

2nd Sheets using Office 2010 and MicroStation V8

General Information

Instructions in this document are for development of 2nd sheets using Office 2010 and MicroStation V8 2004 or MicroStation V8i. Image captures of MicroStation V8i are shown but application is the same in MicroStation V8 2004.

The process of attaching Office files in MicroStation is called '**OLE linking**', which stands for **O**bject **L**ink and **E**MBED.

It works best to **Link Excel** files and to **Embed Word** files when users are attaching Office files to MicroStation V8. CADD Support has embedded several Word documents in MicroStation V8 DGN seed files including General Notes and Index sheets in order to streamline their production.

Some examples of 2nd Sheets created using Word and Excel:

ROADWAY INDEX AND STANDARD DRAWINGS INDEX	1A	Embedded Word
PROJECT COMMITMENTS	1B	Linked Excel
ESTIMATED BRIDGE QUANTITIES AND BRIDGE INDEX	2	Linked Excel & Embedded Word
ESTIMATED ROADWAY QUANTITIES	2A	Linked Excel
ESTIMATED UTILITIES QUANTITIES	2B	Linked Excel
GENERAL NOTES AND SPECIAL NOTES	2G	Embedded Word
TABULATED QUANTITIES	2H - 2J	Linked Excel
PROPERTY MAPS AND RIGHT-OF-WAY ACQUISITION TABLES	3, 3A - 3B	Linked Excel
PHASING NOTES	36, 36A	Embedded Word
UTILITIES INDEX, UTILITY OWNERS, AND UTILITY SHEETS	U1-1	Embedded Word

'Embedded' Word documents are available **only** from inside the MicroStation file.

'Linked' Excel files are external to MicroStation and can be opened & edited from either inside MicroStation or outside of MicroStation directly in Excel. If the Office file is edited separate from MicroStation, the link in MicroStation must be updated after the MicroStation file is opened in order to reflect the current information.

The Office OLE attachment is a picture of the Office file. The boundary of the picture is defined by a MicroStation shape element. The OLE attachment can be modified by graphics commands such as move, copy and scale.

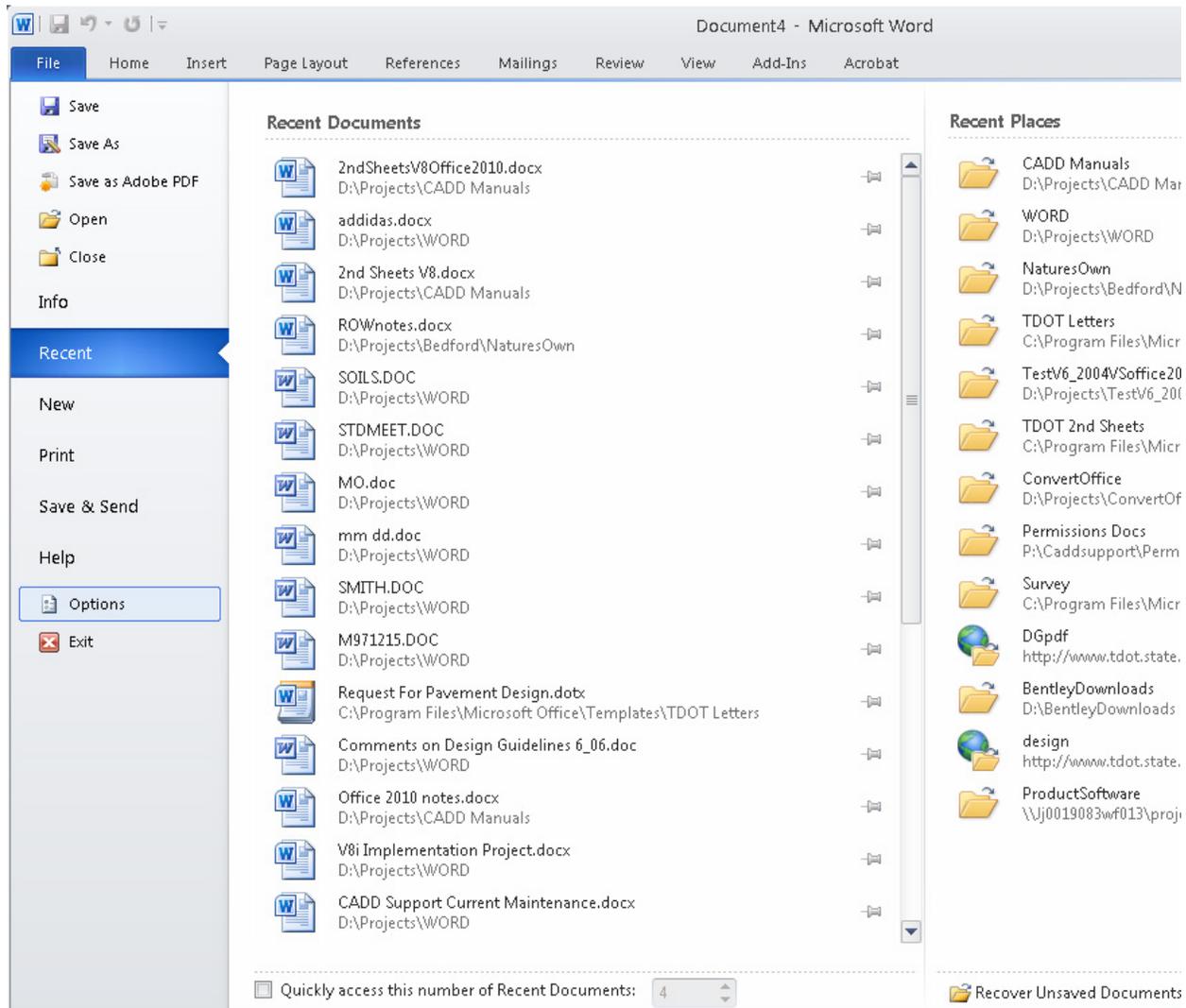
Set up Office 2010

This is the recommended set up for Office 2010 when using the T.D.O.T. Design Division templates and programs. If Office templates are not installed to the default folders, then the directions will need to be modified accordingly.

Do this **one time only** when using **Word** and **Excel 2010** for the first time with the **TDOT** templates and programs. This must be done for each user profile that will be using Office 2010 to link with MicroStation V8.

Word:

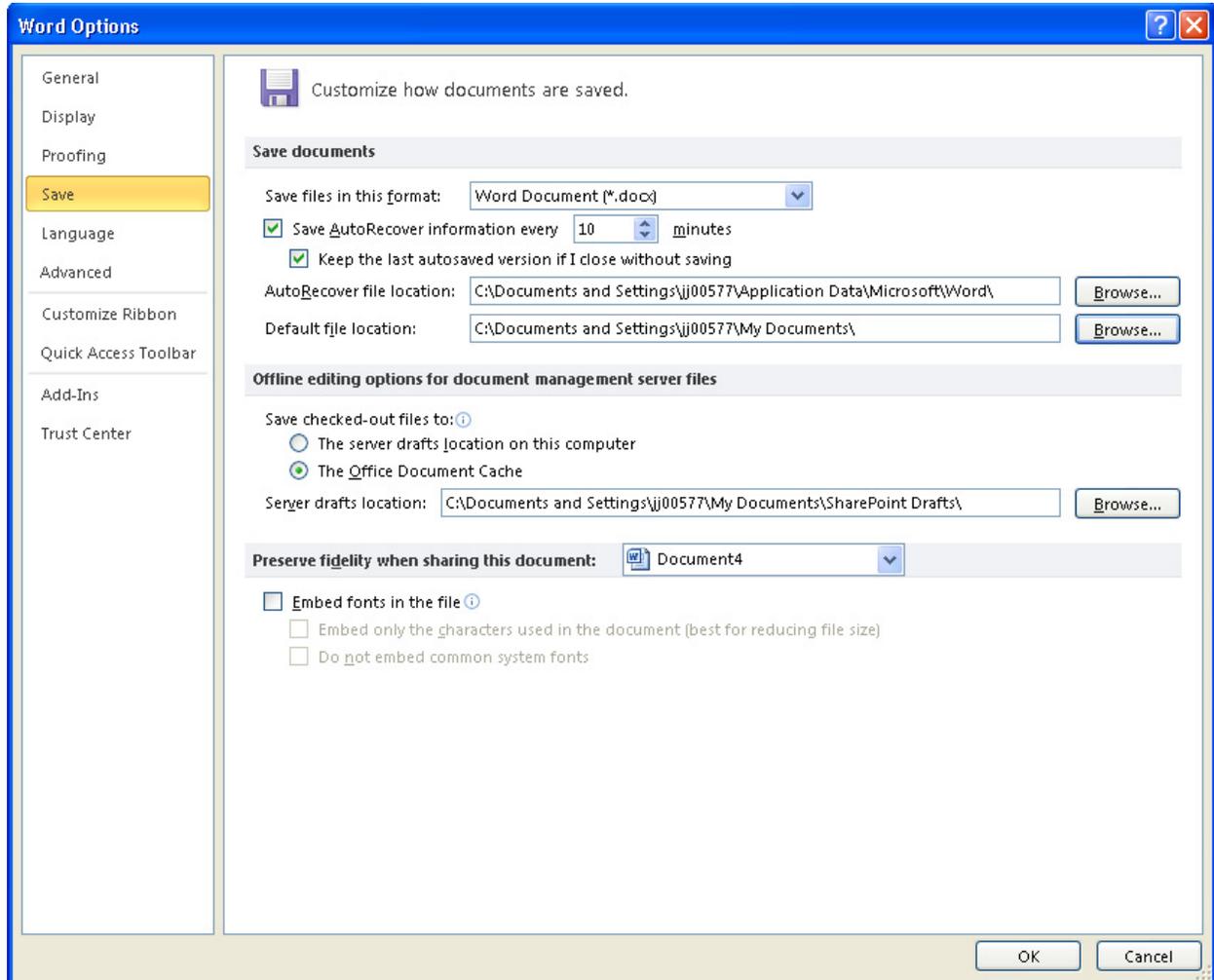
1. In Word 2010, click on the **File** tab at the far left of the ribbon and choose **Options** from the drop down list.



