

INROADS GEOMETRY FOR ROW AND ROW PLAN DEVELOPMENT USING MICROSTATION

Document 2 of 2



This document has been prepared for:

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Software Versions

The software products referred to in this publication are furnished under a license and may only be used in accordance with the terms of such license. This document intended for use with the following software versions:

MicroStation® version 08.05.02.55
InRoads® version 08.05.00.00 – Service Pack 5

0408 – Version 03.02 CDOT Configuration

Document Conventions

There are several conventions that are used throughout this document to indicate actions to be taken or to highlight important information. The conventions are as follows:

<u>Example Item</u>	<u>Meaning</u>
View Perimeter	a command name or a file that you are to select, including directory path
Name:	field name, button or icon in a dialog box
Dialog Header	dialog box name
Tools > Options	a command path that you are to select - usually from the pull-down menus
<i>Dialog Area</i>	heading for separated areas within a dialog box
<i>Tab</i>	heading for tabs found within dialog boxes
Key in	entering data with the keyboard or items selected from drop-down list
<i>Document name</i>	style used when referring to another document
Note: text	information about a command or process that you should pay particular attention to
Concept: text	detailed definition of a concept, procedure or process
<i>Emphasis</i>	an important word or phrase
<i>Prompt</i>	user prompt
1. Numbered Steps	actions that you are to perform as part of the lab activities
<D> or Data	press the data button on the mouse
<R> or Reset	press the reset button on the mouse
<T> or Tentative	press the tentative button on the mouse

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1. Getting Started

Introduction

In this chapter you will be introduced to the overall course contents, goals, schedule, and organization and the training directory structure.

Course Overview

Instructor led training session targeted to the survey group with a focus on MicroStation and InRoads functions applicable to ROW plat generation.

This second day of this course will provide further education to the surveyors as it relates to the development of alignment diagrams and right of way plats. The intent is to introduce additional tools to the surveyors to facilitate development of documents for the right-of-way plat process.

Items addressed in this course will be:

- Creating ROW Plan sets
- Using MicroStation tools
- Using InRoads Plan and Profile Generator command

Foundation

Intended Audience

The intended audience for this course is CDOT Survey and Right-of-Way Plans personnel who have completed the InRoads Survey Data Reduction class, the InRoads Geometry Fundamentals class and InRoads Geometry training for ROW and require further training on the use of the InRoads geometry tools specific to Right-of-Way development.

Prerequisites

The attendees must have a basic understanding of MicroStation prior to attending this course. Additionally, they must have attended the 2-day course *Fundamentals of InRoads Geometry* or otherwise have a genuine understanding of fundamental InRoads geometry.

It is assumed the student is familiar with the InRoads interface and coordinate geometry in general.

Duration and Format

8 hours focused on plan sheet development. Format is instructor lecture and demonstration followed by hands-on lab exercises for students.

Focus

Geometry annotation, MicroStation reference files, automation tasks for tabular/textural data in plan sheets.

Goal

The purpose of this course is to provide CDOT personnel with an understanding of how to use both MicroStation and InRoads tools to facilitate right of way plat development.

Introductions & Schedule

Instructor

Introduction of Instructor(s) and brief summary of credentials.

Students

Introduction of students and a brief summary of student knowledge as it relates to MicroStation and InRoads and/or geometry.

Student Interests

Query as to specific interests of individual students and the class as a whole.

Schedule

Establish schedule for class breaks, lunch, and course termination.

CDOT CADD Resources

There are many resources available to assist you when working on your CDOT CADD project. These resources can be found on the CDOT CADD & Engineering Innovation Web site.

CDOT CADD & Engineering Innovation Web Site

The CDOT CADD & Engineering Innovation web page is available at:

<http://internal/cadd/> It can also be found on the internal CDOT website:

Organizations > Project Development > CADD and Engineering Innovation.

The website (presently only available to CDOT) provides CDOT users with up to date information, tools, and resources related to CADD and the Colorado Engineering Software Transition (CEST) project.



CADD Home Page

CADD Support News

[Tips & Tricks of the week](#)

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[CDOT Work Flow](#)

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News from the CADD Manager

On Wednesday 5-9-07, an update to the V3.01 configuration was deployed through the Standard Workspace Update procedure. Two items of particular importance are as follows. The **JPC#ApproximateQuantities##.dgn** (SAQ sheet) found in the C:\Projects\JPC#ADesign\Drawings folder was updated. Any project that was created the week of 4-25-07 through 5-9-07 with V3.01 workspace, should replace this file. Download the file from [Here](#). The **CDOT Preferences** file was updated to include the following features: *D_CURB_Back, D_Hinge, D_CONC_Pvmt, D_CONC_Sw, D_CURB_FL_LT and D_CURB_FL_Rt*. If you need assistance with either of these updates, contact the Help Desk @ (303)757-9317 to have a support person contact you. [Click Here](#) to review the Configuration ReadMe file.

If you are noticing that your reference files are showing up RED, call the Help Desk (303)757-9317. A support person will contact you and guide you through the process of updating your PCF file. You should **NEVER** have to detach and re-attach your reference files once they have been attached.

To view Previous CADD NEWS check:
[Past CADD Support News](#)

Tips & Tricks

[Back to CADD Support News tab](#)

InRoads

InRoads Menu Location

Did you know that your Bentley InRoads Menu always want to open on your primary monitor? Through discussions with Bentley, it has been determined that this phenomenon is by design. It is necessary because Laptop computers can be used to run InRoads, and if the InRoads menu was banked on the secondary monitor, it would be lost when the laptop was used stand-alone. If you drag the InRoads menu to your secondary screen, leaving only a very small sliver on the primary screen, the menu will stay banked and you won't have to move it each time you open InRoads. **Thanks to Daniel Thomas with Region 4 Traffic.**

To view additional tips and tricks check:
[All Tips & tricks](#)

20424



Email: [Page Master](#) regarding information on this page
Email: [Web Master](#) regarding website functionality



Last Modified: Tue, Feb 28, 2006
[Back to Top](#)

This website is a valuable resource for CADD users and includes:

CADD Library

The **CADD Library** page provides links to manuals, newsletters, standard details, *etc.* One extremely useful link is to the **Tips and Tricks** section for MicroStation and InRoads. This information changes daily, so check back often.



CADD Library

- [Details.](#) • [Manuals.](#) • [Newsletters.](#) • [Old Docs.](#)
- [Tips and Tricks.](#) • [Useful Links.](#)

Details

- [Bridge...](#) • [Construction...](#) • [Design...](#) • [Environmental...](#)
- [Hydraulic...](#) • [ProjectWise...](#) • [Survey\ROW...](#) • [Traffic...](#) • [Utility...](#)

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CADD Manual

The CDOT Computer Aided Design and Drafting (CADD) Manual outlines CDOT's use of Bentley's MicroStation and InRoads software. It documents standardized procedures for the exchange of information between CDOT regions, specialty groups, and consultants working on CDOT projects. The Manual also addresses software issues, tools, techniques, standards and procedures, etc. which will aid the user in the efficient production of CDOT plan sets.

The CDOT CADD Manual and the associated electronic files contained in the CDOT configuration are used in the generation of electronic plans by both CDOT internal designers and the consulting firms doing business with CDOT. The electronic version of the Manual provides hyperlinks to each chapter as well as context sensitive index and search functions. You can also print chapters or the entire manual.

The CDOT CADD Manual can be accessed several different ways including:

- From the CDOT internal CADD web site home page link;
- From the CDOT Design and Construction Project Support Page (external web site);
- From the CDOT Menu (Help > CADD Manual).

The screenshot displays a web browser window with a navigation bar at the top containing links for Contents, Index, Search, Print, and Glossary. The main content area is titled "1.0 Chapter One - Introduction" and includes a table of contents on the left side. The text describes the CDOT's use of Bentley's MicroStation V8 2004 Edition and InRoads V8.05, and outlines the goals of the CADD migration project. A sub-section "1.1 Background" details the Colorado Engineering Software Transition (CEST) Project, which began in 2004 and was completed in 2005. A bulleted list of project goals is provided, including the creation of electronic files, updating existing projects, user training, and development of standard workflows. The text concludes with a statement on the project's success in creating a complete electronic project delivery system. A "1.2 Trademarks" section is also visible at the bottom of the page.

1.0 Chapter One - Introduction

This document is intended to outline the Colorado Department of Transportation's (CDOT) use of Bentley's MicroStation V8 2004 Edition and InRoads V8.05, as well as internally developed tools and procedures. Following these standardized procedures will help to facilitate the exchange of information between CDOT regions, specialty groups, and consultants working on CDOT projects. The CDOT Computer Aided Design and Drafting (CADD) Manual will address issues such as: software, tools, techniques, standards, and procedures, which will aid the user in the efficient production of CDOT plan sets. The CDOT CADD Manual and the associated electronic files contained in the CDOT configuration are to be used in the generation of electronic plans by both CDOT internal designers and the consulting firms doing business with CDOT.

1.1 Background

At CDOT, the CADD migration project is known as the Colorado Engineering Software Transition (CEST) Project. Beginning in 2004 the CEST project began with 15 first adopter projects, migrating each to the Bentley suite of software. Growing from these 15 first adopter projects to a statewide rollout in 2005 the CEST project has encompassed, at some level, each critical item in a project of this magnitude. These include:

- Creation of electronic files making up a comprehensive standard, including, but not limited to:
 - Seed files
 - Levels and symbology
 - Cells
 - Linestyles
 - Text and dimensions
 - InRoads preferences
 - Standard templates and typical sections
- Updating existing projects to the Bentley suite of software.
- User training
- Development of standard workflows

In the initial phases of this project, Survey and Roadway Design were addressed to a much greater degree than other disciplines. The goal over the next three years is to continue the CEST vision by addressing each of the specialty groups within CDOT as well as continued enhancement of the current configuration. To accomplish this, CDOT will continually update and add to CDOT's software, configuration, workflows, and training programs. Ultimately, the CEST project will create a complete electronic project delivery system integrating each user and system from planning through construction. The combination of software, configuration, and workflows will allow all users to work seamlessly together in the most productive and efficient CADD environment available. At the end of FY08, the plan will be complete with interconnection of all groups and complete automation, including electronic bid letting.

1.2 Trademarks

Many of the designations used by manufacturers and sellers to distinguish their products are claimed as trademarks. MicroStation and InRoads are trademarks of Bentley Systems Incorporated. Where other designations appear in this book, and the authors were aware of a trademark claim, the designations have been capitalized.

CDOT Workflows

There are several standardized MicroStation and InRoads workflows that CDOT has developed to assist you. These workflows are step-by-step CDOT-specific procedures for certain tasks that you may encounter when working in MicroStation or InRoads on a CDOT project. Many of these workflows are referenced throughout the course.

In addition to accessing the workflows from the CDOT CADD Web site Home page link **CDOT Work Flow**, you can also access workflows:

- From the Windows Start menu
(Start > All Programs > _CDOT_CADD_Information > Workflows);
- From the CDOT Menu (Help > Workflows).

New workflows are typically added with CDOT configuration updates, so check back often.



CDOT Work Flow

Work Flow :

[CDOT Alignment Display in Cross Section.Ink](#)
[CDOT Annotating Horizontal and Vertical Alignments.Ink](#)
[CDOT Batch Printing.Ink](#)
[CDOT Batch Processing.Ink](#)
[CDOT Configuration ReadMe file.Ink](#)
[CDOT Converting AutoCAD Files to MicroStation.Ink](#)
[CDOT Creating Multiple Plan Sheets.Ink](#)
[CDOT Directory Structure.Ink](#)
[CDOT Displaying Features in Cross Section and Profile.Ink](#)
[CDOT Exporting Fieldbook Files.Ink](#)
[CDOT Greek Characters.Ink](#)
[CDOT Level Update for V03.01.Ink](#)
[CDOT Linking MicroStation to Excel Documents.Ink](#)
[CDOT MicroStation Printing.Ink](#)
[CDOT Note Sheets.Ink](#)
[CDOT PCF Management.Ink](#)

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- Training
- Useful Links

Issue Logs

Check the ***Issue Logs*** to determine the status of submitted requests.

Requests & Support

The ***Requests & Support*** page provides CADD help solutions where you can:

- Learn how to get help;
- Submit a questions;
- Submit a request (e.g. request a new MicroStation level or InRoads preference), as well as
- Obtain InRoads, InRoads Survey and MicroStation support.

There is also a link to **IT Services** for hardware support, “how to” instructions, installation, training files, and work space setup.



Requests & Support



Training

Use this link to sign up for training classes. You can also review online computer-based training (CBT) for MicroStation, InRoads and InRoads Survey.

Scope of Training Data

Training Data Set

This course is a continuation of the training set out in InRoads Geometry for ROW and will use the same data files.

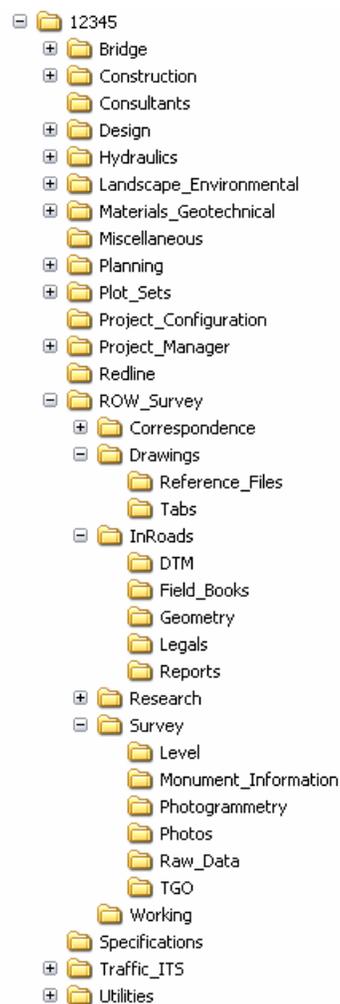
State Highway No. 86 - Elbert County

This project has progressed to the point of having property information, design reference lines, proposed right-of-way limits, and easements developed. This data set will be used to generate the necessary data for development of Survey Control Diagrams and Right-of-Way parcels.

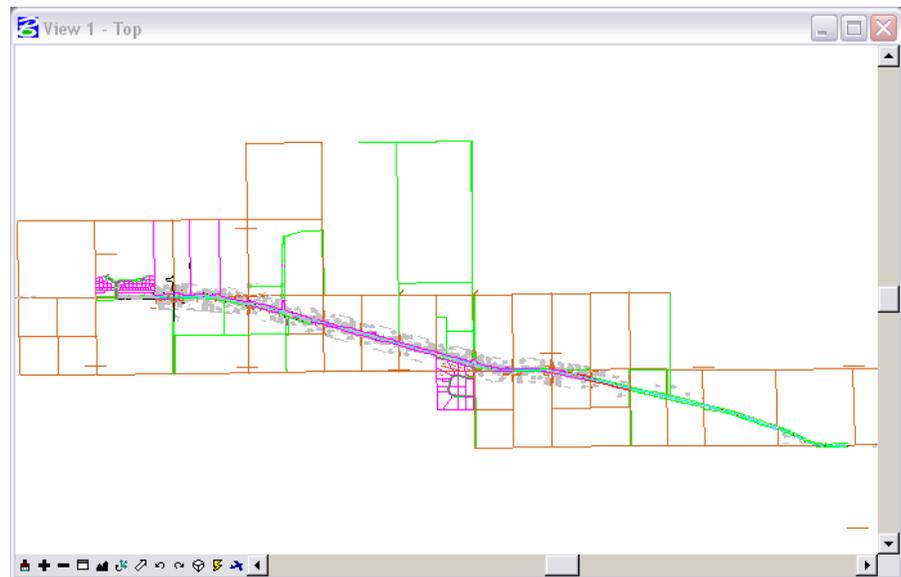
Training Directory Structure

All class work files will be in the C:\Projects\12345 folder, which has a combination of design and survey sub-folders and data files.

The sample project in this document uses the standard CDOT file structure with 12345 = CDOT Project Code (sub account).



Training Data



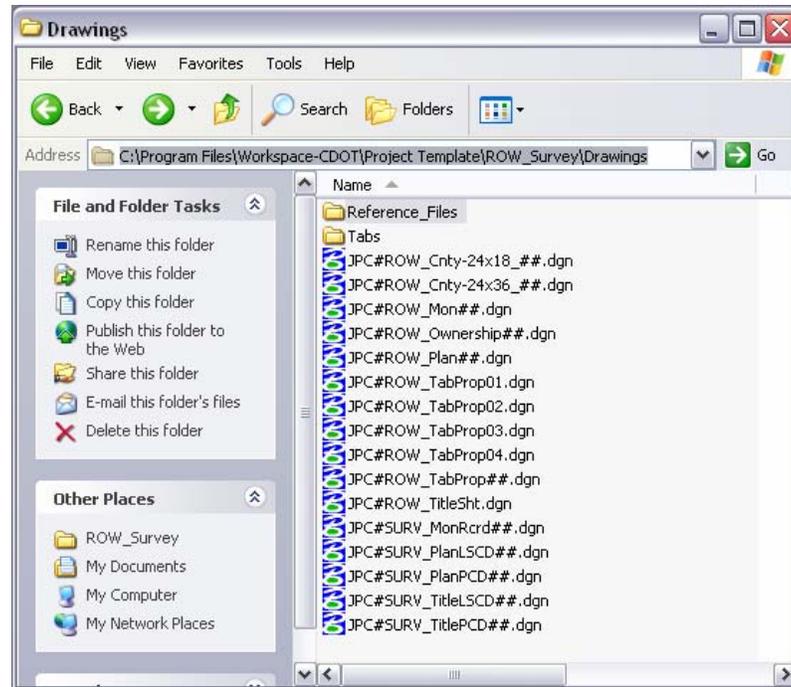
The project data for this training session is based on Colorado S.H. 86. The overall workflow will consist of:

MicroStation Plans Generation

- Creation of standard ROW plan sheets
- Generation of coordinate and parcel information lists using XML reporting and Excel spreadsheets
- Creation of ROW plans using MicroStation reference file commands
- Creation of ROW plans using the InRoads Plan & Profile Generator tool

CDOT Standard Sheet Borders

Standard sheets are delivered with the CDOT configuration. They are stored the folder: C:\Program Files\Workspace-CDOT\Project Template\ROW_Survey\Drawings



2. Working with MicroStation

Chapter Introduction

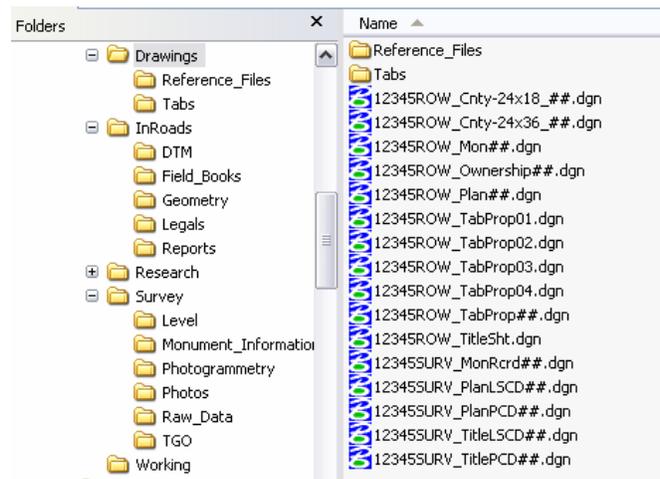
In this chapter you will receive detailed information about the training directory structure, specific lab files, and MicroStation resource files. Additionally you will work with InRoads Project Defaults to identify default directories for opening and saving InRoads resource and data files.

Lab 1: Creating files and placing cells

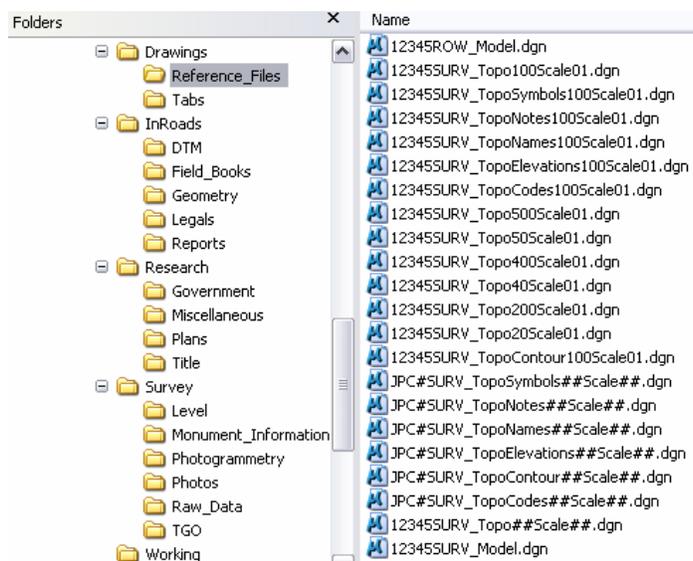
Introduction

Standard sheets for Survey and ROW plans were copied into the project directory for use in training. Prior to beginning, use *Windows Explorer* or *My Computer* to review the training directory contents.

Navigate to C:\Projects\12345\ROW_Survey\Drawings



C:\Projects\12345\ROW_Survey\Drawings\Reference_Files



MicroStation Operation

There are three easy methods to **Start MicroStation**

- Choose **Start > All Programs > MicroStation > MicroStation V8** and MicroStation will start and allow you to choose the design file, once the design file opens InRoads can be loaded as needed.

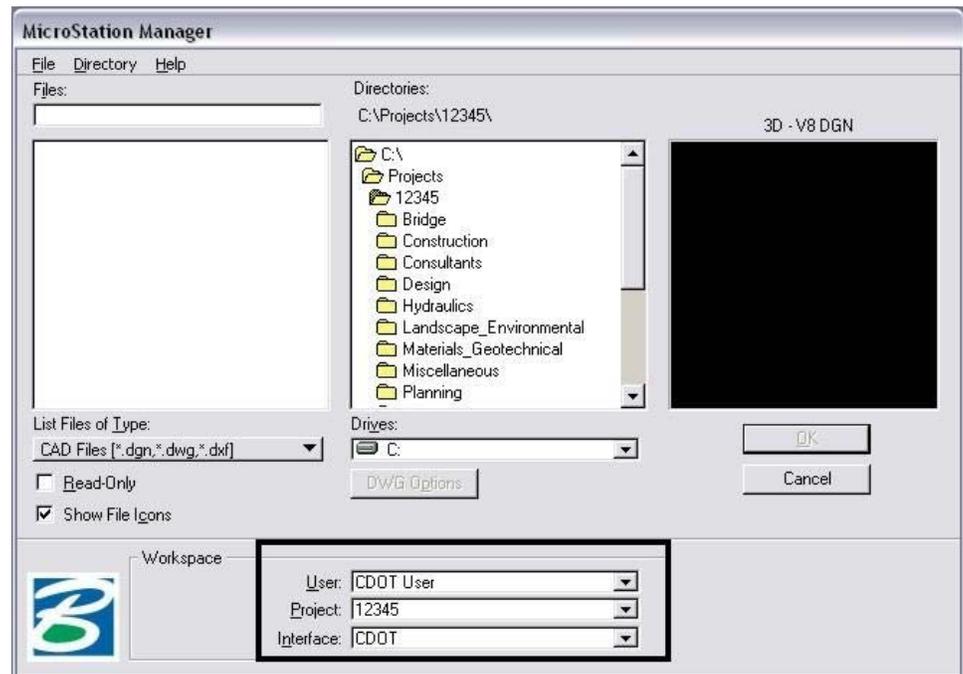
Choose the Desktop icon for MicroStation if one is available on your machine. MicroStation will start and display the MicroStation Manager interface.



- If Windows Explorer is open, <D> <D> on a *.dgn file will launch MicroStation.

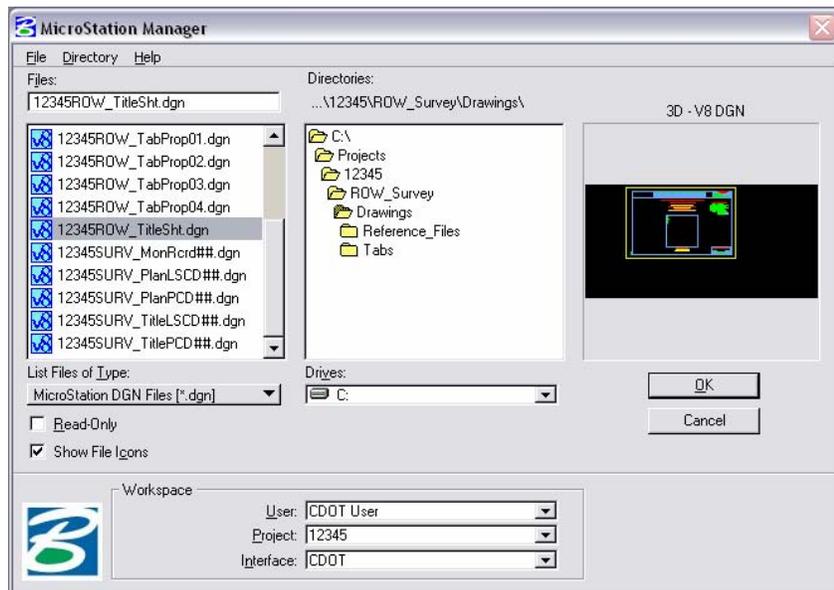
Use one of the above methods to start MicroStation.

1. In the **MicroStation Manager** dialog box, go to the **Workspace** group section and change the **User** field to **CDOT USER**, the **Project** field to **12345** and the **Interface** field to **CDOT**.

