OverView - Proposed Pavement Configuration

Shape loading procedure

NCWedge acquires the configuration of the proposed pavement (widths, cross-slopes etc) directly from the Geopak Shapes files by utilizing it's link with Geopak. The procedure for loading shapes is as follows:

NCWedge searches the shapes file for all complex shape elements that intersect the cross section station perpendicular.

For each intersecting shape, the program determines if the shape is a Geopak shape by (could you guess?) asking Geopak.

For each confirmed Geopak shape, Geopak is consulted to obtain further information on the shape, including the baseline and PGL offset.

If the confirmed shapes are based on the current design alignment, they're colors and levels are tested against the user specified search criteria for level and color.

Shapes that are not Geopak shapes, or are not based on the design alignment, or do not match the specified search criteria for level and color are discarded.

Remaining shapes are analyzed to extract horizontal widths (accounting for skew). The cross slope along the cross section line is computed as an interpolation between the filler lines of the Geopak shape.

Shape search criteria (level - color)</B< TD>

Were you wondering why you would need to specify search criteria? In some cases, it's necessary. When this program was originally created, some over-sights were made. OK, let's call it goofs.

The format of the stations (par) file and the general shape loading algorithms were designed with the assumption that all shapes required would have the same baseline and PGL offset. Wrong.

A good example would be a proposed dual lane facility, where two or more shape clusters define the proposed pavement. Typically, the two shape clusters (left and right lanes) will have a minus and positive PGL offset, respectively. When NCWedge attempts to sort both clusters together, things get a little messy. This is because the offsets of the edges of the shapes are converted and stored as horizontal offsets from the PGL. Therefore, in a situation of this type, it becomes necessary to isolate the left and right clusters for the program.

This is accomplished by using different colors and/or levels for the two clusters. Then the clusters can be isolated from each other to NCWedge, using the Search Parameters option button on the Load Shapes dialog.

However, there are still some design situations that cannot be handled by NCWedge (concerning shapes).

NCWedge Shape Problems to Avoid

PGL Chains

NCWedge cannot properly handle Geopak shapes that have a PGL chain. Be aware of this when making Geopak shapes that will be used by NCWedge.

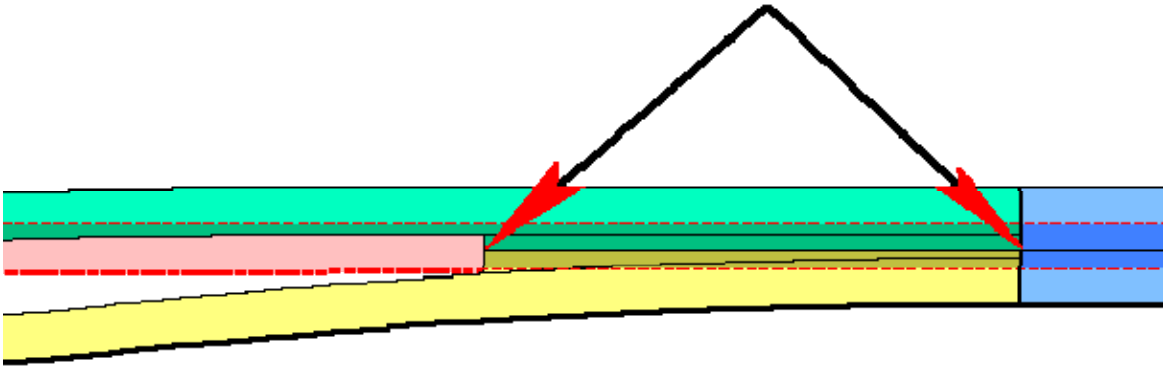
This capability could be added to the program, but truthfully, who has the time?

Shapes with different baselines

NCWedge can not accurately represent the proposed pavement surface when the proposed is described by shapes of different baselines.

For example, in this illustration, there are two shape clusters converging (represented by the green and yellow). Assuming they have different baselines, NCWedge cannot load both shape clusters to cover the

existing pavement (shown in pretty pink) in the area pointed out. Shape definitions in the wedge 'par' file would cover only one or the other of the clusters.



In a situation like this, control elevations would have to computed by hand. Then the control elevations could be entered into the program using the Edit Control Elevations feature of the Utilities dialog. From there, the remaining processes of NCWedge would function properly.