

THE

ZEN

GUIDE TO

INROADS V8i

V8.11 ESSENTIALS

WORKBOOK

SS1, SS1R, SS2

ADDENDUM

平示道神孚



ZEN ENGINEERING



INROADS V8i

SELECT SERIES 1 (SS1) (V08.11.07.229)

SELECT SERIES 1 REFRESH (SS1R) (V08.11.07.246)

SELECT SERIES 2 (SS2) (V08.11.07.428)

ADDENDUM

WHY USE AN ADDENDUM:

This addendum is meant to accompany the *Zen Guide to InRoads V8i Essentials Workbook*. Bentley has released some new versions of the software that include minor changes to the way the InRoads V8i software interface looks and functions. These new releases, SS1, SS1R and SS2 are still considered to be under the V8i umbrella and therefore we here at Zen felt it was best to just issue an Addendum so not to complicate the issue of determining which training workbook you need. When you upgrade your software to InRoads V8i SS1, SS1R or SS2; simply purchase the V8i Workbook and we will include the addendum if you are using either SS1, SS1R or SS2!

HOW TO USE THIS ADDENDUM:

The way this addendum was written was not to take the place of the *Zen Guide to InRoads V8i Essentials Workbook*, but instead to supplement it. The addendum is broken down by chapters and pages that correspond to the same areas of the V8i Workbook, and only contains areas that have changed. The steps and screen captures are virtually identical as the areas in the V8i book but with subtle differences like rewritten directions or dialog boxes as they appear in the SS1/SS1R/SS2 version of the software. To help you identify the text portions that have changed, the addendum has underlined the changes.



It may be helpful to quickly run through the addendum while placing tabs in the V8i workbook on the corresponding pages to help remind yourself later during your training to refer to the addendum when you get to those pages.

Only a couple sections of the V8i Workbook have changed significantly enough to warrant a completely rewritten section in the addendum. To help easily identify those areas, a small paragraph has been inserted into the actual V8i Workbook under the section heading.

NOTE: You may notice on occasion that the dialog box you are looking at on the computer may contain an additional toggle or data field compared to what's in the V8i Workbook. It may be the case that due to the purposes of the training exercise or the overall workflow of the workbook those areas of the dialog box were not pertinent and therefore were not discussed in the workbook. If you wish to learn about these added areas (or any other areas not discussed throughout the workbook), feel free to click the help button on that dialog box to gain more information.

It is possible to be different
and still be right.

– Anne Wilson Schaefer

CHAPTER

11 Introduction

Page 10- Software Information

This guide was written while running InRoads V8i Select Series 2, Version 08.11.07.428 on MicroStation V8i Select Series 2, Version 08.11.07.443.

Page 11- Version Compatibility

When using the InRoads software, it's important to keep in mind the following compatibility versions that are recommended by Bentley:

Release Dates	InRoads	MicroStation	AutoCAD
April 2001 – V08.02.00.00 Dec 2002 - SP 7	V08.02.00.00, SP7	MicroStation SE V07.01.04.16 (MicroStation J)	R14 and 2000i
May 2003 – V08.04.00.00 July 2003 - SP 2	V08.04.00.00, SP2	V08.01.02.15	2000i and 2002
May 2004 – V08.05.00.00 April 2007 - SP7	V08.05.00.00, SP7 (InRoads 2004)	V08.05.02.35 (MicroStation 2004)	2002 and 2004
July 2005 – V08.07.00.82 March 2006 – V08.07.02.08, SP 2	V08.07.02.08, SP2 (InRoads 2004)	V08.05.02.55 (MicroStation 2004)	2004, 2005 and 2006
June 2006 – V08.08.00.46	V08.08.00.46 (InRoads 2004)	V08.05.02.55 (MicroStation 2004)	2004, 2005 and 2006
December 2006 – V08.09.00.51 (InRoads XM)	V08.09.00.51 (InRoads XM)	V08.05.02.55 (MicroStation 2004)	2004, 2005 and 2006
January 2009 – V08.09.03.06, SP3 (InRoads XM)	V08.09.03.06, SP3 (InRoads XM)	V08.09.03.48+ (MicroStation XM)	+2007 and 2008 [SP3 only]
December 2008 – V08.11.05.47 (InRoads V8i)	V08.11.05.47 (InRoads V8i)	V08.11.05.17 (MicroStation V8i)	2008 and 2009
February 2010 – V08.11.07.229 (InRoads V8i SS1)	V08.11.07.229 (InRoads V8i SS1)	V08.11.07.180 (MicroStation V8i SS1)	2008 and 2009
May 2010 – V08.11.07.246 (InRoads V8i SS1 Refresh)	V08.11.07.246 (InRoads V8i SS1 Refresh)	V08.11.07.180 (MicroStation V8i SS1)	2008, 2009 and 2010
August 2010 – V08.11.07.428 (InRoads V8i SS2)	V08.11.07.428 (InRoads V8i SS2)	V08.11.07.443 (MicroStation V8i SS2)	2008, 2009, 2010 and 2011

Notes:

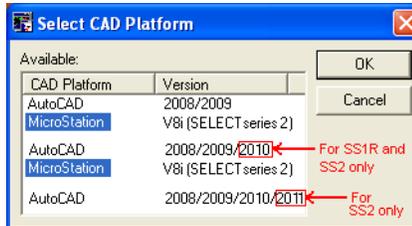
- The **Release Date** was the month and year that the version or service pack was released.
- The name in parenthesis () is the name that the software is referred to as.
- The 'SP' number refers to the Service Pack number. Only the last service pack is listed.

There are also intermediate releases that have not been listed here.

Page 15- The CAD Platform

InRoads can run on either AutoCAD or MicroStation. It contains a tool, delivered with the software, called the **SelectCAD Platform**, that establishes the default CAD package associated with InRoads at startup.

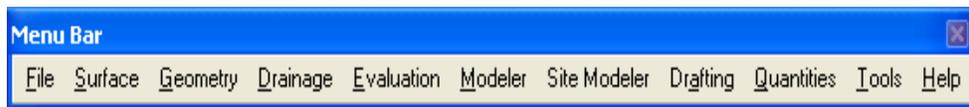
This tool can be found by going to Windows *Start > Programs > Bentley > InRoads Group V8i (Select Series 1) or (Select Series 2)* and looking for the **SelectCAD Platform** shortcut. (The path may vary depending on the version or administrative procedures used.)



This shortcut launches a small dialog box that recognizes the available CAD platforms that meet the minimum system requirements for that version of the software that you are using on your computer. Once a platform is chosen, InRoads will use that CAD package as the default when InRoads is opened from its shortcut. You can change this setting at any time.

Page 17- The Menu Bar

The primary location to access all of the commands is the **Menu Bar**.



Each of the menu headings—**File, Surface, Geometry, Evaluation, Modeler, Tools** and **Help** (with **Drainage, Drafting, Site Modeler, and Quantities** as added items in the more recent versions)—have related commands on the pull-down menus under each heading.

Page 18-The Workspace Bar

The **Workspace Bar**, also sometimes referred to as the *InRoads Explorer Window*, is your portal into which files are currently open and loaded into the InRoads software.



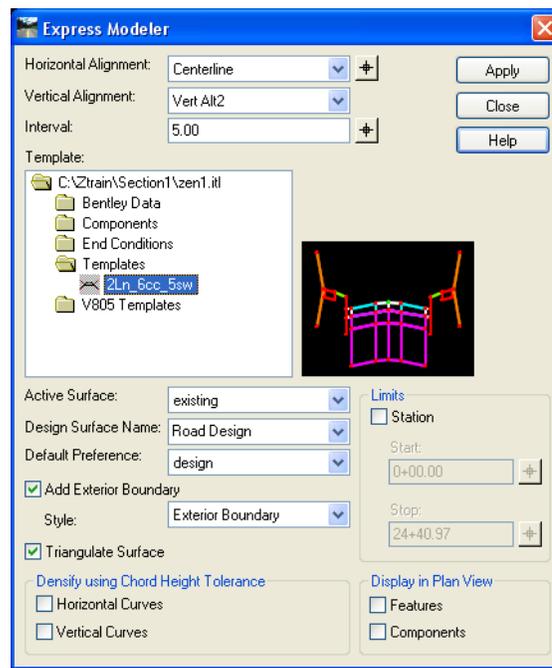
At the bottom of this window, there is a tab for each of the data types that InRoads works with.

Page 33- Express Modeler

The **Express Modeler** is one method of corridor modeling that illustrates the basic requirements of this type of surface generation. The dialog box can be found under *InRoads> Modeler> Express Modeler*.

(The Express Modeler dialog box for SS1/SS1R/SS2 (shown on the right) has been rearranged slightly).

All the functionality still exists from the previous V8i version with the additional option to display Features and/or Components in Plan View or not at all.



Page 46- Tools> Options

This is now located at **File> Project Options**.

Page 75- Preparing and Opening InRoads

At this point the files are loaded on the computer and you're ready to go.

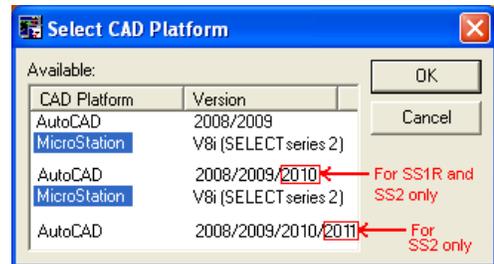
If you have read the previous chapter you may recall that you have to lock in the CAD platform that InRoads is going to use. The way to do this is to go to **Windows > Start > Programs > Bentley > InRoads Group V8.i (Select Series 1) or (Select Series 2)**. Inside here you should find a shortcut called

SelectCAD Platform. Pick that shortcut and a dialog box will pop up with the available CAD Platforms listed in it. By choosing a CAD platform and selecting **OK** it will become the default CAD package to be used when InRoads starts.

