

# ***2009 Roads and Bridges Conference***

**IW-7**

**Plans Production for InRoads V8i**

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## Introduction

This is a two hour workshop to learn the basics of InRoads Plan and Profile generator and how to use tools to create sheets, annotate and add drainage network which after this workshop you will know how to create deliverable plan and profiles using InRoads. Appendix 1 will give you the opportunity to make adjustments

to the sheets.

In this conference class, the topics covered include

- . Plans Preparation
- . Using a composite plan file
- . Using Plan and Profile Generator
- . Modifying Plan and Profile sheets
- . Adding Drainage to Profiles
- . Annotation
- . Annotating profiles
- . Annotating storm data in profile
- . Using InRoads Plan notes

## LESSON NAME: PLAN PREPARATION

### LESSON OBJECTIVE:

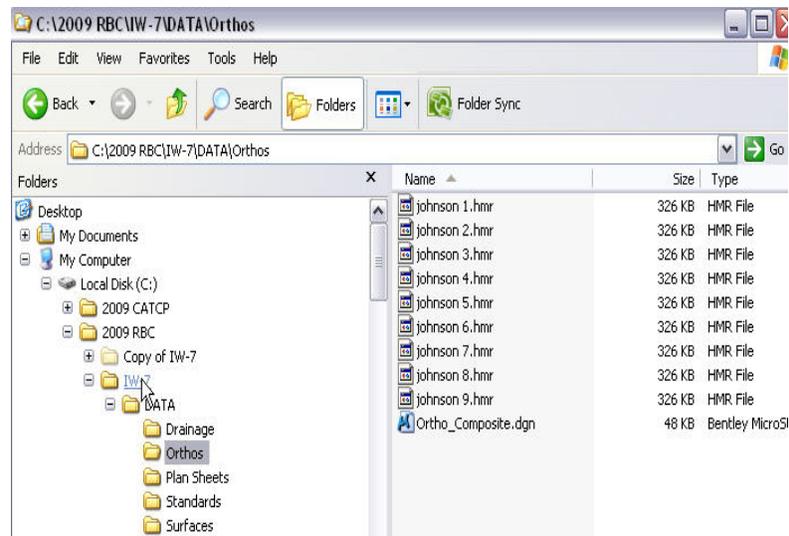
The following exercises will walk you through using InRoads to generate finished plan and profiles.

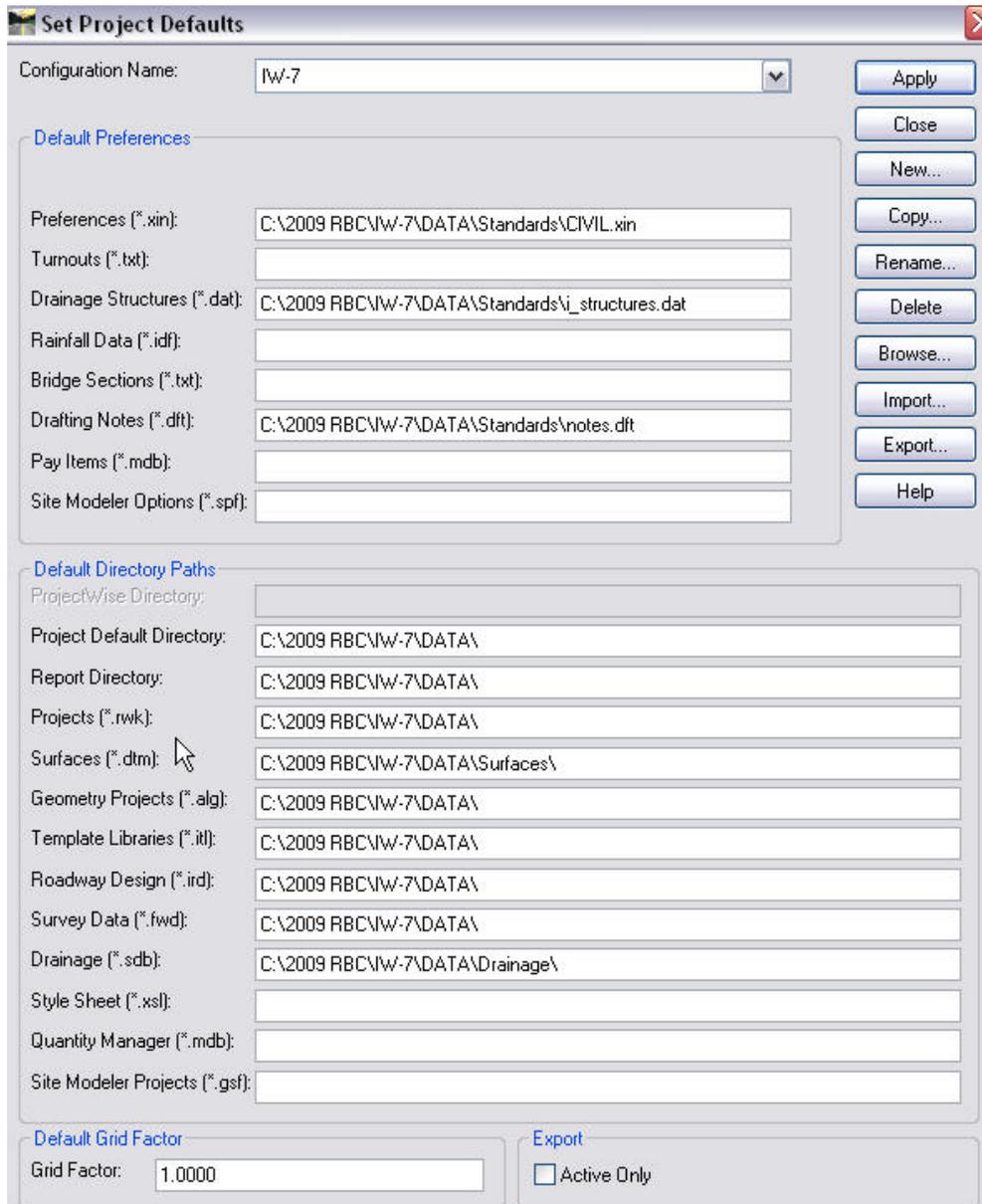
#### >EXERCISE: STARTING INROADS AND LOADING PROJECT DATA

In this exercise you will learn how to start InRoads and how to load project data using a project.rwk file.

1. First we will start MicroStation and InRoads  
(Start>Programs>Bentley InRoads Group>InRoads)
2. When the MicroStation Manager appears open the file  
C:\2009 RBC\IW-7\DATA\Orthos\Ortho\_Composite.dgn

3. When MicroStation and InRoads Survey starts change the *Project Defaults* to IW-7 (File>Project Defaults)





4. Close Set Project Defaults Dialog box.

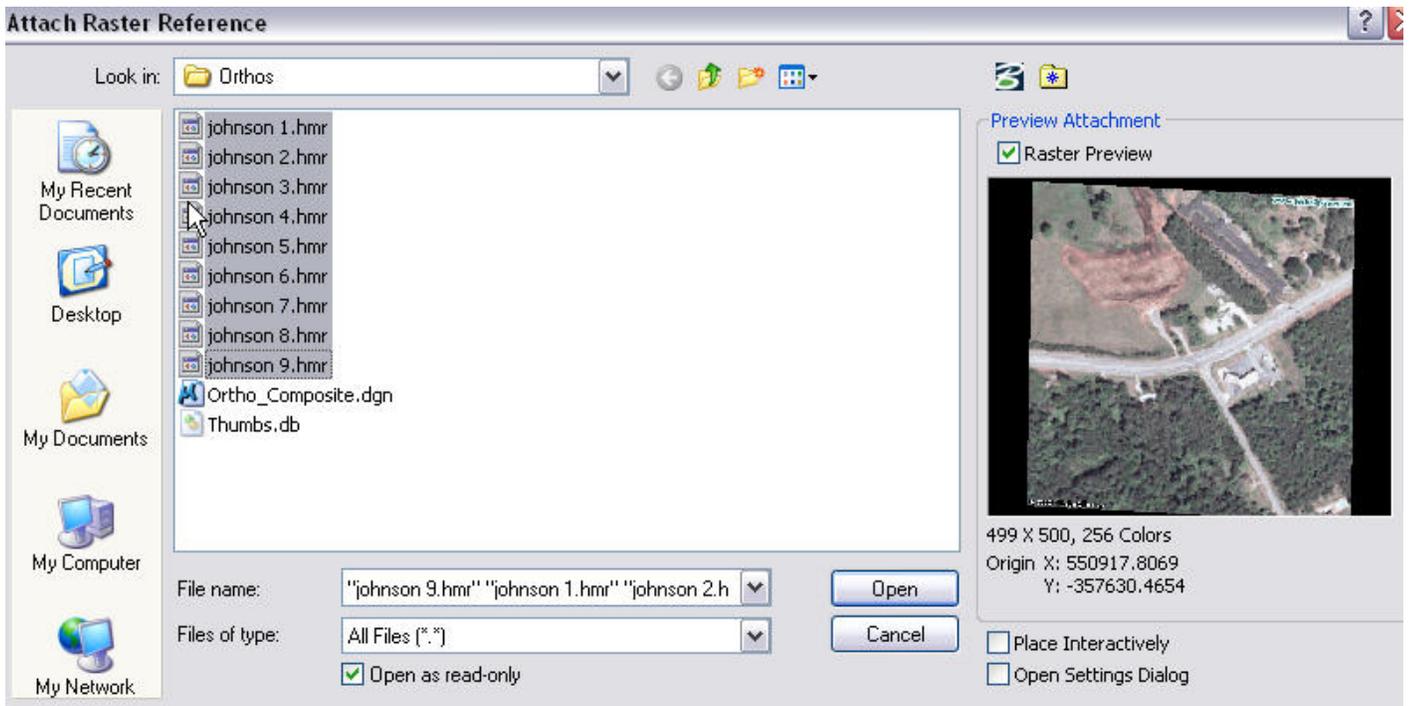
5. Open project files C:\2009 RBC\IW-7\DATA\Project.rwk. (On the InRoads Menu: File>Open>(File Type: Project.rwk))

**>EXERCISE: CREATE AN ORTHO COMPOSITE FILE**

In this exercise you will attach aerial photographs using raster manager to be used later during plan

production.

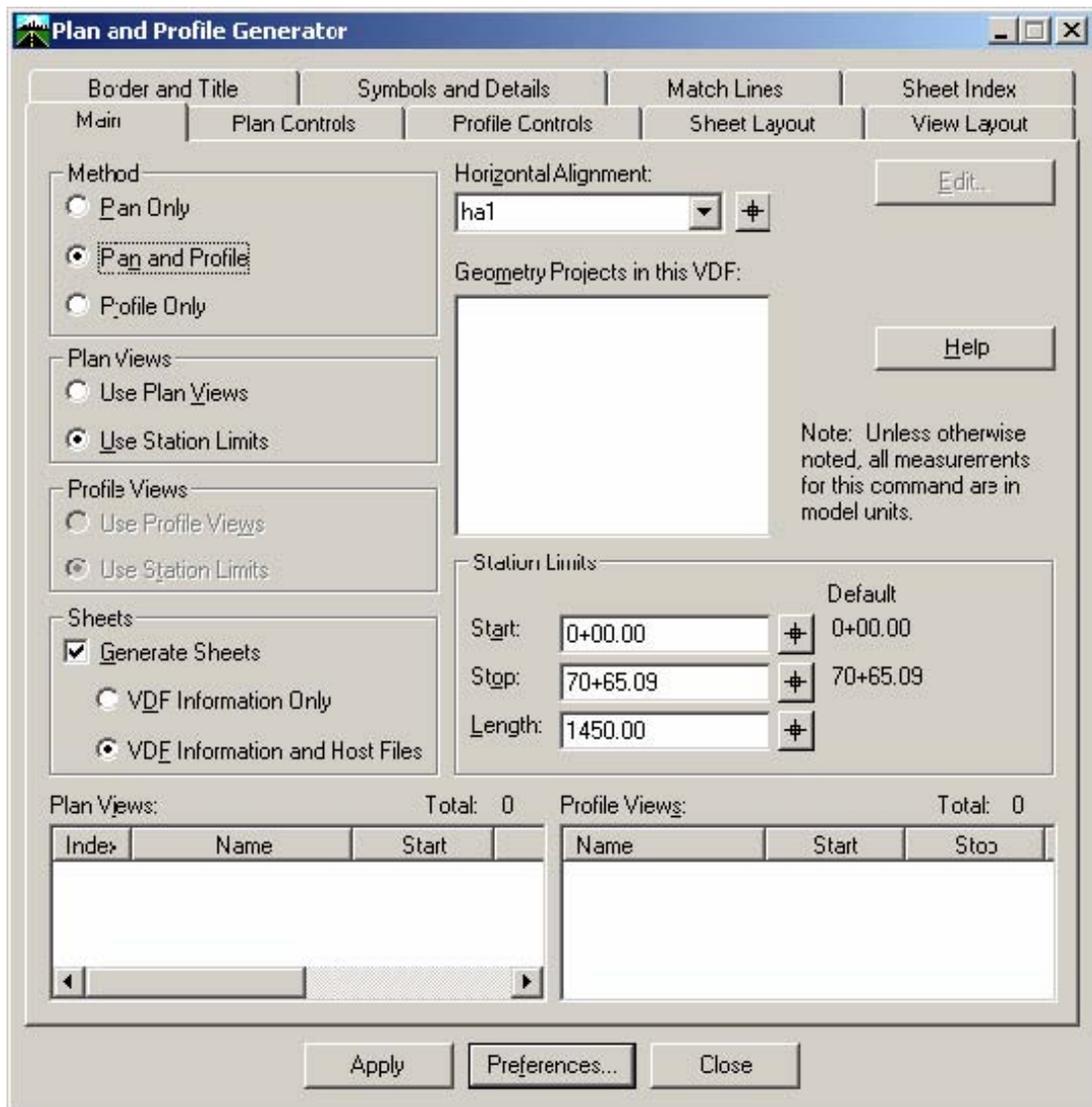
1. You should be in Ortho\_Composite.dgn from the last exercise. If not open that MicroStation file.
2. (On the MicroStation Menu: File>Raster Manager)
3. (On the Raster Manager Menu: File>Attach>Raster) Select all the **Johnson.hmr** files by holding down the **shift key**. Then select the OK button. *Dialog on next page.*



