

Grading on Multi-Year Four Lane Divided Roadway Projects

Design Manual
Chapter 3
Cross Sections
 Originally Issued: 06-02-00
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Grading Typical [G_4D_Grade_Delay](#) and/or [G_4D_Grade_Delay_S](#) should be included in the plans for four lane divided projects that are graded and paved in separate years. [G_4D_Grade_Delay](#) and the select option on [Typical G_4D_Grade_Delay_S](#) show the initial subgrade cross section consisting of a 2% slope to each side. However, the final subgrade cross sections consist of a 1% slope to one side and a 4% slope to the other side, see **Figure 1**.

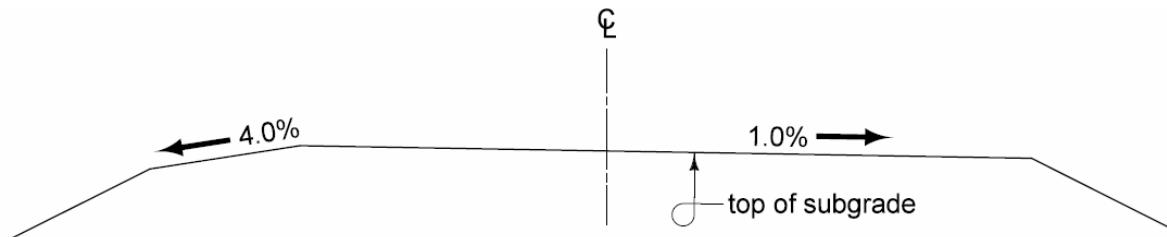


Figure 1: Final subgrade cross section.

For projects that are graded one year and paved the next, water may not drain off the 1% graded surface prior to paving. Water infiltration then creates a wet subgrade. Prior to paving in the following year, the soil in these areas has to be reworked to dry it out and then recompact. In some cases, the soil has to be replaced and then recompact. To prevent this problem, the subgrade cross sections in the first year are graded to a temporary 2% slope in both directions, see **Figure 2**.

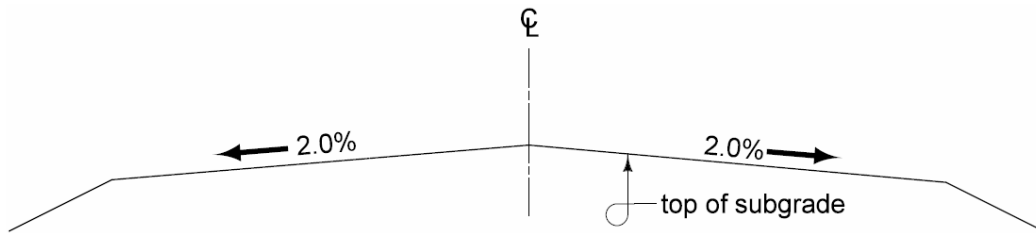


Figure 2: Temporary subgrade cross section.

Prior to paving in the following year, the subgrade is trimmed to the final 1%–4% cross section, see **Figure 3**.

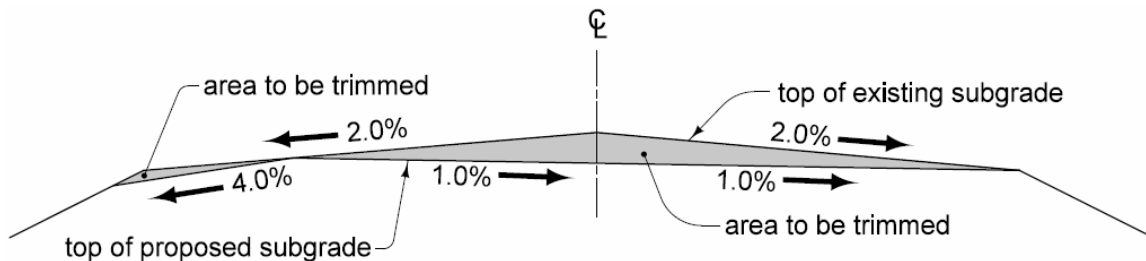


Figure 3: Temporary subgrade is trimmed before paving.

Keep in mind that when subgrade treatment (select soil is assumed) is required, approximately 6 inches of the treatment material will be removed at the centerline when trimming from 2%–2% to 1%–4%. For example, if a minimum of 2 feet of treatment is required, 2.5 feet of treatment will need to be placed to account for the 6 inches of material removed, see **Figure 4**.

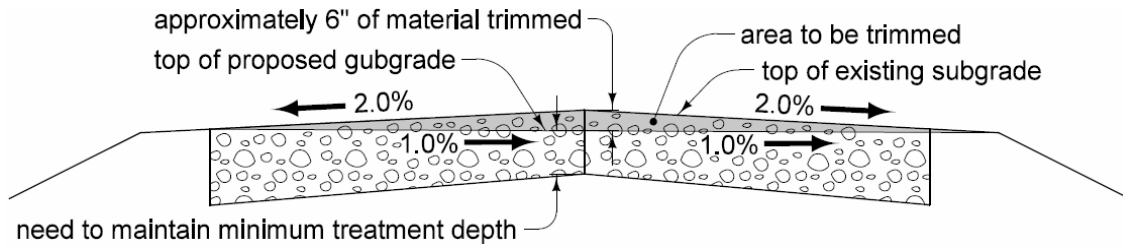


Figure 4: Accounting for trimmed subgrade treatment material.

The trimmed material is used as earth shoulder fill and should be included in excavation required for Earth Shoulder Construction. Add a note in the Estimate Reference Information that indicates the volume for Earth Shoulder Construction that is available from this trimmed material.

Typical [2101](#) should be included in the paving plans.

Chronology of Changes to Design Manual Section:

003D-002 Grading on Multi-Year Four Lane Divided Roadway Projects

4/23/2020	Revised Typical 3221 renumbered as 2101.
11/26/2019	Revised Changed 2% shoulder slope to 4% in Figures 1 and 3.
1/5/2017	Revised Changed title. Revised references to grading typicals. Added text to advise designers to account for subgrade treatment material trimmed.
9/13/2012	Revised Revised to reference current typicals.
6/2/2000	New material.