques, materials, or methods so as to accomplish the original purpose of the project

For bridge projects, the multi-disciplined team shall also include bridge substructure requirements based on construction material and be evaluated as follows:

- On engineering and economic bases, taking into consideration acceptable designs for bridges.
- Using an analysis of life-cycle and duration of project construction. For VA studies of projects on the State Highway System, it is advisable to have Caltrans' participation on the VA team.

This process concludes with a value analysis report that contains the approved recommendations. A copy of this report shall be submitted by the local agency to the DLAE who forwards it to the District Value Analysis Coordinator (DVAC) in Caltrans' Division of Design who is responsible for the project. The DVAC will submit this report to the Value Analysis Branch in headquarters, who will then include it in their annual report to FHWA. As a guide, [Chapter 19 "Value Analysis" of the *Project Development Procedures Manual*](#) may be used. The DVAC may be consulted for applicable sections.

12.6 PLANS

Plans shall describe the location, design features, and construction requirements in sufficient detail to facilitate the construction, contract control, and estimation of construction costs for the project.

A local agency may use the Caltrans [Plans Preparation Manual](#) as a guide for preparing contract plans.

Design Guidance

Guidance for the design of federal-aid highway projects is contained in Chapter 11 *Design Guidance* of this manual.

Design Decisions

The Public Works Director, or the person to whom approval authority has been delegated, shall sign approval for design decisions. The person with approval authority must be a registered Civil Engineer in the State of California. Additional information is provided in Chapter 11 *Design Guidance* of this manual.

Plan Sheet and Specification Signatures

On local agency federal-aid projects, the title sheets of the plans and specifications must 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 (employee or consultant) for the plans and specifications being signed. If signed by a local agency consultant, the title sheets shall also be signed by a full-time employee of the local agency who is responsible for the project. 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

Current Caltrans *Standard Plans* must 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 that 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 Caltrans' bridge design standards.

When a local agency requests structure-review assistance from Caltrans, the *Caltrans Standard Plans* must be used, as appropriate, for the structure portion of the project.

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* are to be followed on all construction projects. These guidelines are not intended to pre-empt 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.

Work Zone Safety and Mobility

Local Agency Policy

23 CFR Part 630-Subpart J “Work Zone and Safety and Mobility” requires the implementation of a policy by the local agency for systematic consideration and management of work zone impacts on all federal-aid transportation projects. This policy may take the form of processes, procedures and/guidance, and may vary based on the characteristics and expected work zone impacts of individual projects or classes of projects.

Each local agency may develop its own policy, or may choose to pattern their policy after Caltrans’ to provide a smooth and efficient flow of traffic, while retaining safety through the roadway work zone. For Caltrans’ policy refer to the Deputy Directive-60 *Transportation Management Plans*, which is available from the DLAE. The local agency’s policy can be as simple as providing a smooth and efficient flow of traffic, while retaining safety through the roadway work zone.

Local agencies are encouraged to implement this policy for their nonfederal-aid projects as well. More information on “Work Zone Safety and Mobility” is provided on the internet at: http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm. FHWA’s “Local and Rural Safety Program” can be found at: http://safety.fhwa.dot.gov/local_rural/.

Significant Projects

As defined in 23 CFR §630.1010, a “Significant Project” is one that, alone or in combination with other concurrent projects nearby, is anticipated to cause sustained work zone impacts greater than what is considered tolerable by the traveling public, based on the agency’s policy and/or engineering judgment. Work zone impacts as defined in 23 CFR §630.1004, refer to work zone-

induced deviations from the normal range of transportation system safety and mobility. The extent of the work zone impacts may vary based on factors such as, road classifications, area type (urban, suburban, and rural), traffic and travel characteristics, type of work being performed, time of day/night, and complexity of the project. These impacts may extend beyond the physical location of the work zone. They may occur on the roadway on which the work is being performed, as well as other highway corridors, other modes of transportation and/or the regional transportation network.

If a project is expected to be significant, the Transportation Management Plan (TMP) for that project must also contain both Transportation Operations (TO) and Public Information (PI) components. Agencies are encouraged to consider TO and PI strategies for all projects. Identification of upcoming projects expected to be significant should be done as early as possible in the project delivery and development process.

TMP

A TMP is required for all federal-aid construction projects. The TMP needs to include a Temporary Traffic Control (TTC) Plan that addresses traffic safety and control in the work zone. It consists of strategies to manage the work zone impacts of a project. The TMP scope, content and degree of detail may vary based upon the local agency's work zone policy, and an understanding of the expected work zone impacts of the project.

For significant projects, the local agency shall develop a TMP that consists of a TTC plan and addresses both TO and PI components. The TMP may consist only of a TTC Plan for individual projects or classes of projects determined by the local agency to have less significant work zone impacts. If additional information is needed by the local agency, the DLAE may refer the local agency to the *Transportation Management Plan Guidelines* and may obtain additional information from the Caltrans headquarters TMP Coordinator in the Division of Traffic Operations.

TTC Plan

A TTC Plan describes the measures to be used to facilitate road users through a work zone, an incident area, or other event that temporarily disrupts normal road user flow. The TTC Plan has a vital role in providing continuity of reasonable, safe and efficient road user flow and for highway workers' safety.

The TTC Plan shall be consistent with the provisions under Part 6 of *the California Manual on Uniform Traffic Control Device* (MUTCD) available at:

<http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/>, and with the work zone hardware recommendations in Chapter 9 *Traffic Barriers, Traffic Control Devices and Other Safety Features for Work Zone* (2002 Edition) of the *AASHTO Roadside Design Guide*. You can purchase this guidebook at AASHTO Publications, P.O. Box 933538, Atlanta, Georgia 31193, phone no. 1-800-231-3475 or at this web site: <https://bookstore.transportation.org/>.

In developing and implementing the TTC Plan, the pre-existing roadside safety hardware shall be maintained at an equivalent or better level than what existed, prior to project implementation. The scope of TTC Plan is determined by the project characteristics and the traffic safety and control requirements identified by the local agency for that project. The TTC

Plan shall be either referenced to specific TTC elements in the MUTCD, or be designed specifically for the project.

Transportation Operations (TO)

The Transportation Operations (TO) shall include the identification of strategies that will be used to mitigate impacts of the work zone in the operation and management of the transportation system. Typical TO strategies may include, but are not limited to, demand management, corridor/network management, safety management and enforcement, and work zone management. The scope of the TO component should be determined by the project characteristics and the transportation operations and safety strategies identified by the local agency.

Public Information

The Public Information (PI) shall include communication/traveler strategies that seek to inform affected road users, general public, area residences and businesses, and appropriate public entities about the project, the expected work zone impacts, and the changing conditions on the project. The scope of the PI component shall be determined by the project characteristic, public information, and outreach strategies identified by the local agency. Public information will be provided through methods suited for the project and may include, but not be limited to, information on the project characteristics, expected impacts, closure details, and commuter alternatives.

