

CDOT Monumentation Sheets



This document describes the process used to assemble a Right of Way Monumentation Sheet. An InRoads XML report is used to display the required data from the geometry project. This data is copied and pasted into the *JPC#ROW_TabMon.xls* Excel file and then linked to the MicroStation *JPC#ROW_Mon##.dgn* file.

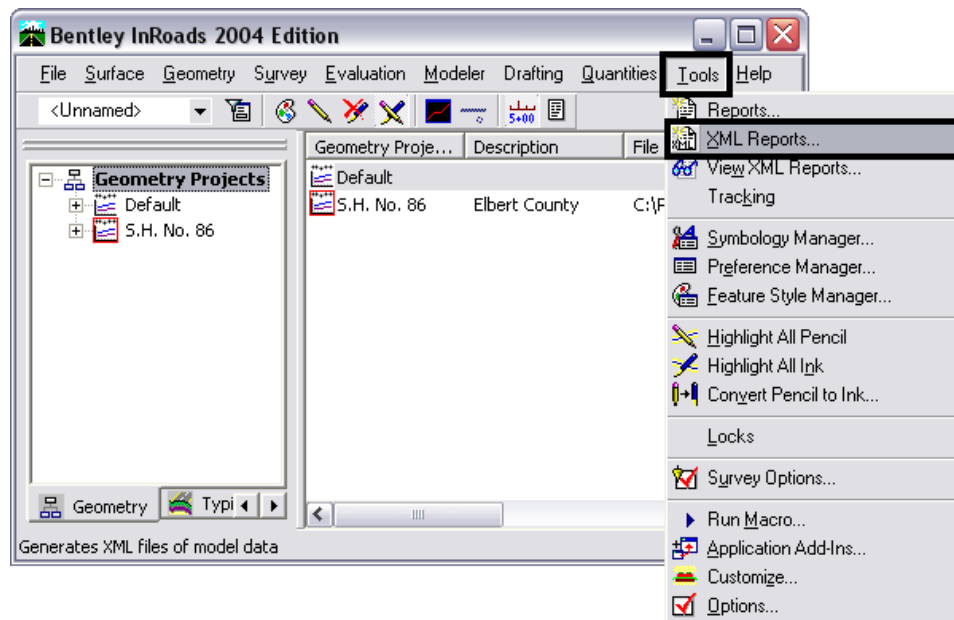
Creating the InRoads XML File

The data used to create the Right of Way Monumentation sheet is stored in an InRoads Geometry Project (*.alg). Depending on the data required, one of two different reports are used to extract the data from the geometry project. Both reports display Point Number, Northing, Easting, and Elevation. If this is all the data that is required, a Geometry report is used. If Station and Offset information is also required, then the Clearance report is used.

Geometry Report

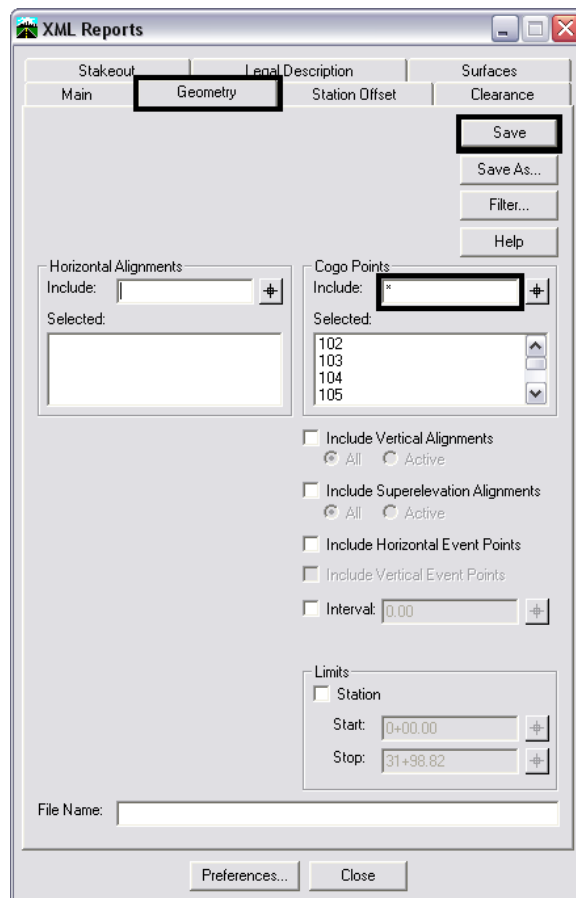
A geometry project containing the data is the only prerequisite for creating a Geometry Report.