This shortcut points to an executable file called **SELECTCAD???.EXE** in the InRoads **bin** directory. (The "??" part of the file name varies with the version number and is usually something like **AT** for V8.11)

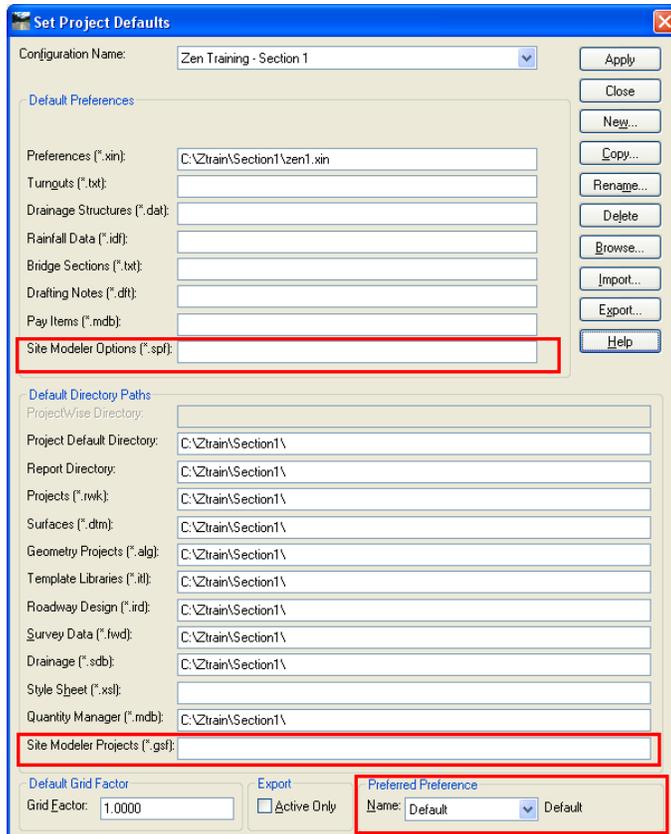
If you only have one CAD package (MicroStation or AutoCAD) installed on your computer then this step isn't necessary.

1. Go to **Start > Programs > Bentley > InRoads Group V8.i (Select Series 1) or (Select Series 2)** and click **SelectCAD Platform**.



Page 78- Project Defaults

Opening that REG file registered all the settings in that file to the computer that you are on. If you look at the selections now under the **Configuration Names**, you will find a new one called **Zen Training - Section 1** that will be used throughout this section (dialog box has changed slightly)



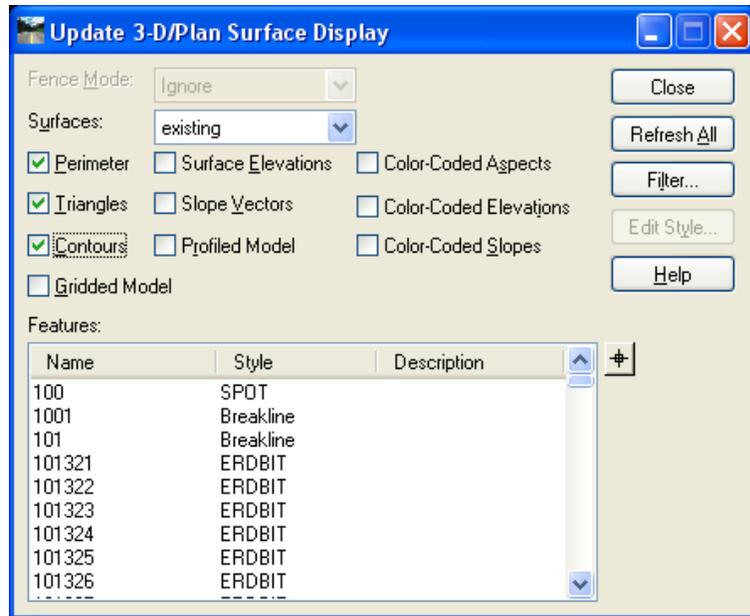
Page 79- Creating a New Project Default Configuration

- g. Now jump to the section below that titled **Default Directory Paths** and set the paths in all those fields except for the one called Style Sheet. While working within the scope of this chapter all these paths should be set to **C:\Ztrain\Section1** since all of the data is contained in that one folder.

Page 86- Update 3-D/Plan Surface Display

(This section is only changed in the SS1R/SS2 versions of the software)

The **Update 3-D/Plan Surface Display** tool found under *InRoads> Surface* can be used to place or remove InRoads surface data from the CAD drawing.



InRoads **Display On** and **Display Off** are not the same as CAD turning on or off the graphic display through its levels or layers. When any InRoads **Update** tool indicates a **Display On** or **Display Off** setting, it is either physically placing that information in the CAD drawing or physically deleting it from the drawing.

1. Go to *InRoads> Surface> Update 3-D/Plan Surface Display*.
2. Select the **EXISTING** surface from the **Surfaces** list box.
3. Toggle *off* the check marks in the check boxes to the left of the **Perimeter**, **Triangles** and **Contours**.



In MicroStation, these graphics are placed as **Graphic Groups** so selecting the delete from MicroStation tools with the **Graphic Group** lock on can remove these graphics as well. AutoCAD does not have this capability.

4. In the SS1R/SS2 version of the software you will notice as you uncheck the boxes, the corresponding graphics will be immediately deleted from the CAD file. There is no longer a need to click an **Apply** button.

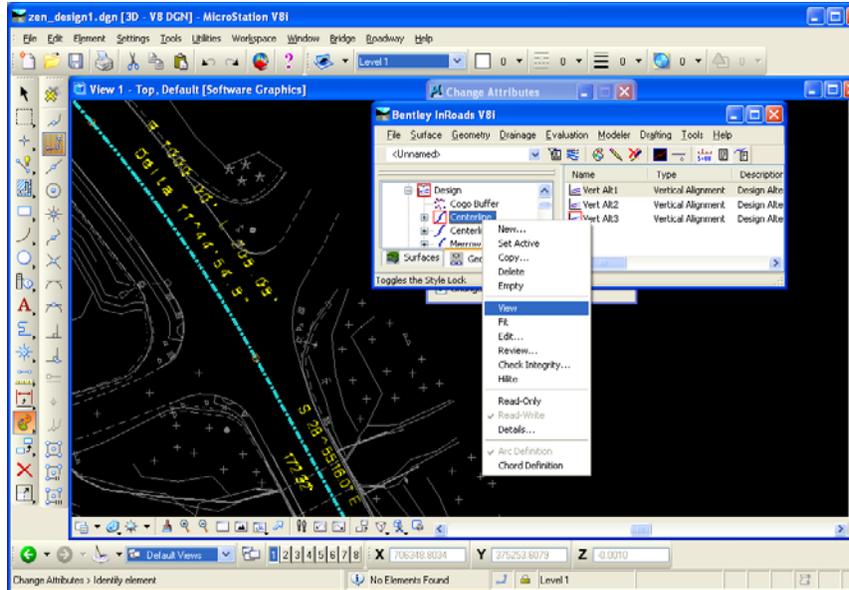


In the **Update** command if you notice a check mark in a box that is greyed out, this means that the graphics were placed while the **Pen/Pencil Lock** was set to **Pen**. In order to remove any **Pen** graphics simply toggle *on* the **Delete Ink** lock and the greyed out areas will become accessible.

Page 99- Workspace Bar Shortcuts - View

(This following step DOES NOT work in the SS1, SS1R or SS2 versions of the software)

3. Hold the **Ctrl** key down on the keyboard and right-click on the **CENTERLINE** horizontal alignment and click **View** just as you did before.

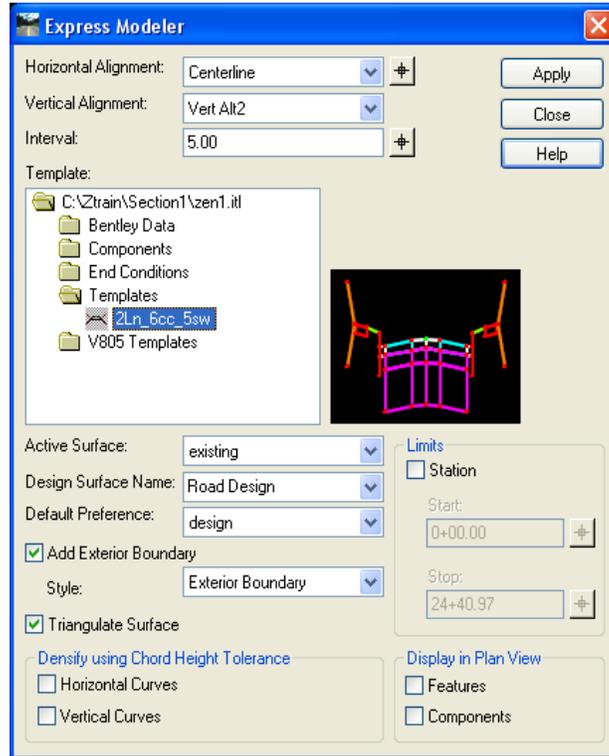


When the **Ctrl** key of the keyboard is held down the right-click **View** command becomes a **View Annotation** command (This is NOT available in the SS1, SS1R, or SS2 versions of the software). The actual **View Horizontal Annotation** command is found under *Geometry > View Geometry > Horizontal Annotation*.

Page 119- Express Modeler

Here is an example set up. (Do not set up or run this configuration)(**This dialog box is slightly different in SS1, SS1R and SS2 than version V8i**)

Also, the explanations of the settings on the following few pages may be a little out of order compared to the dialog box itself. This is because it has been rearranged slightly in the SS1, SS1R, and SS2 versions of the software:



Page 121- Running the Express Modeler

Now let's try the **Express Modeler** in a simple design scenario.

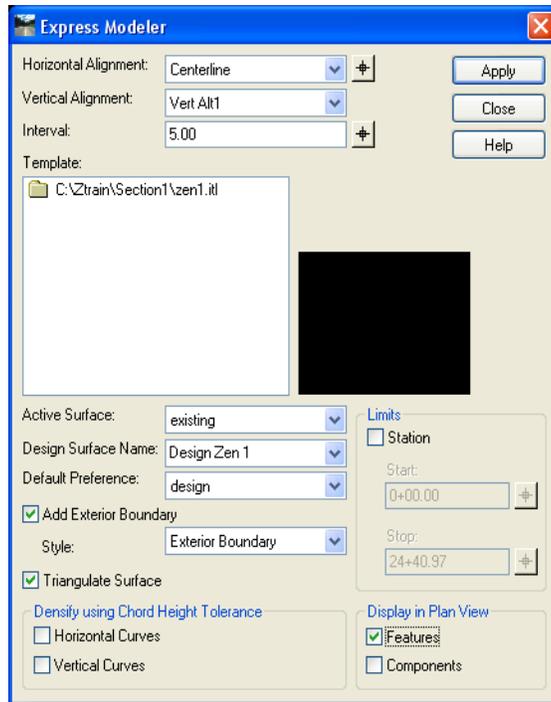
1. Go to **InRoads> Modeler> Express Modeler**.

