InRoads
Design Guidelines

InRoads Select Series 2

Georgia Department of Transportation

Office of Design Policy & Support

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Revision History

Date	Revision Number	By	Section	Description
02-01-13	1.00	CB-HC-JB	All	All
07-15-13	1.1	CB-HC-JB	2-15	Removed references to AMSA import Process.
""	""	""	2-32	Revised GDOT Standard Photogrammetry Code Table to depict the new K Codes for DGN file import.
09-03-13	1.2	CB-HC-JB	2-35	Added new Feature Codes/Feature Styles TOPO_E_SBF and TOPO_E_SXS for use on 404 Permit for Perennial Streams – Culverts.
01-13-14	1.3	CB-HC-JB	2-35	Added new Feature Codes/Feature Styles TOPO_E_DBOD and TOPO_E_DTOD for Drainage Bottom and Top of Ditch.
""	""	""	Appendix A	Added Appendix A InRoads Design procedure on USACE 404 Permit for Perennial Streams – Culverts.
10-31-14	1.4	CB-HC	1-6	Revised deliverable list to reflect the deliverable format of XSL for the PSR (Property Statistic Report)
""	""	""	1-9, 1-10, 1-11	Updated reference location of the GDOT 3D and 2D seed file for the generation of the "Working" DGN file.
""	""	""	2-4	Updated Naming convention of Working DGN file - based on 3D or 2D version.
""	""	""	2-30, 2-31 32	Added Preferences SUE and XSEC TEXT-SUE.

Date	Revision Number	By	Section	Description
""	""	""	2-32	Added TEAD K5 Code.
""	""	""	2-36, 2-37	Revised "Utilities" Feature Codes/Feature Styles to contain a "UU" Prefix for use in the UTLE DGN file.
""	""	""	2-37	Added new Feature Codes/Feature Styles UUTLE_E_ PCL, UUTLE_E_TSB, UUTLE_E_FM, SUEBOT, SUETOP
""	""	""	2-38,2-41	Revised following Topo Feature Codes/Feature Styles to UTLE_E_ UTRCR, UTLE_E_UTRCL, UTLE_E_UTSATDSH, UTLE_E_UTMPR
""	""	""	2-40	Added new Feature Codes/Feature Styles UTLE_E_ UXXA, UTLE_E_UXXB
""	""	""	4-6, 6-6	Added Preference SUE for Profile Annotation.
""	""	""	9-7	Added Preference XSEC TEXT-SUE for SUE X-Section Annotation.
""	""	""	13-5	Revised Flow Chart to depict UTLE deliverable from Survey.
""	""	""	14-9, 14-10	Added Style Sheets "GDOT HEC RAS (Wide Floodplain) Cross Section Geometry Report, GDOT Roadway Design Milling Report & GDOT SUE Utility QL-A Location Report.
""	""	""	Appendix A	Removed Appendix A and placed in the InRoads Workflow Processes Document.

Preface

Design Processing consists of the generation of Design Data for Construction Plan and Right of Way Plan Deliverables and coordination/oversight of other Plan Deliverables. Designers utilize the InRoads platform for the generation of the Design database(s) used in the development of highway project plans. MicroStation is the CADD platform utilized for the generation of highway project plans.

These Design Guidelines have been developed as part of the statewide GDOT implementation of MicroStation V8i and InRoads V8i Select Series 2. The intent of this document is to provide guidelines and standards for generating Design Data in InRoads V8i Select Series 2. These guidelines must be followed in detail in order to conform to the current GDOT standards for producing the required design data for plan deliverables. Updates to this document will be made periodically when minor revisions, additional information, and/or enhancements are added.

If there is any approved deviation from the standard file and data naming/feature style conventions as prescribed by this document - a detailed description of the deviation(s) and approved reasons for the deviation(s) shall be documented and included with the project files in electronic format.

Contact Information

To submit any comments or questions regarding the information contained in this document, please contact the **Office of Design Policy & Support** team by email at the following address:

SolutionsCenter@dot.ga.gov

In the <u>Email</u> Subject Header, please reference the **InRoads Design Guidelines**.

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Overview

These Guidelines cover the GDOT standards for generating Design Data by utilizing the MicroStation V8i and InRoads V8i Select Series 2 software(s). The procedures depict the Project Initialization Standards and Conventions to create an InRoads Design Project to GDOT format and the processes to create/generate the files which are to be submitted as deliverables to the Construction and Right of Way Offices.

For detailed Design Processing instructions please refer to the Training Manual:
Introduction to InRoads for Design

Document Content
Below is a list of topics covered in this document:

- Project Initialization Standards
- Standard Conventions
- Horizontal Alignments
- Vertical Alignments
- Import Graphics and Place Curve Tables
- Profile Sheets
- Component and Template Creation
- Roadway Designer
- Cross Section Sheets/Annotation Generation
- Construction Limits
- Earthwork
- Required Right of Way
- Survey Enhancements
- InRoads Style Sheets
- Additional File Deliverables

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Project Initialization Standards

1. Project Initialization Standards

Project Initialization Standards have been established in order to promote consistency and assist in the organization of project data. These standard project schemes help to ensure uniformity for all users who may work on the project.

This section covers the following topics:

- GDOT Standard Files (MicroStation and InRoads)
- Standard Project Structure
- Starting MicroStation V8i and InRoads V8i Select Series 2
- Overview of InRoads Interface
- InRoads Project Defaults
- Design Default Preferences
- InRoads "Locks"
- Application and Variable Manager Add-Ins
- Initiating a Design Project in InRoads

1.1   GDOT Standard Files –MicroStation and InRoads

In order to conform to current policy for plan deliverables – GDOT provides the requisite files needed to standardize InRoads and MicroStation to GDOT requirements. The first step in the development of an InRoads and MicroStation Project is to ensure that these standard files are being utilized. Instructions for downloading/installing the executables are included on the GDOT R.O.A.D.S. web page (see the links depicted below). These files are required for any Survey/Design Data Projects generated for GDOT.

- ***MicroStation Standard Files Location For Internal GDOT Users*** – a server location has been established to map a drive (an N:\ Drive) in order to access the latest MicroStation Files. Once the internal user maps the N:\ drive – all of the standard MicroStation Files will be available through this mapped drive.

- ***MicroStation Standard Files Location For External Users*** -   a MicroStation (CaddALL.exe) executable file is available and located in a download executable which can be accessed from the GDOT R.O.A.D.S. web page. This executable contains all of the GDOT MicroStation V8i Select Series 2 standard files. This file can be downloaded by navigating to the MicroStation and InRoads links from the following location:

  http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/software/Pages/default.aspx

- ***InRoads Standard Files Location For Internal and External Users*** - an InRoadsALL executable file (InRoadsALL.exe) is available and located in a download executable which can be accessed from the GDOT R.O.A.D.S. web page. This executable contains all of the GDOT InRoads V8i Select Series 2 standard files. This file can be downloaded by navigating to the MicroStation and InRoads links from the following location:

  http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/software/Pages/default.aspx

The **InRoadsALL.exe** file contains all of the standard GDOT files which are required to generate projects to GDOT standards. The user will perform the following steps to extract and set-up the GDOT Standard InRoads Files:

1. Close MicroStation V8i and InRoads V8i Select Series 2 if they are still open.

2. Navigate to the InRoads links from the following web page:
   http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/software/Pages/default.aspx

3. Save the *InRoadsALL.exe* file to the hard drive and then double click the file.

4. The self-extractor will download the GDOT InRoads Standard Files to the following locations:
   a. **C:\InRoads Data\Standards**
      - GDOT_Standard V8i_SS2.xin
      - GDOT_Standard V8i_SS2.itl
      - Project_Data_Sheet_MultipleAlign.docm
      - Photogrammetry_InRoads QA.pdf
      - Survey Data Processing_InRoads QA.pdf
      - Design Data_InRoads QA.pdf
      - GDOT (PI#) Pay Item Database.mdb

   b. **C:\InRoads Data\Component Documentation**
      - GDOT Component Description Help Documentation

   c. **C:\InRoads Data\Style Sheet Documentation**
      - GDOT Style Sheet Help Documentation

   d. **C:\InRoads Data\Style Sheets\GDOT**
      - GDOT Style Sheets

5. For detailed instructions on downloading and installing **InRoadsALL.exe** - navigate to the InRoads links from the GDOT R.O.A.D.S. web page and click on the *Downloading and Running InRoadsALL.pdf* document for installing these standard files.

1.2   Standard Project Structure

The standard File Structure for InRoads is a Project Folder (which is named for the PI # of the Project – *Example:*   **1234567**) located as a sub-folder under **C:\InRoads Data** – *Example:* **C:\InRoads Data\1234567**.   The Project Files are then located directly under the PI # – *Example:* **C:\InRoads Data\1234567** -- This Project Folder contains the individual InRoads Data Files. (See *Table 1.1*)

Table 1.1
InRoads Project Structure
InRoads Project Structure   C:\InRoads Data\PI Number
InRoads Project Structure (Example)   C:\InRoads Data\1234567

Some examples of InRoads Data File Types are:

1. **.DTM** ------- (Digital Terrain Model File) – contains Surface data
2. **.FWD** ------- (Survey File) – contains Field Survey data
3. **.ALG**-------- (Geometry File) – contains Geometric Point, Horizontal and Vertical data
4. **.IRD** -------- (Roadway Design File) – contains the Design Surface data
5. **.RWK**------- (Project File) – contains project data for InRoads files in ASCII format
6. **.ITL**--------- (InRoads Template File) – contains InRoads Templates for cross-sections
7. **.SDB**-------- (Drainage File) – contains the InRoads Storm and Sanitary data

It is highly recommended to backup the Project Folder (which contains these individual data files) after each work session to your Group Account on the GDOT Server if you are a GDOT Employee (or to an appropriate Business Server if you are a GDOT Consultant).

1.3   Starting a Design Project in InRoads

After creating the Design Project folder of **C:\InRoads Data\PI Number**, – the Designer will copy the data received from the SDE to the **C:\InRoads Data\PI Number** folder. The Designer will then copy the **Standards** folder (which is downloaded through the InRoadsALL.exe executable) to the **C:\InRoads Data\PI Number** folder.

1.3.1   *Copy and Rename the SDE DGN Files and SDE InRoads Files*

The Designer will receive from the SDE (Survey Data Engineer) some or all of the following eight electronic files. These files will be made available for copying from SDECommon for Internal GDOT Users. These files will be located on SDECommon under the applicable Project PI Number in a sub-folder named "SDE".

- PI#_SDE.alg (InRoads Geometry file)
- PI#_SDE.dtm (InRoads Digital Terrain Model)
- PI#_TOPO.dgn (Existing Topo features)
- PI#_PROP.dgn (Existing Property Information)
- PI#_UTLE.dgn (Existing Utility features)
- PI#_PSR.xls (Property Statistics Report)
- PI#_Hydraulics.docx (Hydraulics report)
- PI#_Misc.txt (Miscellaneous information SDE deems important. This file may not be included.)

1. The Designer will copy this "SDE" folder to the PI# folder on the group account for backup. The Designer is not to work directly from these files but from copies of them.

2. The Designer will also copy this "SDE" folder to the InRoads Data\ PI Number folder. The Designer will then copy the <u>individual files</u> located in the "SDE" folder directly to the following path: **C:\InRoads Data\PI Number** and rename the files according to the examples depicted below.

**DGN Files –The DGN Files received from the SDE contain an underbar (_) in the file name. The reason for this is to assist in differentiating DGN data received from the SDE from that of the Design DGN files. This will assist in organization of data during the enhancement processes. The Designer must rename the DGN files from the SDE naming convention to the Design naming convention in order for the MicroStation customized Macros to function correctly and to conform to the current EDG (Electronic Data Guidelines). If the Designer does not rename the DGN files (and remove the underbars) – the GDOT MicroStation Macros may not function.

Table 1.2		
Re-name SDE DGN Files		
SDE DGN FILE NAME	**Rename To**	**DESIGN DGN FILE NAME**
PI#_TOPO.dgn	►►	**PI#TOPO.dgn**
PI#_PROP.dgn	►►	**PI#PROP.dgn**
PI#_UTLE.dgn	►►	**PI#UTLE.dgn**

InRoads Files –The InRoads Files received from the SDE must be renamed **internally AND **externally** to the Design Naming Convention.

Table 1.3		
Re-name SDE InRoads Files		
SDE INROADS FILE NAME	**Rename To**	**DESIGN INROADS FILE NAME**
PI#_SDE.alg	►►	**PI#_Design.alg**
PI#_SDE.dtm	►►	**PI#_Exist.dtm**

For detailed instructions regarding the above re-naming process -- please refer to **Lab 2 in the Design Training Manual: *Introduction to InRoads for Design*.

1.3.2 *Copy the "Standards" folder which is downloaded from InRoadsALL.exe*

Important Step:
After installing InRoadsALL.exe – the user will copy the **Standards** folder under **C:\InRoads Data** to the Project Location. The rest of the Standard Files will remain in the default install location.

Whenever a new Project is created – the Designer will download and install InRoadsALL.exe. The files will be extracted to the Default Location(s). The reason for the install is to ensure the user has the latest published XIN File. The Designer will then perform the following step:

- The user will copy the **C:\InRoads Data\Standards** Folder to the InRoads Data\PI# \ folder. (Example: **C:\InRoads Data\1234567\Standards**).

The reason for copying the **Standards** folder to the Project Folder is that the XIN and ITL are project specific and need to be modified during the life of the project. The XIN and the ITL will be submitted with the Design Project data so that other users will have access to the Templates/Components in the ITL and any project specific preferences or filters that may be added to the XIN.

Table 1.4		
Copy Standards Folder to Project Folder		
C:\InRoads Data\Standards	**Copy To ►►**	**C:\InRoads Data\PI #**

1.4 Starting MicroStation V8i and InRoads V8i

The user will be working in <u>both</u> **MicroStation V8i Select Series 2** (the CADD Software) and **InRoads Suite V8i Select Series 2 (**the Survey/Design Software). The **MicroStation CADD Software** is used for the viewing and manipulation of graphics derived from **InRoads**. The **InRoads Software** is the database in which the Surveying/Design data is created and processed. The user will select the standard GDOT 3D "seed" file or GDOT 2D "seed" file to use as the "seed" DGN in order to create the three or two dimensional "Working" DGN file(s). The user may desire to work in 3D for the "working" DGN and 2D for plans production DGN's. The "Working" DGN file(s) are used to display the temporary and/or permanent graphics in **InRoads**.

This section details the following processes:

- Steps to Create a Design "Working" DGN File
- Steps to Open an Existing Design "Working" DGN File

The "Working" DGN file will be saved to the following folder location:
C:\InRoads Data\PI Number\Standards

Table 1.5	
Standard Naming Convention of the "Working" DGN File	
Working DGN File Name	**C:\InRoads Data\PI Number\Standards** GDOT 3D Working File.dgn or GDOT 2D Working File.dgn

The **MicroStation** software will open first before **InRoads**. After the **MicroStation** Splash Screen appears, the **MicroStation Manager** dialog (See *Figure 1-1*) will open so that a "**Working**" DGN file can be created or an existing "**Working**" DGN file can be opened. The **InRoads** software can then be initiated.

1.4.1   *Steps to Create a Design "Working" DGN File*
The Design "Working" DGN file will be created from the **GDOT_V8_3D.dgn** or **GDOT_V8_2D.dgn** seed file. Following are the steps to <u>create</u> a **Design "Working" DGN File**:

Please Note: The current seed file in the MicroStation configuration defaults to a 2D Seed File. If the user prefers to create a 3D seed file instead - then the user will need to browse to select the 3D Seed file as depicted in the steps below. Following are the steps to create a 3D "Working" DGN File:

1.   From the desktop, double-click on the **GDOT Microstation V8i SS2 (x86)** icon.
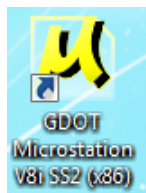
> Double click on the icon labeled
> **GDOT MicroStation V8i SS2 (x86).**

2.   After the **MicroStation** Splash Screen appears, the **MicroStation Manager** dialog box will open. (See *Figure 1-1*).
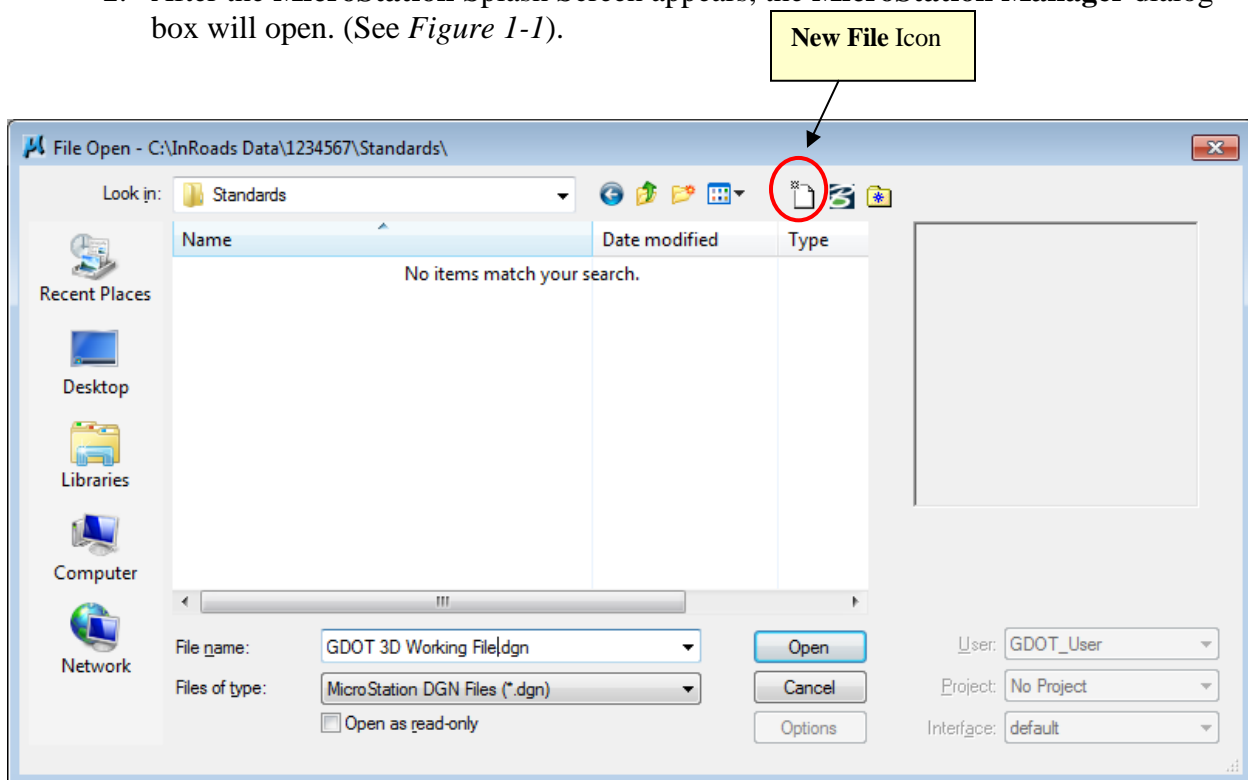
New File Icon

Figure 1-1   Starting MicroStation V8i and InRoads V8i

3.   In the **MicroStation Manager** dialog box, click on the **New File** icon (See *Figure 1-1*) depicted above. The **New File** command will be used to create the "Working" DGN file.

4. After the **New File**   command is selected, the **MicroStation New File** dialog box will open. (See *Figure 1-2*).

    - Click in the **Save in:** Pulldown - and browse to the *C:\InRoads Data\PI Number\ Standards* location to save the new "Working" DGN file
    - In the **File name:** Pulldown – enter *GDOT 3D Working File.dgn*
    - In the **Save as type:** Pulldown – select *MicroStation DGN Files (*.dgn)*
    - In the **Seed:** Field - Click the **Browse** button to select the seed file named **GDOT_V8_3D.dgn**

    The Seed File should already be entered in the field based on the current MicroStation configuration.

    The inputs should now be similar to the screen capture depicted in *Figure 1-2* (as shown below).
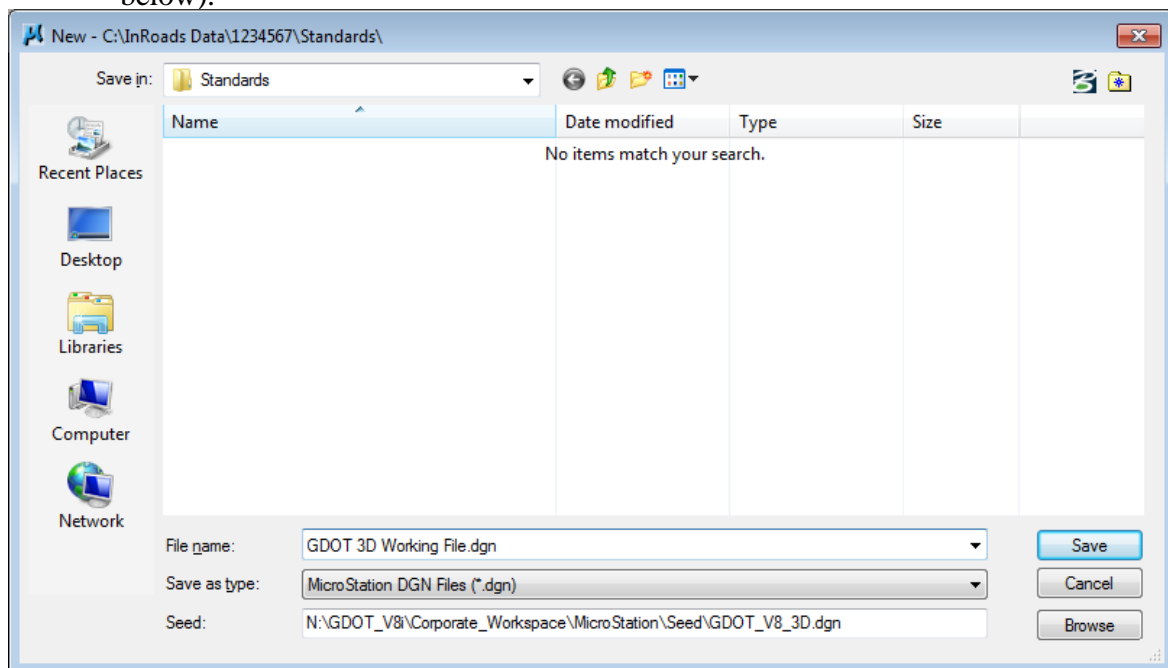
Figure 1-2   MicroStation New File Window

5. Click the **Save** command button and the **MicroStation Manager** dialog box will appear.

6. In the **MicroStation Manager** Dialog box – highlight the file just created (*GDOT 3D Working File.dgn*) and click the **Open** button.

7. The **MicroStation V8i Select Series 2** interface will then finish opening.
8.   In the *Main MicroStation Pull-down Menu* – click on the following InRoads pull-downs:

9. Select *InRoads* ▶ *InRoads Suite (SELECTseries 2) V8i 08.11.07.566* - and the
    InRoads V8i Select Series 2 interface will open. Once **InRoads** and **MicroStation**
    are up and running, the desktop should look similar to that of *Figure 1-3* and
    Figure 1-4.
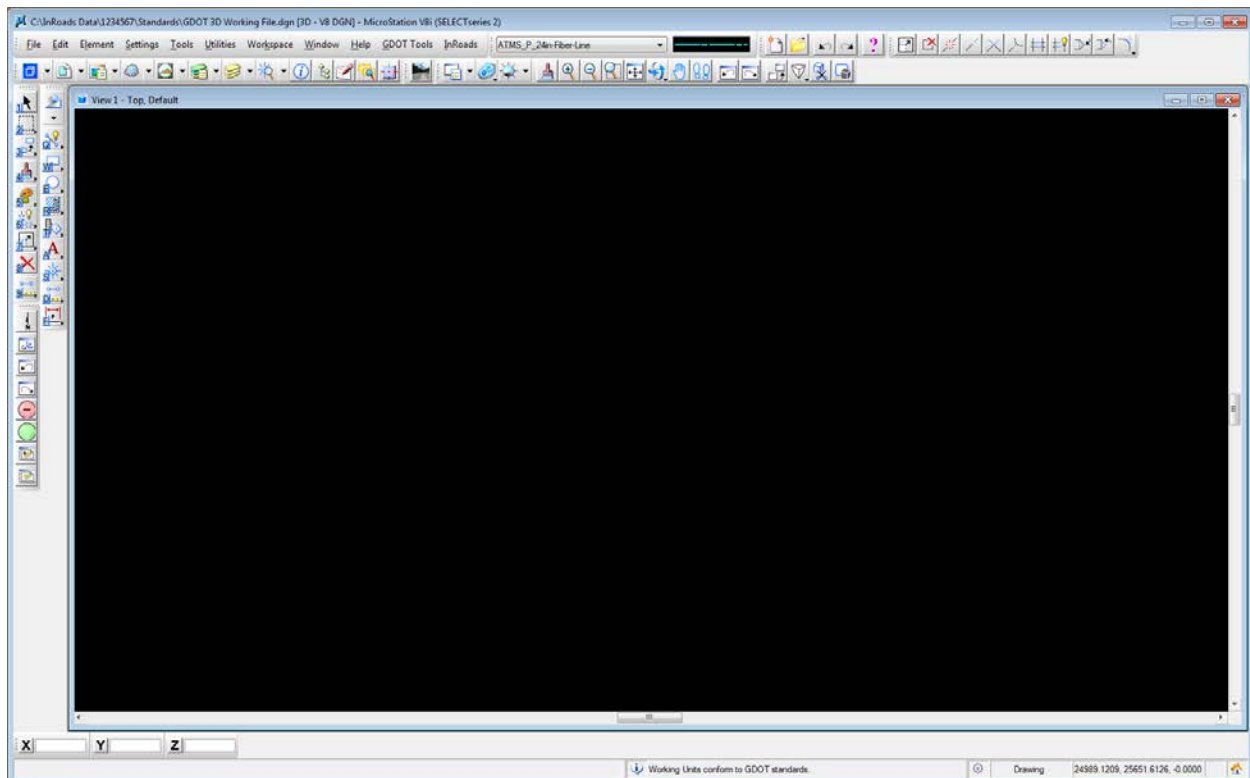
Figure 1-3 Main MicroStation V8i Window
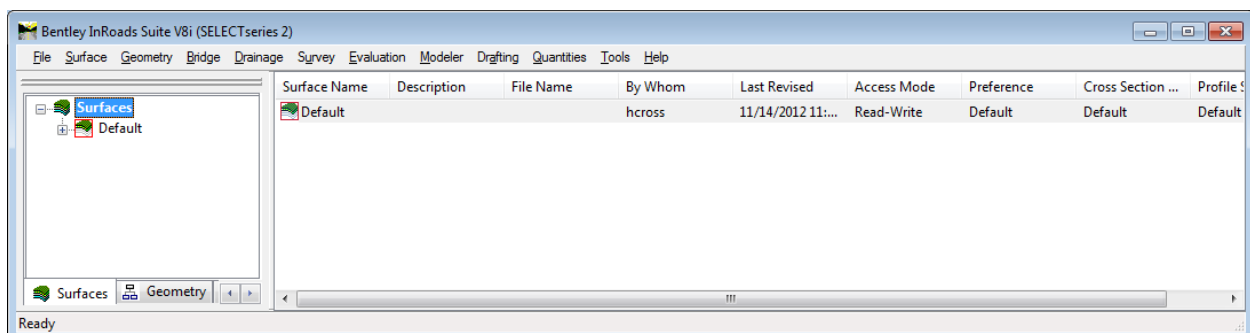
Figure 1-4 Main InRoads V8i Window

1.4.2   *Steps to open an existing Design "Working" DGN File*
If the Design "Working" DGN file has been created previously – use the following steps to
open a **Design "Working" DGN File**:

1. From the desktop, double-click on the **GDOT MicroStation V8i SS2 (x86)** icon.
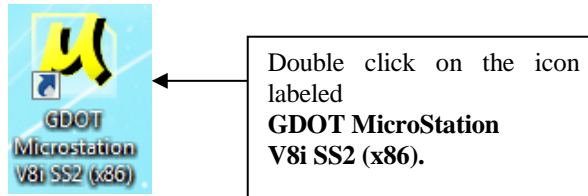
Double click on the icon
labeled
**GDOT MicroStation
V8i SS2 (x86).**

2. After the **MicroStation** Splash Screen appears, the **MicroStation Manager** dialog
box will open. (See *Figure 1-5*).
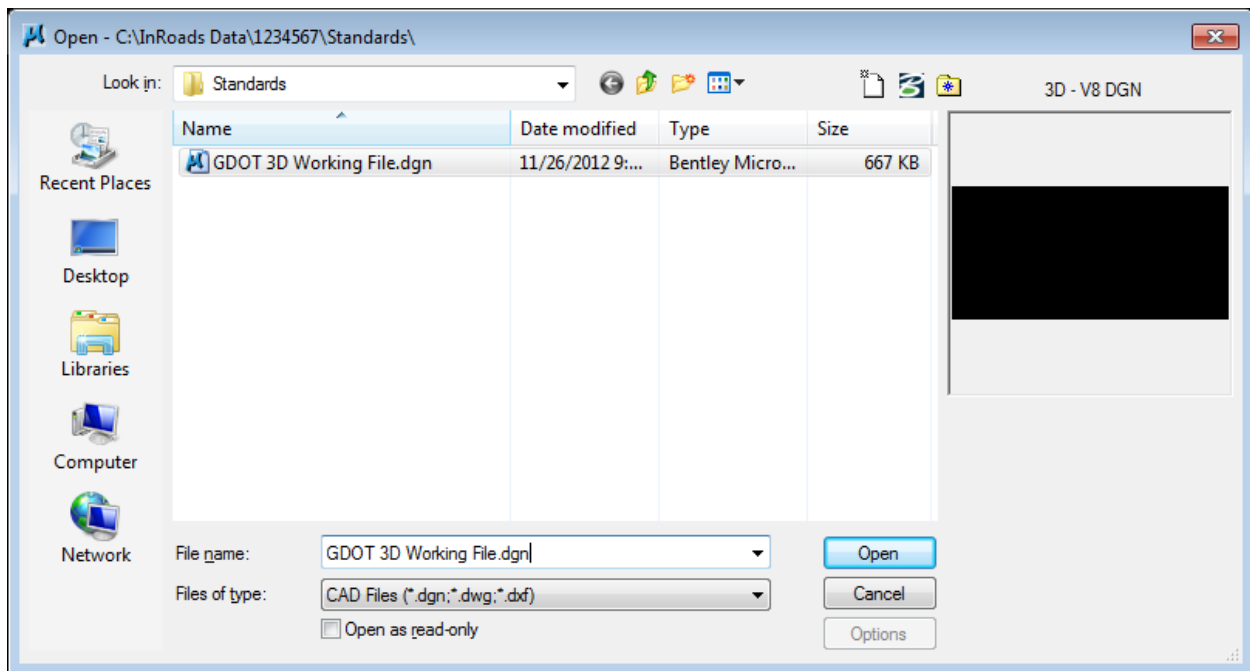
Figure 1-5   Starting MicroStation V8i and InRoads V8i

3. In the **MicroStation Manager** dialog box, browse to the *C:\InRoads Data\PI
Number\Standards* location and highlight the (*GDOT 3D Working File.dgn*) and
click the **Open** button.

4. The **MicroStation V8i Select Series 2** interface will then finish opening. Then select
InRoads ▶InRoads Suite (SELECTseries 2) V8i 08.11.07.566— and the **InRoads
V8i Select Series 2** interface will open. Once **InRoads** and **MicroStation** are up and
running, the desktop should look similar to that of previous screen captures *Figure 1-3*
and *Figure 1-4*.

1.5   Overview of InRoads Interface

As mentioned previously - the user will be working in <u>both</u> the **InRoads Design Software** and the **MicroStation CADD Software**. The **InRoads Software** is the database in which the Design data is created and processed.

Shown below is a **diagram** which depicts the InRoads Explorer objects and a brief overview of the InRoads Explorer Interface:
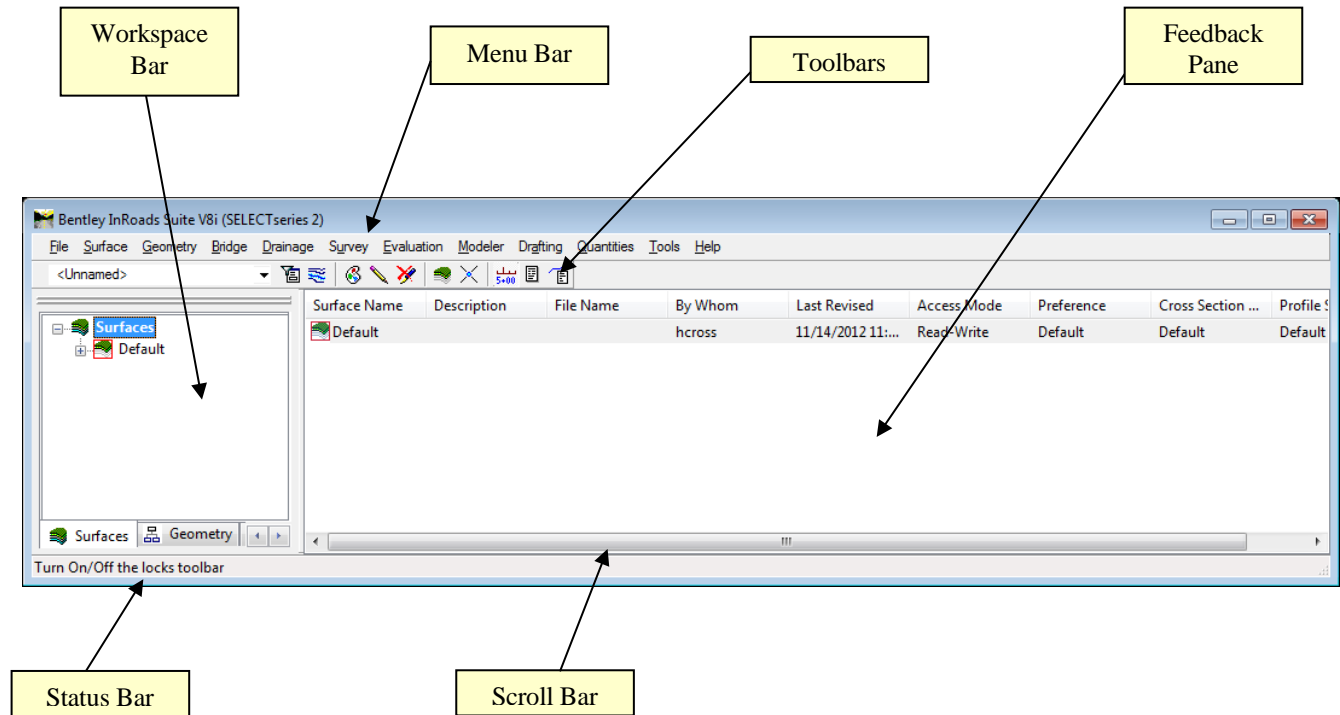
- **Workspace Bar** – Contains all of the InRoads Project Data information
- **Menu Bar** – Contains the pull-down menus to access InRoads commands
- **Toolbars** – Contains default and customized toolbars to access InRoads commands
- **Feedback Pane** – Contains details of selected Project Data from the Workspace Bar
- **Scroll Bar** – Enables the user to view more of the InRoads Explorer Interface. (The Scroll Bar may not be visible if the InRoads Interface is already viewed to extents).
- **Status Bar** – Contains InRoads messages and prompts (Please note: InRoads may direct you to locate something graphically in MicroStation -- some of these prompts may display in the MicroStation Status Bar instead). It is very important that the user review both the InRoads and the MicroStation Status Bar for prompts and information.