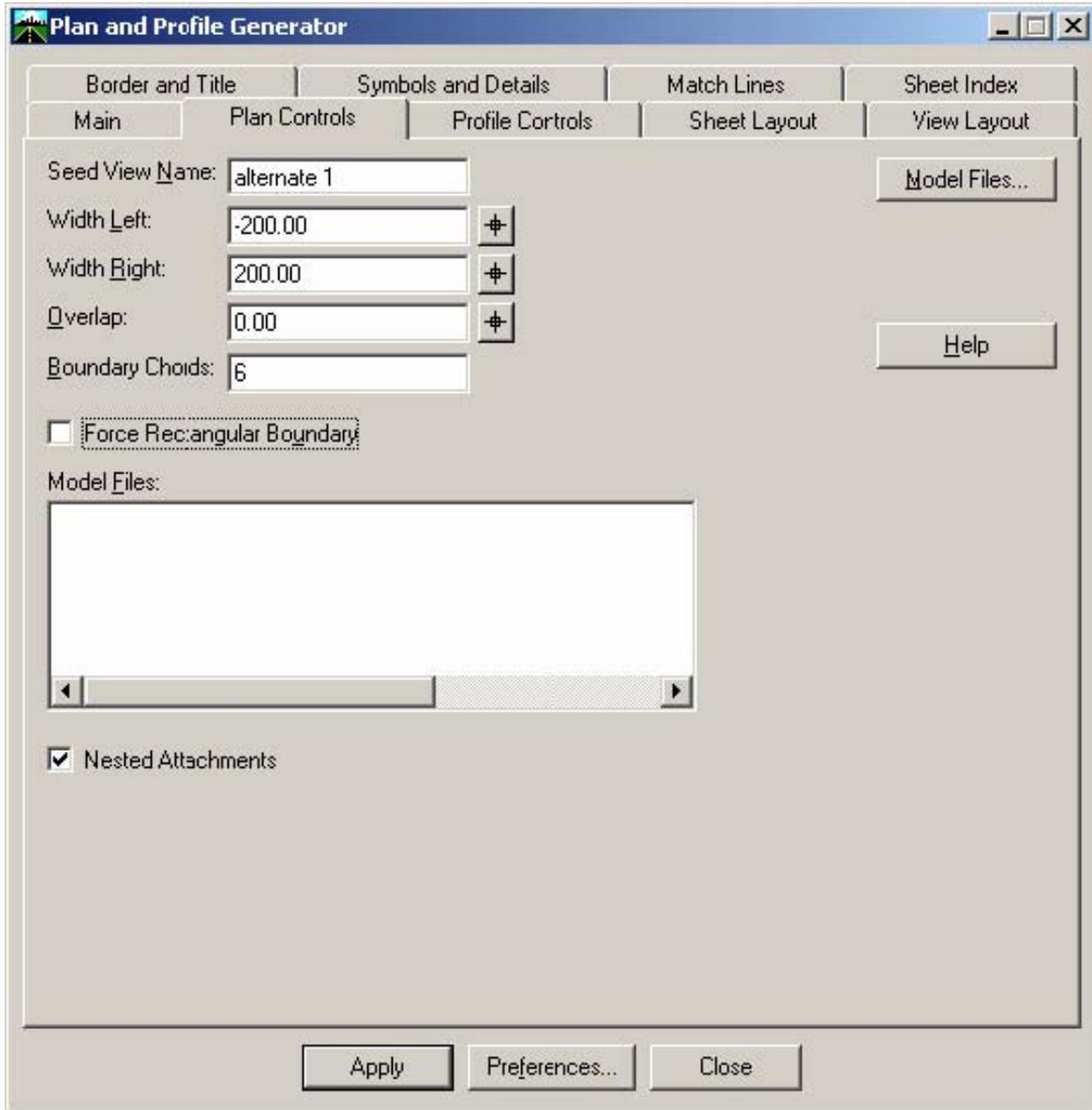
**>EXERCISE: CREATING A PREFERENCE FOR PLAN AND PROFILE GENERATOR**

In this section you will learn how to setup the Plan and Profile Generator and save the settings as a preference to be used again.

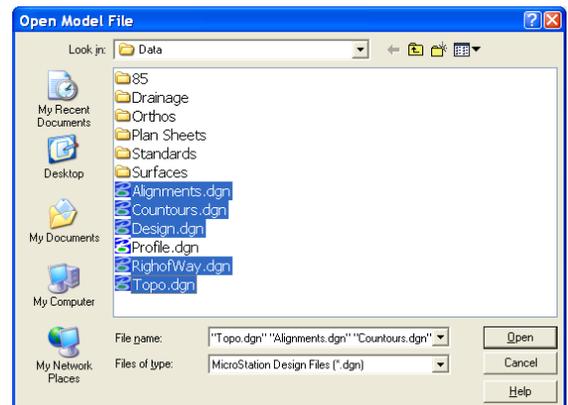
1. Open MicroStation file C:\2009 RBC\IW-7\DATA\profile.dgn. (On the MicroStation Menu: File>Open>(profile.dgn)
2. On the InRoads Menu: Drafting>Plan and Profile Generator)
3. On the main tab set the following: In the Method area: **Plan and Profile** In the Station Limits area: **Stop 70+65.09 Length to 1450**



4. On the Plan Controls tab set the following: Width Left: **-200** Width Right: **200** Overlap: **0** Boundary Chords: **6** This establishes the plan area to be clipped left and right of alignment.

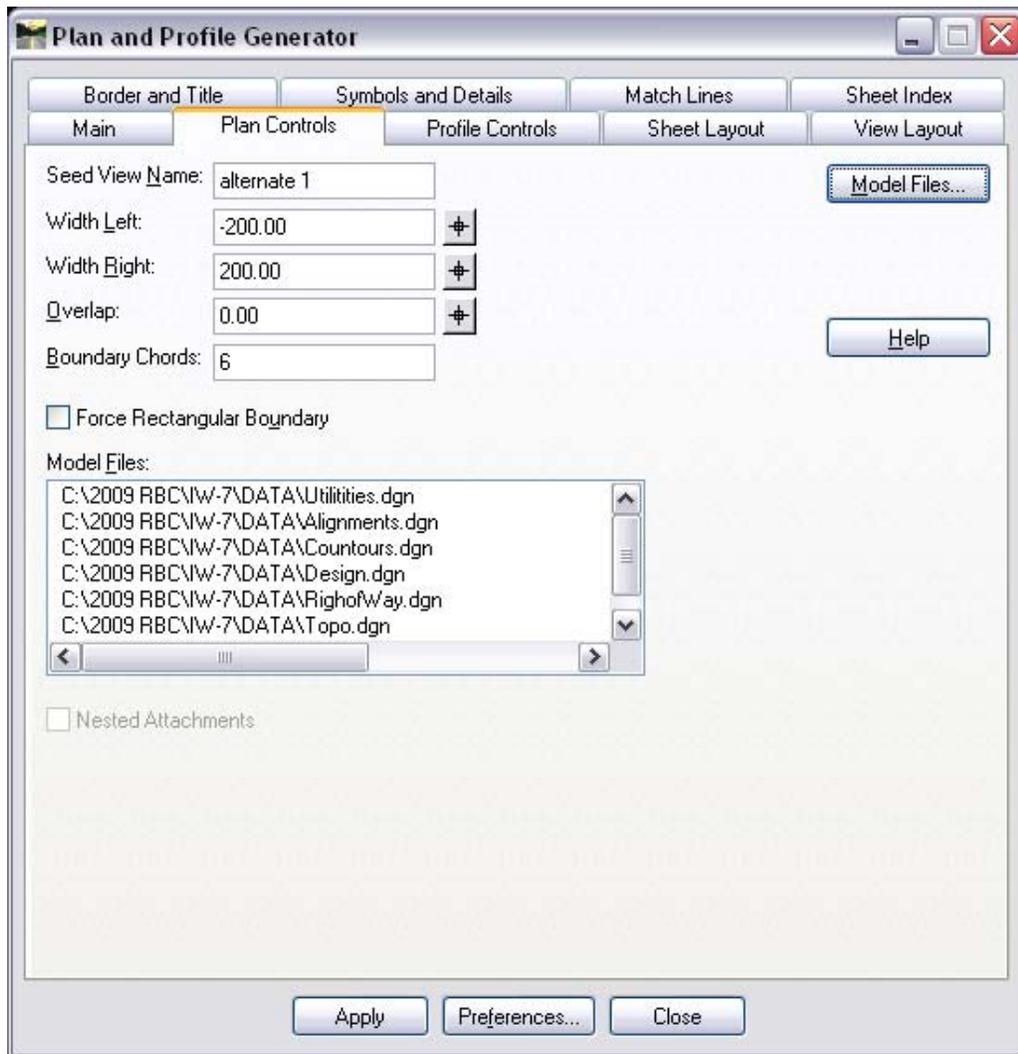


5. Next while on the Plan Controls tab select the Model files button. This will allow you to choose the

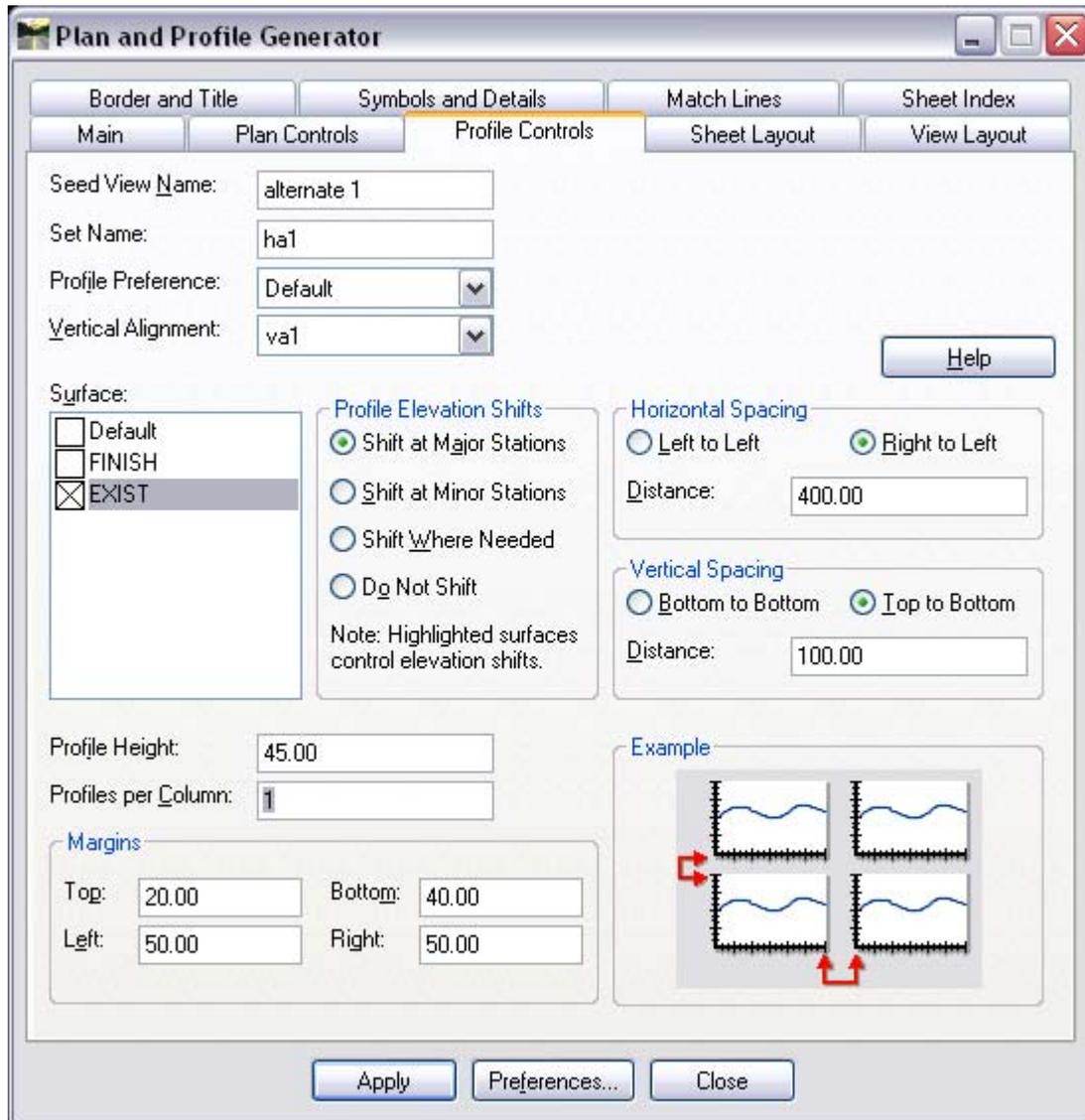


reference files that make up your plan view.

6. Select MicroStation file C:\2009 RBC\IW-7\DATA\ *Alignments.dgn*, *countours.dgn*, *drainage.dgn*, *proposed.dgn*, *rightofway.dgn*, and *topo.dgn*. Hold down the **CRTL** key while selecting the reference files. Then Select **open**.
7. Select the Model files button again. Browse to C:\2009 RBC\IW-7\DATA\Orthos\ *Ortho\_Composite.dgn*

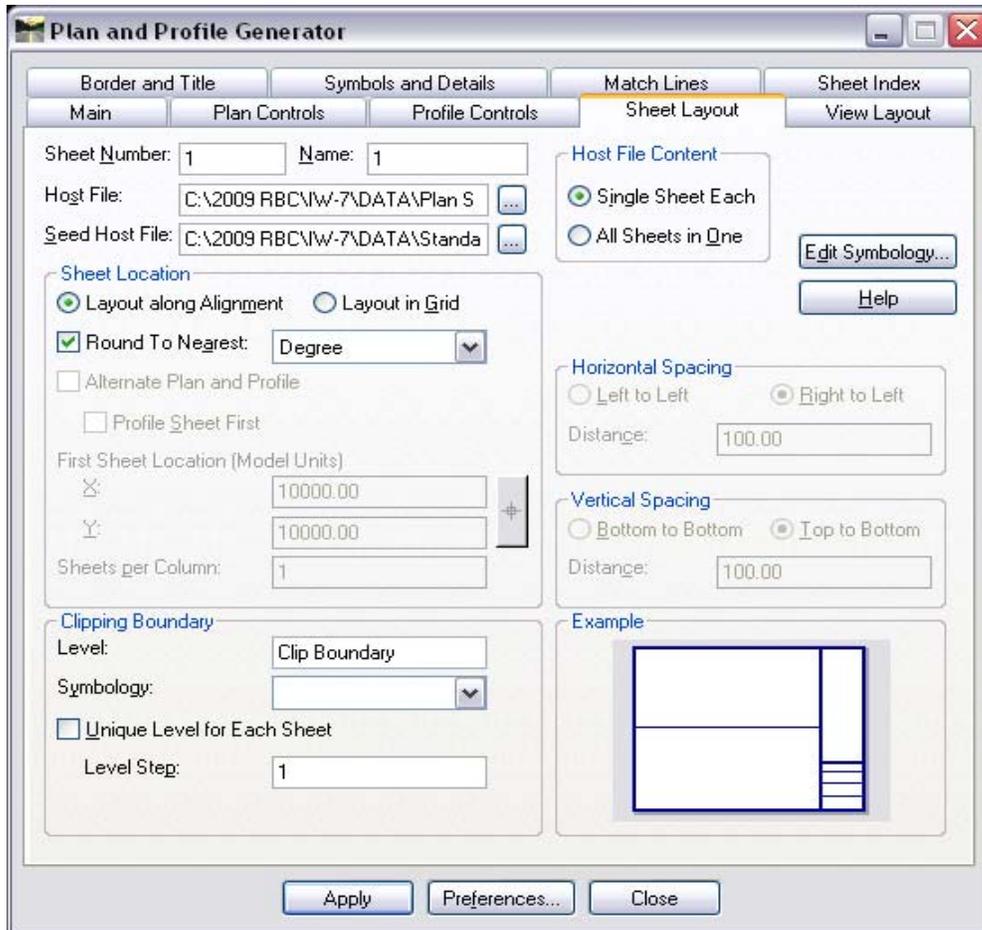


8. Next move to the profile controls tab Vertical Alignment: **VA1** Profile Elevation Shifts: **Shift at Major Stations** Profile Height: **45** Margins: Top: **20** Bottom: **40** Left: **50** Right:**50**

