

Existing 3D Features File

In OpenRoads Designer and OpenSite Designer, **survey** feature definitions that cross perpendicular sections are seen as tiny pinpoints in dynamic and permanent cross sections. To better visualize the existing crossing feature definitions from survey, a file containing existing 3D *linear* (not survey) elements can be created and this file can be attached as a reference to a corridor or XSEC_bas file. Once *linear* feature definitions are attached as a reference, the defined symbology will appear in the dynamic cross sections. A reference attachment to a file containing *linear* feature definitions will also allow the crossing linear feature definition points to be annotated in cross section drawing models according to annotation definitions.

One more reason to have an existing features file is the inability to point control using feature definition and range from survey feature definitions. Feature Definition and Range point controls can select *linear* feature definitions, but not *survey* feature definitions that come from a field book.

It can also be beneficial to see pipes in cross section views. Steps below will show how to use 3D modeling tools to quickly draw cylindrical solids of a specified diameter in the 3D Features file. Sections of the solids will immediately appear in both dynamic and permanent cross sections.

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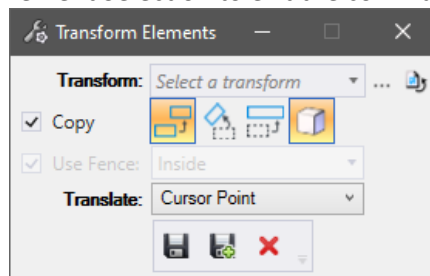
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Steps to Create a 3D Linear Features File from Existing Survey Feature Definitions

Transform the Survey Graphics from an Attachment

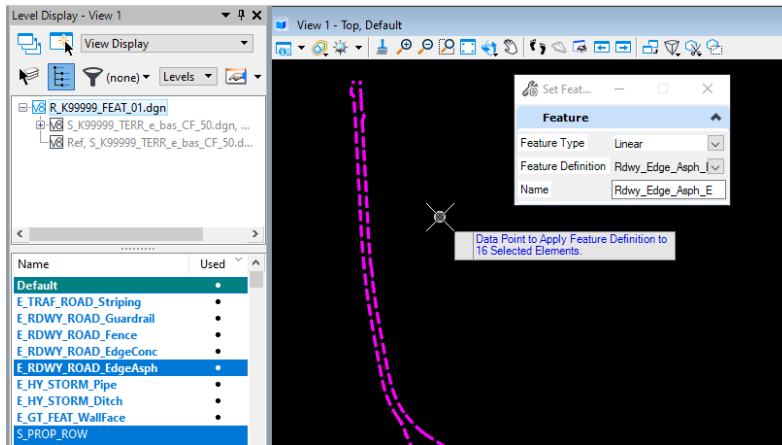
1. **Create a new file from a 3D seed** file in the 6_Civil_Data folder; name it ID_K#####_FEAT_bas_###.dgn.
2. **Attach the survey existing terrain** container file (S_K#####_TERR_e_bas_CF_01.dgn) as a reference with live nesting = 1.
3. Select the terrain boundary and **set it as the active terrain**.
4. **Adjust the level display** to display only the survey feature definitions to create linear feature definitions for (i.e. if only edge of pavement is wanted, toggle off the display of all levels except E_RDWY_ROAD_EdgeAsph).
5. **Make a selection set** of the visible graphics.
6. Use **Terrain>Edit>Transform** with no "Transform" selected, "Copy" checked, "Enable to translate elements" and "Apply transforms to Z or Elevation values" icons selected (highlighted yellow), and "Translate" set to Cursor Point as shown below. Follow the prompts and data point in the same location twice to "Accept Point" and then "Accept Transform". <Esc> or use Element Selection to exit the command.



7. **Detach the referenced survey terrain**.

