WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DESIGN DIRECTIVE

DD-605
DESIGN EXCEPTION POLICY
August 17, 2016

Attached for your use is the Division of Highways (DOH) Design Exception Policy. It shall be used on all applicable projects.

Attachment

DESIGN EXCEPTION POLICY

INTRODUCTION

~~This policy has been developed jointly by FHWA and DOH representatives and provides a procedure to be followed for the documentation of design exceptions for all projects.~~

All new construction or reconstruction projects shall be designed in accordance with the AASHTO criteria. All RRR projects shall be designed in accordance with the current FHWA approved State RRR criteria. Those criteria related to design speed, lane and shoulder widths, ~~bridge widths~~, design loading structural capacity, horizontal curve radius ~~and vertical alignment~~, maximum grade~~s~~, stopping sight distance, cross slope~~s~~, superelevation rate, and ~~horizontal and~~ vertical clearance~~s~~ are the controlling criteria that require formal design exceptions when not met. Stopping sight distance (SSD) applies to horizontal alignments and vertical alignments except for sag vertical curves.

Of the 10 controlling criteria, only design loading structural capacity and design speed apply to all NHS facility types. The remaining eight criteria are applicable only to "high-speed" NHS roadways, defined as Interstate highways, other freeways, and roadways with a design speed greater than or equal to 50 mph (80 km/h). However, any of the remaining eight criteria that are not met on projects that do not require a formal design exception for these criteria shall be documented to the project file, with any mitigation strategies indicated in the report.

The DOH is responsible for the preparation and approval of all design exceptions, including those subject to approval on behalf of the FHWA since the DOH has assumed the responsibility through a Stewardship and Oversight agreement.

The criteria are included in the attached flowcharts and "Design Exception Justification Report". These criteria will be referred to throughout this document as the **"~~13~~ 10 Controlling Criteria"**. A formal design exception is not required and should not be submitted unless the existing/proposed value for any of the "~~13~~ 10 Controlling Criteria" fails when compared to the design values for any of these criteria. The designer should follow "Step 1" of the attached flowchart when determining which design directive to use in establishing design values.

All efforts should be made to adhere to the specified criteria. However, under unusual conditions, it may be necessary to use values that are less than the minimum values that have been established. If lesser values are proposed for use, a Design Exception Justification Report shall be developed and approved. The approved Design Exception Report shall be submitted to Planning Division for filing and inclusion on the straight-line diagrams. A copy of the approved design exception shall be included in the project file.

As stated previously, design exceptions shall only be submitted when one or more of the "~~13~~ 10 Controlling Criteria" design values is violated by the existing/proposed values. Design exceptions are not required and shall not be submitted on projects defined as "Maintenance Projects" as shown in the attached flowcharts. The designer should refer to DD-817 "Resurfacing Project Categories" ~~"Minor Preventive Maintenance"~~ for guidance in determining which project types are classified as maintenance projects in this regard.

Design criteria ~~policies~~ that are not satisfied and are not one of the "~~13~~ 10 Controlling Criteria" shall not be documented and submitted as a formal design exception. These criteria exceptions shall be documented in the project files only.

DESIGN EXCEPTION JUSTIFICATION REPORT

The following information, which affects the design values selected, must be considered and documented as a part of the design exception request: (1) the existing roadway characteristics ~~conditions~~, the minimum design criteria values, specific design criteria that will not be met, the proposed design values, and the criteria source (controlling design directive or AASHTO section) must be identified; and (2) a narrative documenting that the acceptance of the design exceptions is prudent, cost-effective and will not compromise the safety of the traveling public. This narrative will discuss the following items:

1. The effect of the variance from the design criteria on the safety and operation of the facility and other impacts such as right-of-way, community, environmental, cost, and usability by all modes of transportation; and safety mitigating measures considered and provided;

2. The compatibility of the design and operation with adjacent sections of roadway;

3. Amount and character of traffic using the facility;

4. Accident history (type, location, severity, etc.);

5. Alternatives considered;

6. Comparative cost of full design criteria versus lower design criteria being proposed, or other practical alternatives;

7. The long term effect of the reduced design criteria versus full design criteria (effect of capacity reduction);

8. Difficulty in obtaining full design criteria (cost, right of way involvement, delay, environmental impacts, etc.);

9. Level of Service for full design criteria versus reduced design criteria; and,

10. Any other design criteria that is not being met, i.e., cumulative effect of more than one standard that is being reduced.