1.6   InRoads Project Defaults

The **InRoads Project Defaults** setting allows you to define the "default folder locations" for projects. A *Project Default* configuration can then be saved for each project so that multiple projects can be accessed. This configuration allows you to easily navigate between projects. Once the Project Folder locations are saved in the Configuration, the projects can then be accessed by selecting the appropriate Project Configuration Name. The Project Defaults also contain the location for selecting the standard GDOT InRoads Preference File (**GDOT_StandardV8i_SS2.xin**).

The standard Project Default configuration for Design projects will be **PI#_Design**. Each Design Project Default will consist of this naming structure in order to easily navigate between projects. (See *Table 1.6*)

Once the Project Default Location is set for a particular project – this will also be the default folder location whenever the InRoads commands of **File ▶ Save and **File ▶ Close** are used.

Table 1.6
Project Defaults Configuration

Project Default Structure	PI Number_Design
Project Default Structure (Example)	1234567_Design

Following are the steps to create a **Design Project Default Configuration**
(**Substitute the appropriate PI # as required**):

1. Click **File ▶ Project Defaults** from the InRoads pull-down menu to access the **Set Project Defaults** dialog box.

2. Click **New** and enter **1234567_Design** in the **New Configuration** dialog box. Then click **OK**.

3. Under the **Default Preferences** section - Click in the **Preferences (*.xin):** field and then click the **Browse** button to navigate to the following file: **C:\InRoads Data\1234567\Standards\GDOT_Standard V8i_SS2.xin** file and click **Open**.

4. Under the **Default Directory Paths** Section - Click in the **Project Default Directory:**
    field and then click the **Browse** button to navigate to the folder:
    C:\InRoads Data\1234567**. Next **- click **Open**.

5. Under the **Default Directory Paths** Section – copy and paste the following text into
    each entry field shown below: **C:\InRoads Data\1234567**

    - Report Directory: - **C:\InRoads Data\1234567**
    - Projects (*.rwk): - **C:\InRoads Data\1234567**
    - Surfaces(*.dtm): - **C:\InRoads Data\1234567**
    - Geometry Projects: (*.alg): - **C:\InRoads Data\1234567**
    - Template Libraries:(*.itl): - **C:\InRoads Data\1234567**
    - Roadway Design: (*.ird): - **C:\InRoads Data\1234567**
    - Survey Data: (*.fwd): - **C:\InRoads Data\1234567**
    - Drainage: (*.sdb): - **C:\InRoads Data\1234567**
    - Quantity Manager: (*.mdb): - **C:\InRoads Data\1234567**
    - Site Modeler Projects (*.gsf): - **C:\InRoads Data\1234567**

6. Under the **Default Directory Paths** Section - Click in the **Style Sheet (*.xsl):** field and
    then click the **Browse** button to navigate to the folder:
    C:\InRoads Data\Style Sheets\GDOT**. Next **- click **Open**
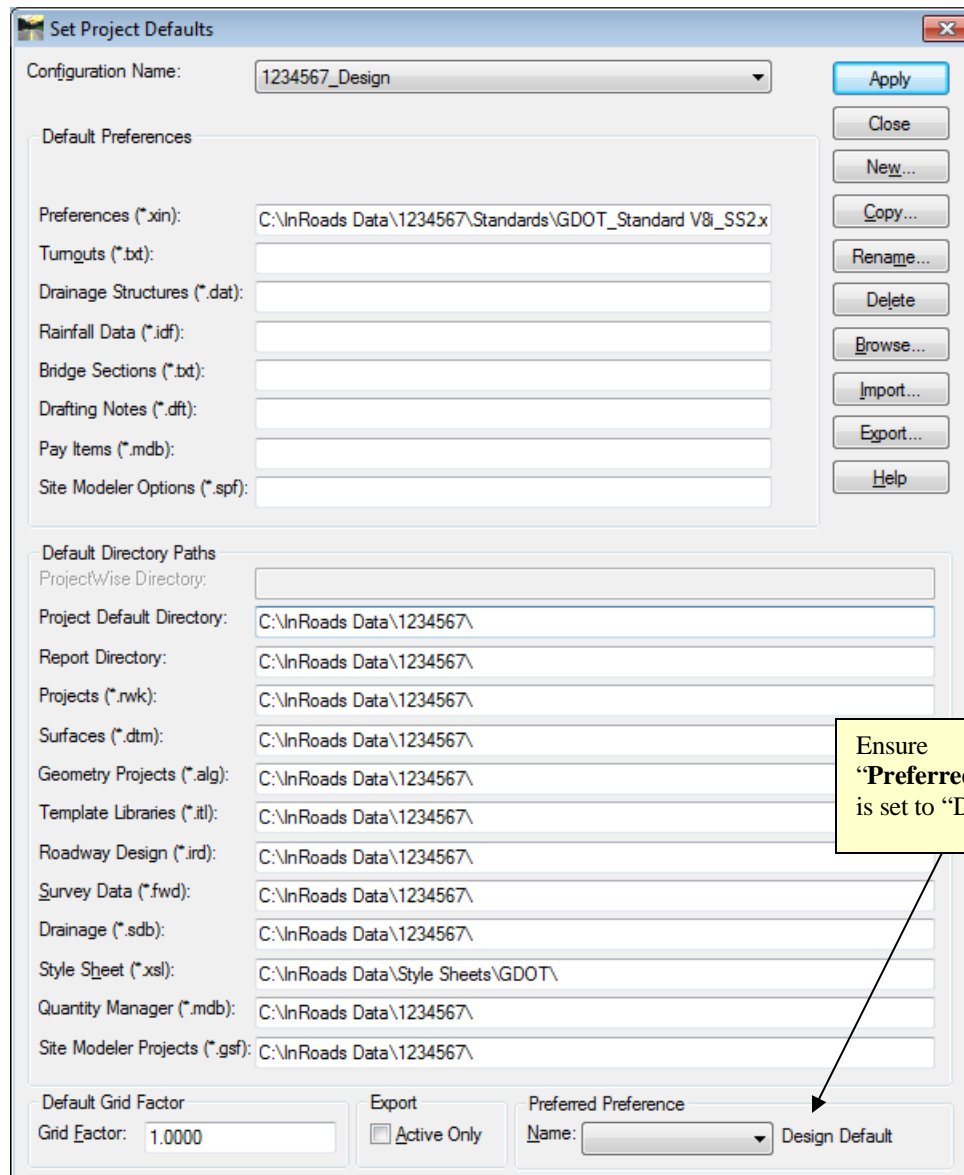
Figure 1-6 Project Defaults

7. The **Project Defaults** should look similar to the screen capture depicted in *Figure 1-6* (as shown above). Click **Apply** and then click **Close**.

1.7 Design Default Preferences

The **Design Default** Preferences must be loaded in InRoads in order to conform to standards for the processing of Design Projects. <u>This is a very important step to ensure that standards are followed for all Design data that will be processed.</u> The **Design Default** Preference loads the Precision Settings, Tolerances, Units and Formats, Default Point and Alignment Numbering scheme(s), etc. Once the **Design Default** Preference is loaded – the project will retain these settings each time the project is accessed.

Following are the steps to set the **Design Default Preferences**:

1. Click **File ▶ Project Options** from the InRoads pull-down menu to access the **Project Options** dialog box.

2. In the **Project Options** dialog box - click on the **General Tab** and the *General Tab* dialog box will appear.
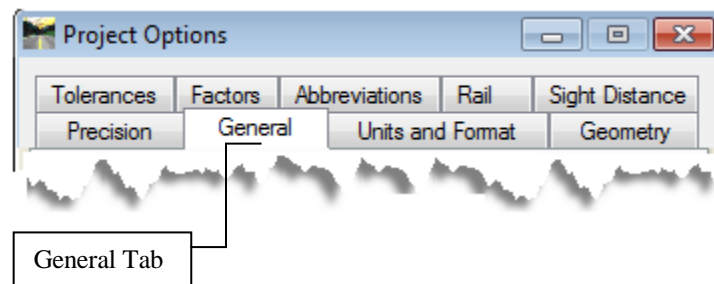
3. In the **General Tab** dialog box, click the command button named **Preferences…** (Located at the bottom of the dialog box) and the **Preferences** dialog box will open.
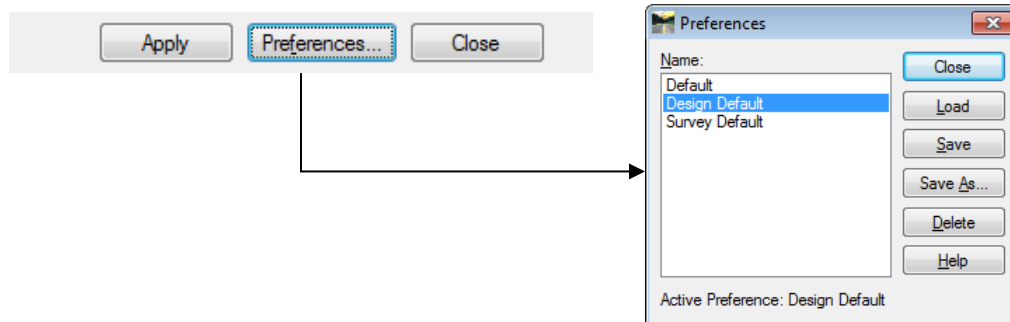
4. In the **Preferences** dialog box – select **Design Default**. Then click **Load** and then click **Close**.

5. The **Design Default** Preference should now correspond to the screen capture depicted in *Figure 1-7* (as shown below).

Ensure that the "**Refresh Command Settings on Preference Change**" is checked:
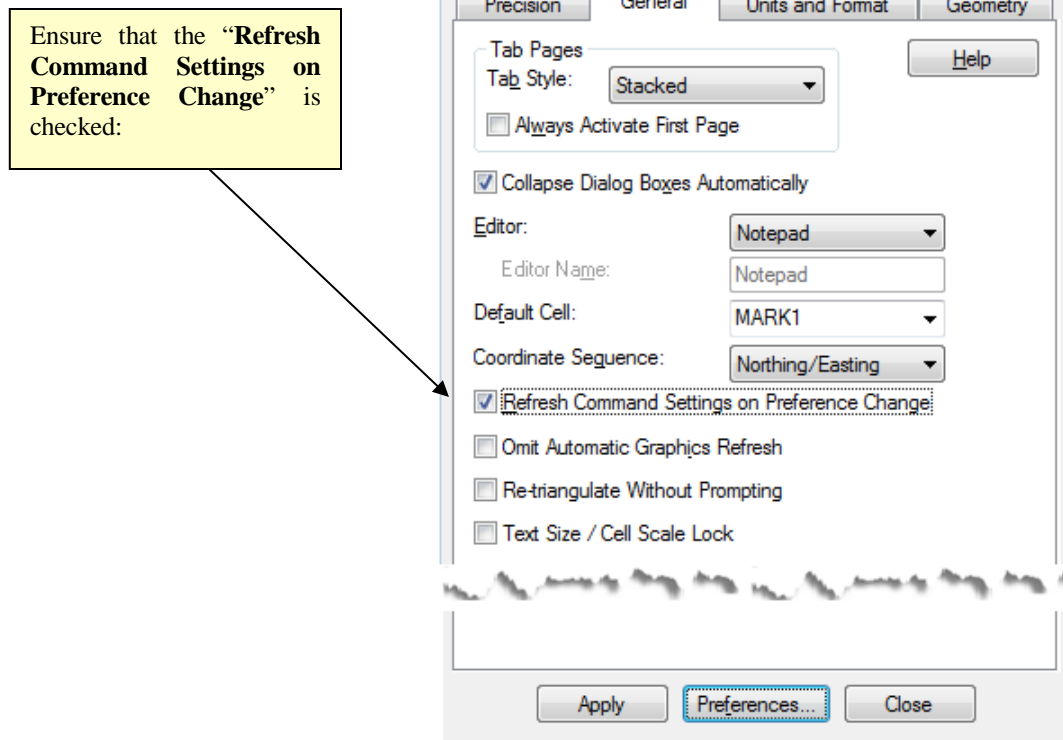
Figure 1-7   Design Default Settings

6.   Click **Apply** and then click **Close**.

The **Design Default** Preference is now loaded. This Preference loads the appropriate data for ALL of the tabs in the Options dialog box. The individual tabs (Tolerances, Geometry, Units and Format, etc.) will automatically be configured for use in Design calculations. The Point and Alignment Numbering scheme(s) are also automatically configured for the standard Design conventions in the **Design Default** Preference. These individual tab options will NOT need to change. Once the **Design Default** Preference is loaded – the project will retain these settings each time the project is accessed on this computer. These settings are specific to this computer Profile/XIN file. If the Project is accessed on another computer – these settings may need to be re-applied in order to load the correct **Design Default** Preference.

1.8   InRoads "Locks"

InRoads contains several "Locks" which are used by many InRoads commands to control different aspects of the selection and viewing of data as well as the reporting of data. There are basically two types of "Locks" – On/Off "Locks" and Switch "Locks". (Switch "Locks" contain different modes but one mode is always active and the user can switch between modes). Both types of "Locks" can be changed by the user as the situation dictates during the course of the database generation. These locks affect many commands – so it is very important that the user understand the use of these locks. If an InRoads command does not function as expected when utilizing the Surface Viewing or Reporting commands -- a "Lock" may have been inadvertently turned on/off.

The following section contains a brief overview of some of the InRoads "Locks". Only the "Locks" pertaining to the Design aspect will be reviewed. As mentioned previously the "Locks" may be changed as situations dictate – but the settings depicted in the following section are applicable for most Design Projects.   It is a very important step to ensure that the "Locks" are set accordingly. (See *Table 1.7*)

Following are the steps to access the InRoads "Locks":

Click **Tools▶Locks** from the InRoads pull-down menu. Each time a "Lock" is changed – the pull-down menu will close and the user must click on **Tools▶Locks** again to access the Locks pull-down.

Table 1.7	
InRoads Locks Settings	
Feature Filter	Unchecked
Feature Highlight	Unchecked
Style	Unchecked
Pencil/Pen 🖉	Set to Pencil
Delete Ink	Unchecked
Locate 🍃	Set to Features
Point Snap ✓	Checked
Element Snap	Unchecked
Station	Unchecked
Report ✓	Checked
Cogo Audit Trail	Unchecked
Toolbar ✓	Checked

Following is a brief overview of the InRoads "Locks":
(See *Table 1.8)*

<div style="border: 1px solid black; background-color: #d3d3d3; padding: 20px;">

Table 1.8
InRoads Locks Overview

Feature Filter
displays or obscures Surface Features based on a filter (also controls Survey Style Filter)

Feature Highlight
 highlights the feature in plan view when selected from a list

Style
 determines if a dialog box is displayed for a surface command or cross sections

Pencil/Pen
controls the redisplaying of Graphics

Delete Ink
allows redisplayed graphics to replace graphics in pen mode

Locate
controls if Locate Buttons snap to Graphics or Features

Point Snap
 controls the ability to snap to points in a Geometry Project

Element Snap
controls the ability to snap to elements in a Geometry Project

Station
controls the Stationing as it pertains to Cross Sections

Report
controls if Report is displayed or not displayed in a dialog box

Cogo Audit Trail
controls the reporting of coordinate geometry results to a text file

Toolbar
displays or turns off the Locks Toolbar

</div>

1.9 Application and Variable Manager Add-Ins

InRoads contains several Application and Variable Manager "Add-Ins" which must be selected and added to the InRoads Program in order to access the standard GDOT customized menu applications/translators for Design. Once the Application and Variable Manager Add-Ins are selected – the settings are written to registry keys in the <u>user's profile</u>. This ensures that each time InRoads is accessed in the user profile -- these settings will already be available. These add-ins will only need to be added once and will then be accessible in all of the InRoads Modules and InRoads Projects.

The "Application and Variable Manager Add-Ins" must be set accordingly in order to access the required GDOT Survey/Design commands and translators.

This section details the following processes:

- Steps to select the Application Add-Ins
- Steps to select the Variable Manager Add-Ins

1.9.1 *Steps to select the Application Add-Ins:*

1. Click **Tools▶Application Add-Ins** from the InRoads pull-down menu and the following dialog box will appear:
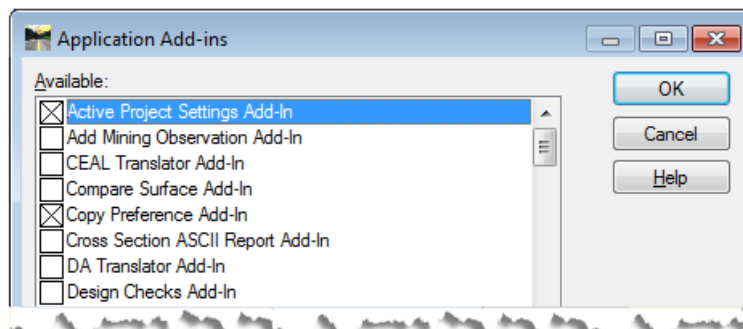
2. Select the following Application Add-Ins by clicking an ⊠ by the appropriate Add-In:

3. Click **OK** to accept the settings and to close out of the dialog box.

1.9.2 *Steps to select the Variable Manager Add-Ins:*

1. Click **Tools▶Variable Manager** from the InRoads pull-down menu and the following dialog box will appear:
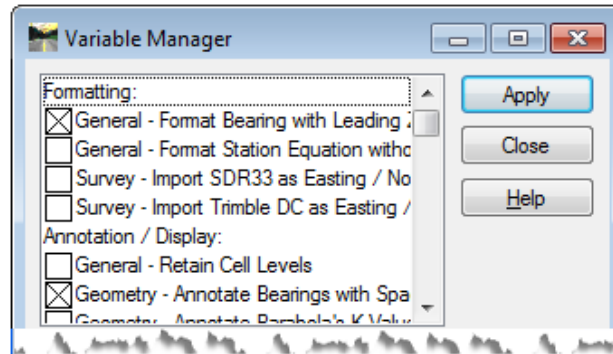
2. Select the following Variable Manager Add-Ins by clicking an ⊠ by the appropriate Variable:

⊠ General - Format Bearing with Leading Zero Option

⊠ Geometry - Annotate Bearings with Spaces

⊠ Geometry - Alphanumeric Names in Create/Edit Alignment by Cogo Points

3. Click **Apply** to accept the settings and then click **Close** to close out of the dialog box.

Standard Conventions

2

2. Standard Conventions

This section provides an overview of the GDOT standard Project, File and Geometry Object naming conventions utilized for Design. A Design Feature Styles Table is provided which lists the applicable Feature Styles available for use in Design, the GDOT Preference File (.XIN) is reviewed and the Standard Preferences are discussed. The Photogrammetry/Survey Feature Code Tables are also provided as Reference Information so that the Designer can refer to these Feature Codes/Styles when working with Existing Survey/Mapping Data.

This section covers the following topics:

- Standard Project Names and File Names
- Standard Geometry Object Names and Feature Styles
- Standard Design Feature Styles
- Standard File Information
- Standard Preference File (XIN) and GDOT Preferences
- GDOT Standard InRoads Photogrammetry Feature Codes
- GDOT Standard InRoads Field Survey Feature Codes

2.1   Project and File Naming Conventions

As mentioned previously in **Section One** - in order to ensure Project and File Naming consistency and uniformity – standard Project and File Naming conventions have been established. The Designer must follow these naming procedures in order to conform to GDOT standards and policies.

This section details the following Standard Naming Conventions:

- Standard Project Naming Conventions
- Standard File Naming Conventions

2.1.1   *Standard Project Naming Conventions*

The standard File Structure for InRoads is a Project Folder named for the PI Number of the project. The InRoads Design Files will be located directly under this PI Number. This is the folder location where the core Design File data is located. When submitting project deliverables to Construction (District Earthwork Coordinators) – submit the entire Project Folder (*Example: the PI Number Folder and the associated files*). This will ensure that all of the applicable files are submitted to the end-user. (See *Table 2.1*)

Table 2.1	
Standard Project Naming Conventions	
InRoads Project Structure	C:\InRoads Data\PI Number
InRoads Project Structure (Example)	C:\InRoads Data\1234567

2.1.2 *Standard File Naming Conventions*

InRoads contains several different file types but the Design data will usually consist of file types pertaining to the .ALG (Geometry File), the .DTM (Digital Terrain Models), the .IRD (Roadway Design Files), the .ITL (InRoads Template File) and the associated .DGN (MicroStation Design File) deliverables.   Following are the applicable file naming conventions (See *Table 2.2*).

<table>
<tr><td colspan="3" align="center">**Table 2.2**</td></tr>
<tr><td colspan="3" align="center">**Standard File Naming Conventions**</td></tr>
<tr><td>**File Type**</td><td>**File Name**</td><td>**Example Name(s)**</td></tr>
<tr>
<td>● **3D or 2D "Working" DGN file**
The 3D or 2D "Working" DGN File is used as the standard DGN file for producing graphics in InRoads.</td>
<td>**GDOT 3D Working File.dgn** or
GDOT 2D Working File.dgn</td>
<td>GDOT 3D Working File.dgn
GDOT 2D Working File.dgn</td>
</tr>
<tr>
<td>● **ALG - Geometry File**
The Design ALG file contains the Existing Survey Geometry Data and the Proposed Design Geometry Data.</td>
<td>**PI#_ Design.alg**</td>
<td>1234567_Design.alg</td>
</tr>
<tr>
<td>● **DTM - Existing DTM File**
The Existing DTM file contains the Original Mapping and/or Field Survey DTM data.</td>
<td>**PI#_ Exist.dtm**</td>
<td>1234567_Exist.dtm</td>
</tr>
<tr>
<td>● **DTM - Proposed DTM File(s)**
The Proposed DTM'(s) naming convention is PI#_Corridor Name.dtm. There can be several Proposed DTM Files including the Mainline and each associated Side Road.</td>
<td>**PI#_Corridor Name.dtm**</td>
<td>1234567_SR100 SPUR.dtm
1234567_SR22.dtm</td>
</tr>
<tr>
<td>● **ITL – InRoads Template Library File**
A standard GDOT ITL File named GDOT_StandardV8i.itl is provided. The Designer will copy this file to the Project Directory and rename it to PI#.itl.</td>
<td>**PI#.itl**</td>
<td>1234567.itl</td>
</tr>
<tr>
<td>● **IRD – InRoads Roadway Design File**
The IRD File is named PI#.ird and contains the Proposed Corridors and the Roadway Design for Cross Sections.</td>
<td>**PI#.ird**</td>
<td>1234567.ird</td>
</tr>
</table>

2.2   Standard Geometry Object Names and Feature Styles

The following section details the Standard Design and Survey Geometry Object Naming Conventions.

The SDE provides the existing survey data in the Geometry Project (.ALG).   This survey data consists of Property data, Existing Right of Way, Alignment data, etc. Basically it is survey which is "Geometry related" and which is used in the creation of the property, alignment and COGO database. This Geometry data will <u>not</u> be represented in the DTM. All other Survey Data <u>will</u> be imported into the Surface Project (.DTM) and will be represented as Surface Features. (The Designer may review this process by reading the *Introduction to InRoads for Survey Data Processing Training Guide* which depicts the process to filter data to import into the Geometry Project (.ALG).

The Designer will store all of the proposed Geometry Data (Cogo Points, Alignment Points, Horizontal Alignments and Vertical Alignments) in the Design ALG File.

NOTE: Please note that the term Horizontal Alignments represents not only Centerline Alignments but also Right of Way Alignments, Easement Alignments, Edge of Pavement Alignments, Ditch Alignments, etc.

NOTE: Please note that Curves are not separate objects in InRoads - but are actually part of the Horizontal Alignment. The Curves have no name assigned to them in the Alignment. When generating curve tables for plan sheets – the Designer will manually name the Curve Table(s) Curve Numbers. This is described in more detail in the Design Training **Lab 5**.

2.2.1 *Standard Design and Survey Object Naming Conventions*

InRoads contains several different object types such as Cogo Points, Alignment Points, Horizontal Alignments and Vertical Alignments. Following are the applicable object naming conventions (See *Tables 2.3 – 2.5*). The Designer shall follow the guidelines below when storing design geometry objects in InRoads. These guidelines must be followed in order to conform to current GDOT standards and policies. Use only one prefix (DE) for points in InRoads and begin point numbering at 10000 (i.e. DE10000). This eliminates the possibility of duplicate points going back to the Data Collector for staking of survey data.

A. Design Object Names and Point/Alignment Ranges:

The Design Geometry Objects consist of Cogo Points, Alignment Points, Horizontal Alignments and Vertical Alignments. The Designer will store Proposed Construction Centerlines, Required R/W Alignments, Easement Alignments, Edge of Pavement Alignments, etc. The following Naming Conventions will be used.

Table 2.3 **Standard Design Geometry Object Names**		
Object Type	**Prefix**	**Starting Number**
*Design Cogo Points	DE	10000 (Max. = 99999)
*Design Horizontal Alignment Points	DE	10000 (Max. = 99999)
**Design Horizontal Alignments	DE	1
***Design Vertical Alignments	DE	1

- * All Design Cogo Points and Design Horizontal Alignment Points **must** be named with a prefix of DE and begin with the number 10000 (e.g., first design point = DE10000).

- **All Design Horizontal Alignments **must** be named with a prefix of DE and begin with the number 1, (e.g., DE1).

- ***It is **suggested** that the Design Vertical Alignment (which corresponds with the Horizontal Alignment) be named the same as the associated Horizontal Alignment.

Table 2.4 **Design Point & Alignment Ranges to Use**	
Cogo/Alignment Points	Range – 10,000 to 99,999
Horizontal/Vertical Alignments	Range – 1 to no Limitations for Alignments -- but must have the **DE** Prefix

B. Survey Object Names and Point/Alignment Ranges:

The SDE stores any computed and/or existing survey points with <u>No</u> prefixes. Any computed Alignments will be stored with an **SV** prefix to represent a Survey stored Alignment. The reason that Survey (field collected and computed points) do not contain pre-pended prefixes is to reduce the possibility of duplicate points going back to the data collector and to ensure that duplicate points are not submitted to the Designer when additional enhancements are added during the life of the project. Another reason is to prevent the Designer's Points and Alignments from being overwritten when additional enhancements are added to the Designer's Geometry Project Database. *<u>Please note that it is a requirement for the SDE to pre-pend the</u> **SV** <u>Prefix to all computed Alignments. This includes Parcel Alignments, Existing Centerline Alignments, Existing R/W Alignments, etc.</u>

Table 2.5 Standard Survey Geometry Object Names		
Object Type	**Prefix**	**Starting Number**
Survey Cogo Points	Survey (SDE) = No Prefix	1
Survey Horizontal Alignment Points	Survey (SDE) = No Prefix	1
Survey Horizontal Alignments	SV	1

Point Numbers 1 – 9999 are reserved for survey collecting and survey data processing. Point numbering should be done consecutively and if more points are required the numbering should continue consecutively as needed. When additional survey data is gathered in the field, the point numbers should begin with the lowest number that has not already been submitted to design. Designer's Point numbering range begins at 10,000. Points 10,000 and above are reserved for Design. If the total number of survey points has reached the 9,999 point limit, the Survey Data Engineer should contact the Designer and obtain the next starting point number.

 A gap in point numbering should only exist where the location survey points total less than 9,999. All other numbering gaps should be minimized.

Table 2.6 Survey Point & Alignment Ranges to Use	
Cogo/Alignment Points	Range – 1 to 9,999
Horizontal/Vertical Alignments	Range – 1 to no Limitations for Alignments -- but must have the **SV** Prefix

2.2.2 *Standard Geometry Survey and Design Feature Style Conventions*
The following Section details the Feature Styles used for Survey and Design Objects. When storing Survey and Design Geometry Objects – the applicable Feature Styles must be utilized in order to view the correct symbology, cells, etc. for each of the elements. This ensures that the data conforms to the correct Level and Symbology as depicted by the Electronic Data Guidelines and for use in Plans Production utilities.

The following existing Property codes/styles (which are composed of data which is used for the generation of Property and Alignment information) is processed by the SDE and submitted to the Designer in the ALG File. All Codes which are not listed in the table below – will be imported into the Surface Project (.DTM File). The Survey Control Codes are imported into both the .ALG and the .DTM Files.

Property and Alignment Codes Survey Style Filter			
PROP_E_RWM	Right-of-Way Marker Found	**TOPO_E_SNGSCM**	NGS Control Mon.
PROP_E_RWC	Right-of-Way Point Computed	**TOPO_E_SLCM**	Loc. Cont. Mon.
PROP_E_RWU	Right-of-Way Utility Company	**TOPO_E_SLCD**	Loc. Cont. Delta
PROP_E_RWE	Right-of-Way Prescription Pt	**TOPO_E_SDCD**	Dist. Cont. Delta
PROP_E_POEL	Point on Easement Line	**TOPO_E_SCCHK**	Cont. Re-shot
PROP_E_PCF	Property Corner Found	**TOPO_E_SBNCHMK**	Benchmark
PROP_E_PPOL	Property Point on Line		
PROP_E_PPC	Property Point Computed		
PROP_E_APOT	Point in Tangent, Existing		
PROP_E_APC	Point of Curvature, Existing		
PROP_E_APOC	Point on Curve, Existing		
PROP_E_APT	Point of Tangency, Existing		
PROP_E_API	Point of Intersection		
PROP_E_ACL	Alignment Centerline		
PROP_E_BCOL	County Line		
PROP_E_BCTL	City Limit Line		
PROP_E_BLDL	Land District Line		
PROP_E_BLLL	Land Lot Line		
PROP_E_BSL	State Line		

A. Survey Feature Styles for Points and Alignments

The Standard Feature Styles the SDE uses when storing Points and Alignments for the Existing Centerline Alignments, Existing R/W, Property, etc. are named according to the type of Point or Alignment which is to be stored. The following Table lists the applicable Feature Style(s) the SDE (Survey Data Engineer) utilizes when storing the Existing Point and Alignment data: (See *Table 2.7*)

Table 2.7 Feature Styles For Geometry Survey Points and Alignments		
Existing/Computed Points	PROP_E_ACL PROP_E_ACL-PC-PT PROP_E_APC PROP_E_API PROP_E_APOC PROP_E_APOT PROP_E_APT PROP_E_PCF	PROP_E_POEL PROP_E_PPC PROP_E_PPOL PROP_E_RWC PROP_E_RWE PROP_E_RWM PROP_E_RWRR PROP_E_RWU
Existing Centerline Alignment	PROP_E_ACL	
Existing R/W Alignment	PROP_E_RWE	
Existing Property (Parcel) Alignment	PROP_E_PAR	

B. Design Feature Styles for Points and Alignments

The Standard Feature Styles to use when storing Design Points and Alignments for the Proposed Centerline Alignments, Proposed R/W and Easements, etc. will be named according to the type of Point or Alignment which is to be stored. The following Table lists the applicable Feature Style(s) the Designer utilizes when storing Design Points and Alignment data: (See *Table 2.8*)

Table 2.8		
Feature Styles For Geometry Design Points and Alignments		
Proposed Design Points Feature Style	DRNG_P_Ditch MAIN_P_CONSTCL MAIN_P_EOP MAIN_P_EPSHLDR MAIN_P_SHLDR MAIN_P_SIDECL	REQD_P_DWESMT REQD_P_PESMT REQD_P_REQD REQD_P_RWRM REQD_P_TESMT STE_P_DETCL
Proposed Centerline Alignments Feature Style		**Descriptions** **(C/L Roadway Name)**
Mainline Centerline	MAIN_P_CONSTCL	Ex: C/L HWY 100
Sideroad Centerline	MAIN_P_SIDECL	Ex: C/L PEQUANOC DR.
Detour Centerline	STE_P_DETCL	Ex: C/L US 78
Proposed Right of Way Feature Style		**Descriptions** **(Feature Style – Parcel #/Parcel Align)**
R/W Monument	REQD_P_RWRM	N/A
Reqd. R/W	REQD_P_REQD	Ex: REQD R/W – PAR 33/SV29
Perm. Const. Esmt.	REQD_P_PESMT	Ex: PESMT – PAR 44/SV67
Temp. Const. Esmt.	REQD_P_TESMT	Ex: TESMT – PAR 23/SV88
Driveway Esmt.	REQD_P_DWESMT**	Ex: DWESMT – PAR 14/SV30
Miscellaneous Feature Style		**Descriptions** **(Feature Style – Roadway Name)**
Edge of Pavement	MAIN_P_EOP	Ex: EOP – HWY 100
Edge of Paved Shoulder	MAIN_P_EPSHLDR	Ex: EPSHLDR – PEQUANOC DR.
Edge of Shoulder	MAIN_P_SHLDR	Ex: SHLDR – US 78
Ditch Centerline	DRNG_P_Ditch	Ex: Ditch – HWY 100
Other	(User-Defined)	User Defined

** The Feature Style of REQD_P_DWESMT will be used for all other types of easements (that are not listed above) and be noted as such on plans by the Engineer.