1. From the InRoads menu, select **Tools > XML Reports**. The *XML Reports* dialog box is displayed.



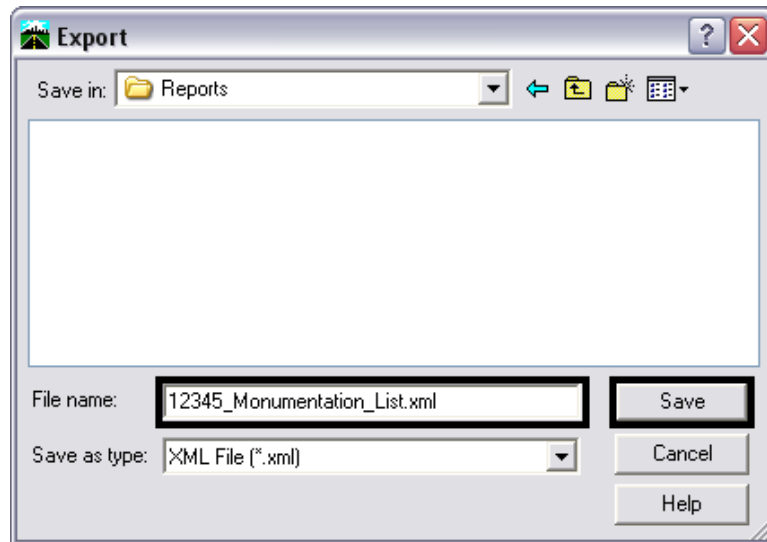
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2. Select the **Geometry** tab at the top of the **XML Reports** dialog box.
3. In the **COGO Points** area, key in the desired **COGO point numbers** in the **Include** field then Tab to accept the keyed in information. COGO points can be specified as a range (**XXX-XXX**), a list of individual points (**XXX,XXX,XXX**) or a combination of both (**XXX-XXX,XXX,XXX-XXX**). If the required point numbers are unknown, all points can be listed by keying an asterisk (*****) into the **Include** field. The asterisk can be used in conjunction with text to limit the list of points. For example, keying in '**10***' would find all points whose first two digits were '**1**' and '**0**'.
4. <D> **Save** to start the report compilation process. The **Export** dialog box displays.



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5. In the *Export* dialog box, key in a name for the report in the *File Name* field
6. <D> **Save** to complete the report.

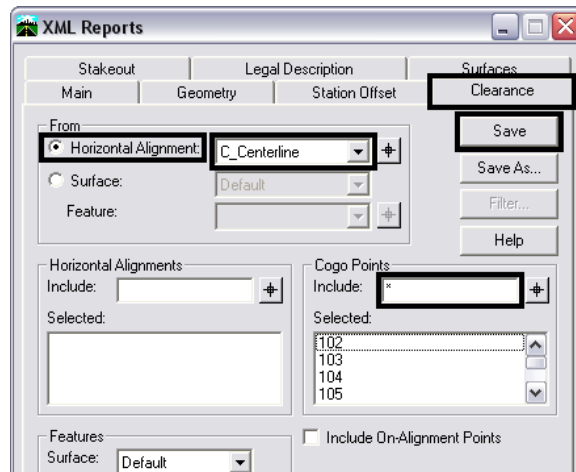


The *Export* dialog box will be dismissed automatically and the *Bentley InRoads Report Browser* will be displayed. This will be discussed later in the workflow.

