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131.1 Design Exception Process

**From Engineering Policy Guide**

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131.1.1 When to complete a design exception

A design exception is encouraged wherever the potential for additional value lies outside of written engineering policy. They should not be considered breaches of policy as much as opportunities to add practicality to design.

Exceptions are not requests for permission; rather, they simply document deliberate variances from engineering policy. It is equally important to document those variances that exceed written standards as well as those that fail to attain them. That is not to say a designer should attempt to exceed policy although such a course of action is, at times, the most practical solution.

Documentation of a design exception is necessary for MoDOT to defend itself from litigation. Litigation may take place many years after the actual construction of an improvement. Permanent documentation is necessary to determine the justification for the design exception.

A design exception consists of items that vary from preferred criteria for the design of an improvement. In most cases the need for an exception is the result of an inability to reasonably meet the preferred design criteria. However, there are occasions where specific design elements for a project may exceed the normal criteria recommended for the type of improvement. These variations must also be documented through the design exception process. When there is doubt if a design exception is required, the Design Division liaison engineer is to be consulted.

131.1.2 How to complete a design exception

When the need for a design exception has been identified, the appropriate person (listed below) is responsible for completing the standard [Design Exception Information Form.](http://epg.modot.org/index.php) Use of this form is more effective official documentation than a casual notation. The form must include a detailed description of the rationale for the change.

After completion of the form, the order of approval by transportation officials, for each project category, is given below. A copy of every design exception is provided to the Design Division for the permanent project file. A copy of the form is also kept in the district file.

**Full FHWA Oversight Projects** (See [EPG 123.1.1 FHWA Oversight - National Highway System](http://epg.modot.org/index.php?title=Category:123_Federal-Aid_Highway_Program#123.1.1_FHWA_Oversight_-_National_Highway_System))

1. district project manager
2. district engineer
3. State Design and/or State Bridge Engineer
4. FHWA

**Exempt Roadway Projects**

1. district project manager
2. district engineer

**Exempt Bridge Projects**

1. district project manager
2. district engineer
3. State Bridge Engineer

**Consultant Designed or Cost Share Projects**

1. consultant or local public agency
2. appropriate project-specific path shown above

The Federal Highway Administration (FHWA) reserves the right to audit the design exceptions of any federal aid project regardless of level of oversight.

The request for travelway design exceptions must be initiated and signed by the project manager in charge of the project. The project manager will submit the design exception information form to the district engineer and following approval to the Design Division as necessary.

If a consultant is designing the project, their project manager will initiate the request and sign the design exception form first and then submit it to the district project manager. All consultant design exceptions are reviewed by the district and signed by the district's project manager prior to submittal to the district engineer and following approval to the Design Division as necessary.

Design exceptions that contain only bridge related items are initiated by the Bridge Division and should adhere to the following process:

**1**. The Bridge Division prepares the design exception information form.

**2**. The design exception is reviewed and/or approved by the State Bridge Engineer.

**3**. The structural project manager transmits the signed design exception information form to the district project manager for review and signature.

**4**. The district project manager will submit the design exception information form to the district engineer and the Design Division as necessary for final processing.

**5**. The Design Division will be responsible for obtaining approval signatures as necessary and furnish the district and the Bridge Division with copies of the final approved document.

Design exceptions that contain both travelway and bridge related items will adhere to the following process:

**1**. The Bridge Division completes the information related to the bridge items on the design exception form.

**2**. The structural project manager will transmit, electronically if possible, the design exception information form to the district project manager for review.

**3**. The district project manager will add the information related to the travelway items and sign the form.

**4**. The district project manager will submit the design exception information form to the district engineer and the Design Division as necessary for final processing. This will include signature by the State Bridge Engineer and the State Design Engineer.

**5**. The Design Division will be responsible for obtaining approval signatures as necessary and will furnish the district and the Bridge Division with copies of the final approved document.

Requests for [design exceptions](http://epg.modot.org/index.php) are made when the need first arises; specifically at submittal of the conceptual study, preliminary plan, right of way certification, or plans, specifications, and estimate (PS&E).