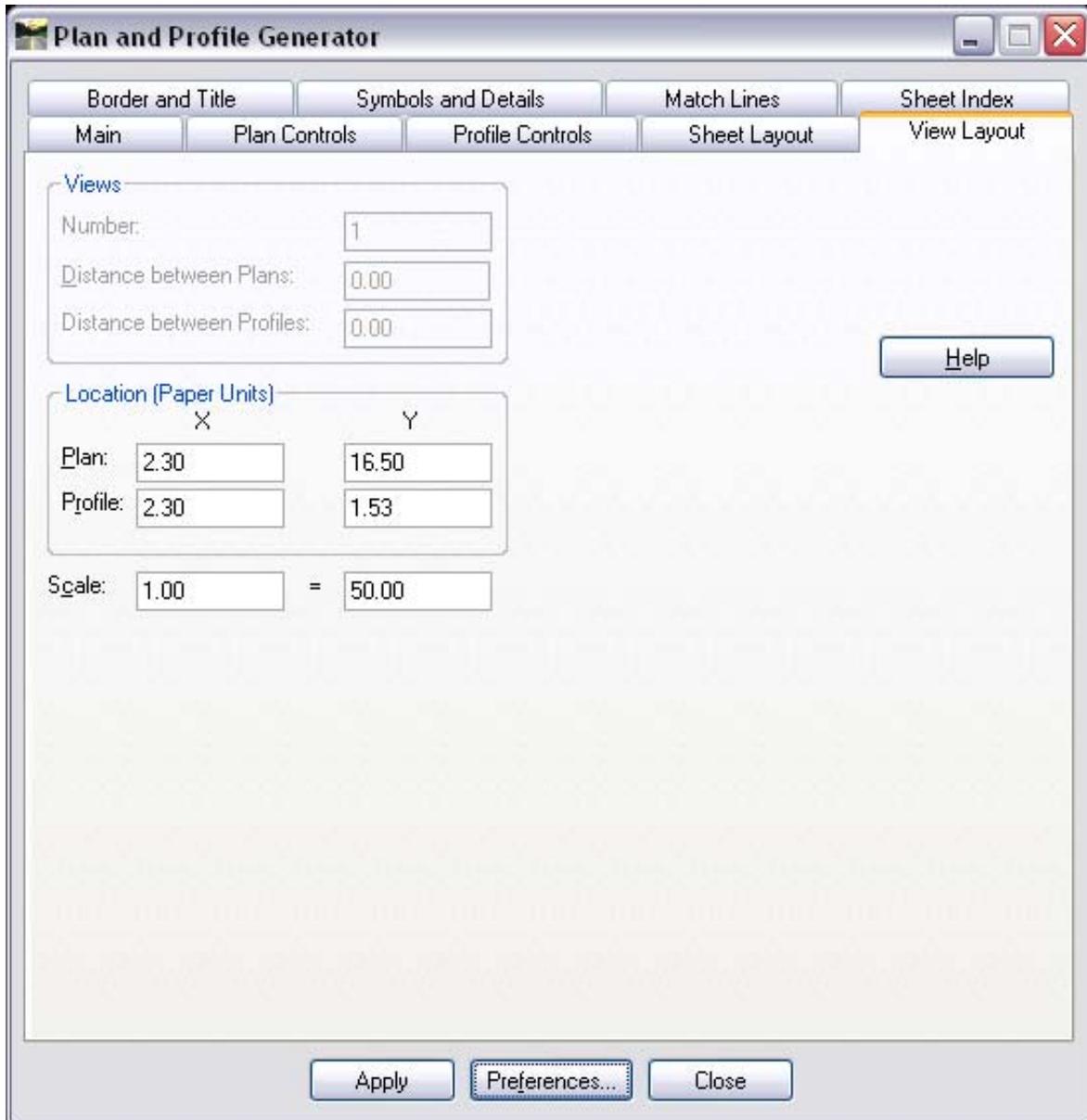


9. Next select the Sheet Layout tab to define the creation of the new sheets.
10. Select in the Host file: field and push the three dots next to the field. C:\2009 RBC\IW-7\DATA\Plan Sheets. In the file name area type the name of the new sheets to be created. **PlanPro1.dgn** Then select save. This is the name of the new files created.
11. Next put your cursor into the Seed Host File: and push the three dots next to the field. C:\2009 RBC\IW-7\DATA\Standards\3Dseed.dgn and select open.

12. Next on the Sheet location area toggle **Layout along Alignment**
13. Change the Round to the Nearest to **Degree**
14. Set the clip boundary level **Clip Boundary**
15. In the Host file content area toggle to **Single Sheet Each**



16. Next select the View Layout tab.
17. In the location (Paper Units) set the dimension to locate the view to be created during the plan and profile process. Set the following. Plan: **X=2.30 Y=16.50** Profile: **X=2.30 Y=1.53**. These dimension come from the lower left corner of the border file.
18. In the Scale: Section set it to **1=50** Since we will be creating 1"=50' plan and profile sheets.

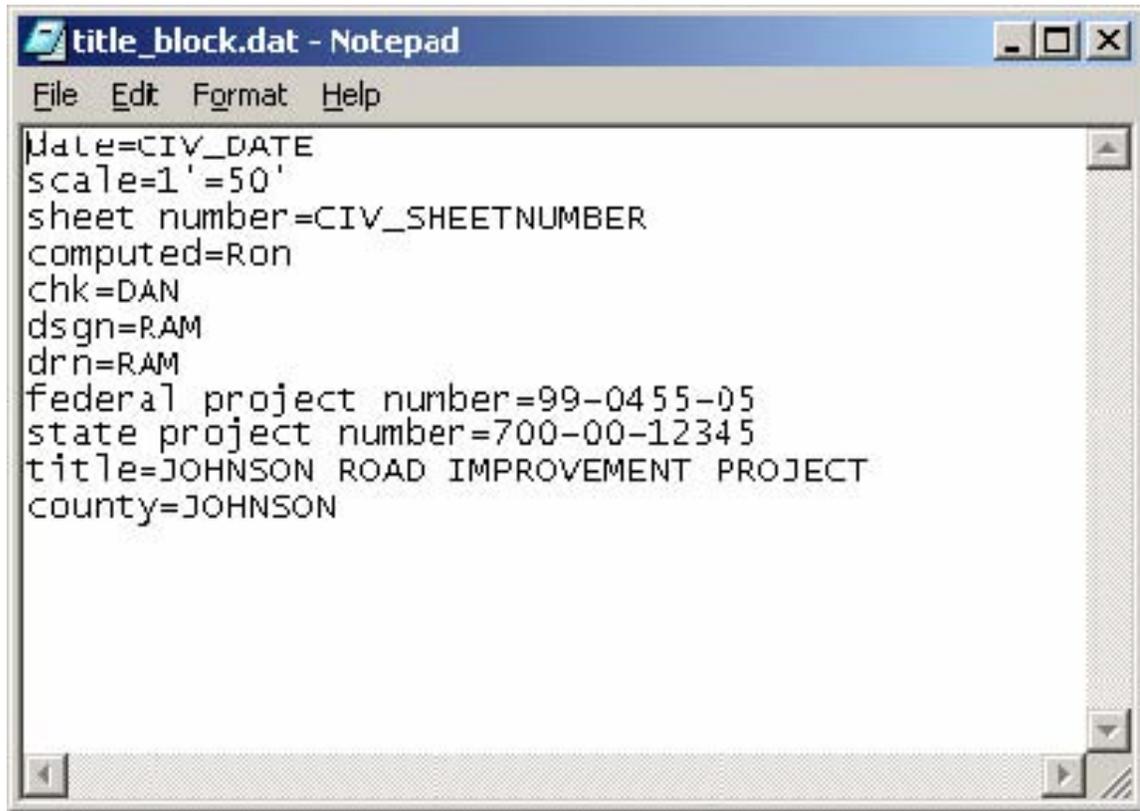


19. Next select the Border and Title tab.

20. Next in the Border area toggle the type from **Cell to reference** file. And then browse to select the border file. C:\2009 RBC\IW-7\DATA\Standards\**Border\_PNP.dgn**

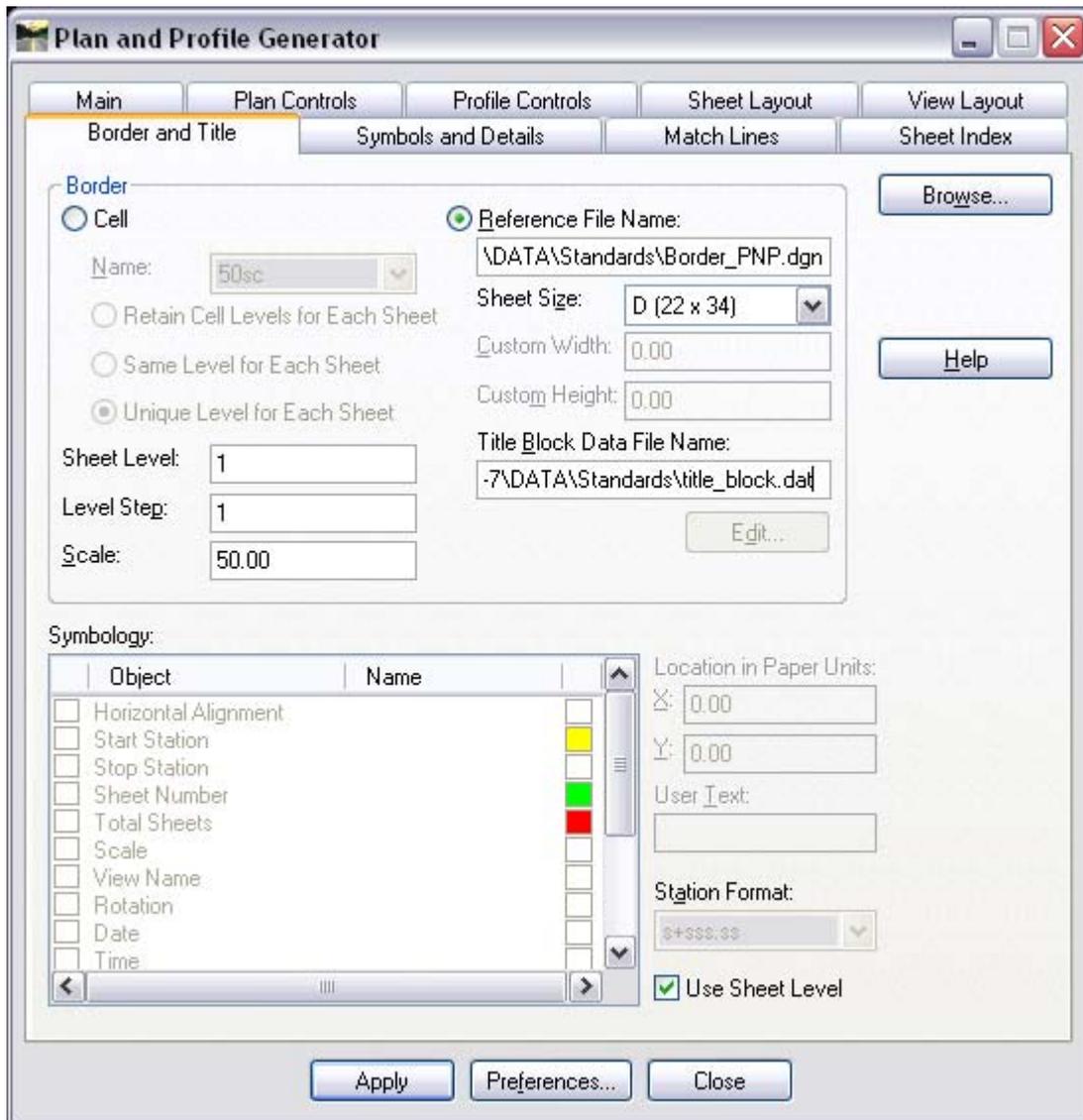
21. Then select the Title block Data File Name. Select the browse button to select the title block .dat file C:\2009 RBC\IW-7\DATA\Standards\**title\_block.dat** Select the file then open.

22. Pick the edit button below the Title Block Data File Name. This opens the file in NotePad.
23. Next change the line `dsgn=RAM` to `dsgn=YOUR INITIALS` Then save the file.



```
date=CIV_DATE
scale=1'=50'
sheet number=CIV_SHEETNUMBER
computed=Ron
chk=DAN
dsgn=RAM
drn=RAM
federal project number=99-0455-05
state project number=700-00-12345
title=JOHNSON ROAD IMPROVEMENT PROJECT
county=JOHNSON
```

*Above is the information that will populate title block*



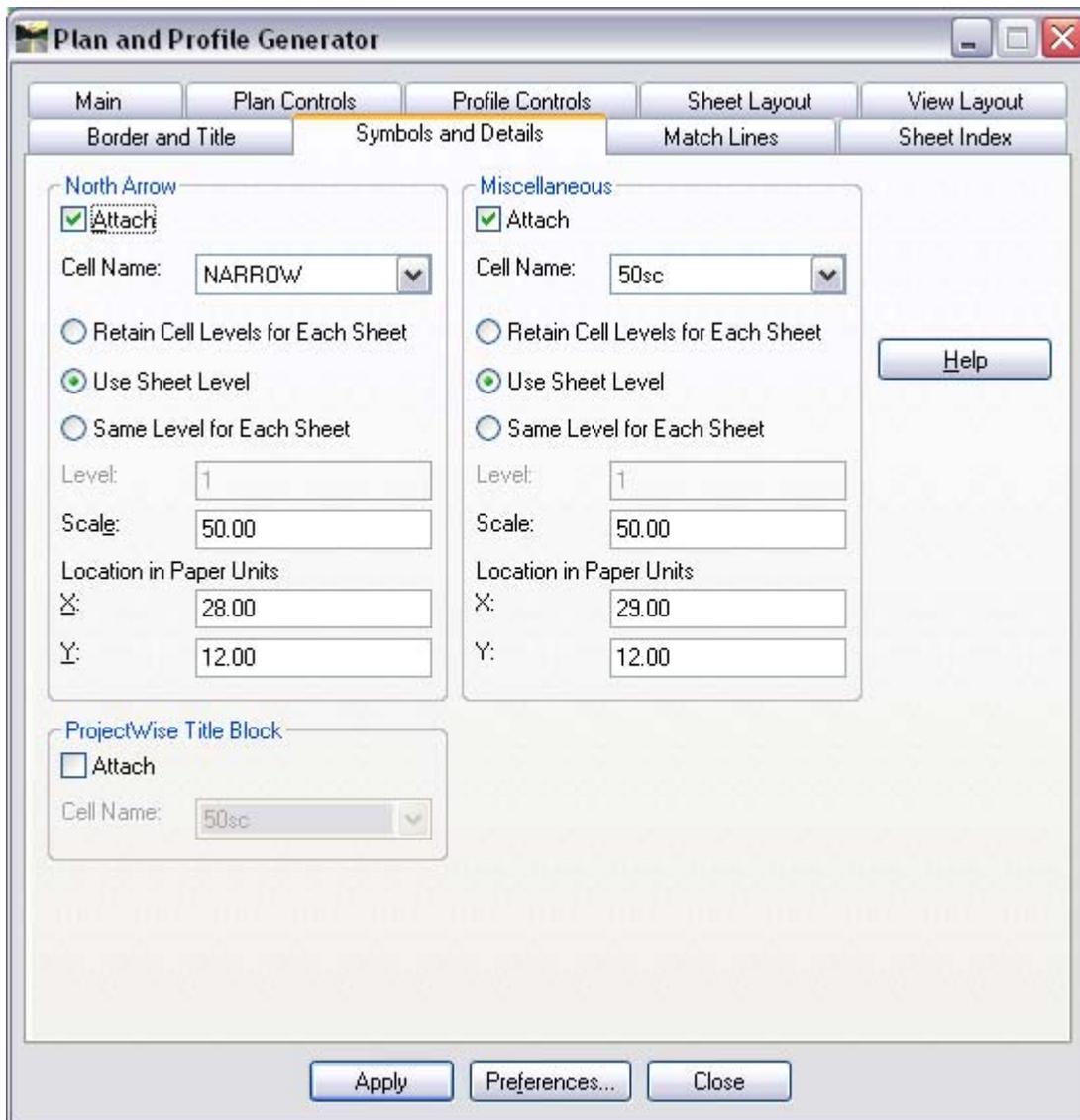
Reference File Name: C:\2009 RBC\IW-7\DATA\Standards\***Border\_PNP.dgn***  
 Title Block Data File Name: C:\2009 RBC\IW-7\DATA\Standards\***title\_block.dat***