Set the following:

(Steps below are rearranged to make it easier to follow in SS1, SS1R and SS2)

- ▶ **Horizontal Alignment = CENTERLINE**
- ▶ **Vertical Alignment = VERT ALT 1**
- ▶ **Interval: = 5**
- ▶ **Active Surface = EXISTING**
- ▶ **Design Surface Name = Type DESIGN ZEN 1 for the new surface**
- ▶ **Default Preference = DESIGN**
- ▶ **Add Exterior Boundary = ON**
- ▶ **Exterior Boundary Style = EXTERIOR BOUNDARY**
- ▶ **Triangle Surface: = Toggle this *on* for this run**
- ▶ **Densify Curves ... = Toggle both of these *off* for this run**
- ▶ **Limits: = Toggle this *off* for this run**

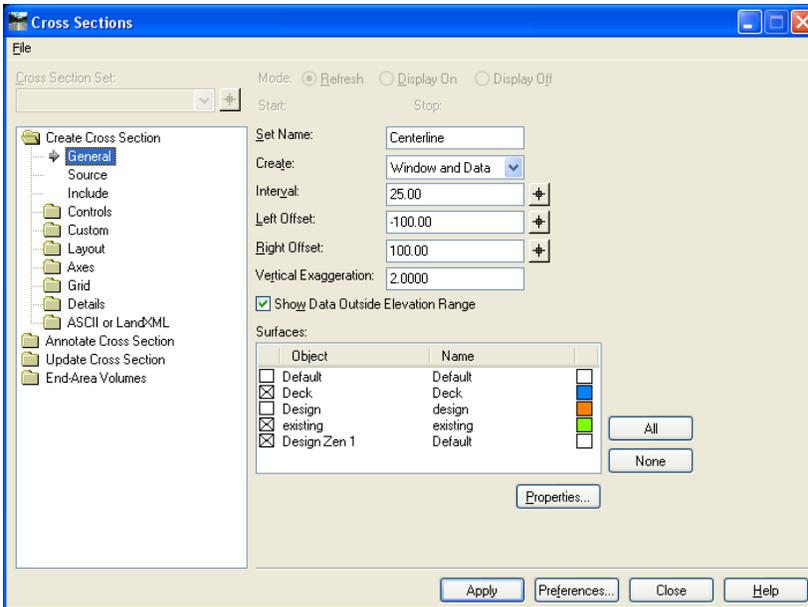
- ▶ **Display in Plan View = Toggle Features *on* for this run**



Page 126- Create Cross Sections

(This section is for the SS1R and SS2 versions of the software only)

1. Go to **InRoads> Evaluation> Cross Section> Cross Sections**.

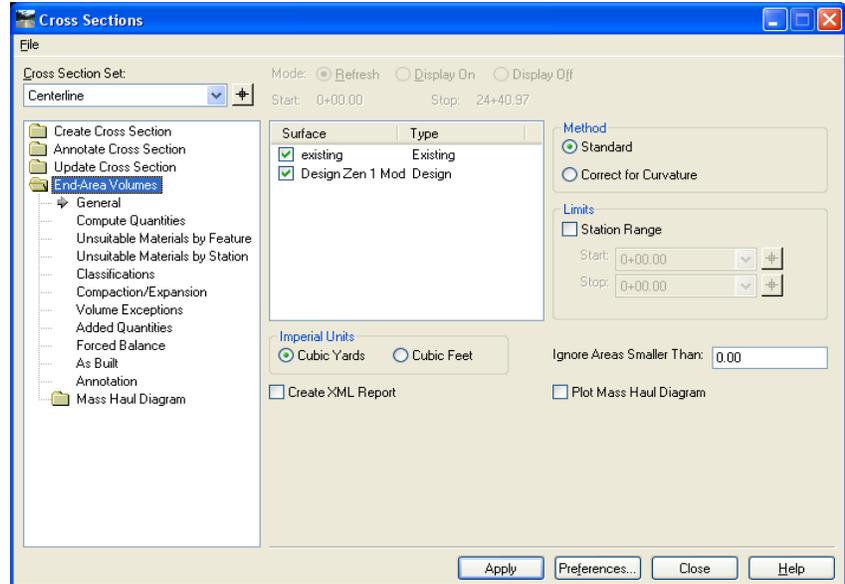


8. **Close the Cross Sections** dialog box once the cross sections have all displayed.

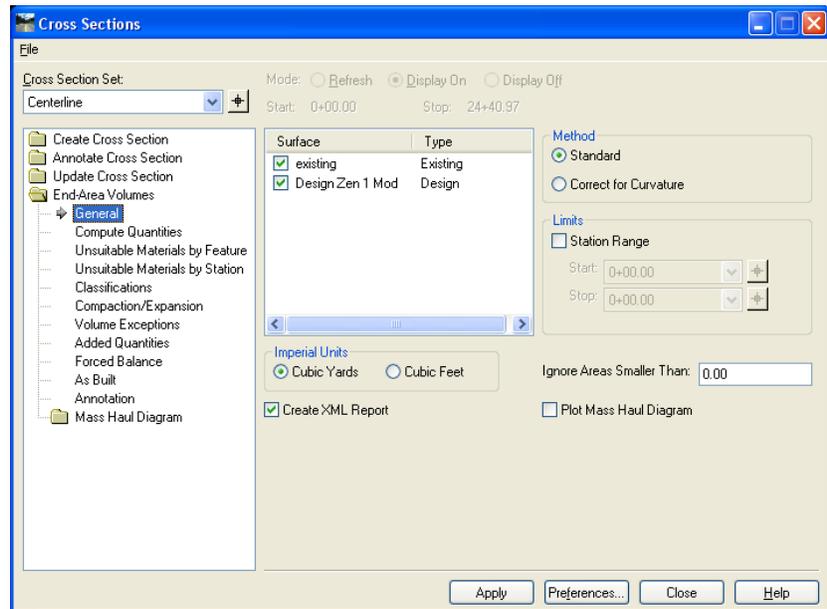
Page 132- End-Area Volumes

(This section is for the SS1R and SS2 versions of the software only)

1. Go to **InRoads > Evaluation > Cross Section > Cross Sections** to launch the command. Then click on the **End-Area Volumes** folder.



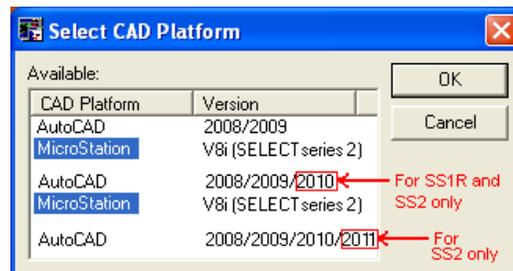
6. Check on the **Create XML Report** option.



Page 142- Selecting a CAD Platform

1. Go to **Windows> Start> Programs> Bentley > InRoads Group V8i (Select Series 1) or (Select Series 2)> Select CAD Platform.**

When this dialog box opens, what you see is the CAD packages that are loaded and registered on that specific computer. Depending on the version of InRoads you are running, this dialog will show listings for **AUTOCAD 2008**, **AUTOCAD 2009**, **AUTOCAD 2010 (SS1 REFRESH ONLY)**, **AUTOCAD 2011 (SS2 ONLY)** OR **MICROSTATION V8i (SELECT SERIES 1) OR (SELECT SERIES 2).**

**Page 143- Starting InRoads**

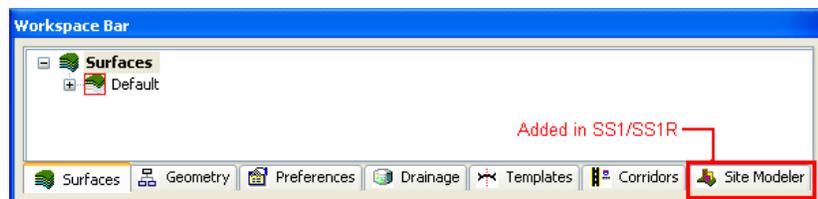
1. Start InRoads Survey from either **Start> Programs> Bentley> InRoads Group V8i (Select Series 1) or (Slect Series 2)**, or from the desktop icon.



InRoads V8i

Page 146- The Workspace Bar

2. Grab the corner with the mouse and expand it to the right or left so that you can see all of the tabs at the bottom.

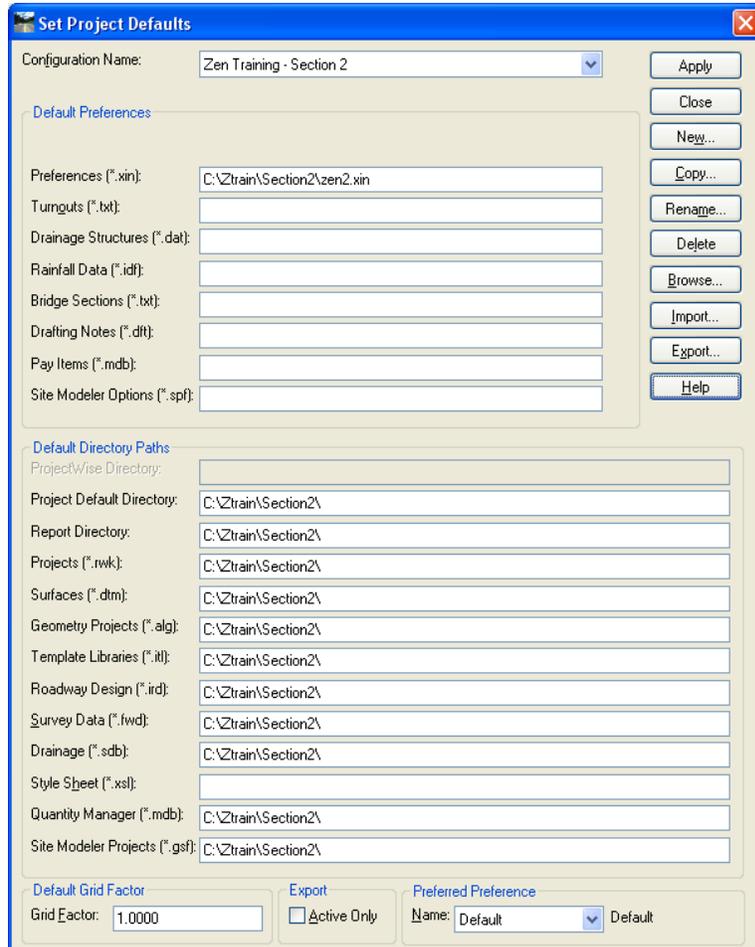


In the V8i SS1/SS1R/SS2 versions you should see the following seven tabs: **Surfaces, Geometry, Preferences, Drainage, Templates, Corridors and Site Modeler.**

Page 158- Creating a New Configuration

2. Complete the set up of the new configuration called **ZEN TRAINING – SECTION 2** with the following settings:
 - The **Preferences** are stored under *C:\Ztrain\Section 2*
 - The **Preference XIN** file is called **ZEN2.XIN**
 - Regardless of the InRoads data type, the **Default Directory Paths** for all the work done in this chapter will be *C:\Ztrain\Section 2*. The **Style Sheet (*.xsl)** field should be left blank.

