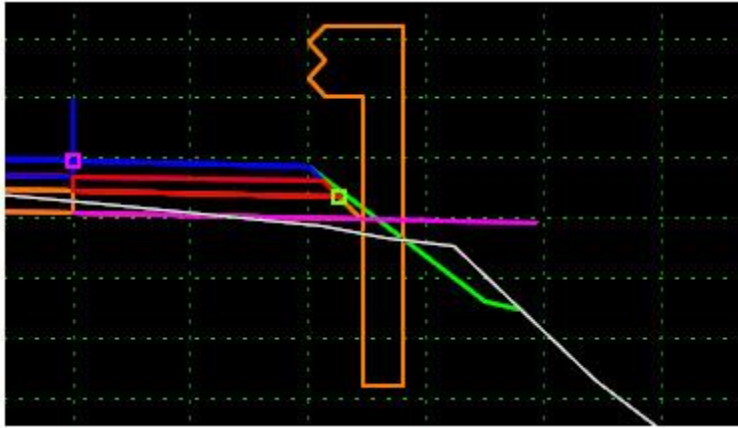## 3_8 SHOULDER POINTS & VECTOR OFFSET CONSTRAINTS

**Question:**

I am getting odd slopes in the areas of the shoulder point, see picture below. What is causing this problem and how do I fix it?


Answer:

Shoulder points with shoulder widening for guardrail are constrained by a "Vector-Offset" type of constraint. A vector-offset constraint needs two points to project a slope from and an offset distance from the vector. Here is a sketch describing how vector-offset constraints work.
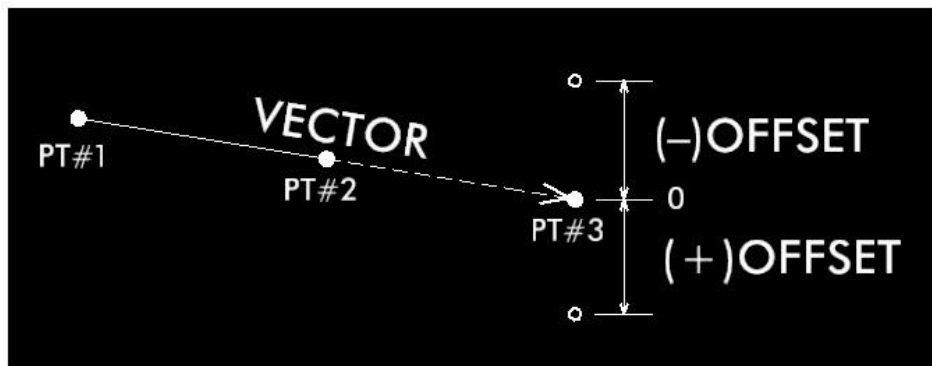
A closer look at the shoulder point reveals that "Constraint 2" has two dependent points (PS1_OEOP and GS_OS_GR_Face_Graphics) to project the slope from and an offset distance of zero to match the slope.
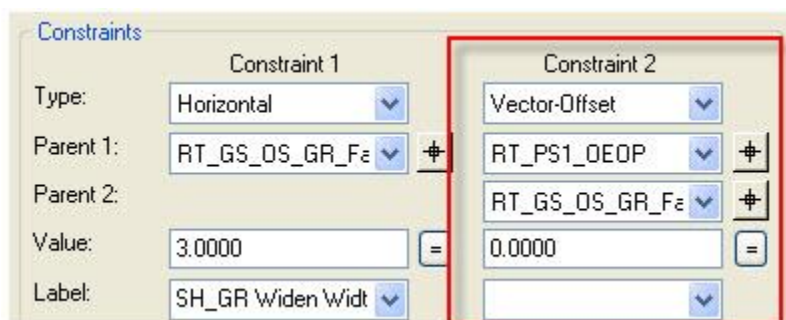
Inspecting the actual template drop reveals that these two vector points are on top of one another. Thus a projected slope cannot be computed resulting in what seems to be random "erratic" slopes.
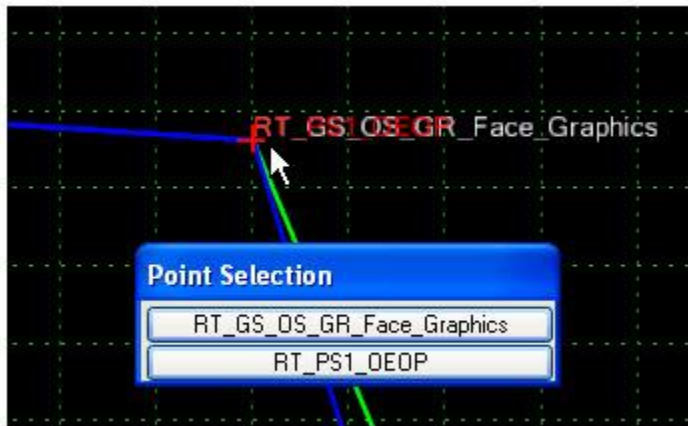
To remedy the problem, either move the guardrail graphic point 0.01' outside the paved shoulder point graphically or use a parametric constraint to shorten the paved shoulder width by 0.01' from the guardrail graphic point. We recommend the latter because it does not require re-importing of graphics.

Note that this issue is only caused by having two dependent points of a vector-offset constraint on top of one another. Normally you will not encounter it and adjustments do not need to be made.