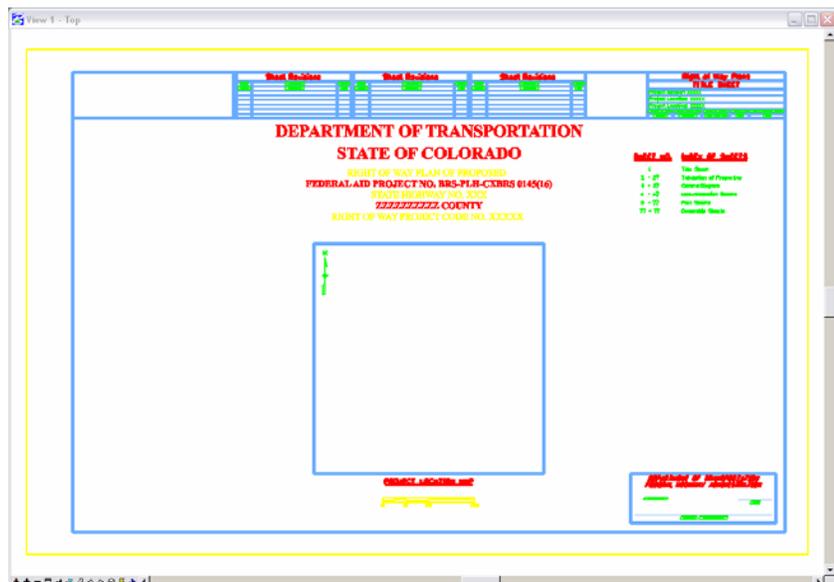


This workspace setup should load the correct MicroStation environment (including toolbars) when the selected MicroStation file is opened.

2. Navigate to the folder ROW_Survey\Drawings
3. <D> on file 12345ROW_TitleSht.dgn
4. <D> OK in the MicroStation Manager dialog box to open the file.



Your graphics window should appear as shown.



Notes: The file names and directory structure used in this course are based on current information. As the CDOT configuration develops and directory structure and file naming conventions are standardized, these may change.

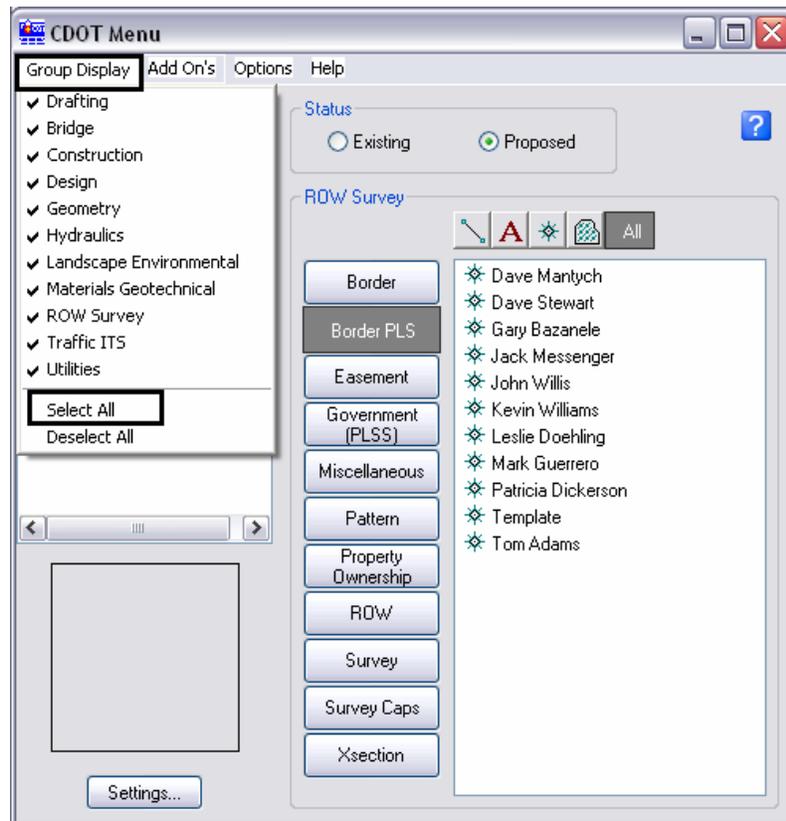
The default Model scale for CDOT plan sheets is 1:100. For sheets that are text based such as title sheets, and tabulation sheets, the Model scale is set to 1:1. Using the annotation scale lock synchronizes both graphics and text placed in the drawing. For drawings at other scales, the model properties will require modification. See the instructor if additional information is required.

Insert the Region, Designer information in the upper-left corner of the sheet.

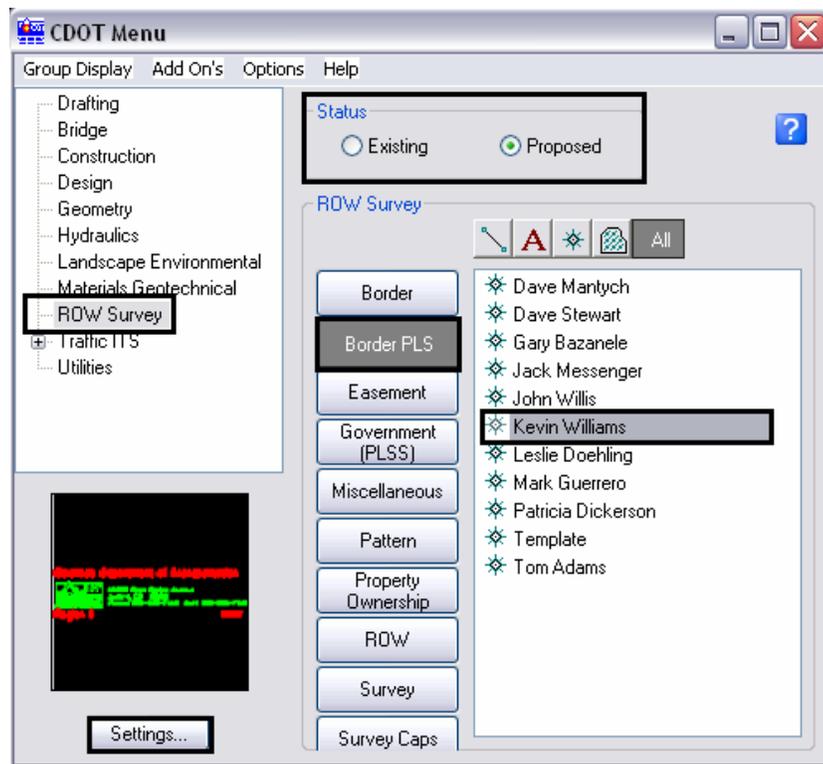
5. The **CDOT Menu** should open by default when MicroStation is launched. If for any reason the **CDOT Menu** is not open, you can open it from the Main Tool frame.



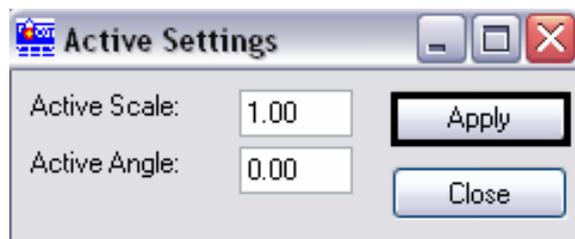
6. From the CDOT Menu <D> on Group Display>Select All.



7. Select ROW Survey in *Group Display*
8. Set the *Status* to Proposed
9. Select Borders PLS
10. Select the Survey Supervisor Kevin Williams
11. Select the Settings icon to get the Active Setting dialog box



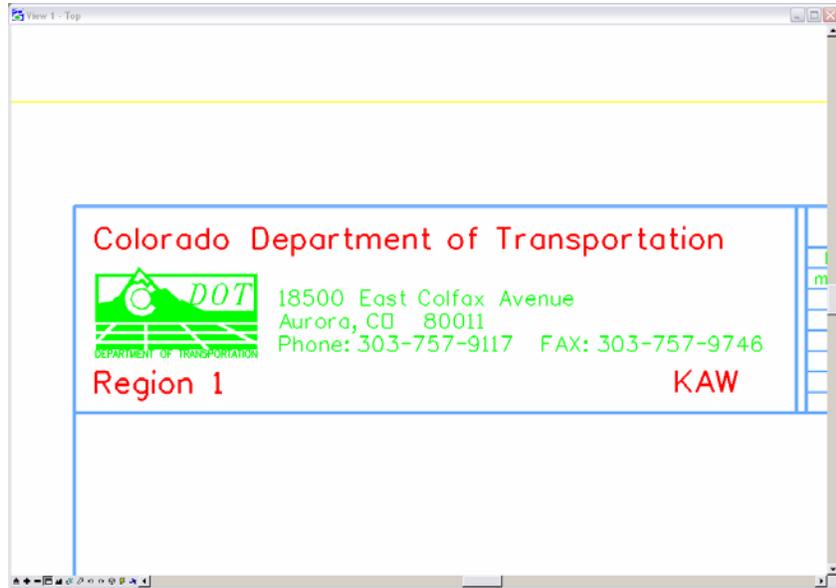
12. In the **Active Settings** dialog box set **Active Scale** to **1.00** and **Active Angle** to **0.00**



13. <D> Apply

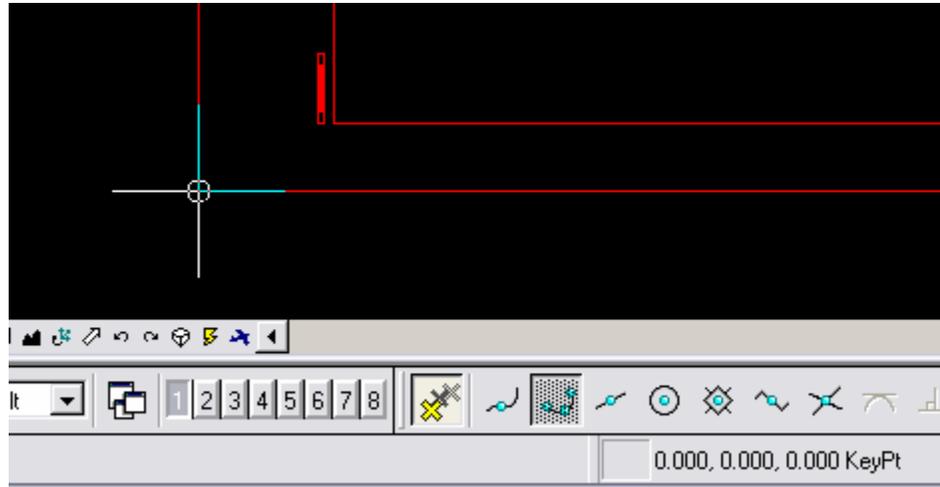
14. <D> Close

15. *Place* the cell at the upper-left corner of the sheet as shown



Challenge Exercises

- Verify the coordinates at the lower left corner of the sheet (tentative snap). Should be at 0,0,0

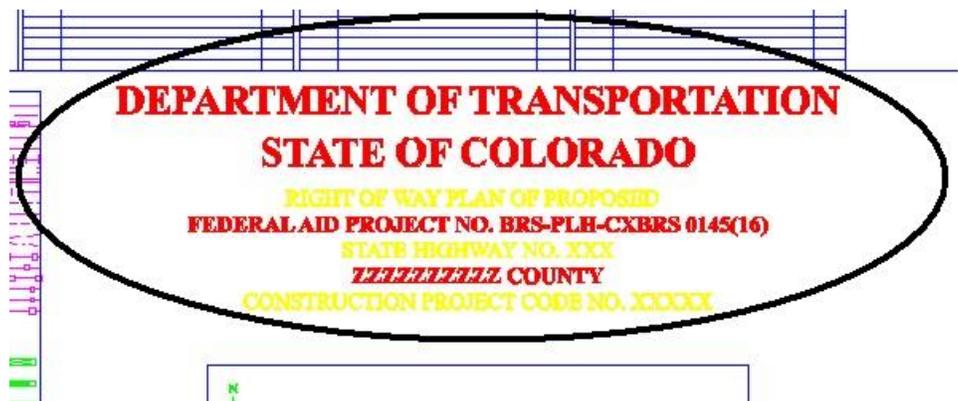


- Determine the length and height of sheet (measure tools or AccuDraw). Should be 11 x 17
- Investigate the levels the graphics are on (level display, element information, or pop-up information)

Lab 2: Editing Text

Formatting has been defined for standard sheets. Text fields indicated with an 'X' indicates the user needs to input project or sheet specific information.

1. *Window* into the top center of the title sheet.

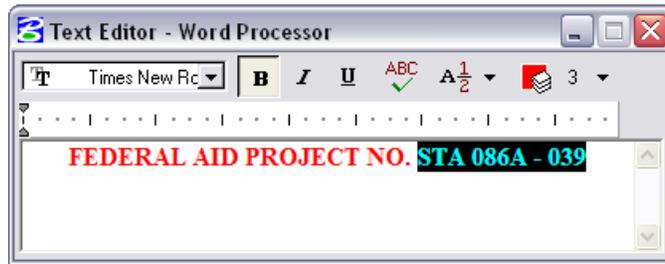


2. Select the Edit Text command.

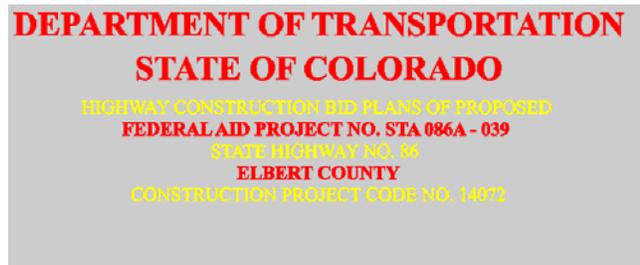


3. <D> on the FEDERAL AID PROJECT NO. XXXXXXXXXX text string.

4. In the Text Editor dialog box, correct the project identifier text and change to **STA 086A – 039** as shown.



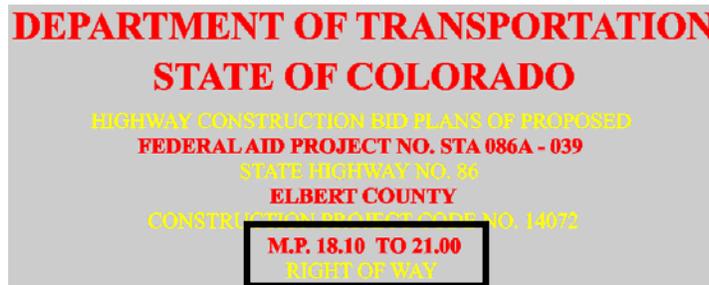
5. <D> on the MicroStation screen to execute the edit.



6. Optional – complete edits to the other project identification text.

Challenge Exercises

- Add another line of text that matches both the text and symbology of the existing text



- Complete the upper right-hand corner of the sheet as shown

Right of Way Plans			
Title Sheet			
Project Number: STA 086A-039			
Project Location: State Highway No. 86 Corridor PE			
Project Location: County Rd. 25 & 27 & 33			
Project Code:	Last Mod. Date	Subset Sheets	Sheet No.
12345	07-26-06	1 of 1	RW 1.01

- Use the **Edit Text** command to complete the scale bar



PROJECT LOCATION MAP



Lab 3: Vicinity Map - Vector

Introduction

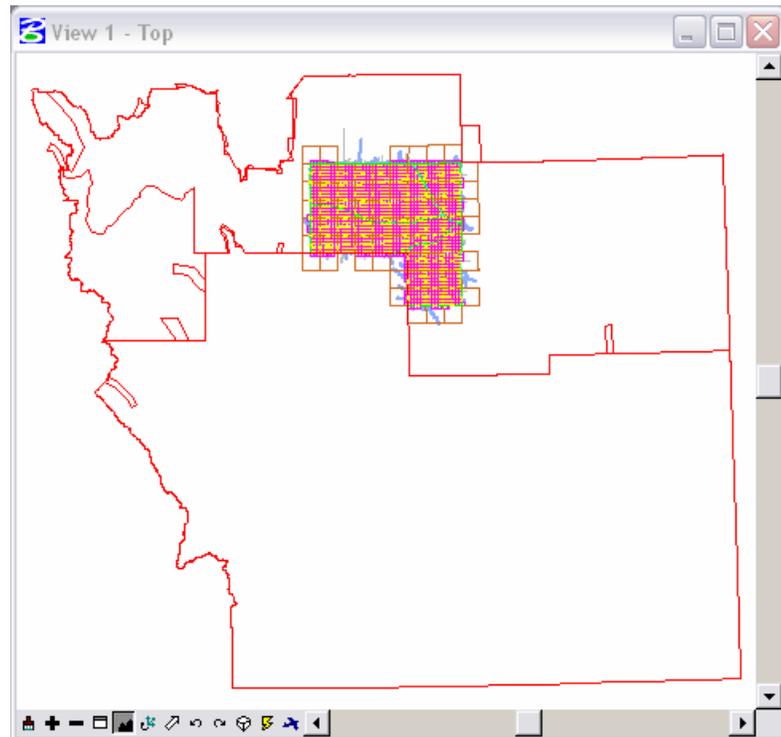
Vicinity maps can be referenced to the title sheet. These maps can be in the form of vector files (CADD elements) or raster files (images).

The CDOT standard procedure is to use county maps that have been translated from GIS information, these maps can be found on the shared drive at: \\public\CADD County Maps\. The county of interest should be copied to your project location drawings folder and can be attached as a reference file to the Title Map. The local map can be edited as desired without affecting the original.

For training purposes, a vicinity map has been stored in the **References** folder.

Review the vicinity map.

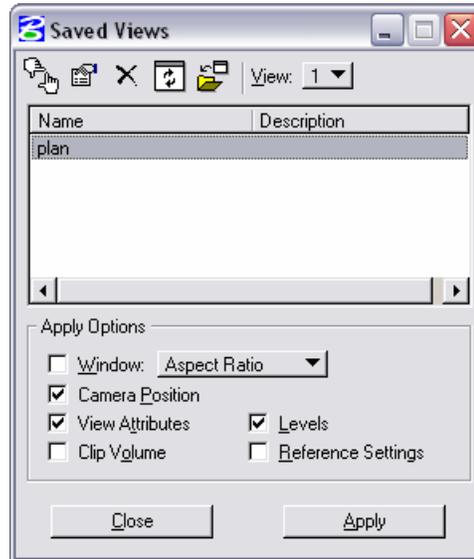
1. **Open** the MicroStation file **Elbert.dgn**
this file is located in:
C:\Projects\12345\Design\Drawings\Reference_Files



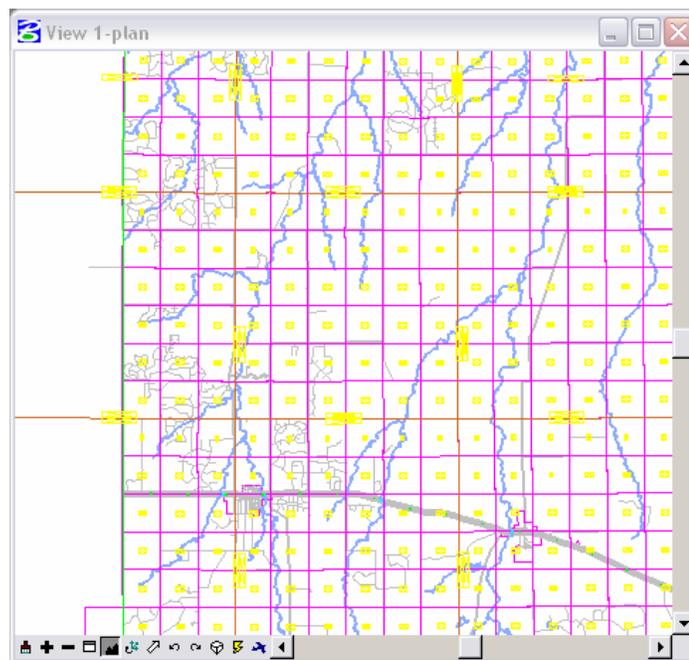
This file contains a Saved View to assist in attaching it as a reference file.

2. Select **Utilities > Saved Views** from the MicroStation pull-down menu.

3. <D> on the saved view by the name of *plan*
4. <D> Apply

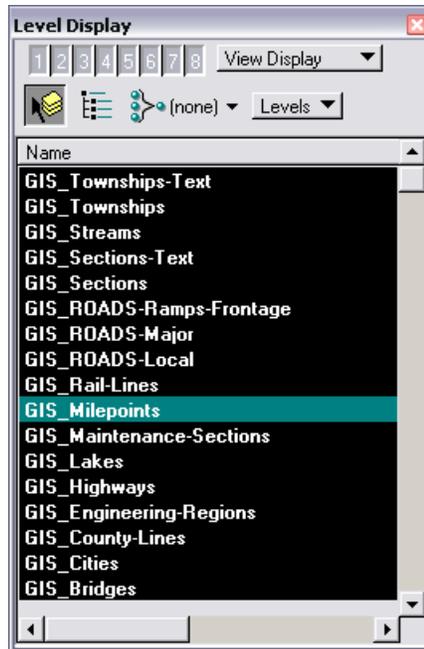


The MicroStation view updates to the limits of the saved view. <D> Close.



5. Use other MicroStation view commands to investigate the contents of the drawing.

Open the MicroStation **Level Display** dialog to investigate level stratification by choosing, **Settings > Level > Display**. Note all information resides on GIS_* levels.



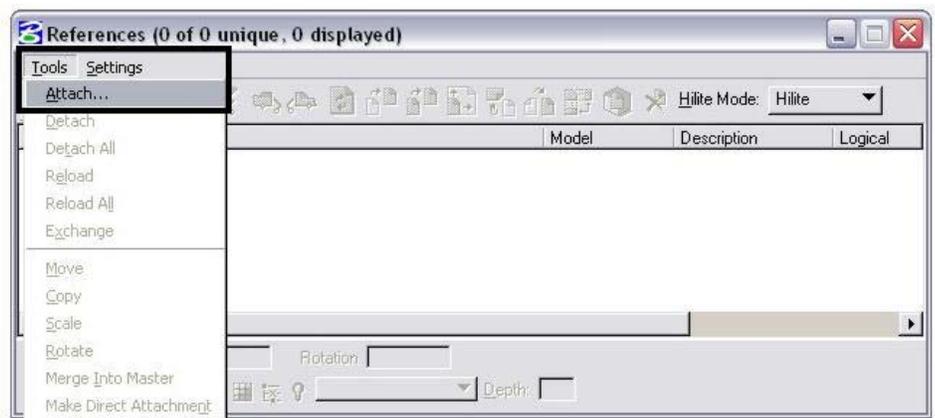
6. Turn level displays *on* and *off* to verify data stratification, then *Close* the Level Display dialog.

Attaching a vicinity map as a reference file

Attach the vicinity file as a reference file to the title sheet. Once attached, move, scale, and constrain the display limits.

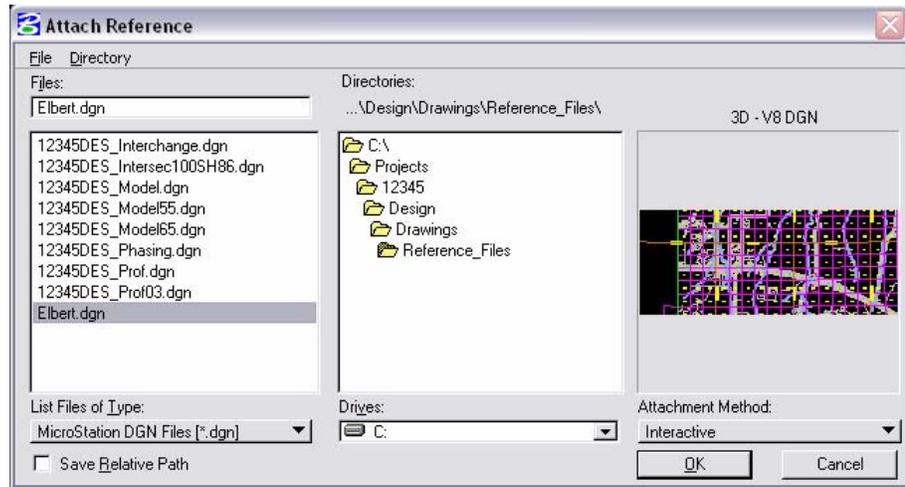
Reopen the title sheet: *12345ROW_TitleSht.dgn*. Once open:

1. Select **File > Reference** from the MicroStation menu bar.
2. In the References dialog box, select **Tools > Attach**



3. <D> the file *Elbert.dgn* from the *....Design\Drawings\Reference_Files* directory.

4. <D> OK



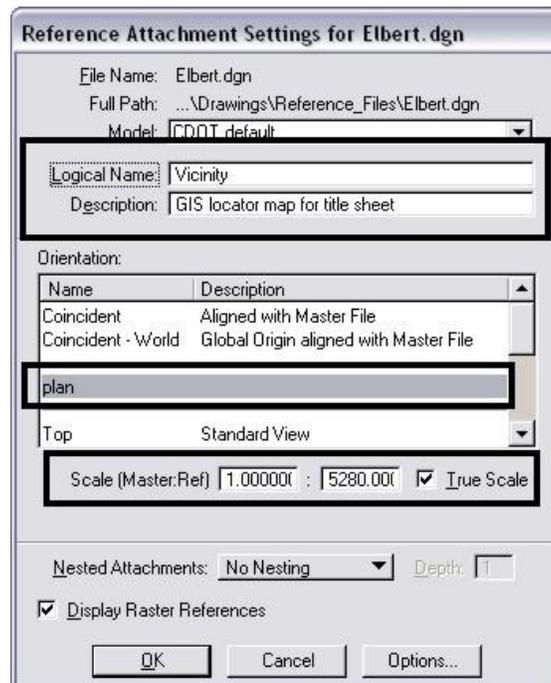
5. Key-in the Logical Name: ***Vicinity***

6. Key-in the Description: ***GIS locator map for title sheet***

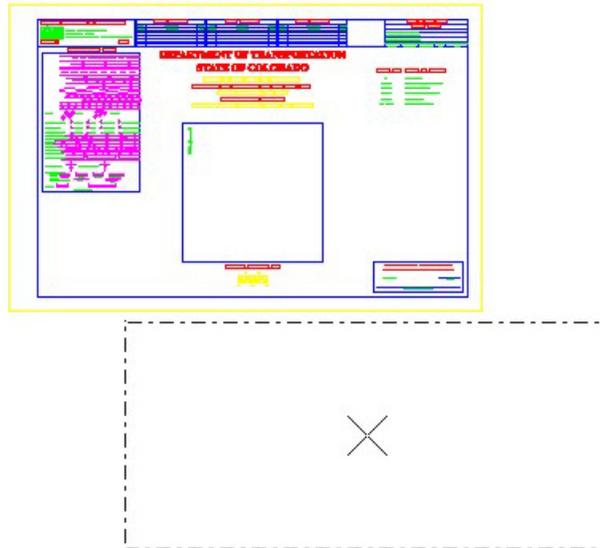
7. Select the ***plan*** option in the ***Orientation*** section of the dialog box.

