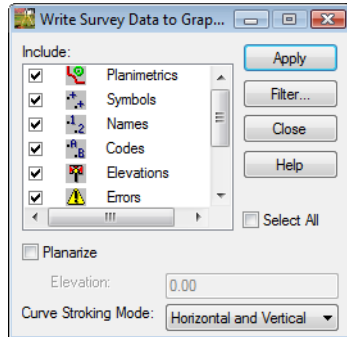












Chapter 4 - Exporting the Fieldbook – Overview

Write Survey Data to Graphics dialog

Writing Survey data to graphics creates the MicroStation design file (DGN) basemap. Once the file has been saved to a MicroStation design file there no longer is a link between the InRoads Survey fieldbook and MicroStation graphics. If there are changes that need to be made to the graphics, modify the InRoads Survey fieldbook and then re-export the graphics.



Dialog Items:

-  **Planimetrics** – if checked Planimetrics such as lines, chorded arcs, and cells will be saved to the design file
-  **Symbols** – if checked a tic mark representing the location of the shot will be saved to the design file.
-  **Names** – if checked the point name of the shot will be saved to the design file.
-  **Codes** - if checked the point feature code of the shot will be saved to the design file.
-  **Elevations** – if checked the point elevation of the shot will be saved to the design file.
-  **Errors** – if checked any errors in the fieldbook will be saved to the design file.
-  **Notes** – if checked any notes in the fieldbook will be saved to the design file.
-  **Network** – if checked any traverse legs will be saved to the design file.
-  **Apply** – will save the checked items to the design file
-  **Filter**- will allow the user to include or exclude any feature codes by a set of rules. Only the feature codes that pass through the filter will be saved to the design file.

Note: The symbology for Symbols, Points, Elevations, Notes, Errors, and Codes is controlled in the Survey Options dialog.

Planarize

- **Elevation** – if checked all points will place at a defined elevation.

Curve Stroking Modes

Curves generated from Survey are chorded arcs based on the Chord Height distance in the **Survey Options** dialog. MicroStation will generate a number of small line segments to represent the arc. There are three settings for generating arcs in 2D and 3D graphics.

- **Horizontal and Vertical**

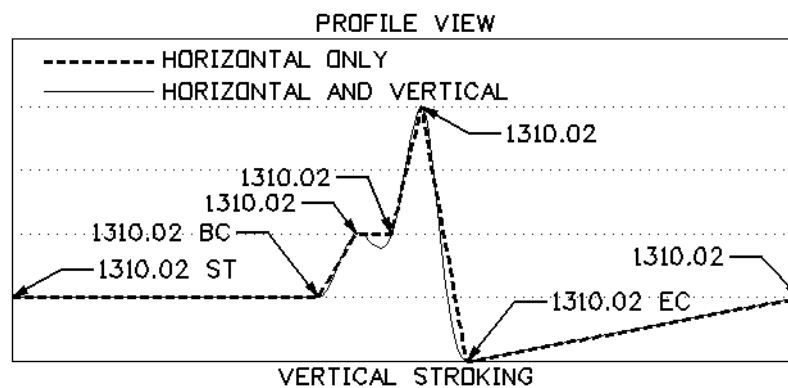
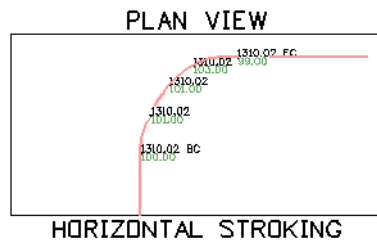
The curve is created by multipoint splines in the x, y, and z directions. In extreme variations in elevations unwanted sag or crest of a curve may occur.

- **Horizontal Only**

The curve is created by multipoint splines only in the x and y directions. The elevations or z values of the points are interpolated linearly between points.

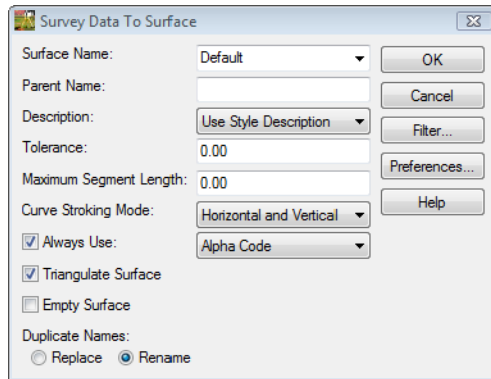
- **Do Not Stroke**

The curve is not created. It will be represented as linear elements between points.



Survey Data to Surface dialog

Writing Survey data to surface creates the Digital Terrain Model (DTM). Each feature is triangulated based on the Point type set in the Survey Feature Style. The intelligence built in to the feature comes from the Feature Style setting in the Survey leaf of the Feature Style dialog.