Local agencies should develop and implement the TMP in sustained consultation with stakeholders (e.g., other transportation agencies, railroad agencies/operators, transit providers, freight movers, utility suppliers, police, fire, emergency medical services, schools, business communities, and regional transportation management centers).

The PS&E shall include either a TMP or provisions for contractors to develop a TMP at the most appropriate project phase that will be applicable to the local agency's chosen contracting methodology for the project. A contractor-developed TMP shall be subject to the approval of the local agency and shall not be implemented before it is approved.

The PS&E shall include appropriate pay item provisions for implementation of the TMP, either through method or performance-based specifications:

1. For method-based specifications individual pay items, lump sum payment or a combination thereof may be used.
2. For performance-based specifications, applicable performance criteria and standards may be used (e.g., safety performance criteria such as number of crashes within the work zone; mobility performance criteria such as travel time through the work zone delay, queue length and traffic volume; incident response and clearance criteria; work duration criteria).

The local agency and the contractor shall each designate a trained person at the project level who has the primary responsibility and sufficient authority for implementing the TMP and other safety and mobility aspects of the project

Work Zone Implementation and Improvement Procedures

Work Zone Assessment and Management Procedures

A local agency shall develop and implement systematic procedures to assess work zone impacts in project development and manage safety mobility during project implementation. The scope of these procedures shall be based on the project characteristics.

Work Zone Data

A local agency shall use field observations, available work zone crash data and operational information to manage work zone impacts for specific projects during the implementation. A local agency shall continually pursue improvement of work zone safety and mobility by analyzing work zone crash and operational data from multiple projects to improve the processes and procedures. A local agency shall maintain elements of the data and information resources that are necessary to support these activities.

Training

A local agency shall require that personnel (either staff or contract personnel) involved in the development, design, implementation, operation, inspection or enforcement of work zone-related transportation management and traffic control be trained appropriate to the job descriptions each individual is required to perform. A local agency shall require periodic training updates that reflect changing industry practices and state processes and procedures.

Process Review

Process reviews may be performed to evaluate work zone data at the local agency level and/or review of randomly selected projects throughout the local agency's jurisdictions. Appropriate personnel who represent the project development stages and the different offices within Caltrans and FHWA may participate in this review. Other non-state stakeholders may also be included in this review, as appropriate. The results of the review are intended for the improvements in the work zone processes and procedures, data and information resources, and training programs to enhance efforts in addressing safety and mobility of both current and future projects.

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. *Title 28 Code of Federal Regulations (CFR) Part 35 "Nondiscrimination on the Basis of Disability in State and Local Government Services" or Title 28 CFR 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 Guidance*, “Title II-6.6000” of the Department of Justice’s “*Technical Assistance Manual*,” 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.

Alterations include items such as reconstruction, major rehabilitation, widening, resurfacing (e.g., structural overlays, mills and fills), signal installation and upgrades, and projects of similar scale and effect. Normal maintenance activities are not considered to be alterations. Resurfacing beyond normal maintenance is considered to be an alteration. Normal maintenance activities include actions that are intended to preserve the system, retard future deterioration, and maintain the functional condition of the roadway without increasing the structural capacity. These activities include, but are not limited to, thin surface treatments (nonstructural), joint repair, pavement patching (filling potholes), shoulder repair, signing, striping, minor signal upgrades, and repairs to drainage systems.

12.7 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*. A description of these contract provisions, requirements and their application is provided in Exhibit 12-E *PS&E Checklist Instructions*, Exhibit 12-G *Required Federal Contract Language* and Exhibit 12-H *Sample Bid*.

Acceptable Standard Specifications and Special Provisions

The local agency must use current Caltrans [Standard Specifications and Standard Special Provisions](#) (including revisions and updates) for locally sponsored projects on the SHS.

Note: In this manual “current Caltrans Standard Specifications” is understood to mean the most currently available Caltrans Standard Specifications inclusive of all revisions, amendments and updates.

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

- Current Caltrans [Standard Specifications and applicable 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

For projects off the SHS, Exhibit 12-G *Required Federal-aid Contract Language* has combined required federal contract provisions into a single document to assist local agencies. Exhibit 12-H *Sample Bid* has assembled federal certifications, disclosures and other requirements into a single document.

For SHS projects, current Caltrans *Standard Specifications and Standard Special Provisions* and federal contract "boilerplate" (Form FHWA 1273 and other required federal contract provisions) are available from the Caltrans Office Engineer at: <http://www.dot.ca.gov/hq/esc/oe/>.

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

12.8 FEDERAL CONTRACT REQUIREMENTS

Required Federal Contract Language

Exhibit 12-G *Required Federal-aid Contract Language* is available to assist local agencies in complying with federal regulations on transportation construction projects. It 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.

Disadvantaged Business Enterprise (DBE)

Individual DBE contract goals will be established. Complete evaluation documentation is required and shall be retained for each contract (see DBE references in Chapter 9, Civil Rights and Disadvantaged Business Enterprises of the LAPM). For contracts that contain a specific DBE goal, Caltrans' *Standard Specifications* are required to describe the DBE policy, the DBE 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. Exhibit 12-G *Required Federal-aid Contract Language* includes requirements for DBE subcontractor listing, Federal Lobbying Restrictions, DBE, and other requirements.

All federal-aid projects are subject to the legislative and regulatory DBE requirements. The main objective is to ensure that DBE firms have an opportunity to participate in federally funded projects.

If there is a DBE goal placed on the contract, the contractor must meet the goal or document a good faith effort to meet the contract goal by using DBEs (see Chapter 9 *Civil Rights and Disadvantaged Business Enterprises* of the LAPM). Good faith efforts shall be documented and verified (see Exhibit 15-H *DBE Information-Good Faith Efforts*). If a DBE subcontractor is unable to perform, the contractor must make a good faith effort to replace him or her with another DBE subcontractor if the goal is not otherwise met.

Contracts 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.

In accordance with Section 9.6 *Local Agency Responsibilities under Caltrans' DBE Program Plan* of the LAPM, 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-B *Bidder's List of Subcontractors (DBE and Non-DBE)* 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 49 CFR 26.11
- b) "Bidder's List of Subcontractors (Part 2)" is required for those providing a quote or bid, but not selected, which is needed to compile a bidders list.

Contract Time

Contract time is defined as the maximum time allowed in the contract for completion of all work contained in the contract documents. This time can be established in the specifications by either a specific completion date or a fixed number of working days. Contract time often becomes an issue when the traveling public is inconvenienced without any apparent reason. While there may be several reasons for a project to appear dormant, frequently the cause can be traced to excessive contract time or poor contractor scheduling.