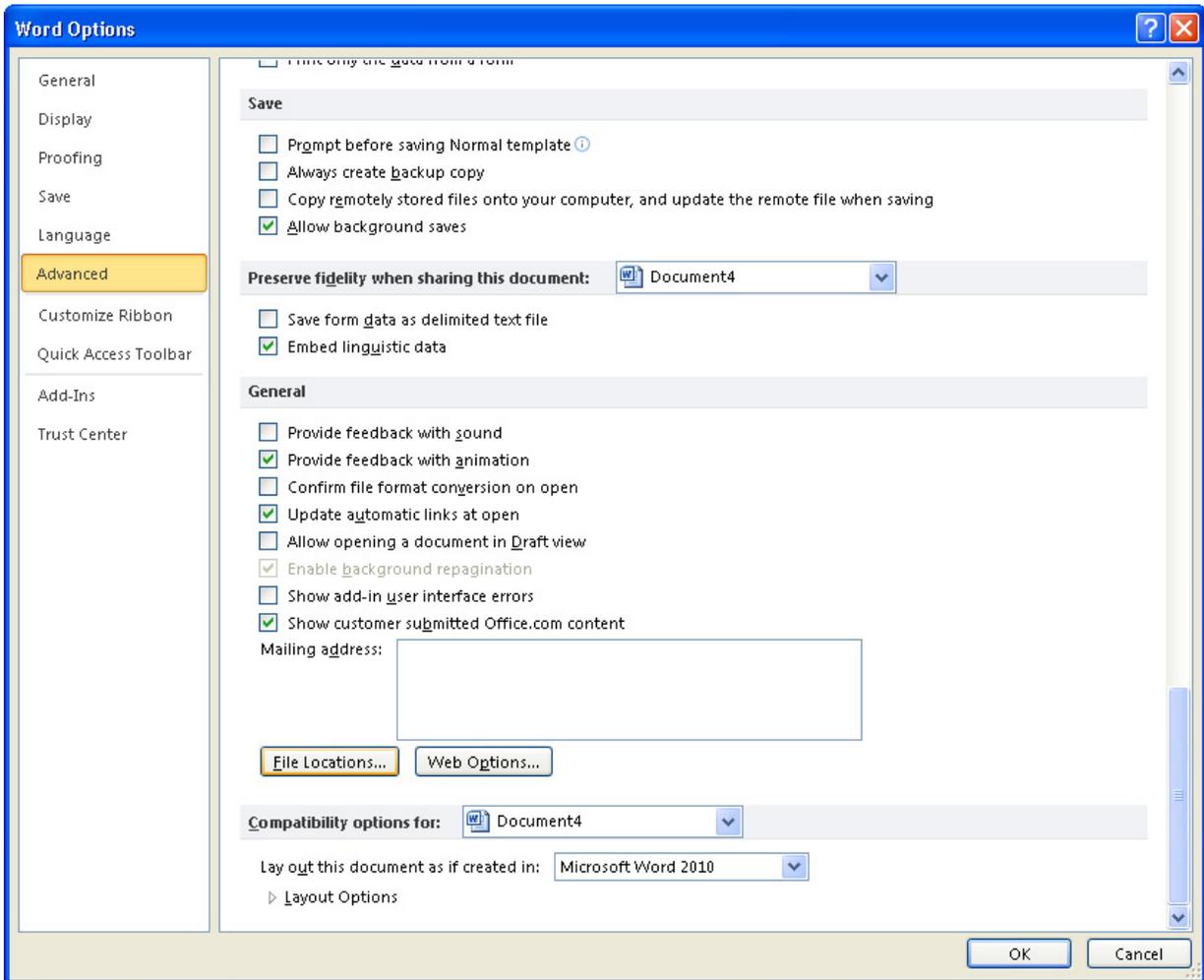
2. In the Word Options dialog click on **Save** in the options on the left.

Set the **Save Files in this format:** option to **Word Document (*.docx)**.

Use the **Browse** button to the right of **Default File Location:** to set the folder where you wish all Word documents to be saved by default.



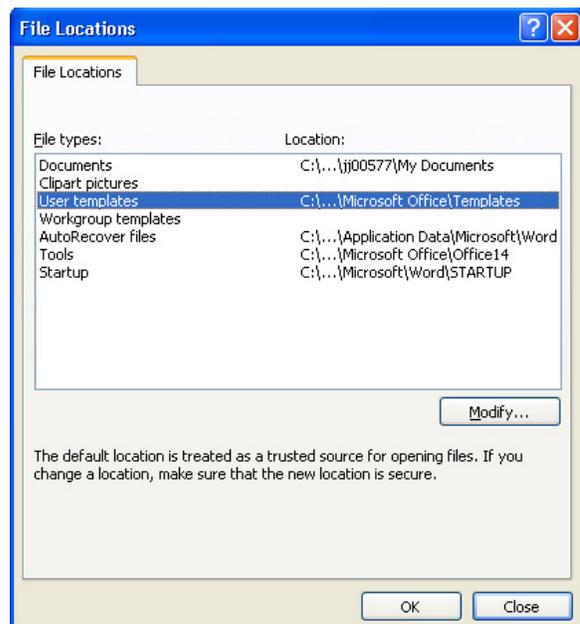
3. In the Word Options dialog, click on **Advanced** in the options on the left. Scroll down to the **General** section and click the **File Locations** button.



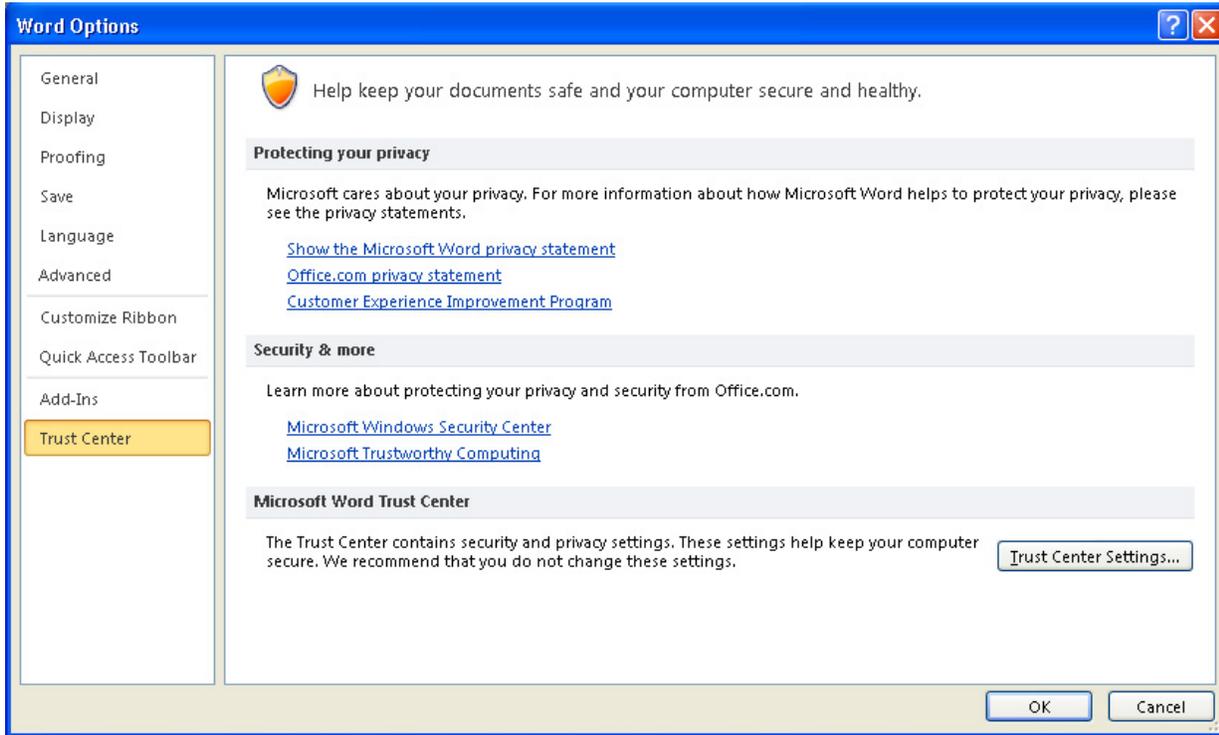
Click on **User Templates** and then click on the **Modify** button.

Navigate to and set the folder **C:\Program Files\Microsoft Office\Templates**. Click **OK** to save the setting.

This will set the default template location for both **Word** and **Excel** so that the TDOT template folders will be available.

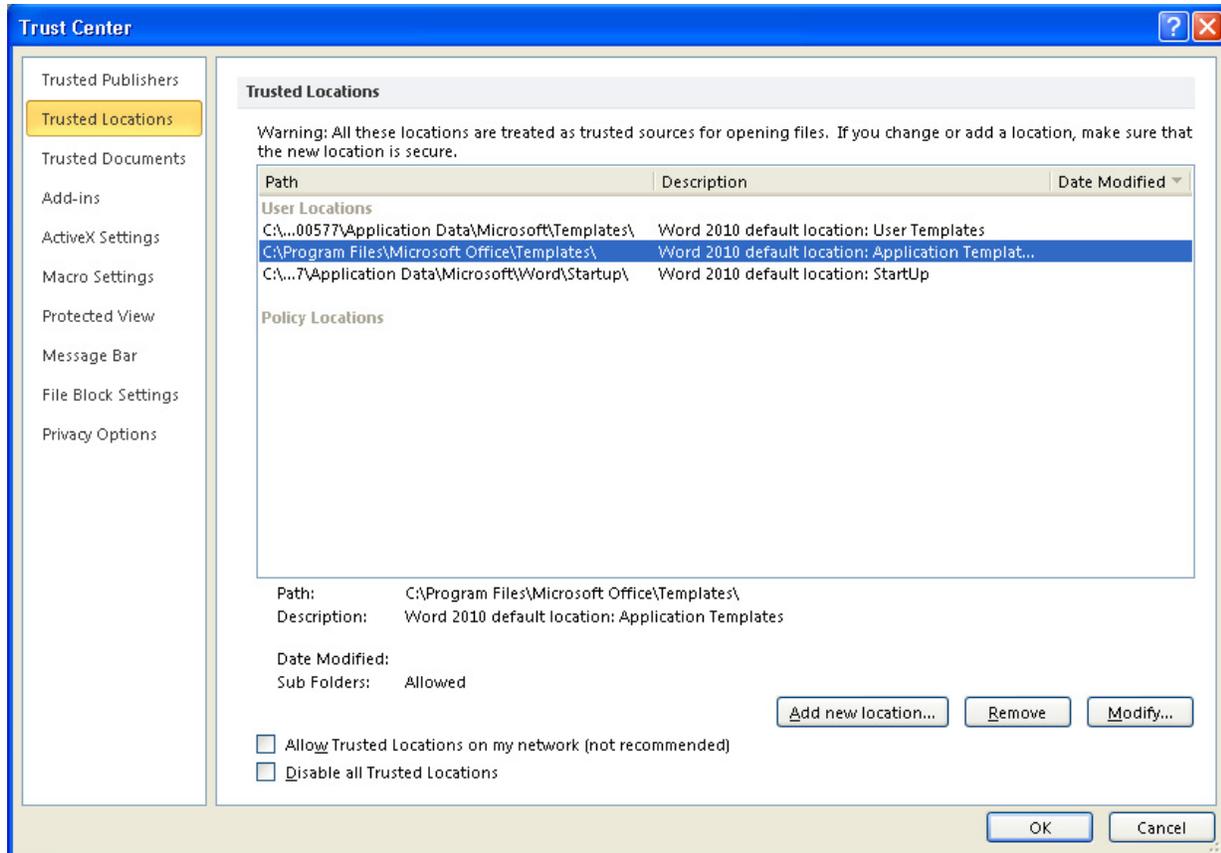


4. In the Word Options dialog, click on **Trust Center** in the options on the left.
Click on the **Trust Center Settings** button.