*Make sure all information is filled out as shown above*

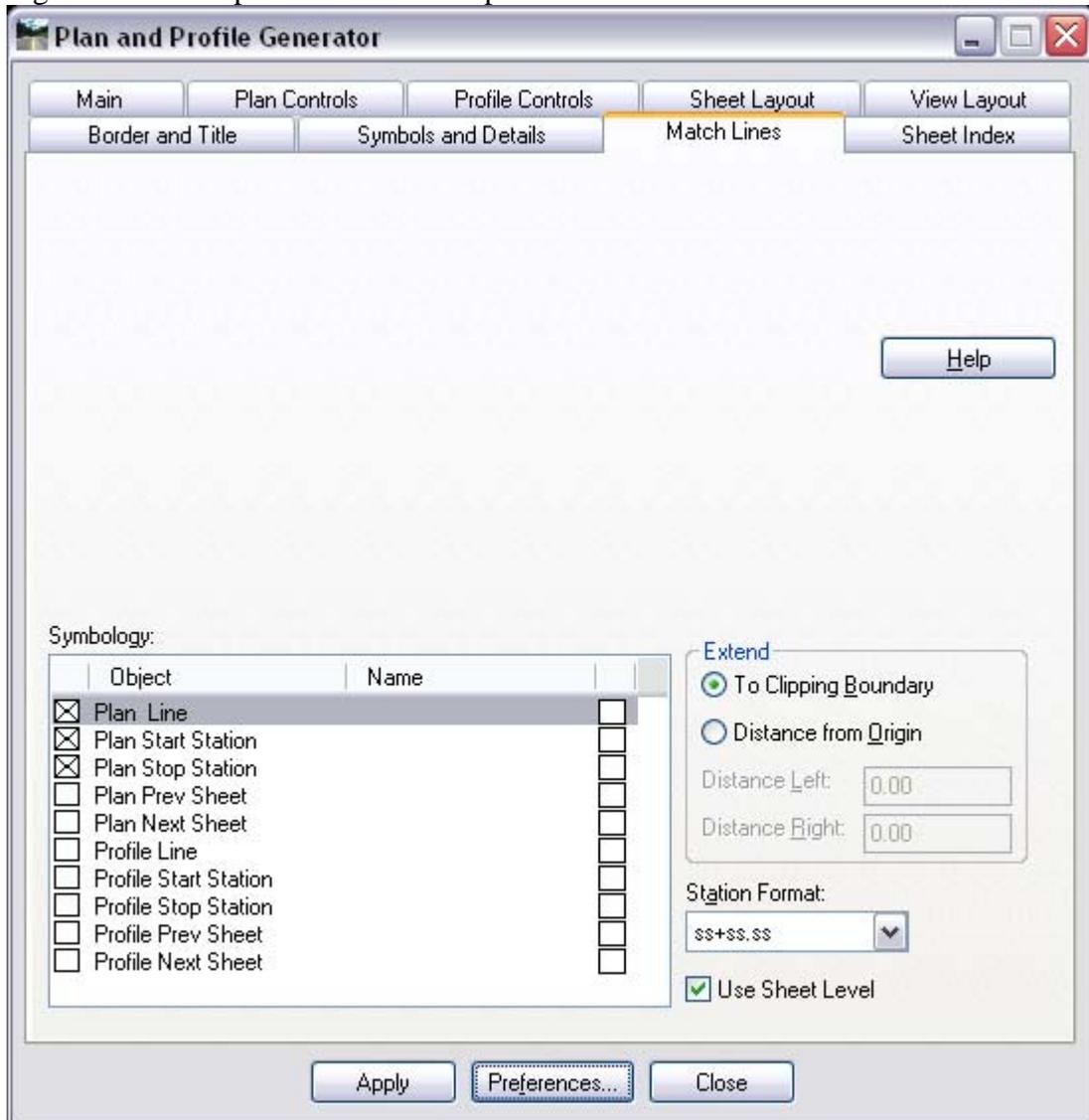
24. Next select the Symbols and Details tab

25. Set the following information North Arrow: Scale: **50** Location (Paper Units) **X= 28 Y=12**

26. Set the following information Miscellaneous: Scale: **50** Location (Paper Units) **X= 29 Y=12**

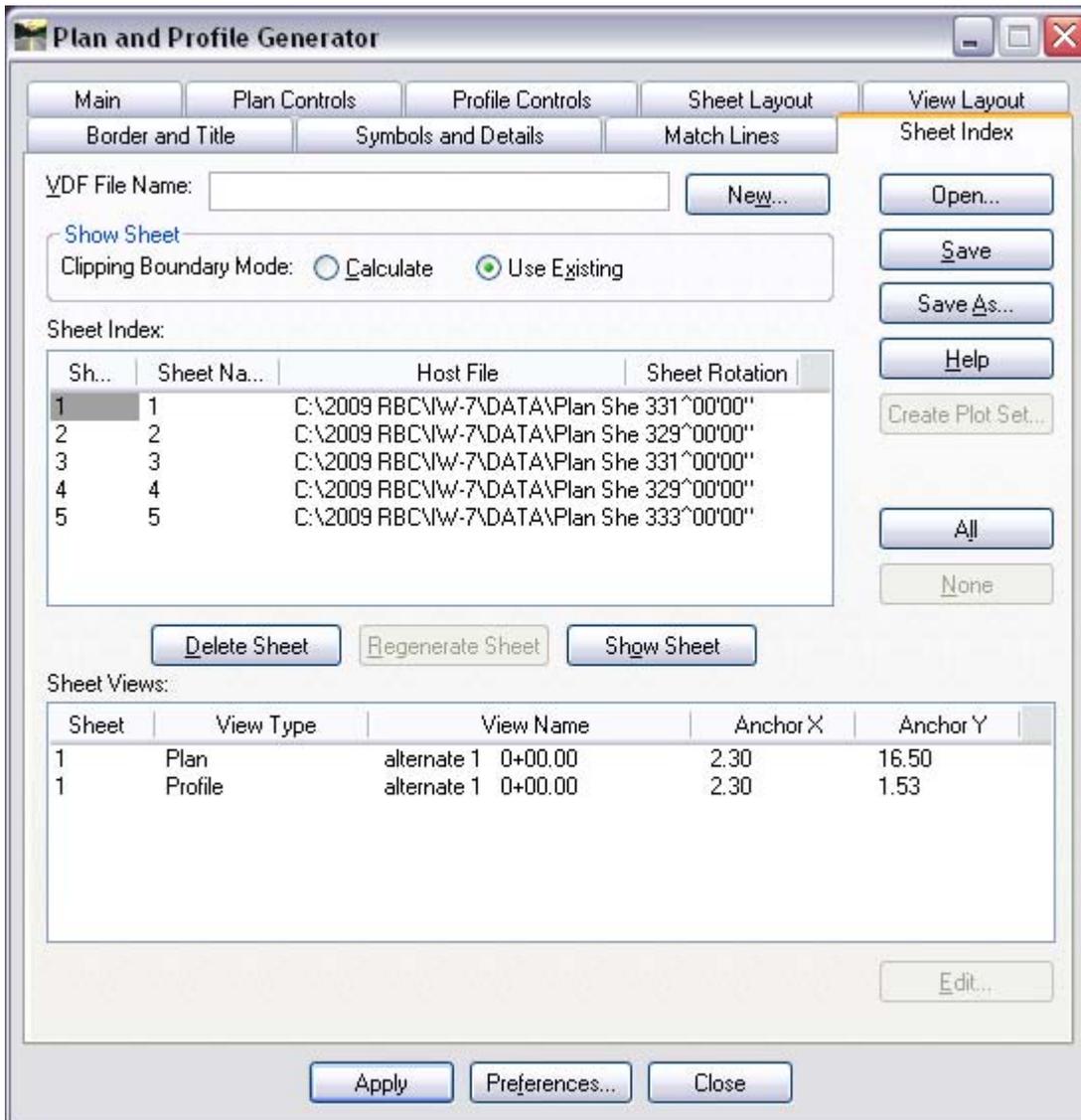


27. Next select the Match Lines tab
28. Set the Stations Format field to **SS+SS.SS**
29. In the Symbology area Check on the following Plan Line, Plan Start Station and Plan Stop Station.
30. Highlight the Plan Start Station and add a prefix **MATCHLINE STA =**
31. Highlight the Plan Stop Station and add a prefix **MATCHLINE STA = .**



32. Select the Preference button at the bottom of the **Plan and Profile generator menu**. And save the preference change you made as **default**.

33. Next select Apply button and pick a point on the left side of your MicroStation window in the Profile.dgn
34. You have now created your sheets and populated the Sheet Index tab.

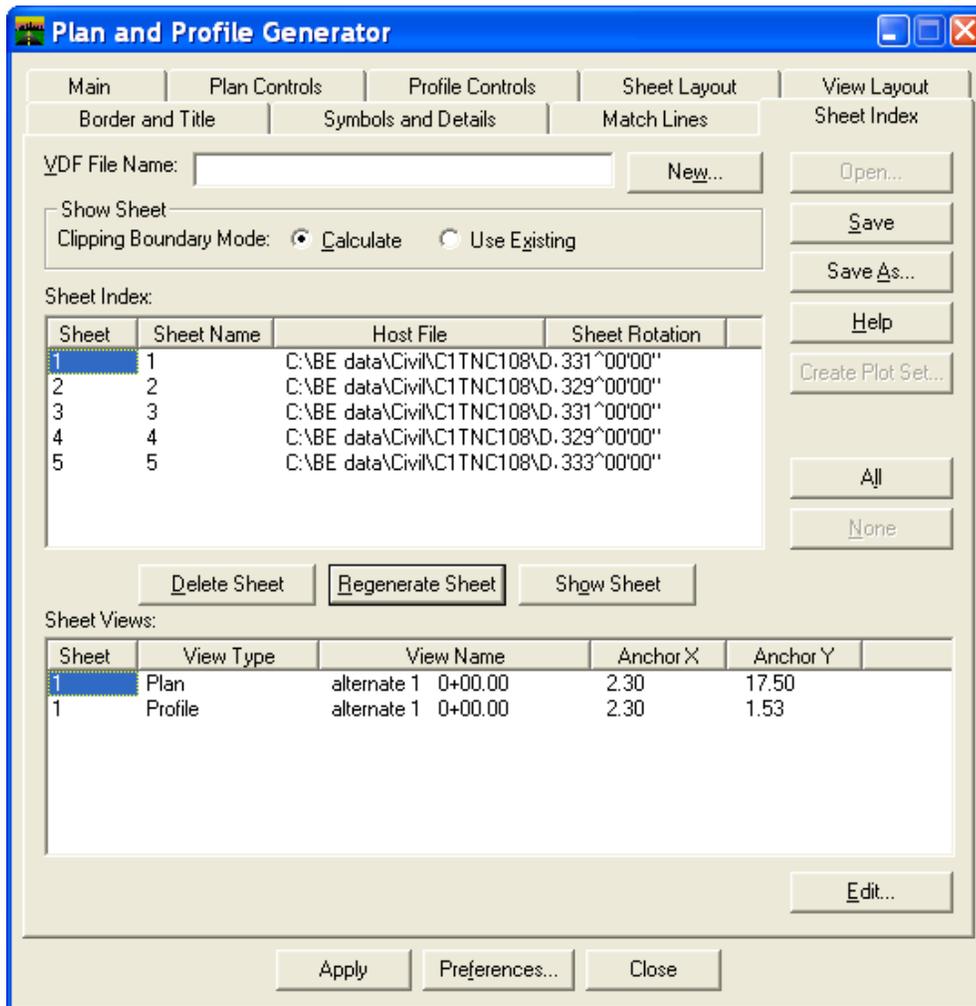


*What the Sheet Index Dialog should look like after creating sheets.*

>**EXERCISE: MODIFY PLAN LOCATION**

In this exercise you will learn how to modify a sheet after running the Plan and Profile Generator. You will adjust the curve in plan view.

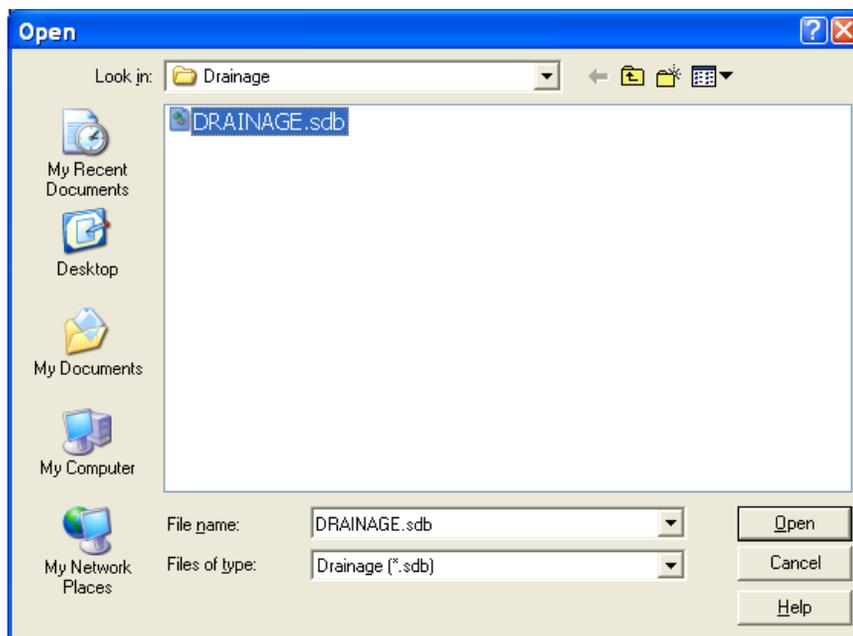
1. If you closed the Plan and Profile Generator open it back up. On the InRoads Menu: Drafting>Plan and Profile Generator)
2. Next in the **Sheet Index** tab in the Sheet Index area highlight the first sheet 1.
3. Next in the **Sheet Views** area highlight the **plan view** and select the edit button.
4. Set the Y Anchor point **17.50** and select OK.
5. In the Show Sheet area change the Clipping Boundary Mode: **Calculate**
6. Next select **Regenerate Sheet** Select Yes on the below dialog. And the sheet is re-calculated based on the new plan anchor point.