8. GIS maps have been designed to be inserted at a scale factor of **1:5280** (Master : Reference). Enter that value for the Scale option.

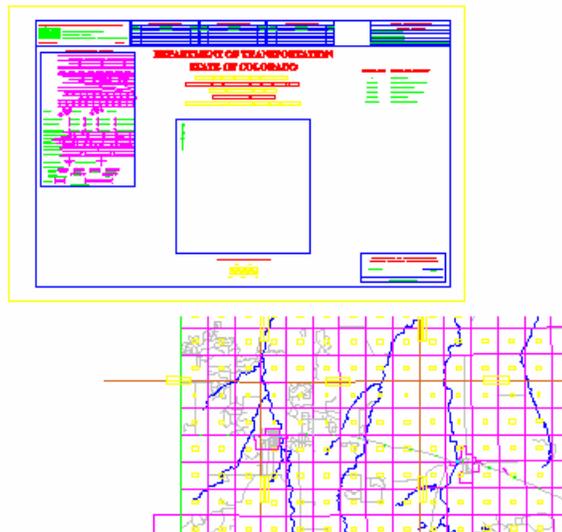
9. <D> OK



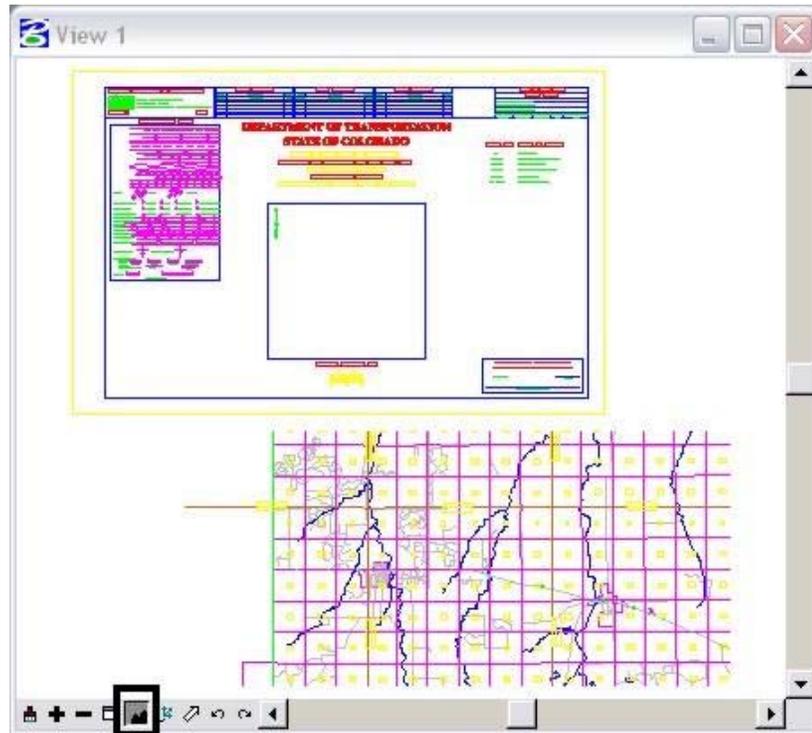
In the MicroStation view window, the limits of the saved view dynamically display relative to the location of the cursor.



10. <D> in the MicroStation view window area to attach and display the contents of the reference file.

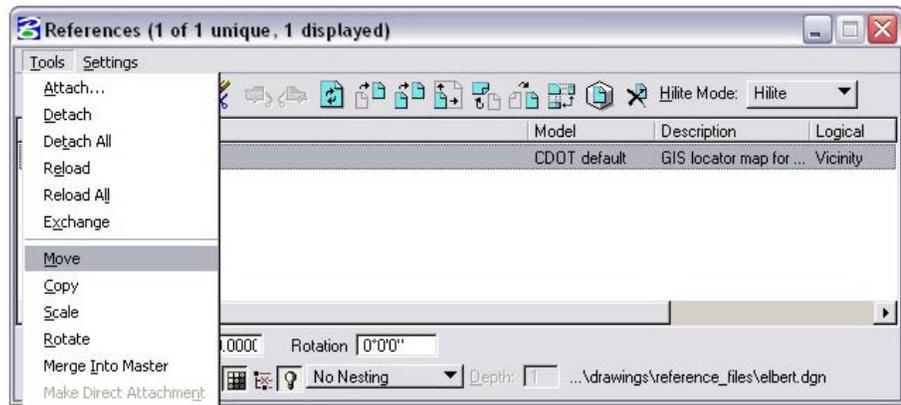


11. Select the MicroStation *Fit* command.

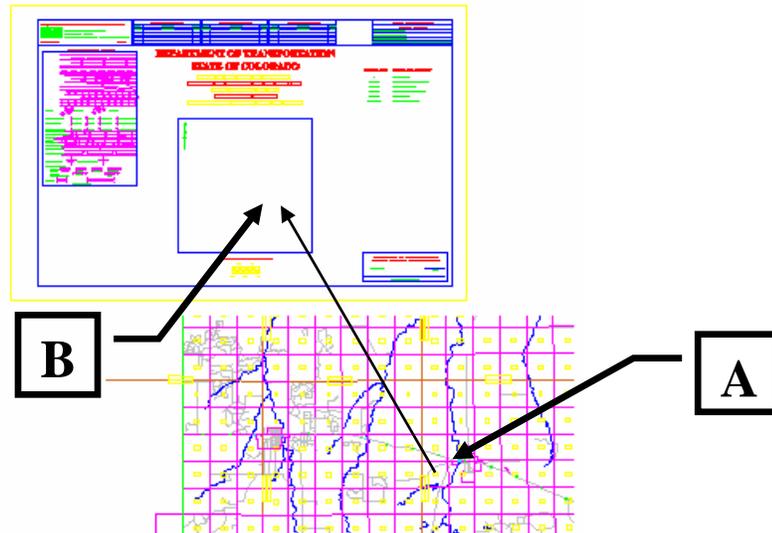


Move the reference file to align with the title sheet.

12. Select Tools > Move in the References dialog.



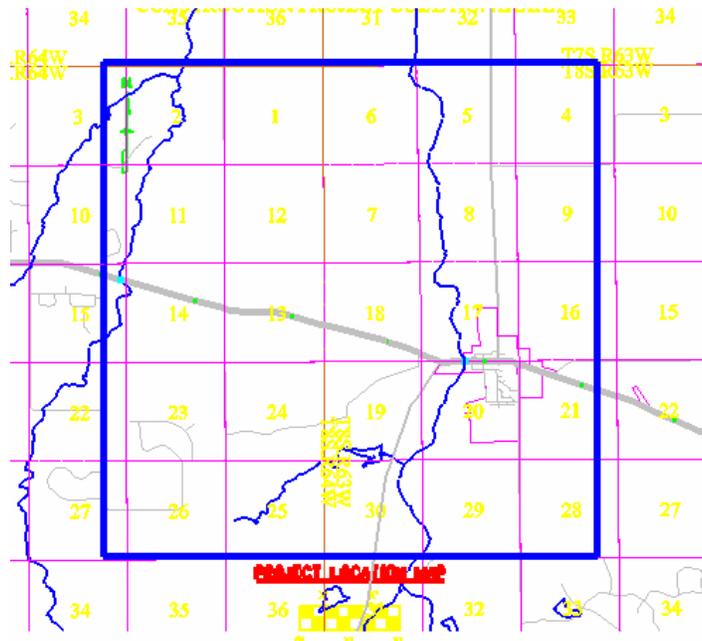
13. <D> at point *A* and then <D> at point *B* to move the attached reference file.



Execute additional move commands to reposition the reference file as necessary.

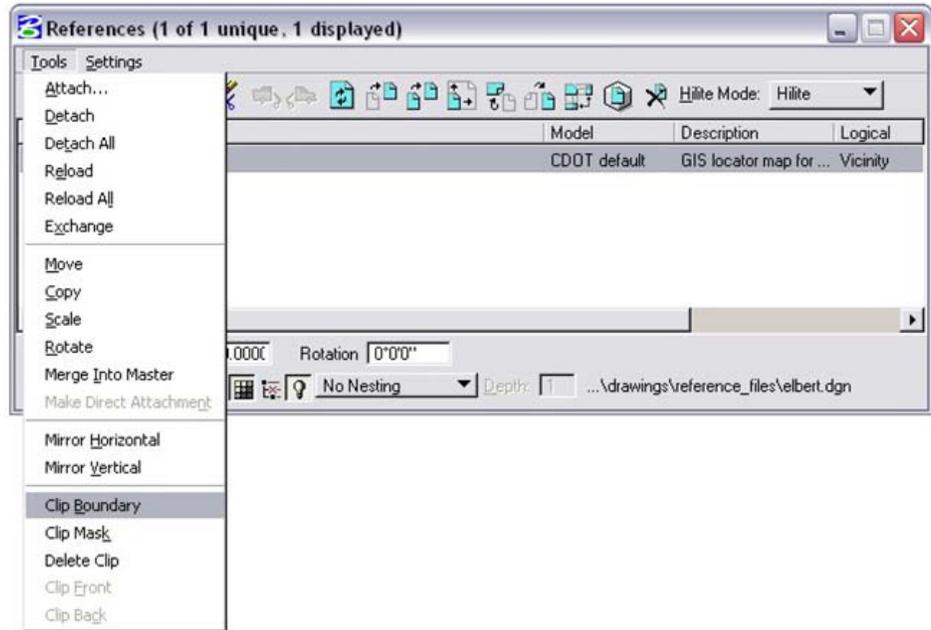
14. <R> to exit the Move References command.

15. Zoom into the *Project Location Map* area of the Title Sheet.



Constrain the display limits of the reference file (clip boundary)

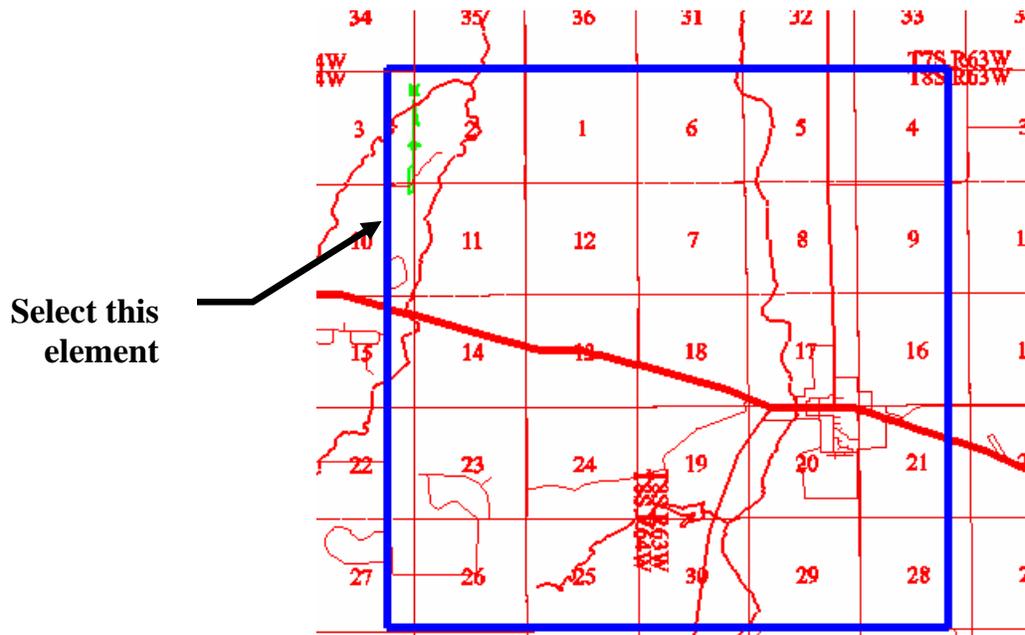
16. Select Tools > Clip Boundary from the Reference File dialog.



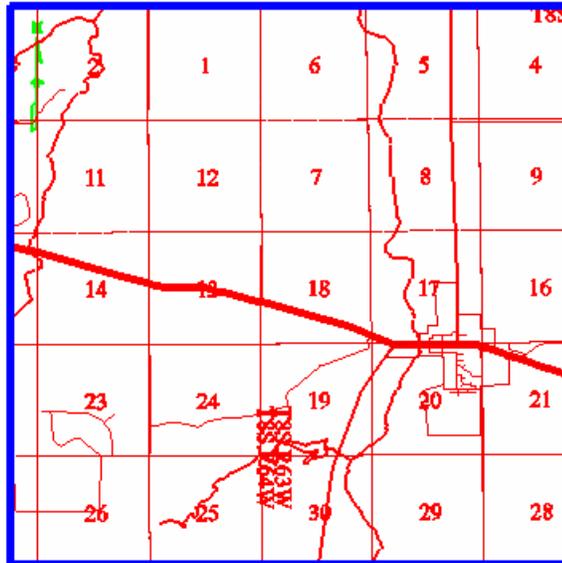
17. In the *Tool Settings* dialog, Set method to Element



18. <D> on the shape representing the limits of the location map display.



19. <D> a second time (anywhere on the screen) to accept the displayed solution.



20. Use the MicroStation command **Modify Element** command to resize the shape identified to define the clip boundary.



The reference file clip boundary will reconfigure with the shape modifications.

Note: The exercise just completed used an existing MicroStation shape to define reference file clipping boundaries. The same process can be followed by using a MicroStation Fence to define (and redefine) the reference file clip boundary.

Challenge Exercises:

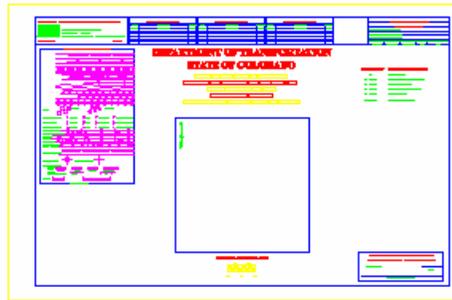
- Move the shape used to define the reference file limits. What happens to the graphics limits displayed?
- Use the References dialog to move the vicinity map after it has been clipped.
- Delete the shape used to define the reference file limits. What happens? (select undo, to restore the shape)
- Turn levels on and off for the reference file attachment
- Constrain the reference file display using a fence block
- Try using a circular fence to define the clipping limits
- Define a *clip mask* within the reference file limits
- Modify elements in the file Elbert.dgn, what happens to the graphics displayed in the vicinity map?

Lab 4: Locator Map – Raster Reference File

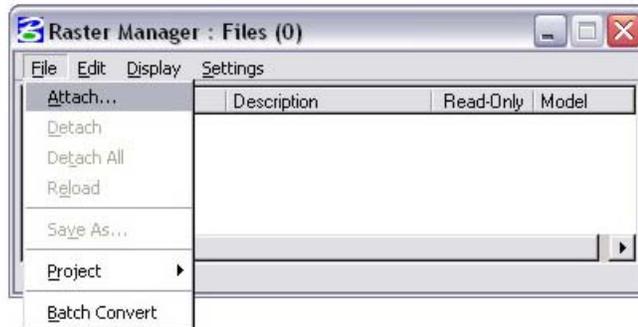
Attach a raster reference file for the locator map. Once attached, move, scale, and constrain the display limits.

In the CADD file for the title sheet:

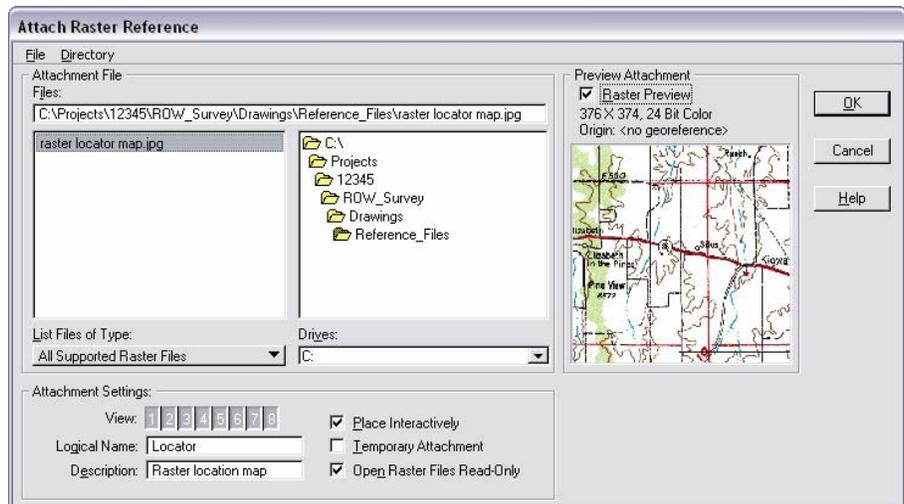
1. Remove the reference file (Elbert.dgn) from the previous exercise by selecting **Tools > Detach** from the **References** dialog box.



2. Select **File > Raster Manager** from the MicroStation menu bar.
3. Select **File > Attach** in the Raster Manager dialog.

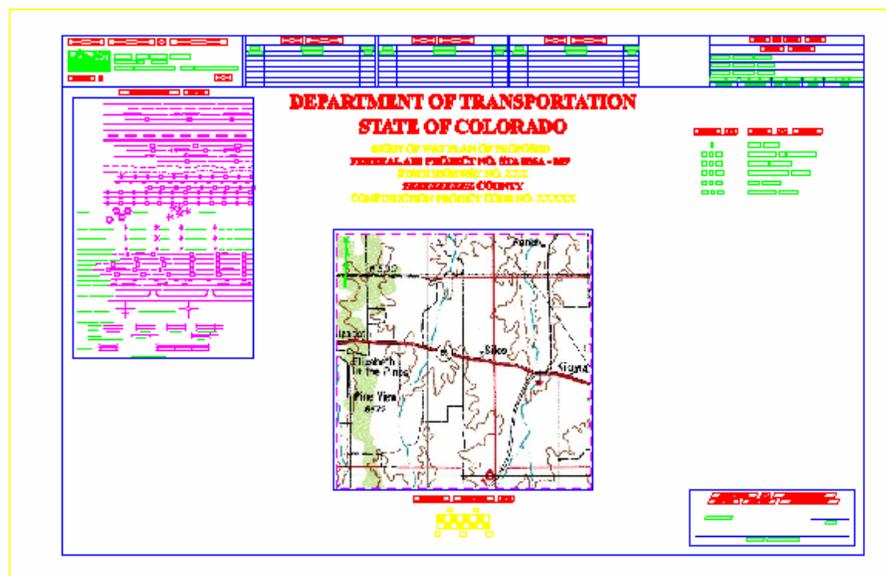


4. Browse to the ...*Drawings**Reference_File* folder and select the file *Raster locator map.jpg*
5. **Key-in** the Logical Name **Locator**
6. **Key-in** the Description **Raster location map**
7. <D> OK

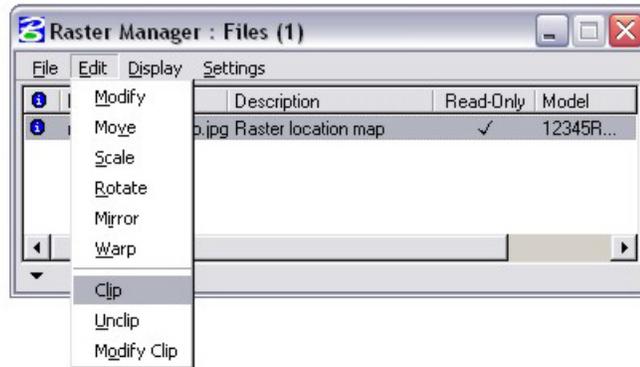


8. As in the previous lab, <D> to define the lower left and upper right corners that define the desired limits for the reference file.

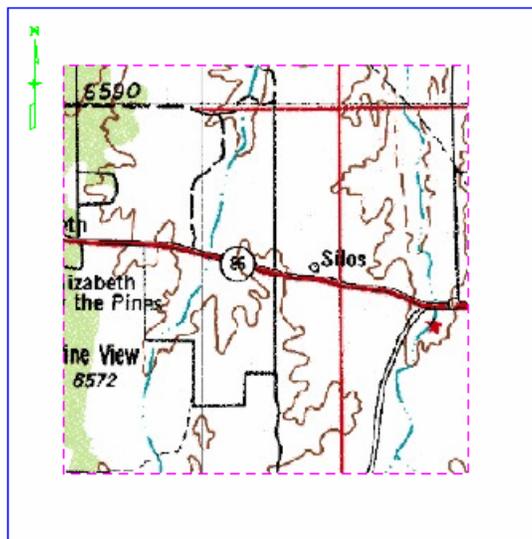
The raster reference file is attached to the title sheet



9. In the Raster Manager dialog, select Edit > Clip



10. Follow the MicroStation prompts to *define* the clip of the raster so it appears approximately as shown.



Challenge Exercises:

In either of the reference file dialog(s):

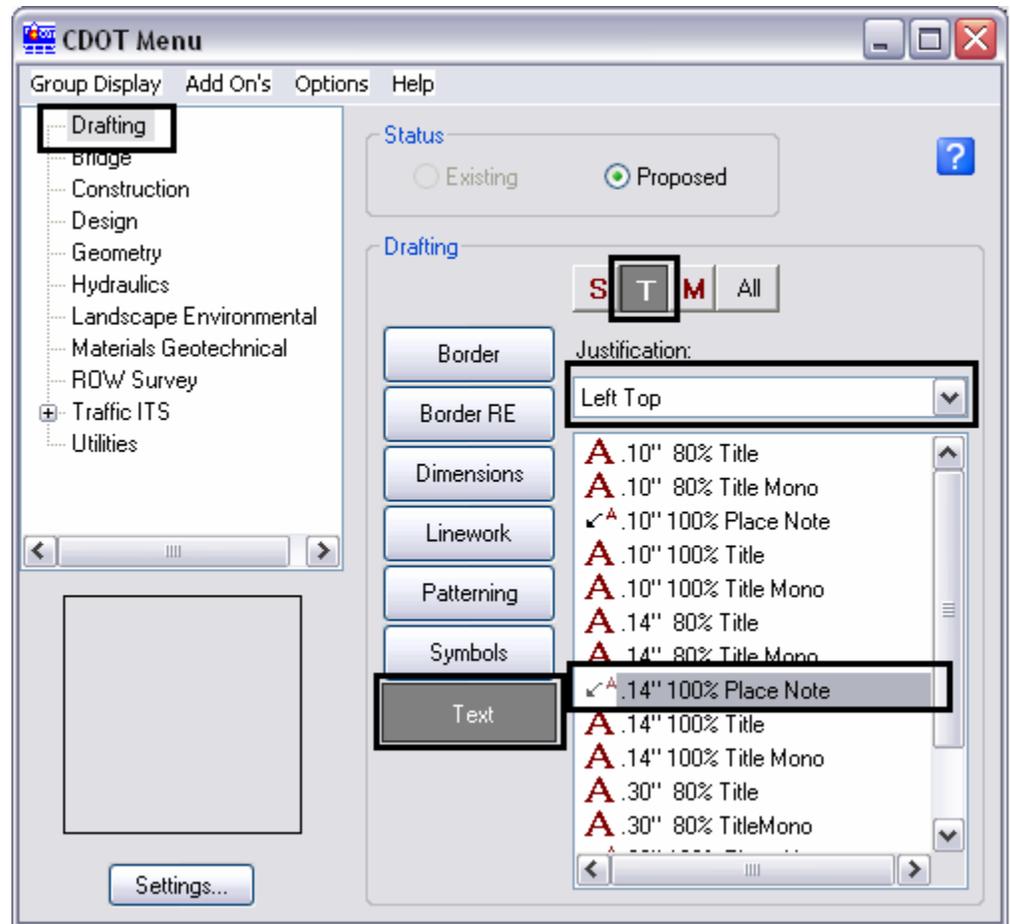
- Experiment with the settings under File >....
- Experiment with the settings under Edit >....
- Experiment with the settings under Display >....
- Experiment with the settings under Settings >....
- Change the raster reference gamma display value to 0.5 (settings > Attachment > Display/Print)
- Redefine the reference file limits to exactly match the locator boundary area
- Turn on the display of the vector reference file
- Turn off the display for the *raster* reference file

Lab 5 – Annotation

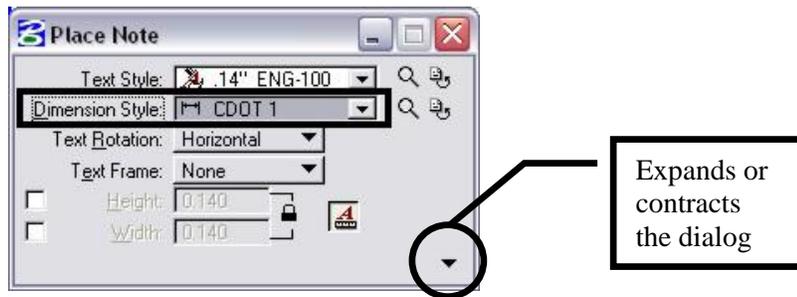
Introduction

Annotate the locator map using the MicroStation place note command. First select the correct symbology using the CDOT Menu.