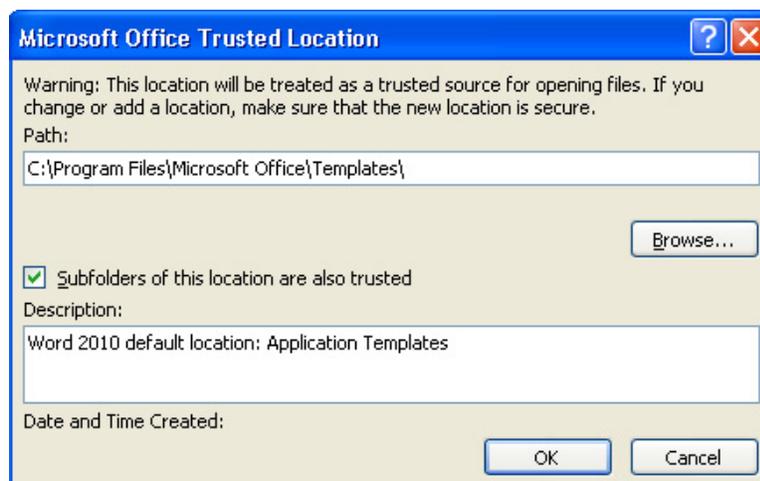
5. In the Trust Center dialog, click on **Trusted Locations** in the options on the left. Select the trusted location for **Application Templates**.

All files stored under Trusted Locations will automatically load macros without any action from the user.



The settings for Application Templates are at the bottom. The **Path** should be set to **C:\Program Files\Microsoft Office\Templates** and **Sub Folders** should be set to **Allowed**.

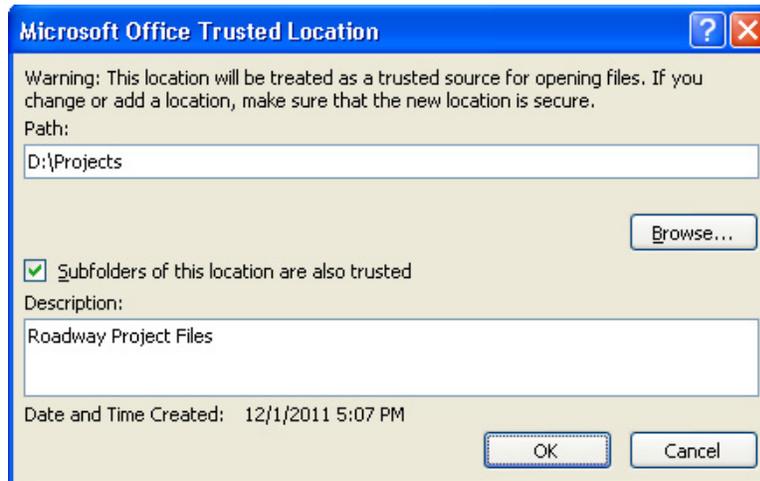
If sub folders are Disallowed, click on the **Modify** button. In the dialog which opens, click on the **Subfolders of this location are also trusted** option and click **OK**.



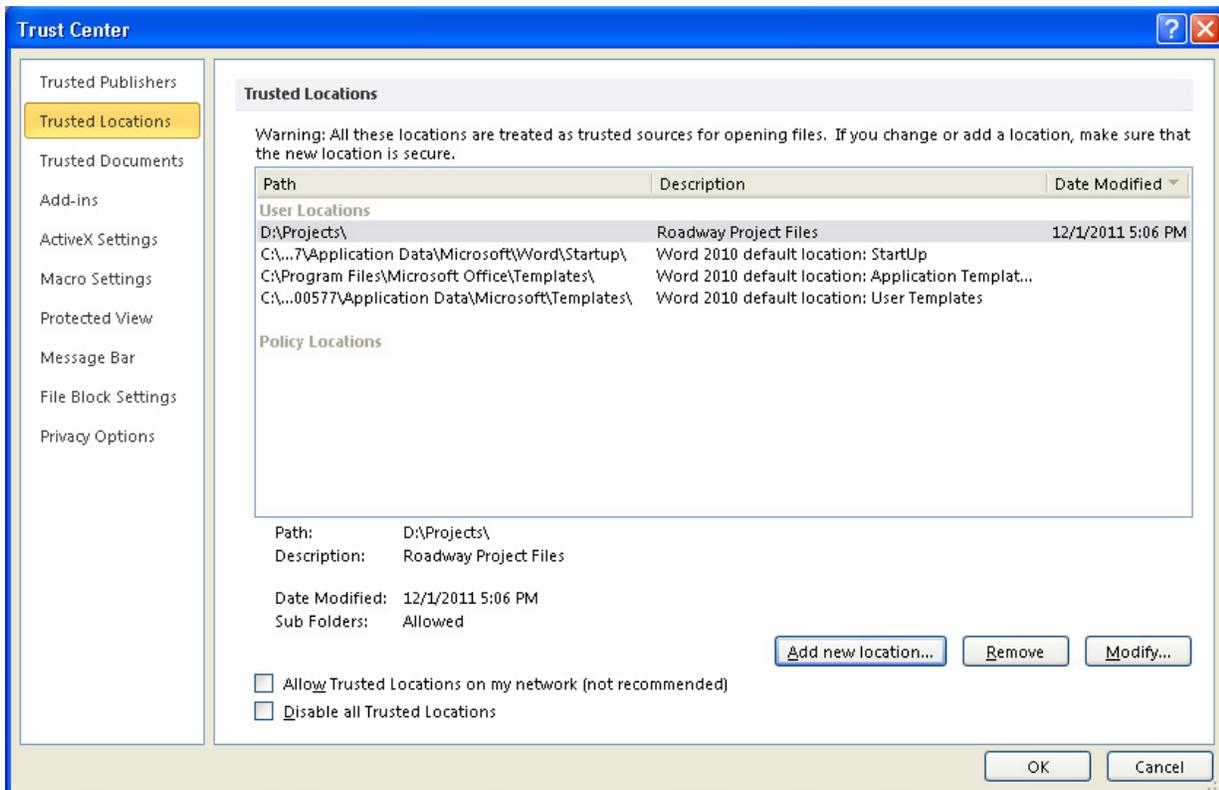
6. In the Trust Center dialog, click on the **Add new location** button.

Click on the **Browse** button and navigate to the location where your project files are stored.

Click on the **Subfolders of this location are also trusted** option, key in a description if desired and click **OK**.

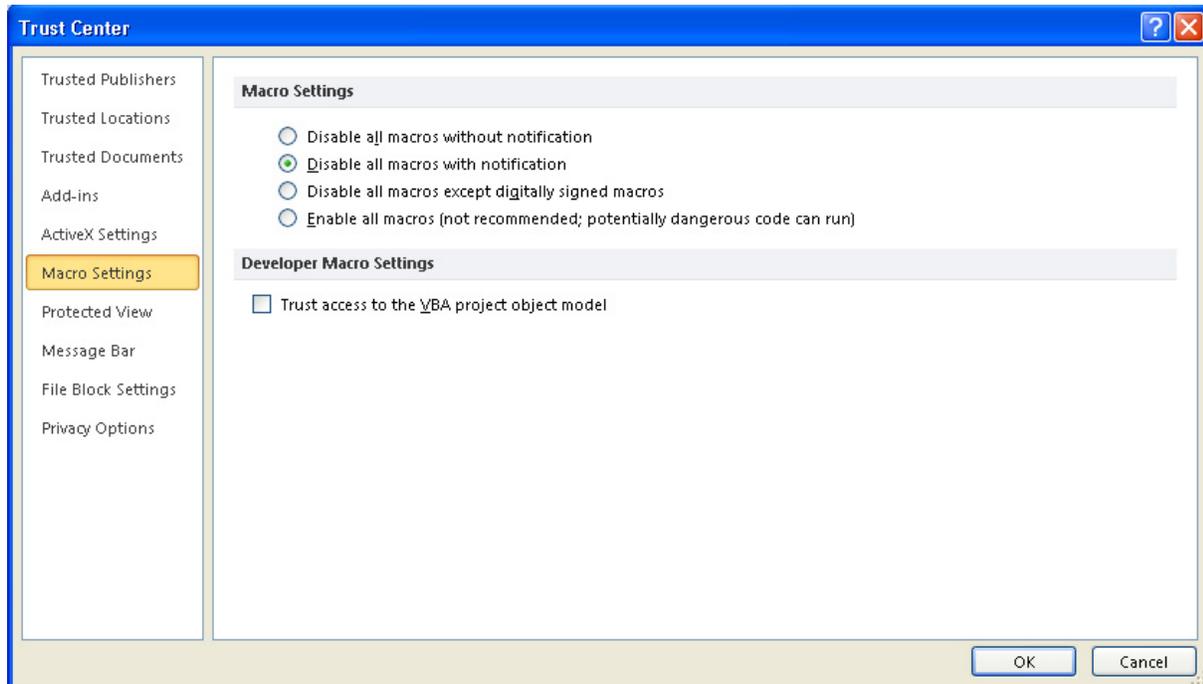


With your project folders defined as trusted locations, all macros will automatically be enabled.

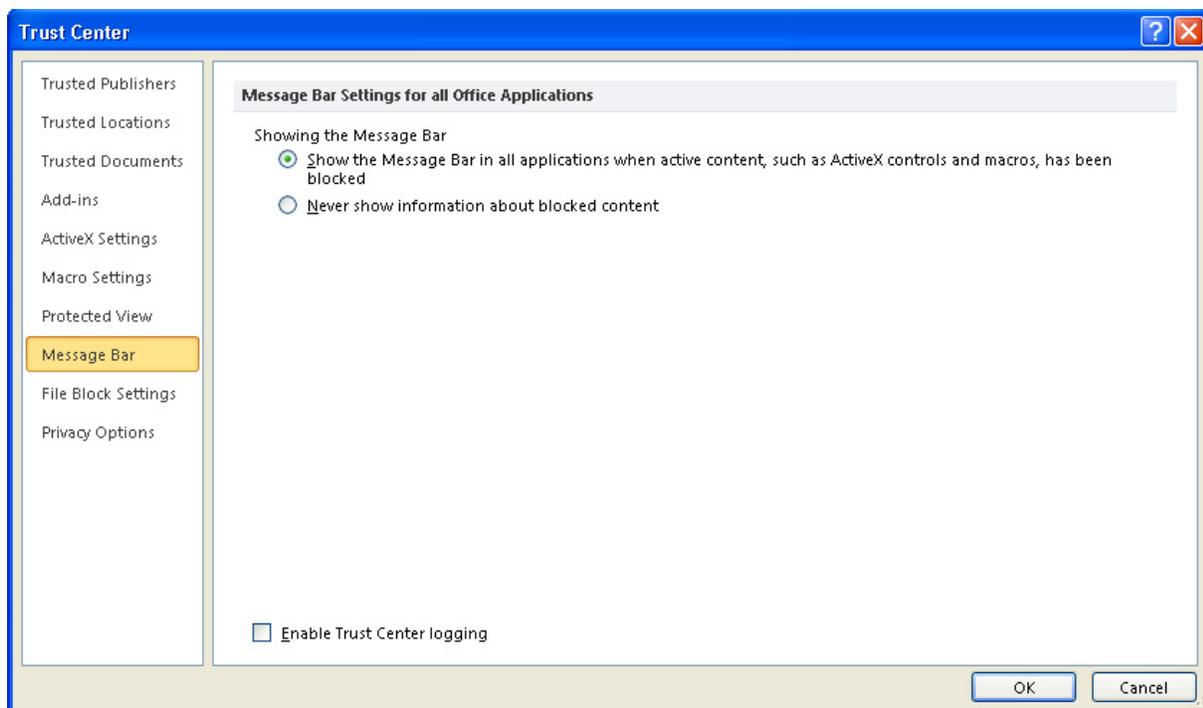


If you open a Word 2010 file with macros that is not in a trusted location, the following two settings will provide you the opportunity to enable the macros as needed.

