



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 20-13

August 6, 2020

October 8, 2020

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/ Elizabeth P. Mouser
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Engineering Department

SUBJECT: Level One Controlling Criteria

EFFECTIVE: Immediately

This memo has been revised to clarify the application of Level One criteria for Freeways. All 10 high-speed controlling criteria apply to freeways and interstates, including exit and entrance ramps, regardless of design speed. Design exceptions are required when Level One criteria are not satisfied.

The Level One checklist and the supplemental Q&A presentation have been updated to reflect these revisions.

The procedures for identifying and justifying exceptions to Level One criteria have been revised.

Background

In 1985, FHWA established 13 controlling design criteria, which were those highway design elements judged to be the most critical indicators of a highway's safety and its overall serviceability. INDOT adopted the FHWA criteria and included additional elements. INDOT refers to these elements collectively as Level One criteria and applies them to both NHS and non-NHS facilities.

FHWA has since reviewed the criteria for effects on operational and safety performance. Based on the findings of NCHRP Report 783 *Evaluation of the 13 Controlling Criteria on Geometric Design* and FHWA's own assessment and experience, revised controlling criteria were established. In addition, the revised controlling criteria were further refined for high speed and low speed facilities.

Policy

INDOT has adopted the revised FHWA controlling criteria and retained a select list of additional criteria for high speed and low speed facilities. The criteria and Level One or Level Two designation is summarized on page 3.

The reduced controlling criteria list does not relieve the designer of evaluating and documenting design decisions. A design exception (Level One or Level Two as noted) is required when the design criteria will not be met or existing substandard criteria will be retained. Level Two documentation includes a brief rationale for not satisfying the criteria.

When a Level One checklist is required, it should be completed for all items, regardless of the high-speed/low-speed or Level One/Level Two designations.

IDM Revisions

The Level One checklist and instructions have been revised to reflect these changes. The *Indiana Design Manual* text and figures related to Level One and Level Two controlling criteria will be updated at a later date. This memo should be referenced until further notice.

Level One design exceptions that have been submitted and are no longer required will be returned, indicating the change in criteria. These documents should be kept with the project design computations.

Questions related to Level One and Level Two controlling criteria should be directed to the Highway Design Review Office, Russ Brittain at rbrittain@indot.in.gov or roadreviewteam@indot.in.gov.

Design Criteria – Level One and Level Two Classifications

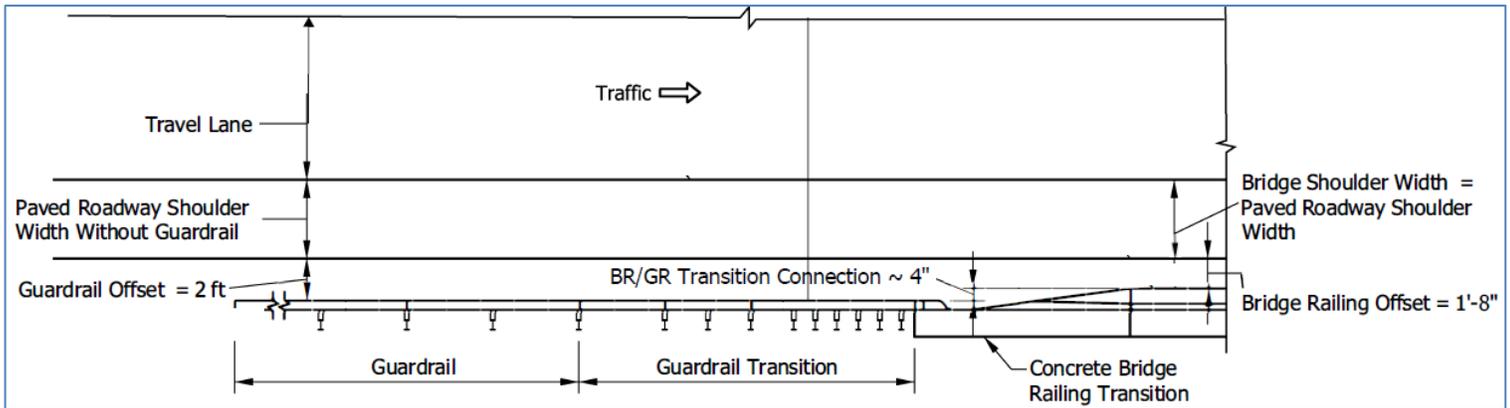
	Design Criteria	High Speed (50 mph or higher and Freeways, incl. ramps)	Low Speed (45 mph or lower)
1	Design speed	Level One	Level One
2	Lane width	Level One	Level One only if on the National Truck Network. Otherwise, Level Two.
3	Shoulder width (uncurbed section) ⁽¹⁾	Level One	Level Two
4	Bridge clear roadway width ⁽²⁾	Level Two	Level Two
5	Design structural capacity	Level One	Level One
6	Horizontal curve, minimum radius	Level One	Level Two
7	Superelevation transition length and distribution	Level Two	Level Two
8a	Stopping sight distance, horizontal curve	Level One	Level Two
8b	Stopping sight distance, vertical curve (crest only)	Level One	Level Two
9	Maximum grade	Level One	Level Two
10	Travel lane cross slope	Level One	Level Two
11	Superelevation rate	Level One	Level Two
12	Minimum vertical clearance	Level One	Level One
13	Americans with Disabilities Act (ADA)	Level One	Level One
	Exceptions are processed as an ADA Technical Inquiry or Technical Infeasibility Determination		
14	Bridge Railing Test Level	Level Two	Level Two

⁽¹⁾ Shoulder Width on a Bridge. The minimum shoulder width on a bridge is the minimum paved shoulder width from the IDM geometric tables or the existing approach roadway paved shoulder width **without guardrail**, whichever is greater. The guardrail offset on the approach roadway should be carried over the bridge. The approximate 4-in loss due to the concrete bridge railing transition/guardrail transition connection may reduce the offset but may not reduce the minimum paved shoulder width without a design exception. See examples on page 4.

⁽²⁾ Bridge Clear Roadway Width. Where the sum of the lane and shoulder widths is less than 30 ft (arterials and collectors) or 28 ft (local roads), the greater width is the minimum criteria.

Bridge Shoulder Width Examples

1. (Desirable) A 2-ft guardrail offset is provided on the approach roadway. The approximate 4-in. reduction at the transition connection will result in a 1'-8" offset on the bridge. The minimum paved shoulder width is not reduced, and a design exception is not required (for shoulder width). Check bridge clear roadway width against minimum required.



2. Zero guardrail offset is provided on the approach roadway. The approximate 4-in. reduction at the transition connection will result in a 4-in. reduction to the paved shoulder width on the bridge, and a design exception is required (for shoulder width). Check bridge clear roadway width against minimum required.