Dialog Items:

- ***Surface Name***

Key-in field to create a new empty surface for export from survey. If a surface has already been created, choose it from the dropdown arrow.
- ***Description***

Each feature in the DTM will be unique. When the feature is pushed to the DTM it will use one of the following options from the Feature table for the description.

 - ◆ Use Feature Definition
 - ◆ Use Attributes
 - ◆ Use Codes
- ***Tolerance***

Tolerance will set the minimum distance between points. If there are any points closer than the minimum, the points will be dropped from the surface. If the value is set to 0 then tolerance is ignored and all points will be used in the surface.
- ***Maximum Segment Length***

Maximum Segment Length defines the point density of an element. If points were taken every 100 feet and the segment length was set to 25 feet then the result would be three additional points along the feature that would be used in the triangulation.

Curve Stroking Mode

Curve Stroking Mode defines a curve horizontally and vertically. Curves in InRoads are defined by short line segments from the Survey Options dialog Chord Height.

- **Horizontal and Vertical**

The curve is created by multipoint splines in the x, y, and z directions. If extreme variations in elevations exist, unwanted sag or crest of a curve may occur.

- **Horizontal Only**

The curve is created by multipoint splines only in the x and y directions. The elevations or z values of the points are interpolated linearly between points.

- **Do Not Stroke**

The curve is not created. It will be represented as linear elements between points.

Always Use:

Defines what each feature style name will be in the surface. CDOT has defined a Style for each survey feature that corresponds to an InRoads Feature Style. By default if it is unchecked the feature style will be assigned in the following order.

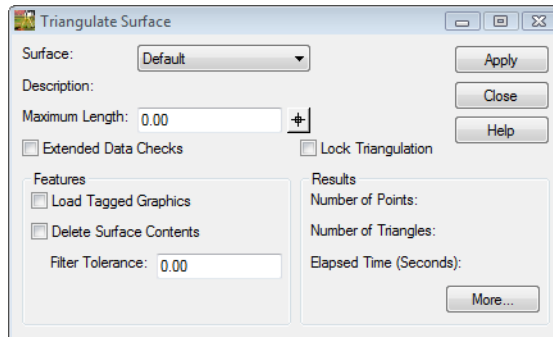
- **Style** – Preference Style name defined in the feature table.
- **Alpha Code**
- **Numeric Code**

Triangulate Surface

If checked the Triangulate Surface dialog will appear after the surface has been exported.

Triangulate Surface dialog

This dialog will appear when triangulate surface in the **Survey to Surface** dialog is checked. Exporting Survey data to Surface without triangulating it will result with the data being pushed to the surface, but the triangle network will not exist yet.



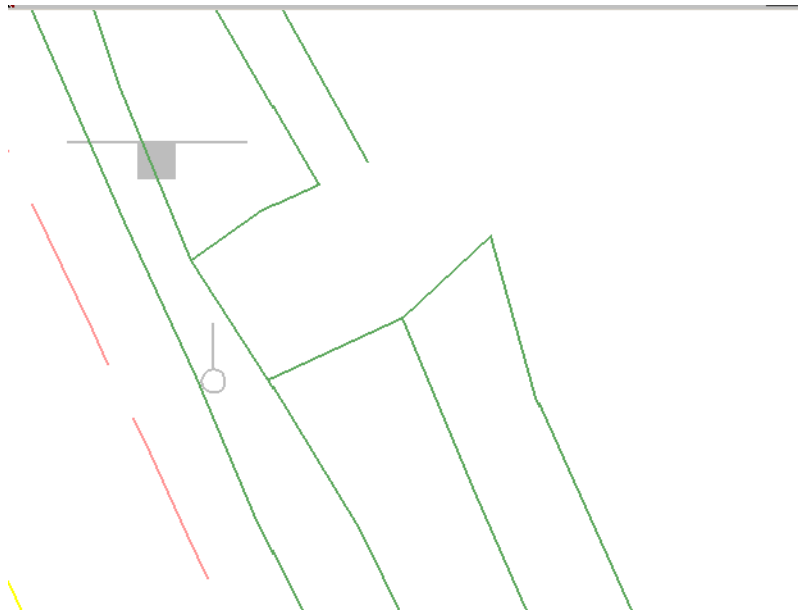
Dialog items:

- **Surface** – drop down box shows the active surface by default, other surfaces selectable from the drop down.
- **Extended Data Checks** - checks DTM integrity (during triangulation) as to crossing breaklines and miss-matched elevations.
- **Maximum Length** - maximum length of any one triangle segment (leg) can span during the triangulation process. If set to 0, triangle legs can extend to any length. Used to constrain triangulation to prevent unnecessary ‘surface’ data.
 - ◆ **+** **Target button** – define a Maximum Length distance by picking two points in a MicroStation view.
- **Load Tagged Graphics** – scans the design file for any InRoads tagged data and loads the elements into the surface.
- **Delete Surface Contents** – empties the surface prior to adding any tagged elements.
- **Results** – readout of triangulation outcome.
- **More...** **More** – opens the **Surface Properties** dialog.