Whenever desired design criteria cannot be met, data for only those non-standard items is listed. This data includes the existing feature (if applicable), the desired design criteria for that feature, the proposed feature, and the location of the feature. The column shown for existing features is not applicable to new construction. The appropriate values for desired design criteria are shown in the second column. The design criteria for new construction on rural and urban highways are stated in individual articles pertaining to each geometric element discussed in the [EPG 200 Geometrics](http://epg.modot.org/files/c/c0/131.4_Design_Exception_Info.doc?title=Category:200_GEOMETRICS) articles. Design criteria for [3R](http://ghepg01/forms/BR/Vertical%20Clearance%20Design%20Exception%20Coordination%20with%20SDDCTEA%20Form.doc?title=Category:128_Conceptual_Studies#128.3_Pavement_Rehabilition_Projects_-_Non_-_Freeway_Roadways) and [4R](http://www.tea.army.mil/?title=Category:128_Conceptual_Studies#128.4_Pavement_Rehabilition_Projects_for_Freeways) projects are discussed in EPG 128. The criteria for proper access management can be found in MoDOT’s [Access Management Guidelines](http://wwwi/design/default.htm?title=Category:940_Access_Management). A Design Exception Information Form is not required if all desired design criteria are used for the improvement project.

All requests must contain reasons to justify the exceptions. It is imperative that the justification be sufficiently complete to clearly reflect that the designer exercised reasonable care in the selection of a particular highway design. It must be kept in mind when writing the justification that design exceptions arise because it is impractical or impossible to reasonably meet a specific design criteria. If the criteria can be reasonably met, then the item in question is built to the criteria. The justification may include appropriate economic analysis, discussion of applicable accident location and type or discussion of avoidance of [Section 4(f)](http://epg.modot.org/files/c/c0/131.4_Design_Exception_Info.doc?title=127.10_Section_4(f)_Public_Lands#127.10.2.1.1_Section_4.28f.29_Properties) or [Section 6(f)](http://epg.modot.org/index.php?title=127.10_Section_4%28f%29_Public_Lands#127.10.2.1.2_Section_6.28f.29_Properties) lands. The justification supports the concept that maximum service and safety benefits were realized for the cost invested. Engineering judgment is used when balancing the economic and engineering reasons for the justification. A design exception is based on sound engineering judgment rather than an attempt to save cost.

If the design exception request involves any features that are safety related, then sufficient accident data and history is attached to the request to support the reasons for justification. A summary report of the accident information is acceptable if the volume of the data is excessive. Examples of safety related features are included in, but not limited to, the following list: lane width, shoulder width, shoulder type, rumble strips, turn lanes, bridge width, bridge approach rail, horizontal alignment, vertical alignment, grade, horizontal clearance, vertical clearance, guardrail, etc. Any other items that may be perceived as a safety concern will also follow these requirements.

In addition, if the design exception request involves safety related features that are adequately addressed in the AASHTO *Highway Safety Manual*, then documentation of the exception should include a safety analysis as described in the manual. In general, this safety analysis should compare the expected number of crashes for the facility with the design exception to the expected number of crashes of the facility without the design exception. Currently, not all safety related features are explicitly addressed in the *Highway Safety Manual*. A list of features currently addressed by the manual include: lane width, shoulder width, shoulder type, center line rumble strips, horizontal alignment (length, radius), grade, roadside hazard rating, fixed objects, driveway density, median width, sideslope, lighting, intersection skew angle and turn lanes. Not all features in the manual are addressed for each facility type.

A transmittal letter that describes the nature of the exceptions that are requested will accompany each design exception request. This letter will also include a brief description of the purpose and need of the project and the improvement goals that it is intended to accomplish. This information is required since the context of the project often helps in deciding if the exception is to be approved.

