California High-Speed Train Project

TECHNICAL MEMORANDUM

Design Variance Guidelines
TM 1.1.18

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Anthony Daniels, Program Director Date

Revision	Date	Description
0	02 June 08	Initial Release

Prepared by

for the California High-Speed Rail Authority

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ABSTRACT

This technical memorandum establishes a procedure for identifying, preparing, requesting, and documenting a design variance from a Minimum design standard, standard drawing, standard specification, adopted standard or design guideline established for the California High Speed Train Project (CHSTP). It is intended to provide guidance for preparing a clear and concise record of the relevant design standard, required variance and rationale, assessment, review and approval of the variance. This process will be used through completion of the design and delivery of the project.

The design variance request process is comprised of the following steps:

- Identification and preliminary investigation of potential variances
- Assessment of Design Variance
- Preparation of Variance Request
- Approval of Variance Request
- Document Control

This technical memorandum also defines the roles and responsibilities associated with the requirements in requesting, approving and documenting the CHST project's design variances. This document includes forms for use in preparing, submitting, and documenting design variance requests.

Requests for a variance in CHSTP design criteria should be considered in light of the Authority's goal of providing safe and reliable high-speed intercity train operations. Variances to CHSTP criteria must be considered in keeping with this primary goal and through the use of sound engineering practices and judgment.

6.0 DESIGN CRITERIA MANUAL

Design Variances

Request for variance in CHSTP design criteria should be considered in light of the Authority's goal of providing safe and reliable high-speed intercity train operations. Variances to CHSTP criteria must be considered in keeping with this primary goal and through the use of sound engineering practices and judgement.

6.1 DESIGN VARIANCE REQUEST PROCESS

The design variance request process is comprised of the following steps:

1. Identification and preliminary investigation of potential variances
2. Assessment of Design Variance
3. Preparation of Variance Request
4. Approval of Variance Request
5. Document Control

6.2 IDENTIFICATION OF POTENTIAL VARIANCES

The DPM shall identify non-standard design elements that require variances early in the design process and submit these findings to the RM. If the RM, after discussion with the DPM, agrees that a potential variance warrants consideration, the DPM shall conduct an investigation of the implications associated with the design exception.

The preliminary investigation should include identification of CHSTP systems, performance, safety, operations and maintenance factors, and cost considerations affected by the introduction of a design element that does not achieve the Minimum standard. The specific location(s) where a potential design variance would be introduced must be clearly identified as part of the initial investigation.

Early identification and discussion with the RM regarding a potential design variance is recommended.

6.3 ASSESSMENT OF DESIGN VARIANCE

Assessment of the design variance shall be conducted by the DPM. The DPM shall prepare appropriate qualitative and quantitative analysis of the impact of the variance and initiate coordination with affected parties. Included in this effort is an assessment of applicable standards for affected municipalities, agencies, rail, and roadway owners and operators associated with the design variance. The assessment may include identification of proposed design mitigations that may be implemented in conjunction with the introduction of an element that does not achieve a Minimum standard.

6.4 DESIGN VARIANCE REQUEST

6.4.1 Variance Request Form

The Design Variance Request Form shall be use for all variance requests. The Design Variance Request Form is a stand-alone document and must contain exhibits and drawings that show proposed non-standard features. A completed Design Variance Cover Sheet shall accompany the final variance request. Templates for the Design Variance Request Form and Design Variance Cover Sheet are included in Sections 6.8 and 6.9, respectively.

Each Design Variance Requests transmitted for approval shall include:

1. Date of the Variance Request
2. Number of the Variance Request (generated in a sequential manner)

3. Title of the Variance Request
4. Name of the DPM requesting, name of contract, contract number, the specific variance requested and why, a clear reference or link to the design criteria
5. Identification of variance with regard to the Minimum standard and its relevance to the Desirable standard. No variances may be requested against the Exceptional Standards.
6. Description of the specific design element and the applicable criteria, i.e., General Criteria, Standard Drawing, Specification or Minimum Design Standard.
7. Rationale and justification for the request and the location(s) and/or length where the variance may be applied.
8. Identification of effects of the variance to the high-speed rail system operations and maintenance, if any, and appropriate potential mitigation measures.
9. Supporting documentation per Section 6.4.2.
10. Seal and signature of a professional engineer licensed in California

6.4.2 Supporting Documentation

The DPM shall provide appropriate and specific documentation to allow review, assessment, concurrence, and approval of the Design Variance Request. Supporting information may consist of but not limited to:

1. Supporting drawings and details
2. Calculations
3. Risk and cost factors and corresponding mitigations
4. Other impacts: environmental, constructability, etc.
5. Proper documentation for inclusion in the contract procurement documents