Clearance Report

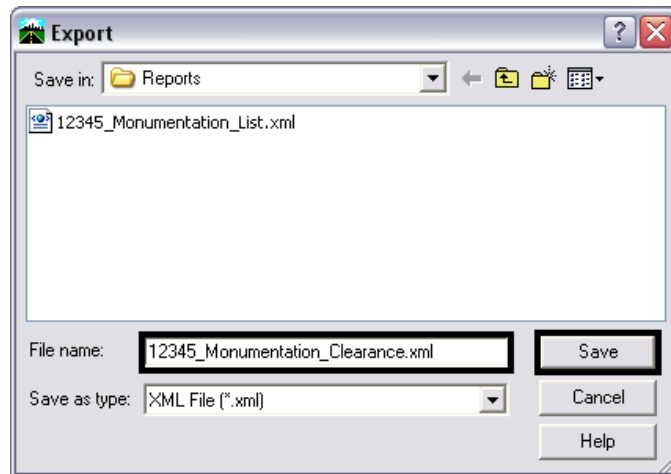
This report is used to generate station and offset information. In order to calculate this information, a horizontal alignment must be present.

1. From the InRoads menu, select **Tools > XML Reports** as earlier. Select the **Clearance** tab at the top of the dialog box.
2. In the **From** area, select the **Horizontal Alignment** toggle.
3. Use the drop-down to select the desired horizontal alignment. This is the alignment from which the station and offset is measured.
4. In the **COGO Points** area, key in the desired **COGO point numbers** in the **Include** field, then **Tab** to accept the key in (see [Geometry Report Step 3](#) above for key in options).
5. **<D> Save** to start the report compilation process. The **Export** dialog box displays.



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6. In the *Export* dialog box, key in a name for the report in the *File Name* field.
7. <D> **Save** to complete the report.



The *Export* dialog box will be dismissed automatically and the *Bentley InRoads Report Browser* will be displayed.

The Bentley InRoads Report Browser

The *Bentley InRoads Report Browser* is a modified version of the Internet Explorer web browser used specifically for InRoads XML reports. It is launched automatically when an XML report is saved. It can also be launched by selecting **Tools > View XML Reports** from the InRoads main menu. The illustrations below use the *List Coordinates* report, however procedures are the same for the *Clearance* report.

Selecting an XML Report Template

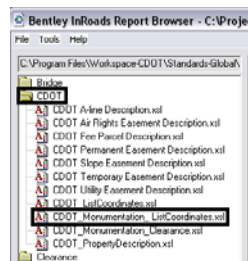
Report templates are program files that format the raw data contained within the XML file. When the *Bentley InRoads Report Browser* opens, it selects a default report template for the type of report that was created.


1. CDOT's custom report templates are stored in the *CDOT* folder. <D> on the *CDOT* folder to display the available templates. Two custom templates are provided for creating Monumentation sheets:

CDOT_Monumentation_ListCoordinates and

CDOT_Monumentation_Clearance.

2. <D> on the desired template name to activate that template. This updates the report layout automatically in the browser window.





List Coordinates Report

Report Created: 5/25/2007
Time: 10:16am

Project: S.H. No. 86
Description: Elbert County
File Name: C:\Projects\TRAIN\Row\Survey\InRoads\Geometry\S.H. No. 86.alg
Last Revised: cferree 5/23/2007 9:35:54 AM

Cogo Points

POINT NAME	NORTH (ft)	EAST (ft)	ELEV (ft)	DESCRIPTION
104	1559514.31	3277056.40	0.00	N 1/4 Corner Sec. 14
105	1558527.87	3279643.18	0.00	NW Corner Sec. 13
106	1553239.97	3279699.86	0.00	SW Corner Sec. 13
107	1553924.17	3281413.94	0.00	SW Corner Sec. 13
108	1553239.97	3279699.86	0.00	SW Corner Sec. 13
109	1568480.37	3269305.79	0.00	SW CORNER SECT 10
123	1559379.09	3279172.06	2202.80	ROW MONUMENT to be set
124	1568494.08	3281809.39	2202.80	ROW MONUMENT to be set
125	1557449.77	3284676.02	2202.80	ROW MONUMENT to be set

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Format Options

The default precision for reporting is set to two decimal places. If a different precision is required, it can be set using **Format Options**.

1. From the Bentley InRoads Report Browser, select **Tools > Format Options**. This displays the *Format Options* dialog box.
2. Use the pull downs to set the desired precision for the different options. For the reports discussed in this document, the following fields are used:
Northing/Easting, Elevation, Linear (for offsets), and *Station*.