This documentation is essential for each design exception requested.

The level of analysis should be commensurate with the complexity of the project.

Design Speed and Design Loading Structural Capacity are fundamental criteria in the design
of a project. Exceptions to these criteria should be extremely rare and the documentation will provide the following additional information;

1. Design Speed exceptions:
   a. Length of section with reduced design speed compared to overall length of project
   b. Measures used in transitions to adjacent sections with higher or lower design or operating speeds.

2. Design Loading Structural Capacity exceptions:
   a. Verification of safe load-carrying capacity (load rating) for all State unrestricted legal loads or routine permit loads, and in the case of bridges and tunnels on the Interstate, all Federal legal loads.

Design values chosen or being considered, which are exceptions to the appropriate minimum design criteria values, shall be approved as early as possible in the design process prior to considerable detailed design work being accomplished. The Deputy State Highway Engineer - Operations will approve those exceptions necessary on projects that are District "Design Responsibility". The Deputy State Highway Engineer - Development will approve those exceptions necessary on projects that are a Central Office Division "Design Responsibility". ~~FHWA will approve design exceptions on all non-exempt projects, and will review and concur on design exceptions on concurrence projects.~~ The DOH is responsible for the preparation and approval of all design exceptions.

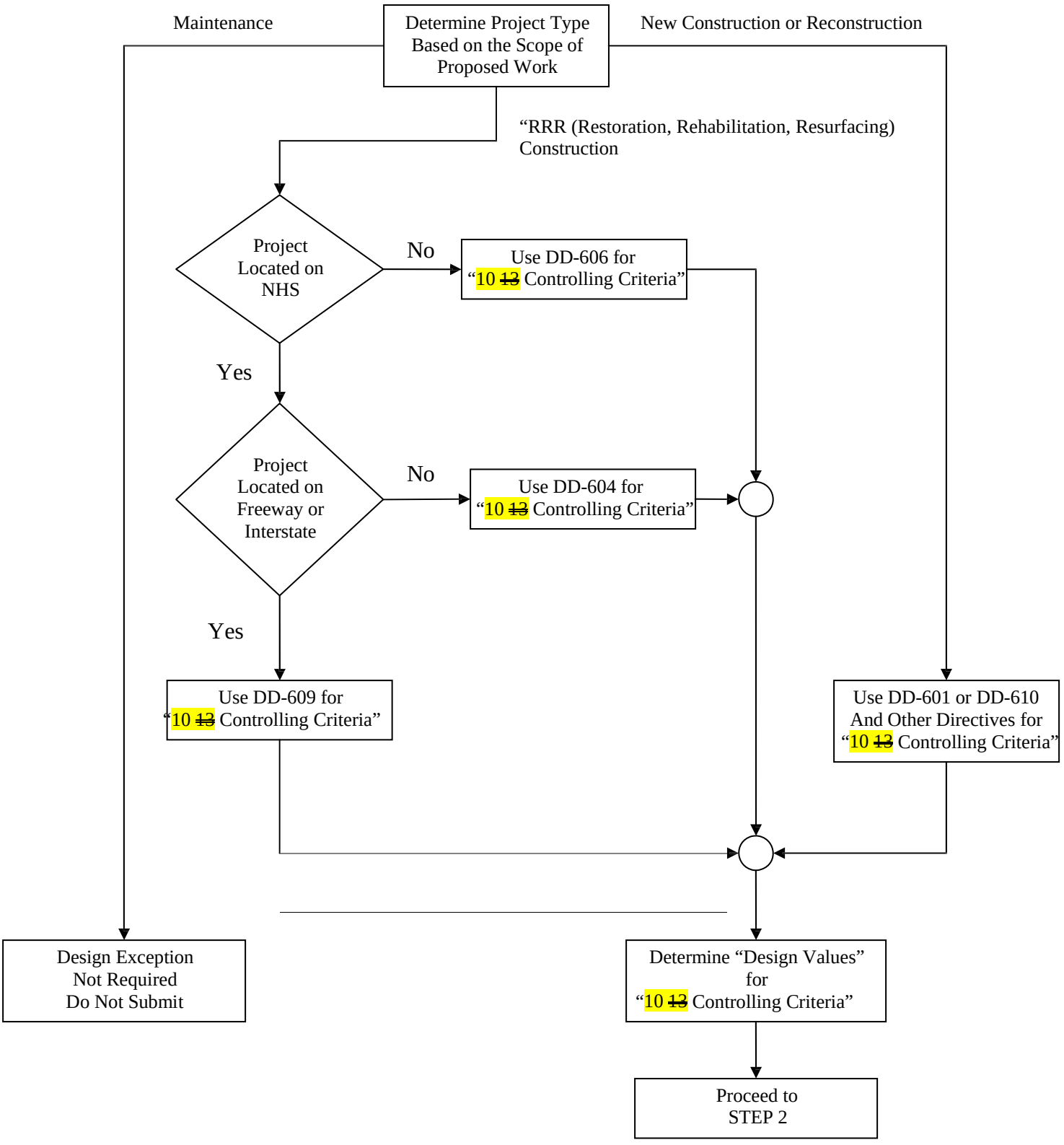
During the design process, a continuing review of exceptions shall be made and any additions or modifications ~~discussed with the agency that approved the exception, FHWA or the DOH, with the results~~ documented and placed in the project files.