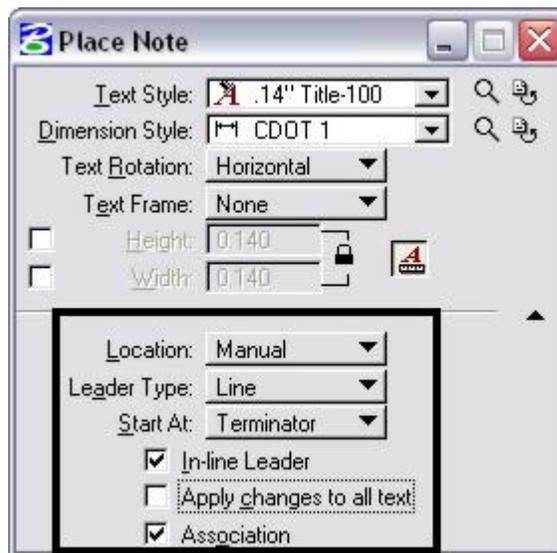
1. Activate the **Drafting** Group Display.
2. <D> Text button in **Drafting** area.
3. Set the **Title** Text Type (button labeled **T** in **Drafting** area).
4. Set the **Justification** to **Left Top**
5. Select **.14" 100% Place Note** as shown.



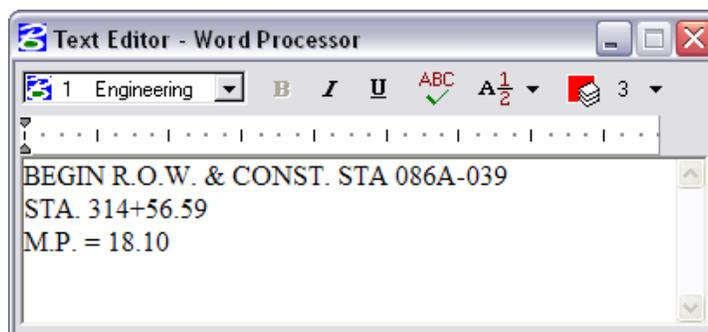
The correct settings and symbology are now set and the MicroStation **Place Note** command should automatically execute with the correct **Text Style** specified in the **Place Note** dialog.

6. Select the Dimension Style **CDOT 1**

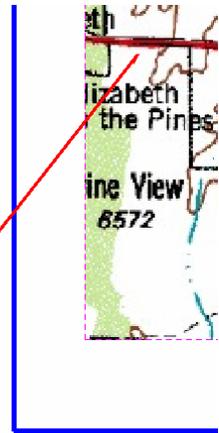
7. Expand the Place Note dialog and note the available options. Make sure the options selected match those shown below.



8. Key-in the required text as shown.



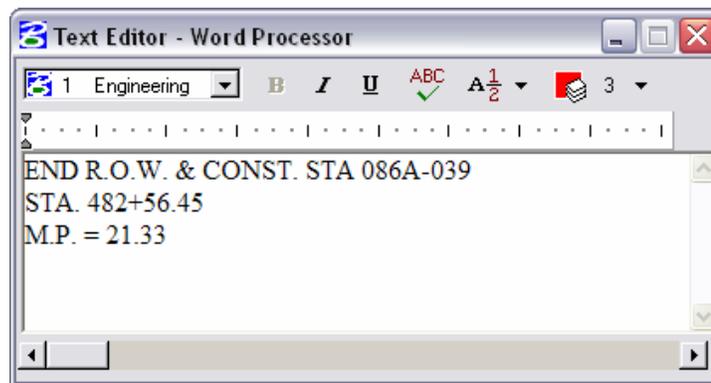
9. Follow the MicroStation prompts to place the leader line and text (the first <D> will define the location of the arrow).



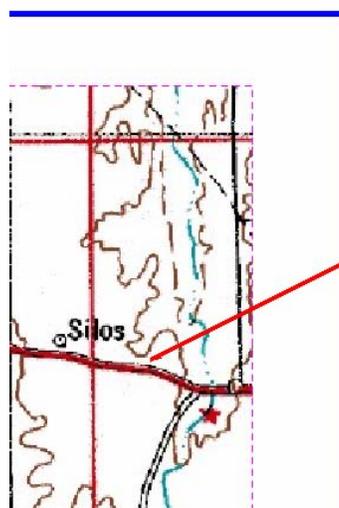
**BEGIN R.O.W. & CONST. STA 086A-039
 STA. 314+56.59
 M.P. = 18.10**

Repeat for the end of project information.

10. Key-in the required text as shown.



Follow the *MicroStation prompts* to place the leader line and text



**END R.O.W. & CONST. STA 086A-039
 STA. 482+56.45
 M.P. = 21.33**

11. Select File > Save Settings

Challenge Exercises:

- Insert a scale bar cell and/or north arrow (General.cel)
- Input a basis of bearing note
- Replace the information in the top-left corner of the sheet (ROW.cel)



3. Tabulation Sheets

Chapter Introduction

The following sheets are available in the training directory. These files are located at:

C:\Projects\12345\ROW_Survey\Drawings

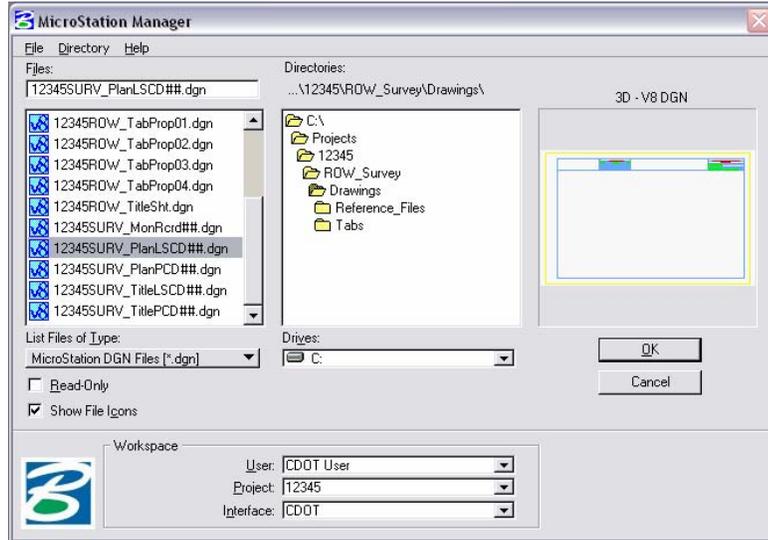
- ROW Monumentation *12345ROW_Mon##.dgn*
- ROW Monumentation *12345SURV_MonRcrd##.dgn*
- ROW Ownership *12345ROW_Ownership##.dgn*
- ROW Plans *12345ROW_Plan##.dgn*
- ROW Plans *12345ROW_TabProp01.dgn*
- ROW Plans *12345ROW_TabProp02.dgn*
- ROW Plans *12345ROW_TabProp03.dgn*
- ROW Plans *12345ROW_TabProp04.dgn*
- ROW Plans *12345ROW_TabProp##.dgn*
- ROW Title *12345ROW_TitleSht.dgn*
- Land Survey Control Diagram-Title sheet *12345SURV_TitleLSCD##.dgn*
- Land Survey Control Diagram-Plan sheet *12345SURV_PlanLSCD##.dgn*
- Project Control Diagram – Title sheet *12345SURV_TitlePCD##.dgn*
- Project Control Diagram – Plan sheet *12345SURV_PlanPCD##.dgn*
- ROW Borders *12345ROW_Cnty-24x18_##.dgn*
- ROW Borders *12345ROW_Cnty-24x36_##.dgn*

Lab 6 – Land Survey Control Diagram Plan Sheet

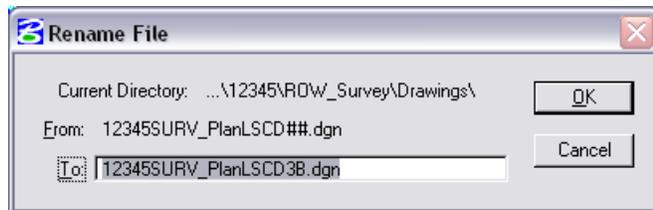
In this sheet, coordinate information will be input in a tabular format.

Return to the MicroStation manager dialog.

1. Select **File > Close** (if MicroStation is currently open).



2. <D> the filename **12345SURV_PlanLSCD##.dgn**
3. Select **File > Rename** from the MicroStation Manager dialog.
4. Replace **##.dgn** with **3B.dgn**
5. <D> OK

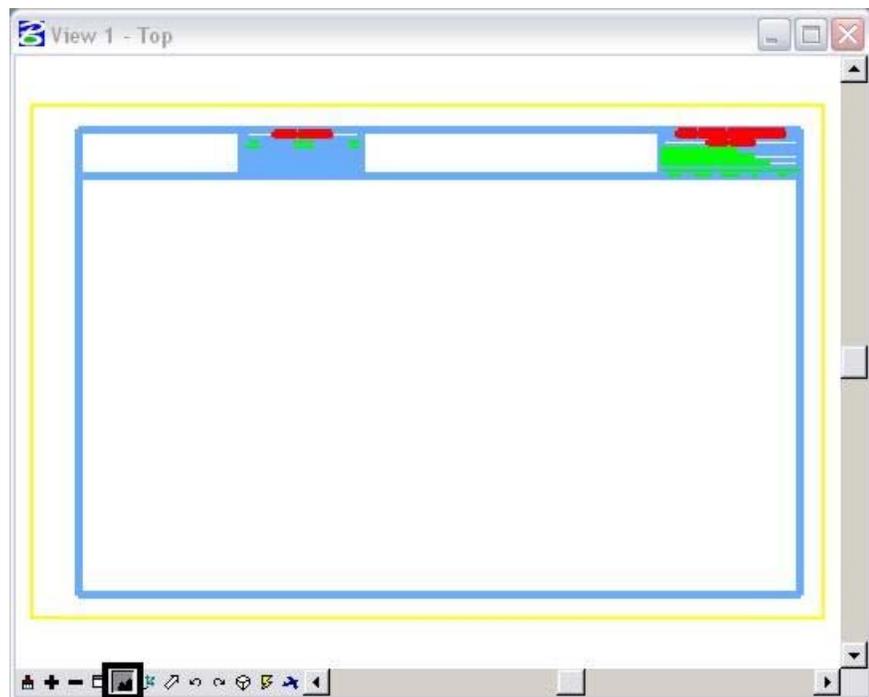


6. The renamed file is highlighted, <D> **OK** to open the file.
7. **Zoom/Window** into the upper-right corner of the sheet.

8. Edit the text as shown using Edit Text command.

Land Survey Control Diagram			
Plan Sheet			
Project Number: STA 086A-039			
Project Location: SH 86 CORRIDOR PE			
Project Location: COUNTY RD. 25 & 27 & 33			
Project Code:	Last Mod. Date	Subset Sheets	Sheet No.
12345	04-11-06	3 of XXX	3B

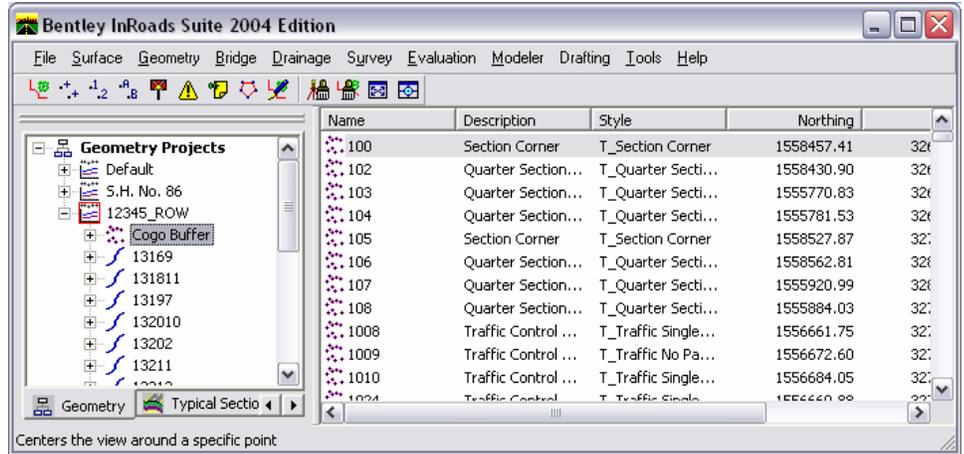
9. Use the MicroStation Fit command to view the entire sheet.



In this sheet, place coordinate information representing a Project Coordinate Summary Table. This coordinate information will be extracted from InRoads using the reporting utility XML.

Using XML to report on Coordinates

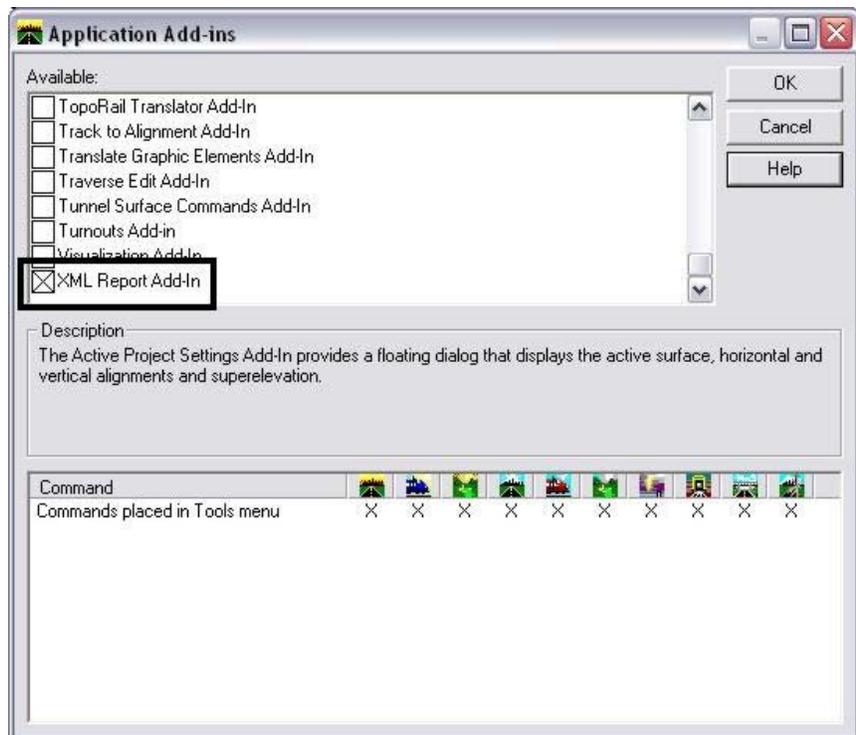
Use InRoads and XML reporting to insert a Project Coordinate Summary Table. Report on points **100-120**.



10. If not already running and loaded:

- **Launch** InRoads & **Load** the Geometry Project 12345_ROW.alg from C:\Projects\12345\ROW_Survey\InRoads\Geometry

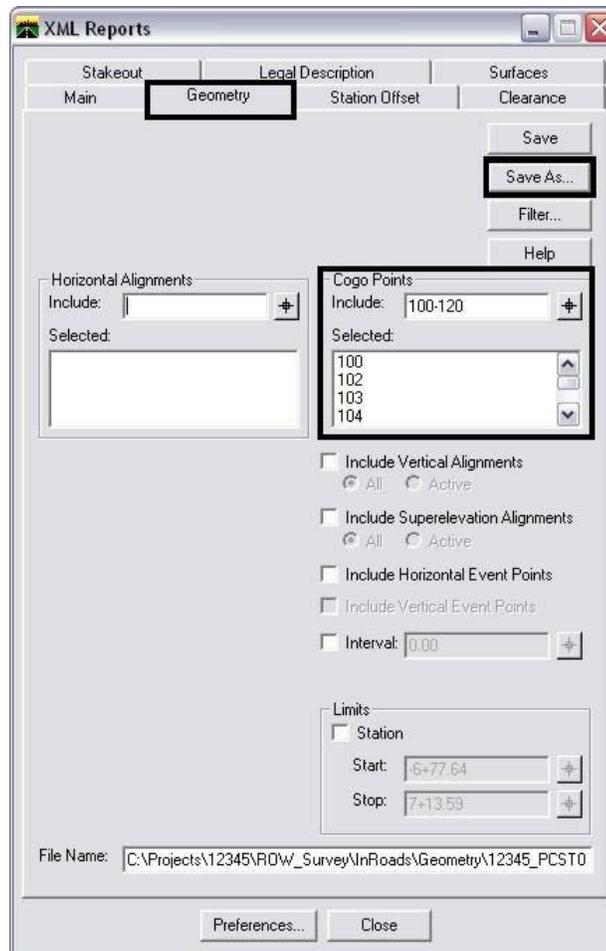
11. Select Tools > XML Reports from the InRoads interface.



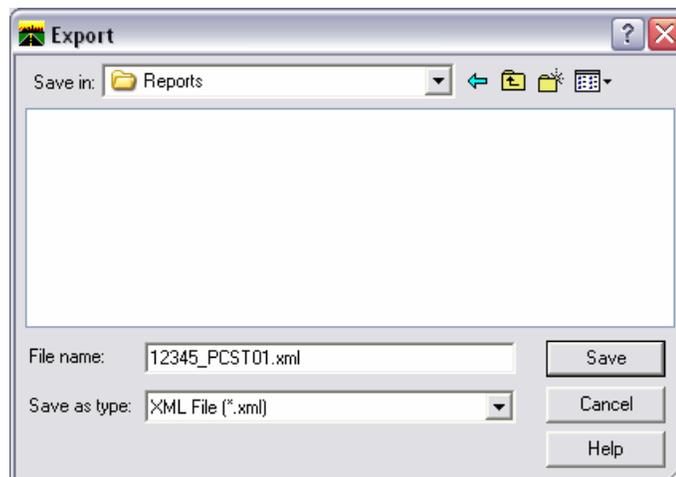
Note: XML Reports is an Application Add-in for InRoads. If XML Reports is not available in the InRoads Tools menu bar, select Tools > Application ADD-Ins... and enable the XML Report ADD-In.

12. In the XML Reports dialog, <D> the **Geometry** tab and identify Cogo points **100-120**

13. <D> Save As



14. From the Export dialog box, *navigate* to the 12345\ROW_Survey\InRoads\Reports folder and input the file name 12345_PCST01.xml



15. <D> Save. The report browser will open to a default report style.

Excel in MicroStation

Tables can be created in MicroStation by linking information that is contained in an Excel spreadsheet. There are several advantages to using the linked spreadsheet method. Some of these are:

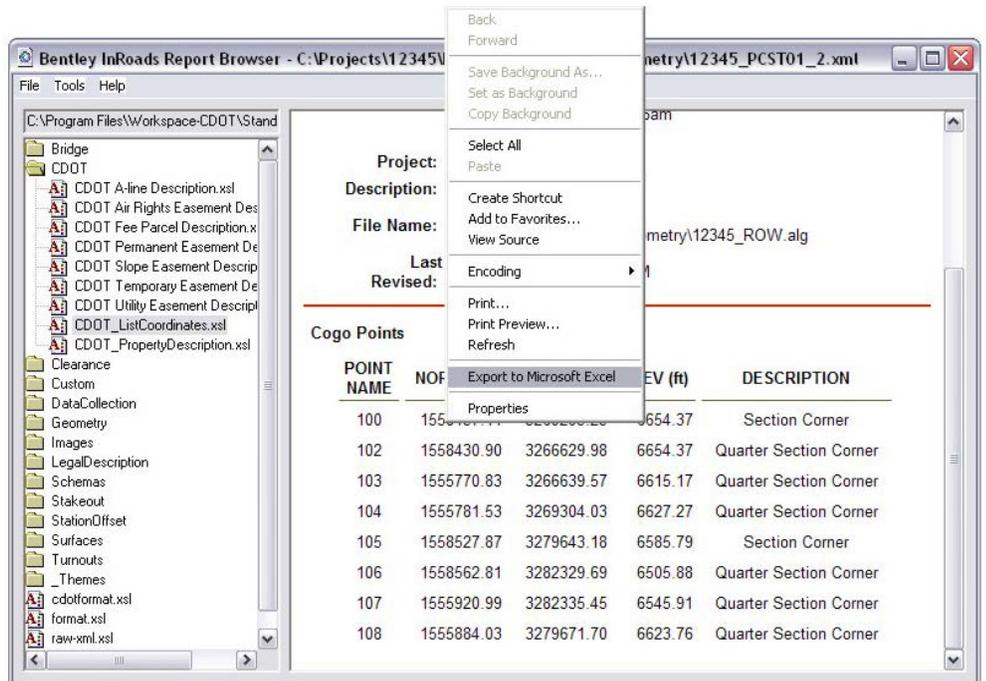
- Text formatting in the spreadsheet is retained by MicroStation
- Graphics (borders, grids, etc) are retained from the Excel file
- Updates to the Excel file are reflected in the MicroStation file

In the xml report browser:

16. <D> the CDOT folder.

17. <D> the **CDOT_ListCoordinates.xml** style sheet.

18. <R> on the report in the coordinate list area as shown. A fly out menu will appear.

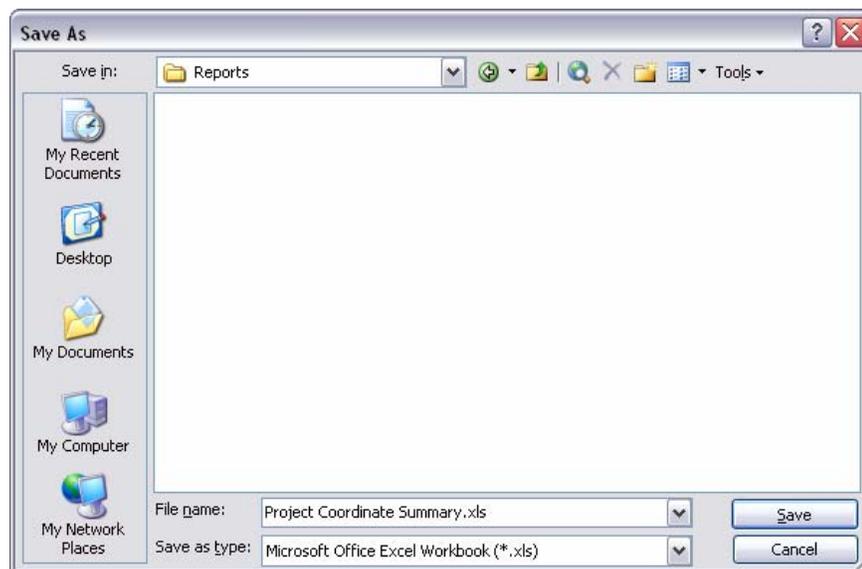


19. Select **Export to Microsoft Excel** from the fly-out menu.

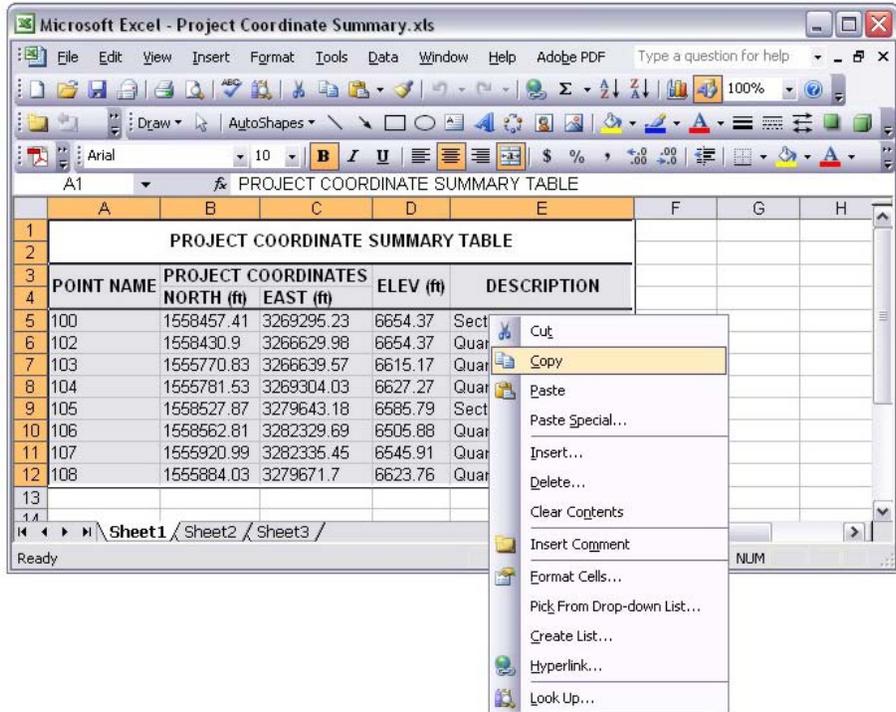
Excel should automatically launch if it is installed on the PC being used.

	A	B	C	D	E	F
1	POINT	NORTH (ft)	EAST (ft)	ELEV (ft)	DESCRIPTION	
2	NAME					
3	100	1558457.41	3269295.23	6654.37	Section Corner	
4	102	1558430.9	3266629.98	6654.37	Quarter Section Corner	
5	103	1555770.83	3266639.57	6615.17	Quarter Section Corner	
6	104	1555781.53	3269304.03	6627.27	Quarter Section Corner	
7	105	1558527.87	3279643.18	6585.79	Section Corner	
8	106	1558562.81	3282329.69	6505.88	Quarter Section Corner	
9	107	1555920.99	3282335.45	6545.91	Quarter Section Corner	
10	108	1555884.03	3279671.7	6623.76	Quarter Section Corner	
11						

20. Make changes to the data or add formatting and save the spreadsheet to the ...*ROW_Survey*\InRoads\Reports\ directory.



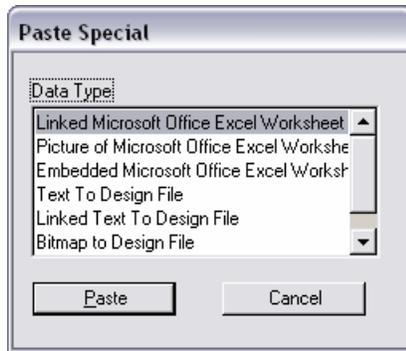
21. Select the range of information desired in the MicroStation file.