	Mode	Precision	Format
Northing/Easting:		0.12	
Elevation:		0.12	
Angular:	Degrees	0	ddd^mm'ss.s"
Slope:		0.12	50%
Linear:		0.12	
Station:		0.12	ss+ss.ss
Acres/Hectares:		0.12	
Area Units:		0.12	
Cubic Units:		0.12	
Direction:	Bearings	0	ddd^mm'ss.s"

Selecting a different precision will automatically update the column or columns in the report that uses that format option. <D> **Close** to dismiss the dialog box when finished.

Copying the Report to the Monumentation Spreadsheet

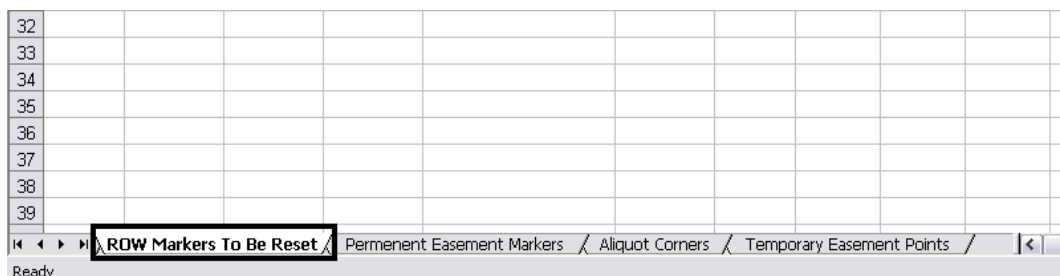
Now that the report has been generated and formatted properly, the contents of the report can be copied into the **JPC#ROW_TabMon.xls** Excel file. This file contains separate sheets for different types of monuments. These are; ROW Markers To Be Set, Control Points To Be Set, ROW Markers To Be Reset, Permanent Easement Markers, Aliquot Corners, and Temporary Easement Points. Because any number of these monument types may be stored in the geometry project, it may be necessary to copy different blocks of data from the report to paste into different sheets in the spreadsheet.

1. Open the **JPC#ROW_TabMon.xls** file with Excel then minimize it.
2. Go back to the Bentley InRoads Report Browser and highlight the desired data in the report.
3. Right Click on the highlighted data to display the menu. Select **Copy** from that menu.

Cogo Points

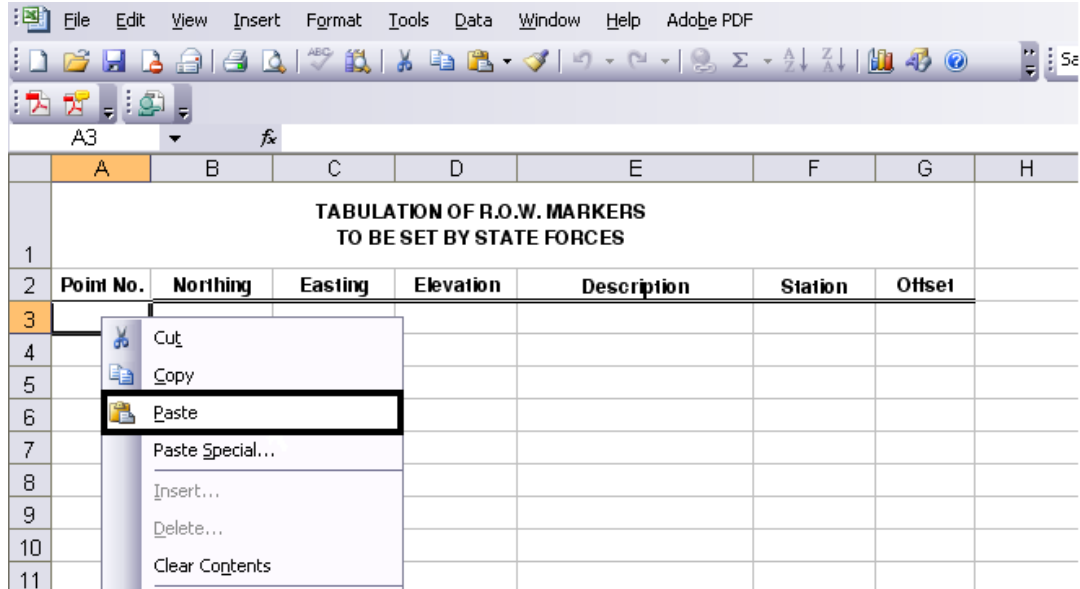
POINT NAME	NORTH (ft)	EAST (ft)	ELEV (ft)	DESCRIPTION
104	1558514.31	3277056.40	0.00	N 1/4 Corner Sec. 14
105	1558527.87	3279643.18	0.00	NW Corner Sec. 13
106	1553239.97	3279699.86	0.00	SW Corner Sec. 13
107	1553924.17	3281413.94	0.00	SW Corner Sec. 13
108	1553239.97	3279699.86	0.00	SW Corner Sec. 13
109	1558460.37	3269305.		SW CORNER SECT 10
123	1559379.09	3279172.		ROW MONUMENT to be set
124	1558494.08	3281809.		ROW MONUMENT to be set
125	1557449.77	3284676.		ROW MONUMENT to be set
202	1558226.58	3274676.		ROW MONUMENT to be set
203	1557378.97	3280570.		ROW MONUMENT to be set
204	1556263.86	3283756.		ROW MONUMENT to be set

