DESIGN BULLETIN #70/2010

Highway Geometric Design Guide
Centreline to Centreline Spacing
For New Rural Divided Highways

Summary
This Bulletin is issued to inform practitioners of the Department’s revised guidelines on the centerline to centerline spacing for new rural divided highway cross-section. Where land is considered to be of lower value (not suitable for cultivation or grazing) the use of a wider median (55m or more is desirable) has many economic advantages resulting from capital, maintenance and operational savings. Where the desirable spacing is not economical, a minimum centerline to centerline spacing of 40m is acceptable.

Background
The revised plan (Figure C-6.0) which provides for a wider standard median should be used in areas where the land is of lower value and where the provision of grade-separations is expected to be deferred for many years. The use of a wider median has many economic advantages resulting from safety, capital, maintenance and operational savings.

- Operationally, due to the use of long vehicles such as Log Haul Trucks (30.5m), Long Combination Vehicles (40 m) and Super B Trains (25m), it is very desirable to have a median which is wide enough to allow these vehicles to take refuge while crossing or making left turns. Narrower medians will lead to pressure to build grade separations many years earlier than would be required on a wider median.

- When four-lane divided highways need to be upgraded to six or eight lanes (expressway or freeway) to increase capacity or level of service, the median spacing can still accommodate design vehicles up to a WB-23 design vehicle (25m length), which is beneficial especially at the expressway stage. At the eight lane divided highway stage, the facility typically will have very strict access control and therefore the operational difficulties at at-grade intersections are minimized. Figure C-6.1 illustrates the divided highway staging.

- Wide medians permit the use of independent roadway alignments, both vertically and horizontally, blending the divided highway into the natural topography with less construction cost.

- The increased width reduces the problems of headlight glare and cross-the-median head-on crashes and may eliminate the need for median barriers.
• The increased width provides greater flexibility for roadway planning and staging of interchange construction. Interchange construction can frequently be deferred.

• The increased width provides a buffer area which meets the suggested shy line offset values (TAC 1999, Table 3.1.6.4) for WB-36 design vehicles. Refer to Figure C-6.0 for TAC table.

Key Changes
Where the land is considered to be of lower value (not suitable for cultivation or grazing), a centreline to centreline spacing of 55m or more is desirable for new rural divided highway cross-sections.

Where the desirable spacing is not economical or not feasible, a minimum centerline to centerline spacing of 40m is acceptable. The 40m minimum spacing accommodates design vehicles up to a WB-23 (25m length). Sites where the desirable spacing is not economical/feasible may include bridge or culvert crossings of watercourses and/or areas where embankments may be impacted by watercourses. At locations where interchanges will ultimately replace at-grade intersections the width will be reassessed at that stage to ensure optimization of the overall design. In addition, where limited by bridge requirements or other constraints, suitable safe transitions in median width conforming to the department’s best practices shall be used.

The centerline to centerline spacing shall be based on design vehicle measurements. Provision for refuge of design vehicles in the median of at-grade intersections is a key factor. Spacing of 55m or more is desirable at all major at-grade intersections with truck-trailer turning movements. A reduced median may be used between intersections if required due to constraints.

The revised guidelines as indicated in this Bulletin are to be implemented immediately as per the usual practice.

Effective Date: June 1, 2010.

Contact
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Attachments
1. Figure C-6.0, Typical Centreline to Centreline Spacing for New Rural Divided Highways in Alberta.
2. Figure C-6.1, Rural Multi-Lane Divided Highway Staging
3. Figure C-8.2a - Rev.1, Standard Cross-section for Six Lane Divided Highway RFD/RAD-616.6-130.
4. Figure C-8.2b - Rev.1, Standard Cross-section for Four Lane Divided Highway RFD 412.4-130 & RAD-412.4-120.

References

Recommended:  

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2 June 2010

Approved:  

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Date  
JUNE 2/10
NOTE 1 * WHERE THE LAND IS NOT SUITABLE FOR CULTIVATION OR GRAZING, A CENTRELINE TO CENTRELINE SPACING OF 55m OR MORE IS DESIRABLE.

NOTE 2 WHERE THE DESIRABLE SPACING IS NOT ECONOMICAL A MINIMUM CENTRELINE TO CENTRELINE SPACING OF 40m IS ACCEPTABLE AND WILL ACCOMMODATE DESIGN VEHICLES UP TO WB-23 DESIGN VEHICLE (LENGTH OF 25m).