7. In the Trust Center dialog, click on **Macro Settings** in the options on the left. The option **Disable all macros with notification** should be set.



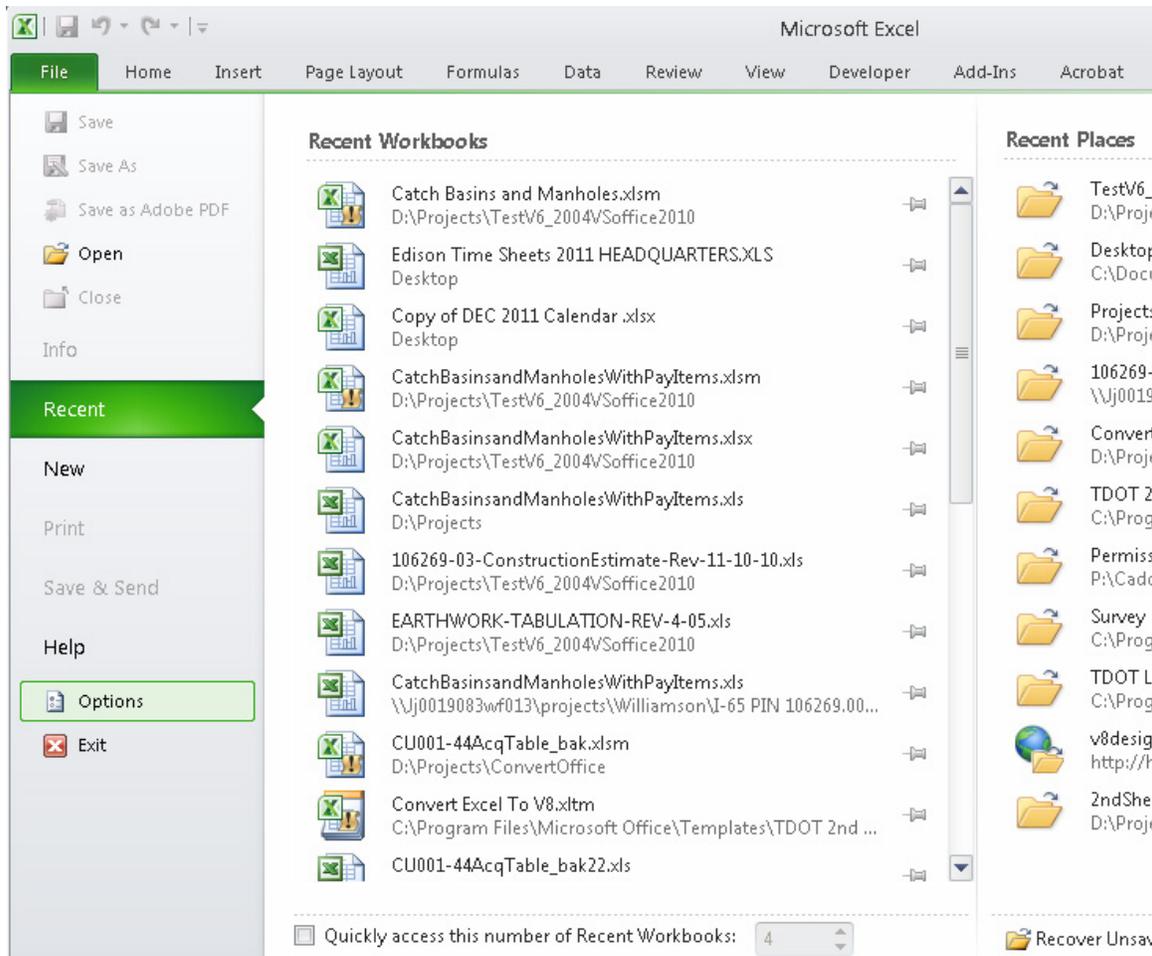
8. In the Trust Center dialog, click on **Message Bar** in the options on the left. The option **Show the Message Bar in all applications when active content, such as ActiveX controls or macros, has been blocked** should be set.



9. Click **OK** at the bottom of the Trust Center dialog to save the Trust Center settings just made.
10. This completes the settings under Word Options, so click the **OK** button at the bottom of that dialog to complete the Word 2010 set up.

Excel:

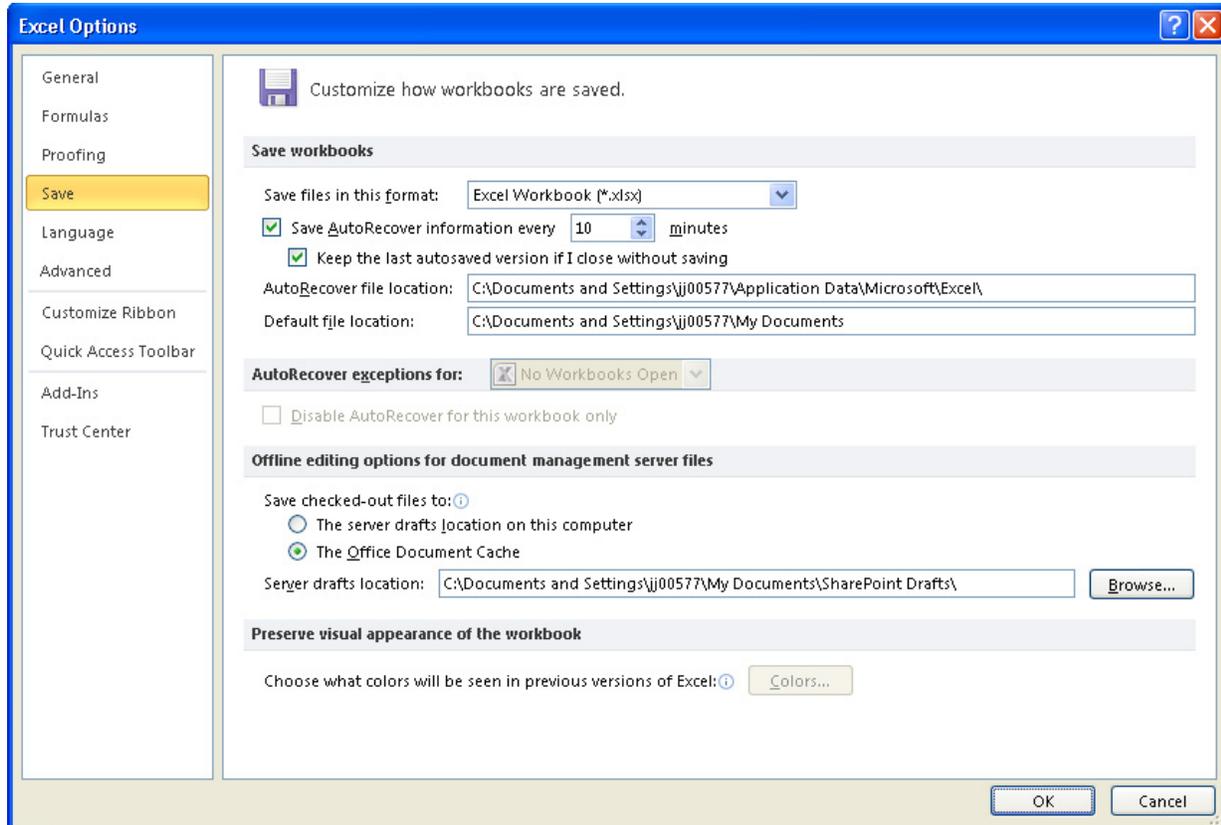
1. In Excel 2010, click on the **File** tab at the far left of the ribbon and choose **Options** from the drop down list.



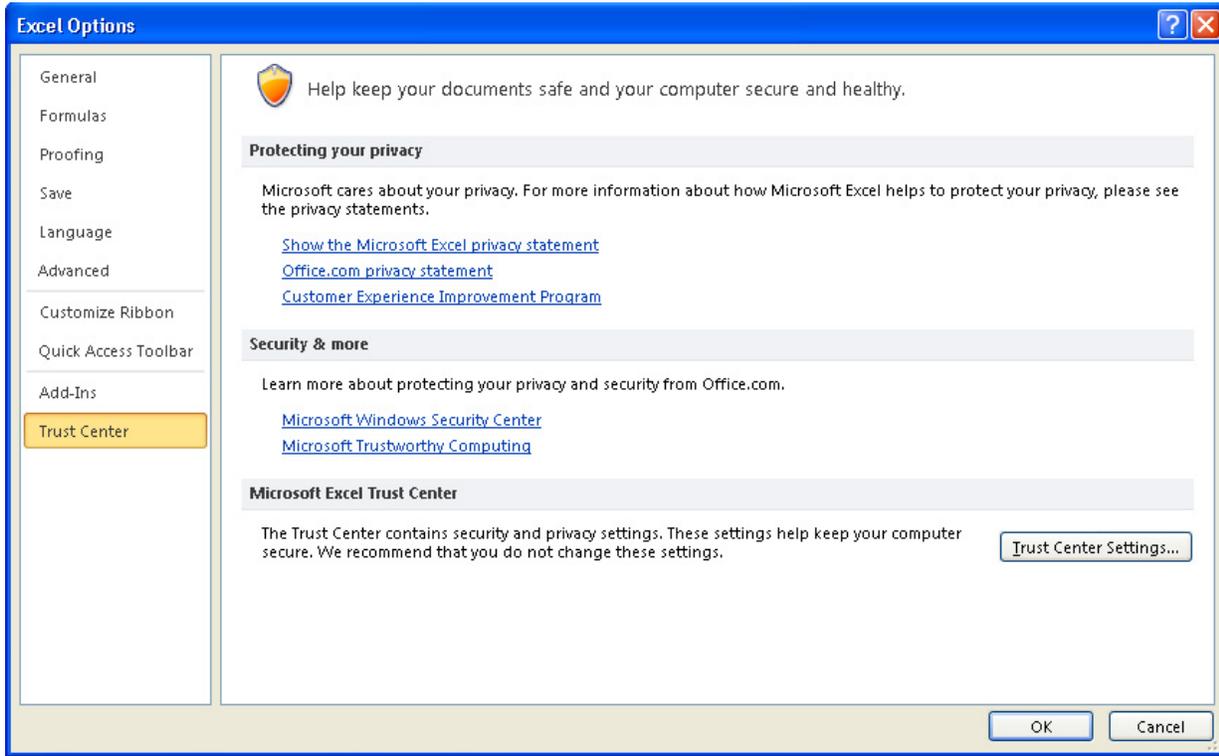
2. In the Excel Options dialog click on **Save** in the options on the left.

Set the **Save Files in this format:** option to **Excel Workbook (*.xlsx)**.

Change the path given for **Default File Location:** to set the folder where you wish all Excel documents to be saved by default.