Copies of all design exceptions must be submitted to Contract Administration Division with the PS&E package and also submitted to Planning Division for filing and inclusion on straight-line diagrams.

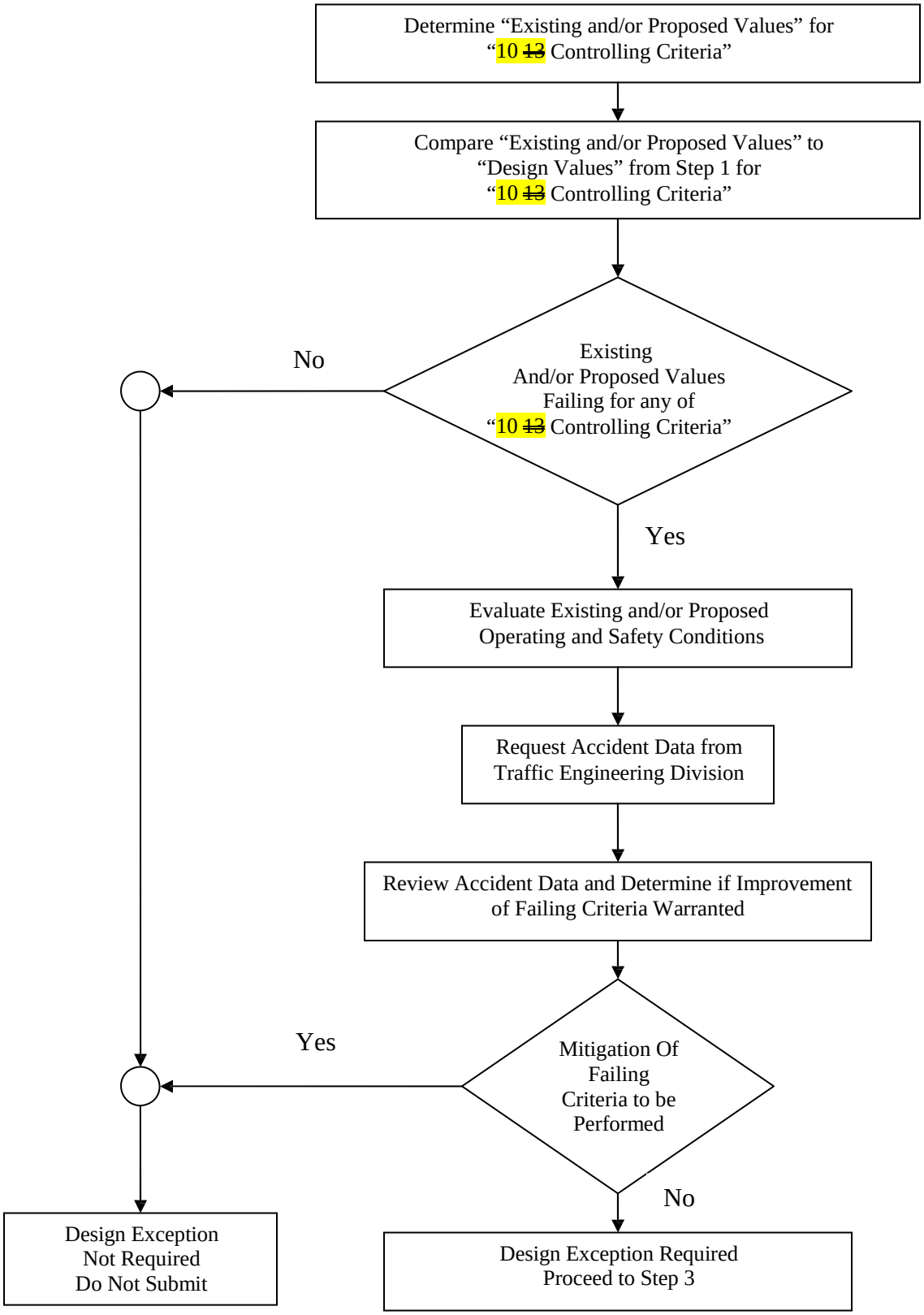
Design exceptions on district projects must be signed by the District Engineer and the Regional Engineer/Operations prior to submitting the PS&E package. Contract Administration Division will obtain the signature of the Regional Maintenance Engineer, Deputy State Highway Engineer – Operations, ~~and FHWA (if applicable)~~ and return the original of the approved exception to the District for inclusion in the project file.

