InRoads – WSDOT Staking Report Generator

Overview

InRoads provides XML reports that can be used for field staking reports. WSDOT CAE developed a macro that generates a staking report (an Excel spreadsheet) from an InRoads XML report. This format is consistent with staking reports from previous WSDOT design applications, and displays station/offset information from centerline left and right. Each feature in the InRoads XML file will display the feature point name, its offset from centerline, elevation, and the slope from the previous feature.

The example below shows the report output of a single station on a two lane roads with side slopes.

10+00.00						
L_FILL	L_EPS_FIN	L_ETW_FIN	**CL_FIN**	R_ETW_FIN	R_EPS_FIN	R_FILL
-22.46	-20.00	-12.00	**0.00**	12.00	20.00	43.38
1986.95	1987.36	1987.20	**1986.96**	1986.72	1986.56	1978.77
-6.0:1	2.00%	2.00%		-2.00%	-2.00%	-3.0:1

The InRoads staking data that is used for the WSDOT staking report generator can be generated by two methods: a station base geometry report or a cross section feature report. This document provides the work flows for generating the XML data for each of these methods, as well as using that data in the WSDOT staking report generator.

Workflow

### Preparing the Surface

Refer to the InRoads Preparing a Surface for Staking Tech Note for information about setting up feature name overrides and finished grade surface filters. This ensures that you will produce the optimum report deliverable.

Method 1 - Station Base Staking Data

The InRoads geometry station base report uses a base alignment with surface feature offsets.

1. Select the *Tools > XML Reports > Station Base*.

2. On the *Include* folder, toggle on the **Interval** and set the interval value. Key Stations, or **Events** may also be checked on if desired. These stations must be previously defined in InRoads at Geometry > Horizontal Curve Set > Events. The Single Station method allows the input of desired stations.
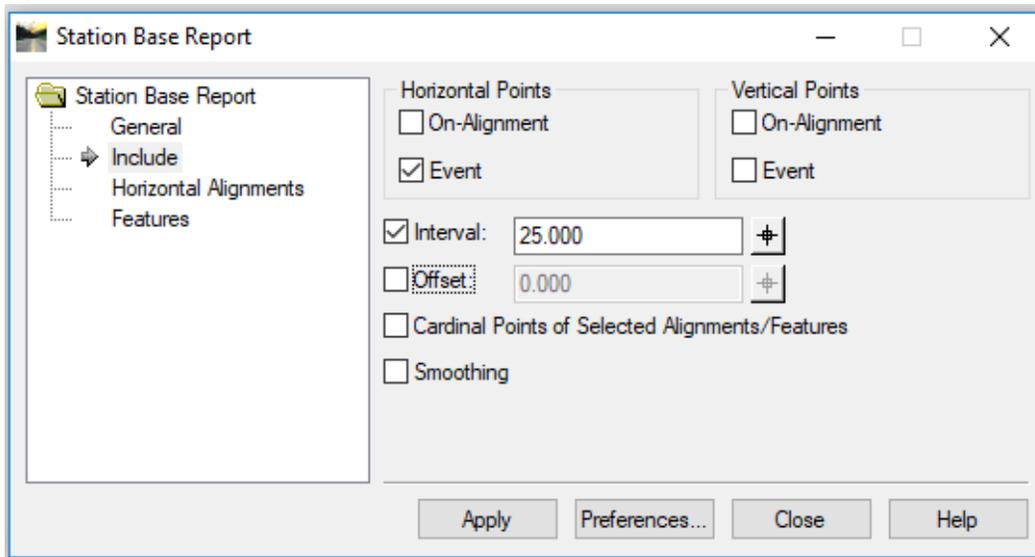
3. Click on the **Features** folder.

