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WS 07

GEOPAK Corridor Modeling

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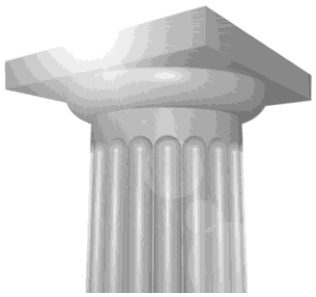


GEOPAK Corridor Modeling

Overview

This course teaches the Corridor Modeling workflow which includes the Create Templates and Roadway Designer applications. The user will import GEOPAK data into the Corridor Modeling application and then proceed to design, create and then cut/label cross sections from the finished model.

Prerequisites

- Working knowledge of Microsoft Windows operating system
- Experience in Road Design
- Working knowledge of MicroStation functionality equivalent to the topics taught in the Bentley Institute *Essentials MicroStation* or *Moving to MicroStation* courses.
- Working knowledge of GEOPAK functionality equivalent to the topics taught in the Bentley Institute *GEOPAK Road 1* course.

Objectives

After completing this course, you will be able to:

- Access *Corridor Modeling*
- Change Preferences
- Import DDB features
- Import GEOPAK TINs
- Import Geometry
- Import Plan Graphics – Using Symbology
- Import Plan Graphics – Using Selection Set
- Understand *Smart Update*

- Access *Create Templates*
- Create a Template
- Access *Roadway Designer*
- Create a Corridor
- Assign Template Drops
- Display References
- Assign Key Stations
- Import Superelevation
- Apply End Condition Exceptions
- Create a Surface
- Use *Drive Roadway*
- Cut Proposed Cross Sections
- Label Proposed Cross Sections

Access Corridor Modeling

Before we can begin, let's make sure everyone knows where and how to access the Corridor Modeling application.

➔ Open Design File

1. Open the file *Plan.dgn*.

➔ Activate GEOPAK

1. If GEOPAK is not already activated, select *Applications > Bentley Civil > Activate Bentley Civil*.

➔ Activate Corridor Modeling

1. Select *Applications > Road > 3D Tools > Corridor Modeling*.
2. The *Corridor Modeling* application should now be open and available for use.

   Note: *The Corridor Modeling application is also available from the Road Tools Palette under the 3D Tools option.*

3. Open *Windows Explorer* and review the project directory. Note the creation of a new subdirectory ***/rddbs***.

   Note: *This subdirectory is where files are created that are needed exclusively by the Corridor Modeling application.*

➔ Select GPK File

1. Using the *Select GPK File* icon, select ***job314.gpk***.

Change Preferences

There are several preferences on the Corridor Modeling dialog that are specific to it's use. In this exercise, we'll review and change these preferences.

➔ Access Preferences

1. Select the *Preferences* tree option on the left of the dialog.

➔ Change and Review Preferences

1. Change the *Station Lock* to ***Even***.
2. Review the other *Preferences* options.

Note: *GEOPAK delivers a template library (default.itl) in the /bin directory that is being used for this course. If you want to use a different template library, you can point to it using the GPK_RD_TEMPLATE_LIBRARY configuration variable.*

Import DDB Features

As we move through the Corridor Modeling application, we'll want to be able to use DDB features to control symbologies. This exercise teaches how to import ddb features into the Corridor Modeling application.

➔ Import DDB Features

1. Select the *DDB* tree option on the left of the dialog.
2. The dialog should change and show you which DDB database is being used.

   Note: *GEOPAK delivers a default_styles.ddb file in the /bin directory that is being used for this course. If you want to use a different DDB file, you can point to it using the GPK_ACBOOK_DDBFILE_STYLES configuration variable.*

3. Click the *Import* button.

   Any Drafting Standard in the DDB will be imported and you should get an information dialog stating as much.

4. Dismiss the *Information* dialog.
5. Open Windows Explorer and navigate to the /rddbs subdirectory previously created within the project.

   You should see a new file (*default_styles.xin*) has been created.

   Note: *This file is needed exclusively by the Corridor Modeling application. It should not be deleted.*

Import GEOPAK TINs

In order to use a GEOPAK TIN in the Corridor Modeling application, it has to be imported. This importation process will result in the creation of a new file with a .DTM extension. This exercise teaches how to import TIN files.

➔ Import TIN File

1. Select the *DTM* tree option on the left of the dialog.
2. Use the *Select Tin File* icon to select the tin file *fm314-dtm.tin*.
3. Use the *Add Tin to List* icon to add the selected tin file to the list box.