All exception requests for ["non-exempt"](http://epg.modot.org/files/c/c0/131.4_Design_Exception_Info.doc?title=Category:123_Federal-Aid_Highway_Program#123.1.1_FHWA_Oversight_-_National_Highway_System) projects (interstate in excess of $5 million, NHS projects in excess of $20 million and all bridges with any span length of 500 ft. or more, see [EPG 123.1.1](http://epg.modot.org/index.php?title=Category:123_Federal-Aid_Highway_Program#123.1.1_FHWA_Oversight_-_National_Highway_System)) are submitted to the Design Division for approval, where the design liaison engineer reviews and forwards them to the State Design Engineer. After approval by the State Design Engineer (State Traffic Engineer for access management items or the State Bridge Engineer for bridge items), the design liaison engineer will provide the information to the FHWA for their approval. Once approved by the FHWA the design liaison engineer will provide a copy of the signed exception to the district and/or other affected divisions at the Central Office.

Exception requests for "exempt" projects (all other projects) do not require direct federal oversight and therefore will not require FHWA approval. For these projects where a design exception is required the district engineer has final approval authority. However, the district must submit a copy of the approved design exception to the Design Division.

Changes in project scope or design criteria can result in changes to design exceptions that have previously been considered. There may also be additional features that were not included on an earlier exception request that now requires approval. In these cases, an [amended Design Exception Information Form](http://ghepg01/forms/BR/Vertical%20Clearance%20Design%20Exception%20Coordination%20with%20SDDCTEA%20Form.doc) must be completed and approved (as described above). The amended form should include all exceptions previously approved in addition to the new features. The transmittal letter will include sufficient information to indicate the items that have received prior design exception approval.

The Design Division maintains the design exceptions in a permanent project file. A copy of the form is also kept in the district file and any other affected Central Office divisions.

131.1.3 Deficient Vertical Clearances on Interstates

Maintaining the integrity of interstates for national defense purposes has long been recognized. Interstates are intended to be constructed and maintained to meet AASHTO Policy as stated in *A Policy on Design Standards - Interstate System*, which is incorporated by reference in [23 CFR 625](http://epg.modot.org/index.php). Maintaining standard vertical clearances to the extent possible for defense mobilization is considered particularly important and is a focus at the national level. As a result, the [FHWA](http://epg.modot.org/index.php) has agreed that all exceptions to a 16 ft. vertical clearance standard for the rural interstate and certain single routings on the urban interstates be coordinated with the [Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA)](http://epg.modot.org/index.php) of the Department of Defense. This agreement applies whether it is a new construction project, a project that does not provide for the correction of an existing substandard condition, or a project that creates a substandard condition at an existing structure. The steps involved are:

- For a vertical clearance over any interstate highway that will be less than 16 ft. meeting the above criteria, the district submits to the [Design Division](http://epg.modot.org/index.php) a completed SDDCTEA Interstate Vertical Clearance Coordination Form along with a Design Exception for vertical clearance.

- The Design Liaison Engineer emails the Bridge Inventory Analysts and requests the Structure NBI number for box 2 on the Vertical Clearance Design Exception Coordination with SDDCTEA Form.

- The Design Liaison Engineer submits the Design Exception for full oversight projects to FHWA. If the project does not require full FHWA oversight, the Design Liaison routes the Design Exception for the necessary internal MoDOT signatures.

- Concurrent with the submission or routing of the Design Exception, the Design Liaison Engineer submits the form to the SDDCTEA and copies FHWA. This may be done electronically using the contact information on the [Vertical Clearance Design Exception Coordination with SDDCTEA](http://epg.modot.org/index.php).

- A response from SDDCTEA should occur within 10 working days following receipt of the coordination request. Receipt of the request can be verified with SDDCTEA via telephone or fax. If there is no response after 10 working days following receipt, it can be determined that SDDCTEA does not have any concerns about the proposed exception.

- The Design Liaison Engineer informs FHWA as to the final outcome of the SDDCTEA request.

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[Category](http://www.fhwa.dot.gov/?title=Special:Categories): [131 Other General Procedures](http://epg.modot.org/index.php?title=Category:131_Other_General_Procedures)