4. Minimize the **Bentley InRoads Report Browser** and maximize the Excel.
5. Using the tabs at the bottom, select the sheet for the copied data.



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6. <D> in cell A3 of the selected sheet. This is where the copied data will be pasted. Right click in the same cell and select **Paste** from the menu that displays.



The illustration below shows the result of this operation.

The screenshot shows the same Excel spreadsheet after the data has been pasted into cell A3. The data is as follows:

Point No.	Northing	Easting	Elevation	Description	Station	Offset
123	1559379.09	3279172.06	2202.8	ROW MONUMENT to be set		
124	1558494.08	3281809.39	2202.8	ROW MONUMENT to be set		
125	1557449.77	3284676.82	2202.8	ROW MONUMENT to be set		
200	1556228.46	3282411.2	2202.8	STATE HWY DEPT MONUMENT		
201	1554582.34	3285207.83	2202.8	STATE HWY DEPT MONUMENT		
202	1558228.58	3274676.21	2202.8	ROW MONUMENT to be set		
203	1557378.97	3280570.38	2202.8	ROW MONUMENT to be set		
204	1556263.86	3283756.41	2202.8	ROW MONUMENT to be set		

Because the example is a List Coordinates report, the *Station* and *Offset* columns are empty. These two columns will be hidden in order to center the title over the data.

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7. <D> and hold the mouse button on the 'F' column label and drag the cursor over the 'G' column label. Both columns highlight.
8. <R> on the highlighted columns (in the body of the table) and select **Hide** from the menu.

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F	G	H
1	TABULATION OF R.O.W. MARKERS TO BE SET BY STATE FORCES							
2	Point No.	Northing	Easting	Elevation	Description		Offset	
3	123	1559379.09	3279172.06	2202.80	ROW MONUMENT to be set			
4	124	1558494.08	3281809.39	2202.80	ROW MONUMENT to be set			
5	125	1557449.77	3284676.82	2202.80	ROW MONUMENT to be set			
6	200	1556228.46	3282411.2	2202.80	STATE HWY DEPT MONUMENT			
7	201	1554582.34	3285207.83	2202.80	STATE HWY DEPT MONUMENT			
8	202	1558228.58	3274676.21	2202.80	ROW MONUMENT to be set			
9	203	1557378.97	3280570.38	2202.80	ROW MONUMENT to be set			
10	204	1556263.86	3283756.41	2202.80	ROW MONUMENT to be set			
11								
12								
13								
14								
15								
16								
17								