**>EXERCISE: PROJECT STORM DATA TO PROFILE**

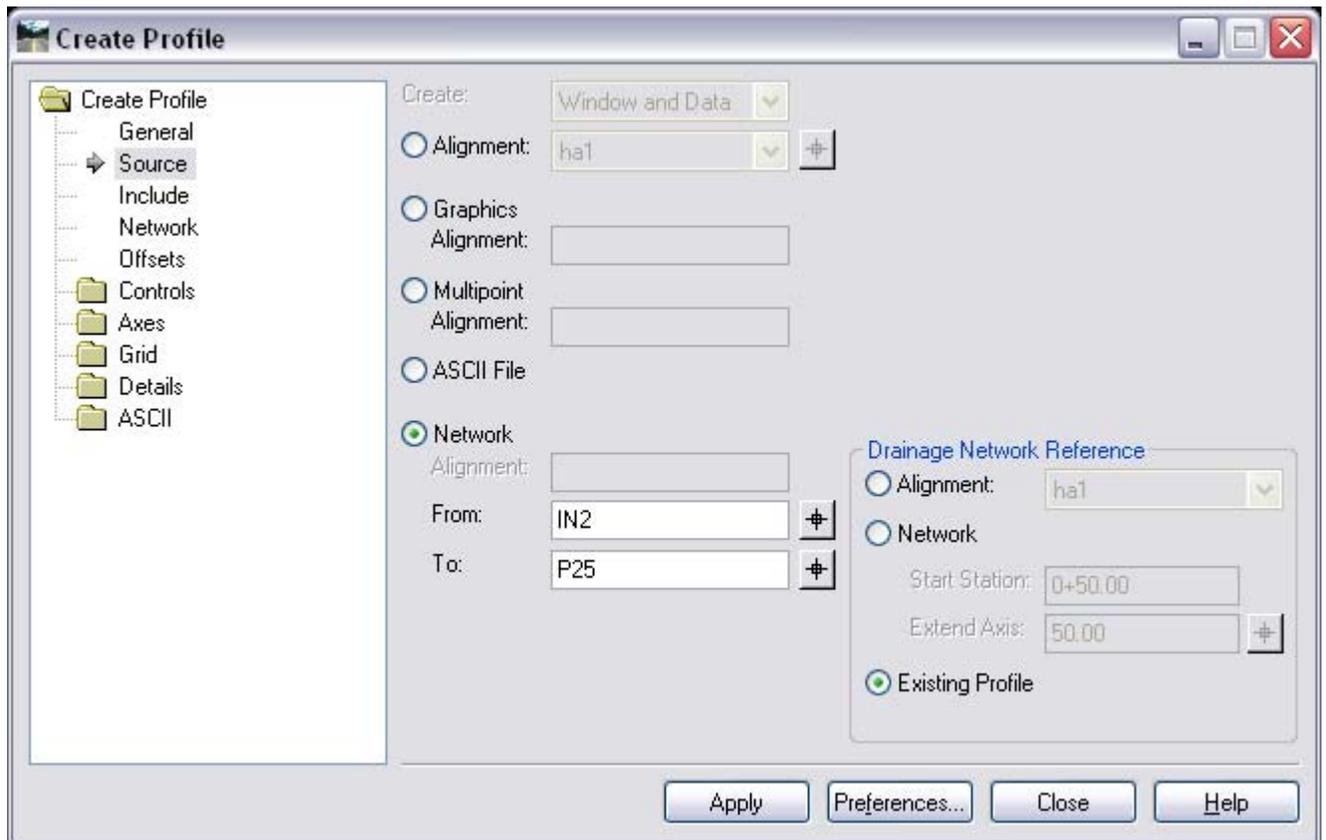
In the following exercise you will learn how to turn on Storm and Sanitary while in InRoads and project the proposed storm data onto a roadway network on the profiles cut from Plan and Profile Generator.

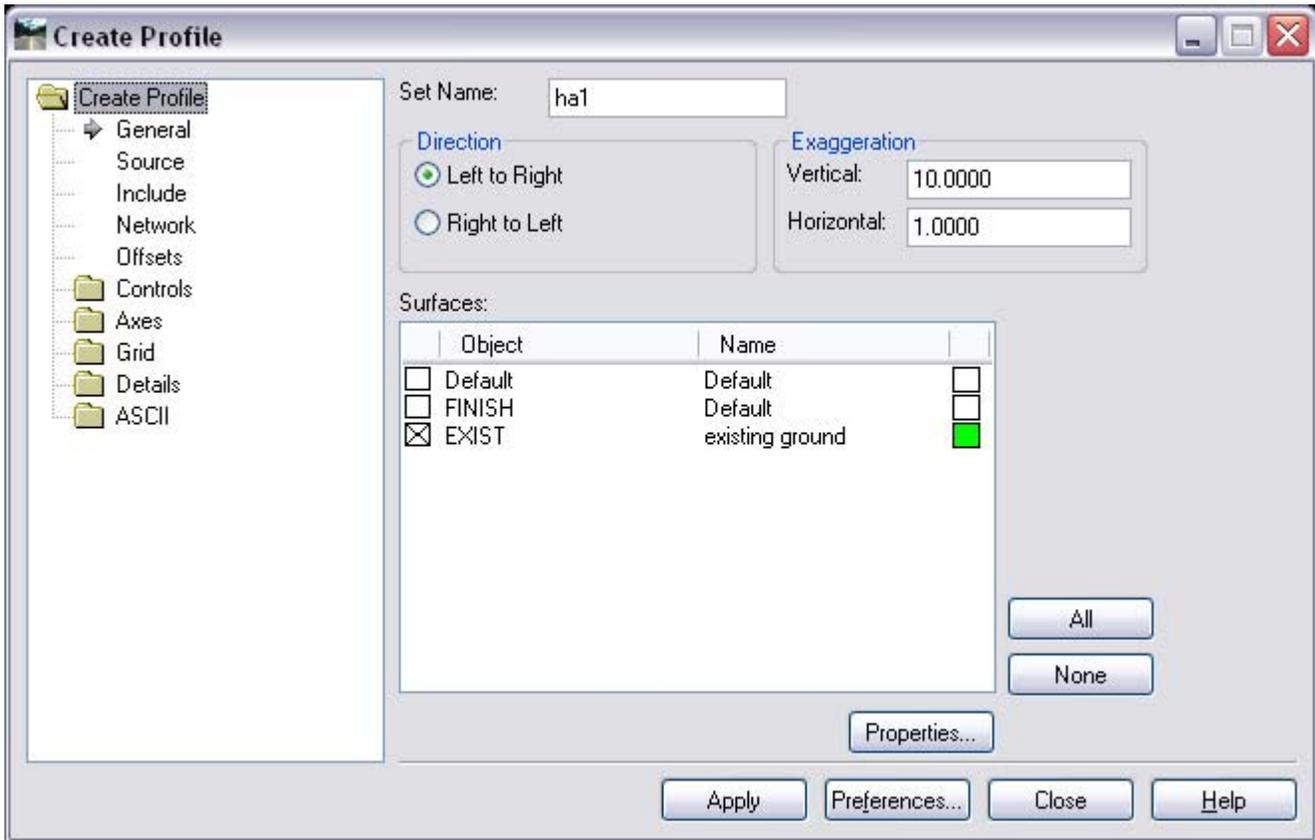
1. Open the Profile.dgn *C:\2009 RBC\IW-7\DATA\Profile.dgn*.
2. If InRoads Suite was not loaded you need to load Storm & Sanitary **On the InRoads Menu: Tools>Product Add-In** and Check **InRoads Storm & Sanitary**.
3. Next step **(On the InRoads Menu: File>Open)** Change the files of type to **Drainage.sdb** Open the drainage file *C:\2009 RBC\IW-7\DATA\Drainage\DRAINAGE.sdb*



4. Next open the create profile dialog **(On the InRoads Menu: Evaluation>Profile>Create Profile)** Select the preference tab and load the drainage preference

5. Select the Source folder under create profile and set the Network Structures From:IN2 To:P25 This accounts for all the structures in our drainage network.
6. While still under the Source leaf also set the Drainage Network Reference. **Existing Profile**





- Next select apply and pick the profile set that was created from running the Plan and Profile Generator.

*Note: not all profiles will have drainage structure.*

- Say OK when you get the dialog saying can not project all structures onto profile.

*Only the first three profile sets have drainage network data on them.*

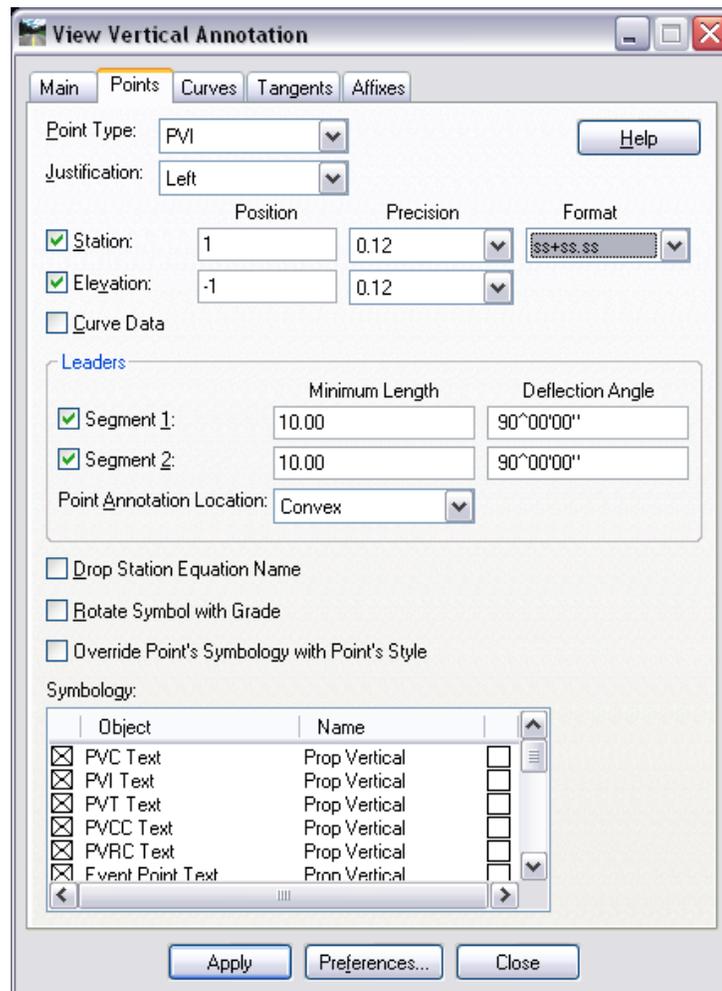
## LESSON NAME: ANNOTATION

**LESSON OBJECTIVE:** During the following exercises you will learn how to annotate your plan and profile sheets you created in the previous exercises. You will learn how to use tools within InRoads to automate most of you annotation.

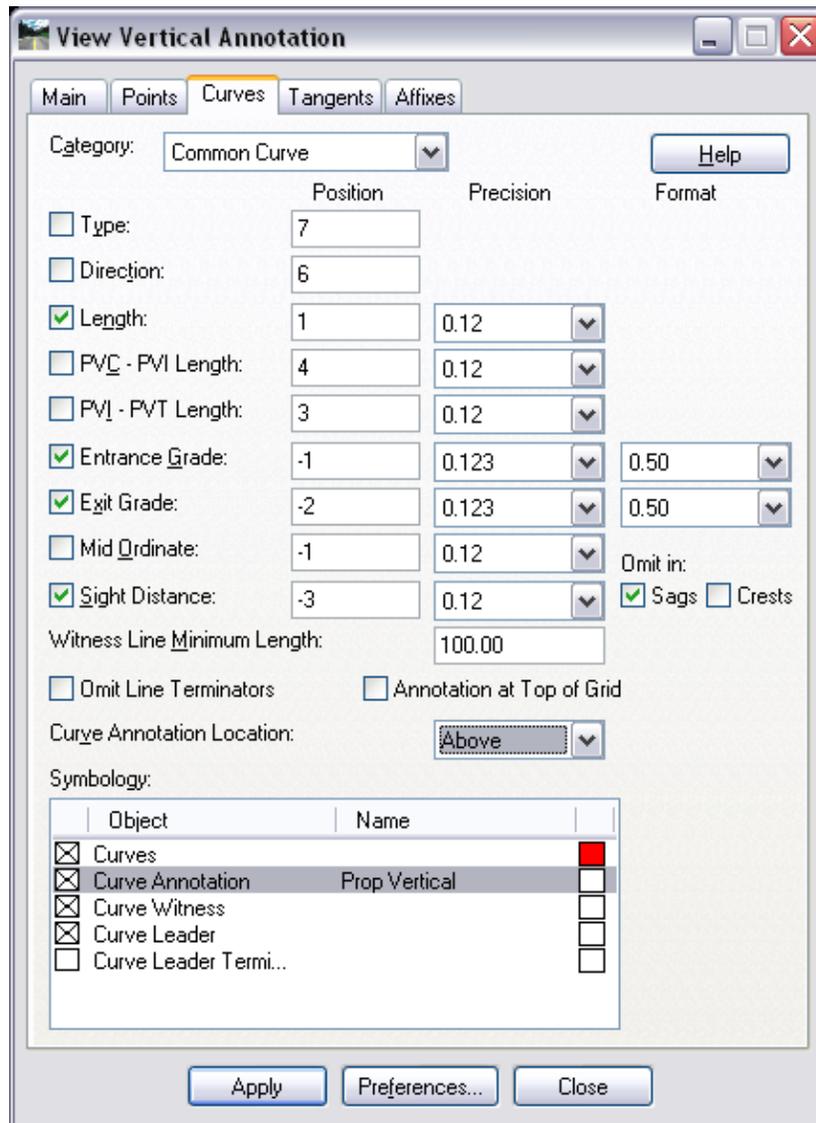
### >EXERCISE: PROFILE ANNOTATION

In this exercise you will learn different aspects of profile annotation. You will display your proposed vertical design as well as display the super elevation diagram in profile.

