2_7 GUARDRAIL FILL SLOPE WARRANT AND LENGTH OF NEED

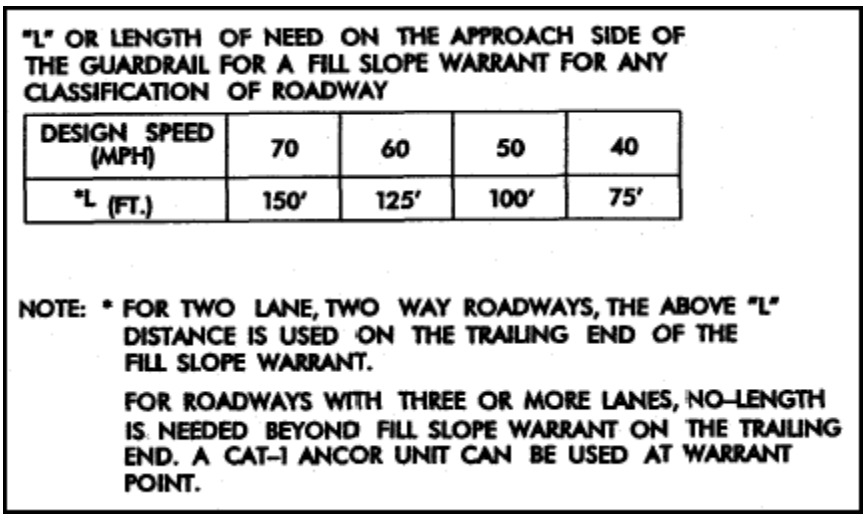
Question:

Why is guardrail still warranted after I've changed the fill slope from 2:1 to 6:1? Also why are guardrails not drawn in the cross sections before and after they're warranted?

Answer:

If the fill height is 7' (default) or greater, the end condition wants to widen for GR, regardless of fill slope used. By setting the "SS_2:1_FillHt_GRWarrant" parametric constraint to a value of -33 means the fill height (no matter what side slope is used) has to be greater than 33' before the shoulder is widen for guardrail.

Keep in mind that this evaluation takes place at each template drop, meaning Roadway Designer does not know if GR was warranted in the previous template drop nor does it know if it is going to be warranted in the next template drop. This is what we have been getting with traditional Criteria x-sections. However, in accordance with the RDM Part 1, Detail 3-2C "Detail of Guardrail Placement on Approach and Trailing End of Fill Slope Warrant", L or the "Length of Need" should be applied to the warrant points.



"L" OR LENGTH OF NEED ON THE APPROACH SIDE OF THE GUARDRAIL FOR A FILL SLOPE WARRANT FOR ANY CLASSIFICATION OF ROADWAY

DESIGN SPEED (MPH)	70	60	50	40
*L (FT.)	150'	125'	100'	75'

NOTE: * FOR TWO LANE, TWO WAY ROADWAYS, THE ABOVE "L" DISTANCE IS USED ON THE TRAILING END OF THE FILL SLOPE WARRANT.

FOR ROADWAYS WITH THREE OR MORE LANES, NO-LENGTH IS NEEDED BEYOND FILL SLOPE WARRANT ON THE TRAILING END. A CAT-1 ANCOR UNIT CAN BE USED AT WARRANT POINT.

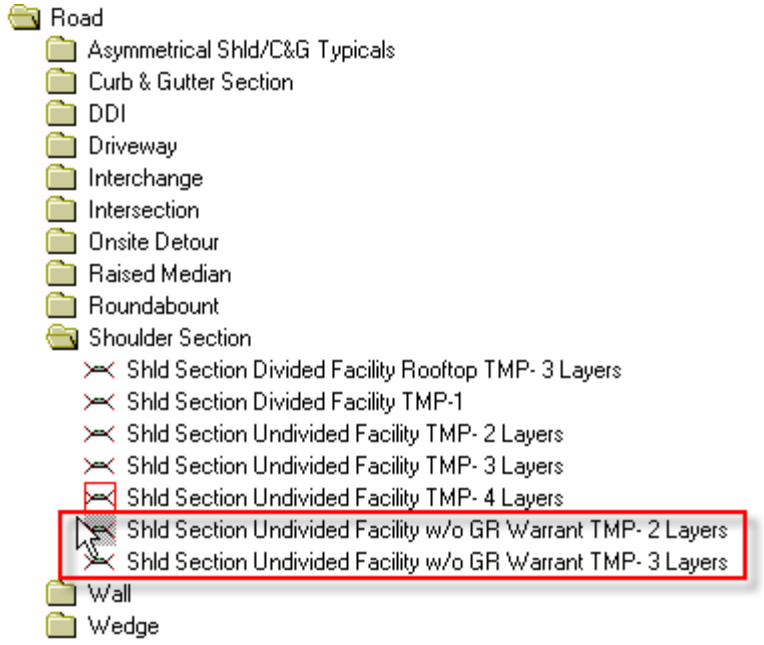
Here are the steps to take if you want to apply the length of need.

1. Use the regular template to determine where the fill slope warrant points are located (template drops that have continuous GR).
2. Determine the length of need from the above table.
3. Draw the guardrail in the areas of the length of need in the DSN.
4. Restore the guardrail graphics as CM chains with the "T_DSN Guardrail" drafting standards.

Cross sections cut in the areas of length of need now should widen the shoulder for guardrail even though the fill height maybe is less than 7'.

For smaller bridge projects (Sub-Regional Tier)

1. Use your regular template to locate the warrant points.
2. Draw guardrail everywhere where they should be shown (not just in the areas of the length of need) in the DSN.
3. Restore the guardrail graphics as CM chains with the “T_DSN Guardrail” drafting standards.
4. In Roadway Designer switch (“Change”) the regular road templates with one that does not have fill slope guardrail warrant.



These types of template will only show guardrail if it is drawn graphically in the DSN or when GR with SBG is encountered, no fill slope guardrail warrant is considered.