2.3   Standard Design Feature Styles

The following section details the Standard Design Feature Styles which are available in the **GDOT_Standard V8i_SS2.xin** file. These Feature Styles conform to the Electronic Data Guidelines and represent the InRoads Named Symbology and the associated MicroStation ByLevel Symbology. These Feature Styles must be utilized to conform to GDOT Standard Conventions and for use in Plans Productions Utilities. If a Feature Style is used which is not available in the GDOT XIN File – an InRoads Default Symbology with a color of **White** will appear. It is very important to use the GDOT standard Feature Styles to ensure that the InRoads Data is generated correctly for use in InRoads, MicroStation and Plans Production Utilities.

These Feature Styles are used in Geometry Objects, Components, Component Points and Proposed DTM's. The following Table contains the applicable Design Feature Styles to use for Design.

NOTE: There are also Feature Styles available for use in Survey and Photogrammetry. Please refer to the **InRoads Survey Data Processing Guidelines** and the **Photogrammetry Guidelines** for Tables listing these Feature Styles.

Table 2.9
Feature Styles -- GDOT Geometry Design Points and Alignments

Feature Style	Description
BRDG_E_Hydraulics	Bridge Hydraulics
DRNG_P_Ditch	Ditch-Drainage
MAIN_P_Barrier-Median-Side	Proposed median or side barrier
MAIN_P_Barrier-Retain-Wall	Proposed retaining wall
MAIN_P_Barrier-Sound-Wall	Proposed sound wall
MAIN_P_CONSTCL	Proposed Construction centerline
MAIN_P_CROWN	Crown Point
MAIN_P_Curb	Proposed Curb
MAIN_P_Driveway	Driveway
MAIN_P_EEOP	Exist Pavement Edge
MAIN_P_EOP	Proposed Road Edge of Pavement
MAIN_P_EPSHLDR	Proposed edge of paved shoulder
MAIN_P_Guardrail	Proposed guardrail
MAIN_P_Misc-Const-Feat	Proposed misc. construction feature
MAIN_P_SHLDR	Proposed Shoulder lines
MAIN_P_SIDECL	Proposed Side or Cross road centerline
MAIN_P_Sidewalk	Proposed Sidewalk
MAIN_P_Slope-break	Proposed Slope Break Location
REQD_P_DWESMT	Required Driveway Easement
REQD_P_PESMT	Required Permanent Easement
REQD_P_REQD	Required R/W
REQD_P_RWRM	Required Right of Way Marker
REQD_P_TESMT	Required Temporary Easement
STE_P_DETCL	Proposed Detour centerline

Table 2.10 Feature Styles – GDOT Design Components and Component Points	
Feature Style	**Description**
DRNG_P_Ditch	Ditch - Drainage
DRNG_P_Cross Drain and Culvert	Cross Drain and Culvert
DRNG_P_Storm Drain Pipe	Storm Drain Pipe
LIMT_P_CUT	Cut Limits (**Assign to End Condition Components**)
LIMT_P_CUT_Const-Limit	Cut Limits (**Assign to <u>LAST</u> Point in the End Condition**)
LIMT_P_FILL	Fill Limits (**Assign to End Condition Components**)
LIMT_P_FILL_Const-Limit	Fill Limits (**Assign to <u>LAST</u> Point in the End Condition**)
MAIN_P_Barrier-Median-Side	Proposed median or side barrier
MAIN_P_Barrier-Retain-Wall	Proposed retaining wall
MAIN_P_Barrier-Sound-Wall	Propose sound wall
MAIN_P_Barrier_PAY_4940_TP20	4940 TP20 CONCRETE BARRIER
MAIN_P_Barrier_PAY_4940_TP21	4940TP21 CONCRETE BARRIER
MAIN_P_Barrier_PAY_4940_TP22	4940 TP22 CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S1	TP S1 SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S2	TP S2 SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S3	TP S3 SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S3A	TP S3A SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S3B	TP S3B SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_2-S	TP 2-S SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_2-SA	TP 2-SA SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_2-SB	TP 2-SB SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_2-SC	TP 2-SC SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_6-S	TP 6-S SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_6-SA	TP 6-SA SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_6-SB	TP 6-SB SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_6-SC	TP 6-SC SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_7-CS	TP 7-CS or 7-RS SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_7-WS	TP 7-WS SIDE CONCRETE BARRIER
MAIN_P_CONSTCL	Proposed Construction centerline
MAIN_P_CROWN	Crown Point
MAIN_P_Curb	Proposed Curb
MAIN_P_Curb_PAY_9032B Dowel TP2	9032B TP2 CONC DOWELED INTEGRAL CURBS 6" THK
MAIN_P_Curb_PAY_9032B Dowel TP3	9032B TP3 CONC DOWELED INTEGRAL CURBS 8" THK
MAIN_P_Curb_PAY_9032B Dowel TP7	9032B TP7 CONC DOWELED INTEGRAL CURBS 6" THK
MAIN_P_Curb_PAY_9032B HeaderTP1	9032B TP1 4"HEADER CURB

Feature Style	Description
MAIN_P_Curb_PAY_9032B HeaderTP2	9032B TP2 6"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP3	9032B TP3 8"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP4	9032B TP4 10"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP6	9032B TP6 6"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP7	9032B TP6 7"HEADER CURB
MAIN_P_Curb_PAY_9032B REdge 6"	9032B 6" RAISED EDGE WITH CONCRETE GUTTER
MAIN_P_Curb_PAY_9032B REdge 8"	9032B 8" RAISED EDGE WITH CONCRETE GUTTER
MAIN_P_Curb_PAY_9032B TP1 6"	9032B TP1 30" CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP1 8"	9032B TP1 30" CURB & GUTTER 8"THK
MAIN_P_Curb_PAY_9032B TP2 6"	9032B TP2 30" CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP2 8"	9032B TP2 30" CURB & GUTTER 8"THK
MAIN_P_Curb_PAY_9032B TP3 6"	9032B TP3 30" CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP3 8"	9032B TP3 30" CURB & GUTTER 8"THK
MAIN_P_Curb_PAY_9032B TP4 6"	9032B TP4 30" CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP4 8"	9032B TP4 30" CURB & GUTTER 8"THK
MAIN_P_Curb_PAY_9032B TP7 6"	9032B TP7 CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP7 8"	9032B TP7 CURB & GUTTER 8"THK
MAIN_P_Driveway	Driveway
MAIN_P_EEOP	Exist Pavement Edge
MAIN_P_EOP	Proposed Road Edge of Pavement
MAIN_P_EPSHLDR	Proposed edge of paved shoulder
MAIN_P_Exterior Boundary	Exterior Boundary
MAIN_P_GoreMainIdeal	Vertical Gore Design Tool - GoreMainIdeal
MAIN_P_GoreMax	Vertical Gore Design Tool - GoreMax
MAIN_P_GoreMin	Vertical Gore Design Tool - GoreMin
MAIN_P_GoreRampIdeal	Vertical Gore Design Tool - GoreRampIdeal
MAIN_P_Guardrail	Proposed guardrail
MAIN_P_Median_PAY_9032B_4"THK	9032B CONCRETE MEDIAN 4"THK PAY ITEM
MAIN_P_Misc-Const-Feat	Proposed misc. construction feature
MAIN_P_SHLDR	Proposed Shoulder lines
MAIN_P_SIDECL	Proposed Side or Cross road centerline
MAIN_P_Sidewalk	Proposed Sidewalk
MAIN_P_Slope-break	Slope break point
REQD_P_DWESMT	Required Driveway Easement
REQD_P_PESMT	Required Permanent Easement
REQD_P_REQD	Required R/W
REQD_P_RWRM	Required Right of Way Marker
REQD_P_TESMT	Required Temporary Easement
STE_P_DETCL	Proposed Detour centerline

2.4   Standard File Information

Following is a brief overview of the most common InRoads file types the Designer will utilize: (See *Table 2.11*)

Table 2.11
Standard File Information Overview

GDOT 3D Working File.dgn
This DGN file is created from the GDOT 3D "seed" file (**GDOT_V8_3D.dgn**) and is used to display the temporary and or/permanent graphics in InRoads.

.FWD
(SDE File Only! This File is <u>not provided</u> to Design.)
The .FWD file contains the imported Field Survey Data (.CSV File Data). Basically this file is an Electronic Field Book in which the .CSV File data is imported so that the survey data can be exported to the .DTM (Surface) and .ALG (Geometry) files.

.DTM
The .DTM file contains all of the Surface Features imported from the 3D Photogrammetric DGN File and/or CSV File(s). The appropriate Surface Features are triangulated in order to form an Existing Ground Surface (TIN Model) for use in Survey and Design. The Designer will create a Proposed DTM File(s) which will contain the Proposed Ground Surface data.

.ALG
The .ALG (Geometry File) contains all of the "Geometry" related data such as Property, Existing R/W, Existing Centerline Alignments, Proposed Horizontal/Vertical Alignments and R/W and Easement Alignments for use in Design.

.ITL
The .ITL is the InRoads Template File which contains all of the Templates and Components for cross sections. This file is specific to each individual InRoads Project and should be submitted as a deliverable during project submission to the Earthwork Coordinator during Construction.

.IRD
The .IRD is the InRoads Roadway Design File which contains the Design Surface Data (the corridors and the associated cross sections which are generated to a Design Surface).

.RWK
The .RWK (InRoads Project File) contains project data for InRoads files in ASCII format. The .RWK file is a text file which can be edited to reflect the path of the Project Files so that all of the Files will be opened when the InRoads Project File (.RWK) is opened.

.SDB
The .SDB (InRoads Drainage File) contains the InRoads Storm and Sanitary data.

2.5   Standard Preference File (XIN) and GDOT Preferences

The following section details the GDOT Standard Preference File **GDOT_Standard V8i_SS2.xin** and the various InRoads Preferences that have been established for use in the Design Process.

2.5.1   *Standard Preference File (XIN) Configuration*

InRoads Standards for Design have been set up in a "Preference" file (also known as an XIN file). This preference file contains the Georgia Department of Transportation's standards for Feature Codes, Feature Styles, Feature Filters, Dialog Box Settings, Linestyles, Lineweights, colors, and numerous other settings. The XIN file is basically a compilation of INI Files (Initialization files) which controls the standardization of the InRoads settings and display options. This preference file is critical for use in the InRoads Design Process and for accurate Digital Terrain Model/ Geometry Objects creation. The XIN file is used in conjunction with MicroStation V8i's ByLevel settings and configuration files to assist in the viewing of project data and in the generation of plan file deliverables.

The standard GDOT XIN file is named **GDOT_Standard V8i_SS2.xin** and is included in the **InRoadsALL.exe** download.

After downloading and executing the **InRoadsALLexe** – a **Standards** folder is created directly under the C:\InRoads Data folder. The Designer will copy this **Standards** folder to the Project Folder: (See Example in *Table 2.12*)

Table 2.12
Name and Location of the GDOT Standard XIN File

GDOT Standard XIN File	C:\InRoadsData\1234567\Standards\GDOT_Standard V8i_SS2.xin

NOTE: The XIN file contains Named Symbology and Feature Styles which correspond with the ByLevel Settings in MicroStation. Please note that if any modifications or additional Feature Styles/Named Symbology are added by the user to the XIN – the MicroStation Levels may not view with the correct Symbology for those modified Feature Styles. It is advisable to NOT add additional Named Symbology or Styles in order for the XIN file to be consistent with the current MicroStation ByLevel settings so that utilities for Plans Productions will function correctly.

2.5.2 *Standard Preference File (XIN) Details*

The XIN File contains the GDOT configuration settings for use in Design/Survey. These settings contain the current GDOT standards for plan development and processing of Design/Survey Data. Following are some of the Configuration Settings contained in the XIN:

- **Named Symbology** – This controls how elements such as points, lines, text, etc. appear in plan, cross section and profile views in MicroStation. The GDOT named symbology is also set to *ByLevel* which references the Level Settings for Symbology in the MicroStation DGNLIB. ByLevel controls the Symbology (weight, color, linestyle) and the Named Level on which the elements are located. The Named Symbology can also be set in the InRoads Named Symbology Manager by selecting each symbology (color, weight, linestyle, etc.) separately but GDOT uses the ByLevel Symbology to correspond with the DGNLIB Levels. (The Named Symbology determines "How" an element is viewed").

- **Feature Styles** – InRoads contains Features which represent elements such as points, lines, arcs, spirals, etc. The Feature Style for each Geometry, Survey, DTM and Component element is used to determine how the elements view. The elements can be set to view in plan view, profile, cross section, DTM, etc. The Feature Style references the associated Named Symbology to view the element with the appropriate corresponding Symbology. The Feature Style determines "Where" the element is viewed.

- **Preferences** – When using commands in the InRoads dialog boxes – it is useful to set Preferences which can be loaded later without having to re-enter information into the dialog boxes. Preferences are basically entries in dialog boxes which can be saved and then selected to automatically configure the settings of a dialog box without manual re-entry.

- **Filters** – Filters are commands in dialog boxes which can be used to "filter" selections of data based on set criteria. This can include selection of Points, Alignments, Features or other entities by using a filter based on the entities' Style, Name, etc.

These are some of the GDOT standards that have been configured for use in the XIN file. These settings are used to assist in the Design process to ensure that standards are consistent for development of GDOT project plans.

2.5.3 *GDOT Preferences*

As mentioned previously - Preferences are entries in dialog boxes which can be saved and then selected later to automatically configure the settings of a dialog box without manual re-entry. The following Table lists the GDOT Preferences available in the GDOT XIN file. These Preferences will be discussed in more detail in each of the applicable Sections of the Survey and Design Guidelines.

Preference Name	Dialog Name	Dialog Location	Description
10 Scale Work Sec 1x Vert Exg *(Ensure the "Create Cross Section Folder" is selected)*	**Cross Sections**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	X-Section Grid (10 Scale) for Earthwork and End-Area reports. For use on projects with small footprints. Most situations will require using the '50 Scale Work Sec 2x Vert Exg' Preference.
100h_10v Profile	**Annotate Profile**	Evaluation ▶ Profile ▶ Annotate Profile ▶ Preferences	Sets settings for 100' Scale Horizontal and 10' Scale Vertical viewing of existing and proposed Profile elevations on the Profile plan sheets. Use when annotating Profiles for Profile sheets using the '50 Scale Single Profile' Preference in the Plan and Profile Generator.
100h_10v_SHEETS	**Create Profile**	Evaluation ▶ Profile ▶ Create Profile ▶ Preferences	Loads grid settings, station formats, fonts and symbology for use in plotting a Profile at 100' Horizontal Scale and 10' Vertical Scale. This Preference is also referenced in the Plan & Profile Generator when generating 50 Scale Single Profile Sheets.
	Annotate Profile	Evaluation ▶ Profile ▶ Annotate Profile ▶ Preferences	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 100h_10v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
100h_10v_WORKING	**Create Profile**	Evaluation ▶ Profile ▶ Create Profile ▶ Preferences	Loads grid settings, station formats, fonts and symbology for use in plotting a Profile at 100' Horizontal Scale and 10' Vertical Scale. Same as 100h_10v_SHEETS except grid is not drawn. For use during temporary viewing of Profile during vertical alignment design.

Preference Name	Dialog Name	Dialog Location	Description
20 Scale	**Survey Options**	Survey ▶ Fieldbook Data ▶ Survey Options ▶ Preferences	Sets Cell Scale, Text Scale, and Line Scale for viewing survey planimetrics for 20 Scale projects.
20 Scale Double Profile	**Plan and Profile Generator**	Drafting ▶ Plan and Profile Generator ▶ Preferences	Used for generating 20 Scale Double Profile Sheets.
20 Scale Plan	Plan and Profile Generator	Drafting ▶ Plan and Profile Generator ▶ Preferences	To be developed.
20 Scale Plan & Profile	**Plan and Profile Generator**	Drafting ▶ Plan and Profile Generator ▶ Preferences	Used for generating 20 Scale Plan & Profile Sheets.
20 Scale Single Profile	**Plan and Profile Generator**	Drafting ▶ Plan and Profile Generator ▶ Preferences	Used for generating 20 Scale Single Profile Sheets.

Preference Name	Dialog Name	Dialog Location	Description
20h_5v Profile	**Annotate Profile**	Evaluation ▶ Profile ▶ Annotate Profile ▶ Preferences	Sets settings for 20' Scale Horizontal and 5' Scale Vertical viewing of existing and proposed Profile elevations on the Profile plan sheets. Use when annotating Profile for Profile sheets using the '20 Scale Single Profile', '20 Scale Double Profile, and '20 Scale Plan & Profile' Preferences in the Plan and Profile Generator.
20h_5v_SHEETS	**Create Profile**	Evaluation ▶ Profile ▶ Create Profile ▶ Preferences	Loads grid settings, station formats, fonts and symbology for use in plotting a Profile at 20' Horizontal Scale and 5' Vertical Scale. This Preference is also referenced in the Plan & Profile Generator when generating 20 Scale Single Profile Sheets, 20 Scale Double Profile Sheets and 20 Scale Plan and Profile Sheets.
	Annotate Profile	Evaluation ▶ Profile ▶ Annotate Profile ▶ Preferences	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 20h_5v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
20h_5v_WORKING	**Create Profile**	Evaluation ▶ Profile ▶ Create Profile ▶ Preferences	Loads grid settings, station formats, fonts and symbology for use in plotting a Profile at 20' Horizontal Scale and 5' Vertical Scale. Same as the 20h_5v_SHEETS Preference except the grid is not drawn. For use during temporary viewing of Profile during vertical alignment design.
50 Scale	**Survey Options**	Survey ▶ Fieldbook Data ▶ Survey Options ▶ Preferences	Sets Cell Scale, Text Scale, and Line Scale for viewing survey planimetrics for 50 Scale projects.
50 Scale Double Profile	**Plan and Profile Generator**	Drafting ▶ Plan and Profile Generator ▶ Preferences	Used for generating 50 Scale Double Profile Sheets.

Preference Name	Dialog Name	Dialog Location	Description
50 Scale Plan	**Plan and Profile Generator**	Drafting ▶ Plan and Profile Generator ▶ Preferences	To be developed.
50 Scale Plan & Profile	**Plan and Profile Generator**	Drafting ▶ Plan and Profile Generator ▶ Preferences	Used for generating 50 Scale Plan & Profile Sheets.
50 Scale Single Profile	**Plan and Profile Generator**	Drafting ▶ Plan and Profile Generator ▶ Preferences	Used for generating 50 Scale Single Profile Sheets.
50 Scale Work Sec 2x Vert Exg	**Cross Sections**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	X-Section Grid (50 Scale) for Earthwork and End-Area reports. Most situations will require using this Preference.
50h_10v Profile	**Annotate Profile**	Evaluation ▶ Profile ▶ Annotate Profile ▶ Preferences	Sets settings for 50' Scale Horizontal and 10' Scale Vertical viewing of existing and proposed Profile elevations on the Profile plan sheets. Use when annotating Profile for Profile sheets using the '50 Scale Double Profile', and '50 Scale Plan & Profile' Preferences in the Plan and Profile Generator.

Preference Name	Dialog Name	Dialog Location	Description
50h_10v_SHEETS	**Create Profile**	Evaluation ▶ Profile ▶ Create Profile ▶ Preferences	Loads grid settings, station formats, fonts and symbology for use in plotting a Profile at 50' Horizontal Scale and 10' Vertical Scale. This Preference is also referenced in the Plan & Profile Generator when generating 50 Scale Double Profile Sheets and 50 Scale Plan and Profile Sheets.
	Annotate Profile	Evaluation ▶ Profile ▶ Annotate Profile ▶ Preferences	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 20h_5v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
50h_10v_WORKING	**Create Profile**	Evaluation ▶ Profile ▶ Create Profile ▶ Preferences	Loads grid settings, station formats, fonts and symbology for use in plotting a Profile at 50' Horizontal Scale and 10' Vertical Scale. Same as the 50h_10v_SHEETS Preference except the grid is not drawn. For use during temporary viewing of Profile during vertical alignment design.
ACL	**View Stationing**	Geometry ▶ View Geometry ▶ Stationing ▶ Preferences	Loads settings for viewing Horizontal Alignment Stationing and Curve Data.
	Curve Set Annotation	Geometry ▶ View Geometry ▶ Curve Set Annotation ▶ Preferences	

Preference Name	Dialog Name	Dialog Location	Description
ACL Cogo Point Feature Styles	**Geometry Selection Filter**	Geometry ▶ View Geometry ▶ Horizontal Annotation ▶ Filter ▶ Preferences	For use by the Survey Data Engineer (SDE) when creating the ACL centerline alignment. The Preference is used in the Geometry Selection Filter when only points with the following Feature Styles are desired to be viewed. PROP_E_API,PROP_E_APT,PROP_E_APC,PROP_E_APOT,PROP_E_APOC
BEARING & DISTANCE	**View Horizontal Annotation**	Geometry ▶ View Geometry ▶ Horizontal Annotation ▶ Preferences	Loads settings into the View Horizontal Annotation dialog to label the bearing when viewing Roadway alignments with the feature styles MAIN_P_CONSTCL, MAIN_P_SIDECL, and PROP_E_ACL. Although DISTANCE is part of the Preference name the distance is no longer set up to be labeled.
BOGUS SURFACE	**View Triangles /** **Surface Properties**	Surface ▶ View Surface ▶ Triangles ▶ Preferences. Surface ▶ Surface Properties ▶ Advanced	Used for viewing surface triangles of 'Bogus' Surfaces (surfaces created by the designer for the temporary filling of obscured areas). The Bogus Surface Preference loads settings to view the surface as pink, easily distinguishing it as a Bogus Surface. The Bogus Surface Preference is used in both the View Triangles dialog and the Surface Properties dialog. The Surface Properties dialog ensures the pink surface is displayed when viewing existing ground Profiles and Cross Sections.
Bridge Hydraulics	**Annotate Feature**	Surface ▶ View Surface ▶ Annotate Feature ▶ Preferences	Loads settings into the Annotate Feature dialog to annotate selected Bridge Features in the Surface for use in Bridge Hydraulics.

Preference Name	Dialog Name	Dialog Location	Description
CONSTCL	**View Stationing/**	Geometry ▶ View Geometry ▶ Stationing ▶ Preferences	50 Scale settings for viewing Stationing and Curve Set Annotation for Mainline Construction Centerline Alignments.
	Curve Set Annotation	Geometry ▶ View Geometry ▶ Curve Set Annotation▶ Preferences	
CONSTCL 20 SCALE	**View Stationing**	Geometry ▶ View Geometry ▶ Stationing ▶ Preferences	20 Scale settings for viewing Stationing of Mainline Construction Centerline Alignments.
Default		Default Preference	Original Equipment Manufacturers default settings.
Design Default	**Project Options**	File ▶ Project Options ▶ Preferences	For use by Design. Loads proper point numbering and prefixes, precision, abbreviations, sight distance settings, factors, tolerances Units and formats for GDOT projects.

Preference Name	Dialog Name	Dialog Location	Description
DETCL	**View Stationing/**	Geometry ▶ View Geometry ▶ Stationing ▶ Preferences	50 Scale settings for viewing Stationing and Curve Set Annotation for Detour Centerline Alignments.
	Curve Set Annotation	Geometry ▶ View Geometry ▶ Curve Set Annotation ▶ Preferences	
DETCL 20 Scale	**View Stationing**	Geometry ▶ View Geometry ▶ Stationing ▶ Preferences	20 Scale settings for viewing Stationing for Detour Centerline Alignments.
Ditch Flow Arrows	**Annotate Feature**	Surface ▶ View Surface ▶ Annotate Feature ▶ Preferences	Loads settings into the Annotate Feature dialog to place the 'Ditch Flow Arrow' cell on user selected features. The settings ensure the 'Ditch Flow Arrow' cell point in the direction of flow.
ENHANCEMENTS	**View Triangles**	Surface ▶ View Surface ▶ Triangles ▶ Preferences	For use by the SDE when viewing enhancements to obscured areas for inclusion into the Existing DTM.
EXISTING	**View Triangles/**	Surface ▶ View Surface ▶ Triangles ▶ Preferences	For use when viewing the Existing DTM.
	View Contours	Surface ▶ View Surface ▶ Contours ▶ Preferences	
Existing Majors	**Label Contours**	Surface ▶ View Surface ▶ Label Contours ▶ Preferences	For use in labeling individual Major Contour Elevations of Existing ground surfaces.

Preference Name	Dialog Name	Dialog Location	Description
Existing Minors	**Label Contours**	Surface ► View Surface ► Label Contours ► Preferences	For use in labeling individual Minor Contour elevations of Existing ground surfaces.
FINISH	**View Triangles/** **View Contours**	Surface ► View Surface ► Triangles ► Preferences Surface ► View Surface ► Contours ► Preferences	For use when viewing Final DTM Surfaces.
Finished Majors	**Label Contours**	Surface ► View Surface ► Label Contours ► Preferences	For use in labeling individual Major Contour Elevations of Finished Design Surfaces.
Finished Minors	**Label Contours**	Surface ► View Surface ► Label Contours ► Preferences	For use in labeling individual Minor Contour Elevations of Finished Design Surfaces.
GDOT	**Display Template**	Modeler ► Create Template ►Right mouse click over the Template to Display and select Display ► Preferences	Loads settings for viewing a component or template in MicroStation.
GDOT Earthwork Volumes *(Ensure the "End-Area Volumes" folder is selected)*	**Cross Sections**	Evaluation ► Cross Section ► Cross Sections ► Preferences	Loads settings for generating the GDOT Earthwork Volumes Report.

Preference Name	Dialog Name	Dialog Location	Description
GDOT Profiles	**View Vertical Annotation**	Geometry ▶ View Geometry ▶ Vertical Annotation	Settings for proper viewing of vertical curve data on the Profile Plan Sheets.
Narrow 10h 10v *(Ensure the "Create Cross Section" folder is selected)*	**Cross Sections**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	Loads settings for creating Narrow Cross Section Sheets at a 10 Horizontal to 10 Vertical Scale. The Global Scale Factor must be set separately to 10.0000 for proper viewing.
NO BEARING & DISTANCE	**View Horizontal Annotation**	Geometry ▶ View Geometry ▶ Horizontal Annotation ▶ Preferences	Loads settings into the View Horizontal Annotation dialog to turn off labeling the bearing and distance when viewing alignments.
OEM_Default		Surface ▶ View Surface ▶ Triangles ▶ Preferences	Original Equipment Manufacturers default settings.
PAR NAMES	**View Closed Areas**	Geometry▶View Geometry▶Closed Areas▶ Preferences	Loads settings for viewing the Alignment Names of closed Alignments in the MicroStation DGN.
Prop.dgn Alignments	**Geometry Selection Filter**	Geometry ▶ View Geometry ▶ Horizontal Annotation ▶ Filter ▶Preferences	For use by the SDE when creating the PI#_PROP.dgn file for delivery to the Design Office. The Preference filters the Feature Styles to the 13 Features Styles listed here: PROP_E_ACL,PROP_E_BCOL,PROP_E_BCTL,PROP_E_BGMD, PROP_E_BLDL,PROP_E_BLLL,PROP_E_BMISC,PROP_E_BSL, PROP_E_PAR,PROP_E_POEL,PROP_E_RWE,PROP_E_RWRR, PROP_E_RWU

Preference Name	Dialog Name	Dialog Location	Description
Prop.dgn Points	**Geometry Selection Filter**	Geometry ▶ View Geometry ▶ Horizontal Annotation ▶ Filter ▶ Preferences	For use by the SDE when creating the PI#_PROP.dgn file for delivery to the Design Office. The Preference filters the Feature Styles to the 22 Features Styles listed here: PROP_E_APC,PROP_E_API,PROP_E_APOC,PROP_E_APOT, PROP_E_APT,PROP_E_BCOL,PROP_E_BCTL,PROP_E_BGMD, PROP_E_BLDL,PROP_E_BLLL,PROP_E_BMISC,PROP_E_BSL, PROP_E_PAR,PROP_E_PCF,PROP_E_POEL,PROP_E_PPC, PROP_E_PPOL,PROP_E_RWC,PROP_E_RWE,PROP_E_RWM, PROP_E_RWRR,PROP_E_RWU
REQD.dgn Alignments	**Geometry Selection Filter**	Geometry ▶ View Geometry ▶ Horizontal Annotation ▶ Filter ▶ Preferences	For use in creating the PI#REQD.dgn file. The Preference filters the Feature Styles to the 4 Features Styles listed here: REQD_P_DWESMT,REQD_P_PESMT,REQD_P_REQD,REQD_P_TESMT
REQD.dgn Points	**Geometry Selection Filter**	Geometry ▶ View Geometry ▶ Horizontal Annotation ▶ Filter ▶ Preferences	For use in creating the PI#REQD.dgn file. The Preference filters the Feature Styles to the 5 Features Styles listed here: REQD_P_DWESMT,REQD_P_PESMT,REQD_P_REQD,REQD_P_TESMT,REQD_P_RWRM
SE LEFT	**Display Super-elevation in Plan**	Drafting▶ Display Superelevation in Plan▶Preferences	For use in displaying the Transition Stations and Superelevation Rate for a developed Corridor and Superelevation Control Line. SE Left displays information to the left of the Pivot Line defined in the command.
SE RIGHT	**Display Super-elevation in Plan**	Drafting▶ Display Superelevation in Plan▶Preferences	For use in displaying the Transition Stations and Superelevation Rate for a developed Corridor and Superelevation Control Line. SE Right displays information to the right of the Pivot Line defined in the command.

Preference Name	Dialog Name	Dialog Location	Description
SIDECL	**View Stationing/**	Geometry ▶ View Geometry ▶ Stationing ▶ Preferences	50 Scale settings for viewing Stationing and Curve Set Annotation for Side Road Construction Centerline Alignments.
	Curve Set Annotation	Geometry ▶ View Geometry ▶ Curve Set Annotation ▶ Preferences	
SIDECL 20 SCALE	**View Stationing**	Geometry ▶ View Geometry ▶ Stationing ▶ Preferences	20 Scale settings for viewing Stationing for Side Road Construction Centerline Alignments.
Stakeout Survey Data	**Geometry Selection Filter**	Tools ▶ XML Reports ▶ Point Validation ▶ Filter ▶ Preferences	Used to create the Stakeout Report. The Preference filters the Feature Styles to the following 20 Feature Styles. PROP_E_PAR,PROP_E_RWE,PROP_E_RWM,PROP_E_RWC, PROP_E_RWU,PROP_E_POEL,PROP_E_PPC,PROP_E_PCF, TOPO_E_SNGSCM,TOPO_E_SLCM,TOPO_E_SLCD, TOPO_E_SDCD,TOPO_E_SBNCHMK,REQD_P_*, MAIN_P_CONSTCL,MAIN_P_SIDECL
Surface Check MPCKGRD	**Geometry Selection Filter**	Tools ▶ XML Reports ▶ Surface Check ▶ Filter ▶ Preferences	Used by the District Survey Party Chiefs and the Consultant Compliance Supervisor in the Office of Design Policy and Support/Location Bureau to generate a GDOT Surface Check Report. The Surface Check MPCKGRD Preference is used to filter the Feature Styles for the **First Check Points** - **Include:** field to include only the Feature Style: TOPO_E_MPCKGRD

Preference Name	Dialog Name	Dialog Location	Description
Surface Check MPCKPAV	**Geometry Selection Filter**	Tools ► XML Reports ► Surface Check ► Filter ► Preferences	Used by the District Survey Party Chiefs and the Consultant Compliance Supervisor in the Office of Design Policy and Support/Location Bureau and Support to generate a GDOT Surface Check Report. The Surface Check MPCKPAV Preference is used to filter Feature Styles for the **Second Check Points** - **Include:** field to include only the Feature Style: TOPO_E_MPCKPAV
Survey Default	**Project Options**	File ► Project Options ► Preferences	For use by Photogrammetry and Survey. Loads proper point numbering and prefixes, precision, abbreviations, sight distance settings, factors, tolerances Units and formats for GDOT projects.
SUE	**Annotate Feature in Profile**	Evaluation ► Profile ► Annotate Feature In Profile ► Preferences	Used for the profile annotation of SUE QL-A Test Hole data.
Vertical Gore Design Tool	**Vertical Gore Tool**	Modeler► Roadway Designer ► Tools ► Vertical Gore Tool► Preferences	Loads the 'Gore' Feature Styles into the proper fields for use in the Roadway Designer Vertical Gore Design Tool.
Wide 10h 10v *(Ensure the "Create Cross Section" folder is selected)*	**Cross Sections**	Evaluation ► Cross Section ► Cross Sections ► Preferences	Loads settings for creating Wide Cross Section sheets at a 10 Horizontal to 10 Vertical Scale. The Global Scale Factor must be set separately to 10.0000 for proper viewing.
XSEC TEXT – CL. EL. GROUND *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ► Cross Section ► Cross Sections ► Preferences	Used for annotating the existing ground elevation on the Cross Sections at the centerline alignment.
XSEC TEXT – EL. DIAGONAL *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ► Cross Section ► Cross Sections ► Preferences	Used for the annotation of proposed elevations in which the text must be viewed diagonally. (i.e. Roadway Profile.)

Preference Name	Dialog Name	Dialog Location	Description
XSEC TEXT – EL. HORIZONTAL *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	Used for the annotation of proposed elevations in which the text must be viewed horizontally. (i.e. Roadway Ditches.)
XSEC TEXT – EL. VERTICAL *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	Used for the annotation of proposed elevations in which the text must be viewed vertically.
XSEC TEXT – OFFSET *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	User for the annotation of offset distances as measured from the centerline. (i.e. Slopestakes/Construction Limits.)
XSEC TEXT – OFFSET/EL. VERTICAL *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	Used for the annotation of offset distances as measured from the centerline. The elevation at the offset is also placed. This form of annotation is not required on the final Cross Section plans. It is provided to be used 'as desired' during the design process.
XSEC TEXT – SLOPES % *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	Used for the annotation of slopes that require a percentage be used rather than a ratio (i.e. Pavement Cross Slopes).
XSEC TEXT – SLOPES x:y *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	Used for the annotation of slopes that require a ratio be used rather than a percentage (i.e. Ditch Slopes, Front Slopes, Back Slopes, etc.).
XSEC TEXT – SUE *(Ensure the "Annotate Cross Section" folder is selected)*	**Annotate Cross Section**	Evaluation ▶ Cross Section ▶ Cross Sections ▶ Preferences	Used for the cross section annotation of SUE QL-A Test Hole data.

2.6 GDOT Standard InRoads Photogrammetric Feature Codes

The following table contains the standard **Photogrammetry Codes** and the associated **InRoads Alpha Codes** for use in Photogrammetry.