The contract time shall be specified in the bidding documents and shall be monitored by the administering agency. Insufficient contract time can result in higher bid prices, increased time overruns and claims, inefficiencies, and safety problems. On the other hand, excess contract time can result in increased inefficiencies, equating to costs to both the local agency and contractor. In addition, delays and inconvenience to the public may be unnecessarily extended.

Caltrans will periodically perform a process review of local agency procedures for determining contract time to assess whether the resulting contract times are appropriate. There are several different techniques used to determine contract time. The *FHWA Technical Advisory 5080.15, Construction Contract Time Determination Procedures*, describes time determination techniques for NHS projects in detail, and is available in the appendix of the *FHWA Contract Administration Core Curriculum*.

The local agency should strive for the shortest practical duration of traffic interruptions during highway construction. Innovative contracting methods including incentive/disincentive (I/D), lane rental, A+B contracts or other contract provisions for early completion are available to minimize traffic inconvenience and delay. These provisions are available from Caltrans. Innovative contacting should be discussed with the DLAE prior to use. The *FHWA Technical Advisory 5080.10, Incentive/Disincentive for Early Completion*, describes this technique in detail, and is available in the appendix of *FHWA Contract Administration Core Curriculum*.

Changed Condition Clauses

Standardized changed condition clauses are required to be included in all contracts. Caltrans' *Standard Specifications* and the *Standard Special Provisions for Public Works Construction (Green Book)* contain standard changed condition clauses. If a local agency chooses to use a different standard specifications book, the federal regulations shall still apply.

The regulation requires the use of three different clauses:

Differing Site Conditions

This clause provides for the adjustment of the contract terms if the contractor encounters:

- Subsurface or latent physical conditions that differ materially from those indicated in the contract, or
- Unknown physical conditions of an unusual nature that differ materially from those ordinarily encountered and generally recognized as inherent to the work

Suspensions of Work Ordered by the Engineer

This clause provides for the adjustment of the contract terms if the performance of all or a portion of the work is suspended or delayed by the resident engineer, in writing, for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry). The contractor is required to submit a request for adjustment, in writing, to the resident engineer within 7 calendar days of receipt of the notice to resume work. Recovery of profit on costs resulting from suspensions of work is not allowed.

This clause does not preclude the recognition of constructive suspensions or delays resulting from the contracting agency's actions, without written notification. The local agencies may address constructive delays and suspensions, as they choose, in their standard specifications and contract administration procedures.

Suspensions must be for unreasonable delays and do not include brief, customary suspensions for reasons inherent to highway construction (i.e., material sampling and testing, approval of shop drawings, material sources, etc. and other reasonable and customary suspensions necessary for the supervision of construction by the contracting agency). In addition, an adjustment under this clause is not allowed if the work is suspended for other reasons or if an adjustment is provided for, or excluded, under other terms or conditions of the contract.

Material Changes in the Scope of the Work

This clause provides for the adjustment of the contract terms if the resident engineer orders, in writing, an alteration in the work or in the quantities that significantly change the character of work. The term “significant change” shall be constructed to apply only to the following circumstances:

- The altered character of the work differs materially from that of the original contract, or
- A major item of work, as defined in the contract, is increased or decreased by more than 25 percent of the original contract quantity (adjustments shall apply only to that portion in excess of 125 percent of original contract quantity, or in case of a decrease, to the actual quantity performed)

This clause provides for adjustments resulting from formal change orders by the resident engineer, in writing, to the extent that the impacted work is part of the contract. Both party may initiate an adjustment, and both must be in agreement before the work is performed. As with the suspension of work provision, this clause does not preclude the recognition of constructive suspensions or delays.

Liquidated Damages

The term “liquidated damages” means the daily amount set forth in the contract to be deducted from the contract price to cover additional costs incurred by a local agency because of the contractor’s failure to complete the contract work within the number of calendar days or workdays specified.

Federal law requires the provision for liquidated damages on all federal-aid projects on the NHS. For projects off the NHS, this provision is optional. Liquidated damages are based on the estimated cost of field construction engineering. In special cases, liquidated damages greater than the estimated field construction engineering cost may be specified provided that detailed reasons, such as project related costs for delays and public inconvenience, are given to support the greater amount. In all cases, calculations should support the recommended rate.

Liquidated damages are not to be used as disincentives or incentives to encourage timely completion. If project completion time is critical, then Incentive/Disincentive (I/D) provisions should be considered to motivate the contractor to complete the work sooner, and the I/D amount and time should be documented in the project file.

Local agencies should use the following formula to avoid excessive, or unreasonable, liquidated damages:

$$\frac{(\text{L\% from table below}) \times (\text{Engr. Estimate} + \text{RE Office Expense}^*)}{\text{WORKING DAYS}^{**}} = \text{Liq. Dam./calendar day}$$

- * Resident Engineer office expenses for the life of the contract should be added unless the cost is already included in the Engineer’s Estimate.
- ** WORKING DAYS USED TO CALCULATE LIQUIDATED DAMAGES SHOULD NOT INCLUDE WATER POLLUTION ESTABLISHMENT OR PLANT ESTABLISHMENT DAYS.

LIQUIDATED DAMAGES TABLE (L%)

Project Type						
Project Estimate	Resurfacing*/ Rehab	New Highway	Realignment/ Widening	Landscaping	Soundwall	Others
Over \$30 million	10%	10%	13%	15%	15%	15%
\$10 million to \$30 million	10%	12%	15%	15%	15%	15%
\$5 million to \$10 million	10%	15%	15%	15%	15%	15%
\$750k to \$5 million	15%	15%	15%	18%	18%	15%
Less than \$750k	15%	20%	20%	18%	20%	15%
* Resurfacing projects include asphalt concrete (AC) surfacing, seal coats, slurry seals, etc.						

The calculated liquidated damages should be rounded up in \$100 increments to determine the amount to be specified.

If the local agency uses an alternate method to determine liquidated damages for locally funded projects, it may be used on federal-aid projects as long as it avoids excessive charges. The local agency should have a liquidated damage calculation in the project files.

Buy America

On all federal-aid construction projects, current regulations require that steel and iron used be made in the United States if federal dollars are used during any phase of the project (such as design, environmental, right-of-way or construction). The “Buy America” provision applies to all foreign steel and iron materials regardless of the percentage of steel in the manufactured product. All manufacturing processes involved in steel or iron products must occur within the United States. These processes include rolling, extruding, machining, bending, grinding, drilling, coating, welding and smelting. Domestically produced steel billets or iron ingots

shipped overseas for any process and returned to the United States do not conform to this requirement.