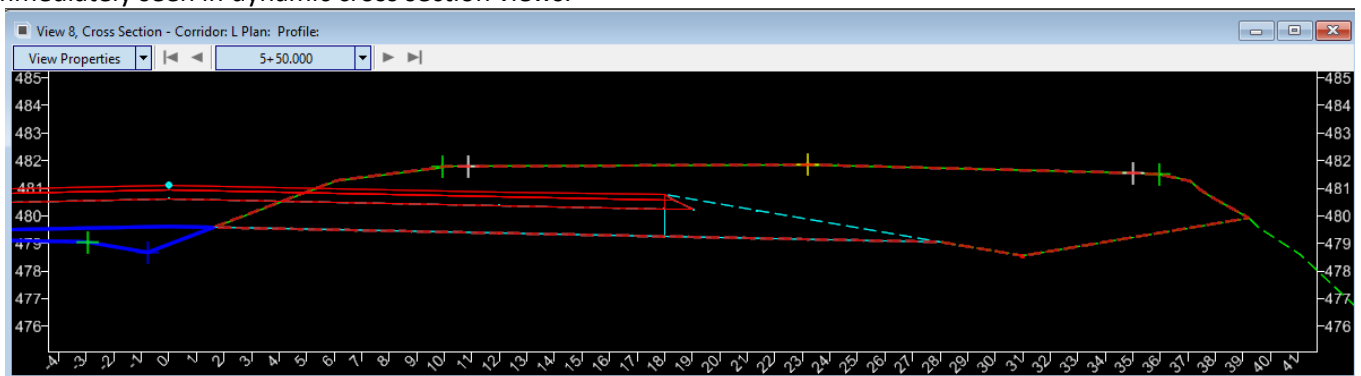
Featurize Graphics as Linear Features

8. **Adjust the level display** to display only one level of data (i.e., E_RDWY_ROAD_EdgeAsph).
9. **Make a selection set** of the visible graphics.
10. Use **Geometry>General Tools>Standards>Set Feature Definition**. In the tool settings dialog select the linear feature definition that corresponds to the displayed level. (i.e., Linear>Existing>Roadway>Rdwy_Edge_Asph_E). Data point to apply the feature definition to the selected elements.



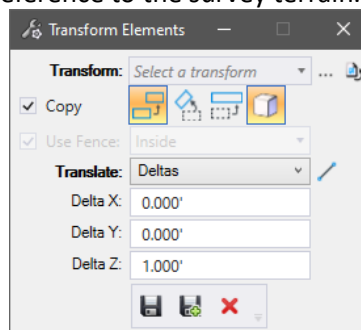
Repeat steps 8-10, displaying another level of data and using the corresponding linear feature definition to set a feature definition until all graphics are linear feature definitions.

When the features file is attached as a reference to a corridor or cross section base file, plus symbols are immediately seen in dynamic cross section views.