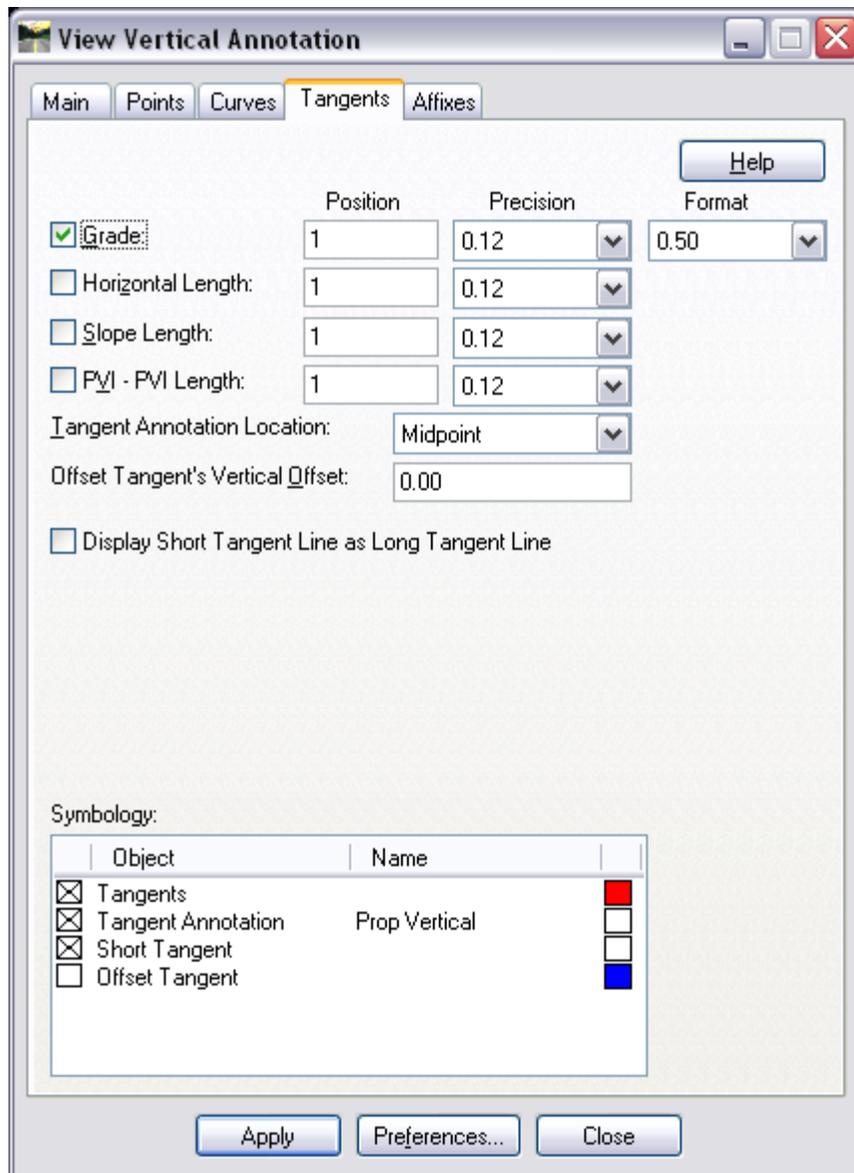
1. Next while in the profile.dgn from the last exercise (On the InRoads Menu: Geometry>View Geometry>Vertical Annotation)
2. Next select the points tab. Set the Point Type: **PVI** and check on the Station and set the Position: **1** and the Precision: **0.12** and the Format: **SS+SS.SS**
3. Next check on the Elevation and set the Position: **-1** and the Precision:**0.12**



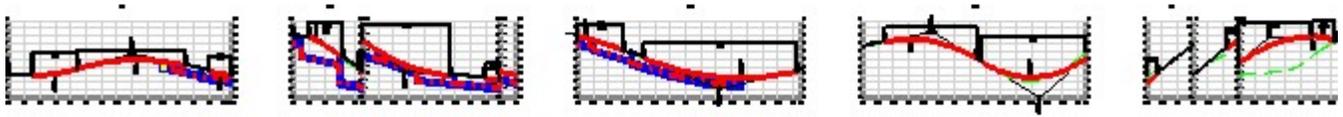
4. Next select the Curves tab.
5. Set the Category to **Common Curve** and check **Length, Entrance Grade, Exit Grade, and Site distance.**
6. Next set the Witness Line Minimum Length **100**
7. Next in the Named Symbology area select Curve Annotation and double click to edit. Under the Named Symbology area select **Prop Vertical**
8. Next on the Curve Annotation Location: **Above**



9. Next Select the Tangents tab. And check on **Grade**.
10. Next in the Symbology area check on the Tangent area.
11. Next while Tangent highlight double click to edit symbology.
12. The next step is to set the Named Symbology for Tangents Annotation. Select **Prop Vertical**

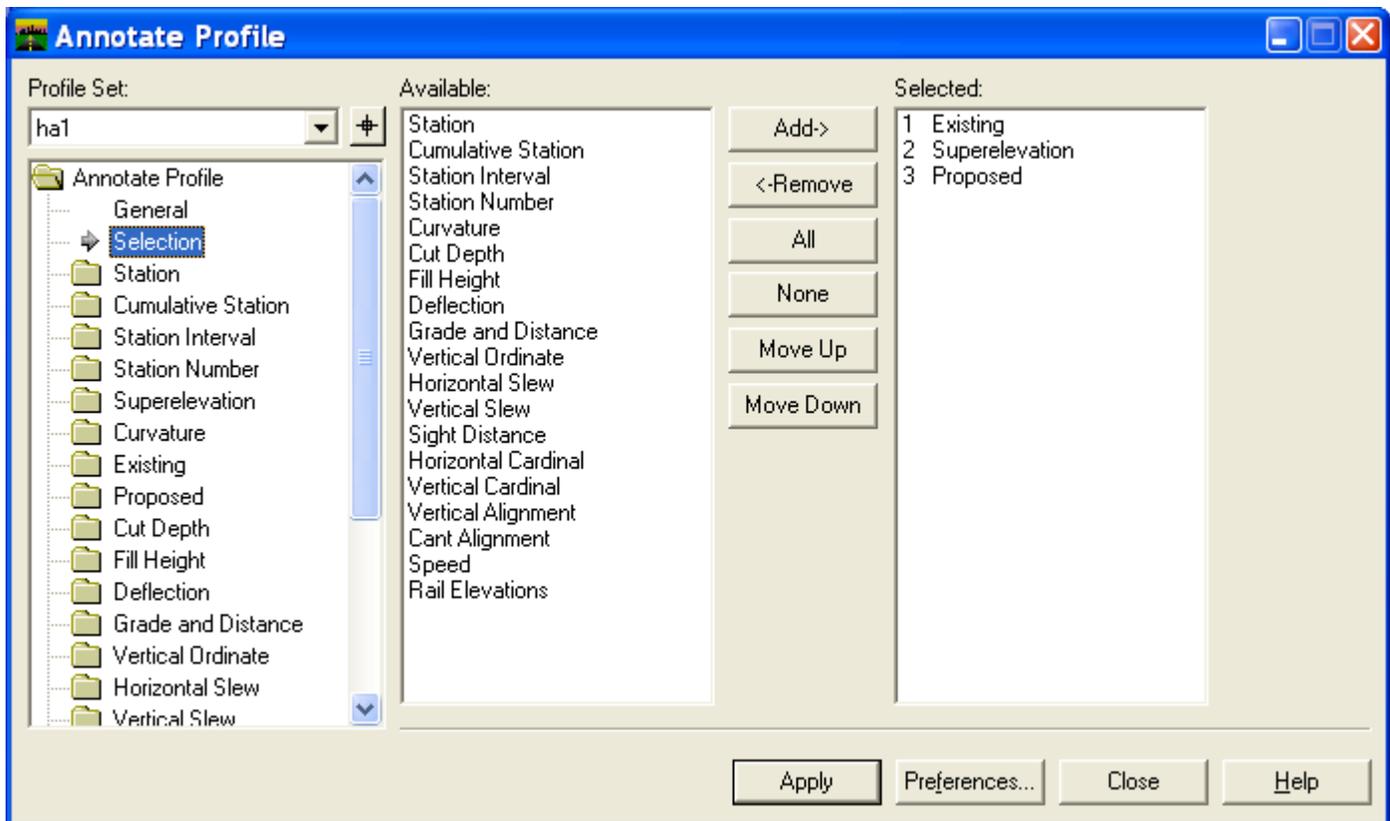


13. Next select *Apply* to do the proposed annotation.

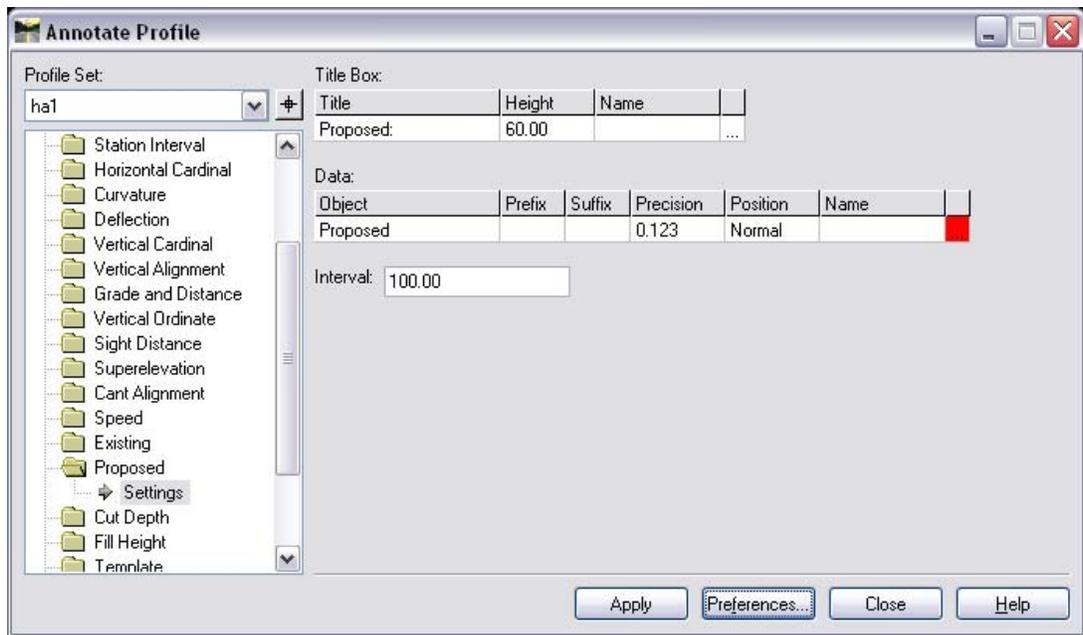


*View after Vertical Annotation*

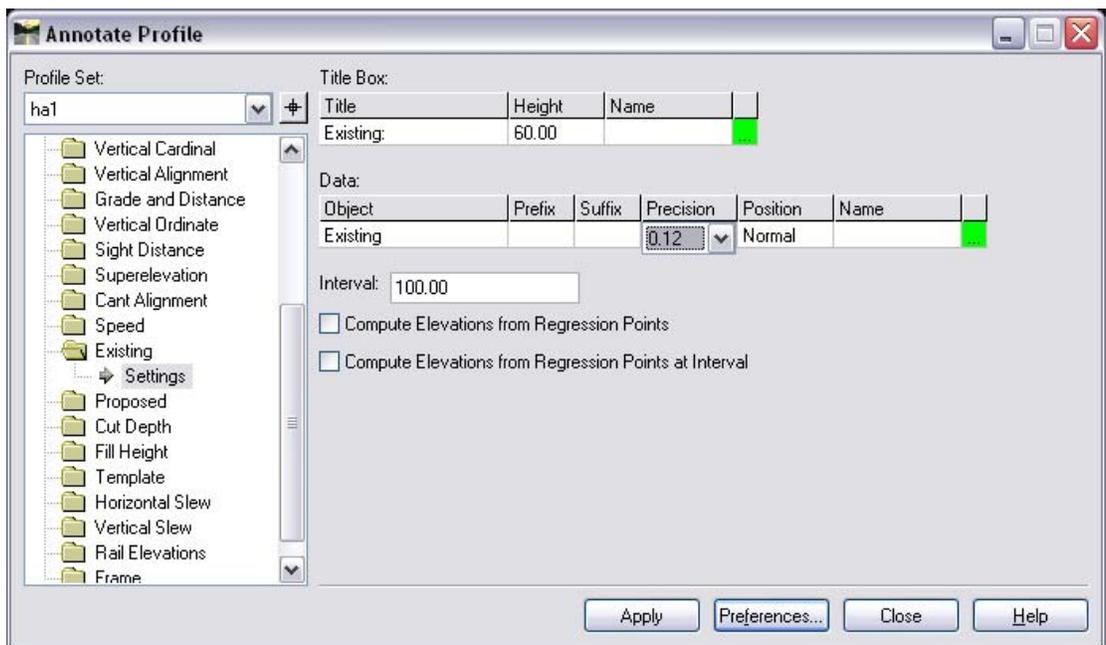
14. Next you will add the Super elevation diagram and existing and proposed elevation annotation to the profile.
15. Next (On the InRoads Menu: Evaluation>Profile>Annotate Profile)
16. Next select the Selections folder and in the Available area add **Existing Superelevation, and Proposed.**



17. Next under the Annotate Profile Select **Proposed**→**Settings** and set the precision **0.123**

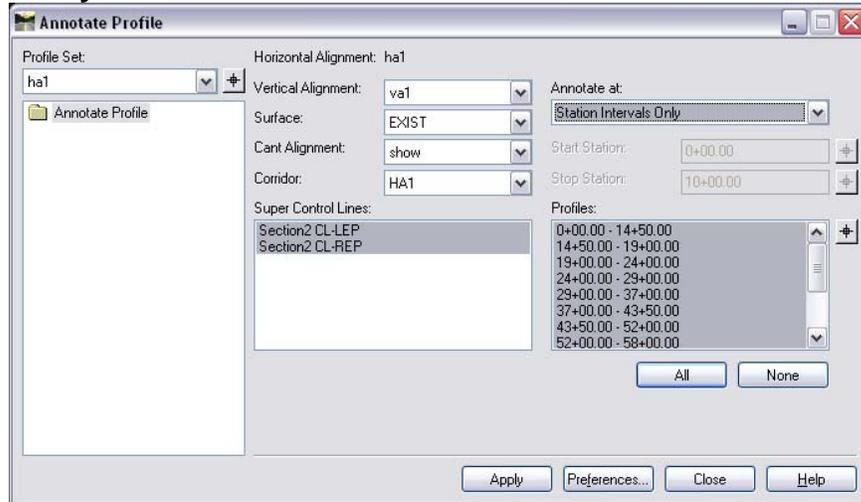


18. Next under the Annotate Profile Select **Existing**→**Settings** and set the following:  
 Precisions: **0.12**



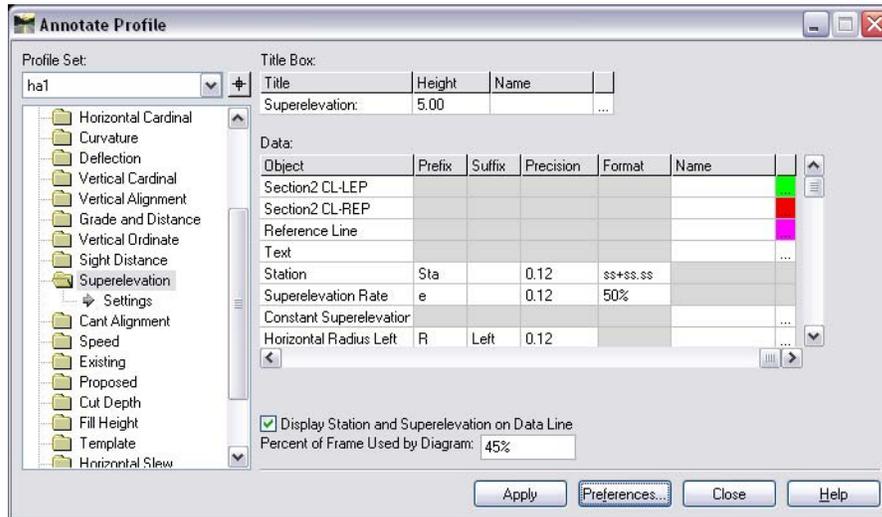
19. Next on the Annotate Profile menu **select the Annotate Profile folder.**

20. Set the following, Vertical Alignment: **va1**, Surface: **Exist**, Corridor: **HA1** and the Annotate at: **Station Intervals Only**



