

# APPENDIX BB – Design Standard Decision Documentation

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## ARTICLE 1 Introduction

### Design Standard Decision Document

This appendix provides guidance for documenting engineering decisions made regarding design features that deviate from the design standards in the [Highway Design Manual](#). This guidance should be used with the policies and essential procedures discussed in [Chapter 21](#) – Design Standard Decisions.

The outline presented in this appendix is used to collect and organize information, including the standard practice for the information that should be contained in a design standard decision document.

The detail presented for each topic should correlate to the complexity of the project and the relevance of that topical information to the engineering decision. The topical information may be abbreviated or modified with the permission of the appropriate approval authority; discuss with the appropriate Headquarters Project Delivery Coordinator and/or the district design liaison.

The design standard decision document template is set up to process combined approvals for deviation from multiple design standards where the approval authority belongs to the Headquarters Project Delivery Coordinator for some of the nonstandard design features and the District Director for others. The district may prepare separate design standard decision documents and the district can decide the format and content of the document used for the design standards with delegated approval authority.

## ARTICLE 2 Outline

### General

This outline identifies the key elements to document in the design standard decision document.

## **Use of the Template**

The individual preparing the design standard decision document should begin with the template provided. All headings in the outline must be included in the design standard decision document. If a topic is not applicable to a specific project, fill in as “Not applicable” and explain the reason.

## **Signature Sheet**

Modify the signature blocks as needed to represent the specific district delegation approval authority.

### Prepared by:

Typically the project engineer, a Transportation Engineer (Civil), Range D. The design standard decision document must be prepared by a registered civil engineer in responsible charge of the work (as defined by California Business and Professions Code, Section 6703), or other licensed professional practicing within the scope of their license. Include the district and/or region for Caltrans engineers and the company name for consultant engineers.

### Submitted by:

Typically the design senior, a Senior Transportation Engineer, Caltrans. The first-line supervisor of the project engineer. For projects-funded-by-others this could be the district oversight engineer or the district permit engineer for encroachment permit projects.

### Concurrence by and approved by:

For design standards where the approval authority is the Headquarters Project Delivery Coordinator:

- Concurrence is given by the district office chief, design manager, or deputy District Director for Design. Typically the concurrence is from a Supervising Transportation Engineer, Caltrans (the first-line supervisor of the design senior and second-line supervisor of the project engineer) or could be from a Principal Transportation Engineer, Caltrans.
- Approval is given by the Headquarters Project Delivery Coordinator, a Supervising Transportation Engineer, Caltrans.

For design standards where the approval authority has been delegated to the District Director:

- Use of a concurrence signature block is by district preference.
- Approval is given by the District Director’s approval authority; typically from an office chief, design manager, or deputy District Director for Design that has been delegated the approval authority.

## **Documentation Topics**

### **1. PROPOSED PROJECT**

#### **A. Project Description:**

Describe the proposed project by the overall type of proposed improvements (safety improvement; operational improvement; roadway widening, rehabilitation, or reconstruction; etcetera) along with the major elements of work to be performed.

Provide the project legal description of the geographic project limits. See the [Plans Preparation Manual](#), Section 2-2.2 for guidance in developing the project legal description. The project legal description is the same as the title sheet project description, such as: “In Los Angeles County...”

Attach a project location map and/or project vicinity map (in addition to the title sheet plan, if available) that includes major geographic features along with the post mile range of the proposed project.

#### **B. Existing Highway:**

Describe the general highway characteristics, including the classification of the facility (such as: freeway, expressway, or conventional highway), number of lanes, posted speeds, etcetera. Include the design designation ([Highway Design Manual](#) Topic 103 “Design Designation”), design vehicles ([Highway Design Manual](#) Topic 404 “Design Vehicles”), and if the route is a designated bike route, the bikeway classification of the facility, when appropriate. State if the project is on the Interstate system and if it is part of the Federal Highway Administration (FHWA) Rural and Single Interstate Routing System. See [Chapter 21](#) – Design Standard Decisions, Article 3 “Policies,” sub-article “Vertical Clearance on Department of Defense Rural and Single Interstate Route System.”

Describe the highway and structure geometric features near the proposed nonstandard features, including existing nonstandard features. If the features vary on either side adjacent to the proposed nonstandard feature location, describe the geometric features of the adjacent highway segments. The focus

should be on those features specific to the proposed nonstandard design, such as: widths of lanes, shoulders, medians, roadbeds, and structures; horizontal and vertical alignments, and clearances; design speeds; sight distances; grades; cross slopes; sidewalks; superelevations; etcetera.

When relevant, note the structure clear width and lane and shoulder widths across the structure; compare the structure widths with the roadway approach widths.