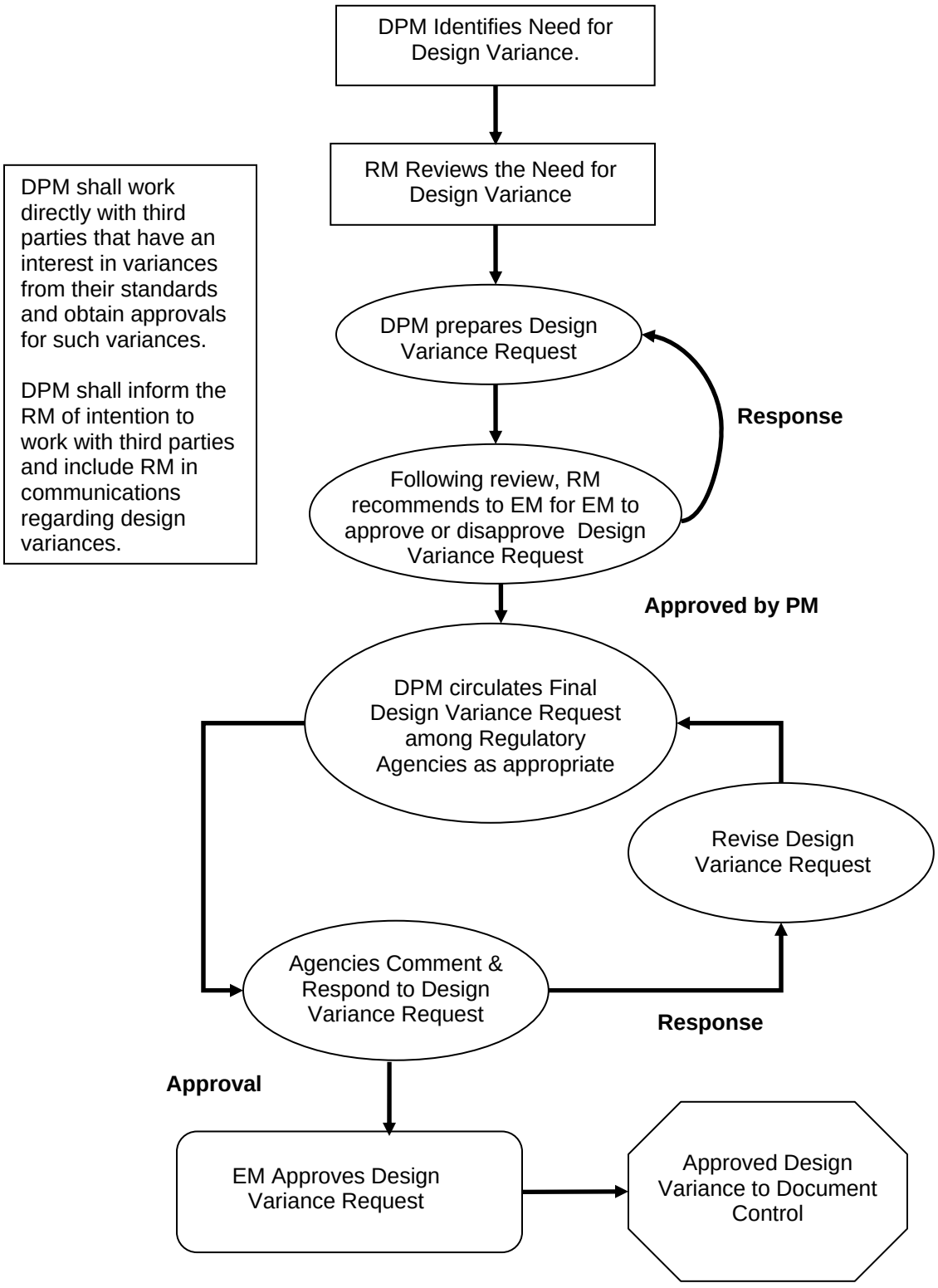
6.5 APPROVAL OF VARIANCE REQUEST

1. Only those non-standard design elements that were previously identified and discussed with the RM shall proceed to the stage of a formal request for approval.
2. If the same design variance is requested in multiple locations, one Design Variance Request Form may be submitted for multiple locations. Each occurrence where a minimum design criterion is not met shall be uniquely identified. Each variance shall reference the applicable design criteria.
3. Non-standard features identified after the approval of a design variance may require preparation of an amendment to the original Design Variance Request or submittal of a new Design Variance Request for approval.
4. Design Variances shall be approved before incorporation into submittals transmitted for review.

6.6 DOCUMENT CONTROL

1. DPM to maintain a copy of Design Variance Request
2. DPM to maintain inventory of all design variances for communication to potential bidders in the construction / design-build contract documents
3. EM to archive Approved Design Variances
4. Original approval documents to be filed in the Authority's files

6.7 DESIGN VARIANCE APPROVAL PROCESS



6.8 CHSTP DESIGN VARIANCE COVER SHEET

California High-Speed Train Project

DESIGN VARIANCE COVER SHEET

Design Variance Request Number:

Design Variance Request Title:

Prepared by:

_____ _____
Design Project Manager Date

Recommended By:

_____ _____
Regional Manager Date

Approval:

_____ _____
Systems Date

_____ _____
Infrastructure Date

_____ _____
Operations Date

_____ _____
Maintenance Date

_____ _____
Rolling Stock Date

Approval:

_____ _____
Engineering Manager Date

Agency Concurrence: (if required)

_____ _____
Agency Project Manager Date

6.9 CHST DESIGN VARIANCE REQUEST

DPM Team - Requestor's Name:
DPM Team - Requestor's Title:

Date :

Project Segment:

Location or Station (length) where Variance is requested:

Design Criteria or Standards Reference number: (include hyperlink to source)

Design Detail Description:

Feature Requiring an Exception:

Reason for Requesting Variance:

Potential Operations and Maintenance Impacts of this Variance:

Potential Mitigations:

Approximate Cost Estimate to meet Minimum Standard:

Additional Documentation:

- **Drawings**
- **Calculations**
- **Applicable Standards**
- **Expert Testimonies**