(The dialog box has added data fields for Site Modeler Projects and Options).



Page 160- Saving InRoads Data

The five primary project data files (Surface, Geometry, Templates, Corridors, and Site Modeler) are saved at the hands of the user.

Page 160- Bentley Embedded Help

1. Go to the InRoads **Menu Bar** and select **File> Project Options**

2·2 Settings, Styles and Symbology

Page 174- Using Named Symbology - Part 2

(This change is for the SS1R and SS2 versions of the software only)

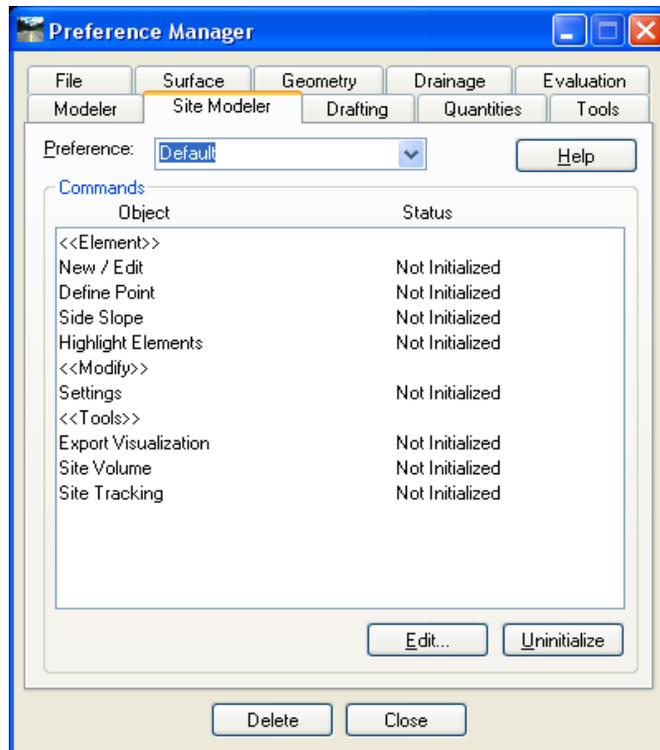
- Go to **Evaluation> Cross Section> Cross Sections**.

Page 195- Preferences

- From the **Menu Bar**, go to **File> Project Options**.

Page 197- Preference Manager

- From the **Menu Bar**, go to **Tools> Preference Manager**.



You will see a tab for each of the **Menu Bar** options (**File**, **Surface**, **Geometry**, **Drainage**, **Evaluation**, **Modeler**, **Site Modeler**, **Drafting**, **Quantities**, and **Tools**).

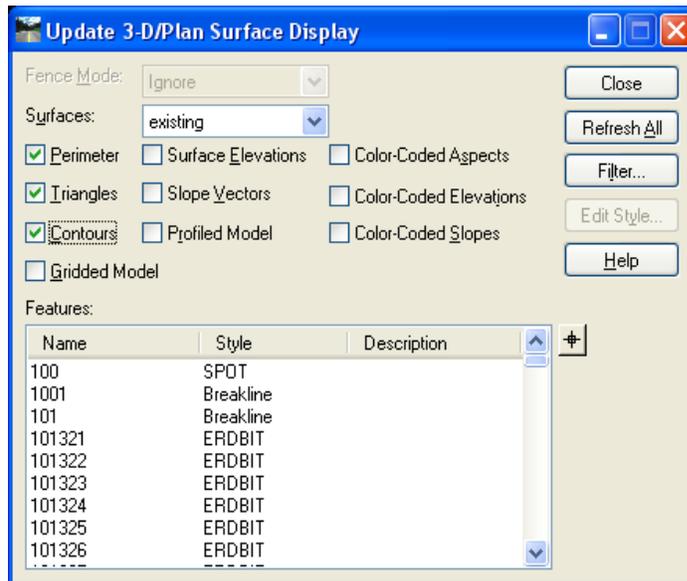
Page 208- Hands On—Surface Essentials

6. Go to *InRoads* > **File** > **Project Options**, then to the **Units and Format** tab.

Page 217- Update 3-D/Plan Surface Display

(This change is for the SS1R and SS2 versions of the software only)

1. Go to *InRoads* > **Surface** > **Update 3-D/ Plan Surface Display**.



There is an **Update** command each for placing and removing **Plan**, **Profile** and **Cross Section** information that are quite valuable.

2. Choose the **EXISTING Surface**.
3. Uncheck the boxes next to **Perimeter**, **Triangles**, and **Contours**. Simply unchecking the boxes will delete the corresponding graphics from the CAD file.

Page 278- View Stationing

The dialog boxes within InRoads can collapse automatically when they are applied. This is user defined and can be turned off under ***File> Project Options*** on the **General** tab near the top where it's appropriately titled **Collapse Dialog Boxes Automatically**.

Page 306- Horizontal Regression**Regression Deviation Check**

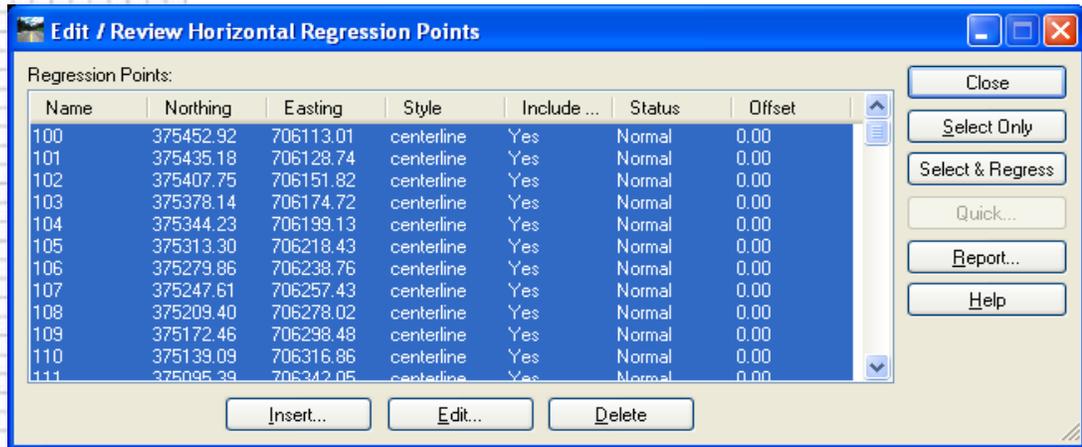
7. Go to **Geometry> Horizontal Regression> Edit/Review Regression Point**.

You will see an Alert Box explaining that the following dialog box has undergone some interface changes.



8. Click **OK** to dismiss this alert.

- You should see all the survey centerline Cogo points listed.
- Use the **Select Only** button to window all the points in the CAD view.
- *Accept* the selection.



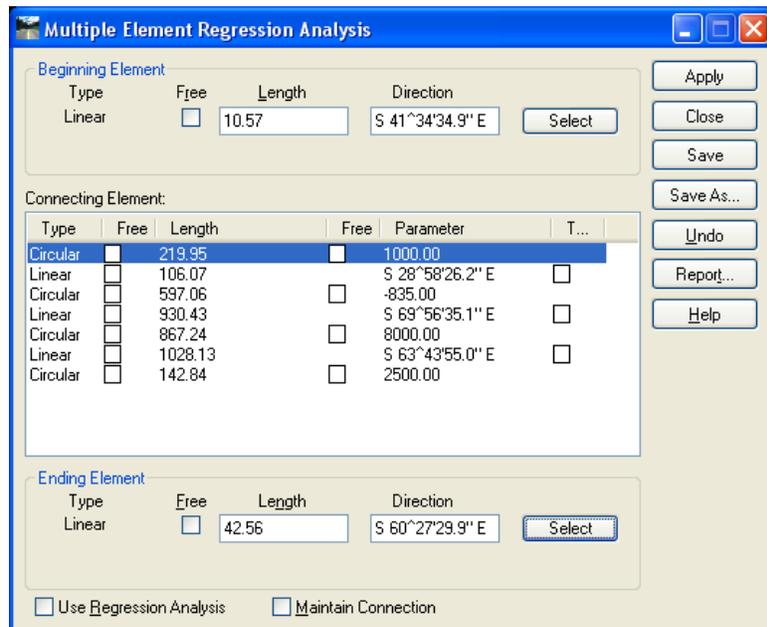
- **Close.**

9. Go to **Geometry > Horizontal Regression > Multiple Element Regression Analysis.**

You will again see an Alert Box explaining that the following dialog box has undergone some interface changes

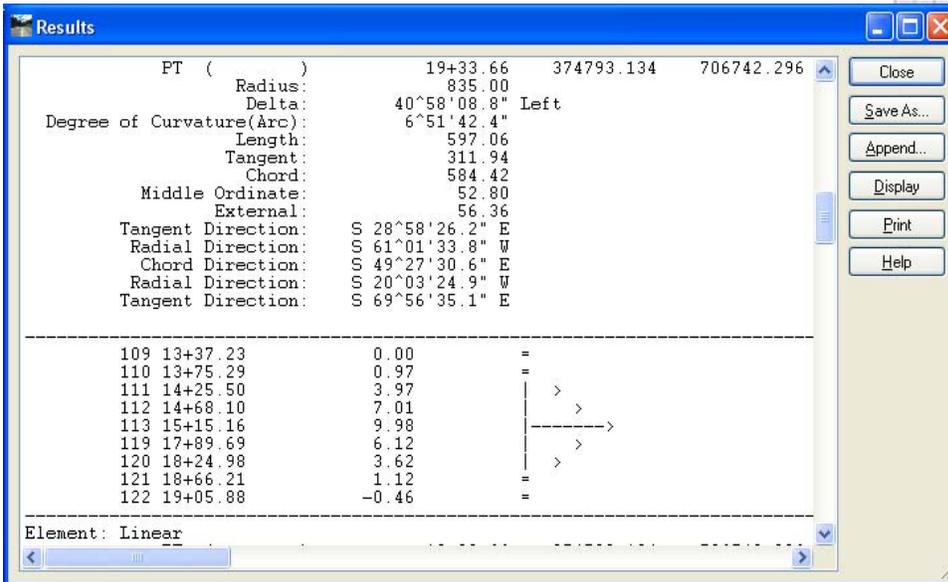
10. Click **OK** to dismiss this alert.