   Note: *You are not limited to importing one tin file at a time. You can add multiple tin file names to the list box and they can all be imported simultaneously.*

4. Click the *Import* button.

   After a few seconds of processing, you should see an information dialog stating that the tin file has been imported.

5. Dismiss the *Information* dialog.
6. Go to Windows Explorer and review the project directory.

   You should see a new file has been created *fm314-dtm.dtm*.

   Note: *When the TIN file is imported,a new file is created with the same name as the original tin, only using a .dtm extension.*

Import Geometry

We have chains and profiles in our GPK file that need to be imported into the Corridor Modeling application in order to use them. This exercise teaches how to select and import geometry data from the GPK.

➔ Import Geometry

1. Select the *Geometry* tree option on the left of the dialog.
2. From the *Chain* combo box, select the chain ***BASE***.
3. From the *Drafting Standard* combo box, select ***Centerline***.

   Note: *The names in the Drafting Standard list are the same ones that we imported from the DDB in a previous exercise.*

4. In the *Profile(s)* list box, use the Shift or CTRL keys to select BOTH the ***Exist*** and ***Proposed*** profiles.
5. Click the *Add Chain to List* icon to add the Chain and Profiles to the list box.
6. Click the *Import* button.

   You should see an information dialog stating that the geometry has been imported.

7. Dismiss the *Information* dialog.
8. Open *Windows Explorer* and navigate to the ***/rddbs*** subdirectory previously created within the project.

   You should see a new file (*cmjob314.alg*) has been created.

   Note: *This file is needed exclusively by the Corridor Modeling application. It should not be deleted.*

Import Plan Graphics – Using Symbology

Roadway Designer does not read plan graphics. So in order to make Roadway Designer aware of our plan graphics, we need to import them into the Corridor Modeling application.

When we import the plan graphics, they are stored in the /rddbs subdirectory in the .alg file.

Once they are in the .alg file, they can be accessed by the Create Templates and Roadway Designer applications. Templates can be used to target the alignment names or they can target the style/drafting standard of the alignment.

This exercise teaches how import graphical elements by specifying the symbology of the graphical elements.

➔ Specify Search Symbology for Edge of Pavement

1. Select the *Plan Graphics* tree option on the left of the dialog.
2. Next to the *Symbology* combo, click on the graphic icon to access the *Element Symbology* dialog.

3. On the *Element Symbology* dialog, enable the *Lv Names* toggle.
4. Use the *Match* button and select one of the *dark blue* lines (edge of pavement) in the design file.

   The level name ***D_EOT_1*** should be placed in the Lv Names field.

   Note: *You could have also used the Select Levels icon on the dialog to manually select the level name. Or you could have just typed it in.*

5. Click the *Display* button on the *Element Symbology* dialog.

   Both edges of pavement (*dark blue* lines) should hilite.

6. Click the *Undisplay* button on the *Element Symbology* dialog.
7. Close the *Element Symbology* dialog.

➔ Specifying the Left Edge of Pavement

1. From the *Chain* combo box, select the chain ***BASE***.
2. In the *New Chain Name* field, enter the name ***LEFT_EOP***.
3. From the Drafting Standard combo box, select **Pavement Outside Edge**.

Import Plan Graphics – Using Symbology (cont).

4. Set the *Side* option to ***L***.
5. Set the Begin Offset = **0** and the End Offset = **100**.
6. Click the *Add Search Criteria to List* icon to add the item to the list box.

➔ **Specifying the Right Edge of Pavement**

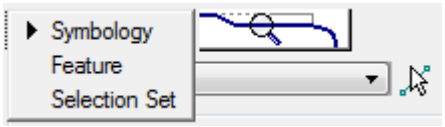
1. In the *New Chain Name* field, enter the name ***RIGHT_EOP***.
2. Set the *Side* option to ***R***.
3. Click the *Add Search Criteria to List* icon to add the item to the list box.

Import Plan Graphics – Using Selection Set

In the previous exercise we learned how to import plan graphics by searching for a particular graphical symbology within a specified search "window". However, there are times when graphical elements don't fall nicely into such a "window". This exercise will show you how to handle cases like this by manually specifying the elements to be imported using a MicroStation Selection Set.