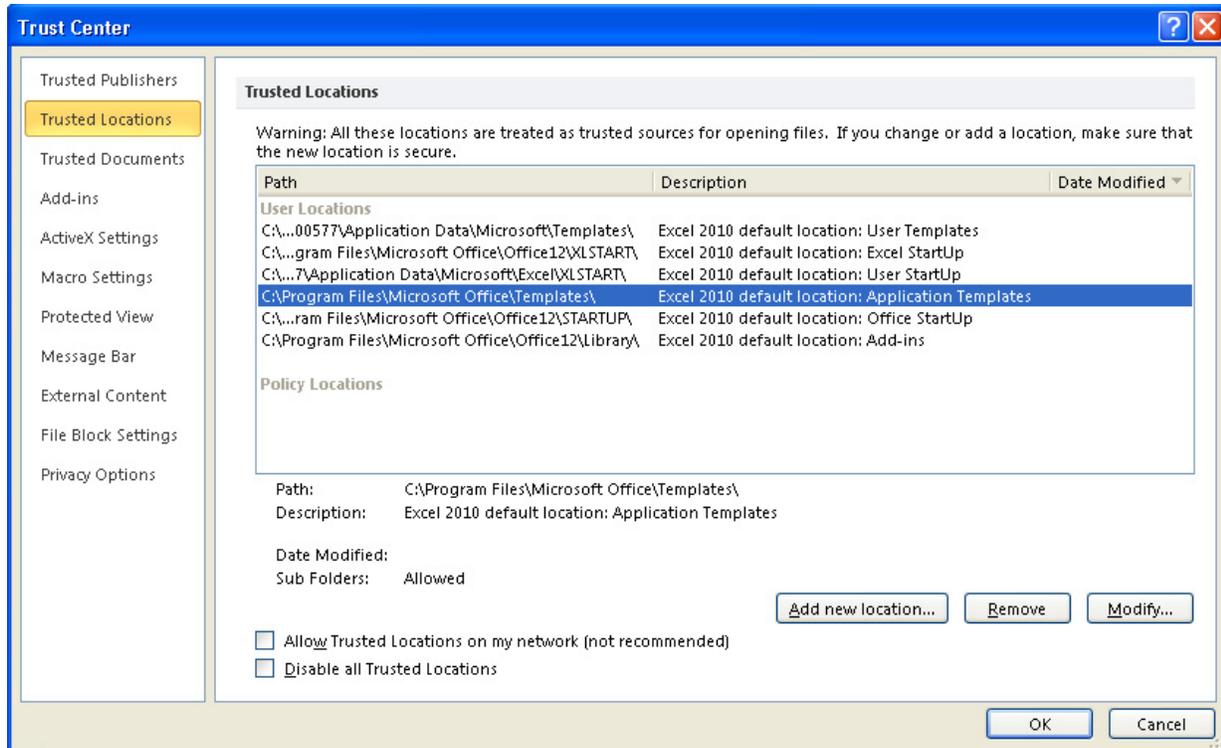


3. In the Excel Options dialog, click on **Trust Center** in the options on the left.
Click on the **Trust Center Settings** button.



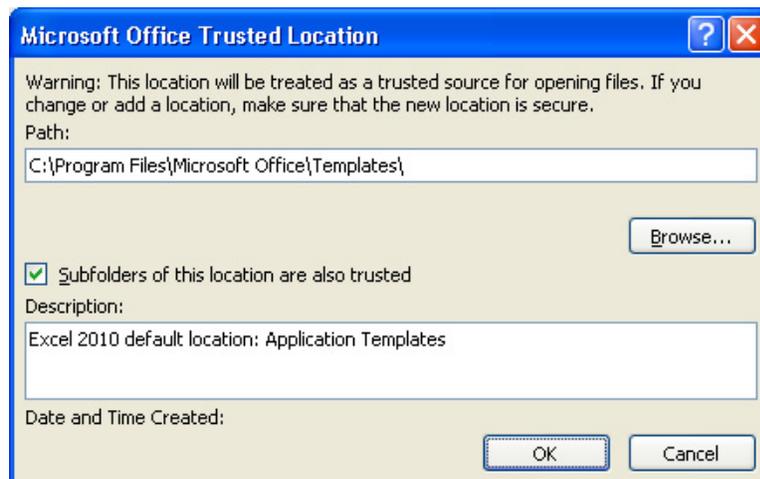
4. In the Trust Center dialog, click on **Trusted Locations** in the options on the left. Select the trusted location for **Application Templates**.

All files stored under Trusted Locations will automatically load macros without any action from the user.



The settings for Application Templates are at the bottom. The **Path** should be set to **C:\Program Files\Microsoft Office\Templates** and **Sub Folders** should be set to **Allowed**.

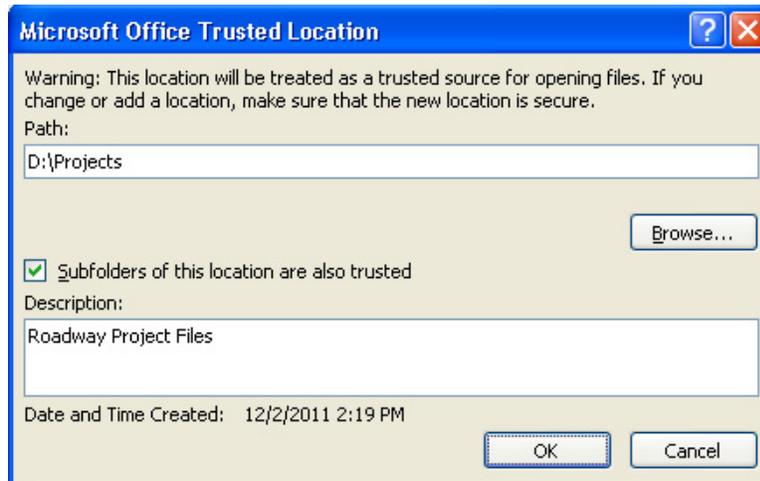
If sub folders are Disallowed, click on the **Modify** button. In the dialog which opens, click on the **Subfolders of this location are also trusted** option and click **OK**.



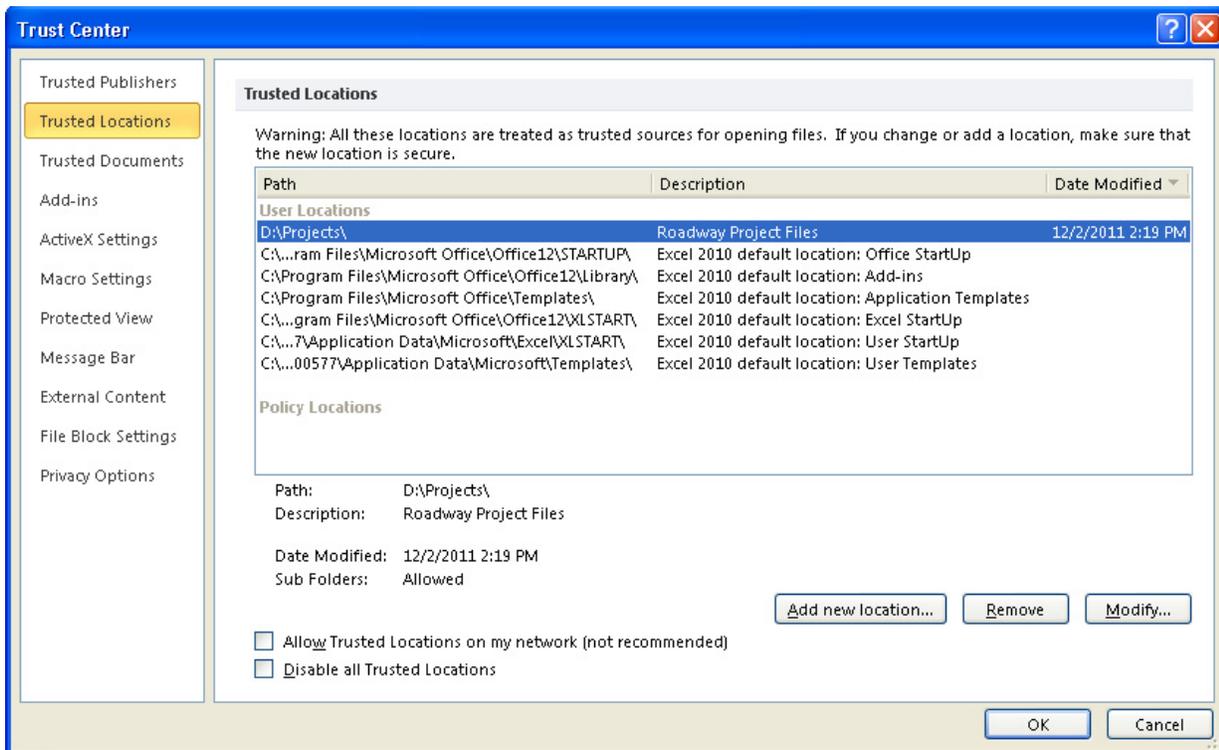
5. In the Trust Center dialog, click on the **Add new location** button.

Click on the **Browse** button and navigate to the location where your project files are stored.

Click on the **Subfolders of this location are also trusted** option, key in a description if desired and click **OK**.

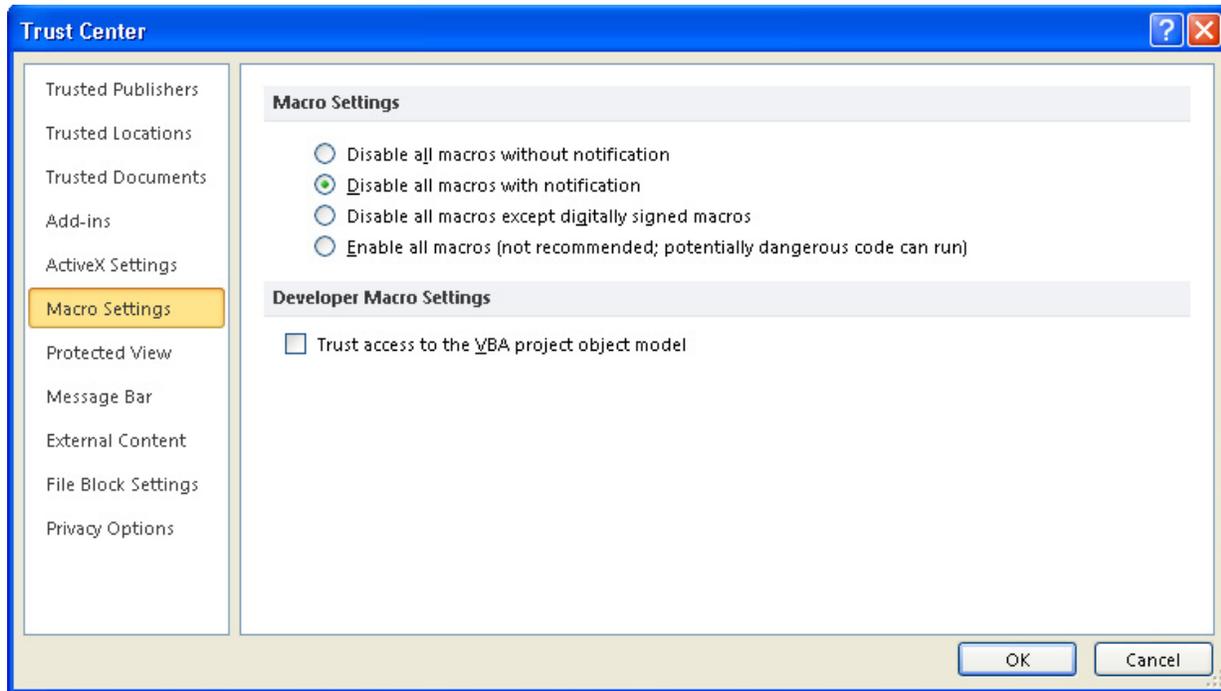


With your project folders defined as trusted locations, all macros will automatically be enabled.