9. The Station and Offset columns vanish and the title is centered over the remaining columns.

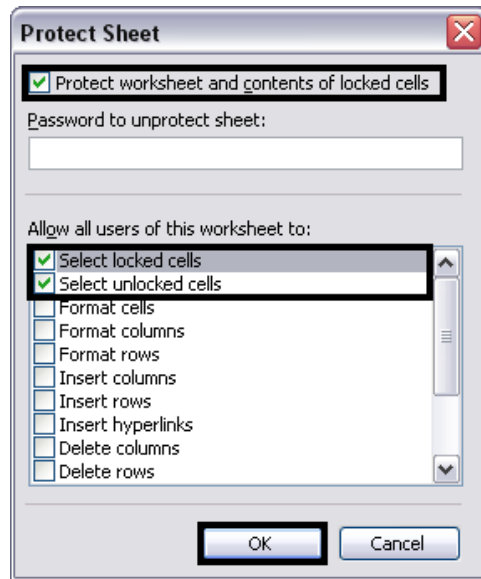
The screenshot shows the same Excel spreadsheet as above, but with columns F and G hidden. The title is now centered across columns A through E.

	A	B	C	D	E
1	TABULATION OF R.O.W. MARKERS TO BE SET BY STATE FORCES				
2	Point No.	Northing	Easting	Elevation	Description
3	123	1559379.09	3279172.06	2202.80	ROW MONUMENT to be set
4	124	1558494.08	3281809.39	2202.80	ROW MONUMENT to be set
5	125	1557449.77	3284676.82	2202.80	ROW MONUMENT to be set
6	200	1556228.46	3282411.2	2202.80	STATE HWY DEPT MONUMENT
7	201	1554582.34	3285207.83	2202.80	STATE HWY DEPT MONUMENT
8	202	1558228.58	3274676.21	2202.80	ROW MONUMENT to be set
9	203	1557378.97	3280570.38	2202.80	ROW MONUMENT to be set
10	204	1556263.86	3283756.41	2202.80	ROW MONUMENT to be set
11					

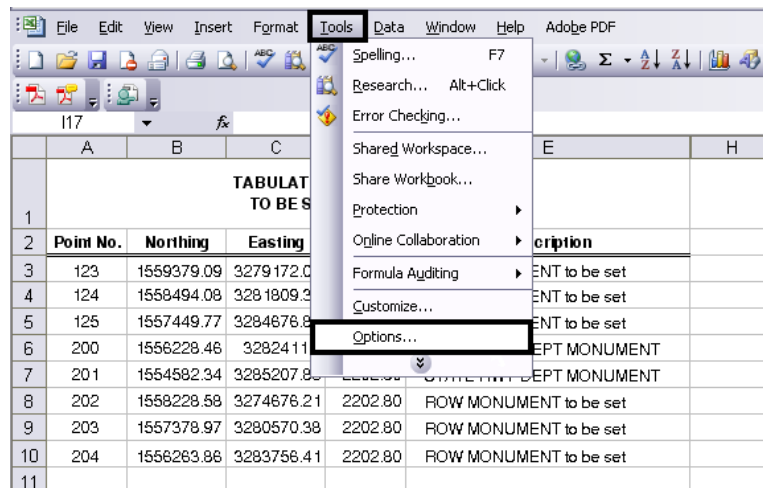
Before the sheet can be linked to the *JPC#ROW_Mon##.dgn* file, the gridlines need to be turned off. If they are left on, they will appear in a print of the dgn file.

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10. Select **Tools > Protection > Protect Sheet** to maintain the new sheet formatting. This will display the *Protect Sheet* dialog box.
11. Toggle on *Protect worksheet and contents of locked cells* near the top of the dialog. In addition toggle on *Select locked cells*, and *Select unlocked cells* under *Allow all users of this worksheet to:*. <D> OK to accept the changes and dismiss the dialog box.