Multiple Feature coding and the DTM

- Rule #1 Multicoded linear features to be triangulated

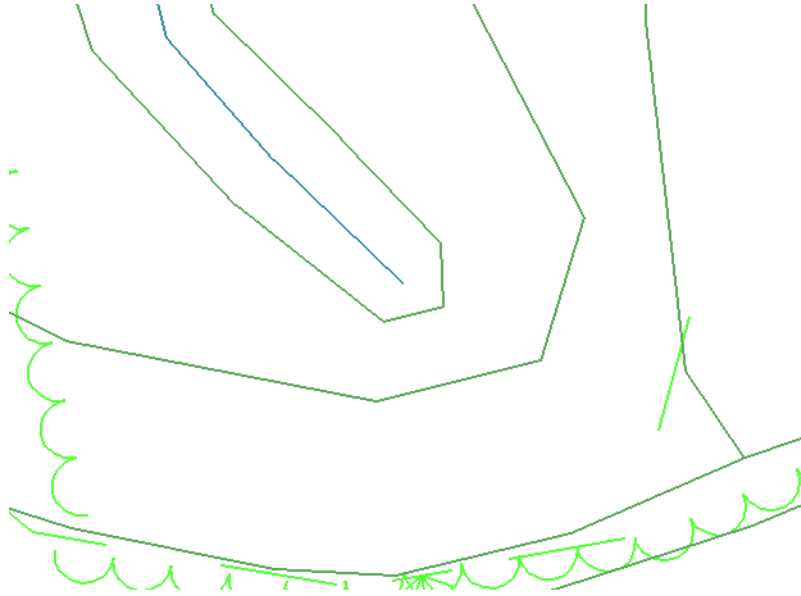
Survey linear features that are also DTM point type breaklines will be moved to the Surface. When duplicate points are triangulated, one will be dropped and will create a shared triangulation point.



- Rule #2 Multicoded linear features with random points to be triangulated

Survey linear features and random points will be moved to the Surface. However, when duplicate points are triangulated the breakline will override and the random point will be dropped entirely from the surface.

The only way to keep this from happening is to exclude the random point from triangulation with a control code “X”. This will allow the feature to remain part of the surface.



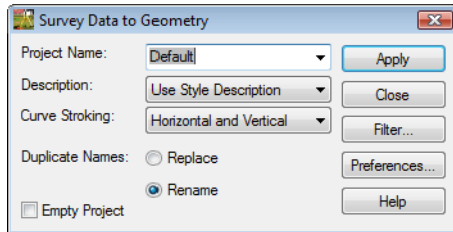
- Rule #3 Multicoded linear features excluded from triangulation with random points to be triangulated

Survey linear features that are excluded from triangulation and random point types will be moved to the Surface. When duplicate points are triangulated the linear feature will remain and the random point will be used for triangulation.



Survey Data to Geometry dialog

Saving Survey Data to Geometry creates a Geometry Project (ALG) which can contain multiple horizontal and vertical alignments from any planimetric linear feature. Any single point such as property corners or trees will also be saved to the same Geometry Project and placed into the Cogo buffer.



Dialog Items:

- ***Project Name***

Key-in field to create a new empty Geometry Project for export from survey. If a Geometry Project has already been created, choose it from the drop down arrow.

- ***Description***

Each alignment in the Geometry Project will be unique. When the alignment is pushed to the Geometry Project it will use one of the following options from the Feature table for its description.

- ◆ Use Feature Definition
- ◆ Use Attributes
- ◆ Use Codes

Curve Stroking

Curve Stroking mode defines a curve horizontally and vertically. Curves in InRoads Survey are defined by short line segments from the Survey Options dialog Chord Height. If a simple curve is collected in the field when the curve is exported to an alignment the curve data is calculated and stored as a curve. The curve will most likely be shown as noncollinear.

- ***Horizontal and Vertical***

The curve is created by multipoint splines in the x, y, and z directions. In extreme variations in elevations unwanted sag or crest of a curve may occur.

- ***Horizontal Only***

The curve is created by multipoint splines only in the x and y directions. The elevations or z values of the points are interpolated linearly between points.

- ***Do Not Stroke***

The curve is not created. It will be represented as linear elements between points