GDOT STANDARD PHOTOGRAMMETRY CODES

K Code	Description	InRoads Alpha Code	Triangulate (Yes/No)
K5	EDGE OF ASPHALT PAVEMENT	TEAP	Y
K5	EDGE OF ASPHALT DRIVE	TEAD	Y
K6	EDGE OF ASPHALT SHOULDER	TEAS	Y
K7	EDGE OF TRAVEL LANE	TETL	Y
K8	WHITE LINE STRIPING	TSTP	Y
K9	EDGE OF DIRT ROAD	TEDR	Y
K9A	EDGE OF DIRT DRIVE	TEDD	Y
K17	SIDEWALK, CENTER	TSW	N
K19A	FOUNDATION	FNDN	N
K19B	RUINS	RUIN	Y
K28	DAM, TOP	DDT	Y
K36	EDGE OF CONCRETE DRIVE	TECD	Y
K41	SWIMMING POOL	POOL	Y
K43	DITCH FLOW LINE	MDITCHFL	Y
K44	EDGE OF RIVER	TRIVER	Y
K45	EDGE OF LAKE	TLAKE	Y
K63	PAVE DITCH	DPD	Y
K150	JOB LIMIT LINE	MJLL	N
K152	EMERGENCY LANE	TEL	Y
K154	CURB & GUTTER, TOP	TCGT	Y
K155	CURB & GUTTER, F/L	TCGF	Y
K156	CROWN OF ROAD	TCOR	Y
K157	MAP SEW LINE	MSEWLINE	N
K158	RANDOM TERRAIN POINT	TRP	Y
K159	MAP OBSCURE AREA	MOBSC	Y
K161	RAILROAD, TOP OF RAIL	TRCRE	Y
K163	WALL FACE, TOP	TWFT	Y
K164	WALL FACE, BOTTOM	TWFB	Y
K165	TERRAIN POINT ON BREAK LINE	TPBL	Y
K166	CONSTRUCTION BOUNDARY, ACTV	TCBA	Y
K167	DAM, TOE	DADB	Y

2.7 GDOT Standard InRoads Field Survey Feature Codes

The following spreadsheet is for informational use only so that the Designer will have a reference for the Field Survey Feature Codes if needed. The spreadsheet contains the standard **Numeric SMI Codes** and the associated **InRoads Alpha Codes** for use in Field Survey. The InRoads Feature Style is depicted for use by Survey Data Engineers and Designers. The **Point Type and Chain Type Triangulate (Yes/No)** column(s) are for informational use only. This column denotes the status of the Alpha Code and lists whether it is triangulated or not triangulated in the DTM Surface and whether it is a Point Type or a Chain Type.

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
	Ground Elevations					
1	TERRAIN POINT ON BREAK LINE	TPBL	TOPO_E_TPBL		Y	4
2	RANDOM TERRAIN POINT	TRP	TOPO_E_TRP	Y		2
	Property and Right-of-Way					
3	RIGHT-OF-WAY MARKER FOUND	RWM	PROP_E_RWM	N		1
4	RIGHT-OF-WAY POINT COMPUTED	RWC	PROP_E_RWC	N		1
5	RIGHT-OF-WAY UTILITY COMPANY	RWU	PROP_E_RWU	N		1
6	RIGHT-OF-WAY PRESCRIPTION PT	RWE	PROP_E_RWE		N	3
7	POINT ON EASEMENT LINE	POEL	PROP_E_POEL	N		1
8	PROPERTY CORNER FOUND	PCF	PROP_E_PCF	N		1
9	PROPERTY POINT ON LINE	PPOL	PROP_E_PPOL	N		1
10	PROPERTY POINT COMPUTED	PPC	PROP_E_PPC	N		1
	Alignment					
15	POINT ON TANGENT, EXISTING	APOT	PROP_E_APOT	N		1
16	POINT OF CURVATURE, EXISTING	APC	PROP_E_APC	N		1
17	POINT ON CURVE, EXISTING	APOC	PROP_E_APOC	N		1
18	POINT OF TANGENCY, EXISTING	APT	PROP_E_APT	N		1
19	POINT OF INTERSECTION	API	PROP_E_API	N		1
20	ALIGNMENT CENTERLINE	ACL	PROP_E_ACL		N	3

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
Roadways						
24	EDGE OF DIRT ROAD	TEDR	TOPO_E_TEDR		Y	4
25	EDGE OF ASPHALT DRIVE	TEAD	TOPO_E_TEAD		Y	4
26	EDGE OF CONCRETE DRIVE	TECD	TOPO_E_TECD		Y	4
27	EDGE OF ASPHALT PAVEMENT	TEAP	TOPO_E_TEAP		Y	4
28	EDGE OF ASPHALT SHOULDER	TEAS	TOPO_E_TEAS		Y	4
29	EDGE OF CONCRETE PAVEMENT	TECP	TOPO_E_TECP		Y	4
30	EDGE SURFACE TREATMENT ROAD	TEST	TOPO_E_TEST		Y	4
31	CURB, ASPHALT	TAC	TOPO_E_TAC		Y	4
32	CURB, HEADER	THC	TOPO_E_THC		Y	4
33	CURB & GUTTER, TOP	TCGT	TOPO_E_TCGT		Y	4
34	CURB & GUTTER, F/L	TCGF	TOPO_E_TCGF		Y	4
35	V-GUTTER	TVG	TOPO_E_TVG		Y	4
36	BRIDGE APPROACH SLAB, EDGE	TBAS	TOPO_E_TBAS		Y	4
37	BRIDGE END, CENTER	TBRDGCEN	TOPO_E_TBRDGCEN		N	4
38	BRIDGE END, CORNER	TBRDGCOR	TOPO_E_TBRDGCOR		N	4
39	BRIDGE COLUMN, CENTER	TCOLC	TOPO_E_TCOLC	N		1
40	BRIDGE COLUMN, EDGE	TCOLE	TOPO_E_TCOLE	N		1
41	BRIDGE GUTTER LINE	TBGL	TOPO_E_TBGL		N	4
42	BRIDGE CENTERLINE	TBCL	TOPO_E_TBCL		N	4
43	ENDROLL	TENDROLL	TOPO_E_TENDROLL		Y	4
44	BRIDGE CAP	TBCAP	TOPO_E_TBCAP	N		2

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
	Drainage					
45	SINGLE CATCH BASIN, Gutr F/L	DCB	TOPO_E_DCB	N		2
47	DOUBLE CATCH BASIN, Gutr F/L	DDCB	TOPO_E_DDCB	N		2
49	DROP INLET, TOP	DDI	TOPO_E_DDI	N		2
50	SPUR DIKE	DSPURDK	TOPO_E_DSPURDK		Y	4
51	TOP OF WATER ELEVATION	DWE	TOPO_E_DWE	N		2
52	STREAM CENTER, F/L	DSC	TOPO_E_DSC		Y	4
53	STREAM EDGE	DSE	TOPO_E_DSE		Y	4
54	STREAM BANK TOP	DSB	TOPO_E_DSB		Y	4
55	DAM, TOP	DDT	TOPO_E_DDT		Y	4
56	DAM, TOE	DADB	TOPO_E_DADB		Y	4
57	OBSCURED AREA	DOBSC	TOPO_E_DOBSC		Y	4
59	HEAD WALL, END	DHWE	TOPO_E_DHWE		N	3
60	CULVERT, WINGWALL END	DCWE	TOPO_E_DCWE		N	3
61	EDGE OF WATER	DEW	TOPO_E_DEW		N	3
62	SWAMP EDGE	DSWE	TOPO_E_DSWE		N	3
63	WETLAND BOUNDARY	DWB	TOPO_E_DWB		N	3
**NA	DRAINAGE BOTTOM OF DITCH	DBOD	TOPO_E_DBOD		Y	4
**NA	DRAINAGE TOP OF DITCH	DTOD	TOPO_E_DTOD		Y	4
**NA	STREAM BANK-FULL	SBF	TOPO_E_SBF	N		2
**NA	STREAM X-SECTION	SXS	TOPO_E_SXS	N		2

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
	Utilities					
68	STRAIN POLE	UUSTRPOL	TOPO_E_UUSTRPOL	N		1
69	ELECTRICAL BOX	UUELBOX	TOPO_E_UUELBOX		N	3
70	OVERHEAD ELECTRICAL LINE	UUOEL	TOPO_E_UUOEL		N	3
71	OVERHEAD TELEPHONE LINE	UUOTL	TOPO_E_UUOTL		N	3
72	POWER POLE, CENTER	UUPP	TOPO_E_UUPP	N		1
73	LIGHT POLE, CENTER	UULP	TOPO_E_UULP	N		1
74	TELEPHONE POLE, CENTER	UUTP	TOPO_E_UUTP	N		1
75	TELEPHONE PEDESTAL, CENTER	UUTPD	TOPO_E_UUTPD	N		1
76	GUY POLE, CENTER	UUGP	TOPO_E_UUGP	N		1
77	POLE ANCHOR	UUPGA	TOPO_E_UUPGA	N		1
78	YARD LIGHT, ELECTRICAL	UUYLE	TOPO_E_UUYLE	N		1
79	YARD LIGHT, GAS	UUYLG	TOPO_E_UUYLG	N		1
80	WATER METER, CENTER	UUWM	TOPO_E_UUWM	N		1
81	WATER VALVE	UUWV	TOPO_E_UUWV	N		1
82	FIRE HYDRANT, CENTER	UUFH	TOPO_E_UUFH	N		1
83	MANHOLE STORM SEWER, TOP	UUMHST	TOPO_E_UUMHST	N		2
84	MANHOLE STORM SEWER, F/L	UUMHSTF	TOPO_E_UUMHSTF	N		2
85	MANHOLE, TELEPHONE, TOP	UUMHT	TOPO_E_UUMHT	N		2
86	MANHOLE, ELECTRICAL, TOP	UUMHE	TOPO_E_UUMHE	N		2
87	MANHOLE, SANITARY SEWER, TOP	UUMHSS	TOPO_E_UUMHSS	N		2
88	MANHOLE, SANITARY SEWER, F/L	UUMHSSF	TOPO_E_UUMHSSF	N		2
89	SANITARY SEWER LINE, CENTER	UUSSL	TOPO_E_UUSSL	N		1
90	GAS METER, CENTER	UUGM	TOPO_E_UUGM	N		1
91	GAS VALVE, CENTER	UUNGV	TOPO_E_UUNGV	N		1

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
Utilities						
92	GAS VENT PIPE	UUNGVP	TOPO_E_UUNGVP	N		1
93	GAS LINE MARKER	UUNGLM	TOPO_E_UUNGLM	N		1
**NA	PEDESTRIAN CROSS LIGHT	UUPCL	UTLE_E_UUPCL	N		1
**NA	TRAFFIC SIGNAL BOX	UUTSB	UTLE_E_UUTSB		N	3
**NA	UNDERGROUND FIBER MARKER	UUFM	UTLE_E_UUFM	N		1
Subsurface Utilities						
**NA	SUBSURFACE UTILITY - BOTTOM	SUEBOT	UTLE_E_SUEBOT	N		2
**NA	SUBSURFACE UTILITY - TOP	SUETOP	UTLE_E_SUETOP	N		2
General Topo						
95	WALL FACE	TWF	TOPO_E_TWF		N	3
96	WALL FACE, TOP	TWFT	TOPO_E_TWFT		Y	4
97	WALL FACE, BOTTOM	TWFB	TOPO_E_TWFB		Y	4
98	IRRIGATION PIVOT POINT	TIRRPVTP	TOPO_E_TIRRPVTP	N		1
99	IRRIGATION LIMITS	TIRRLMT	TOPO_E_TIRRLMT	N		1
100	SIGN, CENTER	TSC	TOPO_E_TSC	N		1
101	GASOLINE MONITORING WELL	TGMW	TOPO_E_TGMW	N		1
102	GASOLINE FILLER VALVE	TGFV	TOPO_E_TGFV	N		1
103	GASOLINE VENT PIPE	TGVP	TOPO_E_TGVP	N		1
104	GASOLINE PUMP	TGP	TOPO_E_TGP	N		1
105	GASOLINE STORAGE TANK, END	TGST	TOPO_E_TGST		N	3
106	GASOLINE PUMP ISLAND	TGPI	TOPO_E_TGPI		N	3
107	CANPOY	TCAN	TOPO_E_TCAN		N	3
108	BUILDING CORNER	TBLD	TOPO_E_TBLD		N	3
109	BUILDING ROOF LINE CORNER	TBLDRL	TOPO_E_TBLDRL		N	3

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
110	HOUSE CORNER	THCR	TOPO_E_THCR		N	3
111	HOUSE ROOF LINE CORNER	THRL	TOPO_E_THRL		N	3
112	MOBILE HOME CORNER	TMHCR	TOPO_E_TMHCR		N	3
113	MOBILE HOME ROOF LINE CORNER	TMHRL	TOPO_E_TMHRL		N	3
115	WOODS LINE	TWL	TOPO_E_TWL		N	3
116	CULTIVATION LINE	TCUL	TOPO_E_TCUL		N	3
117	FENCE, FIELD WIRE	TFFW	TOPO_E_TFFW		N	3
118	FENCE, BARB WIRE	TFBW	TOPO_E_TFBW		N	3
119	FENCE, WOOD	TFW	TOPO_E_TFW		N	3
120	RAILROAD, TOP OF RAIL	UTRCR	UTLE_E_UTRCR		N	4
121	RAILROAD, CENTERLINE	UTRCL	UTLE_E_UTRCL		N	3
122	CEMETERY LINE	TCEM	TOPO_E_TCEM		N	3
123	GRAVE	TGRV	TOPO_E_TGRV		N	3
124	GUARDRAIL	TGR	TOPO_E_TGR		N	3
125	SIGN, END	TSE	TOPO_E_TSE		N	3
126	SATELLITE DISH	UTSATDSH	UTLE_E_UTSATDSH	N		1
127	LIMIT LINE	TLIML	TOPO_E_TLIML		Y	4
128	CONSTRUCTION BOUNDARY, ACTV	TCBA	TOPO_E_TCBA		Y	4
129	CONSTRUCTION BOUNDARY, FIND	TCBF	TOPO_E_TCBF		Y	4
Boundaries						
130	COUNTY LINE	BCOL	PROP_E_BCOL		N	3
131	CITY LIMIT LINE	BCTL	PROP_E_BCTL		N	3
132	LAND DISTRICT LINE	BLDL	PROP_E_BLDL		N	3
133	LAND LOT LINE	BLLL	PROP_E_BLLL		N	3
134	STATE LINE	BSL	PROP_E_BSL		N	3

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
New Codes						
**152	HIGH WATER MARK	DHWM	TOPO_E_DHWM	N		2
**153	FLOOR ELEVATION	TFE	TOPO_E_TFE	N		2
**154	EDGE OF DIRT DRIVE	TEDD	TOPO_E_TEDD		Y	4
**156	GATE	TG	TOPO_E_TG		N	3
**158	UNCOVERED DECK	TUD	TOPO_E_TUD		N	3
160	MAP CHECK GROUND	MPCKGRD	TOPO_E_MPCKGRD	N		2
161	MAP CHECK PAVEMENT	MPCKPAV	TOPO_E_MPCKPAV	N		2
**162	VINYL (PVC) FENCE	TVF	TOPO_E_TVF		N	3
**163	FUEL TANK	TFT	TOPO_E_TFT		N	3
**164	PAVE DITCH	DPD	TOPO_E_DPD		Y	4
**165	BRICK COLUMN	TBC	TOPO_E_TBC		N	3
**166	SEPTIC TANK CENTER	DSTC	TOPO_E_DSTC	N		1
**167	STEPS	TS	TOPO_E_TS		N	3
**168	HISTORICAL MONUMENT	THM	TOPO_E_THM		N	3
**169	FLAG POLE	TFP	TOPO_E_TFP	N		1
**170	DRAIN LINES	DDL	TOPO_E_DDL		N	3
**NA	EDGE OF TRAVEL LANE	TETL	TOPO_E_TETL		Y	4
Surveyor Defined						
171	Surveyor Defined Value	XXA	TOPO_E_XXA		Y	4
172	Surveyor Defined Value	XXB	TOPO_E_XXB		Y	4
173	Surveyor Defined Value	XXC	TOPO_E_XXC		Y	4
174	Surveyor Defined Value	XXD	TOPO_E_XXD		Y	4
175	Surveyor Defined Value	XXE	TOPO_E_XXE		Y	4
176	Surveyor Defined Value	XXF	TOPO_E_XXF		Y	4
177	Surveyor Defined Value	XXG	TOPO_E_XXG		Y	4
178	Surveyor Defined Value	XXH	TOPO_E_XXH		N	3

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
Surveyor Defined						
179	Surveyor Defined Value	XXI	TOPO_E_XXI		N	3
180	Surveyor Defined Value	XXJ	TOPO_E_XXJ		N	3
181	Surveyor Defined Value	XXK	TOPO_E_XXK		N	3
182	Surveyor Defined Value	XXL	TOPO_E_XXL		N	3
183	Surveyor Defined Value	XXM	TOPO_E_XXM		N	3
184	Surveyor Defined Value	XXN	TOPO_E_XXN		N	3
185	Surveyor Defined Value	XXO	TOPO_E_XXO	Y		2
186	Surveyor Defined Value	XXP	TOPO_E_XXP	Y		2
187	Surveyor Defined Value	XXQ	TOPO_E_XXQ	Y		2
188	Surveyor Defined Value	XXR	TOPO_E_XXR	Y		2
189	Surveyor Defined Value	XXS	TOPO_E_XXS	Y		2
190	Surveyor Defined Value	XXT	TOPO_E_XXT	Y		2
191	Surveyor Defined Value	XXU	TOPO_E_XXU	Y		2
192	Surveyor Defined Value	XXV	TOPO_E_XXV	N		1
193	Surveyor Defined Value	XXW	TOPO_E_XXW	N		1
194	Surveyor Defined Value	XXX	TOPO_E_XXX	N		1
195	Surveyor Defined Value	XXY	TOPO_E_XXY	N		1
196	Surveyor Defined Value	XXZ	TOPO_E_XXZ	N		1
197	Surveyor Defined Value	XXZA	TOPO_E_XXZA	N		1
198	Surveyor Defined Value	XXZB	TOPO_E_XXZB	N		1
199	Surveyor Defined Value	XXZC	TOPO_E_XXZC	N		1
**NA	Surveyor Defined Value (Utility)	UXXA	UTLE_E_UXXA	N		1
**NA	Surveyor Defined Value (Utility)	UXXB	UTLE_E_UXXB		N	3

SMI Code	Description	InRoads Alpha Code	InRoads Feature Style	Point Type Triangulate (Y/N)	Chain Type Triangulate (Y/N)	Group Code
Dimension Codes: (Drainage)						
200	DRAINAGE PIPE, F/L, C	DPC	TOPO_E_DPC		N	4
201	DRAINAGE PIPE, F/L, M	DPM	TOPO_E_DPM		N	4
202	DRAINAGE PIPE, F/L, P	DPP	TOPO_E_DPP		N	4
**203	CULVERT END, F/L	DCEF	TOPO_E_DCEF		N	4
Dimension Codes (General Topo)						
210	SIDEWALK, CENTER	TSW	TOPO_E_TSW		N	3
211	FENCE, CHAIN LINK	TFCL	TOPO_E_TFCL		N	3
212	TREE, CENTER	TTRE	TOPO_E_TTRE	N		1
213	WELL	TWELL	TOPO_E_TWELL	N		1
Dimension Codes (Roadway)						
225	DIRT ROAD, C/L	TDR	TOPO_E_TDR		N	3
227	DIRT DRIVE, C/L	TDD	TOPO_E_TDD		N	3
235	MILE POST, RAILROAD	UTMPR	UTLE_E_UTMPR	N		1
236	KM POST, HIGHWAY	TKMP	TOPO_E_TKMP	N		1
237	MILE POST, HIGHWAY	TMPH	TOPO_E_TMPH	N		1
Survey control						
240	NGS CONTROL MONUMENT	SNGSCM	TOPO_E_SNGSCM	N		2
241	LOCATION CONTROL MONUMENT	SLCM	TOPO_E_SLCM	N		2
242	LOCATION CONTROL DELTA	SLCD	TOPO_E_SLCD	N		2
243	DISTRICT CONTROL DELTA	SDCD	TOPO_E_SDCD	N		2
244	CONTROL RE-SHOT FOR CHECK	SCCHK	TOPO_E_SCCHK	N		2
245	BENCHMARK	SBNCHMK	TOPO_E_SBNCHMK	N		2
250	***MISCELLANEOUS	MISC	TOPO_E_MISC	N		2

***SMI Code 250 Miscellaneous MISC TOPO_E_MISC**

(Not to be used by field survey personnel. Reserved for use by the GDOT Location Bureau for such items as Control work for mappers, property line disputes, consultant rechecks, etc. Field survey personnel should only use the surveyor defined codes 171 to 199 for miscellaneous undefined items).

3

Horizontal Alignments

3. Horizontal Alignments

This section provides a brief overview of the requirements for Horizontal Alignments, Horizontal Alignment Points and COGO Points. For detailed Horizontal Alignment information please refer to **Lab 3** in the Design Training Labs.

This section covers the following topics:

- Horizontal Alignment Overview
- Horizontal Alignment and COGO Point Names/Feature Styles
- COGO Points and Alignment Points
- View Horizontal Annotation Preferences
- View Horizontal Annotation Filters
- Reviewing Horizontal Alignments

3.1   Horizontal Alignment Overview

In InRoads the term Horizontal Alignment refers to all linear elements, open or closed, such as centerlines, right of way parcels, edge of pavements, etc. Horizontal Alignments consist of COGO points, linear elements and curves. Curves are not independent entities but are considered part of the Alignment. In order to generate Horizontal Alignments to GDOT standard conventions – the following information should be adhered and followed.

a)   All Centerline Horizontal Alignments must have a Feature Style assigned of **MAIN_P_CONSTCL**, **MAIN_P_SIDECL** or **STE_P_DETCL** for the correct Symbology and Stationing to view correctly.

b)   All Right of Way and Easement Alignments must have a Feature Style assigned of **REQD_P_DWESMT**, **REQD_P_PESMT**, **REQD_P_REQD** or **REQD_P_TESMT** for the Right of Way Tables to generate correctly.

c)   Any additional Horizontal Alignments such as Ditch Centerlines, Edge of Pavements, etc. must be assigned the appropriate Feature Style for the Symbology and Levels to view correctly in MicroStation.

d)   All Horizontal Alignment Names and COGO Point Names must begin with a **DE** Prefix. All Points must begin numbering at DE10000. Horizontal Alignment numbering may begin at DE1.

e)   All Horizontal Alignment Points must be converted to COGO Points.

f)   Designers should <u>not</u> use the Existing Centerline Alignment provided by Survey as the Design Alignment but should create a new Design Alignment either by copying and renaming the Existing Centerline Alignment and assigning an appropriate Feature Style or by creating a new Design Centerline Alignment from scratch.

g)   When working on a Horizontal Alignment – ensure that it is set as the Active Alignment.

h)   When storing curve data in Horizontal Alignments – ensure that all the curves are tangent and points are equated at the PC and PT of all curves.

i)   Make sure to save the ALG file periodically when changes are made. InRoads does not save data on the fly - data is saved in temporary memory. The ALG file must be manually saved in order to retain Design modifications.

3.2   Horizontal Alignment and COGO Point Names/Feature Styles

Horizontal Alignments and COGO Points must be stored with a DE Prefix and must be stored in a certain Point/Horizontal Alignment Number range along with the appropriate Feature Style. See the following Tables (*Tables 3.1, 3.2 and 3.3)* for a list of the required naming conventions.

Table 3.1 Standard Design Geometry Object Names		
Object Type	**Prefix**	**Starting Number**
*Design Cogo Points	DE	10000 (Max. = 99,999)
*Design Horizontal Alignment Points	DE	10000 (Max. = 99,999)
**Design Horizontal Alignments	DE	1
***Design Vertical Alignments	DE	1

* All Design Cogo Points and Design Horizontal Alignment Points **must** be named with a prefix of DE and begin with the number 10000 (e.g., first design point = DE10000).

All Design Horizontal Alignments **must be named with a prefix of DE and begin with the number 1, (e.g., DE1).

***It is **suggested** that the Design Vertical Alignment (which corresponds with the Horizontal Alignment) be named the same as the associated Horizontal Alignment.

Table 3.2 Design Point & Alignment Ranges to Use	
Cogo/Alignment Points	Range – 10,000 to 99,999
Horizontal/Vertical Alignments	Range – 1 to no Limitations for Alignments -- but must have the **DE** Prefix

Table 3.3		
Feature Styles For Geometry Design Points and Alignments		
Proposed Design Points **Feature Style**	DRNG_P_Ditch MAIN_P_CONSTCL MAIN_P_EOP MAIN_P_EPSHLDR MAIN_P_SHLDR MAIN_P_SIDECL	REQD_P_DWESMT REQD_P_PESMT REQD_P_REQD REQD_P_RWRM REQD_P_TESMT STE_P_DETCL
Proposed Centerline Alignments **Feature Style**		**Descriptions** **(C/L Roadway Name)**
Mainline Centerline	MAIN_P_CONSTCL	Ex: C/L HWY 100
Sideroad Centerline	MAIN_P_SIDECL	Ex: C/L PEQUANOC DR.
Detour Centerline	STE_P_DETCL	Ex: C/L US 78
Proposed Right of Way **Feature Style**		**Descriptions** **(Feature Style – Parcel #/Parcel Align)**
R/W Monument	REQD_P_RWRM	N/A
Reqd. R/W	REQD_P_REQD	Ex: REQD R/W – PAR 33/SV29
Perm. Const. Esmt.	REQD_P_PESMT	Ex: PESMT – PAR 44/SV67
Temp. Const. Esmt.	REQD_P_TESMT	Ex: TESMT – PAR 23/SV88
Driveway Esmt.	REQD_P_DWESMT**	Ex: DWESMT – PAR 14/SV30
Miscellaneous **Feature Style**		**Descriptions** **(Feature Style – Roadway Name)**
Edge of Pavement	MAIN_P_EOP	Ex: EOP – HWY 100
Edge of Paved Shoulder	MAIN_P_EPSHLDR	Ex: EPSHLDR – PEQUANOC DR.
Edge of Shoulder	MAIN_P_SHLDR	Ex: SHLDR – US 78
Ditch Centerline	DRNG_P_Ditch	Ex: Ditch – HWY 100
Other	(User-Defined)	User Defined

** Note: All other Types of Miscellaneous Easements should use the REQD_P_DWESMT Feature Style.

3.3 COGO Points and Alignment Points

InRoads has the capability to store both COGO Points (which are northing and easting coordinates) and the ability to store Alignments Points (which are just coordinates with an assigned name – not independent Points). It is a required GDOT standard that all Points must be stored as COGO Points. If Alignment Points are stored – it is the Designer's responsibility to convert these Points to COGO Points. In order to view the correct Point Cells and Symbology – COGO Points must be stored instead of Alignment Points in order to generate the correct Symbology, Level, etc. for plans productions. Following is a brief overview of COGO Points versus Alignment Points.

IMPORTANT DISCUSSION

It is <u>very important</u> to discuss some differences between InRoads and what you are familiar with in CAiCE. InRoads has different kinds of points. <u>Alignment points</u> and <u>COGO points</u> are two types of points to be aware of. <u>Alignment points</u> are nothing more than names assigned to coordinates in an alignment and do not exist in the COGO points buffer. In order to satisfy GDOT plan presentation requirements, prepare R/W tables and properly add enhanced survey data to your project. -- Surveyors and Designers alike must ensure that all alignments have a corresponding COGO point stored. At some point this may cause you problems as you branch out and experiment with other InRoads commands because not all InRoads commands store COGO points. Some only assign Alignment Point names and must be converted to COGO points. Some don't assign Alignment Point names or store COGO points and must be assigned Alignment Point names and then be converted to COGO points. As such we recommend that you adhere closely to the methods presented in the tutorials concerning centerlines, R/W and property. We bring this up because it is possible to view points at the same time as viewing Alignments without having to populate the Cogo Points in the <u>View Horizontal Annotation</u> command. Viewing points in this manner would not apply the correct attributes to the points -- therefore you must view the Cogo points separately.

3.4   View Horizontal Annotation Preferences

In order to view Horizontal Alignments to GDOT Standards – there are several Preferences which must be set. These Preferences set the viewing of Alignments (Bearing & Distance or No Bearing & Distance) options, the Stationing/Tic Marks and the Curve Data Tables. The following Tables depict the available Preferences, Locations and Descriptions to set the Preferences.

Table 3.4
Preference – View Horizontal Annotation

Location: Geometry ▶ View Geometry ▶ Horizontal Annotation (**Preferences Button)**	
Preference Name	**Description**
BEARING & DISTANCE	Loads settings into the View Horizontal Annotation dialog to label the bearing when viewing Roadway alignments with the feature styles MAIN_P_CONSTCL, MAIN_P_SIDECL, and PROP_E_ACL. Although DISTANCE is part of the Preference name the distance is no longer set up to be labeled.
NO BEARING & DISTANCE	Displays NO Bearing & Distance information for all Horizontal Alignments.

Table 3.5
Preference – View Stationing

Location: Geometry ▶ View Geometry ▶ Stationing (**Preferences Button**)	
Preference Name	**Description**
ACL	Displays the Stationing, Tics and Curve Data at a 50 Scale for **PROP_E_ACL** Horizontal Alignments.
CONSTCL	Displays the Stationing, Tics and Curve Data at a 50 Scale for **MAIN_P_CONSTCL** Horizontal Alignments.
CONSTCL 20 SCALE	Displays the Stationing, Tics and Curve Data at a 20 Scale for **MAIN_P_CONSTCL** Horizontal Alignments.
DETCL	Displays the Stationing, Tics and Curve Data at a 50 Scale for **STE_P_DETCL** Horizontal Alignments.
DETCL 20 SCALE	Displays the Stationing, Tics and Curve Data at a 20 Scale for **STE_P_DETCL** Horizontal Alignments.
SIDECL	Displays the Stationing, Tics and Curve Data at a 50 Scale for **MAIN_P_SIDECL** Horizontal Alignments.
SIDECL 20 SCALE	Displays the Stationing, Tics and Curve Data at a 20 Scale for **MAIN_P_SIDECL** Horizontal Alignments.

Table 3.6
Preference – Curve Set Annotation

Location: Geometry ▶ View Geometry ▶ Curve Set Annotation (**Preferences Button**)	
Preference Name	**Description**
ACL	Displays the Curve Data Table for **PROP_E_ACL** to GDOT Standards.
CONSTCL	Displays the Curve Data Table for **MAIN_P_CONSTCL** to GDOT Standards.
DETCL	Displays the Curve Data Table for **STE_P_DETCL** to GDOT Standards.
SIDECL	Displays the Curve Data Table for **MAIN_P_SIDECL** to GDOT Standards.

3.5   View Horizontal Annotation Filters

Geometry Selection Filters can be used to select specific Alignments and COGO Points. Once selected and filtered – the Alignments and/or COGO Points will view and/or can be used for the generation of specific Style Sheets based on the criteria selected. The following Tables depict the available Filters, Locations and Descriptions to set the Filters.

Table 3.7
Geometry Selection Filter Preferences for Horizontal Alignments and COGO Points

Location: Geometry ▶ View Geometry ▶ Horizontal Annotation (**Filter Button)** Then in the Geometry Selection Filter – select the **Preferences Button**.	
Filter Name	**Description**
ACL Cogo Point Feature Styles	Loads the Filter to select and view the Feature Style Points for the generation of the ACL Existing Centerline. (Used by the SDE)
Prop.dgn Alignments	Loads the Filter to select and view the Feature Style Alignments for the production of the PROP DGN File. (Used by the SDE)
Prop.dgn Points	Loads the Filter to select and view the Feature Style Points for the production of the PROP DGN File. (Used by the SDE)
REQD.dgn Alignments	Loads the Filter to select and view the Feature Style Alignments for the production of the REQD DGN File.
REQD.dgn Points	Loads the Filter to select and view the Feature Style Points for the production of the REQD DGN File.
Stakeout Survey Data	Loads the Filter to select the Feature Style Points for use in the GDOT Stakeout Report Style Sheet.
Surface Check MPCKGRD	Loads the Filter to select the TOPO_E_MPCKGRD Feature Style Points for use in the GDOT Surface Check Style Sheet.
Surface Check MPCKPAV	Loads the Filter to select the TOPO_E_MPCKPAV Feature Style Points for use in the GDOT Surface Check Style Sheet.

3.6 Reviewing Horizontal Alignments

The Horizontal Alignments description can be reviewed and printed by using the
Geometry ► Review Horizontal command.