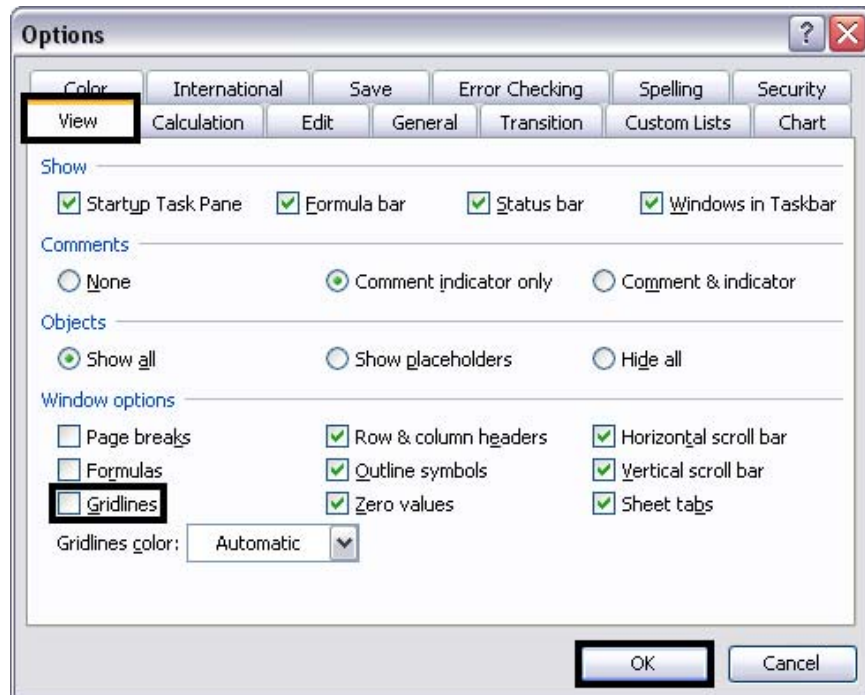


12. Select **Tools > Options** from the Excel menu.



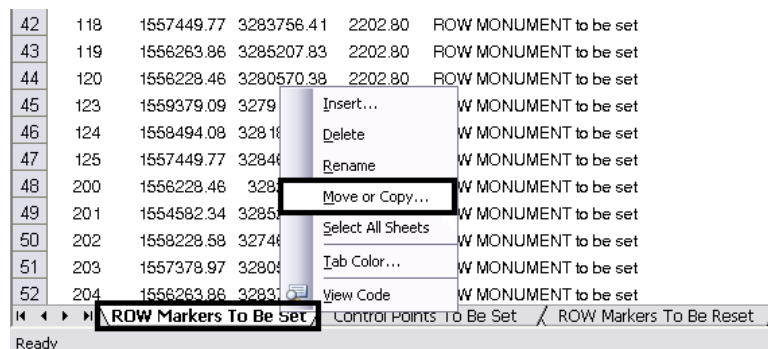
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- From the *Options* dialog box, select the *View* tab.
- In the *Windows Options* area, toggle off *Gridlines*. <D> OK to accept the changes and dismiss the dialog box.



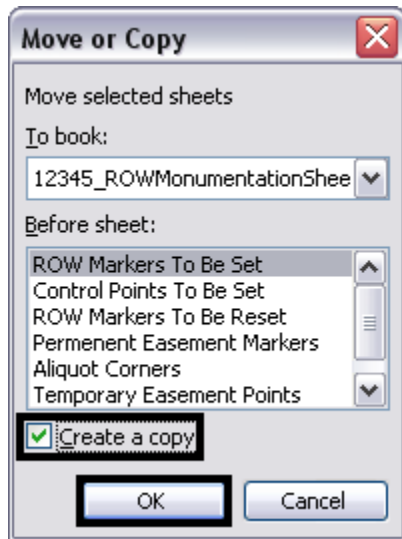
The leftmost column in the *JPC#ROW_Mon##.dgn* file can hold 50 rows of data (not counting the two title rows). Other columns can hold 41 rows of data. If there are more rows of data than a column can hold, the sheet can be copied and the duplicate data deleted from the sheets.

- To make a copy of a sheet, right click on the sheet tab (at the bottom of the window) and select **Move or Copy** from the menu.



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16. In the *Move or Copy* dialog box, toggle on *Create a copy*. <D> OK to create the copy and dismiss the dialog box.

