## GEOMETRIC DESIGN STANDARDS FOR RURAL LOCAL ROAD SYSTEM (GS-4)

| TRAFFIC VOLUME | TERRAIN | DESIGN SPEED (MPH) | MIN. RADIUS | (9) MINIMUM STOPPING SIGHT DISTANCE | (2) MINIMUM WIDTH OF SURFACING OR PAVEMENT | (3) (4) (5) MINIMUM WIDTH OF GRADED SHOULDERS | | (6) MINIMUM WIDTH OF DITCH FRONT SLOPE | (7) SLOPE | NEW AND RECONSTRUCTED MINIMUM BRIDGE WIDTHS AND VERTICAL CLEARANCES |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | FILL W/GR | CUT& FILL | | | |
| (1) ADT OVER 2000 | LEVEL | 50 | 760’ | 425’ | 24’ | 12’ | 8’ | 6’ | CS-4, 4A / 4C | See Footnote (8) |
| | ROLLING | 45 | 589’ | 360’ | | | | | CS-3, 3A / 3B | |
| | | 40 | 446’ | 305’ | | | | | | |
| | MOUNTAINOUS | 35 | 316’ | 250’ | | | | 4’ | | |
| | | 30 | 215’ | 200’ | | | | | | |
| (1) ADT 1500 TO 2000 | LEVEL | 50 | 760’ | 425’ | 22’ | 10’ | 6’ | 6’ | CS-4, 4A /4C | |
| | ROLLING | 45 | 589’ | 360’ | | | | | CS-3, 3A / 3B | |
| | | 40 | 446’ | 305’ | | | | | | |
| | MOUNTAINOUS | 35 | 316’ | 250’ | | | | 4’ | | |
| | | 30 | 215’ | 200’ | | | | | | |
| (1) ADT 400 TO 1500 | LEVEL | 50 | 760’ | 425’ | 22’ | 9’ | 5’ | 6’ | CS-1 | |
| | ROLLING | 45 | 589’ | 360’ | | | | | | |
| | | 40 | 446’ | 305’ | 20’ | | | 4’ | | |
| | MOUNTAINOUS | 35 | 316’ | 250’ | | | | | | |
| | | 30 | 215’ | 200’ | | | | | | |
| CURRENT ADT UNDER 400 | LEVEL | 45 | 589’ | 360’ | 18’ | 8’ | 2’ | 4’ | CS-1 | |
| | | 40 | 446’ | 305’ | | | | | | |
| | ROLLING | 35 | 316’ | 250’ | | | | | | |
| | | 30 | 215’ | 200’ | | | | | | |
| | MOUNTAINOUS | 25 | 135’ | 155’ | | | | | | |
| | | 20 | 77’ | 125’ | | | | | | |

## GENERAL NOTES

Low design speeds are generally applicable to roads with winding alignment in rolling or mountainous terrain where environmental conditions dictate.

High design speeds are generally applicable to roads in level terrain or where other environmental conditions are favorable.

Intermediate design speeds would be appropriate where terrain and other environmental conditions are a combination of those described for low and high speed.

For minimum design speeds for 250 ADT and under, see AASHTO Green Book, Chapter 5, Section 5.2.1, page 5-2, Table 5-1.

Standard TC-5.11R superelevation based on 8% maximum is to be used.

In incorporated towns or other built-up areas, Urban Standard GS-8 may be used. . “Built-up” is where there is sufficient development along the roadway that justifies a need to channelize traffic into and out of properties utilizing curb and gutter.

For Passing Sight Distance Criteria See AASHTO Green Book, Chapter 3, Section 3.2.4, page 3-8.

For maximum grades relative to terrain and design speed, see AASHTO Green Book, Chapter 5, Section 5.2.1, page 5-3, Table 5-2.

For Recreational Access Road design standards, see AASHTO Green Book, Chapter 5, Section 5.4.2, page 5-24.

## FOOTNOTES

(1) Use Design Year ADT for new construction and reconstruction projects in accordance with *Road Design Manual*, Chapter 2A, “REQUEST FOR TRAFFIC DATA” and Form LD-104. For RRR projects or roads with ADT < 400, See Road Design Manual, Appendix A, “GUIDELINES FOR RRR PROCTS.”

(2) Lane width to be 12' at all interchange locations.

(3) In mountainous terrain or sections with heavy earthwork, the graded width of shoulder in cuts may be decreased by 2', but in no case shall the cut shoulder width be less than 2'.

(4) Minimum shoulder slope shall be 8% on low side and same slope as pavement on high side (See St’d. GS-12).

(5) Provide 4' wide paved shoulders when design year ADT exceeds 2000 VPD, with 5% or more truck and bus usage. Provide 5’ wide paved shoulder when design year ADT exceeds 2000 VPD, with 5% or more truck and bus usage or the route is an AASHTO approved U.S. Bicycle Route (1, 76 or 176) or designated as a bicycle route on a locally adopted transportation plan All shoulders not being paved will have the mainline pavement structure extended 1' on the same slope into the shoulder to eliminate raveling at the pavement edge. For additional guidance on shoulder widths, see AASHTO Green Book, Chapter 5, Section 5.2.2, page 5-5.

(6) Ditch slopes to be 4:1 - 6' width, 3:1 - 4' width. A hydraulic analysis is necessary to determine actual depth requirement.

(7) Additional or modified slope criteria to be applied where shown on typical sections.

(8) See *Manual of the Structure and Bridge Division* – Volume V – Part 2 Design Aids – Chapter 6 Geometrics.

(9) For additional information on sight distance requirements on grades of 3 percent or greater, see AASHTO Green Book, Chapter 3, Section 3.2.2, page 3-3, Table 3-2.

**FIGURE A - 1 - 4***

* Rev. 1/17