Buy America provisions do not apply to:

- Minimal use of all foreign material in which the total delivery cost to the project site is less than \$2500 or 0.1 percent of the contract amount, whichever is greater.
- Raw materials, scrap temporary steel items such as sheet pilings, bridges, steel scaffolding and false work.
- Materials that remain in place at the contractor's convenience such as sheet pilings and forms.
- Pig iron manufactured outside the United States.

A local agency shall not list an ineligible iron or steel product as "nonparticipating" in order to circumvent the Buy America requirements.

A waiver of the Buy America requirements by the FHWA Division Administrator is permitted for specific projects, specific products, specific geographical areas, or combinations if:

- Buy America is inconsistent with the public interest, or
- There is not a sufficient supply of domestic materials of satisfactory quality.

Approval authority for waiver of Buy America requirements has not been delegated from the FHWA to Caltrans and therefore is not delegated to the local agencies. Information on the Buy America waiver process can be found at:

<http://www.fhwa.dot.gov/construction/contracts/waivers.cfm>.

Form FHWA 1273

The May 1, 2012 revision of Form FHWA 1273 (included in Exhibit 12-G *Required Federal-aid Contract Language*) is a package of federally required contract provisions that must be physically included, unmodified, in the executed contract for all federal-aid projects.

Incorporation of Form FHWA 1273 into the Contract, Subcontracts, and Purchase Orders.

The provisions apply to all work performed on the contract including work performed by subcontract. The unmodified Form FHWA 1273 is required to be physically incorporated into each contract, subcontract and subsequent lower-tier subcontracts. The provisions may not be incorporated by reference.

Failure of the local agency to incorporate the Form FHWA 1273 in the executed contract is considered an unrecoverable project deficiency and shall make the construction phase of the project ineligible for federal reimbursement (see Chapter 20, "Deficiencies and Sanctions" of this manual).

The prime contractor is responsible for compliance with the requirements by all subcontractors and lower tier subcontractors. Failure of the prime contractor to comply with this requirement is grounds for local agency termination of the contract with the contractor and debarment of the contractor by the FHWA.

Modifications of Form FHWA 1273 by Special Provision. Sections IV (Davis-Bacon and Related Act Provisions) and Section VI (Subletting or Assigning the Contract) of Form FHWA 1273 may not be applicable to some projects. If the project is exempted from either of these two provisions, it must be specified elsewhere in the contract by special provision that it does not apply.

Use of Local Hiring Preference. The local agency shall not include contract provisions that require preferences to hire locally on any federal-aid contract. The contract provisions included in Form FHWA 1273 also require that the contractor not discriminate against labor from any other State.

Any contract that includes provisions that require a contractor to give any preference in hiring (with the exception of Native Americans living on or near a reservation on eligible projects) shall make the contract ineligible for federal reimbursement (see Chapter 20, "Deficiencies and Sanctions," of this manual).

Cargo Preference Act Requirements

Local agencies must insert a contract clause referencing and requiring compliance with the requirements of the Cargo Preference Act of 1954 and the implementing regulations in 46 CFR 381 into all federally funded construction contracts. Until relevant provisions are added to Form FHWA 1273, the "Use of United States - flag vessels" clause provided in Exhibit 12-G must be included (either directly or by reference) in federally funded construction contracts.

Federal Trainee Program

On federal-aid highway construction contracts and subcontracts over \$10,000, "Federal Trainee" or "On-the-Job Training (OJT)" special provisions 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.

Filling training positions on each project must focus on hiring women and minorities, but not exclude anyone. 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, the number of trainees upgraded to journeyman and the 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 an 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.

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.

For federally funded projects with at least 100 working days, include supplemental funds for the federal trainee program. Trainee funds are required for each of the following work categories:

- Earthwork (except for imported borrow)
- Pile driving
- Portland Cement Concrete (except for precast concrete)
- Masonry
- Bar reinforcing and pre-stressing steel
- Structural steel erection
- Electrical
- Buildings

Use the following table to calculate the number of trainees for each work category:

FEDERAL TRAINEE SCHEDULE			
COST FOR WORK CATEGORY	NUMBER OF TRAINEES	COST FOR WORK CATEGORY	NUMBER OF TRAINEES
< 400,000	0	16,000,000	15
≥ 400,000	1	18,000,000	16
700,000	2	20,000,000	17
1,000,000	3	23,000,000	18
1,500,000	4	26,000,000	19
2,000,000	5	29,000,000	20
2,500,000	6	33,000,000	21
3,000,000	7	37,000,000	22
4,000,000	8	41,000,000	23
5,000,000	9	45,000,000	24
6,500,000	10	50,000,000	25
8,000,000	11	> 50,000,000	*
10,000,000	12		
12,000,000	13		
14,000,000	14		

* 25, plus 1 additional trainee for every \$5,000,000 over \$50,000,000

The number of federal trainees for the Contract is the sum from all work categories. Calculate the contract cost using \$800 per trainee.

Federal Wage Rates

The payment of predetermined minimum wages on federal-aid contracts is derived from the Davis-Bacon Act of 1931 and is prescribed by 23 USC 113. These wage rates must be physically inserted in the special provision of the final contract on all federal-aid highway construction projects exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempted. The federal minimum wage rates are available directly from the Department of Labor Home Page under <http://www.wdol.gov> For local agencies in California to be in conformance with the federal "10-day rule," local agencies are to access the federal wage rates within ten days prior to bid opening to see if updated rates have been posted. If the updated wage rates have been posted, local agencies are required to issue an addendum to insert the updated wage rates in their final contract package.

Federal wage rates are not required to be physically included in the contract advertising package provided they are referenced to an Internet web site address where they can be found. However, it must be emphasized that if an Internet web site address is used in the advertising package, the final contract package signed by the local agency and the contractor must physically contain the federal wage rates.

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.

FHWA approval of railroad agreements is required for nonexempt projects. A copy of the conformed agreement shall be transmitted through the DLAE for FHWA review.

The pertinent portions of this agreement applicable to any protective services required during performance of the work must be included in the project specifications and special provisions for any construction contract. Caltrans uses standard special provisions for this section on Caltrans projects.

Sample Bid

Exhibit 12-H *Sample Bid* is available to assist the local agency and the bidder. In addition to the name, address, etc., it contains the Engineer's Estimate, list of subcontractors (including license numbers), EEO certification, Public Contract Code requirements, Non-collusion Affidavit, Debarment and Suspension Certification, Non-lobbying Certification, Bidders Bond, Payment Bond, Performance Bond, Local Agency DBE information, Federal Wage Rates, and Disclosure of Lobbying Activities.