Following is the process for reviewing/describing Horizontal Alignments:

- Ensure that the Horizontal Alignment you want to describe is the Active Horizontal Alignment.
- In InRoads, Select **Geometry ► Review Horizontal**…and the **Review Horizontal Alignment** description appears.
- The user may also print the description by using the Print button on the **Review Horizontal Alignment** dialog. (See *Figure 3-1*).
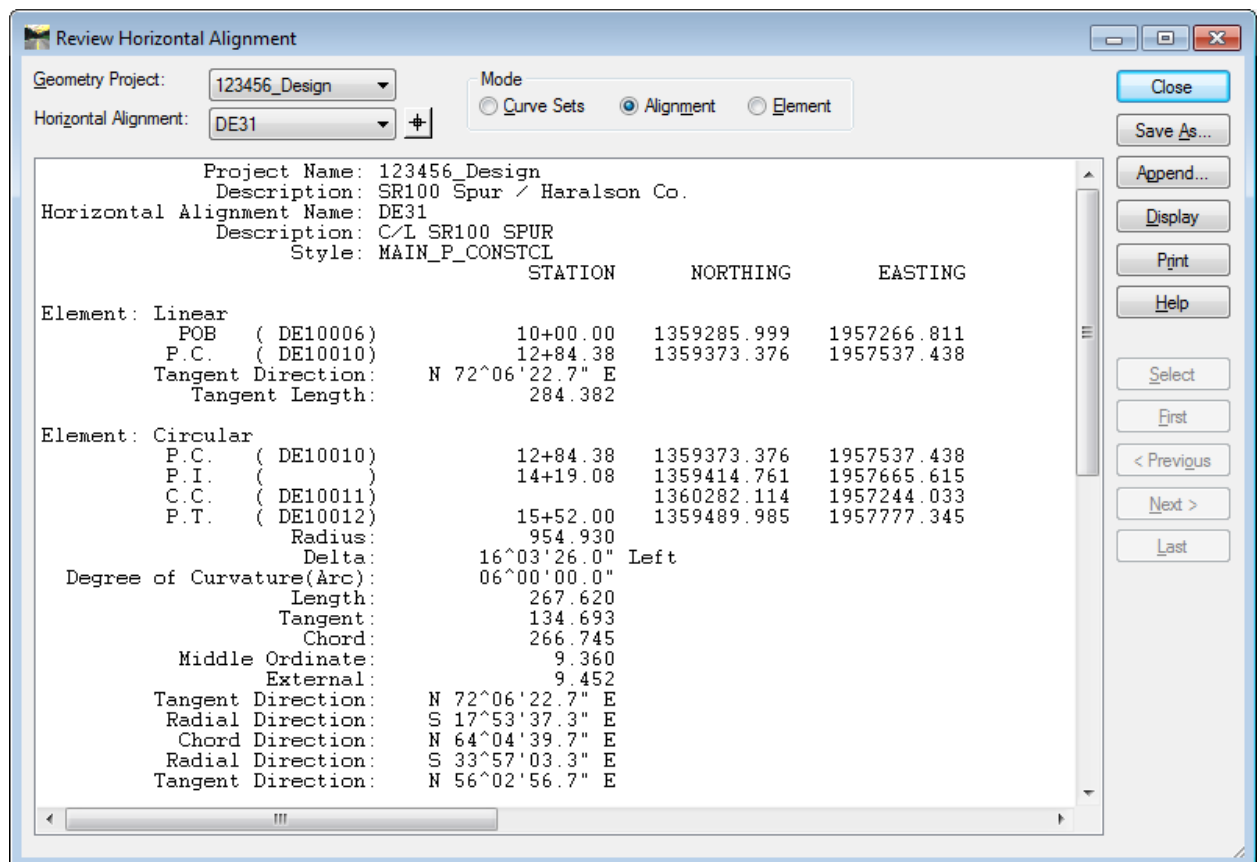
Figure 3-1 Review Horizontal Alignment

Vertical Alignments

4. Vertical Alignments

This section provides a brief overview of the requirements for generating Existing Ground Profiles (Terrain Profiles) and Design Vertical Alignments. For detailed Vertical Alignment information please refer to **Lab 4** in the Design Training Labs.

This section covers the following topics:

- Vertical Alignment Overview
- Vertical Alignment Names and Feature Styles
- Vertical Alignment Preferences
- Vertical Alignment Annotation Preferences
- Reviewing Vertical Alignments

4.1 Vertical Alignment Overview

In InRoads the term Vertical Alignment refers to the Proposed Design Profile. A Vertical Alignment is created for each associated Horizontal Alignment. A proposed Horizontal Alignment and an Existing DTM must be available before creating an Existing Profile and a Proposed Vertical Alignment.   In order to generate Vertical Alignments to GDOT standard conventions – the following information should be adhered and followed.

a) All Vertical Alignments should be named the same as the associated Horizontal Alignment. Example: Horizontal Alignment = DE7 then the Vertical Alignment should be named DE7.

b) A parent/child relationship exists in InRoads between the Horizontal and Vertical Alignments. A Vertical Alignment is a child of the Horizontal Alignment. Multiple Vertical Alignments may exist for a single Horizontal Alignment -- therefore it is important to have the correct Vertical Alignment active <u>along with</u> the active Horizontal Alignment before doing any work.

c) Before PVI's can be added to the Vertical Alignment, a Profile Window must be created. This is also how the Terrain Profile is created. In InRoads, the Terrain Profile is not stored as a permanent object as in CAiCE. The Terrain Profile is created 'on the fly' from the DTM and must be recreated each time you want to view it.

d) The **100h_10v_WORKING, 20h_5v_WORKING** and **50h_10v_WORKING** Preferences views all the same information as the **100h_10v_ SHEETS, 20h_5v_ SHEETS** and **50h_10v_SHEETS** Preferences -- yet adds a grid to assist in the Vertical Alignment design. This is for the temporary viewing of the profile during the design of the project.

e) Permanent viewing of the Profile and Vertical Alignment for plan generation and plotting is covered in **Chapter 6** which depicts the use of the **Profile Generator** in InRoads.

f) Adding PVI's to a Vertical Alignment requires that you have an active Horizontal Alignment, Vertical Alignment and a Profile window in the MicroStation drawing file.

g) Make sure to save the ALG file which contains the Vertical Alignment(s) periodically when changes are made. InRoads does not save data on the fly - data is saved in temporary memory. The ALG file must be manually saved in order to retain Design modifications.

4.2   Vertical Alignment Names and Feature Styles

Vertical Alignments must be stored with a DE Prefix and should be named the same as the associated Horizontal Alignment. Example: Horizontal Alignment = DE7 then the Vertical Alignment should be named DE7. The appropriate Feature Style should be used which corresponds with the Horizontal Alignment Feature Style. (See *Tables 4.1* and *4.2*).

Table 4.1 Standard Vertical Alignment Names		
Object Type	**Prefix**	**Starting Number**
Vertical Alignment	DE	1

Table 4.2 Feature Styles For Geometry Vertical Alignments		
Proposed Vertical Alignment Feature Style		**Descriptions** (C/L Roadway Name)
Mainline Centerline	MAIN_P_CONSTCL	Ex: C/L HWY 100
Sideroad Centerline	MAIN_P_SIDECL	Ex: C/L PEQUANOC DR.
Detour Centerline	STE_P_DETCL	Ex: C/L US 78
Miscellaneous Feature Style		**Descriptions** (Feature Style – Roadway Name)
Edge of Pavement	MAIN_P_EOP	Ex: EOP – HWY 100
Edge of Paved Shoulder	MAIN_P_EPSHLDR	Ex: EPSHLDR – PEQUANOC DR.
Edge of Shoulder	MAIN_P_SHLDR	Ex: SHLDR – US 78
Ditch Centerline	DRNG_P_Ditch	Ex: Ditch – HWY 100
Other	(User-Defined)	User Defined

4.3   Vertical Alignment Preferences

In order to generate/view Vertical Alignments to GDOT Standards – Preferences must be set. These Preferences set the viewing/creation of Vertical Alignments when using the **Evaluation ▶ Profile ▶ Create Profile** dialog. (See *Table 4.3*).

<p align="center">Table 4.3
Preference – Create Profile</p>

Location: Evaluation ▶ Profile ▶ Create Profile (**Preferences Button**)	
Preference Name	**Description**
100h_10v_SHEETS	Used for Vertical Alignment Sheet generation. This Preference should be used for Plans Production only. Preference loads setting for a 100 Scale Horizontal and 10 Scale Vertical (100h_10v_SHEET) plans production Sheet generation.
100h_10v_WORKING	Used for Vertical Alignment Design and depicts a grid to assist in Profile Design. Preference loads setting for a 100 Scale Horizontal and 10 Scale Vertical (100h_10v_WORKING) "working" grid.
20h_5v_SHEETS	Used for Vertical Alignment Sheet generation. This Preference should be used for Plans Production only. Preference loads setting for a 20 Scale Horizontal and 5 Scale Vertical (20h_5v_SHEET) plans production Sheet generation.
20h_5v_WORKING	Used for Vertical Alignment Design and depicts a grid to assist in Profile Design. Preference loads setting for a 20 Scale Horizontal and 5 Scale Vertical (20h_5v_WORKING) "working" grid.
50h_10v_SHEETS	Used for Vertical Alignment Sheet generation. This Preference should be used for Plans Production only. Preference loads setting for a 50 Scale Horizontal and 10 Scale Vertical (50h_10v_SHEET) plans production Sheet generation.
50h_10v_WORKING	Used for Vertical Alignment Design and depicts a grid to assist in Profile Design. Preference loads setting for a 50 Scale Horizontal and 10 Scale Vertical (50h_10v_WORKING) "working" grid.

4.4   Vertical Alignment Annotation Preferences

In order to annotate Vertical Alignments to GDOT Standards – Two different sets of Preferences must be set. One set of Preferences annotates the Terrain Profile and Vertical Alignment Elevations (Existing and Proposed Profiles). The other set of Preferences annotates the Vertical Alignment Curve Data. (See *Tables 4.4* and *4.5*).

Table 4.4
Preference – Annotate Profile (Existing and Proposed Elevations)

Location: Evaluation ▶ Profile ▶ Annotate Profile (**Preferences Button)** **SUE PREFERENCE ONLY: Location:** Evaluation ▶ Profile ▶ Annotate Feature In Profile (**Preferences Button**)	
Preference Name	**Description**
100h_10v_Profile	Used for Annotation of Existing and Proposed Profile Elevations for a 100 Scale Horizontal and 10 Scale Vertical Profile (100h_10v_Profile).
100h_10v_SHEETS	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 100h_10v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
20h_5v_Profile	Used for Annotation of Existing and Proposed Profile Elevations for a 20 Scale Horizontal and 10 Scale Vertical Profile (20h_10v_Profile).
20h_5v_SHEETS	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 20h_5v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
50h_10v_Profile	Used for Annotation of Existing and Proposed Profile Elevations for a 50 Scale Horizontal and 10 Scale Vertical Profile (50h_10v_Profile).
50h_10v_SHEETS	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 50h_10v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
SUE	Used for the profile annotation of SUE QL-A Test Hole data.

Table 4.5
Preference – Annotate Profile (Proposed Curve Data)

Location: Geometry ▶ View Geometry ▶ Vertical Annotation (**Preferences Button**)	
Preference Name	**Description**
GDOT Profiles	Used for Annotation of Proposed Vertical Curve Data for all Scales.

4.5   Reviewing Vertical Alignments

The Vertical Alignments description can be reviewed and printed by using the **Geometry ►
Review Vertical** command.

Following is the process for reviewing/describing Vertical Alignments:

- Ensure that the Vertical Alignment you want to describe is the Active Vertical
  Alignment.
- In InRoads, Select **Geometry ► Review Vertical**…and the **Review Vertical
  Alignment** description appears.
- The user may also print the description by using the Print button on the **Review
  Vertical Alignment** dialog. (See *Figure 4-1*).

Figure 4-1   Review Vertical Alignment

5

Import Graphics and Place Curve Tables

5. Import Graphics and Place Curve Tables

This section provides a brief overview of the process to Import Graphics from MicroStation and the process to Place Curve Table Information in MicroStation. For detailed Import Graphics and Place Curve Table information please refer to **Lab 5** in the Design Training Labs.

This section covers the following topics:

- Import Graphics Overview
- Import Graphics - Names/Feature Styles
- Curve Table Overview
- Curve Table Preferences

5.1 Import Graphics Overview

The following section depicts an overview of the Import Graphics process and Naming/Feature Style conventions utilized to add Graphics from MicroStation into InRoads.

There may be situations where Geometry graphics will need to be imported from a MicroStation DGN file into the InRoads ALG file. Examples are edge of pavement alignments or centerline alignments. In order to generate/ import Graphics to GDOT standard conventions – the following information should be adhered and followed.

a) All Centerline Graphics should be imported and assigned a Feature Style of **MAIN_P_CONSTCL, MAIN_P_SIDECL** or **STE_P_DETCL**.

b) Any additional Horizontal Alignments such as Ditch Centerlines, Edge of Pavements, etc. must be assigned the appropriate Feature Style for the Symbology and Levels to view correctly in MicroStation.

c) All imported Horizontal Alignment Names and Alignment Point Names must begin with a **DE** Prefix. All Points must begin numbering at DE10000. Horizontal Alignment numbering may begin at DE1.

d)   All Horizontal Alignment Points must be converted to COGO Points.

e) When importing Graphics using the **Import Geometry** dialog, *Join Elements* and *All Selected Elements Added to Single Alignment* should be checked.

f) Names must be assigned to the Coordinates in the Alignment to create Alignment Points.

g) All Alignment Points must then be converted to COGO Points.

h) Make sure to save the ALG file periodically when changes are made. InRoads does not save data on the fly - data is saved in temporary memory. The ALG file must be manually saved in order to retain Design modifications.

5.2   Import Graphics - Names/Feature Styles

When importing graphics from MicroStation, all Alignments must be stored with a DE Prefix
and Numbering may begin at DE1 or the next available number. The appropriate Feature Style
should be used which corresponds with the Horizontal Alignment Feature Style. (See *Tables 5.1*
and *5.2*).

Table 5.1 Import Graphics - Standard Design Geometry Object Names		
Object Type	**Prefix**	**Starting Number**
Design Cogo Points	DE	10000 (Max. = 99,999)
Design Horizontal Alignment Points	DE	10000 (Max. = 99,999)
Design Horizontal Alignments	DE	1 or next available number
Design Vertical Alignments	DE	1 or next available number

Table 5.2 Import Graphics - Feature Styles For Geometry Horizontal Alignments		
Proposed Vertical Alignment Feature Style		**Descriptions** **(C/L Roadway Name)**
Mainline Centerline	MAIN_P_CONSTCL	Ex: C/L HWY 100
Sideroad Centerline	MAIN_P_SIDECL	Ex: C/L PEQUANOC DR.
Detour Centerline	STE_P_DETCL	Ex: C/L US 78
Miscellaneous Feature Style		**Descriptions** **(Feature Style – Roadway Name)**
Edge of Pavement	MAIN_P_EOP	Ex: EOP – HWY 100
Edge of Paved Shoulder	MAIN_P_EPSHLDR	Ex: EPSHLDR – PEQUANOC DR.
Edge of Shoulder	MAIN_P_SHLDR	Ex: SHLDR – US 78
Ditch Centerline	DRNG_P_Ditch	Ex: Ditch – HWY 100
Other	(User-Defined)	User Defined

5.3   Curve Table Overview

In order to correspond with the GDOT Plan Presentation Guide, Curve Tables are required for each Horizontal Alignment. The Curve Tables depict the Curve Data for each curve of the Alignment(s). In order to generate/ import Graphics to GDOT standard conventions – the following information should be adhered and followed.

Following is the Curve information which is required in the Curve Data Tables:

a) **Curve Data Table Required Information**
   - **CURVE Number**
   - **P.I. Station**
   - **P.I. Coordinates**
   - **△ or "DELTA"** **(Deflection angle)**
   - **D**   **(Degree of Curve)**
   - **T**   **(Tangent Length)**
   - **L**   **(Length of Curve)**
   - **R**   **(Radius)**
   - **E**   **(External distance)**
   - **e**   **(Superelevation in percent)**

b) The Symbology and Level of the Curve Tables are based on the Feature Style of the Horizontal Alignment.

c) If there is more than one curve in an Alignment – the Curve Table assigns each curve a name of Curve 1, Curve 2, etc. When viewing more than one Alignment – the second alignment will also name the curve in it Curve 1, Curve 2, etc. It is the Designer's responsibility to manually modify each curve table in MicroStation to assign the Curve another Number. For Example: If Alignment DE7 contains three curves (and associated curve tables) – all of the curve tables will be given the curve number of Curve 1, Curve 2 and Curve 3. When viewing Alignment DE31, these Curves will also be named Curve 1, Curve 2 and Curve 3. The Designer will need to edit the Curve Table number in MicroStation in order to rename each successive curve (per alignment) as Curve 1, Curve 2, Curve 3, etc. so that there will not be duplicate Curve Table Numbers/Names on a plan sheet.

d) The Preferences for the Curve Tables are the Feature Styles of (ACL) PROP_E_ACL, (CONSTCL) MAIN_P_CONSTCL, (DETCL) STE_P_DETCL and (SIDECL) MAIN_P_SIDECL.

5.4   Curve Table Preferences

In order to view Horizontal Curves to GDOT Standards – Preferences must be set. These Preferences set the viewing of the Curve Data Table based on the Feature Style of the Alignments and Curve Data. The following Table depicts the available Preferences for Curve Data Tables. (See *Table 5.3* below).

Table 5.3
Preference – Curve Set Annotation

Location: Geometry ▶ View Geometry ▶ Curve Set Annotation (**Preferences Button)**	
Preference Name	**Description**
ACL	Loads the Curve Table Preference for the Feature Style of PROP_E_ACL.
CONSTCL	Loads the Curve Table Preference for the Feature Style of MAIN_P_CONSTCL.
DETCL	Loads the Curve Table Preference for the Feature Style of STE_P_DETCL.
SIDECEL	Loads the Curve Table Preference for the Feature Style of MAIN_P_SIDECL.

6

Profile Sheets

6. Profile Sheets

This section provides a brief overview of the requirements for generating Profile Sheets. For detailed Profile Sheet information please refer to **Lab 6** in the Design Training Labs.

This section covers the following topics:

- Profile Sheets Overview
- Plan and Profile Generator Information
- Vertical Alignment Preferences
- Vertical Alignment Annotation Preferences

6.1   Profile Sheets Overview

The following section depicts an overview of the methods used to generate Profile Sheets in InRoads in order to correspond to the Plan Presentation Guide and the Electronic Data Guidelines. The Plan and Profile Generator is used in InRoads to produce cut Profile Sheets. In order to generate Profile Sheets to GDOT standard conventions – the following information should be adhered and followed.

a) An Existing Terrain DTM must exist and a Proposed Vertical Alignment must exist in the ALG file in order to use the Plan and Profile Generator to create Profile Sheets.

b) The Plan and Profile Generator depicts the Terrain Profile, Vertical Alignment, Annotation and Profile Grid and generates cut Profile Sheets based on the selection of the applicable Scale Preference.

c) The **Create Profile** Preferences of **100h_10v_ SHEETS, 20h_5v_ SHEETS** and **50h_10v_SHEETS** are used for the generation of Profile Sheets.

d) The Plan and Profile Generator Preferences for creation of Profile Sheets consists of 20 and 50 Scale Double Profile and Single Profile Options.

e) The Plan and Profile Generator Preferences set the options in the dialog box for creation of the Profile Sheets but there are certain situations where the Designer will need to change the settings in the dialog box to ensure that the Profile data and annotation fits on the Profile Sheets. Not all situations for set-up of Profile Sheets can be automated without some modifications to spacing and Profile elevation shifts. The Plan and Profile Generator references the Create Profile dialog to draw the Profile in MicroStation. The user may also need to go to the Preferences on the Create Profile dialog and modify the window clearance in order for the Plan and Profile Generator to center the profile on the Profile Sheet.

f) The Plan and Profile Generator utilizes three DGN files to create the cut Profile Sheets. The DGN's are the "Master" DGN File, the "Host File" and the 'Seed Host File".

6.2 Plan and Profile Generator Information

The generation of Profile Sheets is accomplished by using the **Plan and Profile Generator** command in InRoads. This command uses DGN and Host files to generate the cut Profile Sheets. In order to understand the process -- the following information regarding the creation of Profile Sheets is discussed.

- **"Master" DGN File** - a new MicroStation DGN file that is created which will contain the actual Terrain Profile, Vertical Alignment and Annotation.

  o The recommended File Naming Structure is ***PI#PR##.dgn***.
  o (***PI#*** = the *Project Number*, ***PR##*** = the *Profile Alignment Name*).

- **"Host File"** – a MicroStation DGN file which is used to create the Profile Sheet. This file contains the grid cell and the clipping elements. It is the actual Profile Sheet which uses the "Master" DGN file as a Reference File.

  o The recommended File Naming Structure is ***PI#_Section Number.dgn***. The Section Number is depicted in the Electronic Data Guidelines (EDG). The Section for Mainline Roadway Profile is 15. The Section for Crossroad Profile is 16.
  o (***PI#*** = the *Project Number*, ***Separator*** = _, ***Section Name*** = *15* or *16*).

- **"Seed Host File"** – a MicroStation DGN file which is used as the seed file to create the "**Host File**". This is the **GDOT_V8_3D.dgn** file which contains the standard GDOT DGN Library, cell libraries, etc.
  o (Note: In this table the "**Seed Host File**" is named ***GDOT 3D Working File.dgn***).

Table 6.1		
Plan and Profile Generator DGN Files - Standard DGN File Names		
DGN Type	**DGN File Name**	**Example**
"Master" DGN File	**PI#PR##.dgn**	**PI#** = the Project Number, **PR##** = the Profile Alignment Name
"Host File"	**PI#_Section Number.dgn**	**PI#** = the Project Number, **Separator** = _, **Section Name** = 15 or 16
"Seed Host File"	**GDOT_V8_3D.dgn**	**GDOT 3D Working File.dgn**.

RECAP:

  o **PI#PR##.dgn** = DGN File which contains the Terrain Profile, Vertical Alignment and Annotation
  o **PI#_Section Number.dgn** = DGN File which contains the Profile Sheets.
  o **GDOT 3D Working File.dgn** = DGN File which is the standard GDOT Seed File.

6.3   Vertical Alignment Preferences

In order to generate/view Vertical Alignments to GDOT Standards – Preferences must be set. These Preferences set the viewing/creation of Vertical Alignments when using the **Evaluation ▶ Profile ▶ Create Profile** dialog. (See *Table 6.2*).

Table 6.2
Preference – Create Profile

Location: Evaluation ▶ Profile ▶ Create Profile (**Preferences Button**)	
Preference Name	**Description**
100h_10v_SHEETS	Used for Vertical Alignment Sheet generation. This Preference should be used for Plans Production only. Preference loads setting for a 100 Scale Horizontal and 10 Scale Vertical (100h_10v_SHEET) plans production Sheet generation.
100h_10v_WORKING	Used for Vertical Alignment Design and depicts a grid to assist in Profile Design. Preference loads setting for a 100 Scale Horizontal and 10 Scale Vertical (100h_10v_WORKING) "working" grid.
20h_5v_SHEETS	Used for Vertical Alignment Sheet generation. This Preference should be used for Plans Production only. Preference loads setting for a 20 Scale Horizontal and 5 Scale Vertical (20h_5v_SHEET) plans production Sheet generation.
20h_5v_WORKING	Used for Vertical Alignment Design and depicts a grid to assist in Profile Design. Preference loads setting for a 20 Scale Horizontal and 5 Scale Vertical (20h_5v_WORKING) "working" grid.
50h_10v_SHEETS	Used for Vertical Alignment Sheet generation. This Preference should be used for Plans Production only. Preference loads setting for a 50 Scale Horizontal and 10 Scale Vertical (50h_10v_SHEET) plans production Sheet generation.
50h_10v_WORKING	Used for Vertical Alignment Design and depicts a grid to assist in Profile Design. Preference loads setting for a 50 Scale Horizontal and 10 Scale Vertical (50h_10v_WORKING) "working" grid.

6.4 Vertical Alignment Annotation Preferences

In order to annotate Vertical Alignments to GDOT Standards – Two different sets of Preferences must be set. One set of Preferences annotates the Terrain Profile and Vertical Alignment Elevations (Existing and Proposed Profiles). The other set of Preferences annotates the Vertical Alignment Curve Data. (See *Tables 6.3* and *6.4*).

Table 6.3
Preference – Annotate Profile (Existing and Proposed Elevations)

Location: Evaluation ▶ Profile ▶ Annotate Profile (Preferences Button) SUE PREFERENCE ONLY: Location: Evaluation ▶ Profile ▶ Annotate Feature In Profile (Preferences Button)	
Preference Name	**Description**
100h_10v_Profile	Used for Annotation of Existing and Proposed Profile Elevations for a 100 Scale Horizontal and 10 Scale Vertical Profile (100h_10v_Profile).
100h_10v_SHEETS	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 100h_10v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
20h_5v_Profile	Used for Annotation of Existing and Proposed Profile Elevations for a 20 Scale Horizontal and 10 Scale Vertical Profile (20h_10v_Profile).
20h_5v_SHEETS	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 20h_5v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
50h_10v_Profile	Used for Annotation of Existing and Proposed Profile Elevations for a 50 Scale Horizontal and 10 Scale Vertical Profile (50h_10v_Profile).
50h_10v_SHEETS	This same preference name is now also used in the Annotate Profile dialog box. It was copied from and is identical to the 50h_10v Profile preference. This is so the 'Profile Preference' under the 'Profile Controls' tab of the 'Plan and Profile Generate' dialog will not display Superelevation diagrams on the profile sheets.
SUE	Used for the profile annotation of SUE QL-A Test Hole data.

Table 6.4
Preference – Annotate Profile (Proposed Curve Data)

Location: Geometry ▶ View Geometry ▶ Vertical Annotation (Preferences Button)	
Preference Name	**Description**
GDOT Profiles	Used for Annotation of Proposed Vertical Curve Data for all Scales.

7

Component and Template Creation

7.   Component and Template Creation

This section provides a brief overview of the requirements for creating Components and Templates. For detailed Component and Template information please refer to **Lab 7** in the Design Training Labs.

This section covers the following topics:

- Component and Template Creation Overview
- ITL Template Library and Naming Conventions
- GDOT Standard Components
- GDOT Standard Point Names
- GDOT Standard Feature Styles
- GDOT Component Help Files

7.1 Component and Template Creation Overview

The following section depicts an overview of the components and templates used to generate cross sections in InRoads. In order to create and utilize GDOT Components and Templates to GDOT standard conventions – the following information should be adhered and followed.

a) The InRoads Template Library (.ITL) is where the Designer creates all the Components necessary to generate a complete Template such as shoulders, travel lanes, barriers, medians and end conditions.

b) The InRoads Template Library is included in the InRoadsALL.exe file download. The Designer will copy the Template Library (GDOT_Standard V8i_SS2.itl) to the Project Directory and rename the file to PI#.itl (Ex. 1234567.itl).

c) Once the Designer modifies the PI#.itl file and creates the components and templates – this ITL file is always submitted as a deliverable with the project so that anyone who works on the project will have the Template Library that contains the associated project components and templates.

d) There are six types of Components which can be created: Simple, Constrained, Unconstrained, Null Point, End Condition and Overlay/Stripping.

e) The GDOT Standard ITL file contains the following Component Categories: Barriers, Curb and Gutter, End Conditions, Medians, Shoulders and Travel Lanes.

f) The Designer is provided a Point Name List and Feature Styles to utilize in the development and/or modifications to the Components. It is important to use the standard GDOT Feature Styles so that Cross Section Annotation will generate correctly.

7.2 ITL Template Library and Naming Conventions

The InRoads Template Library is included in the InRoadsALL.exe file download. The Designer will copy the Template Library (GDOT_Standard V8i_SS2.itl) to the Project Directory and rename the file to the following: (See *Table 7.1*).

Table 7.1 ITL Naming Convention		
GDOT Standard ITL	**Rename To**	**Example**
GDOT_Standard V8i_SS2.itl	PI#.itl	1234567.itl

The PI#.itl file will be project specific and will be submitted to the Earthwork Coordinator when the project is let to construction. It is very important for anyone who works on (or inherits the project) to receive the associated ITL file so that they will have access to the same Components and Point Names used to create the original Templates.

The Designer will need to add additional Components, Templates and Point Names to the ITL file during the course of Project design to cover design situations that are not represented in the Standard GDOT Template Library. It is very important that the Designer use the same Feature Styles as those provided in the ITL. Component and Point Names may need to be added but always use one of the provided Feature Styles contained in the XIN file.

Following is a list of the six types of components that are provided in InRoads:
1. **Simple**: A Simple Component is a simple prefabricated closed rectangular shape. This is useful for the quick setup of rectangular shapes like a travel lane.
2. **Constrained**: A Constrained Component is placed one point at a time and can be either a closed or open shape. It is useful for making objects of differing shapes such as curb and gutter. The points in Constrained Components can be set to behave in a particular manner by selection of the differing constraint options. The default constraint is set to be Horizontal and Vertical to the previous point placed.
3. **Unconstrained**: An Unconstrained Component is placed one point at a time, the same as a Constrained Component, but is placed with no constraint defaults applied. The constraints of points composing both Constrained and Unconstrained Components can be edited after placement to apply whatever constraints the user desires.
4. **Null Point**: Null Point Components are placed unconstrained to other components and are typically edited to control the behavior of other points. Null Points can be edited to behave as **'Display Switches'** in order to display different components under differing conditions such as Type S Barrier switching between the S1, S2 or S3 variations.
5. **End Condition**: End Condition Components are used to tie to a surface - typically the existing surface. Cut/Fill slopes are the typical type components created with End Condition Components. End Condition Components can be designed with ditches incorporated and that widen for guardrail when certain conditions are met.
6. **Overlay/Stripping:** Components used for milling/stripping and overlay operations.

7.3 GDOT Standard Components

GDOT supplies a standard Template Library (ITL) named GDOT_Standard V8i_SS2.itl.
This Library contains the Component Categories: Barriers, Curb and Gutter, End Conditions,
Medians, Shoulders and Travel Lanes. The following Table lists the Categories and
individual components provided in the GDOT_Standard V8i_SS2.itl file. (See *Table 7.2*).
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Table 7.2
GDOT Standard Components

Location: GDOT_Standard V8i_SS2.itl	
Category	**Component**
Barriers	• **TP 7 WS, CS & RS Barrier** • **TP P1, P2 & P3 Parapet Retaining Wall(s) w/2:1/3:1/4:1 & 6:1 Back Slope** • **TP S1, S2 & S3 Median Barrier** • **TP T Guardrail – 31" w/plastic block & TP T Guardrail – 31" w/steel block** • **TP W Guardrail – 27"** • **TP W Guardrail – 31"** • **Type 2S with 2:1 Fill & Type 2S with 4:1 Fill** • **Type 6S**
Curb and Gutter	• **5' Sidewalk** • **9032B TP 2 CURB & GUTTER** • **9032B TP 2 DOWELED INTEGRAL CURB** • **9032B TP 2 HEADER CURB** • **9032B TP 7 CURB & GUTTER** • **9032B TP 7 DOWELED INTEGRAL CURB** • **9032B TP 7 HEADER CURB**
End Conditions	• **GACUTFIL**
Medians	• **9032B Concrete Median 4" thk MBCL** • **MedianFBD-Low**
Shoulders	• **Inside Shoulder** • **Outside Shoulder – Full Depth** • **Outside Shoulder – Partial Depth** • **Paving Under Guardrail**

Travel Lanes	• **Asphalt**
	   o **Asphalt Lane PGL to LANE**
	• **Concrete**
	   o **Concrete Lane – Inside**
	   o **Concrete Lane – Outside Edge**

7.4   GDOT Standard Point Names

The GDOT_Standard V8i_SS2.itl Library contains the Component Categories: Barriers, Curb and Gutter, End Conditions, Medians, Shoulders and Travel Lanes. Each of the Components listed in the previous *Table 7.2* contain individual Component Points. The following Table lists the Component Points which compose each of these Components. (See *Table 7.3*).

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Table 7.3
GDOT Component Points

(Category: Barriers)

Point Name	Point Name Description
GR	Guardrail
GRL	Guardrail Location Insertion Point
GS_SWITCH	Glare Screen Switch Point
IMBB	Inside Median Barrier Bottom
IMBT	Inside Median Barrier Top
LIPS	Left Inside Paved Shoulder
LMBF	Left Median Barrier Face
LMBFB	Left Median Barrier Face Bottom
LMBFT	Left Median Barrier Face Top
LMBGSB	Left Median Barrier Glare Screen Bottom
LMBGST	Left Median Barrier Glare Screen Top
LMBT	Left Median Barrier Top
LMBX	Left Median Barrier "X" Point
OMBB	Outside Median Barrier Bottom
OMBT	Outside Median Barrier Top
OPS	Outside Paved Shoulder
RIPS	Right Inside Paved Shoulder
RMBF	Right Median Barrier Face
RMBFB	Right Median Barrier Face Bottom
RMBFT	Right Median Barrier Face Top
RMBGSB	Right Median Barrier Glare Screen Bottom
RMBGST	Right Median Barrier Glare Screen Top
RMBT	Right Median Barrier Top
RMBX	Right Median Barrier "X" Point
S1	Type S1 Median Barrier
S2	Type S2 Median Barrier
SB6B	Side Barrier Type 6 Bottom
SB6T	Side Barrier Type 6 Top
SBB	Side Barrier Back

SBBB	Side Barrier Back Bottom
SBBLB	Side Barrier Base Left Bottom
SBBLT	Side Barrier Base Left Top
SBBRB	Side Barrier Base Right Bottom
SBBRT	Side Barrier Base Right Top
SBFB	Side Barrier Face Bottom
SBFT	Side Barrier Face Top
SBKLB	Side Barrier Key Left Bottom
SBKLT	Side Barrier Key Left Top
SBKRB	Side Barrier Key Right Bottom
SBKRT	Side Barrier Key Right Top
SBT	Side Barrier Top
SBX	Side Barrier "X" Point

(Category: Curb and Gutter)

Point Name	Point Name Description
BSW	Back of Sidewalk
BSWB	Back of Sidewalk Bottom
FSW	Front of Sidewalk
FSWB	Front of Sidewalk Bottom
OBC	Outside Back of Curb
OBCB	Outside Back of Curb Bottom
OCFC	Outside Chamfer Face of Curb
OEP	Outside Edge of Pavement
OFC	Outside Face of Curb
OFCB	Outside Face of Curb Bottom
OGFL	Outside Gutter Flow Line

(Category: End Conditions)

Point Name	Point Name Description
CUT	Limit of Cut
FILL	Limit of Fill
GRL	Guardrail Location Insertion Point
IDT	Inside Ditch Bottom
ODT	Outside Ditch Bottom
OPS	Outside Paved Shoulder
OS	Outside Shoulder

(Category: Medians)

Point Name	Point Name Description
DTCTR	Ditch Center
LMDBS	Left Median Ditch Back Slope
LMDFS	Left Median Ditch Fore Slope
LMEB	Left Median Edge Bottom
LMET	Left Median Edge Top
MBCL	Median Barrier Center Line
MBCLB	Median Barrier Center Line Bottom
RMDBS	Right Median Ditch Back Slope
RMDFS	Right Median Ditch Fore Slope
RMEB	Right Median Edge Bottom
RMET	Right Median Edge Top

(Category: Shoulders)

Point Name	Point Name Description
EIS	Edge of Inside Shoulder
EISB	Edge of Inside Shoulder Bottom
EISB	Edge of Inside Shoulder Bottom
EISBB	Edge of Inside Shoulder Base Bottom
EISGAB	Edge of Inside Shoulder Graded Aggregate Base (bottom)
EISIB	Edge of Inside Shoulder Intermediate Bottom
EOS	Edge of Outside Shoulder
IEP	Inside Edge of Pavement
IEPB	Inside Edge of Pavement Bottom
IEPBB	Inside Edge of Pavement Base Bottom
IEPGAB	Inside Edge of Pavement Graded Aggregate Base (bottom)
IEPIB	Inside Edge of Pavement Intermediate Bottom
IS	Inside Shoulder
OEP	Outside Edge of Pavement
OEPB	Outside Edge of Pavement Bottom
OEPBB	Outside Edge of Pavement Base Bottom
OEPGAB	Outside Edge of Pavement Graded Aggregate Base (bottom)
OEPIB	Outside Edge of Pavement Intermediate Bottom
OPS	Outside Paved Shoulder
OPSB	Outside Paved Shoulder Bottom
OPSBB	Outside Paved Shoulder Base Bottom

OPSGAB   Outside Paved Shoulder Graded Aggregate Base (bottom)
OPSIB   Outside Paved Shoulder Intermediate Bottom
OS   Outside Shoulder
OSB   Outside Shoulder Bottom
OSIB   Outside Shoulder Intermediate Bottom

(Category: Travel Lanes)

Point Name   Point Name Description

IEP   Inside Edge of Pavement
IEPB   Inside Edge of Pavement Bottom
IEPGAB   Inside Edge of Pavement Graded Aggregate Base (bottom)
IEPIB   Inside Edge of Pavement Intermediate Bottom
LANE   Lane
LANEB   Lane Bottom
LANEBB   Lane Base Bottom
LANEGAB   Lane Graded Aggregate Base (bottom)
LANEIB   Lane Intermediate Bottom
OEP   Outside Edge of Pavement
OEPB   Outside Edge of Pavement Bottom
OEPGAB   Outside Edge of Pavement Graded Aggregate Base (bottom)
OEPI   Outside Edge of Pavement Intermediate
OEPIB   Outside Edge of Pavement Intermediate Bottom
PGL   Profile Grade Line
PGLB   Profile Grade Line Bottom
PGLBB   Profile Grade Line Base Bottom
PGLGAB   Profile Grade Line Aggregate Base (bottom)
PGLIB   Profile Grade Line Intermediate Bottom

7.5   GDOT Standard Feature Styles

The GDOT_Standard V8i_SS2.itl Library references the GDOT XIN file in order to apply the Feature Styles for the Components and the Component Points. It is very important that the Designer use the same Feature Styles as that provided in the ITL. Component and Point Names may need to be added but always use the provided Feature Styles contained in the XIN file in order to annotate cross-sections to GDOT Standards. The following Table lists the Feature Styles which compose each of these Components and Component Points. (See *Table 7.4*).