- Use the upper **Select** button to identify the **Beginning Element** in the CAD view.
- Use the lower **Select** button to identify the **Ending Element** in the CAD view.



- The alignment portion between the first and last geometry elements should show in the **Connecting Element** widow.

- Don't check any boxes. Checking a box allows that element to be **Free** and the purpose here is not to change anything so keeping these boxes unchecked will not allow any adjustments to take place.
- Check on **Use Regression Analysis** toggle at the bottom.
- Click **Report**. This is the goal of this procedure. Reviewing this report will show the deviations of the Cogo points from the alignment that was created.



- **Close** the report.

Regression analysis is so much more powerful than this little blurb shown here. It is my goal to develop a much more detailed look at this subject in the future.

Stay tune and send me any comments that you might have on this area of InRoads.

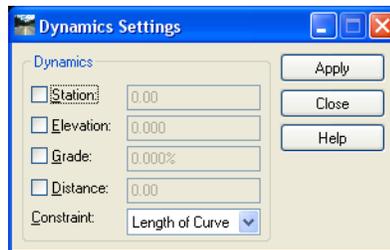
Page 339- Import Vertical from Surface

- The **Horizontal Alignment** in the **Target** area should be set to **MAINRDCENTER** and the **Horizontal Offset** and **Vertical Offset** should remain unchecked.

Page 345- Vertical Curve Set Tools**Preparation**

Before you get going you need to do a couple things to get ready and the first thing is pulling out the vertical layout tools.

- Go to **Tools > Customize** and then to the **Toolbars** tab.
- Find the **Vertical Curve Set** toolbar in the **Toolbars** list window and check it *on*.
- Close** that dialog box to get out of *Customize mode*.
- Find the **Vertical Curve Set** toolbar and position it somewhere appropriate.
- Click on the **Dynamic Settings** button and position that dialog box off to the side as well.



Next, you need to clean up your profile window so that anything unwanted is removed.

- Use the CAD tools to delete the vertical annotation that was viewed from the **Existing** geometry created in *Layout Option 1*.

You should have a clean profile window now, with the tools at your fingertips.

Page 346- VPI Dynamics

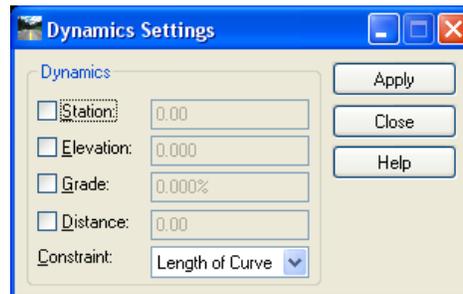
1. Go to **Add PI** from either the toolbar or **Geometry > Vertical Curve Set**.

The **Add PI** command, along with the other VPI placement and editing commands will utilize the **Dynamic Settings** dialog box prior to executing the command.

These settings aren't mandatory and are meant to offer additional control when constructing the vertical design.

The **Add PI** provides four Dynamics:

- ▶ **Station**
- ▶ **Elevation**
- ▶ **Grade**
- ▶ **Distance**



These settings provide a grid-like snap control when placing VPI points in the profile window.

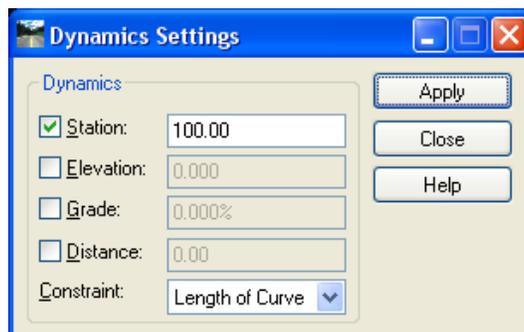
These settings are also integrated into the **Vertical Design** tools.

Vertical Curve Set – Add PI

You should still be in the **Add Vertical PI** command at this time.

If you turn several pages ahead you'll see a picture of what you should end up with after you've completed the next few pages of instruction.

2. Set the **Station** on the **Dynamic Settings** dialog box to **100** and click **Apply** on the dialog box to activate that setting.



3. The **Add PI** command will prompt you to *Identify first point*.

(Follow the next steps from the book until you get to Step 9)

9. Reset the command until there are no more command prompts.

Page 348- Adding More VPIs

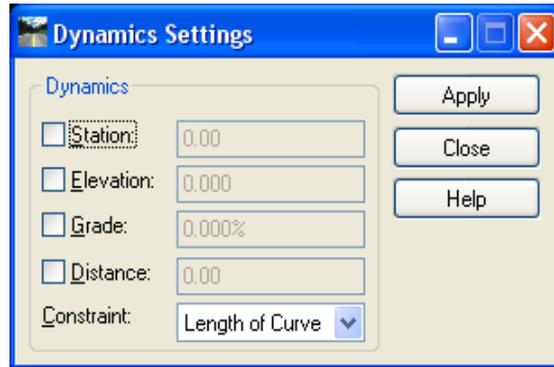
Now you're going to pick up where you left off on the alignment layout.

1. Leave the **Station** set to **100** and set the **Elevation Dynamic** to a value of **1.00** and click **Apply** on the **Dynamic Settings** dialog box.

2. Click on the **Add PI** icon and when prompted to *Identify alignment end* pick near the point that was last placed.

Page 349- Vertical Curve Set—Move PI

1. Window into the beginning of the vertical alignment displayed on the profile.
2. Toggle all the **Dynamic Settings** *off* to obtain full placement control, then click **Apply** on the dialog Box.



3. Pick the **Move PI** command from the **Vertical Curve Set** toolbar and select the very first VPI at the beginning of the alignment when prompted to *Identify element*.

The VPI will attach itself to the cursor and return a prompt to *Identify Point/Reject*. Notice the readout in the InRoads frame now that the **Dynamics** are all *off*.

This first PI should start at the beginning of the alignment and tie into existing ground. For right now let's just say that the existing ground at the start of this job is 545.50. You can always go back to **Move PI** and change it again once you find out *exactly* what it is. Also, we know this alignment starts at 10+00 because that is our beginning station.

4. In the CAD key-in field type **SE=1000.545.50**, then press **ENTER** on the keyboard.

The VPI will reposition itself to that location and prompt you to *Accept overall solution/Reject*. It's always important to watch the InRoads prompts but it is especially vital that you read them when editing your vertical geometry. If you were to move onto another command right now that edit would not be stored in the **Geometry Project** even though you have gone through most of the motions to edit it.

5. When prompted to *Accept overall solution/Reject*, accept it by placing another data point in the view.
6. **Reset** to exit the **Move Vertical PI** command.

Now you'll do the other end of the vertical alignment the same way.

7. Window into the end of the profile where the design currently ends.

Here's what you know—the end of the job is at station 48+00 at elevation 621.30.

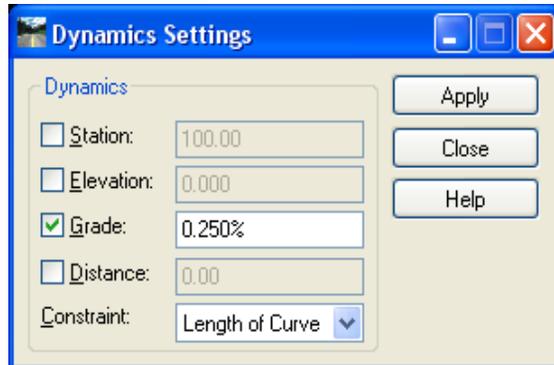
8. Using the **Move PI** command re-establish the last VPI on the alignment where the end of the project is at station 48+00 and the existing elevation is 621.30.

Okay, now the ends are tied down correctly.

Have you saved your **Geometry Project** recently?

You will continue to use the move command for a few more edits.

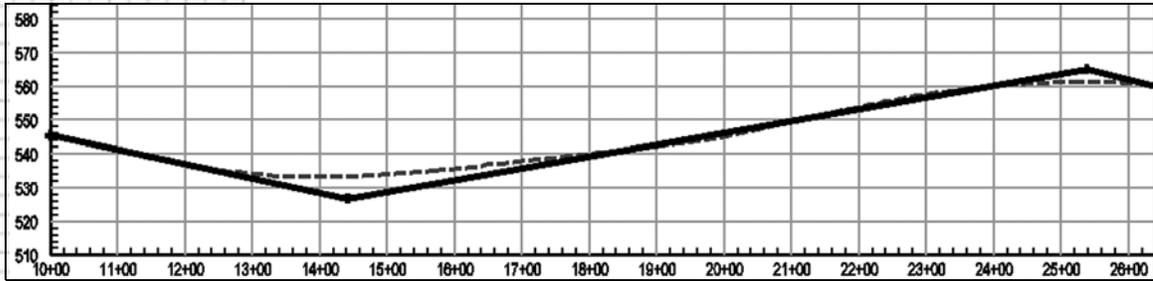
9. Window into the first part of the profile and window enough of it to see the first tangent and a bit of the second.
10. Set the **Dynamic Settings Grade** to **0.25%** and **click Apply on the Dynamic Settings dialog box.**



11. Pick the **Move PI** command from the **Vertical Curve Set** toolbar.
12. Select the second VPI in the sag area and notice as you move it the grades are locked into an even 0.25% interval.
13. Reposition that VPI so that the first tangent tracks right along the existing ground line. Once you've got it, data point at that location.
14. When prompted to *Accept overall solution/Reject* do whatever is appropriate until you've got something that looks good.
15. Click on the **Move PI** command again.
16. Now move to the next VPI and do the same thing.