22. <R> on the spreadsheet data and select **Copy** from the fly-out menu.

RETURN TO MICROSTATION

23. Select **Edit > Paste Special** from the MicroStation menu bar.



24. <D> the **Linked Microsoft Office Excel Worksheet** option.

25. <D> **Paste**

Note: By choosing linked, updates made to the Excel file can be passed back to the MicroStation file through updating. Selecting embedded does not provide this dynamic ability.

26. In the Paste OLE dialog box, set Paste as to **Link**, Method to **By Size**, and input a Scale of **5**



Note: At this time, we do not fully understand the correlation between the *scale* and resulting text size. For this example, 5 seemed to produce reasonable results. Once placed, the text height can be measured and the bounding shape of the linked Excel table can be scaled up or down accordingly to achieve required text size.

PROJECT COORDINATE SUMMARY TABLE				
POINT NAME	PROJECT COORDINATES		ELEV (ft)	DESCRIPTION
	NORTH (ft)	EAST (ft)		
100	1558457.41	3269295.23	6654.37	Section Corner
102	1558430.9	3266629.98	6654.37	Quarter Section Corner
103	1555770.83	3266639.57	6615.17	Quarter Section Corner
104	1555781.53	3269304.03	6627.27	Quarter Section Corner
105	1558527.87	3279643.18	6585.79	Section Corner
106	1558562.81	3282329.69	6505.88	Quarter Section Corner
107	1555920.99	3282335.45	6545.91	Quarter Section Corner
108	1555884.03	3279671.7	6623.76	Quarter Section Corner

Note: Entering a <D><D> on the table in MicroStation will launch the Excel application. If the Excel file is edited (either from MicroStation or outside the CAD application) select **Edit > Update Links** from the MicroStation menu bar to refresh the linked MicroStation graphics.

Challenge Exercises:

- Cut and paste data from the xml report into a Microsoft Word document
- Cut and paste data from the xml report into a Notepad document

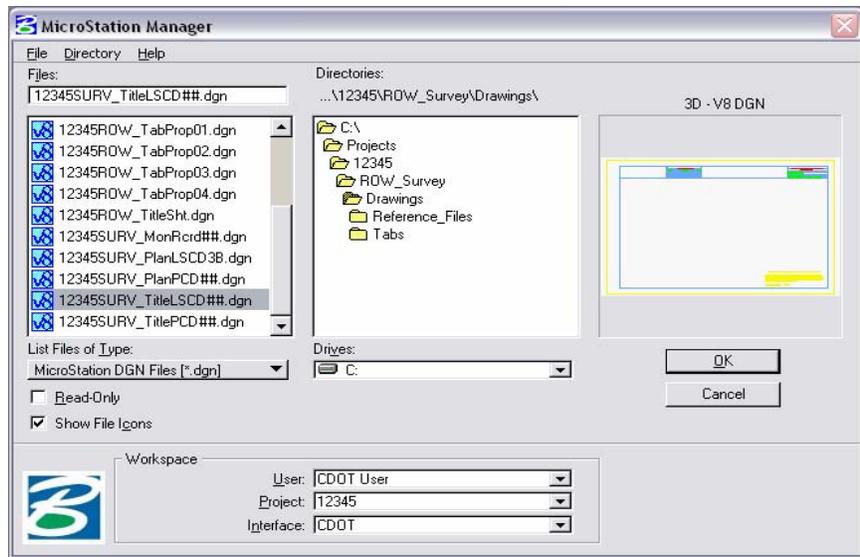
Land Survey Control Diagram Title Sheet – Challenge Exercise

Introduction

The title sheet can be created as the previous sheets have been. Challenge exercises are provided for this first sheet. When working through the lab, keep in mind the same process can be utilized for other sheets.

Land Survey Control Diagram Title Sheet – Sheet 1

1. Create (rename) the MicroStation file provided in the training directory folder. The sheet 12345SURV_TitleLSCD##.dgn should be renamed 12345Surv_TitleLSCD03.dgn



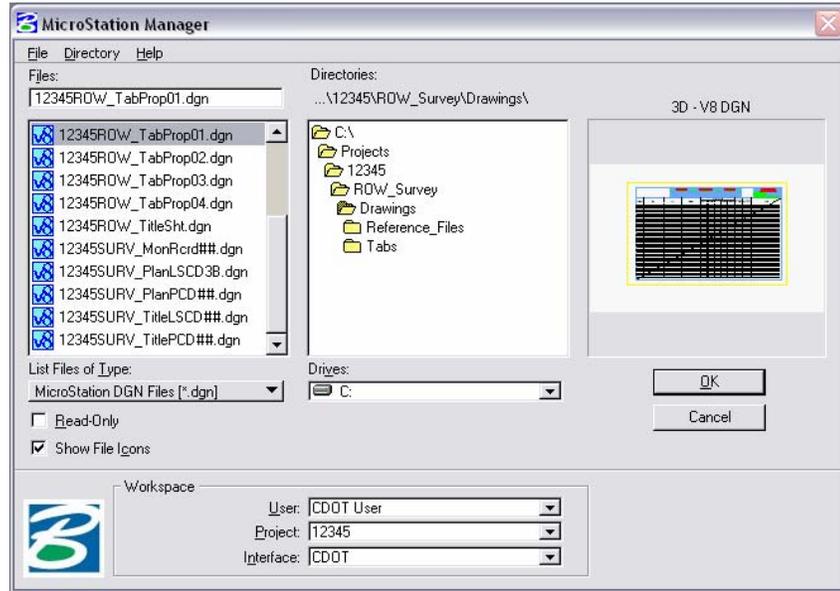
Exercises:

- Use the MicroStation viewing commands to investigate the sheet contents.
- Edit text, insert cells, or place text as appropriate for a Land Survey Control Diagram sheet.

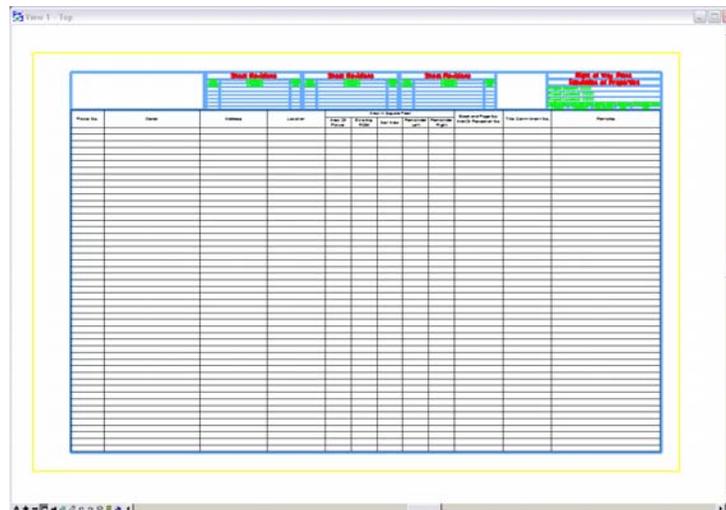
Lab 7 – Tabulation Properties Sheet

In this sheet, information will be updated using Microsoft Excel.
Return to the MicroStation manager dialog.

1. Select File > Close (if MicroStation is currently open).



2. <D> the filename 12345ROW_TabProp01.dgn
3. <D> OK



4. <D> <D> anywhere within the grid to open up XLS link in Excel.

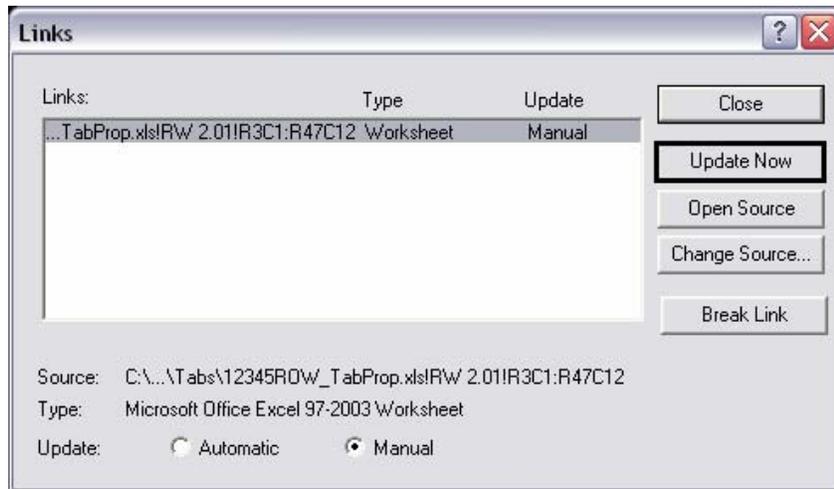
Note: When a linked excel file is opened and modified in Excel a hatched pattern displays in your MicroStation view. This is to indicate that the file is being accessed from an outside program.

Parcel No: 1
Owner: Dianne M. McNamara & Ronald Eggleston
Address: 5937 Highway 86
 Elizabeth, CO 80107
Location: SE 1/4 Sec 9
Area of Parcel: 20,995 s.f.
 (0.51 acre)
Net Area: 20,995 s.f.
 (0.51 acre)
Left: 1,709,693 s.f.
 (39.25 acre)

6. Save and Exit in Excel; the MicroStation file will update.

The screenshot shows a MicroStation data table with the following columns: Parcel No., Owner, Address, LEGAL, Area (sq ft), Area (acres), Perimeter (ft), Perimeter (mi), Area (sq ft) - Total, Area (acres) - Total, The Current Sheet No., and Remarks. The table contains several rows of data for different parcels, including parcel numbers 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

7. To update MicroStation without exiting Excel: Save project in Excel, select **Edit>Links** from the MicroStation pull-down, and in the **Links** dialog **<D> Update Now**.



4. Reference Files for Plan Sheets

Chapter Introduction

Two approaches can be used to assemble plan sheets. In the first part of this chapter the ‘manual’ method of attaching reference files will be used. This is followed by using the InRoads sheet generation command known as the Plan and Profile Generator.

The following labs are designed to illustrate workflows. The contents of the reference files are not important to this process and may not accurately reflect the contents and layout of a final plan sheet.

Lab 8 – MicroStation Reference files

This lab will relocate the border sheet to align with the design graphics.

Moving border sheets to align with design information

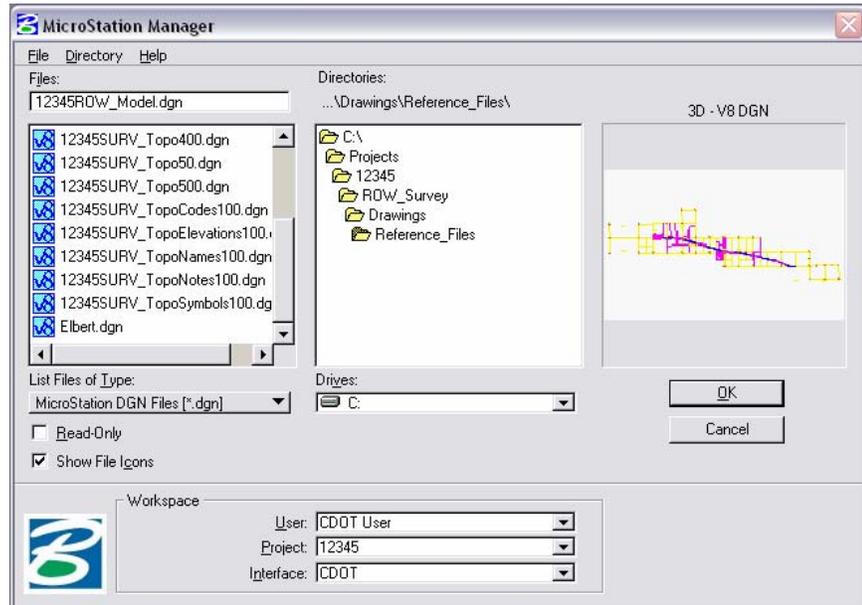
In the previous chapter graphics were moved to align with the title sheet. This may suffice for information that is not coordinate dependent but is not an acceptable practice in the generation of engineering drawings. The following workflow will result in a product that conforms to CDOT standards.

This first lab uses the ‘manual’ method for designing a plan set layout and assembling the plan sheets. A following lab will use the InRoads Plan and Profile generator command to ‘automate’ the process.

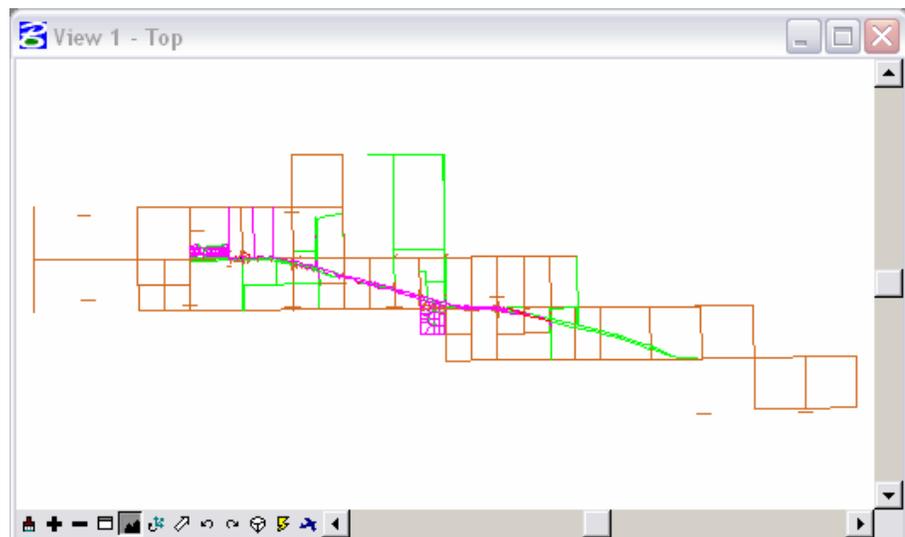
The process for this lab is:

- Define the plan sheet limits, rotation, and size(s)
- Create a sheet file containing a border for each plan sheet
- Attach the appropriate reference files
- Rotate sheets normal to the MicroStation view for ease of use
- Define reference file clip boundaries

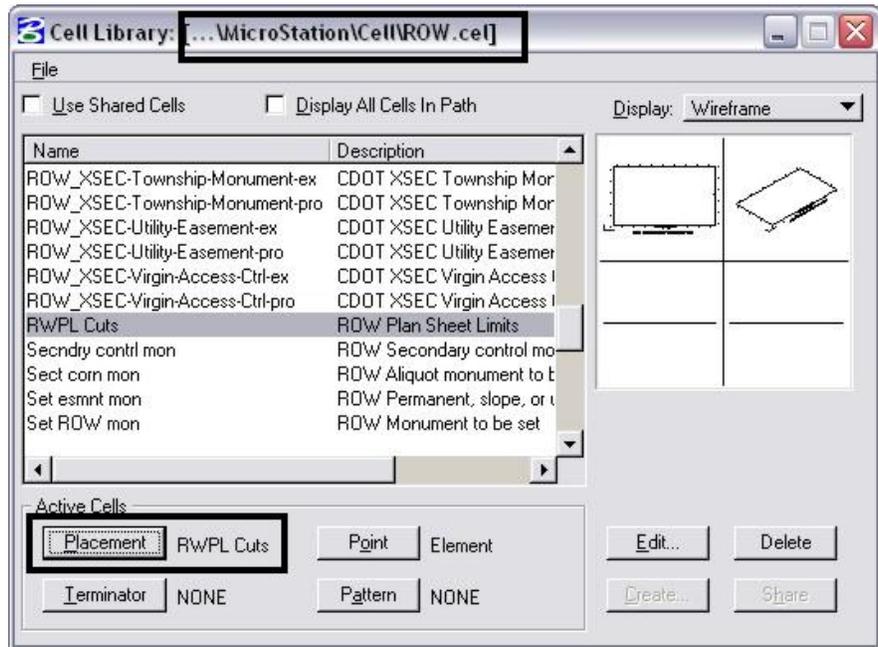
1. **Open** the MicroStation file 12345ROW_Model.dgn



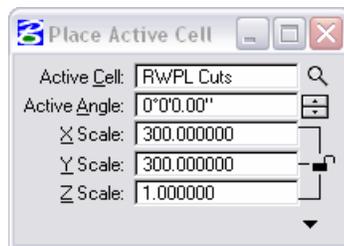
2. Select the MicroStation Fit command to expand the view to show all graphics.

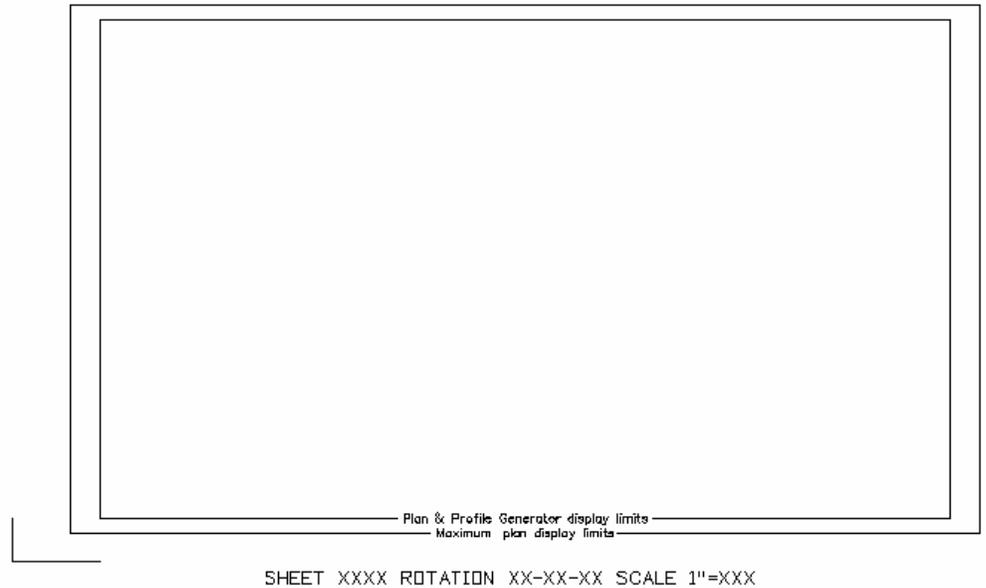


3. Select **Element > Cells** to verify the **ROW** cell library is attached. If not, select **File > Attach** from the **Cell Library** dialog and attach ROW.cel from the cell library list.



4. <D><D> rapidly on the cell name **RWPL Cuts** to identify this as the 'Placement' cell and activate the place cell command.
5. In the **Place Active Cell** dialog, set the **X** and **Y scale to 300**, and **Active Angle** to **0**. A **Z** scale of **1.0** should be used. An X and Y scale of 300 is used because this reflects the scale the survey control diagram sheets will be developed at.

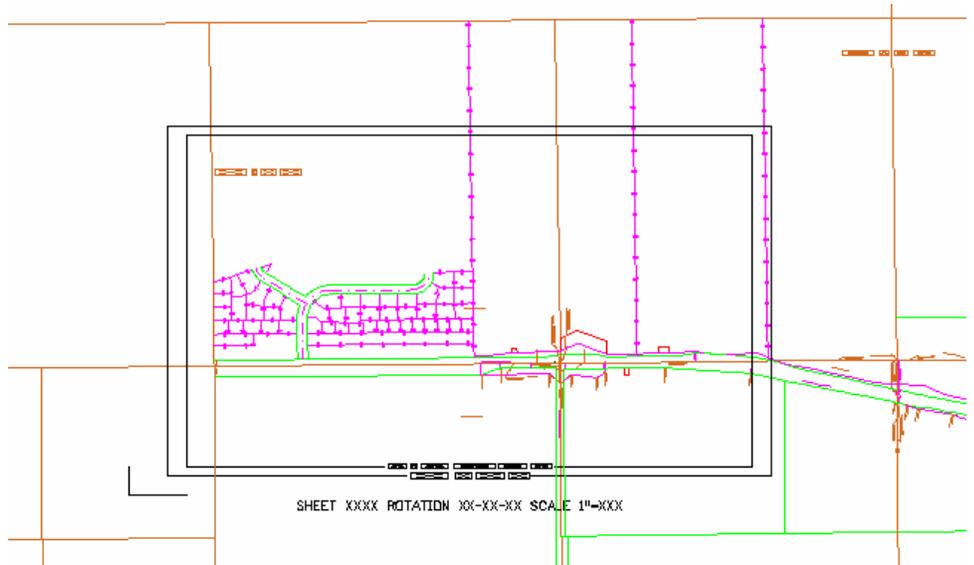




About this cell:

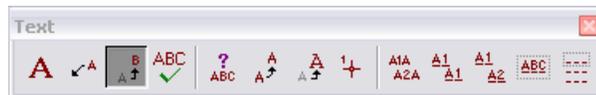
This cell was created to facilitate the planning of eventual sheets. It contains text characters that can be edited to indicate sheet name, rotation, & scale. The outer line-work depicts the maximum display limits for graphics as it relates to the border sheet. The inside shape reflects ½ inch inside this maximum limit. It also reflects the maximum limits that would be displayed if the sheet was created with the Plan and Profile generator command within InRoads. The ‘dots’ in the vertical lines represent ½ of the sheet height and assist in centering planimetrics information on the sheet. All information is written to the MicroStation level ***DRAFT_INFO_No-Plot***.

6. <D> to place the cell in the MicroStation file, move as necessary. These graphics will define the limits for the plan sheet when referenced back to the border.



The above graphics approximately represent the required limits for the first sheet. Position the sheet limit cell as you see fit.

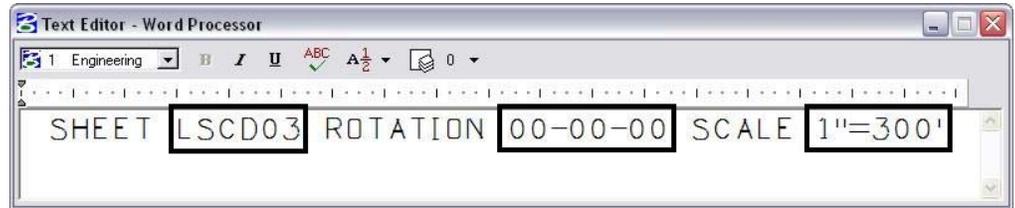
7. Use the **Edit Text** command to complete the text at the bottom of the sheet. This will assist in managing the sheets as reference files.



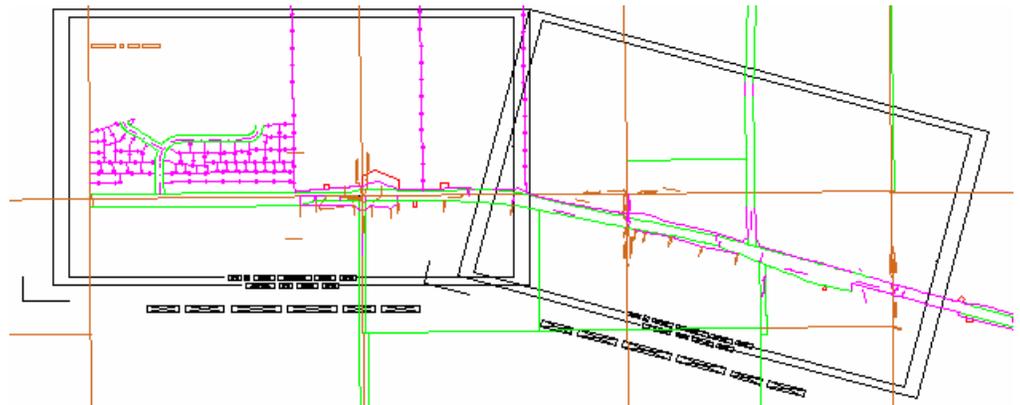
8. <D> on the text at the bottom of the layout sheet.



9. Replace the appropriate sheet information in the *Text Editor* as follows:
LSCD03C
00-00-00
1"=300'

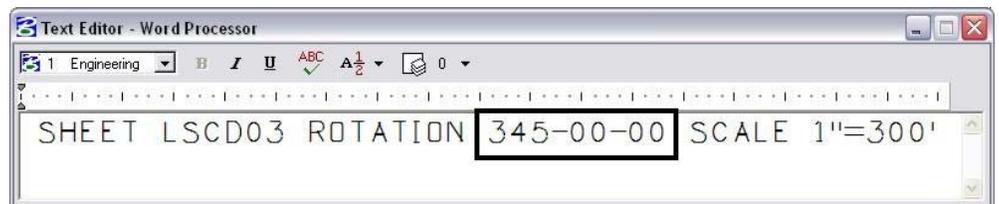


10. <D> anywhere to accept the change.
11. Use the MicroStation **Copy** command to duplicate the graphics for the second sheet.
12. Use the MicroStation **Rotate** command to align the graphics for the second sheet (345 degrees, -15 also works).



Replace the appropriate sheet information at the bottom of the copied sheet.

13. In the *Text Editor* enter:
345-00-00



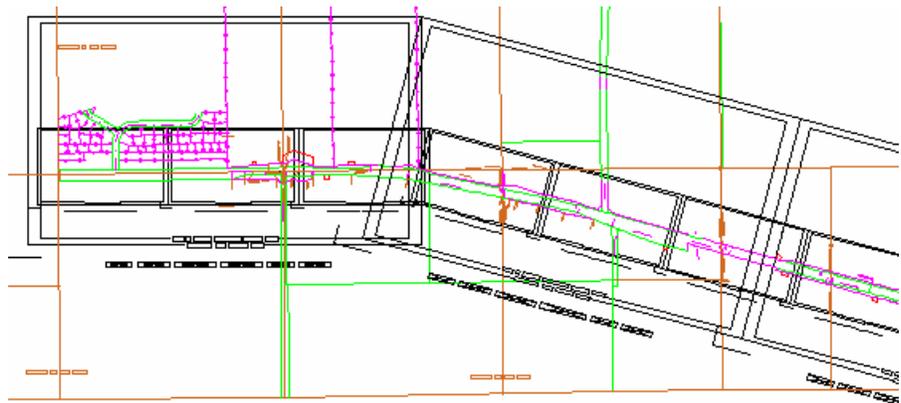
14. Continue planning the sheet layout for the remainder of the project.