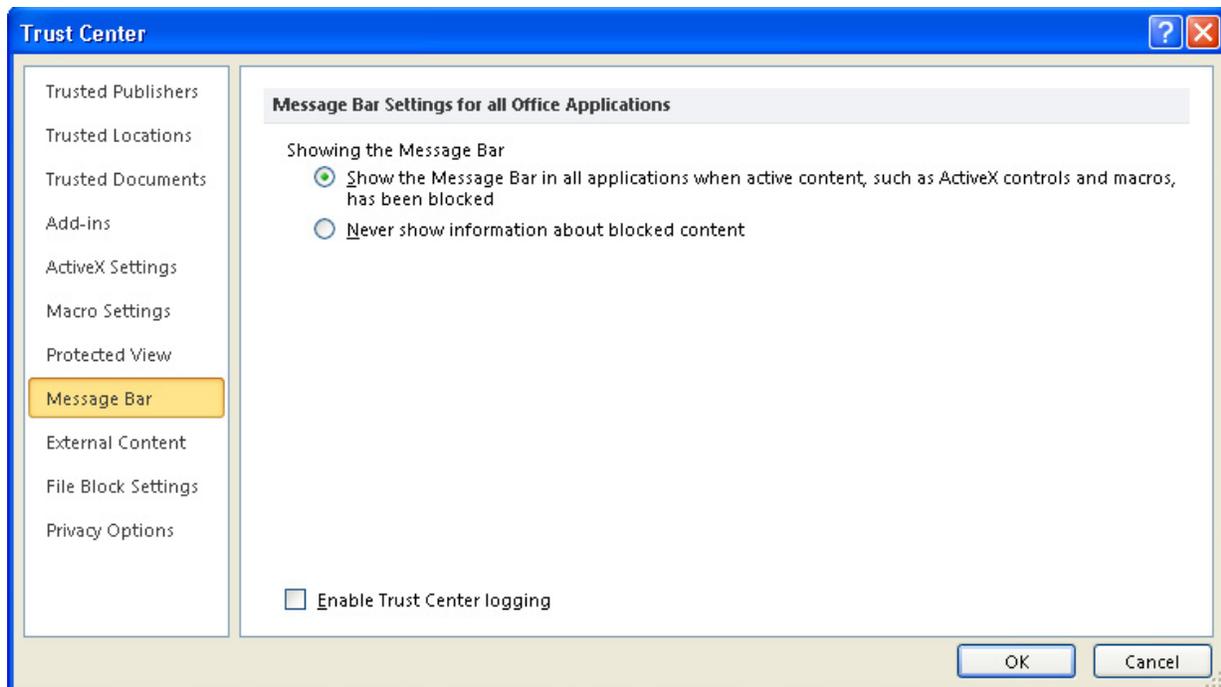


If you open an Excel 2010 file with macros that is not in a trusted location, the following two settings will provide you the opportunity to enable the macros as needed.

6. In the Trust Center dialog, click on **Macro Settings** in the options on the left. The option **Disable all macros with notification** should be set.



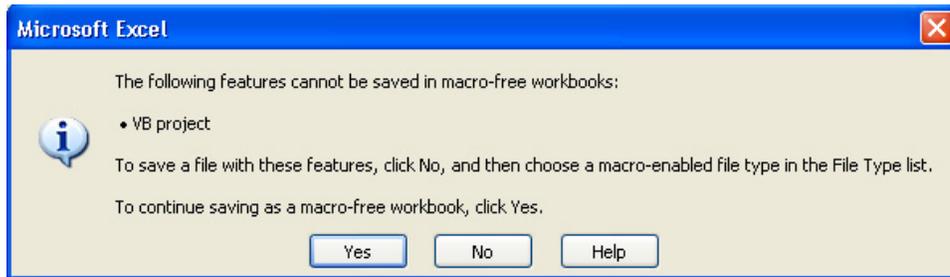
7. In the Trust Center dialog, click on **Message Bar** in the options on the left. The option **Show the Message Bar in all applications when active content, such as ActiveX controls or macros, has been blocked** should be set.



8. Click **OK** at the bottom of the Trust Center dialog to save the Trust Center settings just made.
9. This completes the settings under Excel Options, so click the **OK** button at the bottom of that dialog to complete the Excel 2010 set up.

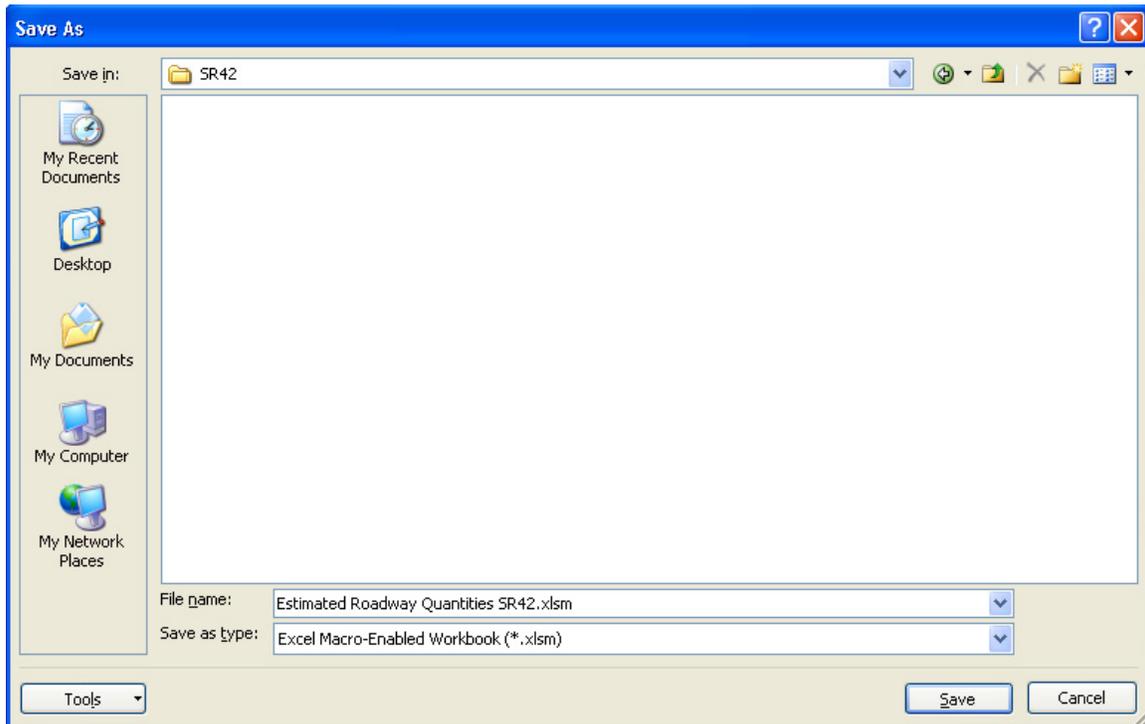
Saving Documents with Macros

If you try to save a new document that has macros with the default file formats, **.docx** or **.xlsx**, then you will be warned that all macros will be thrown out since those file types are specifically macro free.



If you no longer need the macros, simply click **Yes** to save the file in the macro free format. Otherwise, click **No** to stop at this point.

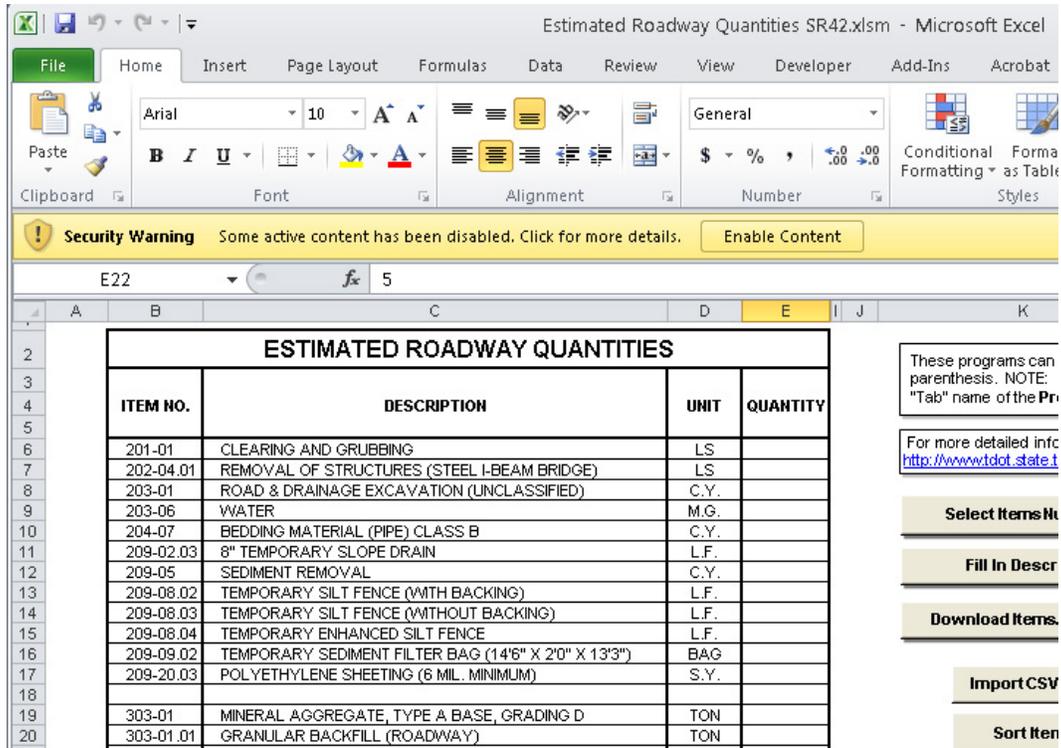
To keep macros for later use, go to **File > Save As** and under **Save As Type** choose the macro-enabled one.



Previously saved documents automatically save in their current format.

Enabling macros that are not in a trusted location

If you open a file with macros that is not in a trusted location, a **Security Warning** message bar will appear.



The screenshot shows the Microsoft Excel interface with a Security Warning message bar at the top. The message bar contains a yellow warning icon, the text "Security Warning Some active content has been disabled. Click for more details.", and an "Enable Content" button. Below the message bar, the Excel ribbon is visible, and the main workspace displays a table titled "ESTIMATED ROADWAY QUANTITIES".