➔ Specifying a Selection Set

1. Change the option on the dialog from *Symbology* to *Selection Set*.



2. In the *New Chain Name* field, enter the name ***WALL***.
3. From the *Drafting Standard* combo box, select ***Wall***.
4. In your design file view, there should be 3 *light blue* lines representing a retaining wall. Place these 3 *light blue* lines into a *MicroStation Selection Set*.
5. Click the *Add Search Criteria to List* icon to add the item to the list box.
6. Clear the *MicroStation Selection Set*.

➔ Importing the Plan Graphics

1. Click the *Import* button.

   After a few seconds of processing, you should see an information dialog stating that 5 chains have been successfully stored.

2. Dismiss the *Information* dialog.

➔ Saving the Dialog Settings

1. Close the *Corridor Modeling* dialog.

   You will receive an *Alert* dialog prompting you to Save Settings.

2. Click ***Yes*** on the *Alert* dialog.
3. Key-in a name (e.g. MyProject.rdp) for your settings file and click ***Save***.
4. Close the *Information* dialog stating that your settings have been saved.

Understanding Smart Update

In our previous exercises, we have imported both geometric and graphical data into the Corridor Modeling application. However, the data in the geometry database as well as our graphical data has a tendency to change throughout the life of a project. With that in mind, we need some way to keep our data in synch. This exercise will show how a functionality called *Smart Update* does just that.

➔ Modifying Geometric Data

1. Open Coordinate Geometry using job ***314*** and the operator code ***dg***.
2. Select *File* > *Input File Utility*.

   You should see the file "prof" listed in the dialog.
3. Select the file name listed in the dialog then click the *Apply* button on the *Input File Utility* dialog.

   This will load the input file commands into the COGO window.
4. Close the *Input File Utility* dialog.
5. Enable the toggle for *Redefine*.

6. Select *Edit* > *Read All.*

   This will update the ***Proposed*** profile.
7. Exit *Coordinate Geometry*.

➔ Modifying Graphical Data

1. In the design file, delete the 3 *light blue* lines that represent our retaining wall.

➔ Geometry - Smart Update

1. Access *Corridor Modeling.*
2. Select the *Geometry* tree option on the left of the dialog.

   Note: *The profiles are now listed in BLUE. When something is denoted with the color BLUE it means that it has been modified. In this case, the Proposed profile has been changed in the geometry database and is out of synch with the geometry data that was previously imported.*

Understanding Smart Update (cont.)

3. Click the *Import* button.

   You should see an information dialog stating that the geometry has been updated.

4. Dismiss the *Information* dialog.

   Note: *The profiles are now listed in BLACK, denoting that the geometry database and the imported geometry are now in synch.*

➔ **Plan Graphics - Smart Update**

1. Select the *Plan Graphics* tree option on the left of the dialog.

   Note: *The wall item is now listed in RED. When something is denoted with the color RED it means that it has been DELETED. In this case, the graphical elements that were used to import the wall have been deleted, so the design file data is out of synch with the Corridor Modeling application.*

2. Select the wall item in the list box.

3. Click on the *Delete Search Criteria of Selected Row* icon.

   You will be prompted with an Alert dialog to make sure you want to remove the previously imported data.

4. Click the *Yes* button on the *Alert* dialog.

   Note: *The wall item is removed from the list box AND it is also removed from the .alg file in the /rddbs subdirectory.*

Summary and Review

Summary

You are now able to:

- Access Corridor Modeling
- Change Preferences
- Import DDB Features
- Import GEOPAK TINs
- Import Geometry
- Import Plan Graphics – Using Symbology
- Import Plan Graphics – Using Selection Sets
- Understand Smart Update

Questions

1. How many ways are there to access the Corridor Modeling application?
2. What is the name of the subdirectory that is created when the Corridor Modeling application is first opened?

   A - \prjdbs
   B - \rddbs
   C - \cmdbs

1. What is the name of the configuration variable that is used to specify which template library is to be used by the Corridor Modeling application? _____
2. What is the name of the configuration variable that is used to specify which DDB file is to be used by the Corridor Modeling application? _____
3. When I import a DDB, all items in the DDB are imported.

   - True
   - False

4. Only one TIN file at a time can be imported.

   - True
   - False

5. If I were to import geometry from job999.gpk, what would be the name of the resulting file that is created in the /rddbs subdirectory? _____

6. When you save a Corridor Modeling settings file, what extension is it given? _____

7. When an item in Geometry or Plan Graphics is shown in *blue*, that means the item has been modified.

   - True
   - False

Summary and Review (cont.)