Design exceptions on all other projects must be approved prior to submission of the PS&E package to Contract Administration Division.

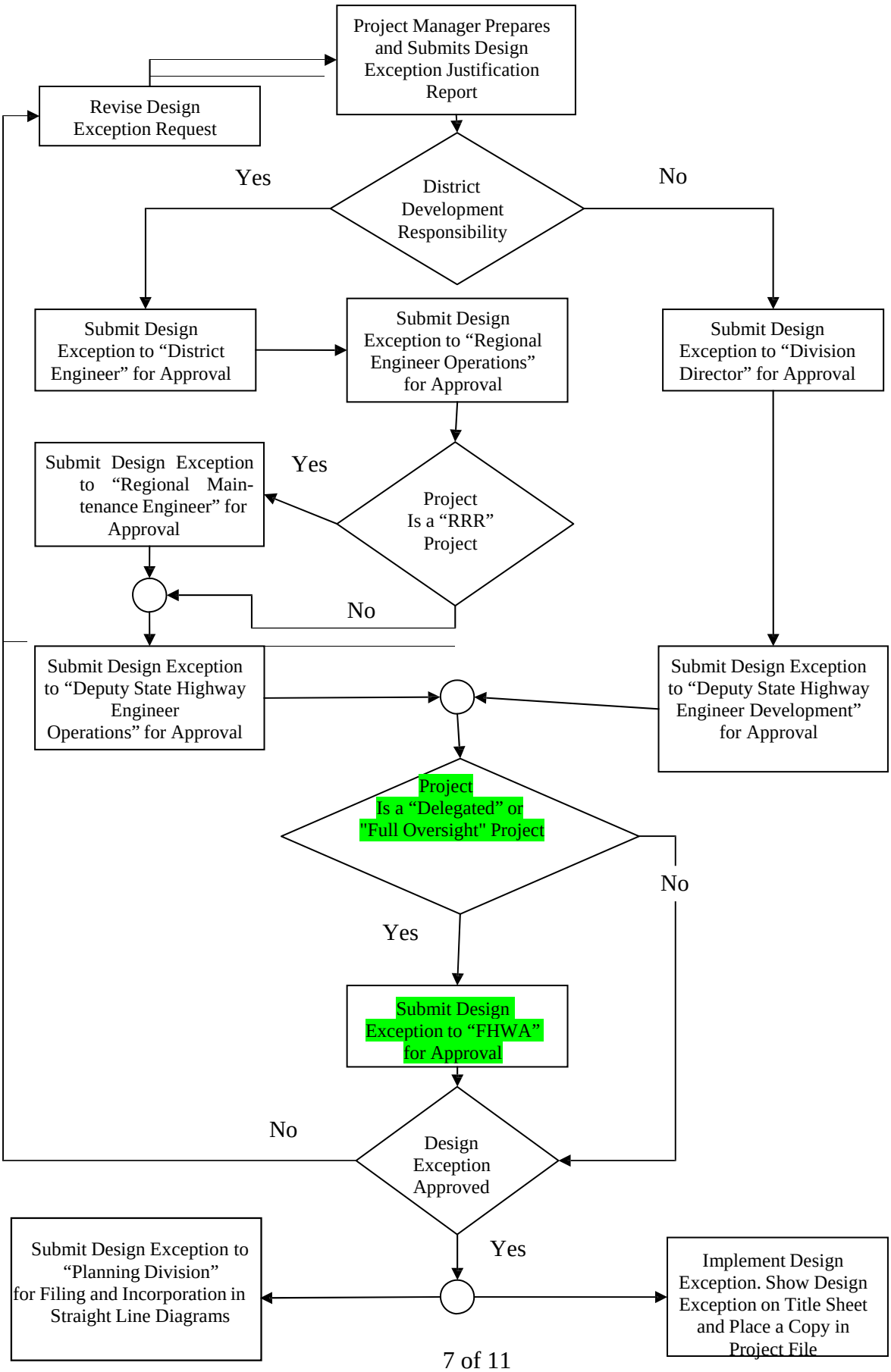
STEP 1: DETERMINE PROJECT "DESIGN VALUES"