21. Next select Super Control Lines: **ALL** and Profiles: **ALL**

22. Next under the Annotate Profile Select **Superelevation**→**Settings** and set the following.

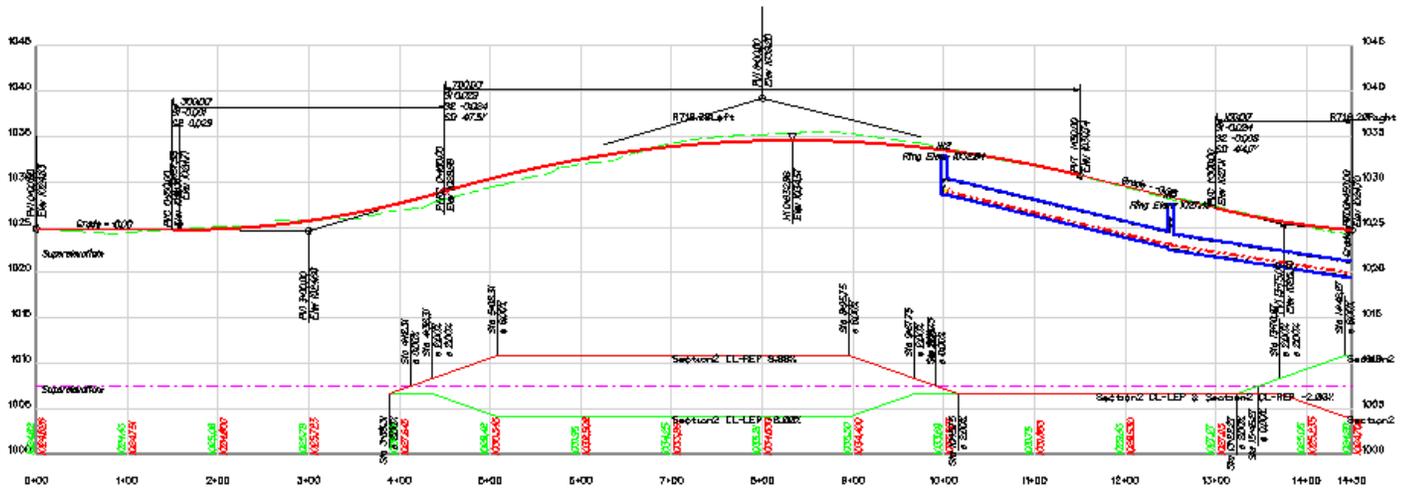


*Note: Select the three little dots on the right side to access the symbology settings for each areas*

Section2CL-LEP: Color: **Green** Level: **DES-PROFILE-SUPER** Weight: **1**

Section2CL-REP: Color: **Red (3)** Level: **DES-PROFILE-SUPER** Weight: **1**

Reference Line: Color: **(5)** Level: **DES-PROFILE-SUPER** Weight: **1** LineStyle: **(7)**

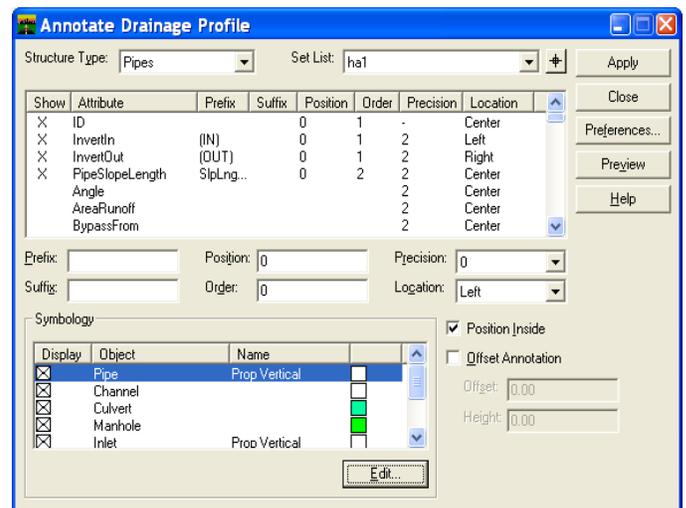


The above view is of the first profile after adding the superelevation diagram, existing and proposed elevations

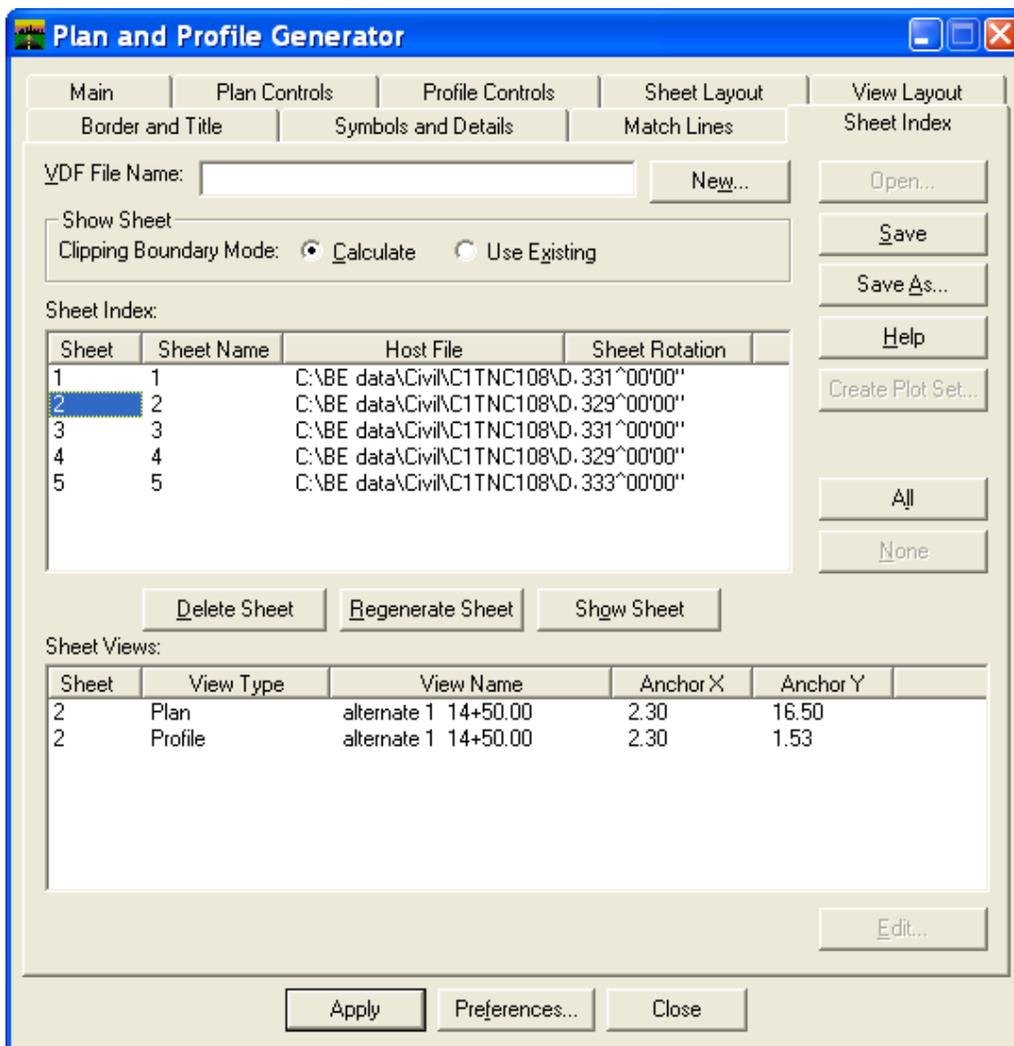
### >EXERCISE: STORM PROFILE ANNOTATION

The next exercise will annotate the storm data that we project onto the roadway profile earlier. You will set the annotation for the structure IDs and ring elevation as well as pipe slope and length. You will also annotate the inverts In and Out.

1. Next open the annotate drainage profile menu (On the InRoads Menu: Evaluation>Profile>Annotate Drainage Profile)
2. Next select the items to annotate. Select Pipe Attribute **ID** and put an **X** in the show area
3. Next do the same as step 2. but for **PipeSlopeLength, InvertIn and InvertOut**.
4. Next in the Symbology area select pipe and edit.
5. Next set the Symbology Name: **Prop Vertical**
6. Select the **Preview** to see what annotation will look like on pipe.



7. Select *Apply* to add Drainage Network Annotation to Profile.
8. Next open the Plan and Profile generator menu **On the InRoads Menu: Drafting>Plan and Profile Generator**)
9. Next select the Sheet Index tab and in the Sheet Index area highlight sheet 2 and the select the show sheet button to change from profile.dgn to PlanProf2.dgn. You could use MicroStation file open command as well.



*Dialog used to change to sheet 2 PlanPro2.dgn, should look like the sheet on next page.*

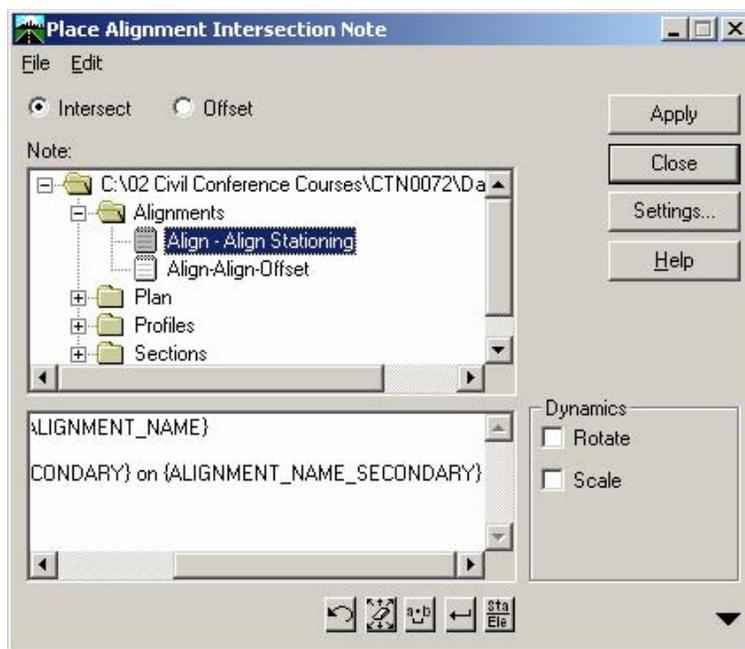


>**EXERCISE: PLAN NOTE ANNOTATION**

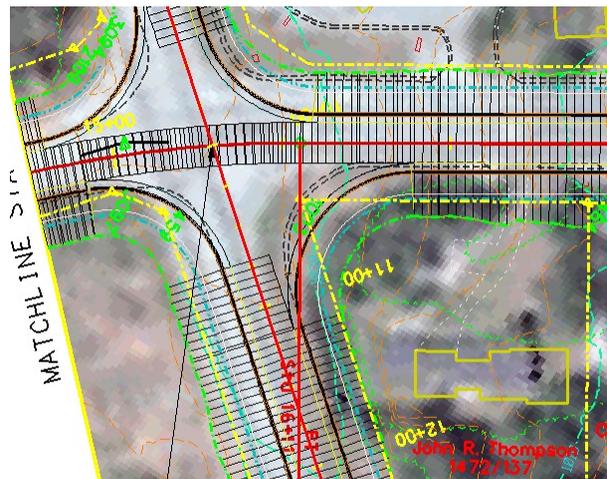
Next on PlanProf2.dgn you will place a plan note using the Intersection note tool. This will get the alignment name of the two alignments and stationing from the alg file. This and the other plan notes are great tools to use since you can update them if the elevation, offset or alignment name changes automatically.

1. Next open the drafting notes menu **On the InRoads Menu: Drafting>Place Alignment Intersection Note)**
2. Next in the Note field use the plus sign to navigate to Alignment notes and Highlight the

**Align-Align Stationing**



3. Next select *Apply* and pick the mainline then *Accept*, then select the side road and *Accept*.
4. Next define the quadrant location to place the note then locate note



Sta. I+558.86 on hdl =  
Sta. I+000.00 on x\_street\_I

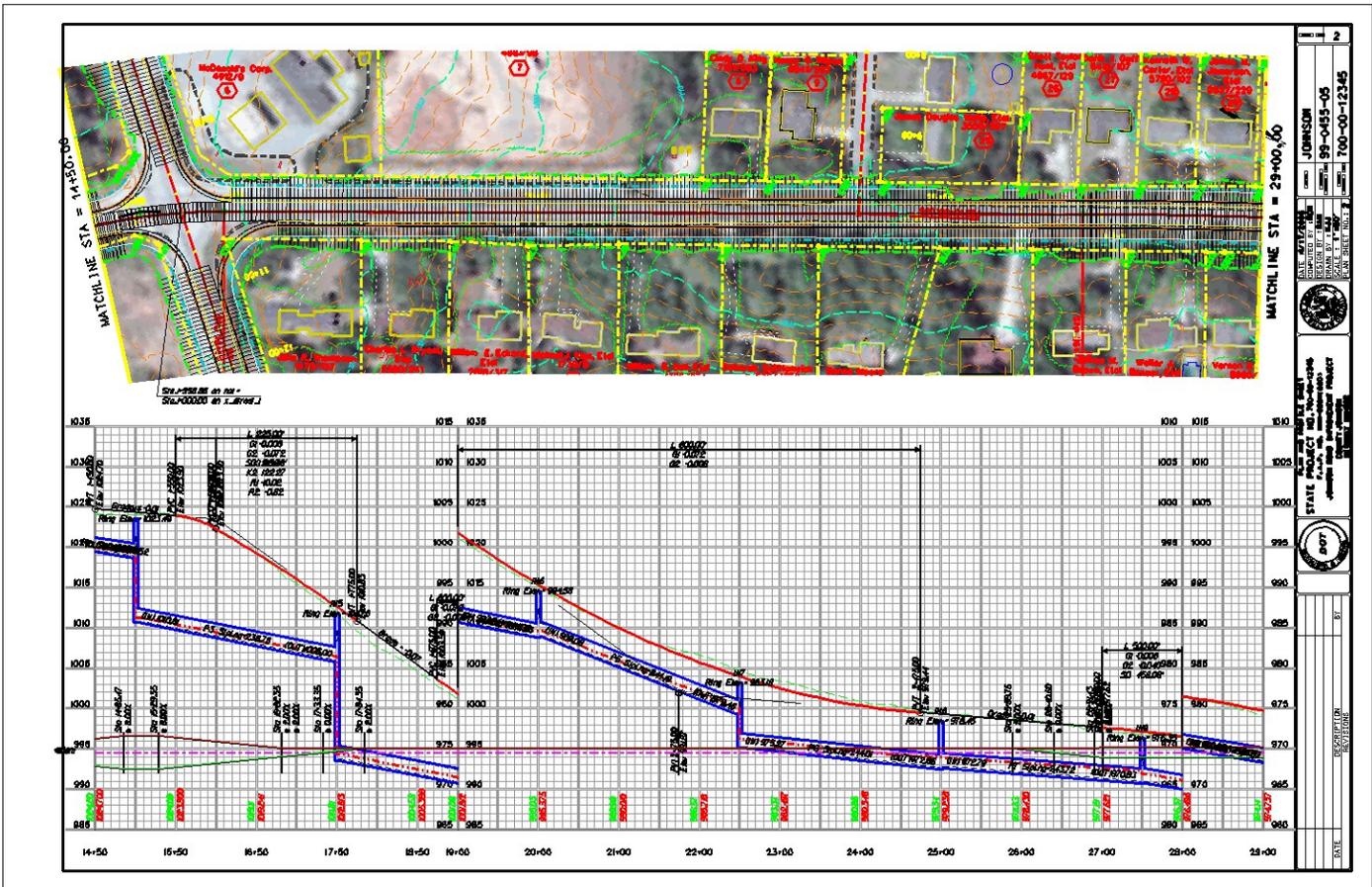
- Next zoom into the title block area to view your initials that were automatically place into the title block when you added your initials to the Title\_block.dat file earlier when you were setting up the Plan and Profile Generator

MATCHLINE STA = 29+00.60

	DATE	4/17/2006
	COMPUTED BY	: RON
	DESIGN BY	: RAM
	DRAWN BY	: KJJ
	SCALE	: 1' = 50'
	PLAN SHEET NO.:	2
COUNTY	JOHNSON	
FEDERAL PROJECT NO.	99-0455-05	
STATE PROJECT NO.	700-00-12345	

*view of title block integration*

- You have now completed Plan and Profile sheets for this project. View sheet PlanPro2.dgn. Your sheet should look the similar to below.