Certifications/Disclosures

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

Equal Employment Opportunity – Federal-aid Highway Act of 1968 (23 USC 140(a)) and implementing regulations at 23 CFR 230, require that the local agency receiving federal financial assistance assure that employment in connection with federal highway construction projects is provided without regard to race, color, creed, national origin or sex. Refer to LAPM Section 9.4 *Equal Employment Opportunity (EEO) Contractor Compliance*, Form FHWA-1273 in Exhibit 12-G *Required Federal-aid Contract Language* and Exhibit 12-H *Sample Bid* for further guidance.

Debarment, Suspension and Ineligibility Certification – On all federal-aid construction contracts and all related subcontracts of \$25,000 or more, the contractor and lower tier participants must certify they are in compliance with this provision. This includes subcontractors, material suppliers and vendors.

Each participant in the contract must certify “that it is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal agency and they have not been convicted or had civil judgment rendered within the past 3 years for certain types of offenses” (See Part X of Form FHWA-1273 in Exhibit 12-G *Required Federal-aid Contract Language* and Exhibit 12-H *Sample Bid*). It is the administering agency's responsibility to assure that the contractor is not suspended or debarred from federal

contracts. A listing of parties excluded from federal procurement and non-procurement programs is at this Website: www.sam.gov

Lobbying – The language of Standard Form-LLL, "Disclosure Form to Rep Lobbying," in accordance with the form instructions certification must be included in all lower tier sub-agreements which exceed \$100,000. See Exhibit 12-H *Sample Bid* and Part X of Form FHWA-1273 in Exhibit 12-G *Required Federal-aid Contract Language*.

12.9 RESTRICTED CONTRACT PROVISIONS

Indian Preference

Local agencies may not use local hiring practices on federal-aid construction projects with one exception: federal law permits an Indian employment preference provision for federal-aid projects on or near Indian reservations or Indian lands. Roads near an Indian reservation are those within a reasonable commute to and from the reservation. Indian preference shall be applied without regard to tribal affiliation or place of enrollment.

In setting employment goals, consideration should be given to the potential employment requirements of the contractor and core-crew. A contractor shall not layoff or terminate a core-crew employee to meet a preference goal. Any sanctions for failure to meet employment goals should be included as part of the contract.

Many tribes have a Tribal Employment Rights Office (TERO) tax, which applies to contracts performed within the reservation boundaries. FHWA will reimburse any local tax as long as it does not single out federal-aid highway construction contracts. TEROs can bill contractors for services rendered during recruitment and related support services. These fees are not eligible for federal participation. If part of a project is not within the reservation boundaries, the TERO tax shall not apply to that portion. "On" and "Off" reservation portions of the project should be clearly indicated in order to avoid over-payment.

Bonding and Prequalification

Bonding is grouped into three classifications which are:

- **Bid bonds** – Consisting of a bond, certified check or negotiable instrument submitted with the bid as assurance that the bidder will execute the contract within the specified time.
- **Performance bonds** – Executed with the contract to assure the contractor's obligations under the contract.
- **Payment bonds** – Executed in connection with a contract to assure payment, as required by law, to all persons supplying labor and material in the contract.

Prequalification is defined "as a means of predetermining job experience and work capacity and is used to identify individuals and organizations from which the local agency may accept a bid."

The FHWA does not require implementation of procedures or requirements for prequalification, bonding, or licensing on federal-aid projects. However, if the local agency has

such procedures or requirements, they must conform to the FHWA's competitive bidding policy as follows:

- No procedures or requirements for bonding, insurance, prequalification, qualification, or licensing of contractors shall 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 the State wherein the work is to be performed.
- No contractor shall be required to obtain a license before the submission of a bid or before the bid may be considered for award of a contract.

Price Adjustment Clauses

On all federal-aid construction projects, price adjustment clauses may be implemented under the following conditions:

- Material costs are extremely volatile
- Suppliers are unable to provide a price quote for the full term of the contract
- Price quotes are subject to delivery or market conditions
- Shortages are expected

These provisions should be limited to materials whose price volatility may produce a large effect on contract prices. The standard adjustment(s) should be quantifiable and set out in the contract specifications. The standard adjustment(s) should be based on a price or base index, which is not susceptible to manipulation by contractors or suppliers, such as the consumer price index. Published price data may be found in the Bureau of Labor Statistics: *Producer Price Indexes*, *Engineering News Record* (weekly) or various oil-related publications with price data for oil-related products.

Some concepts for developing price adjustment clauses include:

- Price adjustment does not need to be a standard specification unless shown in the bid-proposal.
- There should be upper and lower limits on adjusted compensation.
- Both upward and downward adjustments should be calculated.
- Only a significant change in the index should trigger a price adjustment.
- Basis of payment should clearly indicate coverage of the price adjustment clause.
- Contractor should not have an option to accept or reject price adjustment compensation and the compensation should be automatically incorporated in the progress and partial payment computations.
- Compensation should not be based on actual invoiced receipts.
- Upward price adjustments should not be allowed after the contract time has expired.

When local conditions warrant the use of price adjustment clauses, the following should be considered:

- Use for projects which will exceed nine months duration from bid opening to completion.
- On single season contracts, provide price adjustment clauses for all price volatile materials which affect the unit costs of the major items of work.
- On multiple season contracts, provide price adjustment clauses for all price volatile materials and supplies.

When fuel prices are volatile, a price adjustment clause may be needed. This may occur on projects that are fuel intensive such as excavation, embankment, aggregate hauling and paving.

Project Labor Agreements

On February 6, 2009, President Obama issued Executive Order 13502 (the Order) on the use of a Project Labor Agreement (PLA) for federal-aid construction contracts. The Order revoked two Executive Orders issued under President Bush, which required any executive agency issuing grants, providing financial assistance, or entering into cooperative agreements for construction projects to ensure that no project specifications were used that either required or prohibited bidders from utilizing PLAs. The Federal government now believes that PLAs could be beneficial for large-scale construction projects, generally those with a total cost of \$25 million or more, due to the benefits that PLAs can offer by promoting the efficient and expeditious completion of such projects. Local agencies may request the use of PLAs on projects totaling less than \$25 million if the project would otherwise comply with this guidance. The FHWA has issued this interim guidance for use until final implementing guidance is released by the Office of Management and Budget.

Pursuant to the Executive Order, PLAs may be used on federal-aid construction project contracts by local public agencies provided that the agency presents evidence that the use of such an agreement on the relevant project will:

- i. Advance the government's interest in reducing construction costs and achieving economy and efficiency, producing labor-management stability, and ensuring compliance with laws and regulations governing safety and health, equal employment opportunity, labor and employment standards, and other matters as appropriate; and
- ii. Be consistent with law.