Table 7.4
GDOT Feature Styles for Components and Component Points

Feature Style Name	Feature Style Description
DRNG_P_Ditch	Ditch - Drainage
LIMT_P_CUT	Cut Limits (**Assign to End Condition Components**)
LIMT_P_CUT_Const-Limit	Cut Limits (**Assign to LAST Point in the End Condition**)
LIMT_P_FILL	Fill Limits (**Assign to End Condition Components**)
LIMT_P_FILL_Const-Limit	Fill Limits (**Assign to LAST Point in the End Condition**)
MAIN_P_Barrier-Median-Side	Proposed median or side barrier
MAIN_P_Barrier-Noise-Wall	Proposed noise barrier wall
MAIN_P_Barrier-Retain-Wall	Propose retaining wall
MAIN_P_Barrier_PAY_4940_TP20	4940 TP20 CONCRETE BARRIER
MAIN_P_Barrier_PAY_4940_TP21	4940TP21 CONCRETE BARRIER
MAIN_P_Barrier_PAY_4940_TP22	4940 TP22 CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S1	TP S1 SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S2	TP S2 SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S3	TP S3 SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S3A	TP S3A SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_PAY_TP_S3B	TP S3B SPECIAL DESIGN CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_2-S	TP 2-S SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_2-SA	TP 2-SA SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_2-SB	TP 2-SB SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_2-SC	TP 2-SC SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_6-S	TP 6-S SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_6-SA	TP 6-SA SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_6-SB	TP 6-SB SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_6-SC	TP 6-SC SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_7-CS	TP 7-CS or 7-RS SIDE CONCRETE BARRIER
MAIN_P_Barrier_Side_PAY_TP_7-WS	TP 7-WS SIDE CONCRETE BARRIER
MAIN_P_CONSTCL	Proposed Construction centerline
MAIN_P_CROWN	Crown Point
MAIN_P_Curb	Proposed Curb

MAIN_P_Curb_PAY_9032B Dowel TP2	9032B TP2 CONC DOWELED INTEGRAL CURBS 6" THK
MAIN_P_Curb_PAY_9032B Dowel TP3	9032B TP3 CONC DOWELED INTEGRAL CURBS 8" THK
MAIN_P_Curb_PAY_9032B Dowel TP7	9032B TP7 CONC DOWELED INTEGRAL CURBS 6" THK
MAIN_P_Curb_PAY_9032B HeaderTP1	9032B TP1 4"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP2	9032B TP2 6"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP3	9032B TP3 8"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP4	9032B TP4 10"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP6	9032B TP6 6"HEADER CURB
MAIN_P_Curb_PAY_9032B HeaderTP7	9032B TP6 7"HEADER CURB
MAIN_P_Curb_PAY_9032B REdge 6"	9032B 6" RAISED EDGE WITH CONCRETE GUTTER
MAIN_P_Curb_PAY_9032B REdge 8"	9032B 8" RAISED EDGE WITH CONCRETE GUTTER
MAIN_P_Curb_PAY_9032B TP1 6"	9032B TP1 30" CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP1 8"	9032B TP1 30" CURB & GUTTER 8"THK
MAIN_P_Curb_PAY_9032B TP2 6"	9032B TP2 30" CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP2 8"	9032B TP2 30" CURB & GUTTER 8"THK
MAIN_P_Curb_PAY_9032B TP3 6"	9032B TP3 30" CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP3 8"	9032B TP3 30" CURB & GUTTER 8"THK
MAIN_P_Curb_PAY_9032B TP4 6"	9032B TP4 30" CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP4 8"	9032B TP4 30" CURB & GUTTER 8"THK
MAIN_P_Curb_PAY_9032B TP7 6"	9032B TP7 CURB & GUTTER 6"THK
MAIN_P_Curb_PAY_9032B TP7 8"	9032B TP7 CURB & GUTTER 8"THK
MAIN_P_Driveway	Driveway
MAIN_P_EEOP	Exist Pavement Edge
MAIN_P_EOP	Proposed Road Edge of Pavement
MAIN_P_EPSHLDR	Proposed edge of paved shoulder
MAIN_P_GoreMainIdeal	Vertical Gore Design Tool - GoreMainIdeal
MAIN_P_GoreMax	Vertical Gore Design Tool - GoreMax
MAIN_P_GoreMin	Vertical Gore Design Tool - GoreMin
MAIN_P_GoreRampIdeal	Vertical Gore Design tool - GoreRampIdeal
MAIN_P_Guardrail	Proposed guardrail
MAIN_P_Lane	Lane Lines
MAIN_P_Median_PAY_9032B_4"THK	9032b CONCRETE MEDIAN 4"THK PAY ITEM
Main_P_Misc-Const-Feat	Proposed misc. construction feature
MAIN_P_SHLDR	Proposed Shoulder lines
MAIN_P_Sidewalk	Proposed Sidewalk
MAIN_P_Slope-break	Slope break point
REQD_P_DWESMT	Required Driveway Easement
REQD_REQD	Required Right of Way
REQD_P_RWRM	Required Right of Way Marker
REQD_P_TESMT	Required Temporary Easement

7.6 GDOT Component Help Files

Help Files have been created for each of the GDOT Components. These Help Files are included in the InRoadsALL.exe executable. When InRoadsALL.exe is downloaded and installed – Help Files are downloaded to the following location:

C:\InRoads Data\Component Documentation
- GDOT Component Description Help Documentation

These Help Files provide detailed information regarding the composition of the Component, the Default Parameters, Graphic representation and the Component Points/Feature Styles which are utilized in the Component.

When inserting the Components in the **Create Template** dialog, the user may access the Component Help Files to assist in the design of the templates. Following is information on how to access the Component Help Files from the **Create Template** dialog.

➢ In the **Create Template** dialog - Right mouse click over the component **'GACUTFIL'** and select **Template Documentation Link**… as shown here.
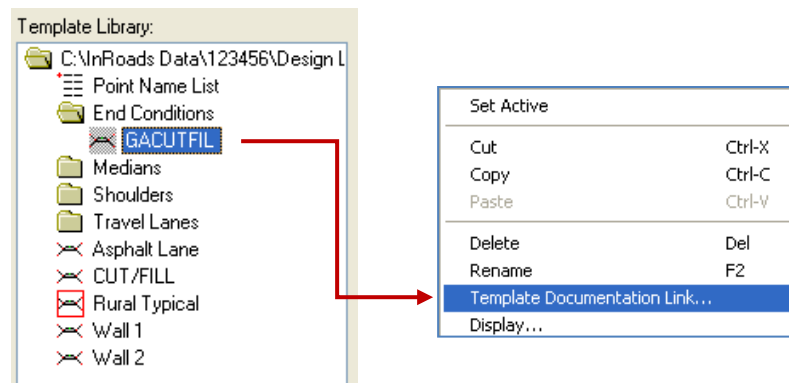
➢ In the **Template Documentation Link** dialog - click the **Locate** button.
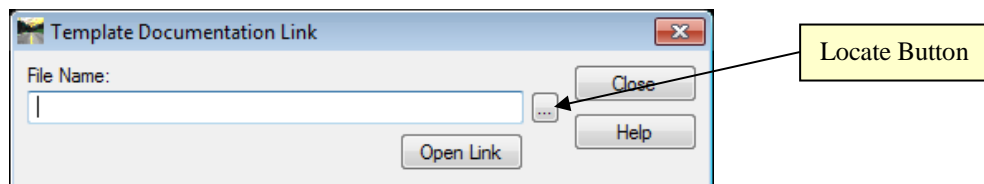
➢ Navigate to **C:\InRoads Data\Component Documentation**
➢ Select a PDF Help File and click **Open**.
➢ In the **Template Documentation Link** dialog - click **Open Link**.
➢ **Close** the Component Description PDF File when finished.
➢ Click **Close** to close the **Template Documentation Link** dialog.

NOTE: Once a Component Description is opened from the **Template Documentation Link** dialog – its path is permanently stored in memory.

8

Roadway Designer

8. Roadway Designer

This section provides a brief overview of the requirements for using the Roadway Designer to create an IRD (Roadway Design File), add Corridors, add Superelevation and create Final Design Surfaces in InRoads. For detailed Roadway Designer information please refer to **Lab 8** in the Design Training Labs.

This section covers the following topics:

- Roadway Designer Overview
- Roadway Designer Workflow
- IRD (Roadway Design) Naming Conventions
- Corridor Naming Conventions
- Superelevation Process Workflow
- Design Surface Naming Conventions/Preference
- Bogus Surface Naming Conventions for Target Aliasing

8.1 Roadway Designer Overview

The following section depicts an overview of the Roadway Designer processes used to generate cross sections in InRoads. In order to create an IRD, corridors and Final Design Surfaces to GDOT standard conventions – the following information should be adhered and followed.

a) In order to generate cross sections – an IRD file, a Corridor and a Finished Design Surface must be created. The cross sections are then cut from the Finished Design Surface.

b) The InRoads Roadway Design file (.IRD) should be named PI#.ird (Ex. 1234567.ird). If there is a need for more IRD files (such as for alternate design situations) - the IRD file should be named PI#A.ird, PI#B.ird, etc. (Ex. 1234567A.ird, 1234567B.ird).

c) The Corridor will be named the Roadway Name or the Alignment Name. (Ex. SR100 SPUR or DE31) based on the Designer's preference.

d) Superelevation in InRoads is created by adding Vertical Point Controls. This is accomplished by utilizing the Superelevation Wizard.

e) Superelevation tables (.SUP) are utilized to calculate the Super required and the % Total on Tangent utilized is 2/3 (67%).

f) The Superelevation tables are located in the following path: C:\Program Files\Bentley\InRoads Group V8.11\data\AASHTO 2004\imperial

g) The Finished Design Surface will be named the PI#_Corridor Name (Ex. 1234567_SR100 SPUR or 1234567_DE31).

h) The Preference used for the Finished Design Surface will be FINISH.

i) If an end condition fails to solve because there is no Existing Ground Surface (an obscured area) to intersect – the Designer is instructed to contact the Office of Design Policy and Support/Location Bureau to request additional DTM Coverage in that area.

j) In order to place a temporary Template so that the Station at the obscured area can close – Target Aliasing is utilized. Target Aliasing consists of creating a Bogus Surface in order to cut a Cross Section to form a closed area.

k) The Naming Convention for the Bogus Surface used in Target Aliasing is PI#_Bogus1 (Ex. 1234567_Bogus1).

8.2 Roadway Designer Workflow

The Roadway Designer is located under the InRoads Modeler menu and is where Roadway Design Files (.IRD's), Corridors, Template Drops, Point Controls, End Condition Exceptions, Superelevation and Final Surfaces are performed, assigned, created, etc.

Following is the workflow and terminology of the Roadway Designer:

Step 1. Create a Roadway Design File – The Roadway Design File (.IRD) is where Corridors are created, Templates are added to Corridors, Point Controls and End Condition Exceptions are added and Design Surfaces are created.

Step 2. Create a Corridor – A Corridor is a strip of land defined by a horizontal and vertical alignment or alignments. It can be considered the project's footprint. Cross section design is performed in the Corridor and the Final Surface is created from the corridor.

Step 3. Add Template Drops – Template Drops are used to add Templates from the .ITL (InRoads Template Library) to specified station ranges in the Corridor.

Step 4. Add Point Controls – Point Controls are used in cross section design to override a point's normal constraint. Example uses of Point Controls in a cross section design would be to have the point representing the outside edge of a travel lane, follow a horizontal alignment to widen for an auxiliary lane (such as a turn lane) or having a point follow a different vertical alignment for split grades.

Step 5. Add End Condition Exceptions – End Condition Exceptions are applied to End Conditions during cross section design when the normal behavior of an End Condition is not sufficient for actual conditions and it is not desirable to create and place new templates. Examples include steepening slopes to stay inside Right-of-Way and additional shoulder widening for guardrail anchorage.

Step 6. Add Superelevation – Superelevation Control Lines are added to control the Roadway cross slope in horizontal curve areas. InRoads utilizes Superelevation Tables based on the AASHTO 2011 Green Book.

Step 7. Create Final Surface – The creation of a Final Surface DTM is necessary in InRoads. The cross sections shown on the cross section sheets are generated from the Final Surface. The Construction Limits and the Roadway Ditches are also generated from the Final Surface.

8.3 IRD (Roadway Design) Naming Conventions

The Roadway Design File (.IRD) is where Corridors are created, Templates are added to Corridors, Point Controls and End Condition Exceptions are added and Design Surfaces are created. The IRD File (and any alternate design IRD File Names) will be named according to the PI Number. (See *Table 8.1*).

Table 8.1 Standard IRD (Roadway Design) File Names	
IRD and Alternate Design IRD Name(s)	**Example**
PI#.ird	1234567.ird
PI#A.ird	1234567A.ird (Alternate Design A)
PI#B.ird	1234567B.ird (Alternate Design B)

8.4 Corridor Naming Conventions

A Corridor is a strip of land defined by a horizontal and vertical alignment or alignments. It can be considered the project's footprint. Cross section design is performed in the Corridor and the Final Surface is created from the corridor. The Corridor will be named the Roadway Name or the Alignment Name based on the Designer's preference. (See *Table 8.2*).

<table>
<tr><td colspan="2" align="center">Table 8.2
Standard Corridor Name
(Roadway or Alignment Name)</td></tr>
<tr><td>Roadway or Alignment Name</td><td align="center">Example: SR100 Spur (or) DE31</td></tr>
</table>

8.5   Superelevation Process Workflow

Superelevation Control Lines are added to control the Roadway cross slope in horizontal curve areas. InRoads utilizes Superelevation Tables based on the AASHTO 2004 Green Book.

Superelevation in InRoads is created by the addition of Vertical **Point Controls** with a Superelevation control type. The addition of Superelevation Point Controls is facilitated by the use of the Superelevation Wizard and is performed after a corridor is created and templates are dropped.   Once Superelevation has been added to the corridor by the Superelevation Wizard, the Superelevation Display is used to resolve Superelevation overlaps and to make any necessary edits to the Superelevation. After the Superelevation Wizard is used to add Superelevation to the Corridor, the Superelevation Display is used to resolve Superelevation overlaps and to edit the Superelevation through an intersection.

Following is the Superelevation Process Workflow:

1. The Superelevation **Table Wizard** is used to select the Superelevation Table (Design Speed and Superelevation Rate), % Runoff on Tangent, Horizontal Curve Sets, etc. The **Table Wizard** is accessed through the following: In InRoads select **Modeler ►Roadway Designer ►Superelevation ► Create Superelevation Wizard ► Table**.

2. The **Superelevation Sections Definitions** window is where the Crown Point or rotational point of the Template and the Left and Right Range Points are added. The Profile Grade Point (PGL) is commonly chosen as the crown point of the Template but does not have to be. Range Points are points on the Template chosen to identify the extents to which the Superelevation is to be applied along the Template. Range Points are almost always picked at the outside edge of the travel lanes whereas the shoulder points are controlled by Shoulder Rollover Locks.   The **Superelevation Sections Definitions** is accessed by clicking the **Next >** button in the **Table Wizard** dialog.

3. If there are any Superelevation Overlaps – the **Fix Superelevation Overlap** dialog appears only when Superelevation Conflicts are detected in the Superelevation Calculations. If overlaps occur – the Designer will need to resolve the overlaps before proceeding.

4. A Superelevation Report can be generated using a Style Sheet named **GDOT Superelevation Data Report.xsl**. The Style Sheet is accessed by selecting the following command: **Modeler ► Roadway Designer ► Superelevation ► Superelevation Report**. The Superelevation Data Report opens in the **Bentley Civil Report Browser** and can be saved as an HTML file.

8.6   Design Surface Naming Conventions/Preference

The creation of a Final Design Surface DTM is necessary in InRoads. The cross sections shown on the cross section sheets are generated from the Final Design Surface. The Construction Limits and the Roadway Ditches are also generated from the Final Design Surface. The Design Surface will be named the PI#_Corridor Name (which can be either the Roadway Name or the Alignment Name based on the Designer's preference). (See *Table 8.3* and *8.4*).

Table 8.3 Standard Design Surface Name (Roadway or Alignment Name)	
PI#_Corridor Name	Example: 1234567_SR100 SPUR (or) 1234567_DE31

Table 8.4
Preference – Final Design Surface Preference

Location: Modeler ▶ Roadway Designer ▶ Corridor ▶ Create Surface (Preferences Button)	
Preference Name	**Description**
FINISH	Displays the FINISH Surface to GDOT Standard Feature Styles/Symbology.

8.7   Bogus Surface Naming Conventions for Target Aliasing

When a Template's End Condition encounters an obscured area or extends beyond the available Existing Surface, the End Condition fails to solve and is not placed. InRoads does not extend the existing ground in order to finish the placement of the Template as CAiCE users are accustomed to experiencing. When these situations are encountered, the Designer is instructed to request additional DTM coverage from the Office of Design Policy and Support/Location Bureau. The Location Bureau will provide a new DTM to the Designer with the additional coverage.   Often obscured areas cannot be accurately surveyed; such is the case with bodies of water or swampy areas. In order to place a Template through these types of areas and have it solve so that construction limits may be computed -- a 'Bogus Surface' must be created.   Target Aliasing may then be used with the 'Bogus Surface'.

The creation of a Bogus Design Surface DTM is necessary in InRoads if there are obscured areas in which cross-sections cannot form a closed area for earthwork calculations. These cross sections shown on the cross section sheets are generated from the Final Design Surface and Bogus Surface.   The Naming Convention for the Bogus Surface used in Target Aliasing is PI#_Bogus1.dtm (Ex. 1234567_Bogus1.dtm). (See *Table 8.5*).

Table 8.5 Standard Bogus Surface for Target Aliasing	
PI#_Bogus1.dtm	Example: 1234567_Bogus1.dtm

Cross Section Sheets/Annotation Generation

9

9. Cross Section Sheets/Annotation Generation

This section provides a brief overview of the requirements for generating and annotating Cross Section Sheets. For detailed Cross Section Sheet Generation and Annotation information please refer to **Lab 9** in the Design Training Labs.

This section covers the following topics:

- Cross Section Sheets/Annotation Overview
- Finished Design Surface (.DTM) Preference
- Cross Section Sheet Scale Factor
- Cross Section Sheet Preferences
- Cross Section Sheet Annotation Preferences

9.1 Cross Section Sheets/Annotation Overview

The following section depicts an overview of the processes to create Cross Section Sheets and annotation of the Cross Sections to GDOT standards in InRoads. In order to generate and annotate Cross Sections – the following information should be adhered and followed.

a) In order to generate cross sections – a minimum of an Existing Ground Surface .DTM and a Final Design Surface .DTM must exist. The cross sections are then cut from the Finished Design Surface.

b) The Cross Section sets are generated using InRoads but are saved and viewed in the MicroStation DGN file. The Cross Sections are not saved in InRoads as independent Cross Section sets which can be viewed after closing the MicroStation File. They must be regenerated from InRoads if changes or alterations are required in the cross-section design. New cross section sets must be cut and viewed as sheets in MicroStation.

c) The Cross Section "Cut Sheets" use cells for the grids and border instead of DGN Reference Files.

d) The Global Scale Factor in InRoads (for Text, Cell and Line Style) must be changed from 50 Scale to 10 Scale in order to generate the Cross Sections at the correct viewing Scale.

e) The Set Name for Cross Sections defaults to the current Active Alignment name.

f) There are four Preferences available for creating Cross Sections: 10 Scale Work Sec 1x Vert Exg, 50 Scale Work Sec 2x Vert Exg, Narrow 10h 10v and Wide 10h 10v.

g) The Annotation of Cross Sections is a multi-step process to annotate the Profile Grade Elevations, Ditch Elevations, Slopes, Station/Offsets, etc.

h) Before annotating Cross Sections – the Lock for Pencil/Pen MUST be set to Pen in order to create permanent annotation of Cross Sections.

i) Several Preferences have been set up to make the annotation process of Cross Sections easier. A multi-step process is required to annotate the Cross Sections to GDOT standards.

j) It is very important that the standard GDOT Styles are used in the Roadway Design File (IRD). If the standard GDOT Styles are not used – the Cross Sections may not annotate correctly.

9.2 Finished Design Surface (.DTM) Preference

In order to generate Cross Sections to GDOT Standards – a Finished Design Surface (.DTM) must first be created. The Finished Design Surface Preference should be loaded before creating the DTM. This Preference sets the viewing/creation of the Finished Design Surface and ensures that the correct DTM Settings are initiated and that the symbology and levels are set before cutting the Cross Sections. The Preference of FINISH must be selected in order for the DTM to view and generate correctly. (See *Table 9.1*).

Table 9.1
Preference – Create Surface

Location: Modeler ▶ Roadway Designer ▶ Corridor ▶ Create Surface (**Preferences Button)**	
Preference Name	**Description**
FINISH	The Preference used for Finished DTM Surfaces. This Preference sets the options in the Create Surface dialog to generate Design Surfaces to GDOT Standards. The Preference creates the Surface on Level FCON_P_Surface Triangles-Line and Color 9 (Grey).

9.3   Cross Section Sheet Scale Factor

The generation of Cross Section Sheets is accomplished by using the **Create Cross Section** command in InRoads. This command uses DGN Cross Section Cells (Narrow and Wide) to generate the cut Cross Section Sheet borders and grids. For detailed Cross Section Sheet Generation information please refer to **Lab 9** in the Design Training Labs. The following table lists the Global Scale Factors for generating Cross Sections. (See *Table 9.2).*

In order to generate Cross Sections to GDOT Standards - the Global Scale Factors must be changed from a 50 Scale to a 10 Scale for Cross Sections to view on the Grids correctly and for the annotation text to view at the correct text size.

Table 9.2 Global Scale Factor Settings (Change Settings from 50 Scale/20 Scale to 10 Scale)	
Location: Tools ▶ Global Scale Factors	
Global Scale Factor Type	**Scale Factor**
Text	10.0000
Cell	10.0000
Line Style	10.0000

9.4   Cross Section Sheet Preferences

The generation of Cross Section Sheets is accomplished by using the **Cross Section** command in InRoads. This command contains Preferences which have been set up in order to create the cut Cross Section Sheets to GDOT Standards. In order to generate/view Cross Sections to GDOT Standards – Preferences must be set. These Preferences set the viewing/creation of Cross Sections when using the **Evaluation ▶ Cross Section ▶ Cross Sections▶ Create Cross Section** folder. (See *Table 9.3*).

Table 9.3
Preference – Create Cross Section

Location: Evaluation ▶ Cross Section ▶ Cross Sections▶ Create Cross Section folder (**Preferences Button)**	
Preference Name	**Description**
10 Scale Work Sec 1x Vert Exg	Used for Earthwork Volumes generation. This Preference uses the built in InRoads grid for viewing cross sections so that the entire cross section is drawn at each station for accurate earthwork volume calculations. The Preference loads settings for a 10 Scale Horizontal with a 1X Vertical Exaggeration.
50 Scale Work Sec 2x Vert Exg	Used for Earthwork Volumes generation. This Preference uses the built in InRoads grid for viewing cross sections so that the entire cross section is drawn at each station for accurate earthwork volume calculations. The Preference loads settings for a 50 Scale Horizontal with a 2X Vertical Exaggeration.
Narrow 10h 10v	Used for Plans Production of Cross Section "Narrow" Sheet generation. This Preference loads the settings into the <u>Cross Sections</u> dialog to view Cross Sections in a Narrow format on the GDOT SUXSEN Cross Section plan sheet cell. The Preference loads settings for a 10 Scale Horizontal and 10 Scale Vertical (Narrow 10h 10v).
Wide 10h 10v	Used for Plans Production of Cross Section "Wide" Sheet generation. This Preference loads the settings into the <u>Cross Sections</u> dialog to view Cross Sections in a Wide format on the GDOT SUXSEW Cross Section plan sheet cell. The Preference loads settings for a 10 Scale Horizontal and 10 Scale Vertical (Wide 10h 10v).

9.5   Cross Section Sheet Annotation Preferences

The generation of Cross Section Sheets also consists of annotating the Cross Sections to include text for slopes, station/offset, ditch elevations, etc. This is accomplished by using the **Annotate Cross Section** command in InRoads. This command contains Preferences which have been set up in order to annotate Cross Section Sheets to GDOT Standards. These Preferences set the text annotation of Cross Sections when using the **Evaluation ▶ Cross Section ▶ Cross Sections ▶ Annotate Cross Section** folder. (See *Table 9.4*).

Table 9.4
Preference – Annotate Cross Section

Location: Evaluation ▶ Cross Section ▶ Cross Sections ▶ Annotate Cross Section folder (**Preferences Button**)	
Preference Name	**Description**
XSEC TEXT – CL EL. GROUND	Used for annotating the existing ground elevation on the Cross Sections at the centerline alignment.
XSEC TEXT – EL. DIAGONAL	Used for the annotation of proposed elevations in which the text must be viewed diagonally. (i.e. Roadway Profile.)
XSEC TEXT – EL. HORIZONTAL	Used for the annotation of proposed elevations in which the text must be viewed horizontally. (i.e. Roadway Ditches.)
XSEC TEXT – EL. VERTICAL	Used for the annotation of proposed elevations in which the text must be viewed vertically.
XSEC TEXT - OFFSET	Used for the annotation of offset distances as measured from the centerline. (i.e. Slopestakes/Construction Limits.)
XSEC TEXT – OFFSET/EL. VERTICAL	Used for the annotation of offset distances as measured from the centerline. The elevation at the offset is also placed. This form of annotation is not required on the final cross section plans. It is provided to be used 'as desired' during the design process.
XSEC TEXT – SLOPES %	Used for the annotation of slopes that require a percentage be used rather than a ratio (i.e. pavement cross slopes).
XSEC TEXT – SLOPES x:y	Used for the annotation of slopes that require a ratio be used rather than a percentage (i.e. ditch slopes, front slopes, back slopes, etc.).
XSEC TEXT – SUE	Used for the cross section annotation of SUE QL-A Test Hole data.

Construction Limits

10

10. Construction Limits

This section provides a brief overview of the requirements and processes for creating/viewing Construction Limits, Roadway Ditches and Ditch Flow Arrows. For detailed Construction Limits information please refer to **Lab 10** in the Design Training Labs.

This section covers the following topics:

- Construction Limits, Ditches and Ditch Flow Arrows Overview
- Construction Limits Feature Styles
- Roadway Ditches Feature Style
- Ditch Flow Arrow Preference
- Ditch Flow Arrow Annotate Feature Style
- Construction Limits DGN and Ditches/Ditch Flow Arrows DGN

10.1 Construction Limits, Ditches and Ditch Flow Arrows Overview

The following section depicts an overview of the processes to create/view Construction Limits, Ditches and annotate Ditch Flow Arrows to GDOT standards in InRoads. In order to generate/annotate Construction Limits and Roadway Ditches – the following information should be adhered and followed.

a) In order to generate/view Construction Limits – a Finished Design Surface must exist. The Final Surface is generated in the Roadway Designer from the Roadway Design File (.IRD).

b) The Final Design Surface must be the Active Surface in order to depict the Construction Limits.

c) The following Feature Styles representing Features from the Design Surface should be selected for viewing in order to create the Construction Limits: LIMT_P_FILL_Const-Limit and LIMT_P_CUT_Const-Limit. There may be several Features with these Feature Styles.

d) The CUT Construction Limits will be depicted as ByLevel Linestyle of Blue containing the "C" Cell Symbol. The FILL Construction Limits will be depicted as ByLevel Linestyle of Yellow containing the "F" Cell Symbol.

e) After viewing the Construction Limits – the DGN file will be saved as the PI#LIMT.dgn (Ex. 1234567LIMT.dgn).

f) In order to generate/view Ditches and Ditch Flow Arrows – a Finished Design Surface must exist. The Final Surface is generated in the Roadway Designer from the Roadway Design File (.IRD).

g) The Final Design Surface must be the Active Surface in order to depict the Ditches and Ditch Flow Arrows.

h) The following Feature Style representing Features from the Design Surface should be selected for viewing in order to view the Roadway Ditches: DRNG_P_Ditch. There may be several Features with this Feature Style.

i) In order to annotate the Ditch Flow Arrows – the Preference named Ditch Flow Arrows should be selected.

j) The following Feature Style representing Features from the Design Surface should be selected for viewing in order to view the Ditch Flow Arrow Cell: DRNG_P_Ditch. There may be several Features with this Feature Style.

k) After viewing the Ditches and Ditch Flow Arrow cells – the DGN file will be saved as the PI#DRNG.dgn (Ex. 1234567DRNG.dgn).

10.2 Construction Limits Feature Styles

The Construction Limits consist of MicroStation ByLevel Symbology of Linestyle color Blue containing the "C" cell for Cut Limits and the ByLevel Symbology of Linestyle color Yellow containing the "F" cell for Fill Limits. In order to generate Construction Limits to GDOT Standards – the Surface Features representing the Construction Limits must be selected and viewed. The following table lists the Surface Feature Styles to select for the viewing of Construction Limits. (See *Table 10.1*).

Table 10.1
Feature Styles – Construction Limits

Note: There may be several Features which contain these Feature Styles.

Location: Surface ▶ View Surface ▶ Features	
Feature Style	**Description**
LIMT_P_FILL_Const-Limit	The Feature Style used to represent the FILL Limits in the MicroStation DGN File. The Feature Style is placed on ByLevel LIMT_P_STKFIL_Const-Limit-Fill-Line.
LIMT_P_CUT_Const-Limit	The Feature Style used to represent the CUT Limits in the MicroStation DGN File. The Feature Style is placed on ByLevel LIMT_P_STKCUT_Const-Limit-Cut-Line.

10.3 Roadway Ditches Feature Style

The Roadway Ditches Feature Style in the Final Design Surface must be selected and viewed in order to depict the Roadway Ditches to GDOT Standards. The ByLevel setting for the Roadway Ditches are depicted with a Symbology of Yellow. The following table lists the Surface Feature Style to select for the viewing of Roadway Ditches. (See *Table 10.2*).

Table 10.2
Feature Style – Roadway Ditches

Note: There may be several Features which contain this Feature Style.

Location: Surface ▶ View Surface ▶ Features	
Feature Style	**Description**
DRNG_P_Ditch	The Feature Style used to represent the Roadway Ditch – Drainage. The Feature Style is placed on ByLevel DRNG_P_Ditch-and-Channel-Line.

10.4 Ditch Flow Arrow Preference

In order to depict the Ditch Flow Arrows on the Roadway Ditches – a Preference is required which sets the viewing/creation of the Arrows. When the Preference is loaded - the MicroStation cell "Ditch Flow Arrow" is selected. The following table lists the Preference and Cell to select for the viewing of Roadway Ditches. (See *Table 10.3*).

Table 10.3
Preference – Ditch Flow Arrow

Location: Surface ▶ View Surface ▶ Annotate Feature (**Preferences Button**)	
Preference Name	**Description**
Ditch Flow Arrows	Populates the selections in the Annotate Feature dialog so that that Ditch Flow Arrows are viewed to GDOT Standards. A Cell named Ditch Flow Arrow represents the direction and flow of the Roadway Ditch Drainage.

10.5 Ditch Flow Arrow Annotate Feature Style

Even though the "Ditch Flow Arrows" Preference is loaded – the Feature Style of DRNG_P_Ditch must still be selected in order to annotate the Ditch Flow Arrow Cell to GDOT Standards. The following table lists the Surface Feature Style to select for the viewing of Ditch Flow Arrows. (See *Table 10.4*).

Table 10.4
Feature Style – Ditch Flow Arrows

Note: There may be several Features which contain this Feature Style.

Location: Surface ▶ View Surface ▶ Features	
Feature Style	**Description**
DRNG_P_Ditch	The Feature Style used to represent the Ditch Flow Arrows annotation for Drainage Flow directions.