Complete a few sheets to understand the concept. It is not the intention of this lab to complete the layout for the entire project.

Note:

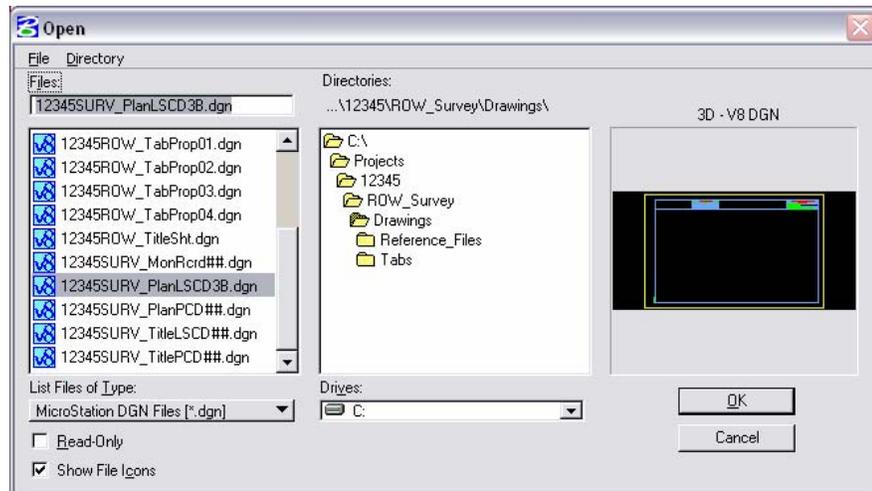
Sheets at other scales could also be laid-out at this time. For instance, Monumentation or right of way plan sheets at a scale of 1"=100'



A major benefit of this workflow is that the eventual limits and orientation of sheets are determined early in the process. These sheet limits can be used to identify proper positioning, size, and rotation of text and tables. This is in addition to acting as a guide for attaching the planimetrics to the border sheets.

Assembling the plan sheets

15. *Open* the MicroStation fileROW_Survey\Drawings\
12345SURV_PlanLSCD3B.dgn



This is a file that you will be using to assemble drawing 4 of this plan subset. This will be accomplished by aligning a cell representing the border with the planimetrics. The current graphics will not be used.

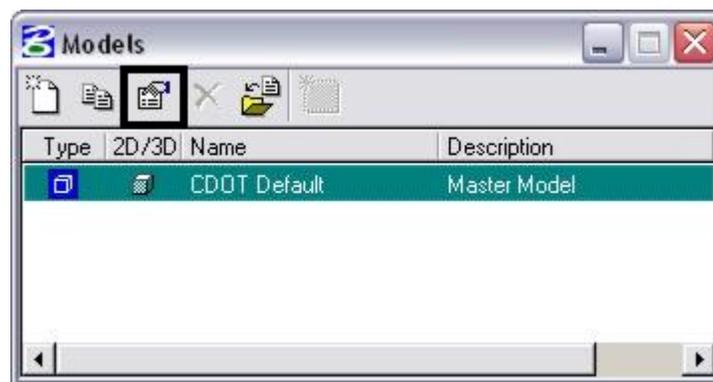
16. **Delete** the border sheet graphics contained in the MicroStation file.

This sheet will be developed at a scale of 1:300. The MicroStation model properties require modification so that the annotation scale matches the plot scale.

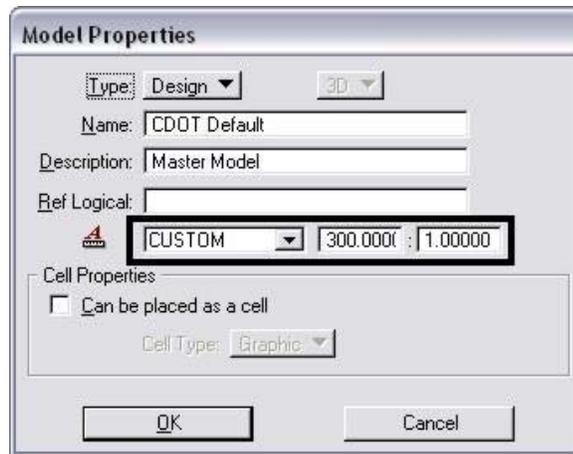
17. **Open** the Models dialog.



18. <D> the Edit Model Properties icon.

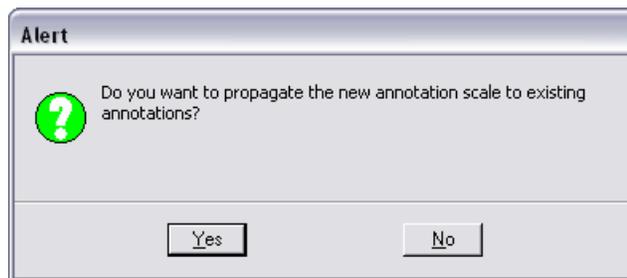


19. <D> the drop-down list and select **CUSTOM**, then input **300:1**



20. <D> OK

21. <D> Yes in the Alert dialog.

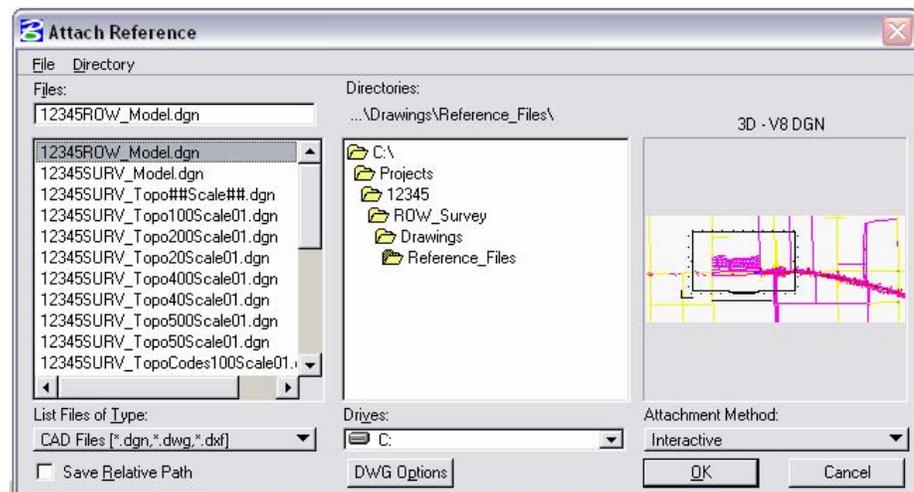


22. Attach the file used in the geometry training portion of this course from the ... \ROW_Survey\Drawings\Reference_Files folder;

- 12345ROW_Model.dgn

23. Select File > Reference

24. From the References menu select Tools > Attach

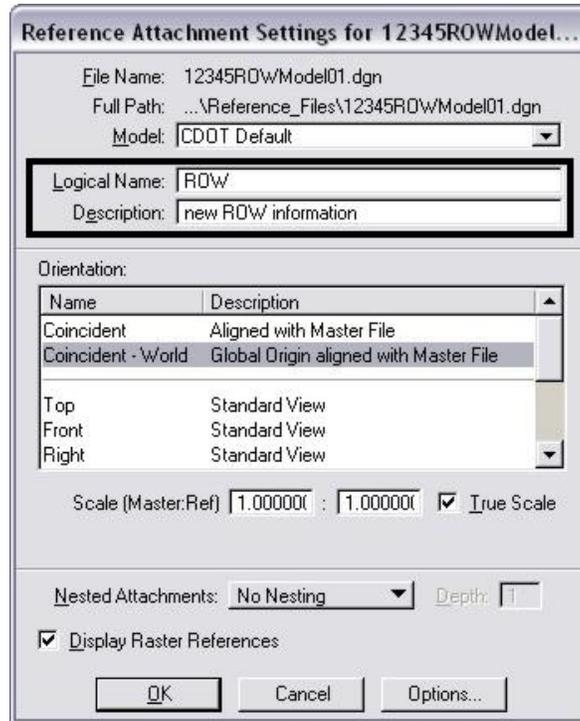


25. **Highlight** the file 12345ROW_Model.dgn and <D> OK

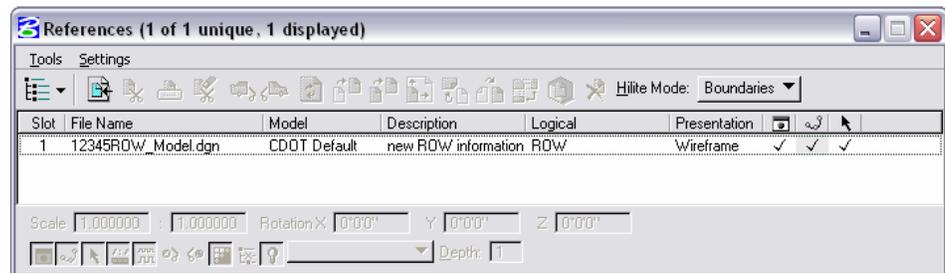
The Reference Attachment Settings dialog appears for the 12345ROW_Model.dgn file.

26. Enter a Logical Name and Description as shown.

27. <D> OK



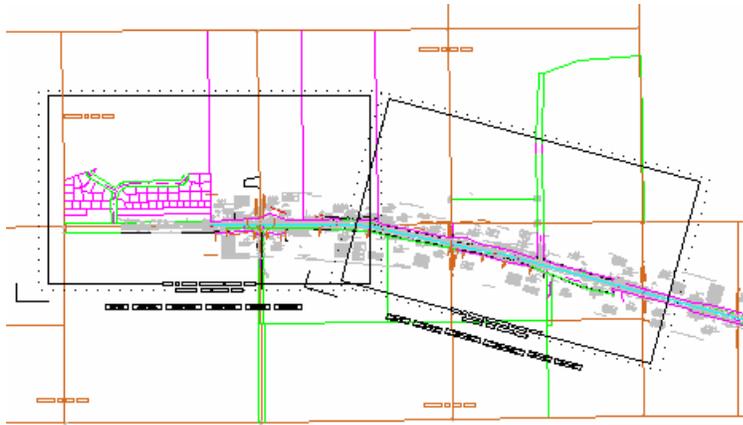
The file is now attached.



28. Close the References dialog.

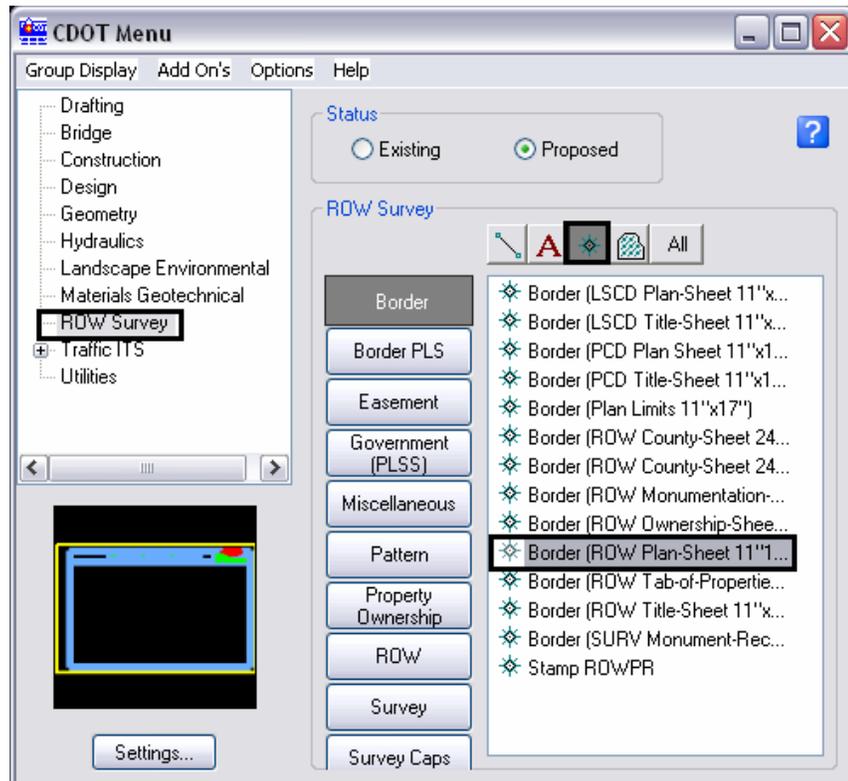
29. Select the MicroStation Fit command.

30. Window or Zoom into the beginning of the project.



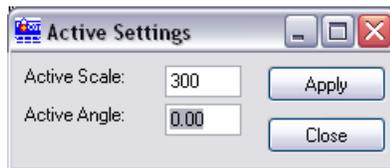
Note the graphics placed previously to indicate sheet limits.

31. Place the *cell* called ROW Plan border sheet from the CDOT Menu.

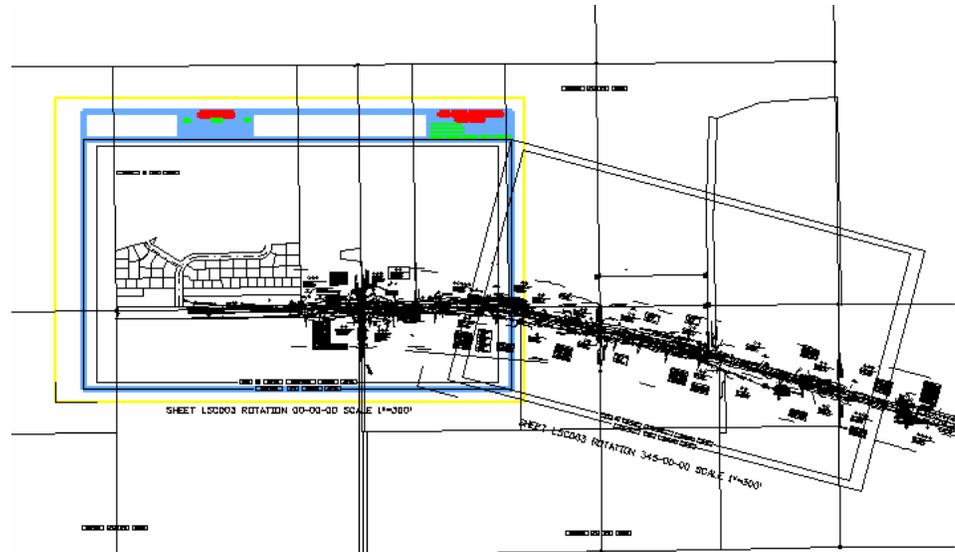


32.

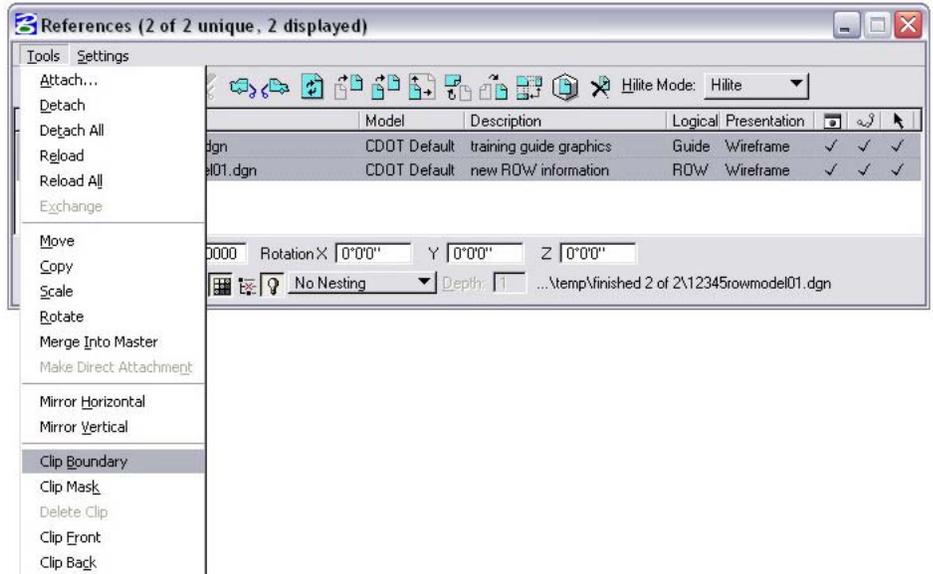
33. <D> Settings to and change the **Active Scale** to **300** and <D> Apply



34. Place the sheet border cell so the lower-left corner coincides with the corner indicated on the sheet limits cell placed previously.
35. <D> in the upper left corner of the plan sheet to place supervisor contact information..



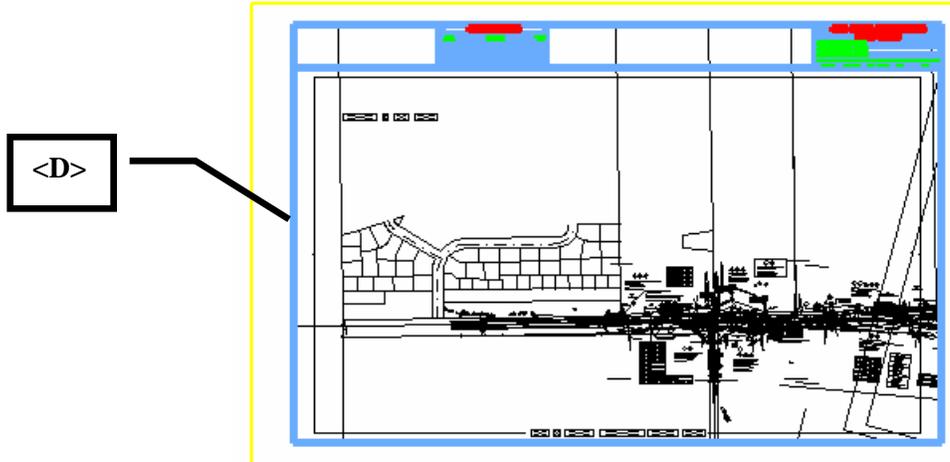
36. In the Reference dialog, identify the reference file and select **Tools > Clip Boundary**



37. In the Set Reference Clip Boundary dialog, select the **Element** Method.



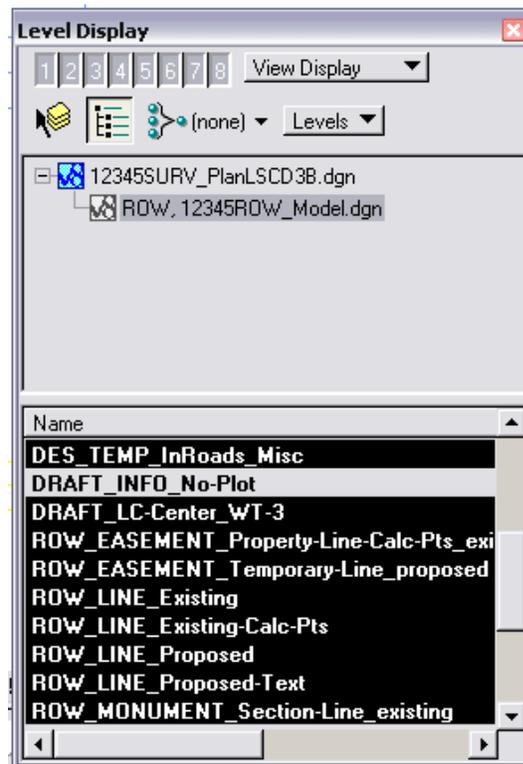
38. <D> on the shape inset 1/2 inch from the border.



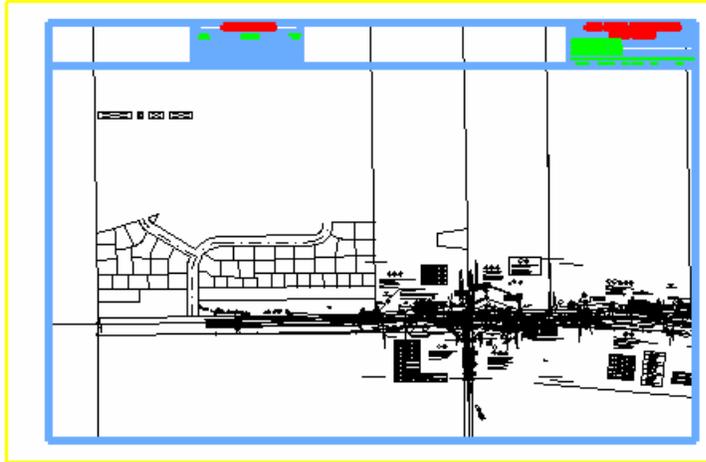
39. <D> anywhere to accept the clip.

The plan sheet display limits are now constrained to a desirable limit.

40. Turn off level *DRAFT_INFO_No-Plot* in the reference file *12345ROW_Model.dgn* to turn off the sheet lay-outs (Select Settings > Level Display).



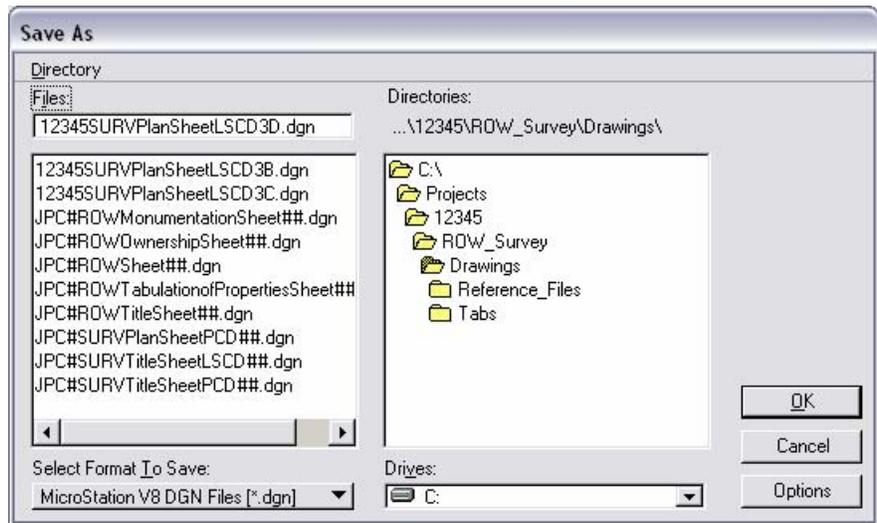
Make appropriate edits to the title block and add any sheet specific information necessary.



Using the tentative (snap) button <T> to query coordinate values that correctly reflect project coordinates. Additionally an InRoads command, such as tracking, will verify the graphics are coordinately correct.

Once the first sheet is done, the second sheet is much easier. It is easier because the sheet file can be duplicated with the reference files already attached. Moving the border sheet and redefining the clipping boundaries will define subsequent sheets.

41. Select File > Save as, input name 12345ROWSURVPlanSheetLSCD3D.dgn

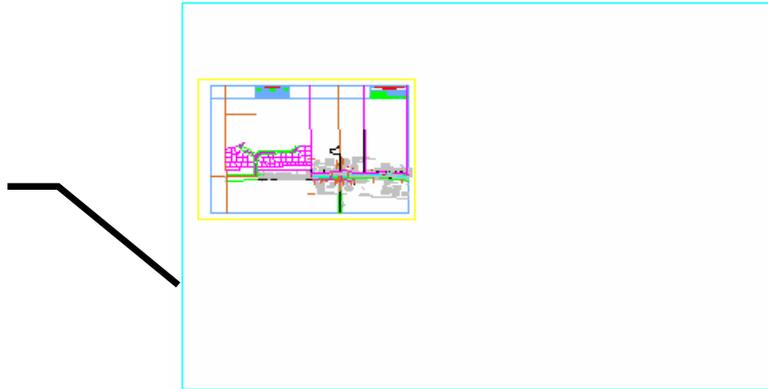


42. <D> OK

Note: The Save As command will automatically save the current drawing to the hard drive, then copy and rename to the specified file name and open the new drawing.

43. Place a MicroStation *fence* over an area that would encompass the next sheet in the set.

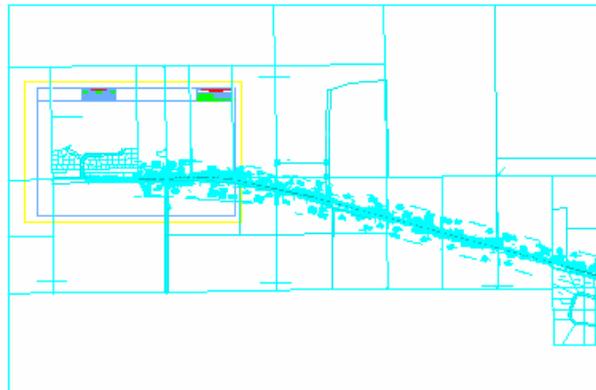
Fence



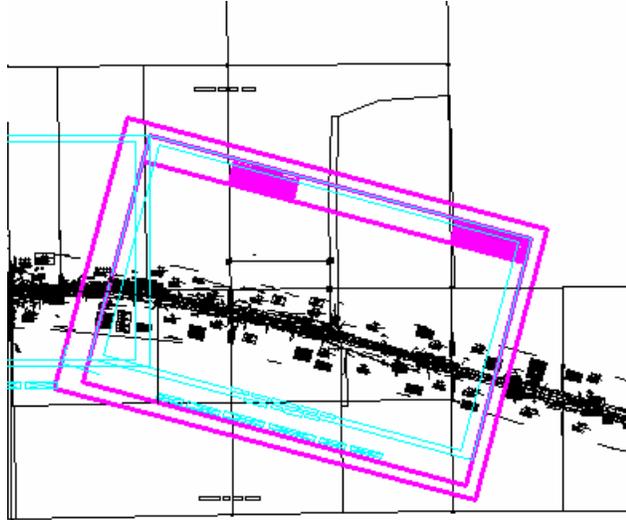
44. In the References dialog, identify the 12345ROW_Model.dgn file and Select Tools > Clip Boundary
45. In the Set Reference Clip Boundary dialog, select the **Fence** Method.