If an agency would like to use a PLA on a federal-aid construction contract, the agency should submit a request for approval to their DLAE that includes the draft PLA and written justification describing why the project advances the interest of the government. The draft PLA must be submitted and approval received prior to construction authorization. The use of a PLA may be approved if the local agency has made a reasonable showing that the use of a PLA on the project will advance the interests of the government. In determining whether the use of a PLA is in the interest of the government, a local agency may consider many factors. Those factors include, but are not limited to:

- The size and complexity of the project;

- The importance of the project and need to adhere to a certain timeline;
- The risk of labor unrest on the project and the circumstances that are present that may lead to a heightened risk of labor disruption, such as the history of labor unrest in the area, the anticipated working conditions of the project relating to the environment or work schedules, and the expiration of one or more collective bargaining agreements that could lead to jurisdictional disputes;
- The impacts of a labor disruption to the users, the operation of the facility, and the region;
- The costs of a delay should a labor disruption occur; and
- The available labor pool relative to the particular skills required to complete the project.

A showing of any one or more of these factors may be adequate to justify the use of a PLA in a particular project. This list is not exclusive – other factors may reasonably permit a local agency to conclude that the use of PLA is appropriate for a given project.

In order to be valid, the draft PLA must:

- Bind all contractors and subcontractors on the construction project through the inclusion of appropriate specifications in all relevant solicitation provisions and contract documents;
- Allow all contractors and subcontractors to compete for contracts and subcontracts without regard to whether they are otherwise parties to collective bargaining agreements;
- Contain guarantees against strikes, lockouts, and similar job disruptions;
- Set forth effective, prompt, and mutually binding procedures for resolving labor disputes arising during the PLA;
- Provide other mechanisms for labor-management cooperation on matters of mutual concern, including productivity, quality of work, safety, and health; and
- Fully conform to all statutes, regulations, and executive orders.

Upon receipt of the request for approval, the draft PLA and the written justification, the request will be reviewed, using the established criteria, by Caltrans and then forwarded to FHWA for their review and approval.

Executive Order 13502 is available online at the following Website:

<http://www.whitehouse.gov/the-press-office/executive-order-use-project-labor-agreements-federal-construction-projects>

12.10 OPTIONAL CONTRACT PROVISIONS

Additive or Deductive Bid Items

Local agencies may use “additive or deductive bid items” on federal-aid projects provided they use one of the following methods, with one exception, specified in California Public Contract

Code, Section 20103.8. That one exception is the method described in subparagraph 20103.8(d) which cannot be used on federal-aid projects because it does not provide for a public opening of bids with full disclosure nor a predetermined method of identifying the lowest bidder.

“20103.8. A local agency may require a bid for a public works **contract** to include prices for items that may be added to, or deducted from, the scope of work in the **contract** for which the bid is being submitted. Whenever additive or deductive items are included in a bid, the bid solicitation shall specify which one of the following methods will be used to determine the lowest bid. In the absence of a specification, only the method provided by **subdivision (a)** will be used:

- (a) The lowest bid shall be the lowest bid price on the base **contract** without consideration of the prices on the additive or deductive items.
- (b) The lowest bid shall be the lowest total of the bid prices on the base **contract** and those additive or deductive items that were specifically identified in the bid solicitation as being used for the purpose of determining the lowest bid price.
- (c) The lowest bid shall be the lowest total of the bid prices on the base **contract** and those additive or deductive items that when taken in order from a specifically identified list of those items in the solicitation, and added to, or subtracted from, the base **contract**, are less than, or equal to, a funding amount publicly disclosed by the local agency before the first bid is opened.
- (d) Deleted as it is not to be used. A responsible bidder who submitted the lowest bid before the first bid is opened as determined by this section shall be awarded the **contract**, if it is awarded. This section does not preclude the local agency from adding to or deducting from the **contract** any of the additive or deductive items after the lowest responsible bidder has been determined.
- (e) Nothing in this section shall preclude the prequalification of subcontractors.”

Alternate Bids

Alternate bidding is a method used to minimize the overall cost of any federal-aid projects through increased competition. By considering alternate design schemes and construction methods, it is possible to attract the greatest number of bidders and realize the lowest possible bid prices.

Alternate bidding procedures should be used when more than one alternate is judged equal over the design period and there is a reasonable possibility that the least costly design approach will depend on the competitive circumstances. The potential for using alternates will normally be developed through design studies and value engineering analysis during project development. Moreover, there may be standard plan alternates developed for repetitive design items (i.e., drainage items, bridge structures, sound walls and pavement details, etc.).

The bidding documents and contract plans should clearly indicate the design criteria and the type of alternate designs or contractor options that will be acceptable. The contractor should be permitted to bid any designated alternate that is consistent with its expertise and equipment.

Incentive/Disincentive (I/D) Provisions

FHWA's long-standing policy prohibiting bonus payments on federal-aid projects, as formerly stated in 23 CFR 635.118, was rescinded on June 13, 1984. The decision was based on the findings of National Experimental and Evaluation Program (NEEP) 24. The NEEP-24 demonstrated that the use of early completion incentive payments could be used beneficially and without abuses.

A discussion of factors to consider when selecting and developing I/D projects is available in FHWA's *Contract Administration Core Curriculum* (2006) at the following website:

www.fhwa.dot.gov/infrastructure/progadmin/contracts/coretoc.htm.

Conceptual guidelines have also been developed to be used for project selection criteria and can be found in the Caltrans memorandum "Delegation of Authority for Use of A+B Bidding and Incentive/Disincentive (I/D) Provisions" at the following website:

www.dot.ca.gov/hq/oppd/pdpmb/pdpmbidx.htm.

A clear distinction should be made between the intent of I/D provisions and the purpose of liquidated damages. Although they have similar mechanisms, the function of each is different. The primary function of liquidated damages is to recover costs associated with the contractor's failure to complete the project on time. On the other hand, an I/D provision is intended to motivate the contractor to complete the work on or ahead of schedule without jeopardizing quality of work. An I/D provision for early completion is defined as a contract provision, which compensates the contractor for each day that identified critical work is completed ahead of schedule and assesses a deduction for each day that completion of the critical work is delayed. The use of I/D provisions is primarily intended for critical projects where it is essential that traffic inconvenience and delays be held to a minimum. It must be emphasized that I/D provisions should not be used routinely.

Quality – Price Adjustment Clauses

Price adjustment clauses and schedules are an important and effective component of quality assurance specifications. "Quality Assurance" specifications generally include statistically based acceptance plans, require contractor process control testing, and have provisions for pay adjustments based on the degree of compliance with specified requirements. Incentives and disincentives should rationally relate to the gain or loss in service life or performance of the product. Quality assurance specifications and programs may lead to better contractor control of the quality of the product, however, they do not diminish the need for effective construction inspection.