10.6 Construction Limits DGN and Ditches/Ditch Flow Arrows DGN

After viewing the Construction Limits and the Ditches/Ditch Flow Arrows – MicroStation DGN files should be created to graphically represent the Features. For detailed instructions on how to create the applicable DGN Files – see **Lab 10** in the Design Training Labs. The following table lists the standard naming conventions of the two DGN Files which are to be generated. (See *Table 10.5*).

Table 10.5
DGN Files – Construction Limits and Roadway Ditches/Ditch Flow Arrows

Location: In MicroStation – File ▶ Save As	
DGN File Name	**Example**
PI#LIMT.dgn	1234567LIMT.dgn
PI#DRNG.dgn	1234567DRNG.dgn

Earthwork

11

11. Earthwork

This section provides a brief overview of the requirements and processes for generating Earthwork Quantities and Earthwork Volume Reports. For detailed Earthwork information please refer to **Lab 11** in the Design Training Labs.

This section covers the following topics:

- Earthwork Overview
- MicroStation – View Attributes Setting
- Cross Section Preferences
- GDOT Earthwork Volumes Preference
- GDOT Earthwork Volume Report

11.1 Earthwork Overview
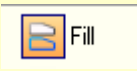
The following section depicts an overview of the processes to generate Earthwork Quantities and Earthwork Volume Reports to GDOT Standards in InRoads. In order to generate these Quantities and Volume Reports – the following information should be adhered and followed.

a) In order to generate Earthwork Quantities and Volume Reports – Cross Section Sets must be created. The Earthwork Volumes are actually generated from the Cross Sections drawn in MicroStation; therefore, a Cross Section Set must first be drawn in MicroStation in order to calculate quantities.

a) In MicroStation – the View Attributes of "Fill" must be selected and turned on in order for the Volumes to view the Cut/Fill areas in the appropriate Fill or Cut shaded color.

b) The Preference of 50 Scale Work Sec 2x Vert Exg or the 10 Scale Work Sec 1x Vert Exg uses the built in InRoads grid for viewing the Cross Sections rather than the GDOT Cross Section plan sheet cell. When viewing Cross Section Sets for Earthwork calculations and volumes – one of the above listed Preferences should be used. The other GDOT Cross Section Preferences should be used only for Plans Production generation.

c) The Existing and the Proposed Surfaces should be selected when creating the Cross Section Sets in order to obtain a closed area for Volume calculations.

d) The Preference of GDOT Earthwork Volumes should be selected (before the calculation of volumes) in order to generate an End-Area Volumes Report to GDOT Standards.

e) In order to generate/view the Earthwork Volumes Report - a Style Sheet named **GDOT Earthwork Volumes.xsl** should be selected. The Style Sheet is accessed by selecting the following command: **Evaluation▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes** folder**.** Click the **Preferences** button and load the GDOT Earthwork Volumes Preference. After clicking **Apply** – the **Bentley Civil Report Browser** opens. Select the Style Sheet named **GDOT Earthwork Volumes.xsl**. The Style Sheet can be saved as an HTML file.

f) Make sure that each Cross Section at each applicable Station forms a closed area. If the areas do not close – the volume calculations will be inaccurate. This is especially the case if there are obscured areas. The Designer is reminded to contact the Office of Design Policy and Support/Location Bureau for any additional survey required in the obscured areas. If these areas are not resolved – inaccurate volume calculations will result.

11.2 MicroStation – View Attributes Setting

After creating the Cross Section Sets- the Cut and Fill shaded areas should be viewed in MicroStation to ensure that each Station's Cross Sections form a closed area. All Cut Areas should be filled as Green and all Fill Areas should be filled as Blue. This will help to ensure that Volumes are being calculated correctly. The following table lists the Location in MicroStation to turn on the Fill View Attribute Setting. (See *Table 11.1*).

Table 11.1
MicroStation – Fill – View Attribute Setting

MicroStation Location: Settings ▶ View Attributes	
Fill	The **Fill** Attribute should be highlighted in Orange as shown on the left.

Volume	**Shaded Color**
CUT	Shaded Green Fill
FILL	Shaded Blue Fill

11.3 Cross Section Preferences

The generation of Cross Section Sheets is accomplished by using the **Create Cross Section** command in InRoads. This command contains Preferences which have been set up in order to create the cut Cross Section Sheets to GDOT Standards. In order to generate/view Cross Sections to GDOT Standards for Earthwork Volumes – Preferences must be set. Preferences set the viewing/creation of Cross Sections when using the **Evaluation ▶ Cross Section ▶ Cross Sections ▶ Create Cross Section** folder. Although there are additional Preferences available – only the first <u>two</u> Preferences listed in the following table should be used for Earthwork Volume Calculations. The other Preferences are used for Cross Section Plans Production only. (See *Table 11.2*).

Table 11.2
Preference – Create Cross Section

Location: Evaluation ▶ Cross Section ▶ Cross Sections ▶ Create Cross Section folder (Preferences Button)	
Preference Name	**Description**
10 Scale Work Sec 1x Vert Exg (Use for Earthwork Volumes)	Used for Earthwork Volumes generation. This Preference uses the built in InRoads grid for viewing cross sections so that the entire cross section is drawn at each station for accurate earthwork volume calculations. The Preference loads settings for a 10 Scale Horizontal with a 1X Vertical Exaggeration.
50 Scale Work Sec 2x Vert Exg (Use for Earthwork Volumes)	Used for Earthwork Volumes generation. This Preference uses the built in InRoads grid for viewing cross sections so that the entire cross section is drawn at each station for accurate earthwork volume calculations. The Preference loads settings for a 50 Scale Horizontal with a 2X Vertical Exaggeration.
Narrow 10h 10v (Use for Plans Production)	Used for Plans Production of Cross Section "Narrow" Sheet generation. This Preference loads the settings into the <u>Create Cross Section</u> dialog to view Cross Sections in a Narrow format on the GDOT SUXSEN Cross Section plan sheet cell. The Preference loads settings for a 10 Scale Horizontal and 10 Scale Vertical (Narrow 10h 10v).
Wide 10h 10v (Use for Plans Production)	Used for Plans Production of Cross Section "Wide" Sheet generation. This Preference loads the settings into the <u>Create Cross Section</u> dialog to view Cross Sections in a Wide format on the GDOT SUXSEW Cross Section plan sheet cell. The Preference loads settings for a 10 Scale Horizontal and 10 Scale Vertical (Wide 10h 10v).

11.4 GDOT Earthwork Volumes Preference

The generation of Earthwork Volumes is accomplished by using the **End-Area Volumes** command in InRoads. This command contains a Preference which has been set up to calculate Volumes to GDOT Standards. In order to generate the correct Volumes for GDOT– the "GDOT Earthwork Volumes" Preference must be set. The **GDOT Earthwork Volumes** Preference loads settings into the <u>End-Area Volumes</u> dialog to generate a Volumes Report. The Preference does not load settings to apply cut/fill adjustment factors. The Preference is accessed in the **Evaluation▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes** folder**.** The following table lists the GDOT Earthwork Volume Preference to select for the calculation of Earthwork Volumes. (See *Table 11.3*).

Table 11.3
Preference – GDOT Earthwork Volumes

Location: Evaluation ▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes folder**. (Preferences Button)**	
Preference Name	**Description**
GDOT Earthwork Volumes	Used for Earthwork Volumes generation. This Preference loads the GDOT Standard Settings in the End-Area Volumes dialog for use in calculating Earthwork Volumes. The Preference does not load settings to apply cut/fill adjustment factors

11.5 GDOT Earthwork Volume Report

The generation of the Earthwork Volume Report is accomplished by using the **GDOT Earthwork Volumes.xsl** Style Sheet. This Style Sheet is accessed by selecting the following command: **Evaluation ▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes** folder. Click the **Preferences** button and load the GDOT Earthwork Volumes Preference. After clicking Apply – the **Bentley Civil Report Browser** opens. Select the Style Sheet named **GDOT Earthwork Volumes.xsl**. The Style Sheet can be saved as an HTML file. For additional information regarding the Style Sheet – review the Style Sheet Help File which is included with the InRoadsALL standard files and is located in the following path: C:\InRoads Data\Style Sheet Documentation. (See *Table 11.4*).

Table 11.4
Style Sheet Report – GDOT Earthwork Volumes.xsl

Location: Evaluation ▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes folder. (Preferences Button)	
Style Sheet Name	**Description**
GDOT Earthwork Volumes.xsl	The GDOT Earthwork Volumes Report.xsl Style Sheet is utilized to supply Earthwork volume information. It is used by the Designer and Earthwork Coordinator during the Design phase and Construction phase of a project. Please Refer to the **GDOT Earthwork Volumes Report.xsl** Style Sheet Help File for additional information.

Required Right of Way

12. Required Right of Way

This section provides a brief overview of the requirements and processes for storing R/W Parcels and generating Right of Way Tables to GDOT Standards. For detailed Right of Way information please refer to **Lab 12** in the Design Training Labs.

This section covers the following topics:

- Right of Way Overview
- R/W Alignment and COGO Point Names/Feature Styles
- R/W COGO Points and Alignment Points
- R/W View Horizontal Annotation Preference
- R/W View Horizontal Annotation Filters
- Reviewing Horizontal R/W Alignments
- R/W DGN File Generation
- R/W and Easement Tables (Style Sheets)
- R/W Deed (Style Sheets)

12.1 Right of Way Overview

The following section depicts an overview of the processes to generate Required R/W and Easement Alignments, R/W DGN Files and R/W and Easement Tables to GDOT Standards in InRoads. Failure by the Designer to follow the correct Point and Alignment naming convention may cause problems with Survey Enhancements during the life of the project and with Stakeout Report generation. In order to generate these Required R/W and Easements – the following information should be adhered and followed.

a) All Right of Way and Easement Alignments must have a Feature Style assigned of **REQD_P_DWESMT**, **REQD_P_PESMT**, **REQD_P_REQD** or **REQD_P_TESMT** for the Right of Way Tables to generate correctly.

b) In InRoads, the term Horizontal Alignment refers to all linear elements, open or closed, such as centerlines, right of way parcels, etc. Horizontal Alignments consist of COGO points, linear elements and curves. Curves are not independent entities but are considered part of the Alignment.

c) All Right of Way Horizontal Alignment Names and COGO Point Names must begin with a **DE** Prefix. All Points must begin numbering at DE10000 or the next available DE Point Number. Horizontal Alignment numbering may begin at DE1.

d) All Horizontal Alignment Points for Right of Way and Easements must be converted to COGO Points.

e) When working on a Right of Way/Easement Alignment – ensure that it is set as the Active Alignment.

f) When storing curve data in Right of Way and Easement Alignments – ensure that all the curves are tangent and points are equated at the PC and PT of all curves.

g) Make sure to save the ALG file periodically when changes are made. InRoads does not save data on the fly - data is saved in temporary memory. The ALG file must be manually saved in order to retain Design modifications.

h) Ensure that all Right of Way and Easement Alignments are stored in a clock-wise direction for use in writing Deeds.

i) In order to generate the R/W and Easement Tables and a Deed Description-Style Sheet(s) named **GDOT RW Table.xsl** and **GDOT Deed.xsl** should be selected. The Style Sheet(s) are accessed by selecting the following command: In InRoads, select **Tools ► XML Reports ►** Hold down the **CTRL** key on your key board while Left clicking **Legal Description**. The **GaDOT Legal Description** dialog opens. The Style Sheet(s) for both the R/W Tables and the R/W Deed can be saved as .txt file(s).

12.2 R/W Alignment and COGO Point Names/Feature Styles

The Right of Way Horizontal Alignments and COGO Points must be stored with a DE Prefix and must be stored in a certain Point/Horizontal Alignment Number range along with the appropriate Feature Style. See the following Tables (*Tables 12.1, 12.2 and 12.3*) for a list of the required naming conventions).

Table 12.1 Standard R/W Design Geometry Object Names		
Object Type	**Prefix**	**Starting Number**
*R/W Cogo Points	DE	10000 (Max. = 99,999)
*R/W Horizontal Alignment Points	DE	10000 (Max. = 99,999)
**R/W Horizontal Alignments	DE	1

- * All Design Cogo Points and Design Horizontal Alignment Points **must** be named with a prefix of DE and begin with the number 10000 (e.g., first design point = DE10000).

- **All Design Horizontal Alignments **must** be named with a prefix of DE and begin with the number 1, (e.g., DE1).

Table 12.2 R/W Design Point & Alignment Ranges to Use	
Cogo/Alignment Points	Range – 10,000 to 99,999
Horizontal Alignments	Range – 1 to no Limitations for Alignments -- but must have the **DE** Prefix

Table 12.3 Feature Styles For R/W Design Points and Alignments		
Proposed Design Points Feature Style	REQD_P_DWESMT REQD_P_PESMT REQD_P_REQD REQD_P_RWRM REQD_P_TESMT	
Proposed Right of Way Feature Style		**Descriptions** **(Feature Style – Parcel #/Parcel Align)**
R/W Monument	REQD_P_RWRM	N/A
Reqd. R/W	REQD_P_REQD	Ex: REQD R/W – PAR 33/SV29
Perm. Const. Esmt.	REQD_P_PESMT	Ex: PESMT – PAR 44/SV67
Temp. Const. Esmt.	REQD_P_TESMT	Ex: TESMT – PAR 23/SV88
Driveway Esmt.	REQD_P_DWESMT**	Ex: DWESMT – PAR 14/SV30

** Note: All other Types of Miscellaneous Easements should use the REQD_P_DWESMT
Feature Style.

12.3 R/W COGO Points and Alignment Points

As mentioned previously - InRoads has the capability to store both COGO Points (which are northing and easting coordinates) and the ability to store Alignments Points (which are just coordinates with an assigned name – not independent Points). It is a required GDOT standard that all Points must be stored as COGO Points. If Alignment Points are stored – it is the Designer's responsibility to convert these Points to COGO Points. In order to view the correct Point Cells and Symbology – COGO Points must be stored instead of Alignment Points in order to generate the correct Symbology, Level, etc. for plans productions. Following is a brief overview of COGO Points versus Alignment Points.

IMPORTANT DISCUSSION

Alignment points and COGO points are two types of points to be aware of. Alignment points are nothing more than names assigned to coordinates in an alignment and do not exist in the COGO points buffer. In order to satisfy GDOT plan presentation requirements, prepare R/W tables and properly add enhanced survey data to your project. -- Surveyors and Designers alike must ensure that all alignments have a corresponding COGO point stored. We recommend that you adhere closely to the methods presented in the tutorials concerning centerlines, R/W and property. We bring this up because it is possible to view points at the same time as viewing Alignments without having to populate the Cogo Points in the View Horizontal Annotation command. Viewing points in this manner would not apply the correct attributes to the points -- therefore you must view the Cogo points separately.

12.4 R/W View Horizontal Annotation Preference

In order to view Right of Way and/or Easement Horizontal Alignments to GDOT Standards – the Preference named "NO BEARING & DISTANCE" should be selected. This Preference sets the viewing of Right of Way Alignments and Easement Alignments (No Bearing & Distance) options. The following Table depicts the available Preference, Location and Description to set the Preference. (See *Table 12.4*).

Table 12.4
Preference – R/W View Horizontal Annotation

Location: Geometry ▶ View Geometry ▶ Horizontal Annotation (**Preferences Button**)	
Preference Name	**Description**
NO BEARING & DISTANCE	Displays NO Bearing & Distance information for all Horizontal Alignments.

12.5 R/W View Horizontal Annotation Filters

Geometry Selection Filters can be used to select specific Alignments and COGO Points. Once selected and filtered – the Alignments and/or COGO Points will view and/or can be used for the generation of specific Style Sheets based on the criteria selected. A Filter can also be used to select the Points to utilize for Stakeout of R/W and Survey Data. The following Tables depict the available Filters, Locations and Descriptions to set the Filters for R/W, Easements and Stakeout of R/W and Survey Data. (See *Table 12.5*).

Table 12.5
Geometry Selection Filter Preferences for R/W, Easements and Stakeout Data

Location: Geometry ▶ View Geometry ▶ Horizontal Annotation (**Filter Button)** Then in the Geometry Selection Filter – select the **Preferences Button**.	
Filter Name	**Description**
REQD.dgn Alignments	Loads the Filter to select and view the Feature Style Alignments for the production of the REQD DGN File.
REQD.dgn Points	Loads the Filter to select and view the Feature Style Points for the production of the REQD DGN File.
Stakeout Survey Data	Loads the Filter to select the Feature Style Points for use in the GDOT Stakeout Report Style Sheet.

12.6 Reviewing Horizontal R/W Alignments

The Horizontal Alignments for R/W and Easement descriptions can be reviewed and printed by using the **Geometry ▶ Review Horizontal** command.

Following is the process for reviewing/describing Horizontal Alignments:

- Ensure that the Horizontal Alignment (R/W or Easement Alignment) you want to describe is the active Horizontal Alignment.
- In InRoads, Select **Geometry ► Review Horizontal**…and the **Review Horizontal Alignment** description appears.
- The user may also print the description by using the Print button on the **Review Horizontal Alignment** dialog. (See *Figure 12-1*).
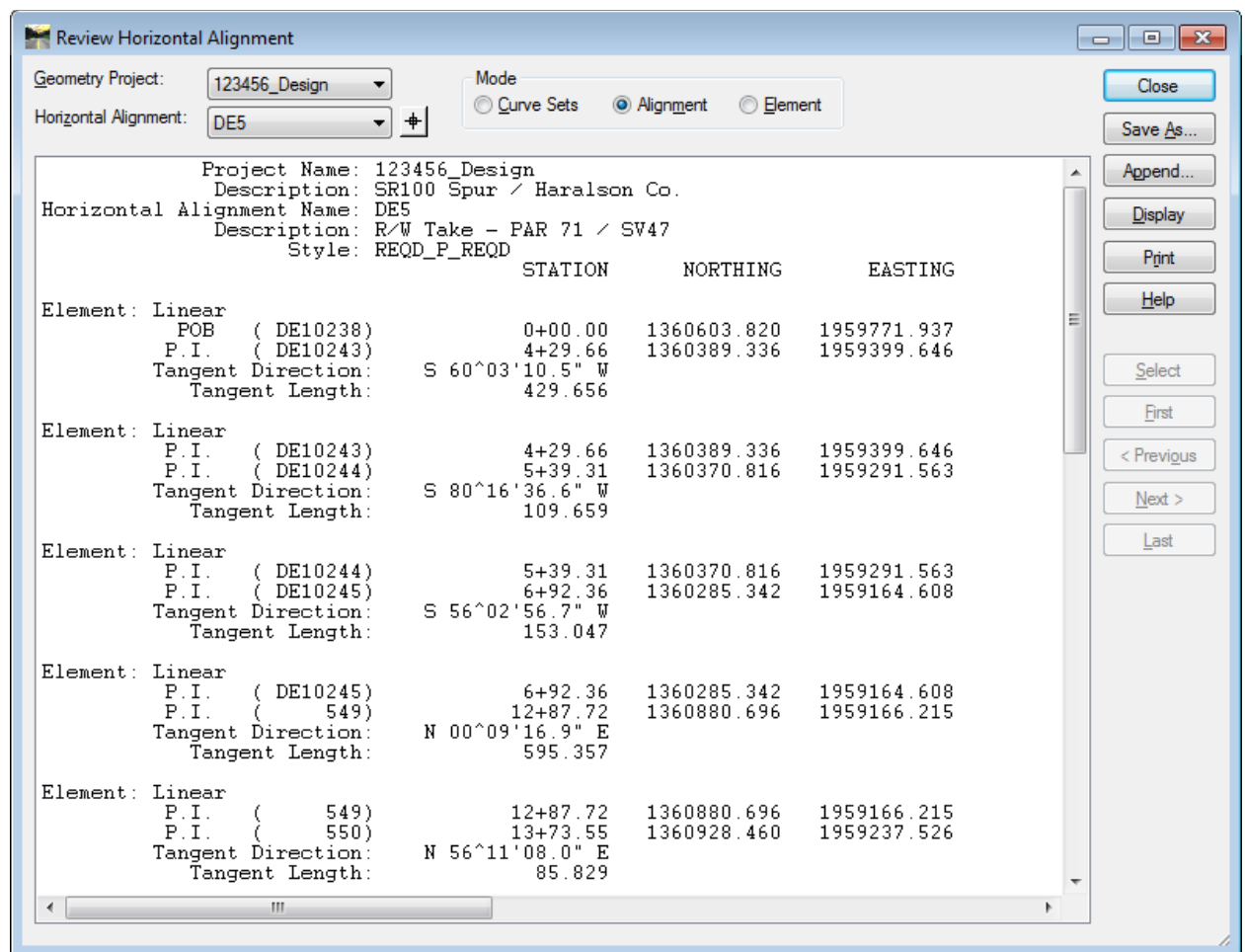
Figure 12-1   Review Horizontal Alignment

12.7 R/W DGN File Generation

After viewing the Required Right of Way and Easement Points, Cells, and Alignments – a MicroStation DGN file should be created to graphically represent these Geometry Objects. For detailed instructions on how to create the applicable DGN File – see **Lab 12** in the Design Training Labs. The following table lists the standard naming convention of the DGN File which is to be generated. (See *Table 12.6*).

Table 12.6
DGN File – Required Right of Way

Location: In MicroStation – File ▶ Save As	
DGN File Name	**Example**
PI#REQD.dgn	1234567REQD.dgn

12.8 R/W and Easement Tables (Style Sheets)

The generation of the R/W and Easement Tables is accomplished by using the **GDOT RW Table.xsl** Style Sheet. This Style Sheet is accessed by selecting the following command: In InRoads, select **Tools ► XML Reports ►** Hold down the **CTRL** key on your key board while Left clicking **Legal Description**. The **GaDOT Legal Description** dialog opens. Enter the appropriate Alignment and Reference Alignments and then click **Apply**. The **Bentley Civil Report Browser** opens. Select the Style Sheet named **GDOT RW Table.xsl.** The Style Sheet can be saved as a .txt file and then imported into MicroStation as a table. For additional information regarding the Style Sheet – review the Style Sheet Help File which is included with the InRoadsALL standard files and is located in the following path: C:\InRoads Data\Style Sheet Documentation. (See *Table 12.7*).

Table 12.7
Style Sheet Report (Table) – GDOT RW Table.xsl

Tools ► XML Reports ► Hold down the **CTRL** key on your key board while Left clicking **Legal Description**.	
Style Sheet Name	**Description**
GDOT RW Table.xsl	The GDOT RW Table.xsl Style Sheet is utilized to create Right-of-Way Table text files for placement in MicroStation with the GDOT Tools – Include Data Table placement Macro. Please Refer to the **GDOT RW Table.xsl** Style Sheet Help File for additional information.

12.9 R/W Deed (Style Sheets)

The generation of the Right of Way Deed is accomplished by using the **GDOT Deed.xsl** Style Sheet. This Style Sheet is accessed by selecting the following command: In InRoads, select **Tools ► XML Reports ►** Hold down the **CTRL** key on your key board while Left clicking **Legal Description**. The **GaDOT Legal Description** dialog opens.   Enter the appropriate Alignment and Reference Alignments and then click **Apply**. The **Bentley Civil Report Browser** opens. Select the Style Sheet named **GDOT Deed.xsl.** The Style Sheet **MUST BE** saved as a .out file. This .out file is then used in the stand-alone Deed Writer Program to generate GDOT Deeds for purchase of Right of Way. For additional information regarding the Style Sheet – review the Style Sheet Help File which is included with the InRoadsALL standard files and is located in the following path:
C:\InRoads Data\Style Sheet Documentation. (See *Table 12.8*).

Table 12.8
Style Sheet Report (Table) – GDOT Deed.xsl

Tools ► XML Reports ► Hold down the **CTRL** key on your key board while Left clicking **Legal Description**.	
Style Sheet Name	**Description**
GDOT Deed.xsl	The GDOT Deed.xsl Style Sheet is utilized to supply a Deed.out file to the Right-of-Way office. The Right-of-Way office utilizes the Deed.out file to generate a Deed. Please Refer to the **GDOT Deed.xsl** Style Sheet Help File for additional information. Please Note: The Style Sheet must be saved as a .out file for use with the GDOT Deed Writer Program.

Survey Enhancements

13. Survey Enhancements

This section provides a brief overview of the processes to include Additional Survey Enhancements received from Photogrammetry/Survey during the Design Phase of a project. For detailed Survey Enhancement information please refer to **Lab 13** in the Design Training Labs.

This section covers the following topics:

- Survey Enhancements Overview
- Survey Enhancements to the DTM
- Survey Enhancements to the ALG
- Survey Enhancements to the DGN

13.1 Survey Enhancements Overview

The following section depicts an overview of the processes to incorporate Survey Enhancements during the Design Phase of a project according to GDOT Standards. In order to add the Survey Enhancement Data – the following information should be adhered and followed.

a) During the life of a Design project – Additional Survey Enhancements may need to be incorporated into the project and the new survey data re-submitted to the Designer in order for the Designer to update the design database.

b) All location survey data and all requests for additional survey data should be submitted to the Engineering Management Section of the Office of Design Policy and Support/Location Bureau.

c) Depending on what type of enhancements are collected – the SDE will process the additional survey data and send the Designer the appropriate files as required. This could result in the SDE sending the Designer all of the updated files or just certain files depending on what data were collected.

d) The Designer will receive a new PI#_SDE.dtm from the SDE when Enhancements are requested and incorporated for Surface Data. After receiving the updated DTM – the Designer will <u>delete</u> their PI#_Exist.dtm and replace it with this new one. The Designer will then rename the PI#_SDE.dtm both externally and internally to PI#_Exist.dtm (as previously described in the Design Training Lab 2). The steps outlined in Design Training Lab 13 will instruct the user how to do this.

e) When the Designer requests additional property or additional existing alignment enhancements that affect the InRoads ALG file, the SDE will add or change the data in the original PI#_SDE.alg file that is kept by the Survey Office. When changes are complete, the Designer will be notified and provided with a copy of the revised PI#_SDE.alg file. The Designer will delete out all Survey Data from the PI#_Design.alg file he is working in and will import all Survey Data from the revised PI#_SDE.alg to the PI#_Design.alg he is working in, using the LandXML Translator. The steps outlined in Design Training Lab 13 will instruct the user how to do this.

f) A new Enhanced DTM may not always be provided to the Designer if no changes were made to the DTM by the SDE. The SDE will only provide an Enhanced DTM if new Features have been surveyed and incorporated into the DTM. If any topographical enhancements are collected – the SDE will send the Designer the new processed DTM file and the associated enhanced data in the PI#_TOPO.dgn file.

g) A new Enhanced Survey ALG file may not always be provided to the Designer if no changes were made to the Property or Existing Alignment data by the SDE. The SDE will only provide an Enhanced ALG if new data has been surveyed and incorporated into the ALG. If any property enhancements are collected – the SDE will send the Designer the new processed ALG file and the associated enhanced data in the PI#_PROP.dgn file.

h) The InRoads LandXML utility is used to export the Enhanced Survey Data from the SDE's ALG File and also to import the Enhanced Survey Data into the Designer's ALG File.

i) The Enhanced Existing DTM received from the SDE contains all of the Surface Points, Breaklines and Features along with the triangulated data. The Enhanced Property/Existing Alignment information in the ALG received from the SDE contains all of the SV Prefix Alignments and the Survey Cogo Points.

j) If only property enhancements were collected, then the SDE would send the Designer the new processed PI#_SDE.alg file and the associated enhanced data in the PI#_PROP.dgn file.

k) If only topographical enhancements were collected, then the SDE would send the Designer the new processed PI#_SDE.dtm file and the associated enhanced data in the PI#_TOPO.dgn file.

l) In most cases the following files (or a combination) of these files will be submitted to the Designer for use as Additional Survey Enhancements:

- **PI#_SDE.dtm**
- **PI#_SDE.alg**
- **PI#_TOPO. dgn** (if applicable)
- **PI#_PROP.dgn** (if applicable)
- **PI#_UTLE.dgn** (if applicable)

Additional Survey Enhancement Process

(Red Dotted Line represents Additional Survey Enhancement Process Overview)

Env/Loc

DGN

DTM

Additional Field Survey Enhancements

SDE

InRoads

Field Enhanced CSV File

FWD

FWD does NOT go to Design

Enhanced Topo and Utle DGN

Merged Topo and Utle DGN

DTM

ALG

Topo.dgn **Utle.dgn**

Prop.dgn

Design

Designer Requests Additional Enhancements
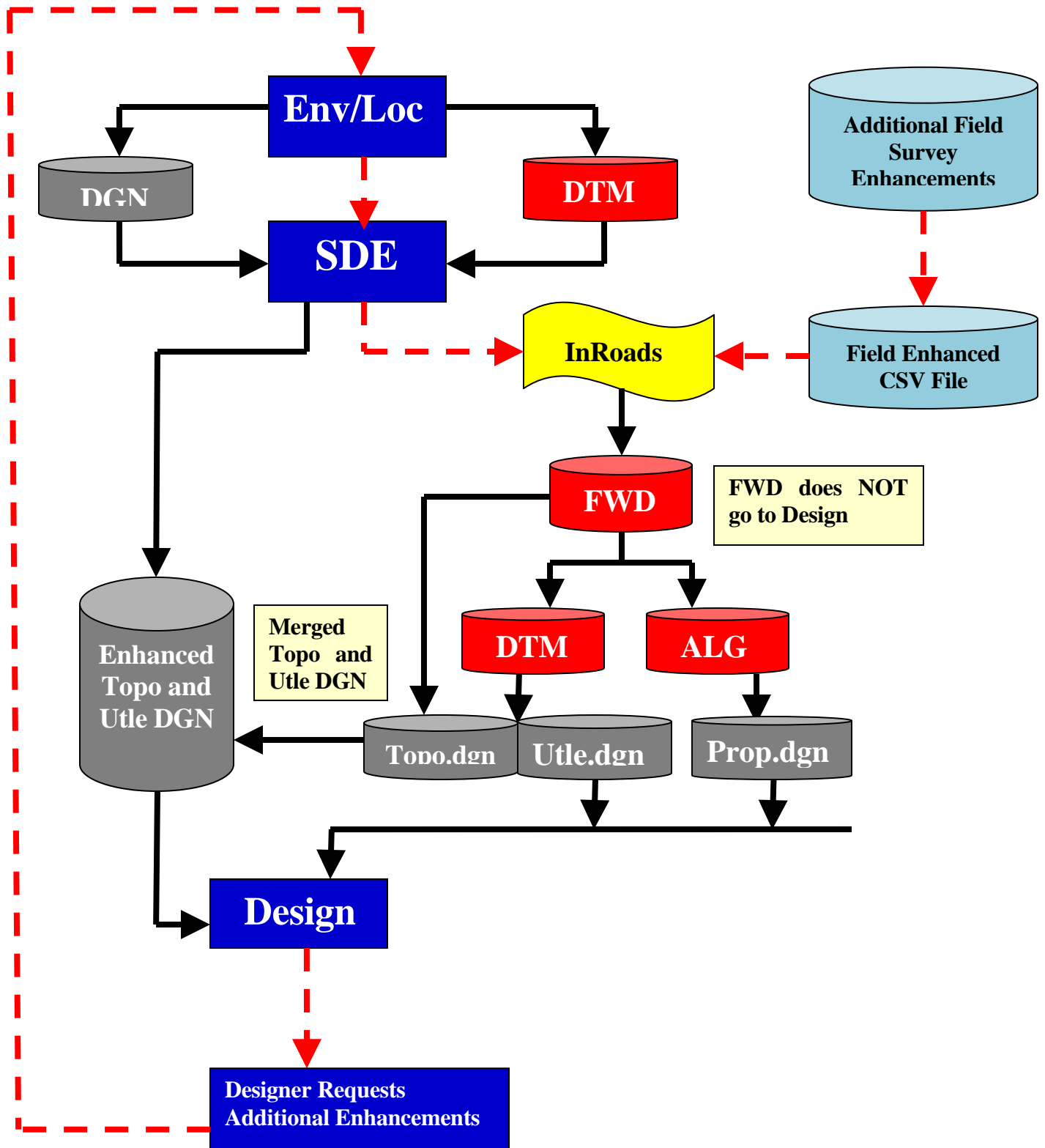
13.2 Survey Enhancements to the DTM

The following section depicts information regarding the DTM file submitted to the Designer whenever Survey Enhancements have been incorporated by the SDE. As mentioned previously, a new Enhanced DTM may not always be provided to the Designer if no changes were made to the DTM by the SDE. The SDE will only provide an Enhanced DTM if new Features have been surveyed and incorporated into the DTM. If any topographical enhancements are collected – the SDE will send the Designer the new processed DTM file (PI#_SDE.dtm).   **For detailed Survey Enhancement information (procedures and processes) please refer to **Lab 13** in the Design Training Labs.

Brief Overview Process:

- **Step 1:** Copy the Enhanced PI#_SDE.dtm to the Project Folder.

- **Step 2.** Delete the PI#_Exist.dtm from the Project Folder.

- **Step 3:** Rename the External Name from PI#_SDE.dtm to PI#_Exist.dtm.

- **Step 4:** Rename the InRoads Internal Name from PI#_SDE.dtm to PI#_Exist.dtm.

13.3 Survey Enhancements to the ALG

The following section depicts information regarding the ALG file submitted to the Designer whenever Survey Enhancements have been incorporated by the SDE. As mentioned previously, a new Enhanced Survey ALG file may not always be provided to the Designer if no changes were made to the Property or Existing Alignment data by the SDE. The SDE will only provide an Enhanced ALG if new data has been surveyed and incorporated into the ALG. If any property enhancements are collected – the SDE will send the Designer an enhanced PI#_SDE.alg file. **For detailed Survey Enhancement information (procedures and processes) please refer to **Lab 13** in the Design Training Labs.

Brief Overview Process:

- **Step 1:** Copy the Enhanced PI#_SDE.alg to the Project Folder.

- **Step 2.** In the PI#_Design.alg – delete all Alignments with an SV Prefix.

- **Step 3:** In the PI#_Design.alg – delete all Points without a Prefix.

- **Step 4:** In the PI#_SDE.alg – export the Survey Data using LandXML Utility.

- **Step 5:** In the PI#_Design.alg – import the Survey Data using LandXML Utility.

13.4 Survey Enhancements to the DGN

The following section depicts information regarding the DGN file(s) submitted to the Designer whenever Survey Enhancements have been incorporated by the SDE. The following DGN File(s) are updated by the SDE by merging the new data into the original PI#_TOPO.dgn, PI#_PROP.dgn and/or PI#_UTLE.dgn files depending on the data collected. The Designer may not always receive all three of the above mentioned files. The Designer will only receive the updated DGN files if changes were made to the DGN files by the SDE.