Keep in mind that you are not trying to place the VPI point itself on grade but are working toward lining up the vertical tangents along the existing grade. You may find yourself going back to that earlier VPI and moving it again but that is up to you. The goal is to create a vertical alignment that traces along the existing ground.

17. Try your best at moving those two VPIs so they track along the existing grade.

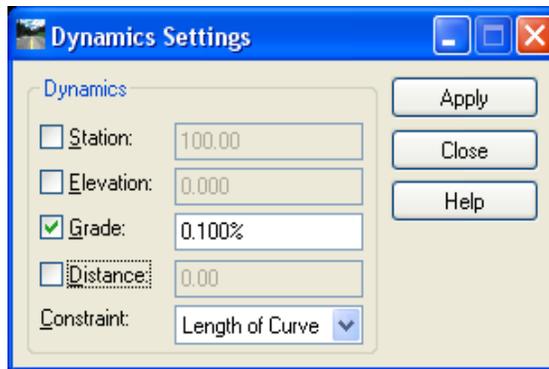


18. Reject out of the **Move Vertical PI** command until there are no more prompts.

Page 351- Vertical Curve Set – Insert PI

Sometimes an additional VPI is needed and this is where **Insert PI** comes in.

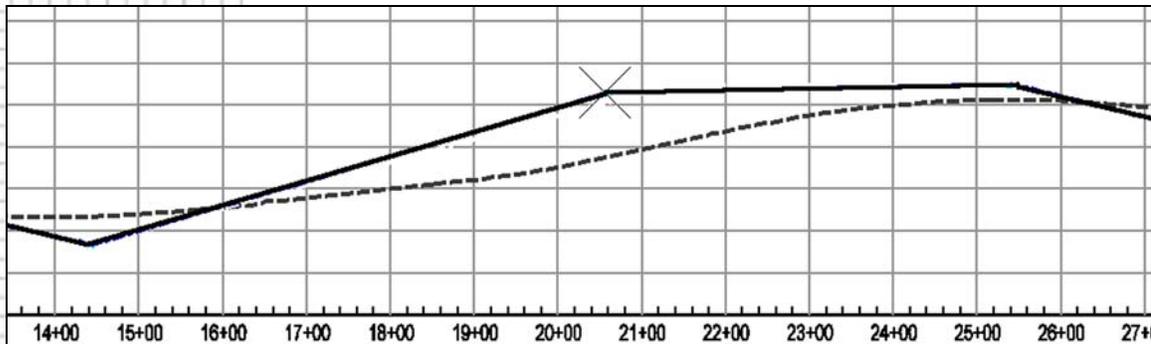
1. Set the **Dynamic Setting Grade** to **0.10%** this time.



2. Pick the **Insert PI** command.
3. Window into the second long tangent that goes from the first sag curve to the first crest curve.

Let's say that you thought about inserting a VPI along that tangent because you felt that it wasn't represented by a straight shot for that entire length.

4. Pick that long tangent somewhere between the two end points.



The new point will be on the end of the cursor waiting for placement.

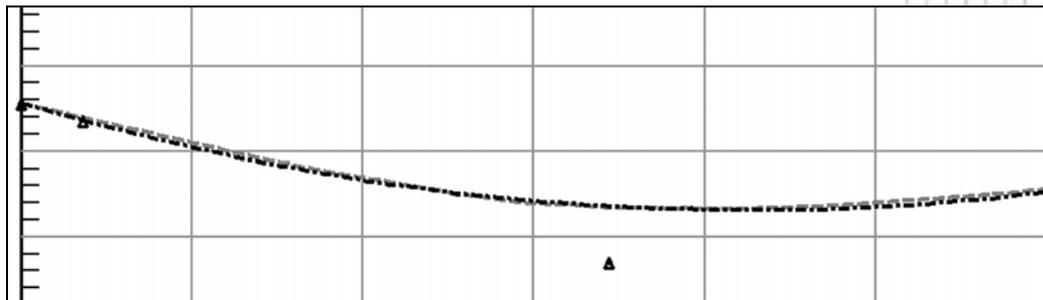
Okay, now let's assume that the more that you look at it, you decided to not place that extra point just yet and decide to place the curves in first. (This is really what I actually did here.)

5. *Reset* to reject this placement.
6. *Reset* again to ensure you have completely exited the command.

Page 353- Move Curve PI

The VPI location can be moved in the upper part of this dialog but the **Move PI** command works better in this case because it's more dynamic.

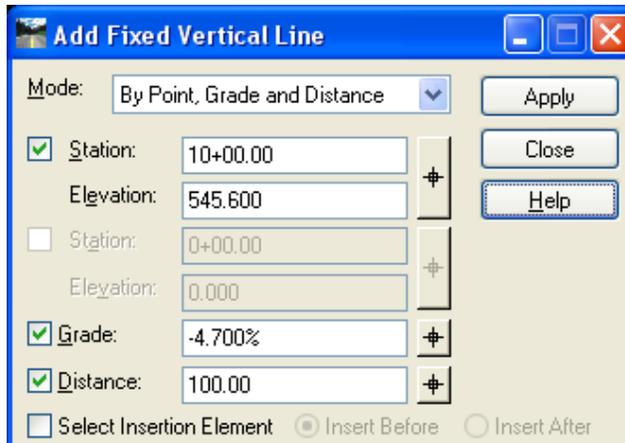
1. Set the **Dynamic Settings Grade** back to **0.25%** and click **Apply** on the **Dynamic Settings** dialog box.
2. Click on the **Move PI** command.
3. Data point near the VPI of the curve and the command will "grab" the curve.
4. Slide the curve around until it seems to fit better and then data point to identify the location.
5. Watch the prompts and *accept* the overall solution if it looks good.
6. *Reset* to ensure you have completely exited the command.
7. Window closer into the curve and see if that positioning is acceptable.



Page 361- Add Fixed Vertical Line

5. Enter the following settings:

- Station = **10+00**
- Elevation = **545.60**
- Grade = **-4.70%**
- Distance = **100**



These settings define the initial control based on the existing information.

Notice the **Dynamics Settings and Intervals** are no longer at the very bottom of the dialog box. They are now on a separate **Dynamic Settings dialog box**. This is the case for **ALL** of the Vertical Element tools. Several of the screen captures to follow will also show these settings. Just be aware that they have moved and don't worry too much about them because you won't be using these right now, but you should already know what they do from the explanation provided in Layout Option 2.

CHAPTER
2·8 Corridor Modeling

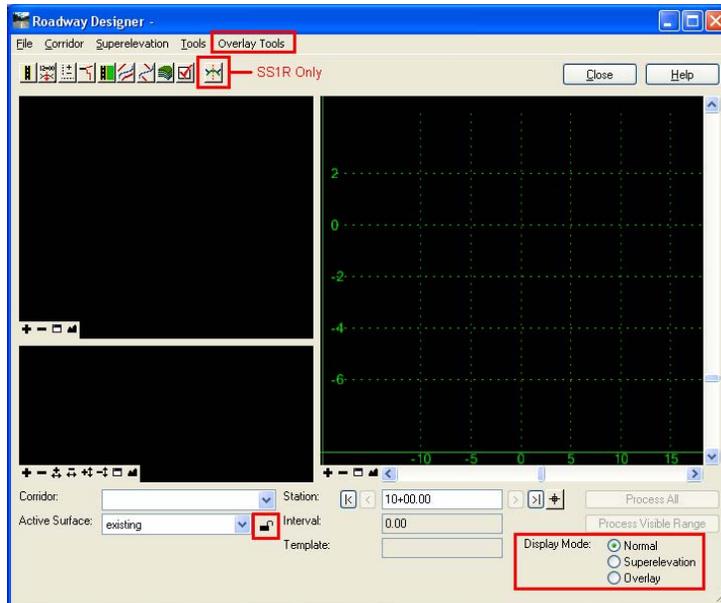
Page 500- The Project File

There is also a **More Options** button which is used when the data that is being saved needs to be stored in an earlier version format.



Page 503- The Roadway Designer

The **Roadway Designer** interface will open.

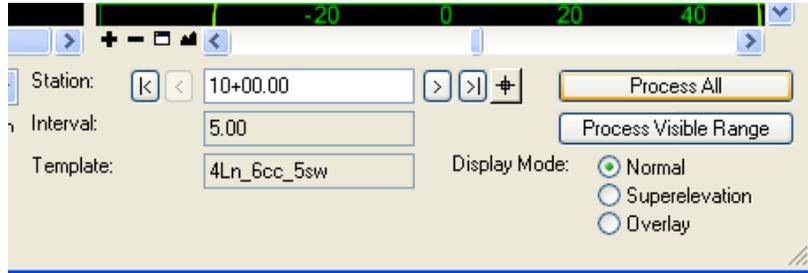


(The dialog box has been enhanced and some additional functionality has been added. For the purposes of this book, don't be too concerned with these changes)

Page 522- Pre-Processing the Corridor

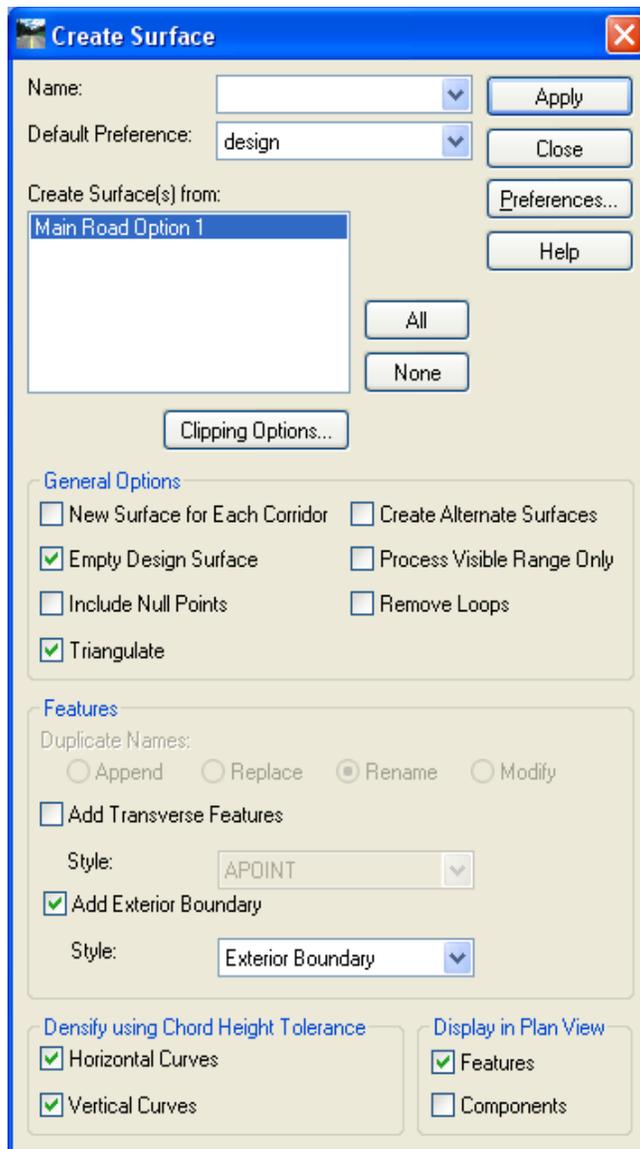
The **Roadway Designer** was created to reduce, and potentially eliminate, the iterative design process that the earlier versions of InRoads sometimes required.