46. <D> on the MicroStation screen to accept the new clip boundary.



47. **Turn On** the level **DRAFT_INFO_No-Plot** in the reference file **12345ROW_Model.dgn** to turn the sheet lay-outs back on.
48. Use the MicroStation **Move** command to relocate the border sheet. Also **Rotate** the border sheet to align with the predefined sheet limits.

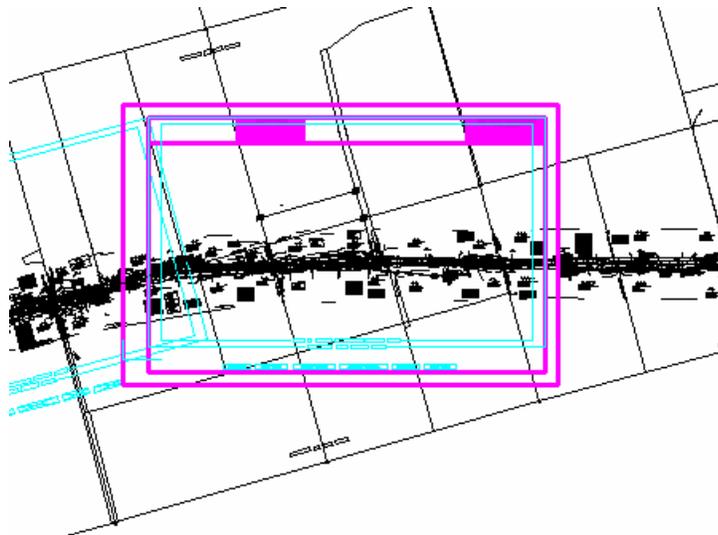


Rotate the MicroStation view so that the sheet is normal to the view.

49. Key-in **rv=0,0,15** (rotate view = value) for this **3D** file
rv=15 if in a **2D** file.

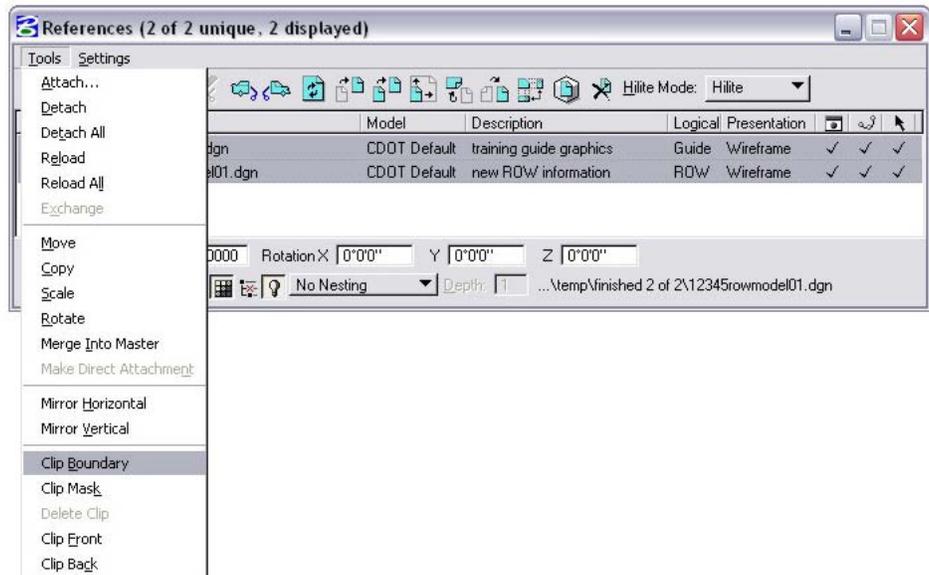
50. <D> on the MicroStation screen to initialize the rotation.

Note: The above key-ins vary based on the dimension of the MicroStation file, 2D or 3D. When working in a 3D file, the key-in is: rv=0,0,15 (rotate view=x-value, y-value, z-value). Rotation is specified in relative to the Z axis as that is the axis perpendicular to the view. Also, rotating a MicroStation view simply rotates the viewing of the graphics. The coordinate system is still relative to the graphics and any coordinate or alignment information extracted will be correct.



Define a reference clip boundary, as you did earlier.

51. In the Reference dialog, identify the reference file and select
Tools > Clip Boundary



52. In the Set Reference Clip Boundary dialog, select the **Element** Method.



53. <D> on the shape inset 1/2 inch from the border.



54. <D> anywhere to accept the clip.

55. **Update** information in the title block of the sheet as necessary.

56. Select **File > Save Settings**

This same procedure can be repeated to complete the remainder of the sheets.

5. InRoads Plan & Profile Generator

Chapter Introduction

In the previous reference file exercises, manual methods were employed to assemble plan sheets. As delivered, the InRoads software contains various drafting utilities. One of these is a routine referred to as the Plan and Profile Generator, or PnP for short. The PnP can be used to automatically generate plan sheets based on user defined criteria such as sheet scale, naming, and the selection of files to be incorporated.

InRoads Plan and Profile generator can be used for:

- Creating Roadway plan sheets depicting both plan and profile views on a single sheet.
- Full plan view sheets (suitable for Roadway or Right-of-way plans)
- Double plan views on a single sheet
- Full profile view sheets

Preparing to run the Plan & Profile command

Project specific parameters need to be defined prior to command execution:

- Verification of Border Cell
- Location of a MicroStation seed file
- Location for sheet output (project directory)
- Length along the alignment that will display in plan view
- Left and right offsets from a horizontal alignment for plan view display

Required Resources

A number of resources are required for this command to operate fully.

Horizontal Alignment

Plan view limits are defined relative to a horizontal alignment (length and right/left offsets). Therefore, a project specific Geometry Project must be loaded into memory. A specific horizontal alignment will need to be specified to use as a basis for sheet creation.

Digital Terrain Models

Required for profile views only – not relative to this exercise.

Cells

Cells are used to place the border sheet along with north arrows for the drawing. The cells used are in the cell library, **General.cel** and must be attached for the Plan and Profile Generator to operate correctly.

Border Sheet

A Cell is used to generate the border sheet and is placed in each drawing created.

Source cell library: C:\Program Files\Workspace-CDOT\Standards-Global\MicroStation\cells\General.cel

Cell Placed for ROW: SHEET_ROW-Plan-Sheet

Scale

Before the P&P command is run, the user needs to determine the final plot scale of the drawings being created. Current preferences exist for 20, 40, 50, 100, 200, 300, and 500 scale plots for plan sheets, double plan sheets, plan and profile sheets, or ROW sheets. This is reflected on specific tabs within the command. See the following section for additional information.

Station Lock – Warning!

Before running the Plan and Profile Generator command. Disable the Station lock in the InRoads Locks tool bar. Failing to do so will result in truncated sheets.



Lab 9 – Project Specific Plan Sheets

Introduction

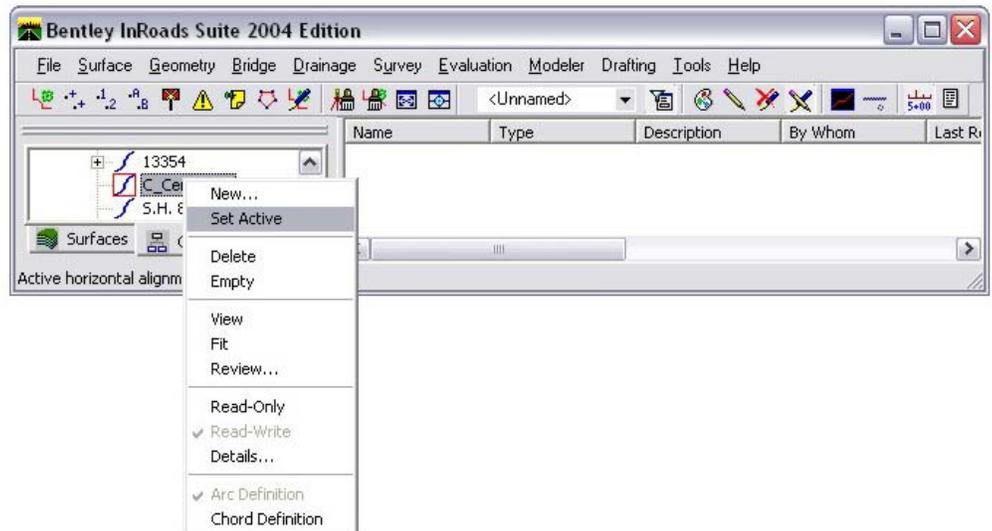
The following exercise will step through creating a full plan view depicting right of way plan sheets (sheet subset 5) at a scale of 1"=100'. The plan sheets will be centered along the design alignment for the project S.H. 86.

Open a MicroStation File

1. *Open* the MicroStation file **12345ROW_Model.dgn** from the ... \Survey_ROW\Drawings\Reference_Files folder.

Note: The MicroStation file opened is immaterial and only acts as an interface to InRoads. New plan sheets will be created and the open drawing will not be impacted.

2. *Load* the geometry project **12345_ROW** if not already in memory
3. Select **Tools > Options [Factors]** and set the global scale factors to **100** then <D> **Close** to dismiss the **Options** dialog box.
4. <R> on the alignment **C_Centerline** and select **Set Active** from the fly-out list.



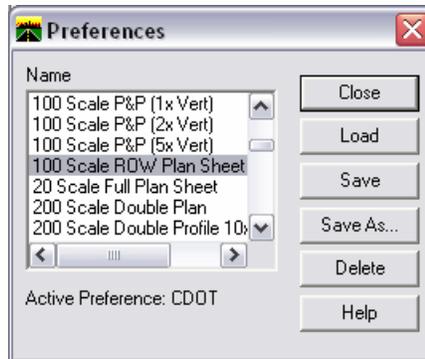
5. Select **Drafting > Plan and Profile Generator...** from the InRoads interface.

By default, the dialog will populate with the **CDOT** preferences (100 horizontal scale by 1x vertical exaggeration Plan & Profile sheet).

Note: Drafting notes is an InRoads Application Add-In. If the Drafting category is not shown in the InRoads menu bar, select **Tools > Application Add-Ins** and enable **Drafting Production Add-In**.

6. Select the **Preferences** button (at the bottom of the **Plan and Profile Generator** dialog).

7. Select the preference named - **100 Scale ROW Plan Sheet**
8. <D> Load
9. <D> Close

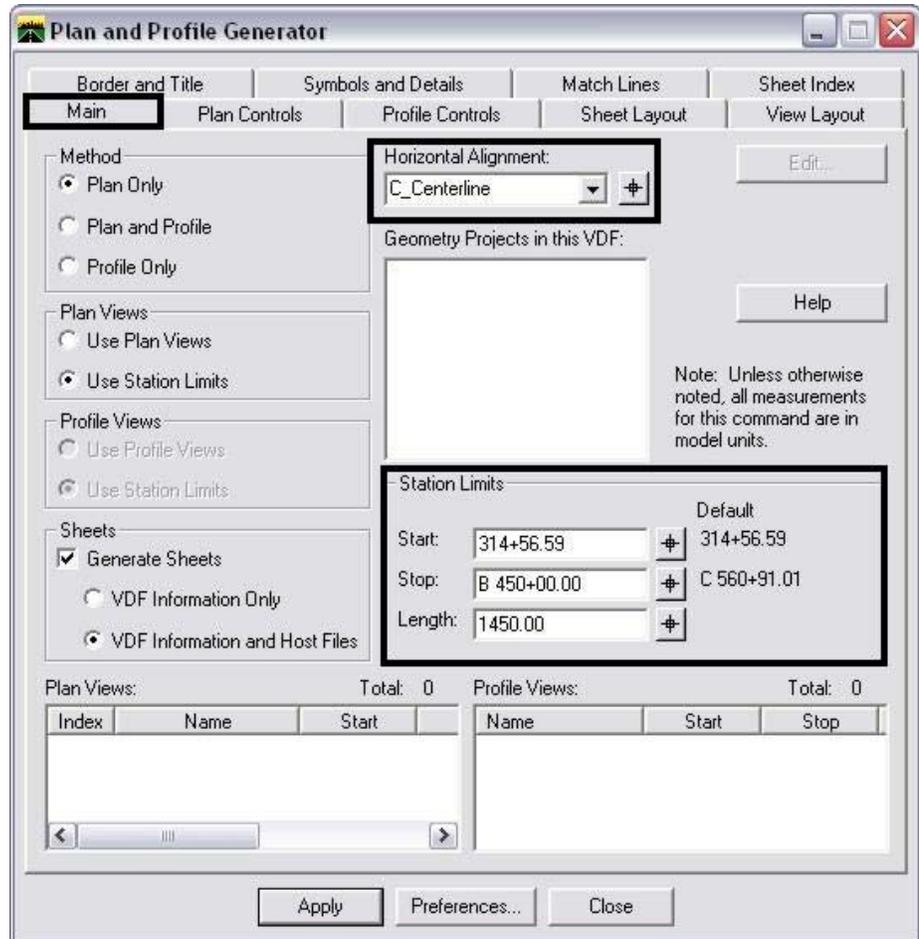


Preferences developed for ROW are:

- 100, 200, and 300 scale full plan view ROW Sheets

Main Tab

By default, the active horizontal alignment and the begin/end station limits for said alignment will populate the dialog.



10. Load the appropriate *Preference* (if not done in step 6)

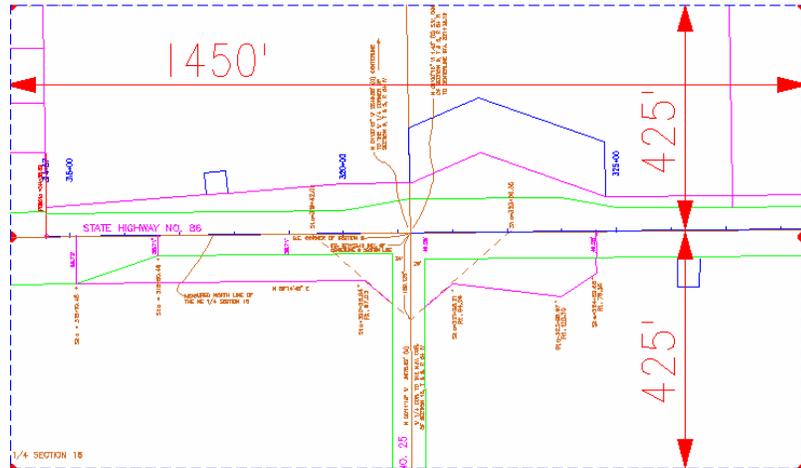
11. Select the appropriate *Horizontal Alignment*
(the sheet will be centered on the defined alignment).

12. Redefine start and stop station limits to:

- Start: 314+56.59
- Stop: B 450+00.00

Note: The 'B' in the 'stop' station defined above is required as it indicates the stop station falls within a station-equation range.

Length defines the length along the alignment that will fit in a plan view. 1450 feet is the default for a 100 scale 11" x 17" plotted sheet.



Changing Scale:

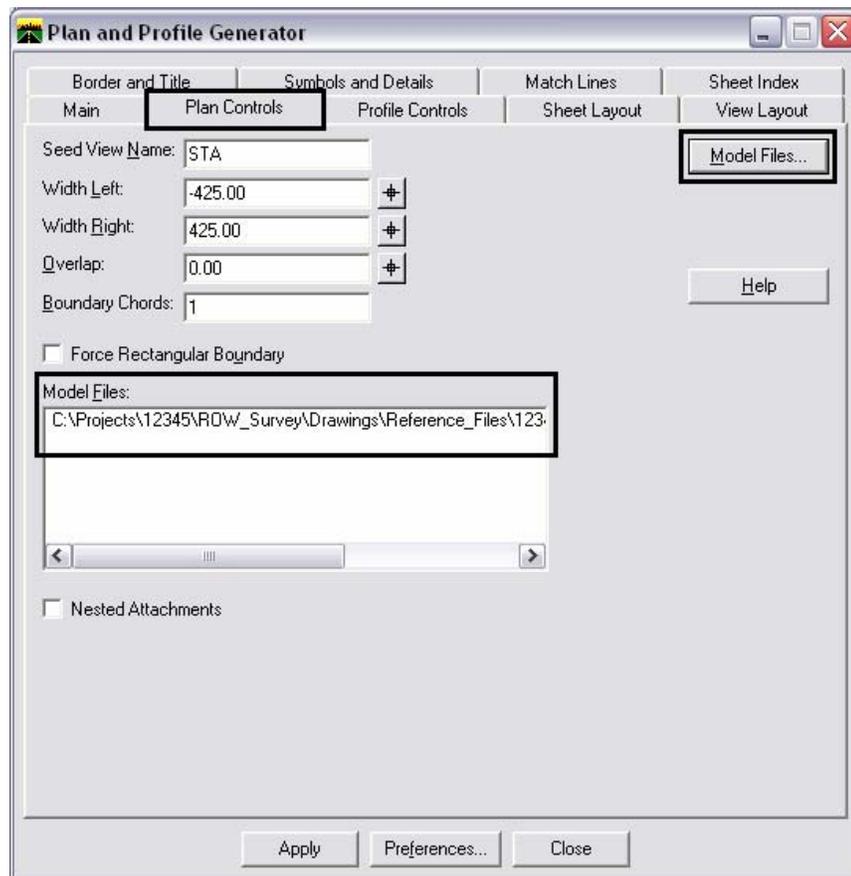
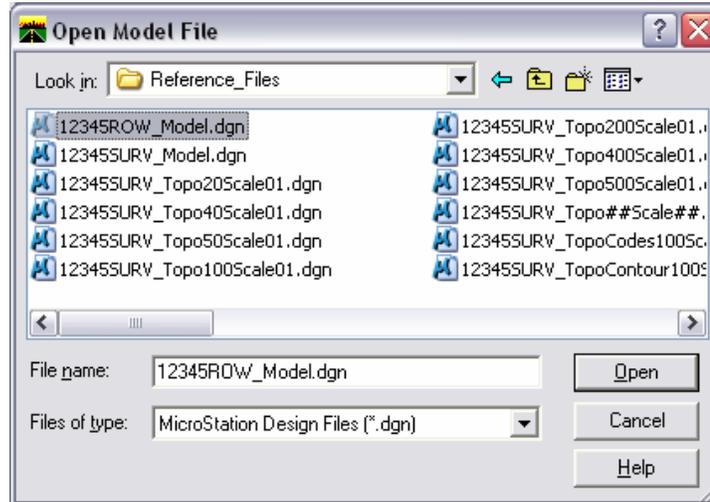
A 200 scale plot will display 2,900 feet along the alignment in plan view, a 300 scale plot will display 4,350 feet.

If something other than 100 scale is desired, the user must proportionally change:

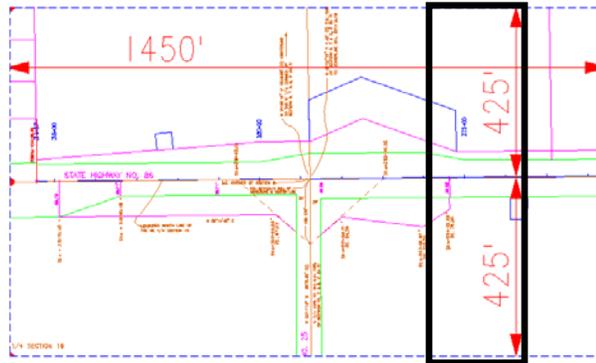
- Main tab – modify Length
- Plan Controls tab – modify Width Left, & Width Right
- View Layout tab – modify Scale
- Symbols and Details – modify Scale

Plan Controls tab

13. Select the **Model Files** button to pick the *Drawing files* (references) for display in plan view.
14. Select the file 12345ROWModel01.dgn in the **Open Model File** dialog.
15. <D> Open



Width Left and **Width Right** define plan view limits perpendicular from the reference line (left is negative).



The **Boundary Chords** setting will create a clipping limit that will fit the extents of the plan window area. This reference file clipping edge should be considered a “first pass limit” and may have to be edited on curved portions of the corridor path in locations where the desired limits extend beyond this “calculated” clipping limit. This plan limit editing, along with any shifting of the plan window position, is accomplished on the **Sheet Index** tab after the sheets have been created or through the use of the MicroStation references dialog.

Model Files & Levels

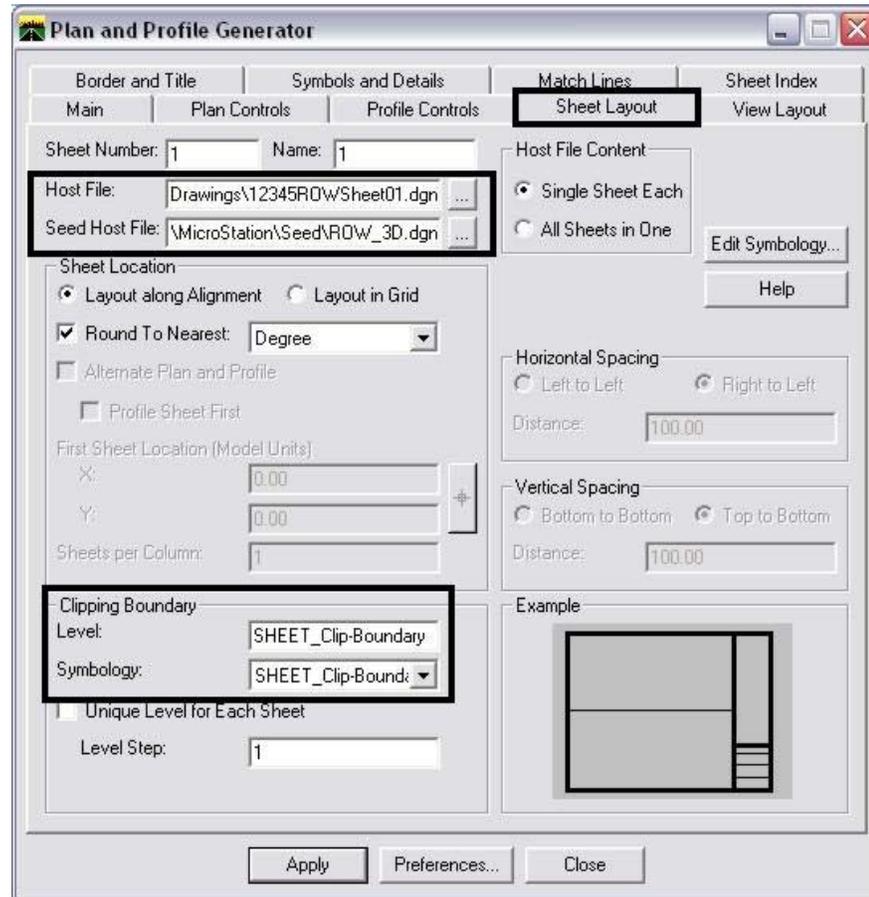
The Model files selected will be attached as reference files. The attached files will have all levels turned on that contain data. If additional data (levels) are added to the referenced files after the sheets are created, the user is required to turn on the appropriate levels through the use of the references dialog box.

Additionally, the files referenced will have the design file ‘Default’ model attached. The user should not use any model space other than ‘Default’.

Profile Controls tab

No action required

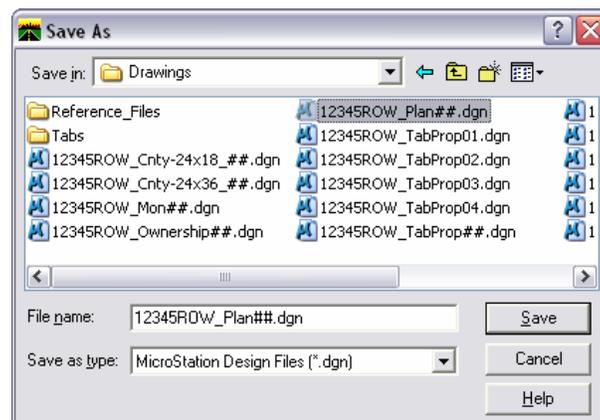
Sheet Layout tab



16. <D> the ... button next to **Host File** to identify the path and initial sheet name for the new drawing set. The **Host File** refers to the new MicroStation plan drawings that will be created by this tool. The last number, "1", will be automatically incremented as each new sheet is created. Set to the project directory, i.e.

.....ROW_Survey\Drawings\ 12345ROW_Plan01.dgn

17. <D> **Save** in the Save As dialog.