If Enhanced DGN Files <u>are</u> provided by the SDE – the Designer will overwrite his current TOPO, PROP and/or UTLE DGN Files and replace them with the new ones provided by Survey.

**DGN Files –The DGN Files received from the SDE contain an underbar (_) in the file name. The reason for this is to assist in differentiating DGN data received from the SDE from that of the Design DGN files. This will assist in organization of data during the enhancement processes. The Designer must rename the DGN files from the SDE naming convention to the Design naming convention in order for the MicroStation customized Macros to function correctly and to conform to the current EDG (Electronic Data Guidelines). If the Designer does not rename the DGN files (and remove the underbars) – the GDOT MicroStation Macros may not function. (See *Table 13.1*).

Table 13.1		
Re-name SDE DGN Files		
SDE DGN FILE NAME	**Rename To**	**DESIGN DGN FILE NAME**
PI#_TOPO.dgn	►►	**PI#TOPO.dgn**
PI#_PROP.dgn	►►	**PI#PROP.dgn**
PI#_UTLE.dgn	►►	**PI#UTLE.dgn**

For detailed instructions regarding the above re-naming process -- please refer to **Lab 2 in the Design Training Manual: *Introduction to InRoads for Design*.

InRoads Style Sheets

14. InRoads Style Sheets

This section provides a brief overview of the requirements and processes for generating InRoads Style Sheets to GDOT Standards. For additional information regarding the processing of Style Sheets, please refer to **Lab 14** in the Design Training Labs.

This section covers the following topics:

- InRoads Style Sheets Overview
- Location of GDOT Style Sheets
- Location of GDOT Style Sheet Help Files
- Descriptions of GDOT Style Sheets

14.1 InRoads Style Sheets Overview

Style Sheets are used by InRoads to present data in a particular Report Format. The Style Sheets are XSL files which can be saved in different extensions depending on the Style Sheet used. Formats can be saved as .HTML, .OUT, .TXT, etc. depending on the function of the Style Sheet. GDOT has several Style Sheets which can be used to generate Report Data in a format for use in submitting Report deliverables for Design, Survey, Construction, etc. In order to generate these Style Sheets to GDOT Standards – the following information should be adhered and followed.

a) The Style Sheet Data is based on XML (Extensible Markup Language) code which is used to generate the data from InRoads into an XSL (Extensible Style Sheet Language) Report Format.

b) In order to generate Style Sheets to GDOT Standards for deliverables – the Style Sheets in the following location should be utilized:

C:\InRoads Data\Style Sheets\GDOT

The above path is set as the default in the **Project Defaults** Command in InRoads. (The process for setting this default path is described in the next section of the Guidelines).

c) Following are the categories which are available:
- Geometry
- Station Base
- Station Offset
- Clearance
- Stakeout
- Legal Description
- Map Check
- Intersecting Alignment Stations
- Point Validation
- Surfaces
- Surface Check

d) It is very important that only the Style Sheets that have the name GDOT in it are used for submitting deliverables according to GDOT Standards. The Designer may use the generic InRoads Style Sheets during the Design Process – but all deliverable Reports MUST use the GDOT Style Sheets according to Design Policy.

14.2 Location of GDOT Style Sheets

As mentioned previously, in order to generate Style Sheets to GDOT Standards for deliverables – the GDOT Standard Style Sheets should be utilized. The GDOT Style Sheets are included in the **InRoadsALL.exe** download executable file.

Once **InRoadsALL.exe** is executed and installed – the GDOT Style Sheets will be located in the following path:

C:\InRoads Data\Style Sheets\GDOT

In order to access these Style Sheets - the path should be set as the default path in InRoads by using the **Project Defaults** command. The Designer will need to enter this path in the InRoads Project by doing the following:

In the InRoads pull-down select:

1. **File ▶ Project Defaults** from the InRoads pull-down menu.
2.   Under the **Default Directory Paths** Section - Click in the **Style Sheet (*.xsl):** field and then click the **Browse** button to navigate to the folder:

    C:\InRoads Data\Style Sheets\GDOT.

3. Next **-** click **Open**.
4. The Current Configuration for the Style Sheets will now default to the following path: **C:\InRoads Data\Style Sheets\GDOT**
5. Click **Apply.**

14.3 Location of GDOT Style Sheet Help Files

GDOT Style Sheet Help Files are included in the **InRoadsALL.exe** download executable file.

Once **InRoadsALL.exe** is executed and installed – the GDOT Style Sheets will be installed and located in the following path:

C:\InRoads Data\Style Sheet Documentation

These GDOT Style Sheet Help Files depict detailed information regarding the usage of the Style Sheets, the format of the Style Sheets and the type of extension (.html, .txt, .etc.) in which the Style Sheet should be saved.

14.4 Descriptions of GDOT Style Sheets

Customized Style Sheets have been created to GDOT Standards in order to provide Reports for InRoads Data. These Style Sheets correspond to GDOT Policy and should be utilized for Report deliverables when required. The following Table lists the current available GDOT Style Sheets, the Location to Access the Style Sheets in InRoads and a brief Description of the Style Sheets. Detailed Help Files are also available as discussed in the previous Section 14.3. (See *Table 14.1*).

Table 14.1
Style Sheet Descriptions

Style Sheet Name (.xsl)	Location	Description
GDOT 3D Alignment Comparison Report	Tools ▶ XML Reports ▶ Station Base	The **GDOT 3D Alignment Comparison.xsl** Style Sheet is utilized to report the Station, Elevation, Horizontal Offset and Vertical Offset from one alignment (Baseline Alignment) to a second alignment (Offset Alignment).
GDOT Alignment File Descriptions	Tools ▶ XML Reports ▶ Geometry	The **GDOT Alignment File Descriptions.xsl** Style Sheet is utilized to supply a text file description of the centerline alignments to the Contractor.
GDOT Alignment Points List	Tools ▶ XML Reports ▶ Geometry	The **GDOT Alignment Points List.xsl** Style Sheet lists all the points in an alignment in a format that may be copied and pasted into the **View Horizontal Annotation** dialog's Cogo Points include: field. This function is useful during Right-of-Way plans preparation when the Cogo points in the Right-of-Way alignments need to be viewed. In InRoads V8i, viewing the Cogo points comprising the R/W alignments is the only way to ensure the proper point symbols are viewed in MicroStation.

Style Sheet Name (.xsl)	Location	Description
GDOT Alignment Report	Tools ► XML Reports ► Geometry	The **GDOT Alignment Report.xsl** Style Sheet is utilized to supply Horizontal Alignment information to the Contractor for use in GPS equipment. The Report depicts the Alignment information located at 50 Foot Station intervals at a Zero Offset. The **GDOT Alignment Report.xsl** will contain each Horizontal Alignment with the Feature Styles of MAIN_P_CONSTCL and MAIN_P_SIDECL in the InRoads Project Database (.ALG file). The Alignments may all be generated at one time and listed in one **GDOT Alignment Report.xsl**.
GDOT Deed	Tools ► XML Reports ► CTRL key + Legal Description	The **GDOT Deed.xsl** Style Sheet is utilized to supply a Deed.out file to the Right-of-Way office. The Right-of-Way office utilizes the Deed.out file to generate a Deed.
GDOT Earthwork Volumes Report	Evaluation ► Cross Section ► Cross Sections ► End-Area Volumes folder	The **GDOT Earthwork Volumes Report.xsl** Style Sheet is utilized to supply Earthwork volume information. It is used by the Designer and Earthwork coordinator during the design phase and construction phase of a project.
GDOT End-Area Report - Compressed	Evaluation ► Cross Section ► Cross Sections ► End-Area Volumes folder	The **GDOT End-Area Report-Compressed.xsl** Style Sheet writes out an End-Area file to an ASCII text file format that is similar to the RDS format for distribution to Auditors and Contractors when a project is let to Construction. This format uses much less paper when compared to the GDOT End-Area Report-Standard.xsl.
GDOT End-Area Report - Standard	Evaluation ► Cross Section ► Cross Sections ► End-Area Volumes folder	The **GDOT End-Area Report-Standard.xsl** Style Sheet is utilized to supply an End-Area report in a standard GDOT ASCII text file format for distribution to Contractors when a project is let to Construction.

Style Sheet Name (.xsl)	Location	Description
GDOT Feature Lengths Report	Tools ▶ XML Reports ▶ Surfaces	The **GDOT Feature Lengths Report.xsl** Style Sheet is utilized to determine lengths of Features used in Finished surfaces. It requires the Designer to use a unique point name in the component utilized to create the surface.
GDOT Feature-StationElevationOffset Report	Tools ▶ XML Reports ▶ Clearance	The **GDOT Feature-StationElevationOffset Report.xsl** Style Sheet is utilized to supply a Station, Elevation and Offset Report from the Roadway Centerline to selected Surface Features in the Digital Terrain Model (DTM).
GDOT Feature Volumes Report	Evaluation ▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes folder	The **GDOT Feature Volumes Report.xsl** Style Sheet is utilized to supply volumes of component shapes placed in the Final design surface. This Report will only work on closed shape components. Each component for which volumes are desired must be set up with a unique Feature Style.
GDOT GPS Grading Report	Evaluation ▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes folder	The **GDOT GPS Grading Report.xsl** Style Sheet is utilized to supply an End-Area report of the Proposed "Finished Surface" in a standard GDOT ASCII text file format for distribution to Contractors before the award of the contract (pre-award). The **GDOT GPS Grading Report** generates a report on the proposed Finished Surface and does not report the Existing Surface. This file is utilized by contractors to upload data for use in Automated Grading Machines.
GDOT HEC RAS Bridge Features Report	Tools ▶ XML Reports ▶ Clearance	The **GDOT HEC RAS Bridge Features Report.xsl** Style Sheet is utilized to supply a Station, Elevation and Offset Report from the Roadway Centerline to selected Surface Features representing the existing Bridge Geometry. This Report is then used for input of the Bridge Geometry data into HEC RAS.
GDOT HEC RAS Cross Section Geometry Report	Tools ▶ XML Reports ▶ Clearance	The **GDOT HEC RAS Cross Section Geometry Report.xsl** Style Sheet is utilized to supply a comma delimited Station and Elevation Report from the Roadway Centerline for use in importing Cross Sectional geometric data into HEC RAS. The Cross Sectional data is reported based on the Offset Parallel Alignments/Profiles from the Roadway Centerline through a Stream Center.

Style Sheet Name (.xsl)	Location	Description
GDOT HEC RAS (Wide Floodplain) Cross Section Geometry Report	Tools ► XML Reports ► Clearance	The **GDOT HEC RAS (Wide Floodplain) Cross Section Geometry Report.xsl** Style Sheet is utilized to supply a comma delimited Station and Elevation Report (for Wide Floodplain Cross Sections) from the Roadway Centerline for use in importing Cross Sectional geometric data into HEC RAS. The Cross Sectional data is reported based on the Offset Parallel Alignments/Profiles from the Roadway Centerline through a Stream Center.
GDOT Intersecting Alignment Stations	Tools ► XML Reports ► Intersecting Alignment Stations	The **GDOT Intersecting Alignment Stations.xsl** Style Sheet is utilized to report the Intersecting Stations, Elevations, Elevation Difference and Northing and Easting coordinates between two or more alignments.
GDOT Roadway Design Milling Report	Modeler ► Roadway Designer ► Tools ►Milling Report	The **GDOT Roadway Design Milling Report.xsl** Style Sheet is utilized to report the Total Planar Area for Milling. A "Process All" should be performed before creating a Milling Report.
GDOT Ponding Report	Evaluation ► Cross Section ► Cross Section Report	The **GDOT Ponding Report.xsl** Style Sheet is utilized to report profile stations where the longitudinal grade < 1.0% and the road cross slope < 0.5%.
GDOT RW Table	Tools ► XML Reports ► CTRL + Legal Description	The **GDOT RW Table.xsl** Style Sheet is utilized to create Right-of-Way Table text files for placement in MicroStation with the **GDOT Tools – Include Data Table** placement macro.

Style Sheet Name (.xsl)	Location	Description
GDOT Stakeout Report	Tools ► XML Reports ► Point Validation	The **GDOT Stakeout Report.xsl** Style Sheet is utilized to check for Duplicate Points and supply Point information to the Surveyor for use in staking out alignments and property. The Report lists the point name, easting and northing for all points with the Feature Styles listed below. When the report is saved as an ASC file it may be used to upload the points directly into the surveyor's data collector for staking in the field. • **PROP_E_PAR** • **PROP_E_RWE** • **PROP_E_RWM** • **PROP_E_RWC** • **PROP_E_RWU** • **PROP_E_POEL** • **PROP_E_PPC** • **PROP_E_PCF** • **TOPO_E_SNGSCM** • **TOPO_E_SLCM** • **TOPO_E_SLCD** • **TOPO_E_SDCD** • **TOPO_E_SBNCHMK** • **REQD_P_*** • **MAIN_P_CONSTCL** • **MAIN_P_SIDECL**
GDOT Station-Offset Report	Tools ► XML Reports ► Clearance	The **GDOT Station-Offset Report.xsl** Style Sheet is utilized to supply Station and Offset information of selected Cogo Points to a selected Horizontal alignment.
GDOT SUE Utility QL-A Location Report	Tools ► XML Reports ► Clearance	The **GDOT SUE Utility QL-A Location Report.xsl** Style Sheet is utilized to supply a report depicting Test Hole Name, Description, Station and Offsets for SUE QL-A Test Hole data.
GDOT Superelevation Data Report	Modeler ► Roadway Designer ► Superelevation ► Superelevation Report	The **GDOT Superelevation Data Report.xsl** Style Sheet is utilized to provide superelevation information that was applied using the Create Superelevation Wizard. The **GDOT Superelevation Data Report** lists the Station, Cross Slope and Point Type (Normal Crown, Zero Cross Slope, Reverse Crown, and Full Super) for each superelevation transition location.

Style Sheet Name (.xsl)	Location	Description
GDOT Surface Check Report	Tools ► XML Reports ► Surface Check	The **GDOT Surface Check Report.xsl** Style Sheet is utilized to verify the tolerance and accuracy of an Existing Digital Terrain Model (original terrain surface) as compared against associated field survey points.
GDOT Vertical Clearance	Tools ► XML Reports ► Clearance	The **GDOT Vertical Clearance Report.xsl** Style Sheet is utilized to supply the vertical clearance information from selected Cogo Points to a selected Horizontal alignment.

Additional File Deliverables

15. Additional File Deliverables

This section provides a brief overview of Additional File Deliverables which are required to be submitted when using the InRoads Design Software. Several Additional Files are generated in InRoads for use by other Offices internal to GDOT. Additional Files are also provided to Contractors when a Project is complete and let to Construction.

This section covers the following topics:

- Additional File Deliverables Overview

- InRoads File Deliverables to GDOT
  o Write Stakeout Data to a Data Collector
  o Generate GDOT Deed File(s)
  o InRoads Project Data Sheet(s)
  o GDOT InRoads Design Data Quality Assurance Checklist

- InRoads File Deliverables to Contractors
  o Alignment File Description(s)
  o Alignment Report File(s)
  o End-Area Report File(s)
  o GPS Grading Report File(s)

15.1 Additional File Deliverables Overview

The following section depicts an overview of the Style Sheets, Data Files and Reports which are required as Additional File Deliverables. In order to generate these Additional File Deliverables – the following information should be adhered and followed.

a) The GDOT Standard Style Sheets for generating the Additional File Deliverables are located in the following path: **C:\InRoads Data\Style Sheets\GDOT.**

b) For Detailed Help Instructions on using the Style Sheets – please see the GDOT Style Sheet Help Files which are located in the following path: **C:\InRoads Data\Style Sheet Documentation**

c) To generate the GDOT Stakeout Data File for staking of R/W – the InRoads LandXML Generator should be used.

d) To generate the Deed output files for use in writing Deeds – the following Style Sheet should be used: **GDOT Deed.xsl**.

e) To generate the Alignment File Descriptions which depict the Alignment information (including the Curve Data and Coordinate information) for Feature Styles **MAIN_P_CONSTCL** and **MAIN_P_SIDECL** - the following Style Sheet should be used: **GDOT Alignment File Descriptions.xsl**.

f) To generate the Alignment Report files which depict the Alignment information at 50' intervals for use by Contractors – the following Style Sheet should be used: **GDOT Alignment Report.xsl**.

g) The End-Area Report which is submitted to Contractors for use in the Earthwork process utilizes the following Style Sheet: **GDOT End-Area Report-Standard.xsl**.

h) To generate the GPS Grading Report file(s) for use by Contractors – the following Style Sheet should be used: **GDOT GPS Grading Report.xsl**.

i) The Project Data Sheet is a required Deliverable that should list all of the pertinent InRoads Design information. This file is used by Designers to help document associated files and data for use during the Design process. This file is also submitted as a deliverable with the InRoads project files so that users who inherit the project can easily identify project data. This file is included in the InRoadsALL.exe.

j) A Quality Assurance Control Checklist is also required. This is a checklist that the Designer should utilize to ensure that all pertinent Design Data is included for Project Delivery. This File is included in the InRoadsALL.exe.

15.2 InRoads File Deliverables to GDOT

As mentioned previously, there are several Additional File Deliverables which are required to be submitted by the Designer for use by other Offices in the Department. The following Section contains information on how to generate the following Report/Data Files:

- o   Write Stakeout Data to a Data Collector using InRoads LandXML
- o   Generate GDOT Deed File(s)
- o   InRoads Project Data Sheet(s)
- o   GDOT InRoads Design Data Quality Assurance Checklist

15.2.1   Write Stakeout Data to a Data Collector using InRoads LandXML

The following procedure is used to export Stakeout Data such as COGO Points, Horizontal/Vertical Alignments, etc. from InRoads to a LandXML file. This LandXML file can then be uploaded to the GDOT Trimble Business Center/GDOT Trimble Data Collectors for use in staking out Survey Data.

Workflow Procedure:

Open the InRoads ALG file. Then utilize the LandXML Translator to select the COGO Points and Horizontal/Vertical alignments which will be written out to create the LandXML File.

Feature Styles to Export to LandXML for Stakeout:

• PROP_E_PAR	• PROP_E_RWE	• PROP_E_RWM
• PROP_E_RWC	• PROP_E_RWU	• PROP_E_POEL
• PROP_E_PPC	• PROP_E_PCF	• TOPO_E_SNGSCM
• TOPO_E_SLCM	• TOPO_E_SLCD	• TOPO_E_SDCD
• TOPO_E_SBNCHMK	• REQD_P_*	• MAIN_P_CONSTCL
• MAIN_P_SIDECL		

Workflow Steps:

A. Open the Geometry Project (.ALG) in InRoads

1.   In InRoads, select **File ▶ Open**

2.   Set the **Files of type:** *Geometry Projects (*.alg)*

3.   Select the .ALG File (Geometry Project) that contains the Cogo Points and Alignments that are to be exported to the LandXML file.

B. Create the LandXML File

1. In InRoads, select **File ▶ Translators ▶ LandXML Translator**

2. Select the *Export Alignment* tab

3. Select the *Geometry Project:*

4. Click in the **Include:** field to activate the **Filter** button

5. The Geometry Selection Filter dialog box opens. Select all of the Alignments that are to be included in the XML file. Then click **OK**.

6. Ensure that LandXML: *Version 1.0* is selected.

7. Check the box to "*Include All Cogo Points".*
    Note: This box can be left unchecked if no Cogo Points need to be included in the LandXML file.

8. **Important** - Change the Linear Units to: *US Feet*

9. Change the State: to *proposed*

10. Click the **Save As** button. The **Export** dialog opens. Key in the **File Name:** and click **Save**.

11. In the **File Name:** field - the name of the file will be listed.

12. Ensure your dialog box is similar to the one depicted below:
    Note: If the LandXML file is written by Survey, the ALG file Name will be PI#_SDE.
    If the LandXML file is written by Design, the ALG file Name will be PI#_Design.
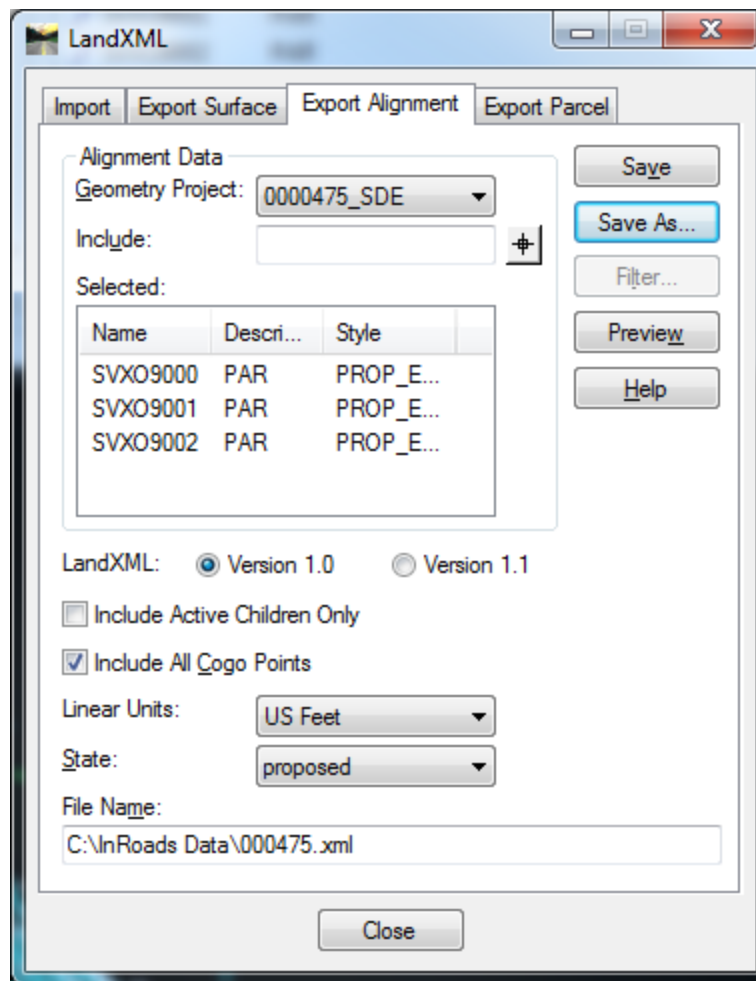
Figure 15-1   LandXML

13. Next, click **Close** to close the dialog box.

14. The LandXML file will be created in the Path depicted in the **File Name:** field.

15.2.2   Generate GDOT Deed File(s)

In order to write out data from InRoads to use as the Metes and Bounds description for generation of Deeds, the **GDOT Deed.xsl** Style Sheet is used. The **GDOT Deed.xsl** Style Sheet is utilized to create an output (.OUT) file which is imported into the stand-alone GDOT Deed Writer program. The Deed Writer Program is used by the Office of Right of way to create Deeds for the purchase of Right of Way on the project.

NOTES:

a) For Detailed Instructions on using the **GDOT Deed.xsl** Style Sheet – please see the GDOT Style Sheet Help Files which are located in the following path:

   C:\InRoads Data\Style Sheet Documentation

b) Points <u>must</u> be stored at the PC and the PT of Curves in order to generate an accurate Metes and Bounds Deed file.

c) The Points must be stored in a clockwise direction to facilitate the Deed Writing process.

d) To access the Style Sheet – select the following from the InRoads pull-down menu: **Tools ►XML Reports ► CTRL + Legal Description**

e) The **GDOT Deed.xsl** Style Sheet Report should be saved with an .OUT Extension.

f) The Naming Convention for the **GDOT Deed** .OUT File will be **Alignment Name.out** (Example: DE31.out).

Table 15.1
File Naming Convention – GDOT Deed

Location: Tools ►XML Reports ► CTRL + Legal Description	
File Name	**Example**
Alignment Name.out	DE31.out

15.2.3   InRoads Project Data Sheet(s)

The **Project Data Sheet** is used to document the design files and data contained in the InRoads Database File(s). This documentation not only assists the Designer during the Design process but also is used by other personnel who may inherit the project in latter stages to help identify the correct design files and design objects. This Project Datasheet File should be submitted as an Additional Deliverable along with the associated InRoads Project Database File(s).

NOTES:

a)   The **Project Data Sheet** is included with the InRoadsALL.exe download and may be found in the following location on the hard drive:

   C:\InRoads Data\Standards

b)   The Designer should create a Documentation Folder under the C:\InRoads Data\PI Number directory. The Project Data Sheet and any additional Project Documentation should be included in this folder and submitted along with the InRoads Project Database File(s).

c)   The following page contains a screen capture of the Project Data Sheet:

GDOT — Georgia Department of Transportation

PROJECT DATA SHEET

Georgia Department of Transportation
(Alignments and Associated Objects and Files)

(Multiple Alignments)

Existing Surface	.dtm
Geometry File	.alg
Template Library	.itl
Roadway Design File	.ird
Preference File	.xin
Designer	
Phone Number	

Comments:

Project Number:
PI Number:
Project Description:
County:

Street/Road Name	Hor. Align.	Vert. Align.	Corridor Name	Finished Surface	Bogus Surface	Prop. Left E.O.P.	Prop. Right E.O.P.	Ditch Align. L/R	Ditch Profile Name	Station on Mainlin	Station Begin Const.	Station End Const.	Design Speed	K crest	K sag	Microstation X-Section Filename	User Defined	User Defined	User Defined
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
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				.dtm	.dtm											.dgn			
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				.dtm	.dtm											.dgn			
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				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			
				.dtm	.dtm											.dgn			

15.2.4   GDOT InRoads Design Data Quality Assurance Checklist

The **GDOT InRoads Design Data Quality Assurance Checklist** will be documented and submitted by the Designer or Design Consultant. This document is an overall checklist to ensure that the applicable Design Deliverables are submitted to Construction (Earthwork Coordinators) and/or GDOT Design Personnel after the Design aspect of the Project is completed. Some of the areas listed in the checklist include: Design Data submitted, Proposed DTM Surface information, Geometry Data, Templates, Cross-Sections, etc. The Designer is to use this checklist to verify that the Project Deliverables contain all the requisite data before submittal to Earthwork Coordinators during the Field Plan Reviews, Letting and Construction Phases.

NOTES:

a) The **GDOT InRoads Design Data Quality Assurance Checklist** is included with the InRoadsALL.exe download and may be found in the following location on the hard drive:

   C:\InRoads Data\Standards

   The **GDOT InRoads Design Data Quality Assurance Checklist** is available for download by navigating to the MicroStation and InRoads links from the following location:

   http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/software/Pages/default.aspx

b) The Designer should create a Documentation Folder under the C:\InRoads Data\PI Number directory. The **GDOT InRoads Design Data Quality Assurance Checklist** and any additional Project Documentation should be included in this folder and submitted along with the InRoads Project Database File(s).

c) The following page contains a screen capture of the GDOT InRoads Design Data Quality Assurance Checklist:

Georgia Department of Transportation

P.I. Number:	
County:	
Project Description:	
QA Reviewer:	
Phone Number:	

GDOT InRoads Design Data Quality Assurance Checklist

(Instructions: In the Verified Column pull down – enter YES, NO or N/A for the Verification QA Status)

CATEGORY	TASK	VERIFIED
Geometry Project -- (.ALG)	The Geometry Project (.ALG) is named the PI#_Design.alg	_____
	All Alignments stored have the DE Prefix for the Alignment Name	_____
	All Points stored have the DE Prefix and begin numbering at 10,000	_____
	All Alignment Points are converted to COGO Points in the Geometry Project	_____
	All Required R/W Alignments are stored clockwise and the Alignments close	_____
	The beginning and ending point of each curve is equated to a point number	_____
	All Alignments and Points are stored with standard GDOT Feature Styles	_____
DTM Surface(s) -- (.DTM)	The Design Surface(s) DTM's are named the PI#_Corridor Name.dtm	_____
	If a Bogus Surface is utilized – the DTM is named PI#_Bogus1.dtm	_____
	The Finish Preference is used for the Final DTM Surface Symbology	_____
	The Bogus Preference is used for the Bogus DTM Surface Symbology	_____
Template Library – (.ITL)	The Project Template Library (.ITL) is named PI#.itl	_____
	All templates utilized in the Project Design are included in the Template ITL	_____
	The Standard GDOT Feature Styles are used for all components and points	_____
Roadway Design – (.IRD)	The Roadway Design File (.IRD) is named PI#.ird	_____
	The Roadway Corridor is named PI#_Roadway Name (or Alignment Name)	_____
Final Deliverables -Internal	Stakeout Data Report	_____
	Deed (.OUT) Files	_____
	InRoads Project Data Sheet	_____
	GDOT InRoads Design Data Quality Assurance Checklist	_____
Final Deliverable -Contractor	Alignment File Descriptions(s)	_____
	Alignment Report Files(s)	_____
	End-Area Report File(s)	_____

15.3 InRoads File Deliverables to Contractors

As mentioned previously - when a project is complete and let to construction, there are several additional File Deliverables which are required to be submitted by the Designer for use by Contractors. The following Section contains information on how to generate the following Style Sheets:

o   Alignment File Description(s)
o   Alignment Report File(s)
o   End-Area Report File(s)
o   GPS Grading Report File(s)

NOTE: The Alignment File Descriptions, Alignment Report Files and the End-Area Report Files will be provided Pre-Award of the contract.

NOTE: The GPS Grading Report File(s) will be provided Pre-Award of the contract.

15.3.1   Alignment File Descriptions

Text file descriptions of the Alignments with Feature Styles of MAIN_P_CONSTCL (Construction Centerline) and MAIN_P_SIDECL (Sideroad Centerline) will be provided to the Contractor. These text files will list all of the applicable Centerline Alignment information including the associated Curve Data. A Filter may be used to select the Feature Styles of MAIN_P_CONSTCL and MAIN_P_SIDECL. The Descriptions can be generated for each Alignment at the same time and included in one .TXT output file.

NOTES:

a) For Detailed Instructions on using the **GDOT Alignment File Descriptions.xsl** Style Sheet – please see the GDOT Style Sheet Help Files which are located in the following path:

   C:\InRoads Data\Style Sheet Documentation

b) A Geometry Filter can be utilized to select all of the applicable alignments with Feature Styles of MAIN_P_CONSTCL and MAIN_P_SIDECL.

c) To access the Style Sheet – select the following from the InRoads pull-down menu: **Tools ►XML Reports ► Geometry**.

d) The **GDOT Alignment File Descriptions.xsl** Style Sheet Report should be saved with a .TXT Extension.

e) The Naming Convention for the **GDOT Alignment File Descriptions** will be **PI#_AL.txt** (Example: 1234567_AL.txt).

f) The following Feature Styles will be written to the Alignment File Descriptions Report:

- **MAIN_P_CONSTCL**
- **MAIN_P_SIDECL**

Table 15.2
File Naming Convention – Alignment File Descriptions

Location: Tools ►XML Reports ► Geometry	
File Name	**Example**
PI#_AL.txt	1234567_AL.txt

15.3.2   Alignment Report Files

Alignment Report Files will be utilized to supply alignment information to the Contractor for use in GPS equipment. This report depicts the alignment information located at 50 Foot Station intervals at a Zero offset. The report is required for each of the alignments with Feature Styles of **MAIN_P_CONSTCL** and **MAIN_P_SIDECL**.

NOTES:

a) For Detailed Instructions on using the **GDOT Alignment Report.xsl** Style Sheet – please see the GDOT Style Sheet Help Files which are located in the following path:

   C:\InRoads Data\Style Sheet Documentation

b) A Geometry Filter can be utilized to select all of the applicable alignments with Feature Styles of MAIN_P_CONSTCL and MAIN_P_SIDECL.

c) To access the Style Sheet – select the following from the InRoads pull-down menu: **Tools ►XML Reports ► Geometry**.

d) The **GDOT Alignment Report.xsl** Style Sheet should be saved with an .HTML Extension.

e) The Naming Convention for the **GDOT Alignment Report** will be **PI#_Alignment Report.html** (Example: 1234567_Alignment Report.html).

f) The following Feature Styles will be written to the Alignment File Descriptions Report:

- **MAIN_P_CONSTCL**
- **MAIN_P_SIDECL**

Table 15.3
File Naming Convention – Alignment Report Files

Location: Tools ►XML Reports ► Geometry	
File Name	**Example**
PI#_Alignment Report.html	1234567_Alignment Report.html

15.3.3 End-Area Report Files

The GDOT End-Area Report-Standard.xsl Style Sheet is utilized to supply an End-Area report in a standard GDOT ASCII text file format for distribution to Contractors when a project is let to Construction.

NOTES:

a) For Detailed Instructions on using the **GDOT End-Area Report-Standard.xsl** Style Sheet – please see the GDOT Style Sheet Help Files which are located in the following path:

   C:\InRoads Data\Style Sheet Documentation

b) To access the Style Sheet – Select the following from the InRoads pull-down menu: **Evaluation▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes** folder

c) The **GDOT End-Area Report-Standard.xsl** Style Sheet should be saved with an .END Extension.

d) The Naming Convention for the **GDOT End-Area Report-Standard.xsl** will be **PI#_Alignment Name.end** (Example: 1234567_DE31.end).

Table 15.4
File Naming Convention – End-Area Report Files

Location: Evaluation▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes folder	
File Name	**Example**
PI#_Alignment Name.end	1234567_DE31.end

15.3.4   GPS Grading Report Files

The GDOT GPS Grading Report.xsl Style Sheet is utilized to supply an End-Area report of the Proposed "Finished Surface" in a standard GDOT ASCII text file format for distribution to the Contractor before the award of the contract (pre-award).

NOTES:

a) For Detailed Instructions on using the **GDOT GPS Grading Report.xsl** Style Sheet – please see the GDOT Style Sheet Help Files which are located in the following path:

   C:\InRoads Data\Style Sheet Documentation

b) To access the Style Sheet – Select the following from the InRoads pull-down menu: **Evaluation▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes** folder

c) The **GDOT GPS Grading Report.xsl** Style Sheet should be saved with an .END Extension.

d) The Naming Convention for the **GDOT GPS Grading Report.xsl** will be **PI#_Alignment Name_GPS.end** (Example: 1234567_DE31_GPS.end).

Table 15.5
File Naming Convention – GPS Grading Report Files

Location: Evaluation▶ Cross Section ▶ Cross Sections ▶ End-Area Volumes folder	
File Name	**Example**
PI#_Alignment Name_GPS.end	1234567_DE31_GPS.end