The InRoads roadway design technology is component based; the sub-layer features are included in the design surface. Individual features should be selected (filters may also be useful here) from the surface to be included in the staking data. Be sure to include a centerline feature to stake from.
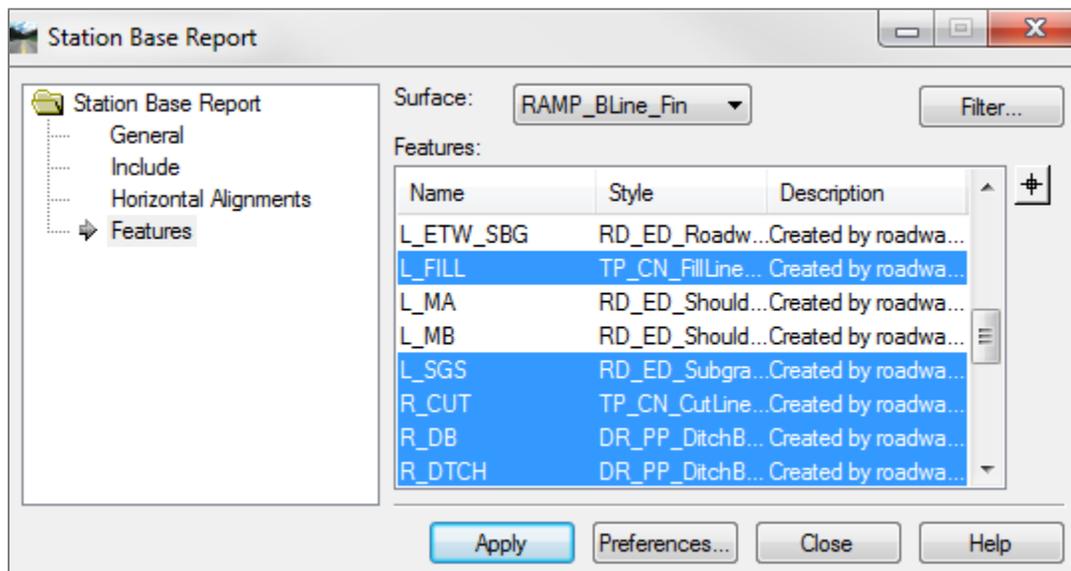
4. Click **Apply**, the XML report is created and displayed in the <u>Bentley Civil Report Browser</u>.

5. Select the **WSDOT Transverse Feature.xsl** style sheet in the *Station Offset and Station Base* category to verify the data.

6. Select the *File > Save As* command and navigate to your project report folder.

    Use **XML File (*.xml)** as the *Save as type,* enter the file name and save the file.

    The InRoads Station Base Report XML file has been created and saved to the project folder, the file is now ready to be used by the Staking Report Generator