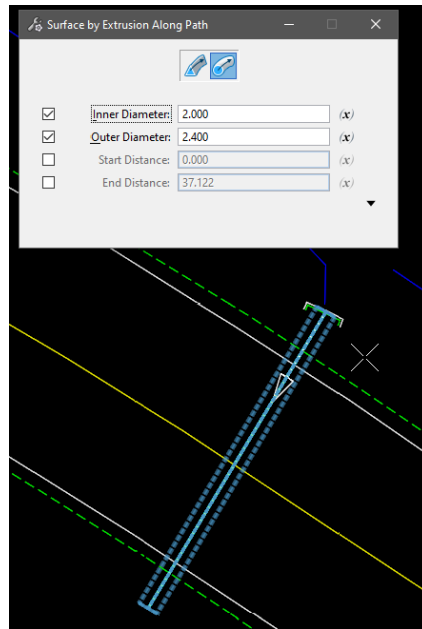


Draw Pipe Solids for Display in Cross Sections

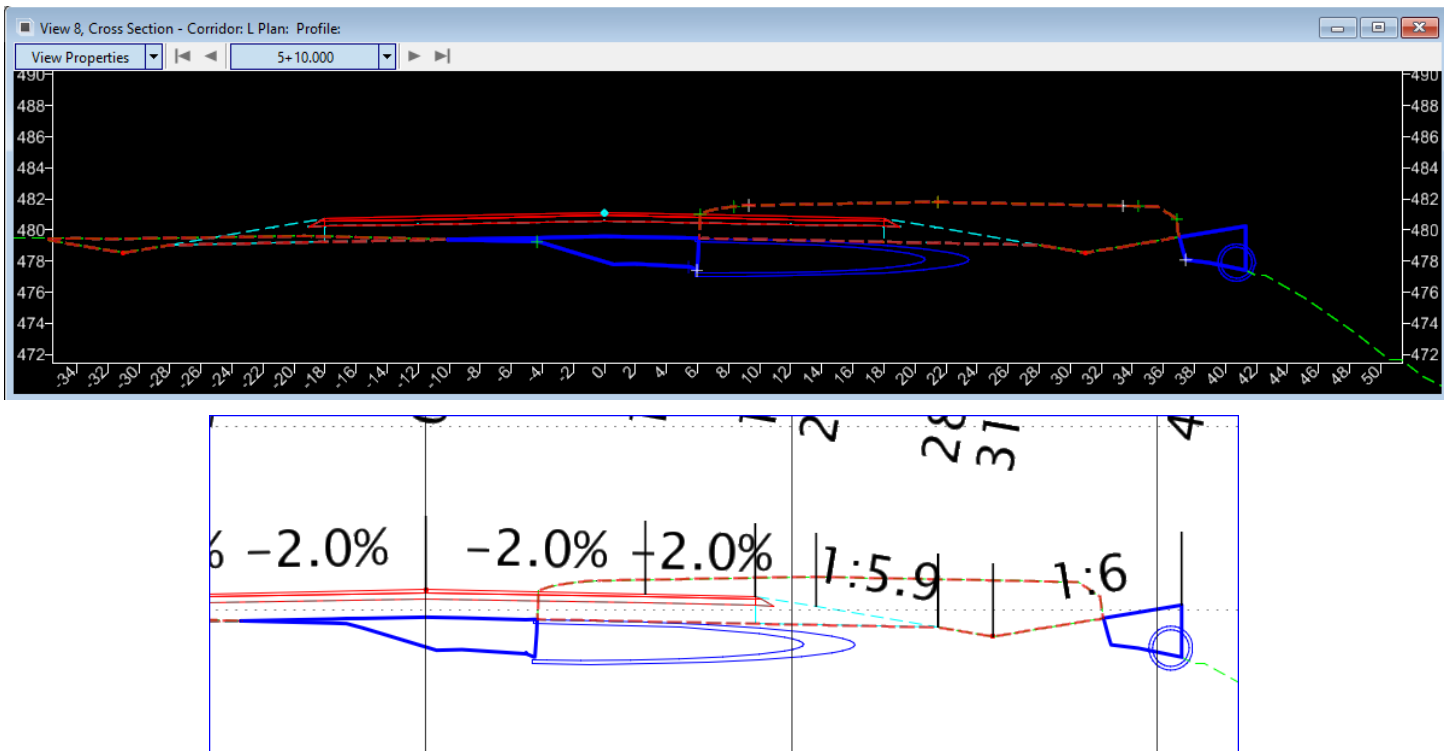
1. **Transform (Copy)** a survey feature definition like, HY_PIPE_CONC_E into the features file as a graphical element to create a Line String. Use a **Translate method of Deltas** (as shown below for a 24" pipe) to create a line string that is raised from the flow line to the center of the pipe; the Delta Z value will be $\frac{1}{2}$ the pipe diameter. Then toggle off the display or detach the reference to the survey terrain.



2. Use the **Element Properties** to change the line style from pipe Extg_V8 to 0.
3. Use **Extrude Along** (found in Modeling workflow: Solids>Create Solids or by typing into the Search Ribbon). Select the Circular Profile method and enter the inner pipe diameter and the outer diameter, accounting for the pipe thickness, as shown in the image below.



The images below of the dynamic cross sections (black background) and the permanent cross sections (white background), show a pipe that crosses the existing highway at a slight angle to perpendicular (half a double, blue-colored oval) and another pipe that was “faked in” along the right side to run longitudinally for illustration purposes (blue-colored double circle).



That’s all it takes; sections of the pipe solids will immediately appear in both dynamic and permanent cross sections that use the features file as a reference.