Answers

1. How many ways are there to access the Corridor Modeling application?

   2 - The Applications pulldown and the Road Tools Palette.

2. What is the name of the subdirectory that is created when the Corridor Modeling application is first opened?

   B - \rddbs

3. What is the name of the configuration variable that is used to specify which template library is to be used by the Corridor Modeling application?

   GPK_RD_TEMPLATE_LIBRARY

4. What is the name of the configuration variable that is used to specify which DDB file is to be used by the Corridor Modeling application?

   GPK_ACBOOK_DDBFILE_STYLES

5. When I import a DDB, all items in the DDB are imported.

   False – Only the Drafting Standards items are imported.

6. Only one TIN file at a time can be imported.

   False – Multiple TIN files can be imported simultaneously.

7. If I were to import geometry from job999.gpk, what would be the name of the resulting file that is created in the /rddbs subdirectory?

   cmjob999.alg

8. When you save a Corridor Modeling settings file, what extension is it given?

   .rdp

9. When an item in Geometry or Plan Graphics is shown in *blue*, that means the item has been modified.

   True – *blue* means modified/changed while *red* indicates it's been deleted.

Access Create Templates

Now that we've imported all of our data into the Corridor Modeling application, we're ready to begin our work with templates. This exercises teaches how to access the Create Templates application.

➔ Access Create Templates

1. From the *Corridor Modeling* dialog, click on the *Open Create Template* icon.

Note: *The application is opened using the default.itl file delivered with GEOPAK in the /bin directory. Remember this is controlled with the setting in the Corridor Modeling preferences.*

2. Double-click on the template library name to expand the view to see the *Components*, *End Conditions* and *Templates* folders.

Create a Template

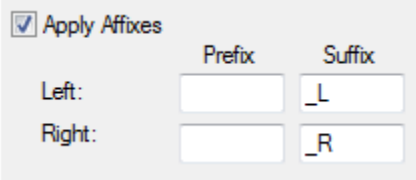
There is a lot to know when it comes to creating templates. A user may want to start from "scratch" and create their own components, or they may want to assemble a template from previously created components. Because of time limitations, this exercise will take a look at the second option and explain how to create a template by using previously created components.

➔ Create a New Template

1. Right-Click on the *Templates* folder and select *New* > *Template*.
2. Key-in the template name ***Workshop***.

➔ Template Options

1. Enable the *Template Options* dialog using *Tools* > *Options*.
2. Enable the *Apply Affixes* option.
3. Key-in a suffix of ***_L*** for the Left and ***_R*** for the Right.



4. Click *OK* to close the Template Options dialog.

➔ Enable Dynamic Settings

1. Enable the *Dynamic Settings* dialog using *Tools* > *Dynamic Settings*.

   Note: *There is also a small icon at the bottom of the template view that can be used to enable and disable this dialog.*

2. In the Dynamic Settings dialog, set both *Step* fields to ***0.1***.

➔ Drag and Drop Pavement Component

1. Navigate to the ***Components*** > ***Pavement*** folder.
2. Select *12' Travel Lane* component and drag it into the template view.

Create a Template (cont.)

3. With the component still attached to your cursor, right-click to access the template placement options.
4. Release your left mouse button. Select *Mirror* using a left-click.
5. Move your mouse to the *Dynamic Origin* location (0,0) and drop the components.
6. Fit the view.

➔ Merging Components

1. Select the middle blue line that connects both the left and right asphalt pavement components.
2. Right-click and select *Merge Components*.
3. Repeat the process for both the Base (red) and Aggregate (yellow) components.

➔ Drag and Drop Curb Component

1. Navigate to the ***Components*** > ***Curb Gutter and Sidewalk*** > ***Curb*** folder.
2. Select the component ***30" C&G 6" Curb*** and drag it into the template view.
3. Move your cursor to the point name ***EP_R*** and drop the component.
4. Fit the view.

➔ Drag and Drop End Condition

1. Navigate to the ***End Conditions*** folder.
2. Select the End Condition ***4:1 Cut/Fill*** and drag it into the template view.
3. Move the cursor to the point name ***BC_R*** and drop the end condition.
4. Fit the view.

➔ Exit and Save

1. Click the *Close* button to exit the Create Template application.
2. When prompted, click *Yes* to save the changes to the template library.