7. Go to <u>Generating a Report Using the WSDOT Staking Utility</u>

Method 2 - Cross Section Gradebook Staking Data

The InRoads **Cross Section Report**, along with the **WSDOT Cross Section Gradebook** style sheet, can be used to create the WSDOT staking report. This is particularly useful when your dataset contains special stations that were generated in the Roadway Modeler or the cross section interface.
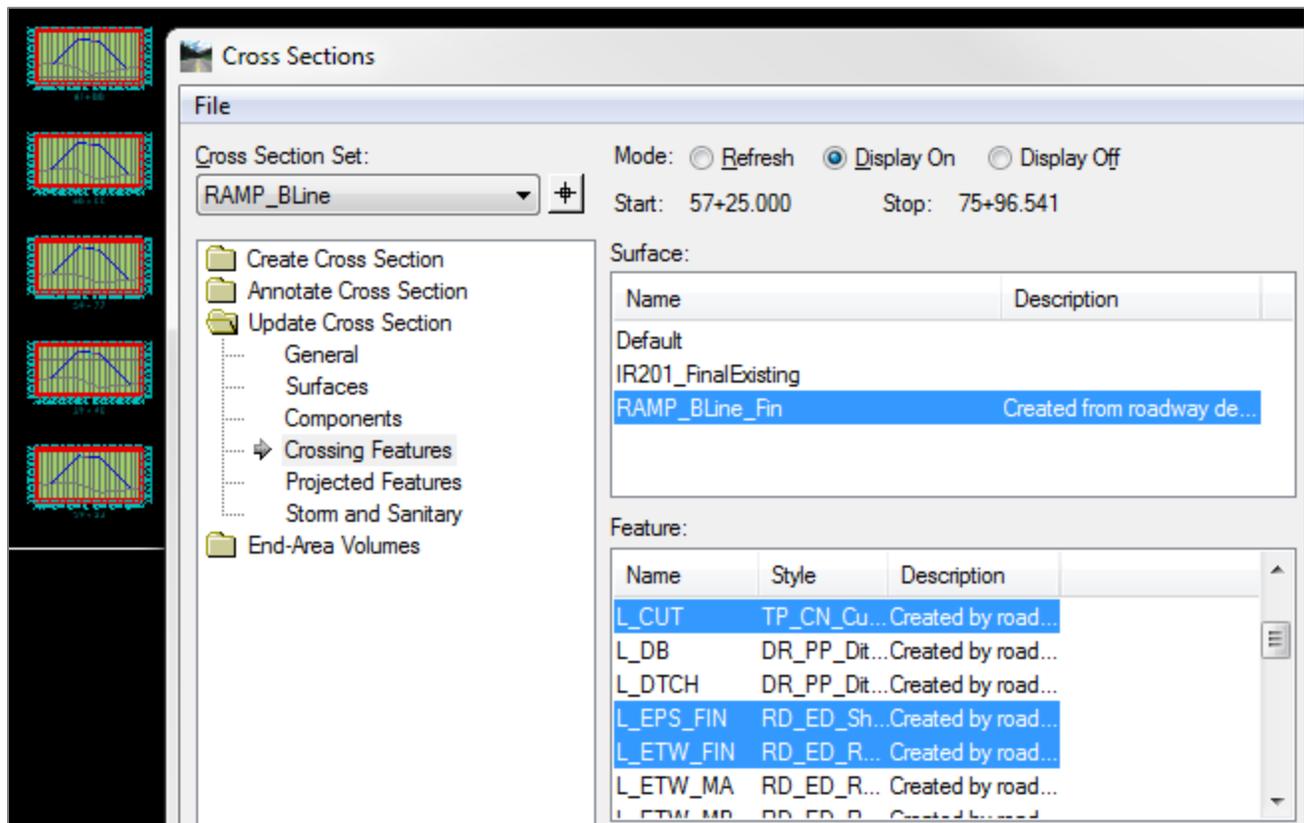
Create Cross Sections

Generate a cross section set that contains standard and custom stations, intervals, etc. using the E*valuation > Cross Section > Cross Sections > Create Cross Sections* command.
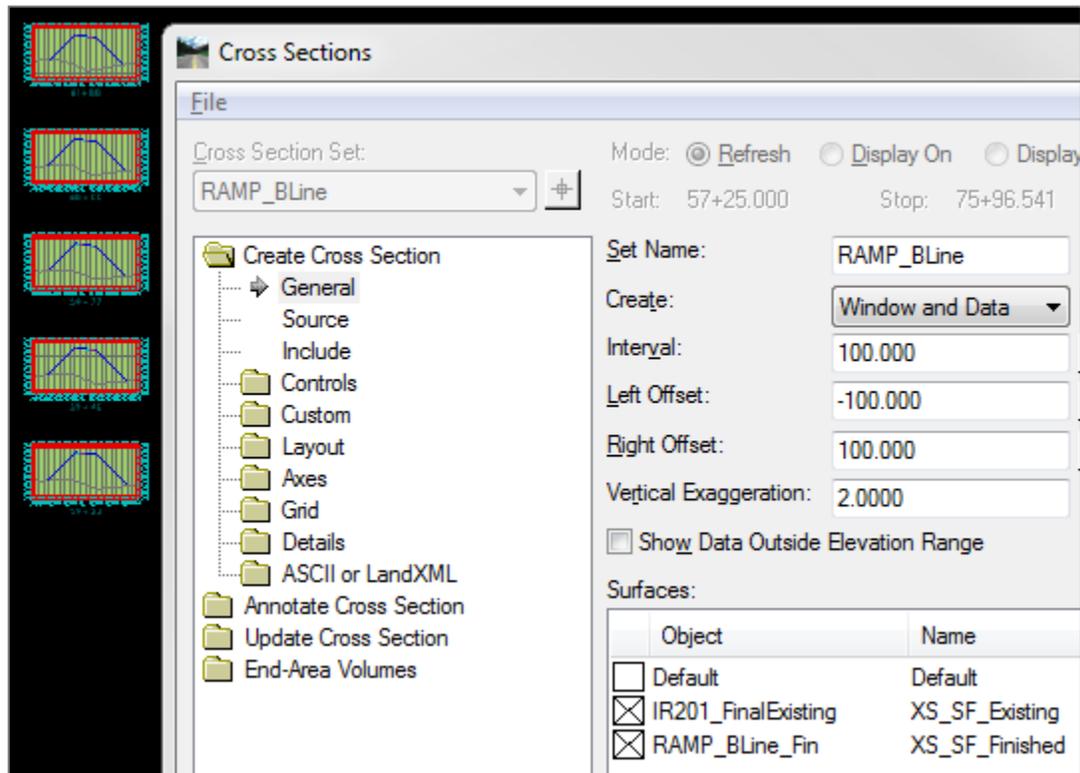