STEP 2: DETERMINE IF DESIGN EXCEPTION IS REQUIRED



STEP 3: PREPARE AND SUBMIT DESIGN EXCEPTION FOR APPROVAL



DESIGN EXCEPTION JUSTIFICATION REPORT

PROJECT DATA

State Project No. _____ **Date:** _____

Federal Project No: _____ **County:** _____

Project Name: _____

Project Description: _____

WVDOH Representative: _____

FHWA Representative: _____

HIGHWAY ROUTE DATA

AASHTO Functional Classification

1. ☐ Urban ☐ Rural
2. ☐ Arterial ☐ Collector ☐ Local Road
3. ☐ Freeway ☐ Divided/Arterial ☐ Two-Lane Arterial
4. ☐ Interstate

TERRAIN TYPE ☐ Level ☐ Rolling ☐ Mountainous

TRAFFIC DATA

	Current Year:	Design Year:
ADT:	_____	_____
DHV:	_____	_____

SPEED LIMIT: _____ ☐ POSTED/ ☐ REGULATORY

ACCIDENT DATA

Accident Rate: _____

Base Accident Rate (Statewide Average): _____

Nature of Area: _____

DISTRICT DESIGN PROJECTS

DESIGN CRITERIA DATA (Document Only Exceptions)

10 ~~13~~ Controlling Criteria	Existing Condition	Minimum Design Criteria	Proposed Value	Criteria Source
1. Design Speed				
2. Lane Width				
3. Shoulder Width				
4. Stopping Sight Distance				
5. Horizontal Alignment				
~~6. Vertical Alignment~~				
6. Grade				
7. Cross-Slope				
8. Superelevation				
~~10. Horizontal Clearance~~				
9. Vertical Clearance				
~~12. Bridge Width~~				
10. Bridge Structural Capacity				

APPROVAL SIGNATURES

RECOMMENDED:

1. _____
   Project Manager

2. _____
   District Engineer/Manager

APPROVED:

_____
Deputy State Highway Engineer – Operations

_____
Federal Highway Administration
(Full Oversight Projects Only)

CENTRAL OFFICE DESIGN PROJECTS

DESIGN CRITERIA DATA (Document Only Exceptions)

10 ~~13~~ Controlling Criteria	Existing Condition	Minimum Design Criteria	Proposed Value	Criteria Source
1. Design Speed				
2. Lane Width				
3. Shoulder Width				
4. Stopping Sight Distance				
5. Horizontal Alignment				
~~6. Vertical Alignment~~				
6. Grade				
7. Cross-Slope				
8. Superelevation				
~~10. Horizontal Clearance~~				
9. Vertical Clearance				
~~12. Bridge Width~~				
10. Bridge Structural Capacity				

APPROVAL SIGNATURES

RECOMMENDED:

APPROVED:

1. _____
Project Manager

_____
Deputy State Highway Engineer – Development

2. _____
Division Director

_____
Federal Highway Administration
(Full Oversight Projects Only)

NARRATIVE DISCUSSION OF DESIGN EXCEPTION(S):