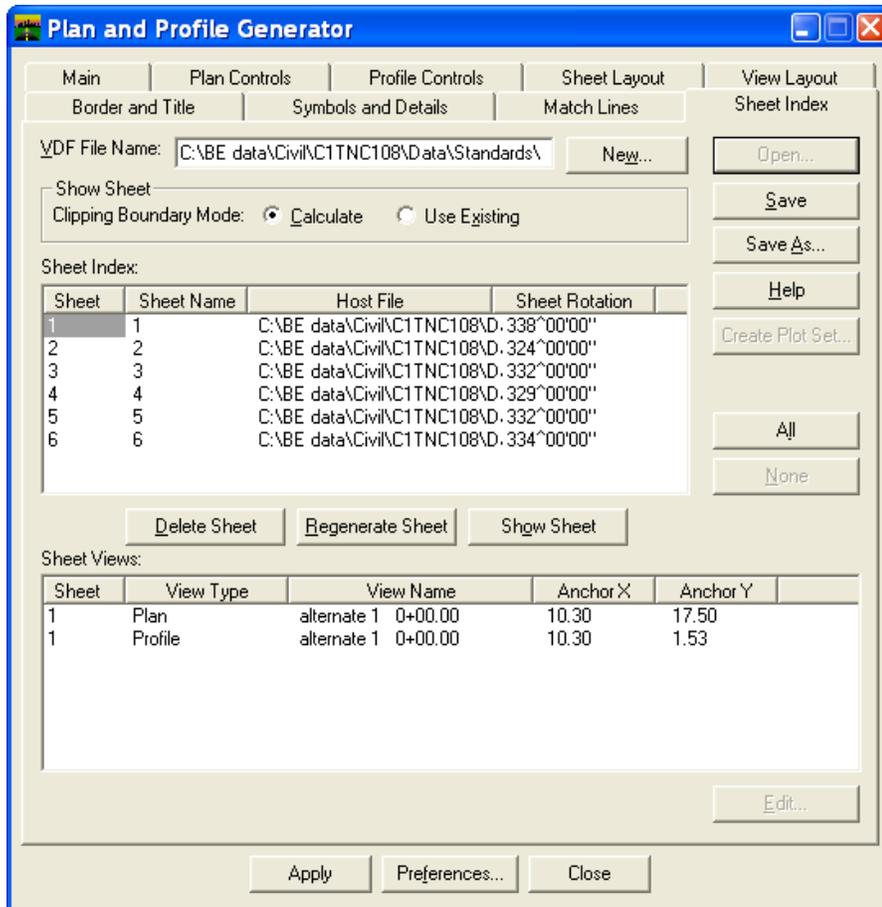
Completed Plan and Profile

### Appendix 1: Workflow for Sheet View Modification

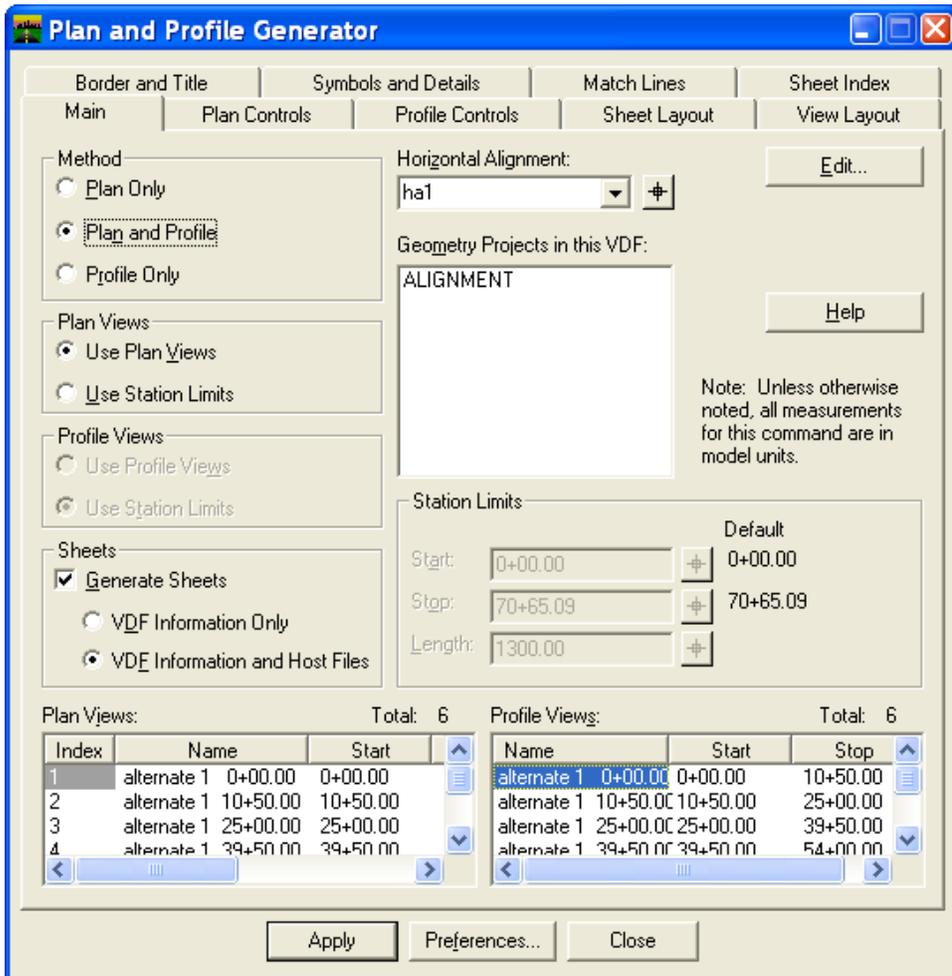
#### *EXERCISE: SHEET VIEW MODIFICATION*

In this exercise you will learn how to make modifications to view length by station and how to adjust plan and profile view locations. You will make adjustments to allow for a legend on the left side of the first sheet in plan view.

1. Open the Profile.dgn *C:\2009 RBC\IW-7\DATA\Profile.dgn*.
2. In MicroStation select all the graphics that make up the profile cut from the previous exercises and **delete** them.
3. Next open the Plan and Profile generator menu On the InRoads Menu: Drafting>Plan and Profile Generator)
4. Select the Sheet Index Tab then in the VDF File Name open:  
*C:\2009 RBC\IW-7\DATA\Standards\AdjustedViews.vdf*



5. Next select the Main tab. In the Plan Views area set: **Use Plan Views**
6. While in Profile.dgn select *Apply* on the Plan and Profile Generator dialog to create new sheets.



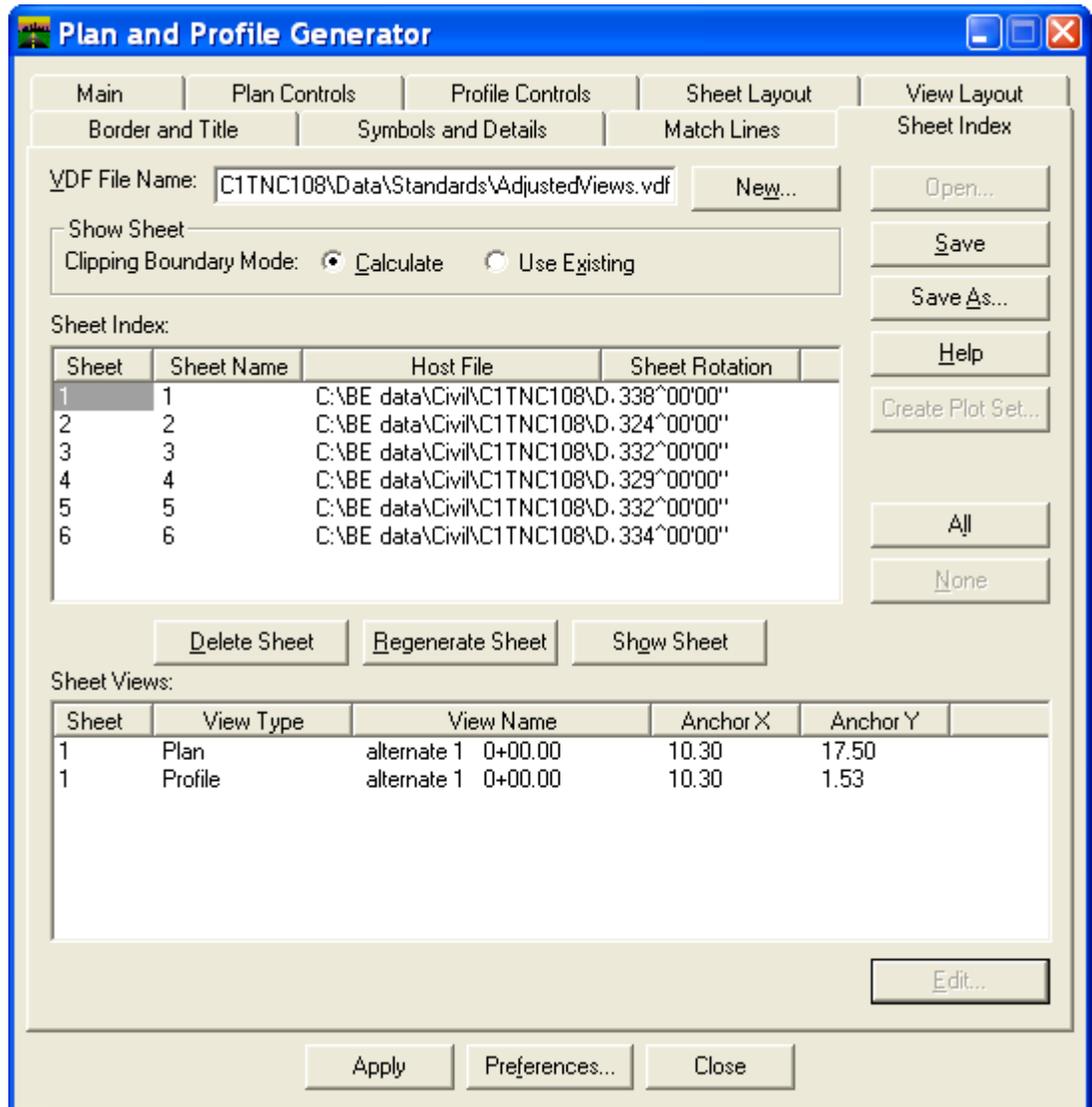
7. Select the Sheet Index tab. Select sheet index 1 and make modification in the Sheet Views:

Plan: Anchor X: **10.30**      Anchor Y: **17.50**

Profile Anchor X: **10.30**      Anchor Y: **1.53**

8. Next make sure **Calculate** is toggled on and **sheet 1** is still highlighted then select the **Regenerate** button. This adjusts the view location to accommodate the legend on the first sheet.

*See next page for dialog*



9. Open the Profile.dgn C:\2009 RBC\IW-7\DATA\Profile.dgn.

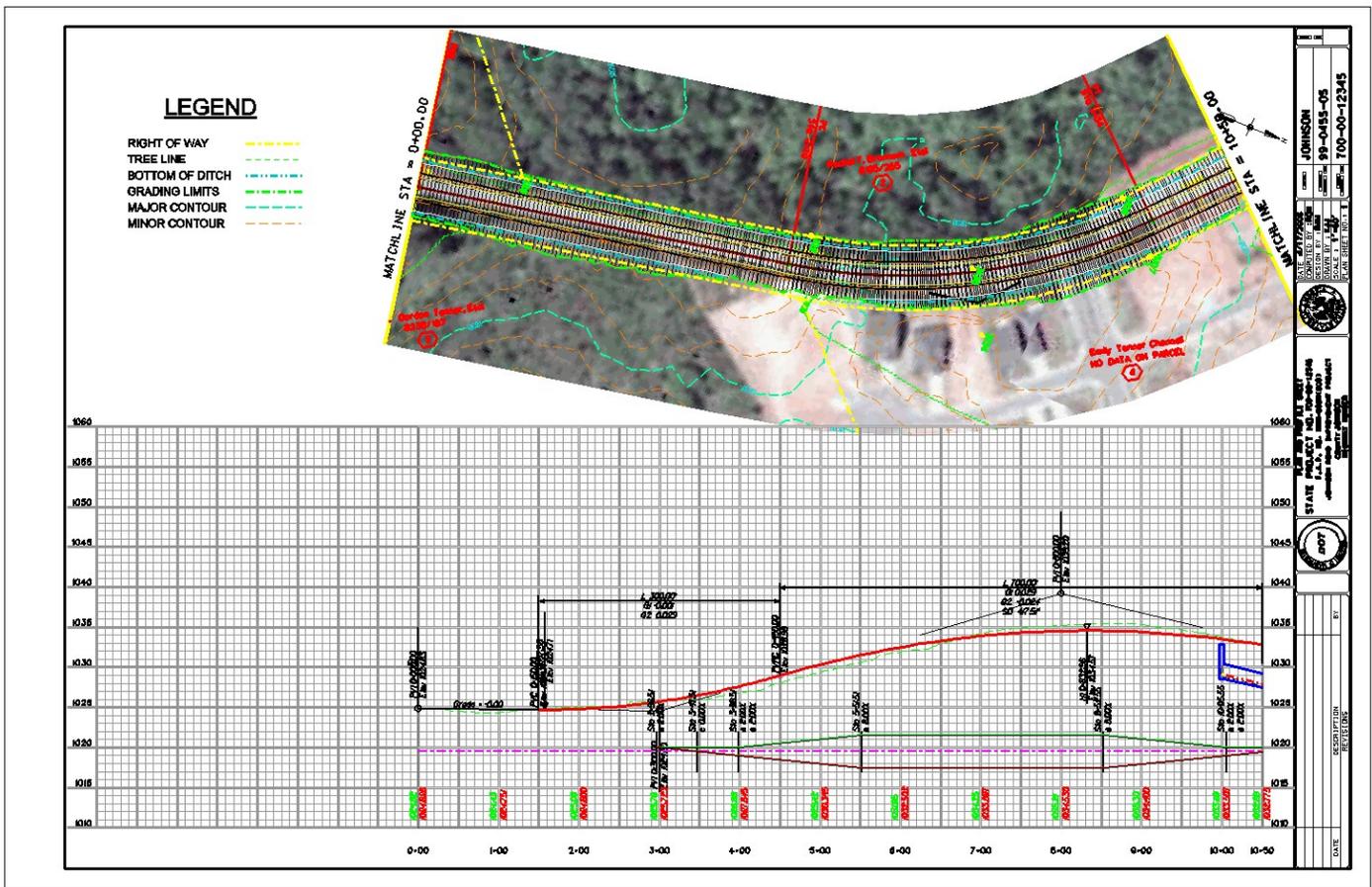
10. Do the annotation for profile that was done in the previous exercises.

(On the InRoads Menu: Geometry>View Geometry>Vertical Annotation) *Apply*

(On the InRoads Menu: Evaluation>Profile>Annotate Profile) *Apply*

(On the InRoads Menu: Evaluation>Profile>Create Profile) Select the preference tab and load the drainage preference. Source Leaf then Network IN2 to P25 *Apply*

11. Next open the Plan and Profile generator menu On the InRoads Menu: Drafting>Plan and Profile Generator)
12. Next select the Sheet Index tab and in the Sheet Index area highlight sheet 1 and the select the show sheet button to change from profile.dgn to PlanPro1.dgn. You could use MicroStation file open command as well.
13. Place Cell **Legend** using MicroStation place cell command to place cell in the blank area in plan view.
14. Next use the control Key to select the elevations in profile on the left side.
15. Use MicroStation copy command and copy elevation to the left into the correct location.
16. Next place a fence as a shape to clip mask in profile the elevation on the left side in the referenced profile.dgn.



Planpro1.dgn completed from adjusted views