When relevant, note the bridge-rail type and determine if it meets current standards for structural adequacy. Request this information from the Headquarters Division of Engineering Services-Structure Design district technical liaison engineer representative assigned to the appropriate district.

### **C. Safety Improvements:**

Describe any proposed improvements that would qualify as safety enhancements, such as: median barrier, guardrail upgrade, flattening slopes, adding sidewalks, eliminating roadside obstructions, etcetera.

Briefly discuss if any existing nonstandard features will be brought to standard with the proposed project.

### **D. Total Project Cost:**

Include a concise summary of the estimated project cost segregated by the major elements (Roadway, Structure, and Right-of-Way).

## **2. FEATURES REQUIRING DESIGN DECISION DOCUMENTATION**

### **A. Design Features with Headquarters Approval Authority**

#### **1) Design Feature Number 1**

##### Nonstandard Feature:

Describe the proposed nonstandard feature and identify whether it would be created, maintained, improved, or reduced. Reference the attachment that shows the location, limits, and nature of the proposed nonstandard feature and clearly label the nonstandard feature on the attachment.

##### Design Standard for Which Documentation is Required:

State the specific design standard and reference the topic and/or index in the [\*Highway Design Manual\*](#). If more than one standard applies to a feature, such as shoulder width and horizontal clearance, state all that apply.

Reason for not Using Design Standard:

Provide complete, compelling, and objective justification with backup information and calculations as the situation warrants. Clarify how the proposed nonstandard feature will meet the desired performance and why the design standard will not be used. Reasons for which deviation from design standards have been granted include a combination of excessive cost, significant right-of-way acquisition, and environmental and/or social economic impacts. Supportive factors have included low collision frequency, local position, maintaining consistency with adjacent highway segments, and application of alternative design guidance provided in the [Highway Design Manual](#) when it is impractical to meet the specific standard, see Index 82.3 “FHWA and AASHTO Standards and Policies” for further information. Explain any proposal to mitigate the nonstandard feature. See FHWA’s publication [Mitigation Strategies for Design Exceptions](#) for mitigation options.

State the specific resources used to justify the nonstandard condition, such as:

- [Highway Design Manual](#)
- [Highway Safety Manual](#)
- [Roadside Design Guide](#)
- [California Manual on Uniform Traffic Control Devices](#) (California MUTCD)

Added Cost to Make Standard:

Summarize, by major elements, the added cost above the proposed project cost required to meet the design standard. The estimate must be realistic, but need not be highly developed.

When the design standard decision document includes multiple nonstandard features, provide separate cost summaries for the “standardization” of individual design features. If upgrading a design feature to standard results in the standardization of additional features, note the additional features that upgrade to standard. An example of this would be upgrading shoulders to standard resulting in providing standard horizontal clearance.

**2) Design Feature Number 2**

For projects with more than one nonstandard feature, add additional sub-headings 2, 3, 4 etcetera, under heading A.

**B. Design Features with District Delegated Approval Authority**

Repeat the information from heading A instructions for design features with district delegated approval authority under heading B.

### **3. TRAFFIC DATA**

Include traffic data for the area near the design feature. Include both annual average daily traffic (AADT) and design (peak period) hourly volumes. Use current year traffic volumes for pavement rehabilitation, roadway rehabilitation and safety projects. For other projects, use the design year traffic forecasts (usually 20 years after construction is complete) and current year traffic volumes. For an interim project that will be superseded by a programmed future project, provide traffic volumes for both the construction year and the design year of the programmed future project.

### **4. COLLISION ANALYSIS**

Traffic safety is of primary importance to both Caltrans and FHWA when considering approval or rejection of a design standard decision document. To strengthen the justification, the documentation should include analysis of collision data. The analysis should identify prevalent collision types and causes in the area of the design feature, when the applicable design standard can be correlated to existing collision data. The discussion should include an evaluation of the effect of the proposed nonstandard feature on collision types and frequencies. This analysis must include a review of the Highway Safety Improvement Program (HSIP) reports and be completed either by the appropriate district traffic unit or in close coordination with that unit.

When the design feature is located on a new alignment, the collision analysis may be abbreviated when there is sufficient justification on why the existing collision data is not relevant.

Provide a summary table of TASAS Table B collision data for latest 3-year period showing actual versus average collision rates; merely stating actual versus average numbers is insufficient. To enhance the understanding of prevalent collision types and how they relate to existing and proposed highway design features, the TASAS data should be supplemented by a review of collision patterns covering the project area. This review should focus on how the nonstandard feature will not contribute to any increase in collisions.