Access Roadway Designer

In the next few exercises, we'll be taking a look at the different functionalities of Roadway Designer. We'll start with this simple exercise that shows how to access the application.

➔ Access Roadway Designer

1. In the design file, change the model from ***DEFAULT*** to ***3D MODEL VIEWS***.
2. From the Corridor Modeling dialog, click on the Open *Roadway Designer* icon.

Note: *In the lower left corner of the application, you'll see the option for selecting an Active Surface. There you'll also see the previously imported surface fm314-dtm listed. In order for a surface to be listed here in Roadway Designer, it MUST be listed in the Corridor Modeling → Import Tin list box.*

Create a Corridor

When using Roadway Designer, we always begin by creating our corridor. A corridor is just a name we give to a specific chain and profile combination that we want to design along. We can have a single corridor or multiple corridors for our project. This exercise shows what is involved in creating a corridor.

➔ Accessing Corridor Management

1. Select *Corridor > Corridor Management.*

   Note: *The Manage Corridors dialog can also be accessed via the use of an icon positioned along the top portion of the Roadway Designer application.*

2. Key-in the name ***WS1*** for the name of the corridor.
3. Select the Horizontal Alignment ***BASE*** and the Vertical Alignment ***PROPOSED***.
4. Click the *Add* button to add the corridor to the list box.
5. Close the *Corridor Management* dialog.

   Note: *The Roadway Designer is divided into 3 views: Plan, Profile and Cross Section. You should now see your plan and profile displayed.*

6. Fit the view in either the Plan or Profile views.

Template Drops

Now that we have our corridor created, we are ready to apply templates.

When we apply a template to a corridor, we specify a beginning station at which to begin the template and then give an interval. The interval we use is very important. When determining an interval, we want to keep in mind the interval that we will use to cut our proposed cross sections.

You never want to cut a final proposed cross section at a location where you did not have a section in Roadway Designer. To facilitate this, always make sure that the interval of your final proposed cross sections is divisible by the interval used in Roadway Designer.

For example, let's say in Roadway Designer that we use an interval of 10'. So we would have cross sections at 100+00, 100+10, 100+20, etc.. When we cut our final proposed cross sections, an interval of 5, 10, or 20 would work fine because any of these intervals would generate sections that also exist in Roadway Designer. But if we tried to use a final cross section interval of 25 we would end up with cross sections (e.g. 100+25, 100+75) at locations that did not exist in Roadway Designer.

We can apply single or multiple templates along our corridor. The process is simple, as we'll see through this exercise.

➔ Template Drops

1. Select *Corridor* > *Template Drops.*

   Note: *The Template Drops dialog can also be accessed via the use of an icon positioned along the top portion of the Roadway Designer application.*

2. Double-click on the template library name to expand it.
3. Double-click on the *Templates* folder.
4. Select the template ***Workshop*** that we created previously.
5. Click the *Add* button to add the template to the list box.
6. Close the *Template Drops* dialog.
7. Review several of the cross sections.

Display References

There are times that we may want to display alignments on our cross sections for review purposes. For example, we may want to make sure that our templates are properly following our edge of pavement alignments, or make sure that our toe of slopes are falling within our right of way limits. To do this, there is a tool called Display References. This exercise will review how to access and use this application.

➔ Access Display References

1. Select *Corridor > Display References.*

   Note: *The Display References dialog can also be accessed via the use of an icon positioned along the top portion of the Roadway Designer application.*

➔ Using Display References

1. From the Display References dialog, select the alignment ***Left_EOP***.

   Note: *This is one of the plan graphics that we imported earlier*.

2. Enable the *Display as Right of Way* toggle.
3. Click the *Add* button to add the entry to the list box.
4. Select the alignment ***Right_EOP***.
5. Click the *Add* button to add the entry to the list box.
6. Close the *Display References* dialog.
7. Review the references displayed in the cross section view.

Critical Stations

When we applied our templates earlier, we applied them at a particular interval. But in order to get the most accurate model possible, we will need sections at other locations. Critical Stations allows us to automatically generate sections at the horizontal and vertical control points of our alignments and profiles. This exercise explains how to access and use this functionality.

➔ Access Critical Stations

1. Select *Tools* > *Options*.

   This will open the *Roadway Designer Options* dialog.