The FHWA has traditionally endorsed the use of incentive provisions up to five percent of the unit bid price for improved quality provided they are based on readily measured physical properties that reflect improved performance. Incentives greater than five percent on NHS projects are considered on a case-by-case basis following an analysis of performance data. For non-NHS projects, consideration for incentives greater than 5 percent is delegated to the local agency.

A detailed discussion of the criteria (such as: typical critical physical properties, acceptance plans and pay schedules) to consider when developing price adjustment provisions are provided in FHWA's *Contract Administration Core Curriculum*.

Innovative Contracting Practices

Neither the FHWA nor Caltrans have any intention of mandating the use of any of the innovative contracting practices cited below on local agencies. However, the FHWA is trying to develop a process nationwide through which states, local agencies and the industry can bring forth innovative contracting practices that they believe could result in worthwhile improvements to our traditional ways of doing business. It is FHWA's intent to try all promising concepts proposed that fall within the flexibility of the federal-aid program requirements

A discussion on the "Cost-Plus-Time Bidding" (A+B method), "Lane Rental" and "Design/Build" innovative contracting techniques is provided in the FHWA's *Contract Administration Core Curriculum*. Conceptual guidelines have also been developed to be used for project selection criteria and can be found in the Caltrans memorandum "Delegation of Authority for Use of A+B Bidding and Incentive/Disincentive (I/D) Provisions" at the following website: www.dot.ca.gov/hq/oppd/pdpmb/pdpmbidx.htm

12.11 MATERIALS AND EQUIPMENT

Publicly Owned Equipment

On all federal-aid construction projects, publicly owned equipment should not normally compete with privately owned equipment on a project going out for bid. The local agency may approve the use of publicly owned equipment when justified by a Cost-Effectiveness Determination (see Exhibit 12-F *Request for Approval of Cost-Effectiveness/Public Interest Finding*).

Federal participation is permitted provided:

- The PS&E submittal provides for the proposed use;
- The specifications indicate equipment availability, rates and delivery point;
- The specifications include the provision that the contractor shall have the option of providing or renting all or part of the equipment.

Public agencies shall not benefit from the rental of its own equipment and rental rates must be competitive. The rates for work performed by force account work should be based on an agreed unit price or actual cost. The equipment need not be included in the estimate; however, the estimate should include a schedule of rates charged for use of publicly owned equipment.

Contractor Purchases for Local Ownership

On all federal-aid construction projects, equipment purchased by the local agency or by a contractor with ownership transferred to the local agency for construction engineering (CE) is not totally eligible for federal participation. Only that portion of the amortized equipment cost

(over its useful life) attributable to the time the equipment is used on a federal-aid project is accounted for as CE and eligible.

Equipment is defined as tangible, nonexpendable, personal property having a useful life of more than one year and an acquisition cost of \$5,000 or more per unit.

Convict-Produced Materials

Materials produced by convict labor after July 1, 1991 may be used on any federal-aid projects if:

- Such materials have been produced by convicts on parole, supervised release, or probation from prison;
- Such material has been produced in a qualified prison facility and the amount produced during any 12-month period does not exceed the amount produced during the 12-month period ending July 1, 1987.

These materials are not given preferential treatment and are subject to the same requirements as materials from other sources. The contractor furnishes all materials through normal contracting procedures and selects either public or private sources of materials. Prison Industries may not bid directly on projects but may serve as a material supplier to contractors.

Local Preferences

On all federal-aid construction projects, materials produced within the state or local area shall not be favored over comparable materials produced outside of the state or local area. Also, in-state material sources cannot be given preference over foreign materials or actions taken against materials of foreign origin unless permitted by federal law (for example "Buy America" materials). State or local preference provisions are not allowed on federal-aid project contracts.

Warranty Clauses

For projects off the NHS, local agencies may include warranty provisions in construction contracts in accordance with procedures they have developed for their nonfederal projects.

For projects on the NHS, local agencies may include warranty provisions in construction contracts in accordance with the following conditions:

- Warranty provisions shall be for a specific construction product or feature. Items of maintenance not eligible for federal participation shall not be covered.
- 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 will result in the items being considered non-participating and requiring pay back of the federal funds involved.

Proprietary Items

The use of proprietary products and processes on federal-aid projects is restricted. When less than three proprietary (brand name) products or processes are called out in the project plans or special provisions, a Public Interest Finding (including Certification as applicable) must be completed and emailed to Proprietary.PIF@dot.ca.gov.

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 federal-aid project unless:

- The item is purchased or obtained through competitive bidding with equally suitable unpatented items using a minimum of three bids.
- The local agency certifies in a Public Interest Finding (PIF) 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 applicable to local agency projects both on and off the NHS.

The primary purpose of this policy is to estimate competition in the selection of materials and development of new materials and products, and to ensure FHWA participation in the costs of such proprietary items as specified in the project documents and special provisions. As such, specifications should be written to allow bidders the maximum flexibility to select materials and products to meet construction specifications and result in the lowest bid prices.

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 PIF, including certification as applicable shall be fully documented and retained in the project files.

Trade names (3M, Corten, etc.) are generally the key to identifying patented or proprietary materials. Generally, products should not be identified by their brand or trade name unless a reasonable number of these materials or products are listed. The FHWA considers three to be a reasonable number. 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.

Proprietary items must be clearly identified on the PS&E Checklist (Exhibit 12-D). Failure to do so may render the purchasing, furnishing, and installation of such items as non-participating.

Public Interest Finding

For any instance when less than three proprietary (brand name) products or processes are called out in the project plans or special provisions, the local agency must prepare a PIF to adequately document and justify the specification of such products.

PIFs are specific to each federal-aid project in order to properly assess changes in market conditions and re-examine the need to specify a proprietary product. This will encourage re-evaluation of the continued need for a specific product in light of changes in the agency's performance objectives, product availability, technological improvements, product lifecycle, and market conditions.

The terms "or equal" or the term "or approved equal," do not relieve the agency from preparing a PIF for each such proprietary product as specified in the project. The PIF must define objective and testable criteria for determining what will be considered "equal." These criteria must be based upon documented needs. Vendor-created descriptions or specifications are not acceptable and are likely to be protested by competitors.

The local agency must email the approved PIF to Proprietary.PIF@dot.ca.gov, and retain the originals in the project files. If the project is on the State Highway System, a copy of the approved PIF must also be provided to the Caltrans Project Manager.

Certification

The Certification portion of the PIF (Exhibit 12-F) is required for each product specified in the project if no such equally suitable alternate exists or if such a patented or proprietary item is essential for synchronization with existing highway facilities.

The local agency must email the completed Certification along with the approved PIF to Proprietary.PIF@dot.ca.gov, and retain the originals in the project files. If the project is on the State Highway System, a copy of the Certification along with the approved PIF must also be provided to the Caltrans Project Manager.