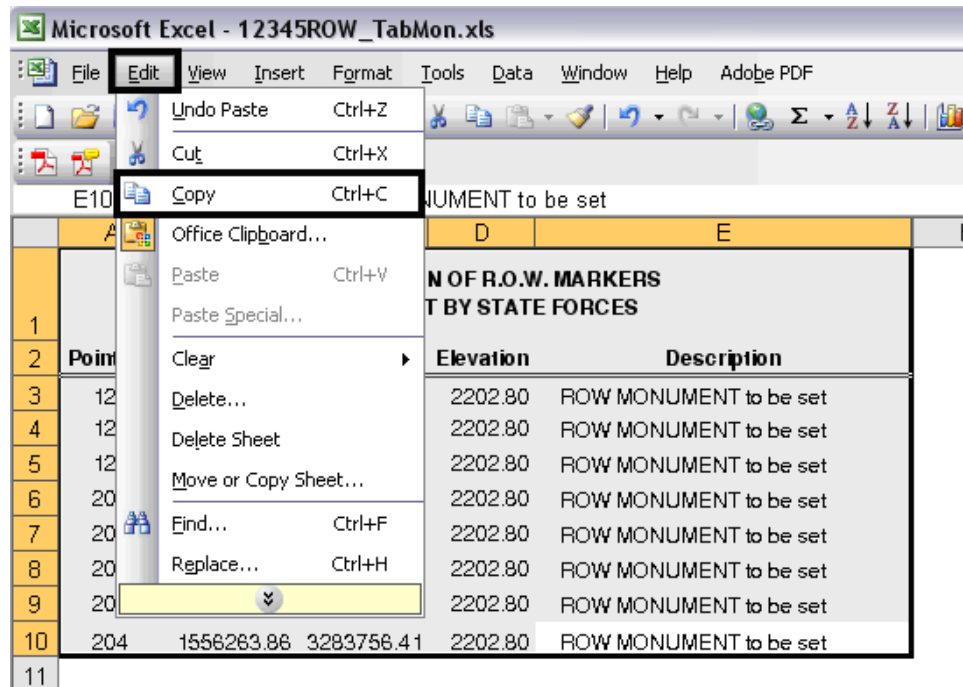


17. The Copy of the sheet is named with (2) appended to the sheet name. The sheets can be renamed by right clicking on the tab and selecting **Rename** from the menu. Key in the new name and press the **Enter** key to accept the change.
18. In the original sheet, delete all the data below row 52 for the long column, below row 43 for the short columns (the long column can hold 50 rows of data and there are two rows of headings).
19. In the copied sheet, delete the data from rows 3 through 52.

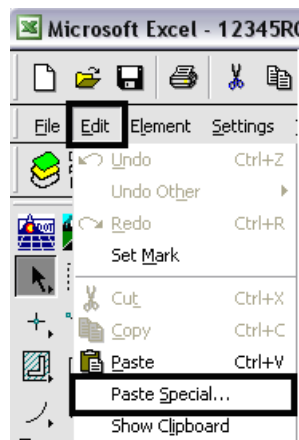
Linking the Spreadsheet to the MicroStation Sheet File

Once the data has been copied to the spreadsheet and the sheets formatted, they can be linked to the MicroStation sheet border.

20. Open *JPC#ROW_Mon##.dgn* in MicroStation then minimize it.
21. In the *JPC#ROW_TabMon.xls* file, highlight the data to be linked. Be sure to include only columns and rows with data (including the two title rows).
22. From the Excel menu, select **Edit > Copy** (or right click in the highlighted area and select **Copy** from the menu).

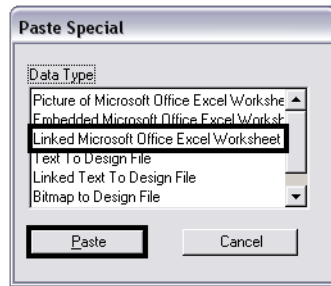


23. Maximize the MicroStation window. From the MicroStation Menu select **Edit > Paste Special**.



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24. The *Paste Special* dialog box is displayed. Select **Linked Microsoft Office Excel Worksheet** from the list and <D> Paste.



25. In the *Paste OLE* dialog box, set the *Method* to **By Size**.

26. In the *Scale* field, key in **9.25**.



An outline of the linked file is now attached to the cursor.

27. With *AccuDraw* active, <T> to the no-plot line in the middle of the sheet. Press the 'O' key to identify this point as the origin on the link placement.
28. Move the cursor along the line, away from the sheet border, then key in the desired value in the AccuDraw tool setting box. This should be **4"** for a table with the Station and Offset columns and **4.5"** for a table without. <D> to accept the location.