Add Staking Features

Add the features that you want to stake (i.e. **CL**, **EOP**, **SGS**, cut and fill, etc.) as crossing features, using the *Evaluation > Cross Section > Cross Sections > Update Cross Sections* command.

Generating the Cross Section Report

1. Open the *Evaluation > Cross Section > Cross Section Report* command.

2. Select the appropriate surface on the *Main* tab and toggle on **Include Selected Features Only**.

3. Select the features that you have displayed in your cross section set.
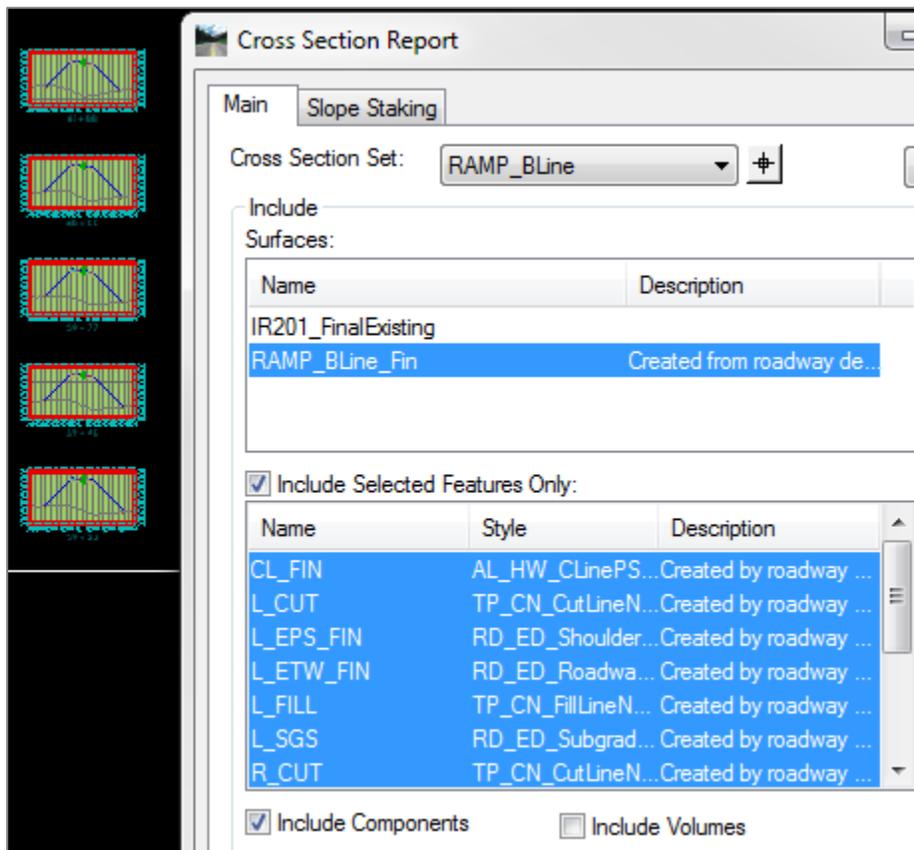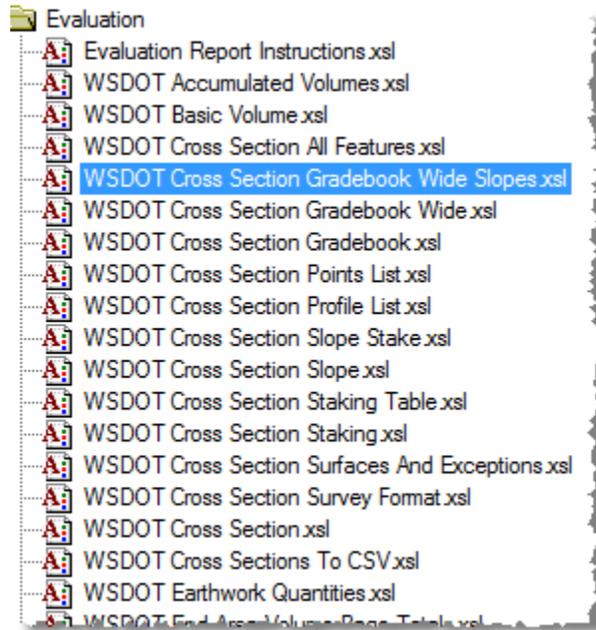
4. On the *Slope Staking* tab, select the **From Catchpoint** option and provide an offset range (i.e. -50 on the left and 50 on the right, depending on your corridor).
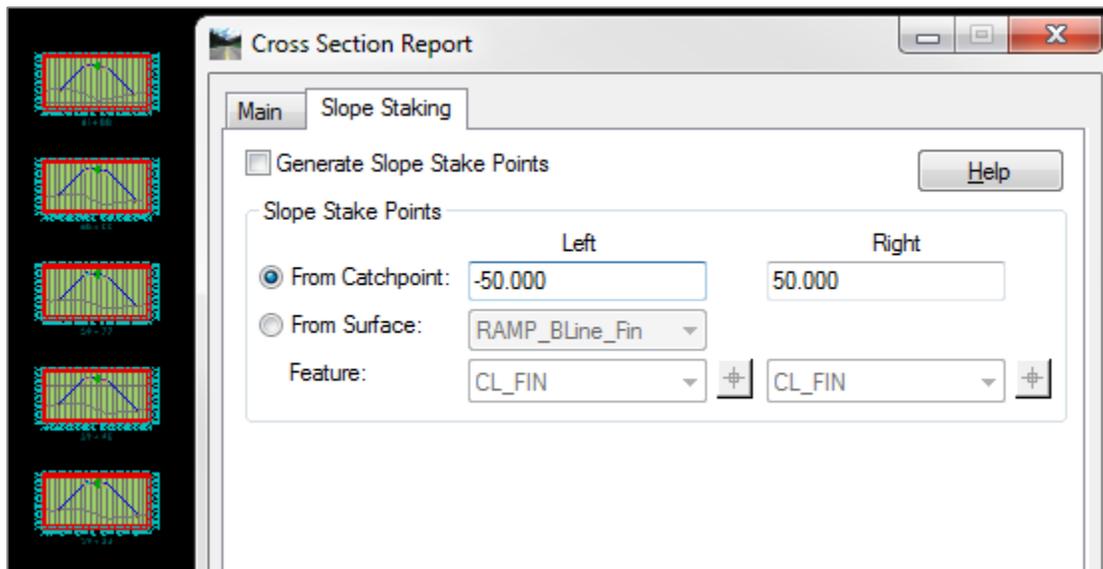
5. Click **Apply**.

   The **Bentley Civil Report Browser** opens.

