

## WFLHD SUPPLEMENT 9.1.3.4-1

Add the following:

### 9.1.3.4 Documenting Design Exceptions with WFLHD-3

This supplement provides guidance for documenting exceptions to Highway Design Standards within WFLHD using the [WFLHD-3](#) form. Fill out this form for each project. Provide information such that design decisions made with regard to design exceptions are clear and easily explained many years into the future.

Identify and justify all exceptions to the design standards, taking into consideration the effect of any deviation from design standards on safety. The project files must include this information. Identify approved exceptions in the project files by use of form WFLHD-3. Begin drafting this document as early as possible with most criteria defined by 30% design and the completed form signed by 70% (or Plan-in-Hand) Design.

If a project has more than one discrete section with different standards applying to each section, provide a WFLHD-3 form for each section.

Complete a WFLHD-3 for every project containing work along a roadway. For projects where the existing geometry is incorporated into the final design without any change (i.e. ERFO, 3R, etc.), document the known information as best as possible. When the existing information is not known, indicate that the project geometry matches the existing condition.

#### 9.1.3.4.1 Project Setting

The first portion of the WFLHD-3 form describes the project setting. Fill out the information as follows:

1. **Project Information.** The top portion of the form asks for the project number, name, location along the roadway, type of project, and a description of the work.
2. **System.** Indicate whether the highway is on a Forest Service, National Park, or other system. Also indicate if the project is on the National Highway System (NHS). Most Federal Lands Highways are not on the NHS, but check the [NHS maps](#) to be sure. Check your scoping documents for the functional classification.
3. **Traffic.** Show the current year and design year traffic volumes. See [PDDM Exhibit 8.6-A](#) for more information.
4. **Design Standards.** Establish a baseline standard (AASHTO, VLVR, NPS, etc.) for the route. Indicate the standard by checking the appropriate box. If a state or local standard is to be used, check the "Other" box and replace that text with the standard used. Where the accepted baseline standard does not provide adequate guidance regarding certain design criteria, note within the document the supplemental

standard used to address the criteria. Indicate the design and posted or regulatory speed as well (they are not necessarily the same).

#### **9.1.3.4.2 The Thirteen Controlling Criteria**

Note the accepted standard and design value of the 13 controlling criteria listed. If a criteria does not apply to the project in question (e.g., Bridge criteria on a project without a bridge), insert N/A.

For all applicable criteria that do not meet the accepted standard, note the exception. It is a good idea to reference the page or citation where the exception criteria are defined.

For 3R projects, many existing substandard elements may not be addressed as a result of the limited scope and lack of designed alignments. In these cases, note the appropriate standard for the information that is provided, such as lane width. For 3R projects with a horizontal alignment (even if only for stationing purposes), document any substandard curves and discuss the exceptions as a whole within the justification portion of the form. For the rehabilitation of very low volume roads, much flexibility is allowed within the AASHTO policy. In these situations, note what the standard would have been had the project been "new" construction and note the guidance that allows for the divergence from this standard within the justification portion of the form.

1. Design speed – The posted or regulatory speed limit is the standard. When no speed limit is posted, indicate the default assumed speed that is determined by law within the state. If the chosen design speed is less than this speed, there is a design exception.
2. Lane width – Indicate the travel lane width from the plans.
3. Shoulder width – Indicate the shoulder width from the plans. For gravel roads without an earthwork design, it is not very meaningful to distinguish between the lane and shoulder. In this case identify if the total roadway width (lane plus shoulder) meets the standard roadway width.
4. Bridge width – note that different design tables are available for new/reconstructed bridges and bridges that are to remain in place.
5. Horizontal curvature – under the designed column in the chart indicate the minimum curve radius within the project. If this is below the standard radius, document the exception. Describe other critical exception curves in the write-up and provide reasons for them.
6. Vertical curvature – under the designed column indicate the minimum "K" values for crest and sag vertical curves within the project. If this is below the standard "K" values, document the exception.
7. Gradient – under the designed column indicate the maximum grade within the project. If this is greater than the standard grade, document the exception.

8. Stopping sight distance – in addition to the line and grade, indicate exceptions due to visibility limitations and at intersections.
9. Normal cross slope (crown)
10. Superelevation – The  $\Delta$  symbol indicates the maximum relative gradient. An exception may occur here if the roadway superelevates in a shorter distance than the Green Book values for superelevation runoff.
11. Structural capacity – Obtain the design loading structural capacity from the Bridge section.
12. Horizontal clearance to structures – this is the horizontal distance to a fixed, unshielded obstruction. It is to be viewed as an operational constraint on the roadway such as an object that could be a hazard for a vehicle with wide mirrors. This is more applicable in urban settings where on-street parking may cause conflicts with the traveled way. It is not to be confused with clear zone, which is not one of the thirteen controlling criteria.
13. Vertical clearance – distance to underpasses.

#### **9.1.3.4.3 Justification and Risk Analysis**

Discuss the circumstances, stakeholder input, and evidence supporting the identified design exceptions. Some project conditions warranting exceptions could be the extreme difficulty or high cost of obtaining right-of-way, cost of construction, mitigation of environmental impacts, or the preservation of historic or scenic values of the location.

Such factors as the functional classification of the road, the amount and character of the traffic, the type of project (i.e., new construction, reconstruction, or 3R), and the accident history should be considered in the evaluation. The cost of attaining full standards and any resultant impacts on scenic, historic or other environmental features, as well as whether any other future improvements are programmed should also be taken into consideration.

Depending on the nature of the variance from the design standard, it may not be necessary to look at all of the above factors. However, before an exception is approved there should be compelling reasons why the adopted criteria should not be used. Three issues should be considered in any analysis: (a) what is the degree to which a standard is being reduced; (b) will the exception affect other standards; and (c) are there any additional features being introduced, e.g., signing or delineation, that would mitigate the deviation?

Mention CFT and external partner input on design decisions as they apply. The more informed decisions made by the project team, the better the justification for any variance to accepted standards. Be sure to discuss the accident and safety history of the route. Hard data is always preferable, but anecdotal evidence and observed problems in the field are better than no data. Quote statements and pages from reference guidelines and policies, especially when using the flexibility built into the guidelines. This is powerful language that removes any doubt as to specific guidance or intent and is easily reviewed.

#### **9.1.3.4.4 Roadside Design**

Discuss any roadside design variances from the reference cited. In general, every attempt should be made to upgrade existing roadside barriers, especially where an existing safety concern is present. Where new roadside barriers are warranted based upon the guidelines cited but not provided, document the safety history or extenuating circumstances surrounding the variance. Clear zone variances from recommended widths should be addressed in terms of project context and accident history.

Refer to the *Roadside Design Guide* and [FLH Barrier Guide for Low Volume and Low Speed Roads](#) for roadside recommendations.

#### **9.1.3.4.5 Review and Approval**

Submit a draft WFLHD-3 form to your HDM at each project review phase. Present the completed form for approval and signature not later than the PIH review phase.

Send the original WFLHD-3 form to the WFLHD-3 folder in Central files. Keep a copy of the form with the project design records.