Shoulder Rollover Locks

To create superelevation rollover controls. This is a workflow to create superelevation rollover controls for shoulder points, but with the general process can be used to create rollover controls for any point. The rollover lock tool in InRoads is broken but is supposedly fixed in V8i SS2 Refresh (not released as of 2/9/11).

1. Create superelevation controls for your traveled way as you would normally.
2. Add control lines for each shoulder point. These control lines will be used to control the shoulder rollover.
    a. In your Superelevation display, right-click and select “Create Single Control Line”.
    b. Name your control line something intuitive (LT_SH) and select your section.
    c. This creates your control line at whatever you said was your “Normal Cross Slope”
3. For high side of the template:
    a. Insert points on the proper control line and constrain them horizontally and vertically to the points where full super is achieved. Horizontal=0 and Vertical=-rollover maximum (if rollover maximum=8%, then V=-0.08).
    b. Place other points outside the limits of full super and constrain them Vertically to your normal shoulder cross slope and by Vector-Offset. The vector will be between the points of normal crown and full super on the high side EP and the offset will be your rollover maximum. It is important to note that the order in which you assign your parent points in the Vector-Offset constraint is important! Assign parent points from left to right with increasing stations (i.e. Parent 1 is at 50+00 and Parent 2 is at 50+50, NOT vice versa). If you assign your parent points correctly, this will transition your shoulder at a rate equal to (super control lines will be parallel) the EP transition from normal crown to full super, while maintaining the desired rollover max.
4. For the low side of the template:
    a. Insert points on the proper control line and constrain them horizontally and vertically to the points where full super is achieved. Horizontal=0 and Vertical=0 will lock the shoulder cross slope to the traveled way cross slope through the stretch of full superelevation.
    b. Place other points outside the limits of full super and constrain them Vertically to your normal shoulder cross slope by Vector-Offset. The vector will be between the points of normal crown and full super on the low side EP and the offset will be 0 because we want our shoulder cross slope to be equal to our traveled way cross slope when the superelevation is higher than the rate of normal shoulder cross slope. Doing this will allow the shoulder cross slope to remain normal until the low side superelevation crosses the normal shoulder slope. At that point the shoulder slope is equal to the traveled way slope.
5. Apply these control lines to your template points.
    a. The superelevation control lines are used as point controls to control points vertically. Using the Superelevation Wizard sets these point controls for you. Here you will do this step manually.
    b. In your point controls dialog box, select the point you wish to control (LT_SH for example). Set the mode to “Vertical” and the Control Type to “Superelevation”. You should be able to select the control line you designated to control that point. Set your reference point to the point where your rollover is to be applied. Setting this reference point to the centerline is wrong and your rollover will not work correctly.
    c. Repeat for both sides. Then look through your sections to ensure that the rollover is indeed working as desired.
6. If you have any questions regarding this, call the CO Developmental Branch at 502-564-3280 for help.