6. Select the **WSDOT Cross Section Gradebook Wide Slopes.xsl** stylesheet.

This report stylesheet presents the data in a gradebook format, including the feature, slope and offset information.

Surface:	RAMP_BLine_Fin					
Station:	57+25.0					
Elevation:	1985.8	2015.4	2015.2	2015.0	2014.7	2014.6
Offset:	-79.260	-20.000	-12.000	0.000	12.000	20.000
Feature:	L_FILL	L_EPS_FIN	L_ETW_FIN	CL_FIN	R_ETW_FIN	R_EPS_FIN
Slope:	-2.000:1	50.000:1	50.000:1		-50.000:1	-50.000:1

7. Select the *File > Save As* command and navigate to your project report folder.

   Use **XML File (*.xml)** as the *Save as type,* enter the file name and save the file.

   The InRoads Cross Section Report XML file has been created and saved to the project folder, the file is now ready to be used by the Staking Report Generator
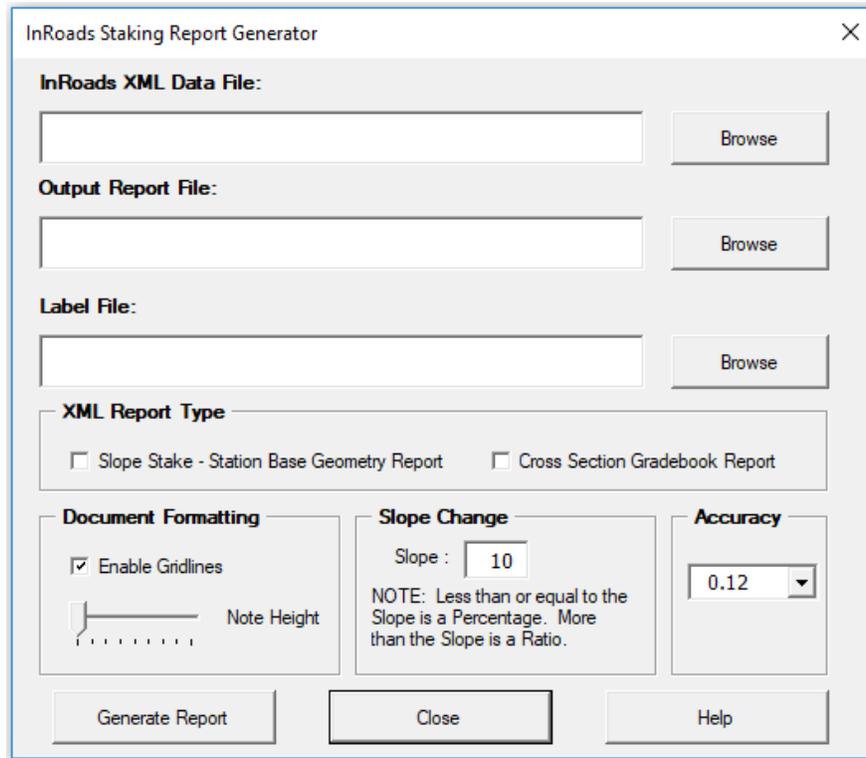
8. Go to Generating a Report Using the WSDOT Staking Utility

Generating a Report Using the WSDOT Staking Utility

Access the **WSDOT Staking Report Generator** from the Windows **All Programs** start menu and select **Engineering Applications**, then click on the **WSDOT Utilities** and select the **Staking Report Generator** option.

1. Launch the **Staking Report Generator**.

   The <u>InRoads Staking Report Generator</u> dialog is displayed.

Use the appropriate data file field, based on the XML file that you generated in InRoads.

2. In the *InRoads XML Data File* field, navigate to the XML file that you saved in InRoads using either method 1 or 2.

3. In the *Output Report File* field, browse to the location where you want to save the Excel report.

   This field is automatically populated with the path of the XML file selected in the current input field.

4. The *Label File* field is an optional field. If used, the Events must be previously defined in the xml as described in step 2 of page 2. Create a comma-delimited or text file that contains key stations and descriptive information to be labeled in the final report.