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
201-01	CLEARING AND GRUBBING	LS	
202-04.01	REMOVAL OF STRUCTURES (STEEL I-BEAM BRIDGE)	LS	
203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	
203-06	WATER	M.G.	
204-07	BEDDING MATERIAL (PIPE) CLASS B	C.Y.	
209-02.03	8" TEMPORARY SLOPE DRAIN	L.F.	
209-05	SEDIMENT REMOVAL	C.Y.	
209-08.02	TEMPORARY SILT FENCE (WITH BACKING)	L.F.	
209-08.03	TEMPORARY SILT FENCE (WITHOUT BACKING)	L.F.	
209-08.04	TEMPORARY ENHANCED SILT FENCE	L.F.	
209-09.02	TEMPORARY SEDIMENT FILTER BAG (14'6" X 2'0" X 13'3")	BAG	
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM)	S.Y.	
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	
303-01.01	GRANULAR BACKFILL (ROADWAY)	TON	

On the right side of the screenshot, there is a text box with the following content:

These programs can
parenthesis. NOTE:
"Tab" name of the Pr

For more detailed info
<http://www.tdot.state.tn.gov>

Select Items Here

Fill In Description

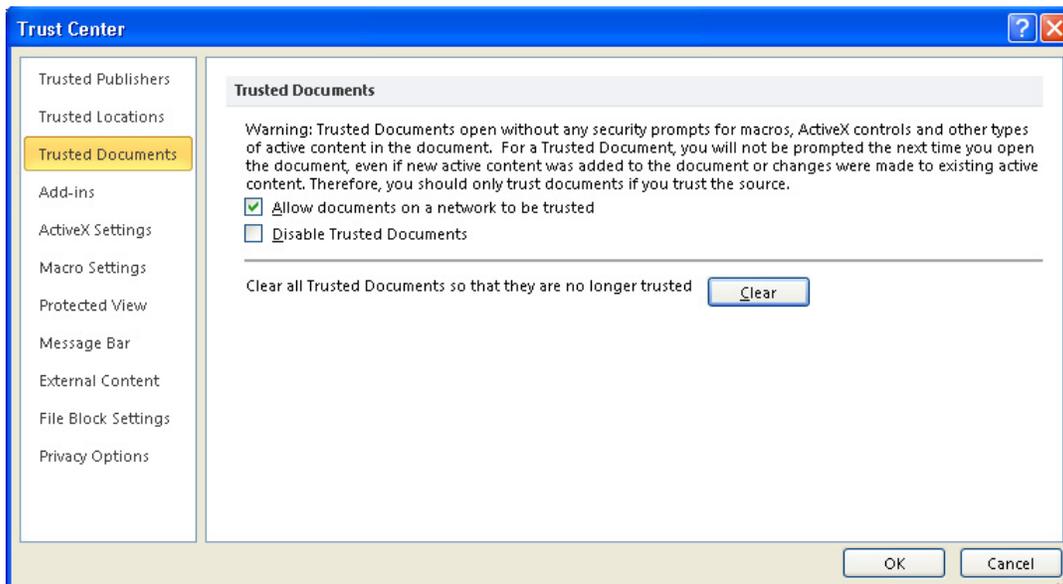
Download Items

Import CSV

Sort Items

If you need to use the macros, click on the **Enable Content** button in the message bar. The Security Warning message bar goes away and macros are ready for use.

Once a document has been trusted, Office 2010 remembers the name so that it will not be necessary to Enable Content again later. If you wish to clear the trusted document list or to disable this functionality, go to **File > Options > Trust Center > Trust Center Settings**. Choose the **Trusted Documents** option on the left and reset as desired.



The screenshot shows the Trust Center dialog box in Microsoft Office 2010. The "Trusted Documents" section is selected in the left-hand navigation pane. The main area displays a warning message: "Warning: Trusted Documents open without any security prompts for macros, ActiveX controls and other types of active content in the document. For a Trusted Document, you will not be prompted the next time you open the document, even if new active content was added to the document or changes were made to existing active content. Therefore, you should only trust documents if you trust the source." Below the warning, there are two checkboxes: "Allow documents on a network to be trusted" (checked) and "Disable Trusted Documents" (unchecked). At the bottom of the dialog, there is a "Clear" button and "OK" and "Cancel" buttons.

Excel Template Files

T.D.O.T. Design Division Excel templates used with MicroStation V8 are part of the standard Office file downloads from the TDOT CADD web page. The templates are listed below with their default folder locations.

C:\Program Files\Microsoft Office\Templates\Survey

ROWAcqTable.xltn
Utility Owners.xltx
ROWAcqMetric.xltx

C:\Program Files\Microsoft Office\Templates\TDOT 2nd Sheets

Bridge Quantities.xltn
Estimated Roadway Quantities.xltn
Maintenance Quantities.xltn
Project Commitments.xltx

C:\Program Files\Microsoft Office\Templates\TDOT English Tab Quantities

Box Bridge.xltx
Box Culvert.xltx
Bridge Drains.xltx
Catch Basins and Manholes.xltx
Catch Basins.xltx
Concrete Median Barrier.xltx
Cross Drain Arterials WO Full Access Control.xltx
Cross Drain Collectors.xltx
Cross Drain Freeways.xltx
Cross Drain Local Roads.xltx
Drop Inlets.xltx
Enhanced Silt Fence Check Design Dimensions.xltx
Erosion Prevention and Sediment Control.xltx
Grading Quantities Composition Known.xltx
Grading Quantities Composition Unknown.xltx
Guardrail Tab Builder.xltn
Guardrail.xltx
Manholes.xltx
Median Drains.xltx
Pavement.xltx
Removal Of Buildings & Obstructions.xltx
Removal Of Structures.xltx
Rip Rap Basins.xltx
Rip Rap Ditches.xltx
Roadway Approaches.xltx
ROW Markers.xltx
Sediment Control Structure Dimensions.xltx
Sediment Control Structure Quantities.xltx
Side Drain.xltx
Slab Bridge.xltx
Slab Culvert.xltx
Slope Rehabilitation.xltx
Special Ditches.xltx
Spring Drains.xltx
Storm Drainage Endwalls.xltx
Storm Drainage Pipe Tab Builder.xltn
Storm Drainage Pipes.xltx
Storm Drainage Structure Tab Builder.xltn
Traffic Control.xltx
Trees.xltx

C:\Program Files\Microsoft Office\Templates\TDOT Metric Tab Quantities

Box Bridge.xltx
Box Culvert.xltx
Bridge Drains.xltx
Catch Basins and Manholes.xltx
Catch Basins.xltx
Concrete Median Barrier.xltx
Cross Drain Arterials WO Full Access Control.xltx
Cross Drain Collectors.xltx
Cross Drain Freeways.xltx
Cross Drain Local Roads.xltx
Drop Inlets.xltx
Enhanced Silt Fence Check Design Dimensions.xltx
Erosion Prevention and Sediment Control.xltx
Grading Quantities Composition Known.xltx
Grading Quantities Composition Unknown.xltx
Guardrail Tab Builder.xltn
Guardrail.xltx
Manholes.xltx
Median Drains.xltx
Pavement.xltx
Removal Of Buildings & Obstructions.xltx
Removal Of Structures.xltx
Rip Rap Basins.xltx
Rip Rap Ditches.xltx
Roadway Approaches.xltx
ROW Markers.xltx
Sediment Control Structure Dimensions.xltx
Sediment Control Structure Quantities.xltx
Side Drain.xltx
Slab Bridge.xltx
Slab Culvert.xltx
Slope Rehabilitation.xltx
Special Ditches.xltx
Spring Drains.xltx
Storm Drainage Endwalls.xltx
Storm Drainage Pipes.xltx
Traffic Control.xltx
Trees.xltx

Estimated Roadway Quantities Excel File

The Estimated Roadway Quantities Excel file is required on all jobs per the [T.D.O.T. Design Division Roadway Design Guidelines](#). A preliminary construction quantity estimate Excel file is to be submitted to the Estimating and Bid Analysis Office when the Right-of-Way plans are turned in per **Section 3-400.15**. A complete construction quantity estimate Excel file shall be turned in to the Estimating and Bid Analysis Office when the plans are turned in for construction, **Section 4-140.00**. See **Section 4-140.05** for details on the Estimated Roadway Quantities Excel file.

This Excel quantities file is used as an input file for a T.D.O.T. computer database program. The worksheets names, column and row locations and some heading information should not be changed or the database program will not input the data correctly.

There are at least two worksheets required for the Estimated Roadway Quantity Excel file, **Project Data** and **Col #1-Est. Rdwy. Quantities**. There may be more worksheets for a large job or a job with box bridge quantities.

The Structures and Maintenance division also have estimated quantities Excel files they submit to the Estimating and Bid Analysis Office. The templates for these are included in the **TDOT 2nd Sheets** download.

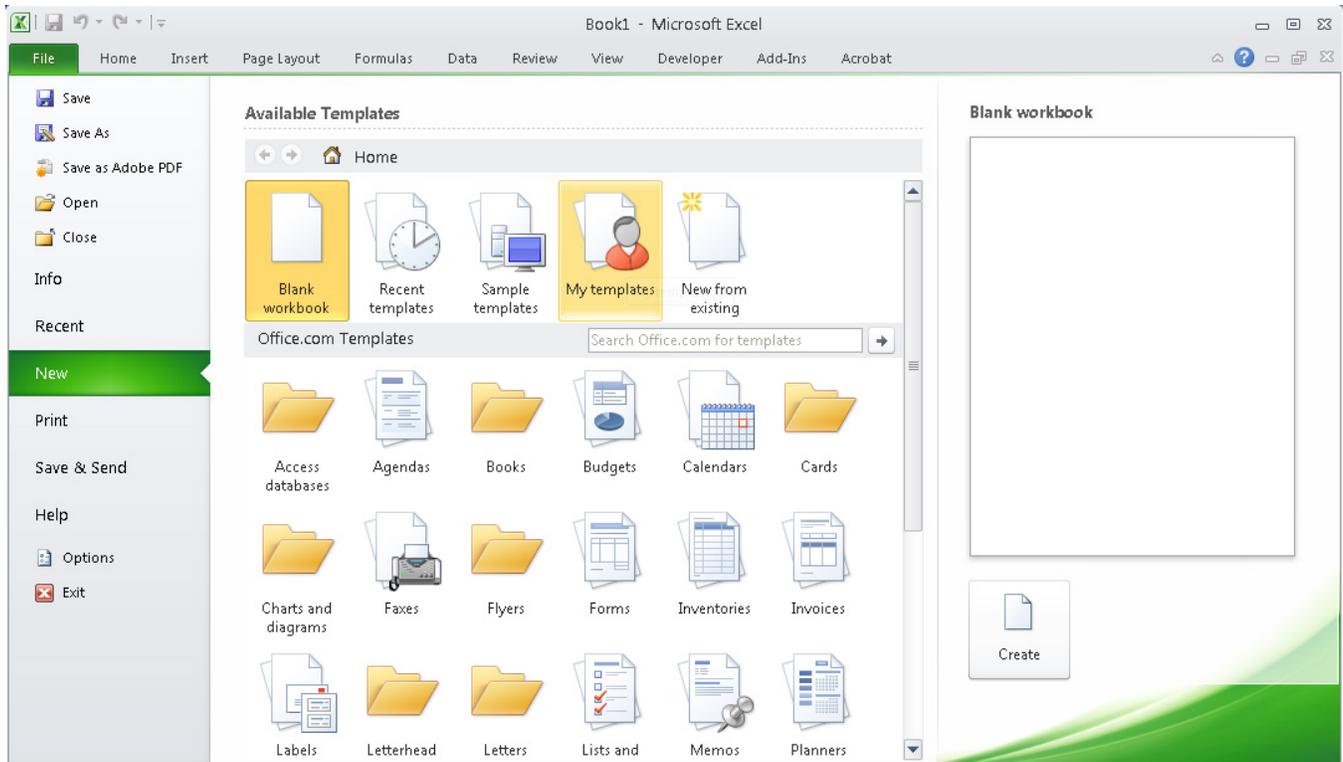
The Utilities Office of the Right-of-Way Division also has an estimated quantities worksheet they submit to the Estimating and Bid Analysis Office. The Utility Office provides their estimated quantities Excel worksheet to their users. The Utility Office will send a copy of the utility Excel worksheet to the Design Division so the “Estimated Utilities Quantities” Sheet 2B for the plans can be produced as per **Section 4-137.00** in the T.D.O.T. Design Division Roadway Design Guidelines.