From the analysis, explain how the proposed project will help alleviate identified safety problems. The collision analysis must include the Traffic Accident Surveillance and Analysis System (TASAS) Table B statistical data regarding both the number and severity of collisions, actual versus statewide average collision rates for a similar facility, and the collision patterns and causes. For nonstandard features related to spot locations (such as a nonstandard horizontal curve) on existing highways, analyze only the collision data within the vicinity of the proposed nonstandard feature. The analysis must include a review of the Highway Safety Improvement Program (HSIP)

reports to determine if any high collision frequency spot locations are within the proposed project limits.

In determining collision causes, terms like “excessive speed,” “inattention,” “failure to yield right-of-way,” “under the influence,” etcetera, are valid for the California Highway Patrol (CHP), but are only useful to the highway engineer as they relate to the underlying highway characteristics. The engineer must instead look for other reasons, such as: tight radius curves with inadequate superelevation, high-volume turning movements without separate turn lanes, a concentration of rear-end or side-swipe collisions in a particular lane, etcetera. The collision concentrations detected in this manner are too small for a TASAS Table C printout, but collectively they are the key to understanding the vehicle-highway interactions that are the basic causes of collisions.

## **5. FUTURE CONSTRUCTION**

Describe any planned future projects near the proposed nonstandard feature. If a commitment is made to address the nonstandard feature in a future project, it must be concurred by the Headquarters Project Delivery Coordinator and approved by the Deputy District Director for the design function. Describe the follow-up project’s funding source (STIP, SHOPP) and schedule as listed in the appropriate programming document. Identify the ultimate concept from the transportation concept report.

## **6. REVIEWS AND CONCURRENCE**

Note relevant project reviews by the district design liaison, district traffic engineer or designee, and/or FHWA transportation engineer (if appropriate), etcetera. Also indicate any reviews or approval of items listed in [Highway Design Manual](#) Table 82.1C “Decision Requiring Other Approvals.” Provide the date of meeting or discussion, and state the individual’s concurrence with the proposed nonstandard feature.

## **7. ENVIRONMENTAL DETERMINATION/DOCUMENT**

Approval of nonstandard features for projects on the National Highway System, including the Interstate System, is a federal administration action that requires compliance with the National Environmental Policy Act (NEPA). Caltrans has developed a “blanket” categorical exclusion for NEPA compliance when approval of nonstandard features is the only relevant federal action on the project. See the [Categorical Exclusion Memorandum](#) from the Division of Environmental Analysis for more information.

Federal actions include FHWA approval of nonstandard features and changes in access control for Interstate System projects, using Federal-aid funding, and Caltrans approval of nonstandard features for National Highway System

projects and Interstate projects where the approval has been delegated from FHWA.

Consult with the district environmental unit to determine the appropriate federal environmental determination/document for the project and if the “blanket” categorical exclusion is applicable. The circumstances for determining applicability of the “blanket” categorical exclusion include:

- The project is on the National Highway System.
- There is no project-specific federal environmental determination/document.

Construct an appropriate project attribute statement by choosing and modifying:

The project location (is part/is not part) of the National Highway System.

And choose one:

A federal environmental (determination/document) (will be/has been) approved specifically for this project to comply with the *National Environmental Policy Act of 1969* (NEPA).

The project conforms to the conditions for applying the “blanket” categorical exclusion for approval of design exceptions, listed in the memorandum signed by Jay Norvell on March 3, 2008.

Compliance with the *National Environmental Policy Act of 1969* (NEPA) is not applicable to this project.

## **8. ATTACHMENTS**

All attachments should be black and white (no color copies or color photos) and in standard paper sizes of 8.5” x 11”, 8.5” x 14”, or 11” x 17” per Caltrans Division of Legal request. Clearly label each attachment page and the nonstandard feature number.

Provide the project location map and/or project vicinity map referenced in heading 1A “Project Description.” When the design standard decision document covers multiple nonstandard features at various locations, a project strip map may be provided to indicate the general location of each nonstandard feature.

Provide cross sections and/or special details to clearly illustrate the proposed condition for each location that does not meet the standard for horizontal or vertical clearance and lane, shoulder, or bridge clear width. For example, nonstandard vertical and horizontal alignment features must include a layout with existing and proposed horizontal curve data, existing and proposed



profile with vertical alignment data, and existing and proposed superelevation diagram.

Letters, resolutions, traffic study summaries, etcetera should only be attached if requested by the appropriate approval authority, otherwise these documents should be filed in the project binder. While TASAS data and collision rates may be summarized within the “Collision Analysis” heading, TASAS reports, such as Table B and Table C, should never be attached.

Do not attach superfluous materials such as complete project plan sets or engineering reports unless specifically requested by the appropriate approval authority.

## **ARTICLE 3      Template**

This article is a template for the design standard decision document. When using the template, delete any italicized text within the body of the document. The italicized text provides instructions for template users and provides no value to the final document. The template is available at:

[Appendix BB Template](#)