   The first column in the text or CSV file should contain the station, and the second column contains the description. Example: 57+30.00, Signbridge.
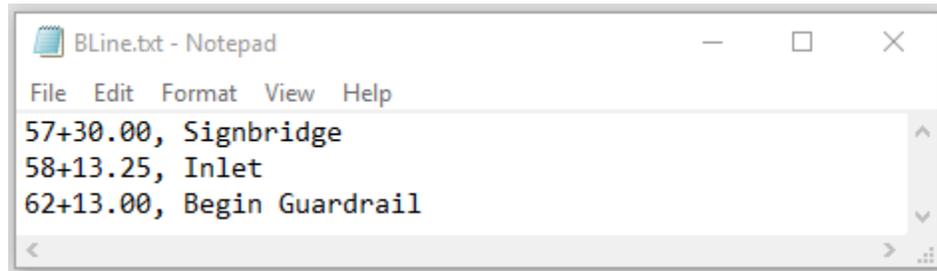

5. In the *Label File* field, select the text or CSV file.

6. Select the *XML Report Type*.

   Use the **Slope Stake – Station Base Geometry Report** option if you generated a report using the station base geometry command.

   Use the **Cross Section Gradebook Report** option if you generated a report using the cross section report command.

7. Configure the document settings:

   - Toggle on or off the *Enable Gridlines* option. This determines whether gridlines are visible in the Excel file.

   - Slide the needle to one of nine possible spacing options in the *Note Height* area. As the needle moves to the right, the space between stations is increased. This creates white space for hand written field notes to be added to the report.

   - Set the *Slope Change* value. This is the threshold for displaying slopes as a percentage or as a ratio.

   - Set the report accuracy using the drop-down box in the *Accuracy* section.

8. Click **Generate Report**.

9. The <u>Available Features</u> dialog will open. Select the feature that the stakeout report slopes and distances will be computed from. This would typically be the centerline feature.
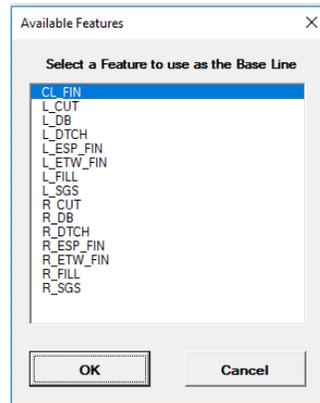
10. Click **OK**

The Excel macro will then begin formatting the data.

When the formatting is completed, the report is displayed on the *Formatted Report* tab. The XML data from InRoads is available on the *Raw Data* tab.

You can use Excel's search and replace functionality to change column heading names or reformat the report to suit your needs. If you are generating staking data for multiple surfaces, you can consolidate them into one worksheet and then reformat the data as needed.

11. After reviewing, save and close the Excel SlopeStake report.

12. If additional reports are desired, Select Alt+F8
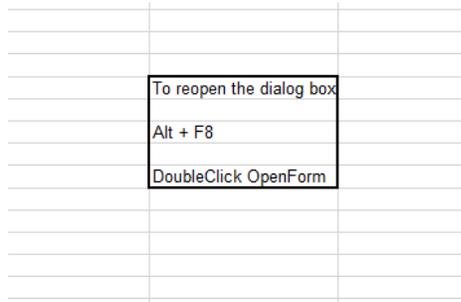
13. Double Click the *OpenForm* option to restart the utility.
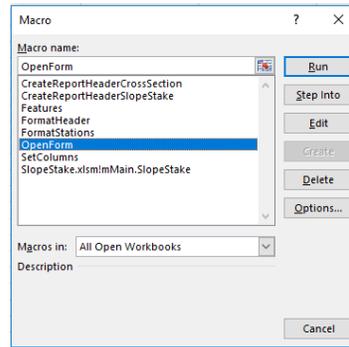
For questions or comments on this tech note, contact your regional CAE Support Coordinator or the WSDOT CAE Help Desk at (360) 709-**8013**.