➔ Enable Critical Stations

1. Under the section of the dialog entitled *Include Critical Sections*, enable the toggles for the following options:

   Horizontal Cardinal Points

   Vertical Cardinal Points

   External Control Points

2. Click *OK* to close the *Roadway Designer Options* dialog.
3. Review the cross sections in Roadway Designer. Notice that new sections are generated at Stations 75+62.30, 78+62.30, 78+91.20, etc..

Key Stations

So far we have sections at a specified interval as well as the Critical Stations we enabled in the previous exercise. However, our goal is to generate an accurate model, and to do that the need may arise to cut sections at odd locations, or what are called "key stations". This exercise shows you how to force the Roadway Designer to cut sections wherever the user deems necessary.

➔ Using Key Stations

1. Review your cross sections and note that there is no section at 79+20.
2. Select *Corridor > Key Stations.*
3. In the *Station* field of the *Key Stations* dialog, key-in ***79+20***.
4. Click *Add* to add the stations to the list box.
5. Click *Close* to dismiss the *Key Stations* dialog.
6. Review the cross sections and note the creation of a station at 79+20.

Note: *An easier way to have done the same thing is to just key-in the desired station directly on the cross section view dialog. Keep in mind that when you enter a station this way you must use the TAB key to accept the entry.*

Import Superelevation

Now that we have assigned our template drops along the corridor, we are ready to apply superelevation to the template. Even though Roadway Designer has its own superelevation preferences and calculation methods, you can also import your superelevation directly from a GEOPAK shape input file. This allows the user to continue to use the GEOPAK superelevation preferences and workflows. This exercise explains how this process works.

➔ Import the Shape Input File

1. In the cross section view, navigate to Station ***293+00***.
2. Select *Superelevation > Import Superelevation from INP file.*
3. Key-in a *Section* name (this can by anything).
4. From the project directory, select the file *shape.inp*.
5. Click *Apply.*

   Note: *In the cross section view the superelevation has been applied.*
6. Click *Cancel* to close the *Import Superelevation from INP File* dialog.

End Condition Exceptions

Before we create our surface, we have a problem that we need to address. If you review your sections from 122+98.20 through 126+50, you'll notice that the end condition was unable to solve on the left side for several of the sections. In other words, it just wasn't possible to place a 4:1 slope. This exercise will explain how to address an issue like that using the End Condition Exceptions dialog.

➔ Creating an End Condition Exception.

1. Navigate to the cross section at Station 122+98.20.

   Note: *The cross section is missing the End Condition on the left side. This also occurs at other stations in this general area.*

2. Select *Corridor > End Condition Exceptions.*

   Note: *The End Condition Exceptions dialog can also be accessed via the use of an icon positioned along the top portion of the Roadway Designer application.*

3. Change the Start and Stop stations as shown.

   Start: **122+98.20**

   Stop: **126+50.00**

4. Click *Add* in order to add the station range to the list box.

➔ Adding the End Condition

1. At the bottom of the *End Condition Exceptions* dialog, click *Edit*.
2. In the template library, navigate to the ***Components > Walls and Barriers*** folder.
3. Select the component ***Retaining Wall*** and drag it into the template view.
4. With the component still attached to your cursor, right-click to access the template placement options.
5. Release your left mouse button. Select *Mirror* using a left-click in order to disable that option.
6. Move your mouse to the back of the *left curb* and drop the component.
7. Fit the view.
8. Click OK to close the dialog.

End Condition Exceptions (cont.)

➔ **Review**

1. Close the *End Condition Exceptions* dialog.
2. Review the cross sections from 122+98.20 through 126+50 to see that the wall has been added.

Create a Surface

At this point we are ready to create a surface. Remember that the surface will be created from the sections that we've generated, so it's important that we've created sections at all critical locations in order to create an accurate model. This exercise will explain how a surface is created and review some of the options that a user has when creating a surface.

➔ Access the Create Surface dialog

1. Select *Corridor* > *Create Surface*.

   Note: *The Create Surface dialog can also be accessed via the use of an icon positioned along the top portion of the Roadway Designer application.*

➔ Choosing Options

1. Enable the toggle for *New Surface for Each Corridor*.
2. Enable the toggle for *Densify Horizontal Curves using Chord Height Tolerance*.

   Note: *Chord Height Tolerance was one of our preference options on the Corridor Modeling dialog.*

3. Enable the toggle for *Add Transverse Features*.
4. Set the style for the Transverse Features to *Miscellaneous*.

   Note: *The style is the same as a drafting standard.*

5. Enable the toggle for *Display Features in Plan View*.

➔ Create the Surface

1. Click *Apply*.
2. When the surface creation is complete, close the *Results* dialog.
3. Close the *Create Surface* dialog.