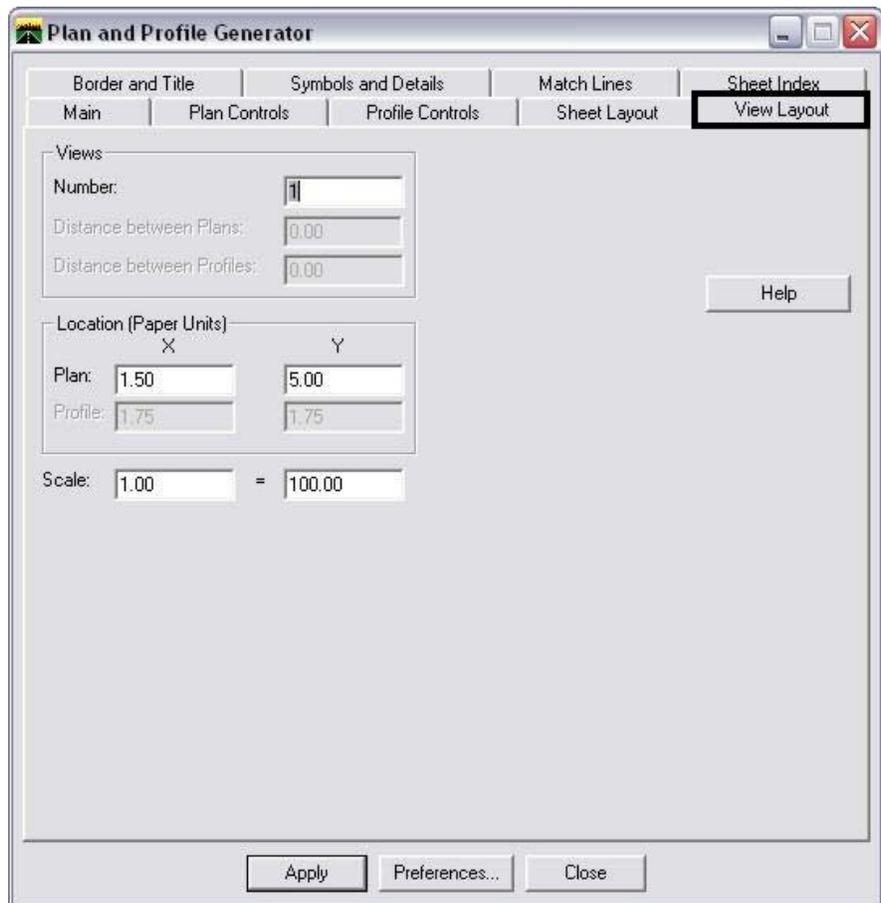
18. The **Seed Host File** is the ‘prototype’ file used to create the **Host** files and should be set to:

C:\Program Files\Workspace-CDOT\Standards-Global\MicroStation\Seed\3D-Seed_CDOT.dgn

19. Make sure the **Level** and **Symbology** options in the **Clipping Boundary** section display **SHEET_Clip-Boundary**.

View Layout tab

This tab sets location (origin) for the plan views relative to the border sheet. No user input is required in this dialog.



Note: The **Location** of the **Plan** position is computed from the outside edge of the border sheet in paper (plotted) units.

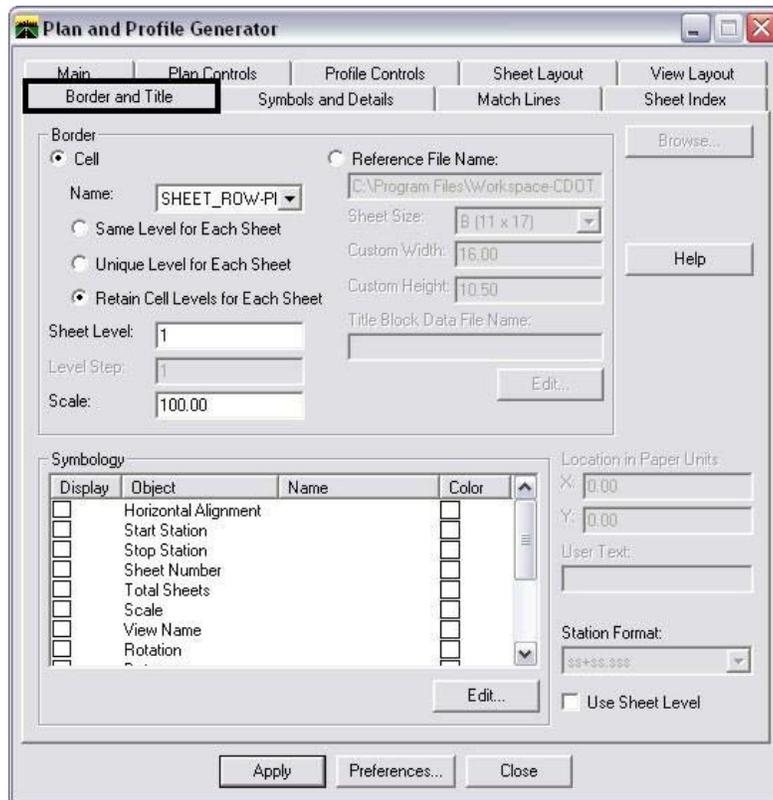
Border and Title tab

The only user input on this tab is to ensure the correct cell is specified for the border sheet. No other user input is required in this dialog unless creating sheets at a scale other than 1"=100'.

Source cell library: C:\Program Files\Workspace-CDOT\Standards-Global\MicroStation\cells\General.cel

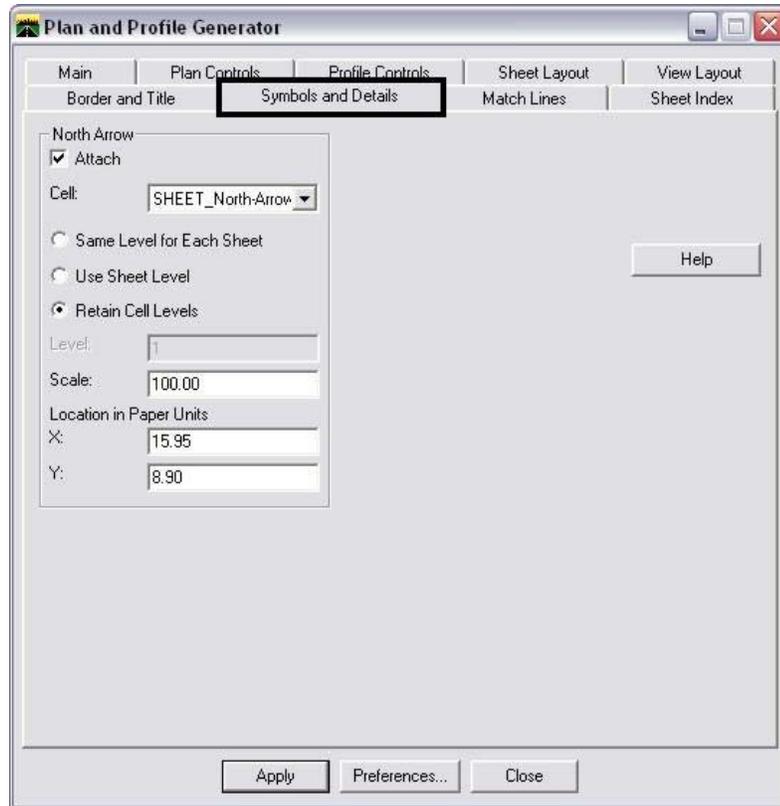
Cell Placed:

20. Verify Cell Name: SHEET_ROW-Plan-Sheet



Symbols and Details tab

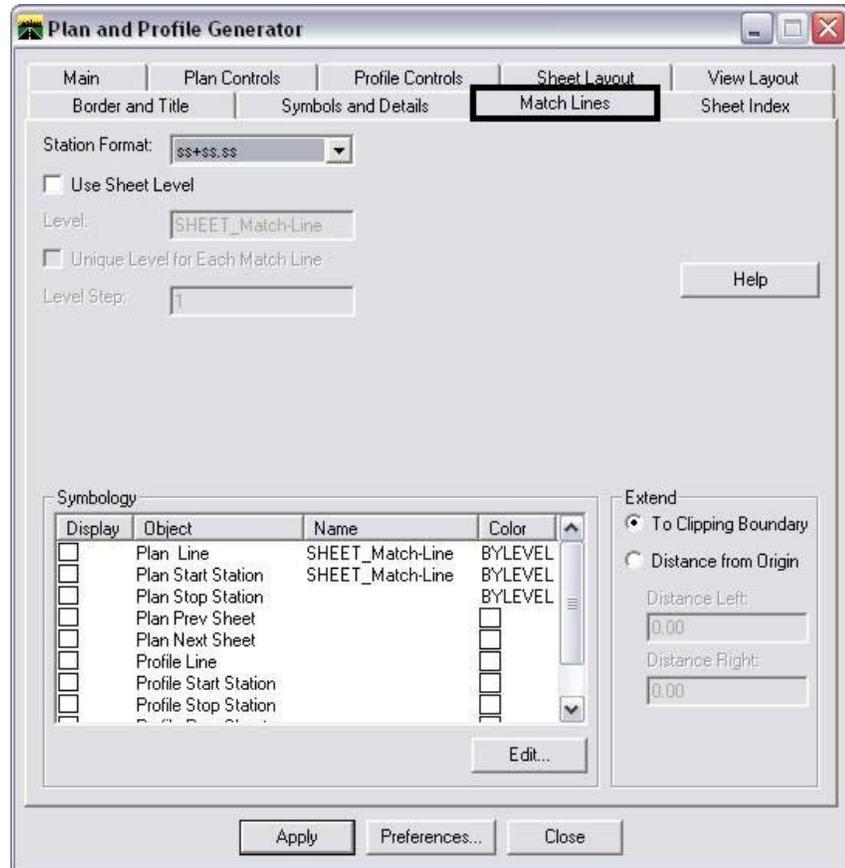
No user input is required in this dialog unless modifications to the stored preference are required.



The **North Arrow** position set by the **Location in Paper Units** and is set to the upper right corner of the sheet. This is a rough placement and will likely have to be moved for clarity and conflicts on many sheets. Once the sheets are constructed each sheet should be checked for optimum cell position.

Match Lines tab

No user input is required in this dialog. Match lines are not being used for ROW sheets.



Executing the Plan & Profile Command

Once the Apply command is executed, the workflow process for this command follows the following sequence:

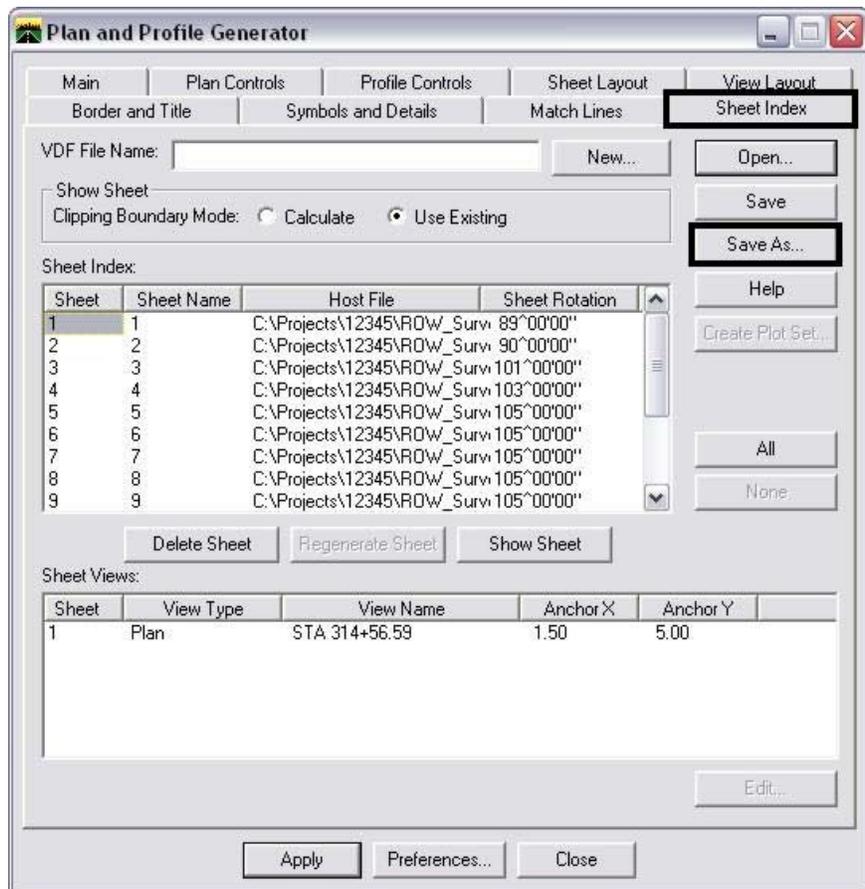
- A) Plan view reference limits are established.
- B) New drawing files are created based on the host file name.
- C) Each new drawing file has 3 items generated.
 1. Plan views
 2. Border sheet placed as a cell in each generated drawing
 3. North arrow placed on each sheet
- D) The Plan and Profile dialog (sheet index tab) will populate with sheets created and sheet limits.

Sheet Index tab

Nothing is required by the user on this tab prior to executing the PnP command. A summary of sheets created is displayed after successful execution of the command.

21. <D> **Apply**, the routine will run and MicroStation will cycle through the sheets as they are created – be patient and wait for the command to complete.

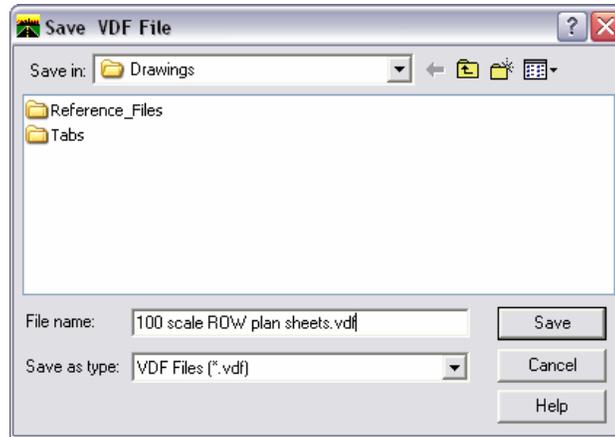
The Sheet Index tab will display a list of sheets created and MicroStation will display the last sheet created.



22. Select **Save As** from the Sheet Index tab to store a project specific **View Definition File** (VDF). A VDF file allows sheet definitions to be recalled and modified in subsequent MicroStation/InRoads sessions if necessary.

23. Name the file **100 scale ROW plan sheets.vdf**

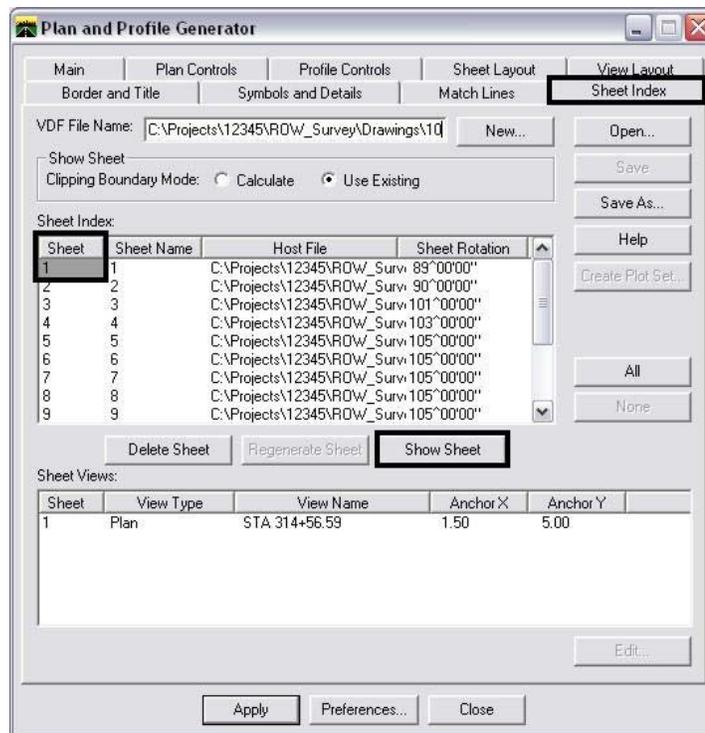
24. <D> **Save**



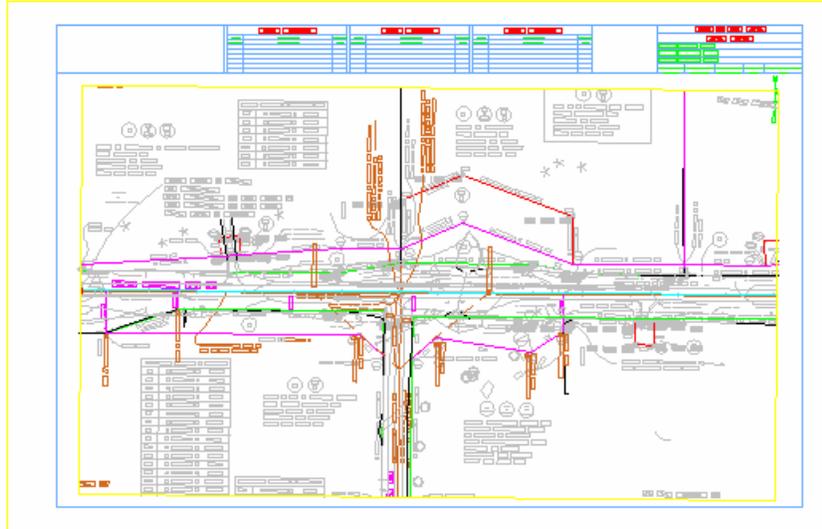
Displaying sheets

By highlighting a specific sheet in the Sheet Index tab and selecting **Show Sheet**, MicroStation will open the selected drawing.

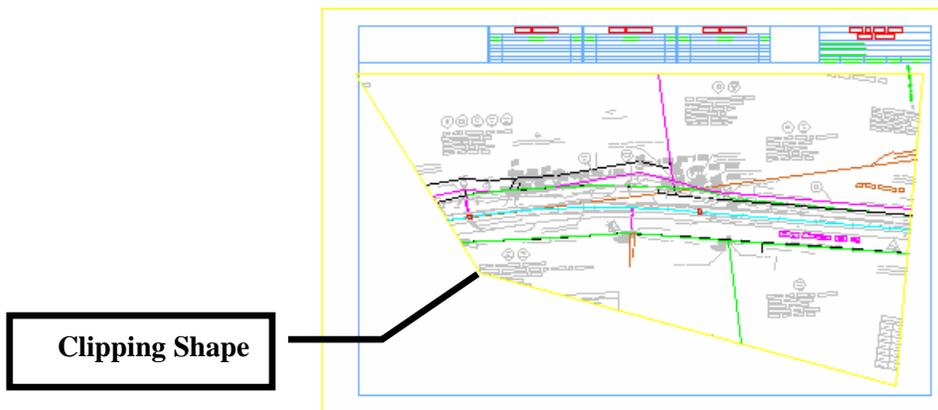
25. Identify *Sheet 1* and <D> Show Sheet



MicroStation opens the identified sheet



26. Identify *Sheet 2* and <D> Show Sheet
27. Use the MicroStation **Modify** command to adjust the clipping shape to any new location.
28. <D> Show Sheet to redefine the clipping limits after modifying the clipping shape.

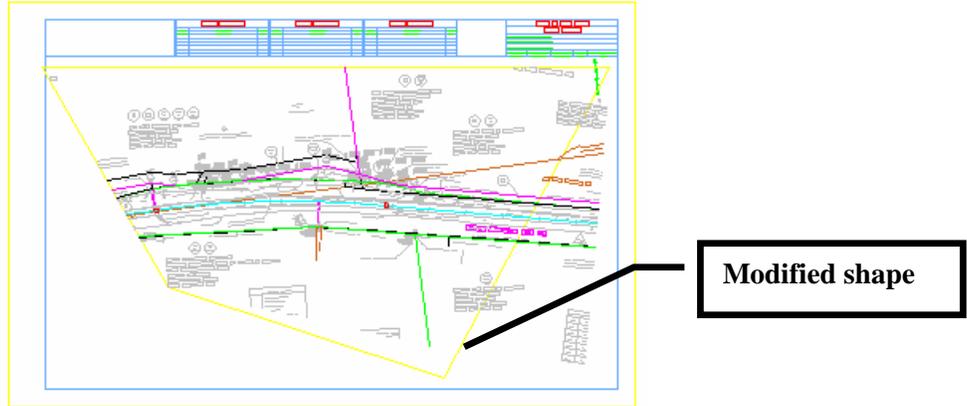


Note: Other modification tools such as insert vertex and delete vertex can be used also.



Standard MicroStation References commands can also be applied.

29. Use the MicroStation **Modify** command to adjust the clipping shape to any new location.



30. Select **File > References** from the MicroStation menu bar.

31. **Highlight** the 12345ROW_Model.dgn file.

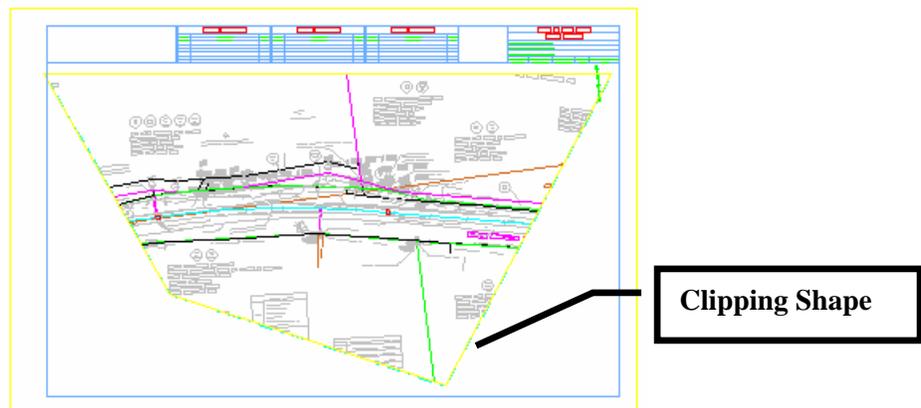
32. Select **Tools > Clip Boundary** from the References dialog.



33. Set the **Method** to **Element**

34. <D> on the modified clipping shape in the MicroStation view.

35. <D> to accept the command.



Notes:

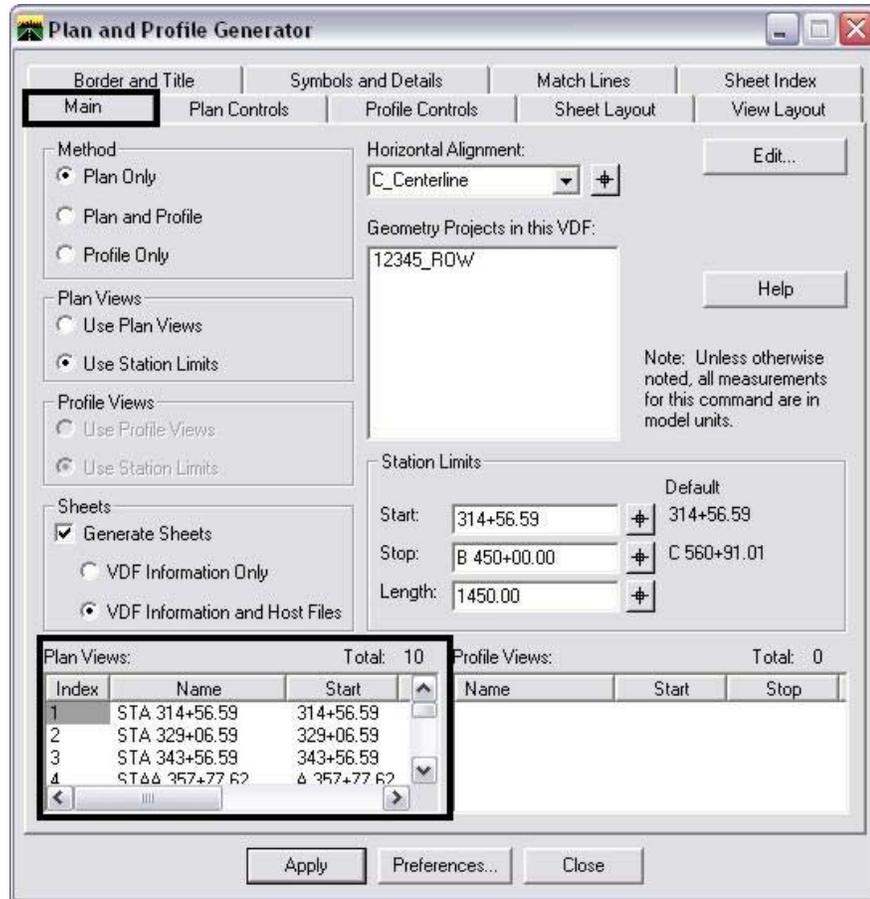
- The clipping boundary is now defined by the identified shape. Using any MicroStation command to modify this shape will automatically update the reference file clipping boundary. This shape is on the level GEN_SHEET_Clip-Boundary. This level is configured as a non-plotting level.
- Deleting the clipping boundary shape will result in the reference file display limits reverting to the initial limits defined by the PnP command.
- Regenerating a sheet from the PnP Sheet Index tab will also cause the sheet to revert to the reference file display limits initially defined by the PnP command.

After the Plan and Profile Generator has been run, each sheet should be reviewed for:

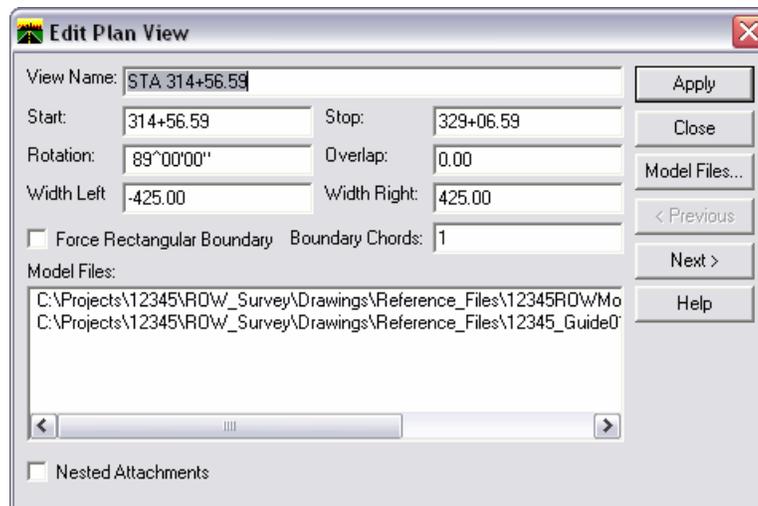
- North Arrow position (move the cell using MicroStation move command)
- Plan view Clipping limits
- Title block information

Main tab – After running the P&P command

Once the command has been run, the Geometry Project field will populate and the Plan and Profile view limits display.



Double clicking on a specific Plan View sheet opens an **Edit Plan View** dialog. Sheet limits can be modified numerically and reference files can be added or removed.



Challenge Exercises:

- Modify the last sheet to add 500' to the stop station
- Modify any sheet to change the left and/or right offsets
- Add or subtract from the model file list
- Modify the station limits on the first sheets and 'adjust' adjacent sheets

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