1. In the **Roadway Designer**, at the lower right, click on the **Process All** button.



Page 525- Create Surface

2. The **Create Surfaces** dialog box will open.



The setting on this dialog can be stored in a user-defined **Preference** so more than likely the options set here will be appropriate for the most part.

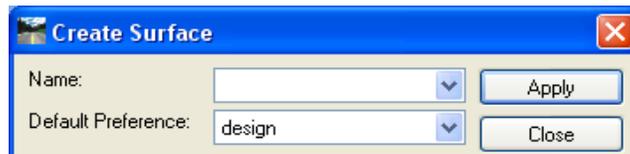
There are a few key settings on here that should be well understood.

For this reason the next couple pages will explain some of these settings so you will better grasp when they should be used or not.

If you have a good grasp of these settings then feel free to just skim the next couple pages.

Name and Preference

1. At the top of the **Create Surface** dialog box enter a **Name** of **MAIN RD DESIGN** and set the **Default Preference** to **design**.



The **Name** here will become the **Surface** name.

The **Default Preference** is the pre-created *Preference Group* that is to be assigned to this new surface. It is important to note here that the Preference chosen in this step will be the same one assigned to the symbologies for this surface in both Profiles and Cross-Sections. With this being said, it is important to pick a Preference here that makes sense. More about where this comes into play will be discussed later in this chapter.

Create Surface(s) from

1. Make sure that the corridor **MAIN ROAD OPTION 1** is selected.

The roadway definition, which was set up through the **Roadway Designer**, contains all of the **Station/Template** details for the corridor. This roadway definition *must* be set up prior to running the **Create Surface** command.

If there were multiple corridors set up here it is possible to select any number of models to run consecutively.

New Surfaces for Each Corridor

1. Toggle *off* the **New Surface for Each Corridor**.



The **New Surface for Each Corridor** is used when more than one roadway is being modeled at once. When this option is used the **Name** given to the surface at the top is ignored and the surface name is taken from the name of the corridor in the central list window.

Empty Design Surface

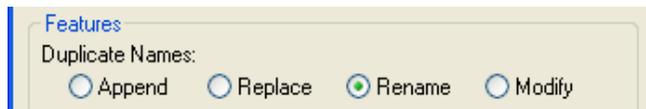
The **Roadway Designer** is going to create a design surface based on either the name provided at the top of the Create Surface command or the name of the **Corridor**. When the **Empty Design Surface** option is *on*, a check will be made to see if that surface name is already in use. If a surface exists with a name the same as the new surface, the data in the earlier surface will be emptied and replaced by this new modeling.

If this is *not* checked *on*, then the data from the current modeling will be *combined* with the surface with the same name.

1. Click *on* and *off* the **Empty Design Surface** option and watch the **Duplicate Names** area.



Exactly how the Surface *Feature* data in the combining surfaces is addressed is a function of the **Duplicate Names** option in the **Features** portion of this command.



If the data is to be combined, some thought has to be given as to how duplicate feature names should be addressed.

The options are:

- ▶ **Append**—Will attach like-named features so they are combined into a single feature.
 - ▶ **Replace**—Will remove any feature that is named something identical to a new feature that is being created by the current modeling.
 - ▶ **Rename**—This setting will retain all earlier data and combine any new data with it while adding an incrementing value onto its name.
 - ▶ **Modify**—This option will take the previous surface and change just the portion being currently remodeled.
2. Toggle *on* the **Empty Design Surface** option for this particular corridor model.

Triangulate

1. Toggle *on* the **Triangulate** option.

Sometimes when models are created and combined with other surface models conflicts are expected and editing the resulting features becomes an anticipated next step. In these cases **Triangulation** is unnecessary since the surface will be first ‘cleaned up’ and then manually triangulated at the users discretion.

Add Transverse Features

1. For now toggle the **Add Transverse Features** option *off*.

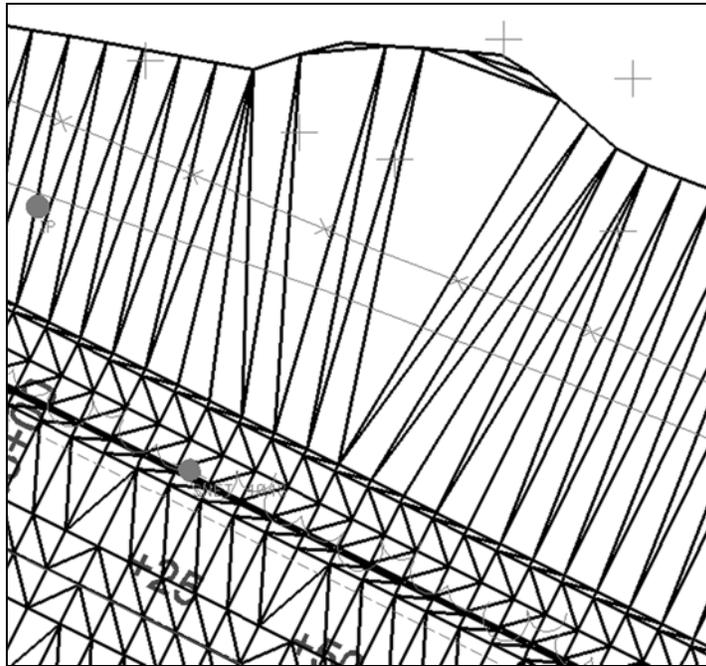


This setting, **Add Transverse Features** came out in InRoads V8.04 to address a very specific issue that sometimes occurs in a surface model.

Transverse Features are perpendicular breaklines that are generated at each interval, and these breaklines are assigned a **Style** just like any other surface feature. To see a picture of these transverse feature take a look at the graphics within the section titled “Roadway Models” on page 32.

Transverse features are sometimes needed to enhance the surface model when triangulation doesn’t form correctly. For instance, there are locations when the distances between the top and toe of slope is so large that the triangulation crosses over to another section where it shouldn’t. By generating these transverse features and triangulating them with the model, the surface is formed more accurately.

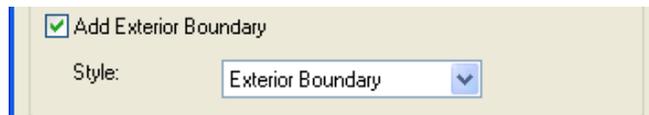
In the example shown here, the triangulation is crossing over several sections, while some other inappropriate small triangulation is occurring at the top of the slope.



Surfaces have to be checked for inappropriate triangulation and corrected.

Add Exterior Boundary

1. Toggle *on* **Add Exterior Boundary** and define the **Style** as **EXTERIOR BOUNDARY**.



The **Add Exterior Boundary** toggle is used to automatically create an exterior boundary around the generated design surface model. This is usually done when the surface model that is being created is a “standalone” surface. When this surface data is going to be combined with other data, like for an intersection design, then the exterior boundary isn’t created because it would conflict with the combining of data and its eventual triangulation.

The **Style** controls the display characteristics of the exterior feature.

Densify Curves

1. In the **Densify using Chord Height Tolerance** area, toggle *off* the **Horizontal Curves** and the **Vertical Curves**

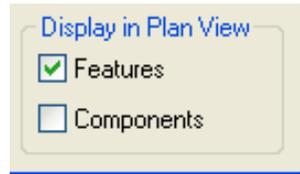


This **Densify using Chord Height Tolerance** is exactly the same setting as is on the **Express Modeler**. Refer to the topic “*Express Modeler*” on page 118 for that material if you need to review it.

Display in Plan View

The **Display in Plan View** simply tells InRoads to view the breakline features, the components, or both from this design model in the plan view.

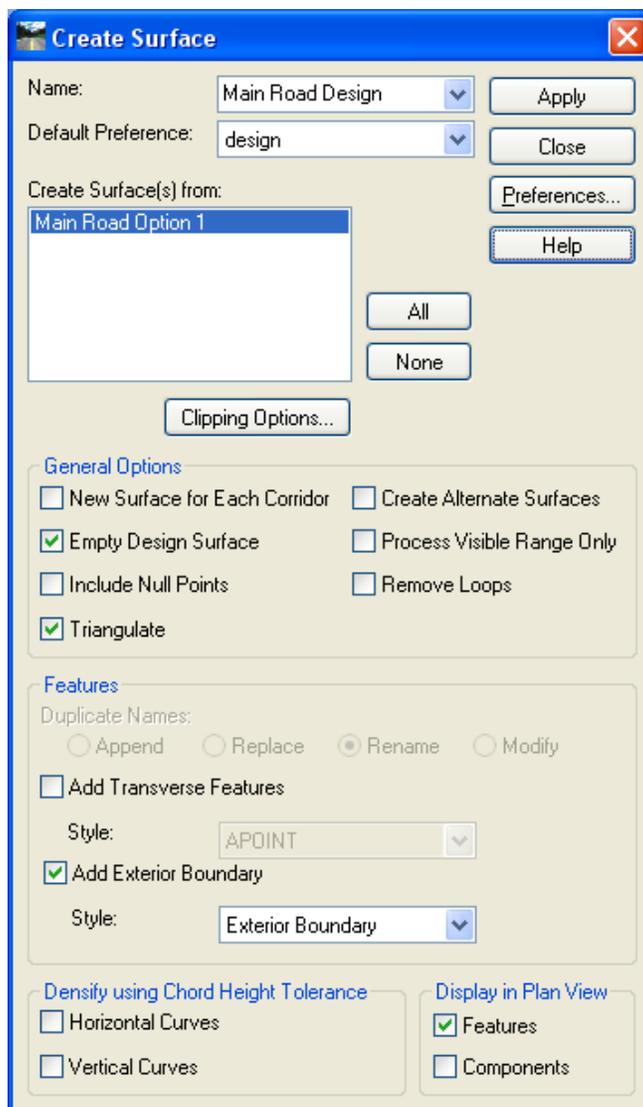
1. Toggle *on* the **Features** in the **Display in Plan View** option.