Create Surface (cont.)

➔ Saving the .IRD file

1. Click the *Close* button in order to close out *Roadway Designer*.
2. When prompted to save your data, click *Yes*.
3. Save the file ***MyProject.ird***.

➔ Reviewing Data

1. Review the plan features that were drawn when we created the surface.
2. Open Windows Explorer and note the creation of two files in the project directory:

   WS1.dtm

   WS1.xml

   Note: *The .xml file is created for the user automatically, in case there is a need to import the surface and create a GEOPAK TIN file.*

Drive Roadway

Now that we have created our surface and we have the plan features of that surface drawn in plan view, we can use the Drive Roadway application to help us review the model. This exercise details how to use this simple tool.

➔ Using Drive Roadway

1. From the *Corridor Modeling* dialog, click on the *Drive Roadway* icon.

2. Minimize the *Corridor Modeling* dialog to move it out of the way.
3. Set the *Vertical Alignment* to ***PROPOSED***.
4. Set the *Speed* to ***45***.
5. Set the *Target Distance* to ***150***.
6. Click *Run*.

   After a few seconds, the view will update and the application will begin to drive down the model.

   Note: *Once the application begins to drive down the roadway, you can quit at any time by pressing the <ESC> key.*

7. *Close* the *Drive Roadway* dialog.

Summary and Review

Summary

You are now able to:

- Access Create Templates
- Create a Template
- Access Roadway Designer
- Create a Corridor
- Perform Template Drops
- Display References
- Enable Critical Stations
- Assign Key Stations
- Import Superelevation
- Create a Surface
- Drive the Roadway

Questions

1. What is the name of the template library that GEOPAK delivers _____?
2. Multiple corridors can be created for a single project.
   - True
   - False
3. If I used an interval of 10 in Roadway Designer when applying my templates, which of the following would be an incorrect interval for my final proposed cross sections?

   A - 5

   B - 20

   C - 50

4. Where do we go in Roadway Designer if we want do display our alignments as references on the cross section?

   A - Critical Stations

   B - Corridor Management

   C - Display References

5. If I want a section to occur at the VPC of one of my vertical curves, what dialog would I use to accomplish that? _____

6. I can import my superelevation directly from a GEOPAK shape input file.

   - True
   - False

7. Where do I control my Chord Height Tolerance?

   A - Corridor Modeling Preferences

   B - Create Template Preferences

   C – Roadway Designer Preferences

8. When I create a surface named TEST, what two files are created in my working directory?

   A – test.tin, test.xml

   B – test.dtm, test.xml

   C – test.dtm, test.tin

9. What <ESC> key can be used to stop the Drive Roadway application as its processing.

   - True
   - False

10. A Style is another name for what? _____

Summary and Review (cont.)

Answers

1. What is the name of the template library that GEOPAK delivers _____?

   default.itl – This template library is delivered in the /bin directory.

2. Multiple corridors can be created for a single project.

   True – You can create multiple corridors for a single project.

3. If I used an interval of 10 in Roadway Designer when applying my templates, which of the following would be an incorrect interval for my final proposed cross sections?

   A – 5

4. Where do we go in Roadway Designer if we want do display our alignments as references on the cross section?

   C - Display References

5. If I want a section to occur at the VPC of one of my vertical curves, what dialog would I use to accomplish that? _____

   Tools > Options

6. I can import my superelevation directly from a GEOPAK shape input file.

   True – This can be done via *Superelevation > Import Superelevation from INP file*

7. Where do I control my Chord Height Tolerance?

   A - Corridor Modeling Preferences

8. When I create a surface named TEST, what two files are created in my working directory?

   B – test.dtm, test.xml

9. The <ESC> key can be used to stop the Drive Roadway application as its processing.

   True

10. A Style is another name for what? _____

    Drafting Standard

Cut Proposed Cross Sections

Now that our surface has been created, we are ready to step back into our "normal" GEOPAK workflow. The first thing we need to do is to cut cross sections from our proposed model. This exercise will explain how to do this using the Draw Cross Sections application.