Functions and specifications of electronic devices change frequently, and new or revised equipment appears very often. As a result, certifications for electronic components must be based on testing the compatibility of new products with existing infrastructure.

Synchronization is defined by FHWA as providing a product that matches specific current or desired characteristics of a project. Synchronization may be based on:

- Function (the proprietary product is necessary for the satisfactory operation of the existing facility),
- Aesthetics (the proprietary product is necessary to match the visual appearance of existing facilities), or
- Logistics (the proprietary product is interchangeable with products in an agency's maintenance inventory), or any combination thereof.

Additional considerations for synchronization could be:

- Lifecycle (the relative age of existing systems that will be expanded and the remaining projected life of the proposed proprietary element in relation to the remaining life of the existing elements).
- Size/extent of products and systems to be synchronized to/with, and the relative cost of the proprietary elements compared with replacing the elements requiring synchronization. As guidance, if the project expands the existing inventory by less than 30% in the number of units, this would be deemed approvable in terms of the size and extent. An increase of greater than 100% (a doubling of the existing inventory) would typically not be deemed approvable. An increase between 30% and 100% of the existing inventory may be approvable only if supported by a cost analysis comparing the “expansion of the existing inventory” vs. the “replace inventory” scenarios.

Other Proprietary Item Considerations

- The existence of a proprietary product/process on an FHWA or Caltrans “qualified” or “approved” product list does not grant sole source approval.
- This policy is also applicable to non-physical products (software, mobile apps, etc.).
- The PIF Certification must specify a “sunset date” whereby the continued use of the proprietary product is based on appropriate testing and evaluation of the current and ongoing marketplace of available products.
- The use of the terms “or equal” and “or approved equal” clause in the project plans and specifications is discouraged, as it can often result in misunderstandings and subsequent contractor claims in construction, and does not meet FHWA requirements. If product substitution requests are considered, the specifications must be very clear regarding the specific functional, operational, and maintenance characteristics of the product.
- In the absence of specifying a particular product or brand name, a product should not be so narrowly specified that the effective result is to essentially limit the use to that particular product or brand name.
- This FHWA policy is applicable to local agency projects both on and off the NHS.
- Regulations on the use of patented or proprietary products on federal-aid projects are included in the Code of Federal Regulations ([23 CFR 635.411 Material or Product Selection](#)) and FHWA policy found at: www.fhwa.dot.gov/programadmin/contracts/011106qa.cfm#_Hlk307506586 and <https://www.fhwa.dot.gov/construction/cqit/propriet.cfm> .

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 rate schedules developed 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.

12.12 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

- Bid items ineligible for the federal program funding the project

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. 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, approved by the local agency and submitted to the DLAE for review that justifies 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, 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 of this manual).

For additional information on the use of supplemental work as an item of work, refer to Section 7 “Preparing Cost Estimate” in the Caltrans *Ready-to-List Guide*, at:
http://www.dot.ca.gov/hq/sc/oe/specifications/rtl_guide/sec+07.pdf.

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 FHWA 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.

Historically, federal participation in construction engineering (CE) was limited to fifteen percent of the federal participating construction costs. Current federal statutes no longer contain such a limitation. As a general guide, it is highly recommended that local agencies continue to use 15% as a guide for estimating CE costs and maintain justification for higher CE costs, except for projects funded from federal programs under direct Caltrans management (*i.e., those programs for which Caltrans selects and programs the projects*). For projects selected and programmed directly by Caltrans, CE costs in excess of fifteen percent will continue to need justification by local agencies and approval by the DLAEs.

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 Section 12.8 *Federal Contract Requirements* 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 by a Cost-Effectiveness Determination as described in Section 12.4 of this chapter (also see Exhibit 12-F *Request for Approval of Cost-Effectiveness/Public Interest Finding*).

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

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 numbers of copies, as appropriate, are to be submitted to the Division of Structures. These figures represent the minimum number of copies required:

Document Submitted	Number Required
Plans (reduced or full-size prints)	3
Special provisions (for bridge portion)	3
Hydraulic report	2
Foundation report	2

12.13 PS&E CERTIFICATION

Exhibit 12-C *PS&E Certification* must be signed by the engineer responsible for the project (who must be either a local agency employee or a consultant retained by the local agency and a professional civil engineer registered to practice in California).

In the certification, the local agency certifies that the PS&E has been prepared in accordance with this chapter and that any necessary design decisions 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 Exhibit 12-D *PS&E Checklist* 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. However, if any of the required provisions are left out of a construction contract, the project will not be eligible for federal reimbursement.

Exhibit 12-E *PS&E Checklist Instructions* 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 required federal contract provisions and certifications are provided in Exhibit 12-G *Required Federal Contract Language* and Exhibit 12-H *Sample Bid*. 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, 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 number 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 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. A set of plans will also be required. As soon as the project is advertised, the local agency shall furnish the DLAE with 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.

12.14 PROJECTS WITHOUT TRADITIONAL PS&E

Some projects on or off the NHS, such as Congestion Mitigation and Air Quality and Transportation Alternatives Program projects, may consist of studies and other nonconstruction-type projects. Examples include Traffic Demand Management studies relating to regional air quality, ride sharing programs, commuter incentive programs 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 a request for authorization to proceed in the same manner as Non-Infrastructure Projects discussed in Chapter 3 of the LAPM.

If the project is part of a regional study conducted by a Metropolitan Planning Organization, then the local federal-aid portion of the work plan must be segregated to show the project costs associated with each local agency.

12.16 References

The Civil Rights Act of 1964	23 CFR 230.111
STAA Section 165	23 CFR 635.410
23 USC 106(b)(2)	23 CFR 627.5
23 USC 112	23 CFR 630.1010(a)(2)
23 USC 113	23 CFR 633
23 USC 114	23 CFR 635.410
23 USC 140	23 CFR 771.113
23 USC 140(b)	25 CFR 170
23 USC 313	28 CFR 35
23 USC 315	29 CFR 1,3,5
23 USC 324	29 CFR 1630
25 USC 472a	29 CFR 1926
40 USC 276 (a) Davis-Bacon & (c) Copeland Act	41 CFR 60 48 CFR 31
40 USC 333	49 CFR 1.48
23 CFR 200	49 CFR 20
23 CFR 230	49 CFR 21
23 CFR 230 A&D	49 CFR 26

Section 6730-6749 California 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)

Authority for Use of A+B Bidding and Incentive/Disincentive (I/D) Provisions *Caltrans Memorandum* to "All District Directors" dated June 12, 2000; Subject: Delegation of

Joint Stewardship and Oversight Agreement between FHWA and Caltrans,
<http://www.dot.ca.gov/hq/oppd/stewardship/>

MAP-21 Website: <http://www.fhwa.dot.gov/map21/>