It's not critical that this be done because other tools such as the **View Features** command as well as the **Update 3D/Plan Surface Display** tool can display these features as well.

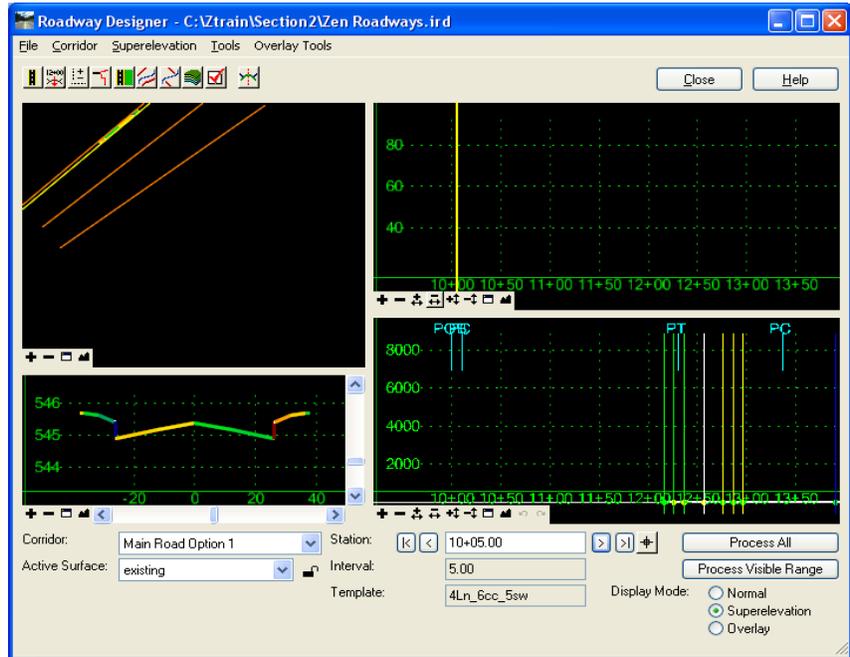
Final Set-up

1. Before moving forward verify the following settings.



Page 543- InRoads Superelevation

4. Change the **Display Mode** to **Superelevation** in the lower right.



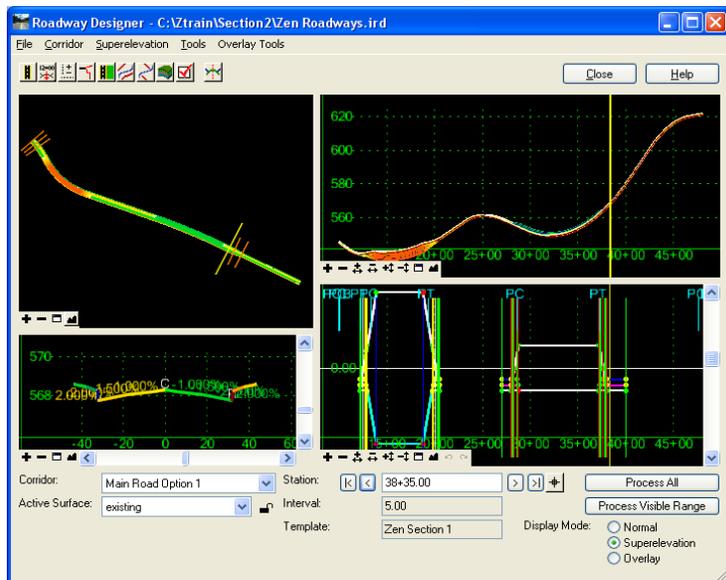
The dialog box view is altered to show four window panes. These panes represent the Plan (upper left), Profile (upper right), Cross Section (lower left) and the Superelevation Diagram (lower right).

These views are incomplete since the superelevation is not yet created.

5. Click on **Normal** in the **Display Mode** section to return to the default three pane mode.

Page 567- Viewing the Superelevation

2. Click **Superelevation** in the **Display Mode** section of the Roadway Designer.



Page 584- Creating the Surface DTM

2. Define the following settings:

Create Surface

Name: Design_Superelevated

Default Preference: design

Create Surface(s) from:

Main Road Option 1

General Options

New Surface for Each Corridor Create Alternate Surfaces

Empty Design Surface Process Visible Range Only

Include Null Points Remove Loops

Triangulate

Features

Duplicate Names:

Append Replace Rename Modify

Add Transverse Features

Style: APOINT

Add Exterior Boundary

Style: Exterior Boundary

Densify using Chord Height Tolerance

Horizontal Curves Vertical Curves

Display in Plan View

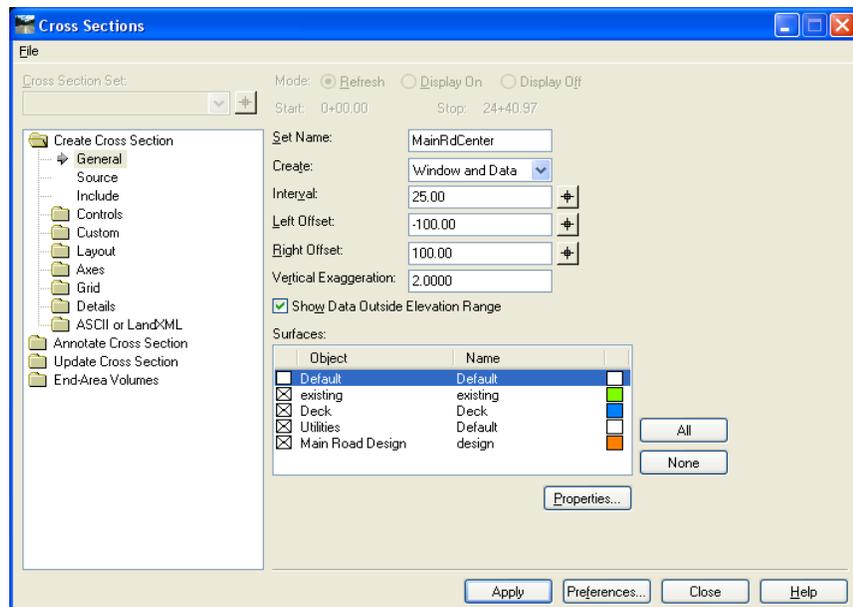
Features Components

Page 600- Creating Cross Sections

(The changes in this section are only for the SS1R (08.11.07.246) and SS2 (08.11.07.428) versions of the InRoads software)

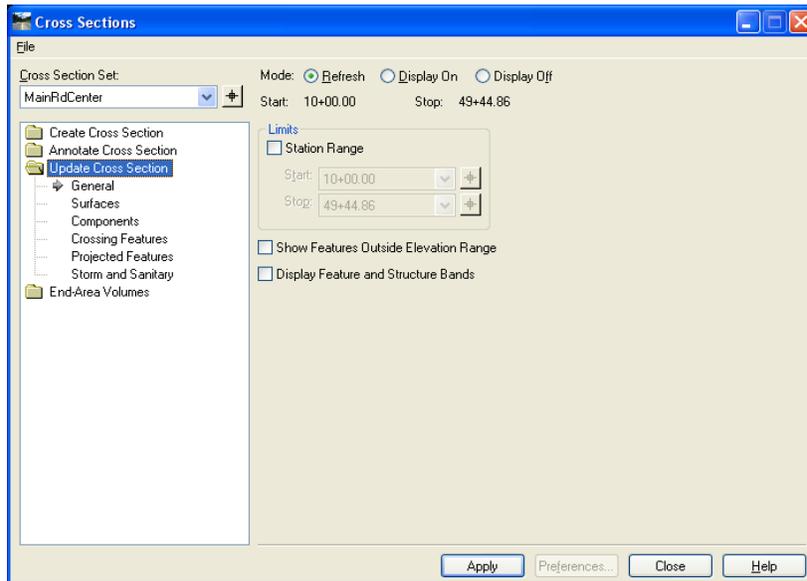
Creating collections of cross sections is an easy operation once the settings have been pre-established and stored under **Preferences**.

1. Go to ***Evaluation > Cross Section > Cross Sections***.



Page 611- Updating the Cross Sections Overview

1. Go to **Evaluation > Cross Section > Cross Sections** and click on the **Update Cross Section** folder.



NOTE: The screen captures on the next few pages of the book (and the rest of the Chapter 2-9 for that matter) are slightly different on the tree and leaf side (left side) of the dialog box. This is because Bentley has combined some of the different **Cross Section** commands into one dialog box. The functionality of each command is virtually the same only it can now all be accessed from the same location **Evaluation > Cross Section > Cross Sections**.

Page 614- Refreshing

2. Return to the **Update Cross Section** folder on the **Cross Sections** command and **Refresh** the **ROW Features**.
3. Go back to the **Symbology Manager** as necessary to increase the **Scales** until satisfied with the display.
4. **Refresh** the **Features** using the **Update Cross Section** folder on the **Cross Sections** command until the **ROWS** are a reasonable viewing size.

The section below is shown with **Scales** of **X = 4**, **Y = 2** and **Z = 1**.

Remember that the cross sections are displayed with a 2:1 vertical exaggeration so the X scale should be twice the Y scale for the cell in the **Symbology Manager**, since the Cell was designed at 1:1.

5. **Close** the **Cross Sections** command when done.

Page 617- Chapter Challenge

Additional Exercises

For those of you who are ready for some additional practice, do the following.

1. Jump back to Chapter 1-4 to the topic “*End-Area Volumes*” on page 132. (This tool is now a folder located on the **Cross Sections** command found at **Evaluation> Cross Section> Cross Sections**) Read through this portion and compute volumes on the Main Road cross sections.

Page 621- Surface Symbology

1. If you are not still there, go to **Evaluation> Cross Section> Cross Sections** and get on the **General** leaf in the **Create Cross Section** folder.