➔ Switch Design Files

1. Use the MicroStation *File* > *Open* pulldown to open the file ***xs.dgn***.

➔ XS Cells Tab

1. From the *Corridor Modeling* dialog, click on the icon ***Draw Cross Sections from Surfaces***.

   This will open the *Draw Cross Sections* application.

2. Select Job Number ***314*** and Chain ***BASE***.

3. For the *XS Cells* tab, set the options as follows:

   By Station

   Begin Station **76+00**

   End Station **200+00**

   Even **100**

   Left Offset **100**

   Right Offset **100**

4. Leave all other options under the *XS Cells* tab the same.

➔ Surfaces Tab

1. Select the *Surfaces* tab.

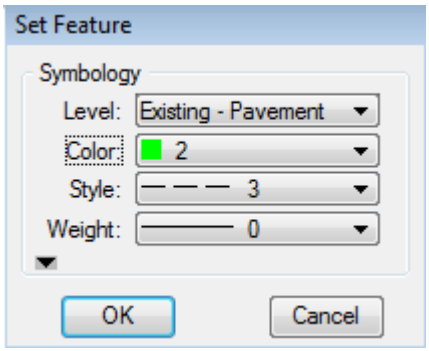
2. Change the selection option from ***Tin File*** to ***Dtm File***.

   Note: *This is a new option that has been added to the dialog to allow the user to cut sections from files with a .DTM extension.*

3. Select the existing DTM file *fm314-dtm.dtm.*

Cut Proposed Cross Sections (cont.)

4. Set the Level Symbology as shown for the Existing Ground.



5. Click the *Add Surface* icon in order to add the existing surface to the list box.
6. Select the proposed surface ***WS1.dtm***.
7. Click the *Add Surface* icon in order to add the proposed surface to the list box.

Note: *Even though the previous existing ground symbology is added to the list box along with the proposed surface name, this is not a problem. When the sections are cut, the symbology of the proposed elements will come from the components themselves and the symbology in the list box will be ignored.*

➔ Process the Proposed Cross Sections

1. Click *Draw* in order to process the sections.
2. When processing is complete, close the *Draw Cross Sections* dialog.
3. Use Cross Section Navigator to review the cross sections.

Note: *Notice that the component point names are placed on the cross sections as part of the process when the sections are cut from a proposed surface. These point names are placed using the active text symbology of the design file.*

Label Proposed Cross Sections

In our last exercise, we noticed that when we cut the proposed cross sections, the component point names are placed on the cross sections as part of the process. This exercise will explain how to use the point names in order to label our cross sections.

➔ Cross Section Labeling

1. From the *Corridor Modeling* dialog, click on the *Cross Section Labeling* icon in order to access the *Cross Section Labeler* application.

2. Minimize the *Corridor Modeling* dialog to move it out of the way.
3. From the *Cross Section Labeling* dialog, click on the *Open an Existing Preference File* icon.

4. Select the preference file ***MyProject.xlp***.
5. Review the *Slope Label* tab.
6. Review the *Elev/Off Label* tab.
7. From the *General* Tab, make sure you stations are set as follows:

   Begin Station – **76+00**

   End Station – **200+00**
8. From the *General* tab, click ***Draw Labels***.
9. Close the *Cross Section Labeling* dialog.
10. Review the cross sections using *XS Navigator*.

Summary and Review

Summary

You are now able to:

- Process Proposed Cross Sections
- Label Proposed Cross Sections

Questions

1. In the Corridor Modeling workflow, what application is used to cut proposed cross sections?

   A - Process Cross Sections
   B - Draw Cross Sections
   C - Cross Section Labeler

2. What new option has been added to the Draw Cross Sections dialog?

   A - Tin File
   B - Triangles File
   C - Dtm File

3. The symbology of the proposed cross sections comes from the components.

   - True
   - False

4. When the component point names are placed on the proposed cross sections, where does the text symbology come from? _____

5. The Cross Section Labeling preference file uses what extension?

   A - .ird

   B - .xlp

   C - .xld

Summary and Review (cont.)

Answers

1. In the Corridor Modeling workflow, what application is used to cut proposed cross sections?

   B - Draw Cross Sections

2. What new option has been added to the Draw Cross Sections dialog?

   C - Dtm File

3. The symbology of the proposed cross sections comes from the components.

   - **True**

4. When the component point names are placed on the proposed cross sections, where does the text symbology come from?

   Active Design File – It's taken from the Active Design File text settings.

5. The Cross Section Labeling preference file uses what extension?

   B - .xlp