Create TDOT Estimated Roadway Quantities in Excel

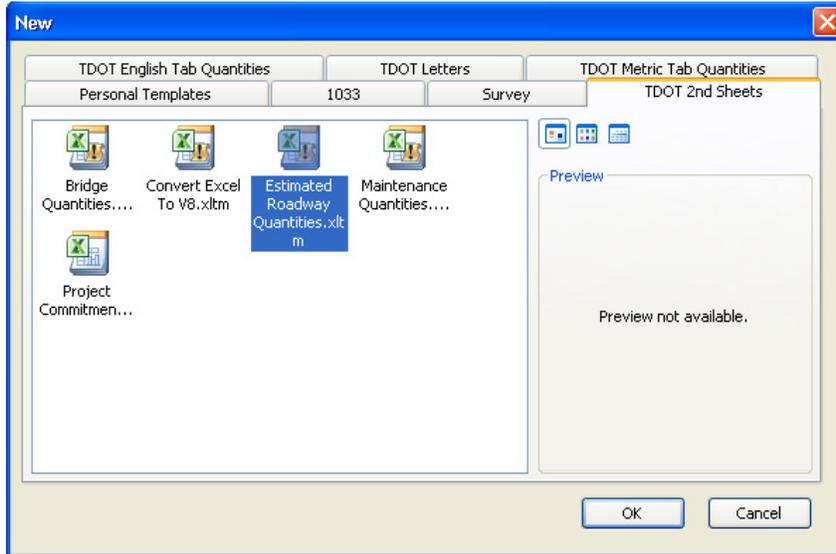
It is recommended that the user have all of the tabulated quantity blocks in the same file with the estimated roadway quantities. By putting all of the worksheets together in the same Excel file, the quantities on the different tab block sheet quantities can be linked to the estimated quantities sheet. These same tab blocks and quantity blocks will be linked to the MicroStation design files. By setting up the Excel estimate file in this way, each quantity can be entered and updated in one location only, and will then be updated in each of the locations where the value appears.

These directions will first demonstrate creating the Estimated Roadway Quantities file and later describe adding other tabulated blocks.

1. In Excel, click on the **File** tab on the far left of the Excel ribbon and choose **New**
2. Under New, choose **My Templates**.



3. Go to the TDOT 2nd Sheets tab and select the **Estimated Roadway Quantities.xltm** template



- Fill in the **Project Data** sheet. Instruction notes are available on the worksheet. Hold the mouse pointer over the small red triangles for directions.

The screenshot displays the Microsoft Excel application window titled "Estimated Roadway Quantities.xlsm1 - Microsoft Excel". The ribbon is set to the "Home" tab, showing options for Font, Alignment, Number, Styles, Cells, and Editing. The worksheet is named "Project Data" and is divided into columns for "Project No. 1 Data", "Project No. 2 Data", and "Project No. 3 Data". The rows are numbered 1 through 33, with the first row being a header row. The data rows contain various project information fields, some of which are highlighted in yellow or cyan. The status bar at the bottom indicates the application is "Ready" and the zoom level is "90%".

	A	B	C	D	E	F	G	H	I
		Project No. 1 Data	Project No. 2 Data	Project No. 3 Data					
1									
2	State Project Number								
3	Federal Project Number								
4	Non-Participating								
5	Project Description								
6	Letting Date								
7	Project Type								
8	Units								
9	County								
10	Route								
11	Road Name								
12	Project Length								
13	Beginning Station								
14	Ending Station								
15	Beginning Log Mile								
16	Ending Log Mile								
17	North Coordinate								
18	East Coordinate								
19	Longitude								
20	Latitude								
21	Roadway Designer								
22	Roadway CE Manager 2								
23	Date Turned In								
24	Bridge Required								
25	Bridge Designer								
26	Bridge CE Manager								
27	Estimate Type								

Estimated Roadway Quantities Macros

Select Item Numbers From List

Uses the **Items.dat** file located at **C:\Program Files\Microsoft Office\Templates\TDOT 2nd Sheets** to find items, list them in a selection window and write the items selected to the worksheet.

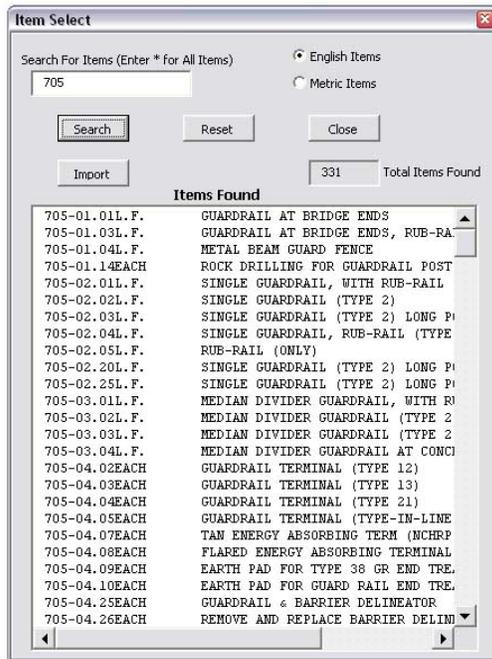
Search – If the **Search for Items** field is left blank, the search button will open all of the items for either **English** or **Metric** items. Put in one or more numbers or letters to pull up all items containing those characters. Do **not** use any wild card characters. Use the **Shift** or **Ctrl** key to select or unselect multiple items.

Import – Will prompt for the Excel cell to start placing the selected item numbers.

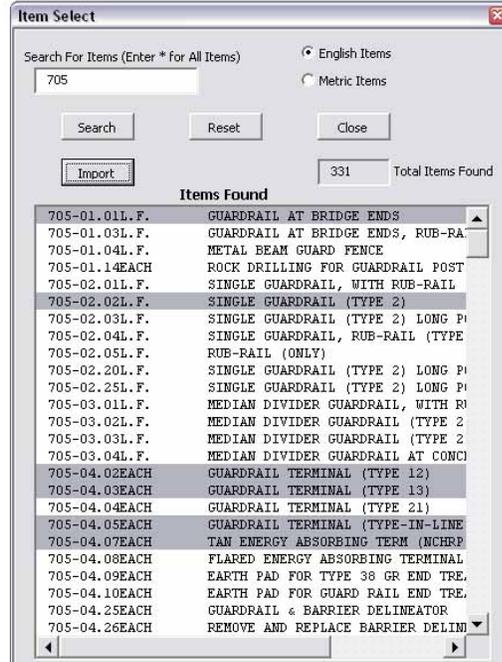
Reset – Clears the **Items Found** list box.

Close – Closes the **Item Select** dialog box.

Search



Select desired items ...



Import ...

ESTIMATED ROADWAY QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	
705-04.02	GUARDRAIL TERMINAL (TYPE 12)	EACH	
705-04.03	GUARDRAIL TERMINAL (TYPE 13)	EACH	
705-04.05	GUARDRAIL TERMINAL (TYPE-IN-LINE)	EACH	
705-04.07	TAN ENERGY ABSORBING TERM (NCHRP 350, TL3)	EACH	

Download Items.dat from Web Page

This is a direct link to the item numbers web page. Follow the directions shown on the right of the web page to save the **items.dat** file to the folder location **C:\Program Files\Microsoft Office\Templates\TDOT 2nd Sheets** for use with the other macros.



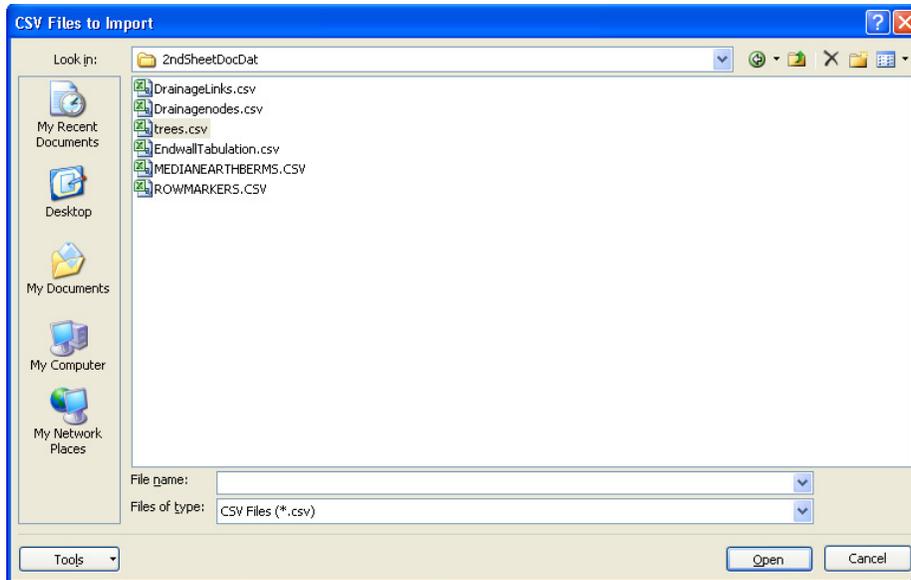
The item number information can be reviewed, cut from the web page and pasted into the Excel estimate file using the **Search Item Lists** option on the left side of the web page. A direct Paste or Paste Special as HTML will paste the text into separate cells on the Excel estimated items worksheet but formatting will be lost. It will be necessary to run the **Format Item Numbers** macro and perhaps the **Format Notes Area** macro to replace the borders and text formatting.

Import CSV File for Items

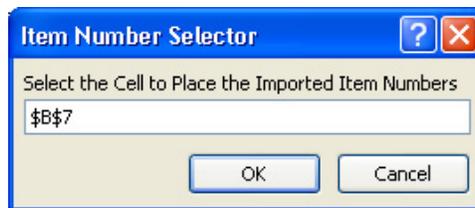
Geopak produces quantity calculation files in CSV (comma separated values) format that can be input directly into the Excel estimated roadway quantities file. The default CSV file format from Geopak is item number, Geopak description, units and quantity.

This macro imports only the item number and the quantity and then uses the **Fill In Description ...** macro to enter the description and unit. The Geopak descriptions do not always match the official item descriptions which must be used.

You are first prompted for the CSV file to import.



Then you are prompted for the starting location in the estimated roadway quantities block to start placing data.



Data is then added in Excel.

ESTIMATED ROADWAY QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
802-01.01	TREES (QUERCUS PALUSTRIS) (1.5 - 2" CAL. B&B)	EACH	2
802-01.02	TREES (LIRIODENDRON TULIPI) (1.5 - 2" CAL. B&B)	EACH	2
802-01.03	TREES (CERCIS CARADERSIS) (1.5 - 2" CAL. B&B)	EACH	3
802-01.04	TREES (ACER RUBRUM) (1.5 - 2" CAL. B&B)	EACH	4
802-01.05	TREES (BETULA NEGRA) (1.5" - 2" CAL. B&B)	EACH	5
802-01.06	TREES (ACER SACCHARUM) (1.5 - 2" CAL. B&B)	EACH	6
802-01.07	TREES(LIQUIDAMBER STYRACIFLUA) (1.5 - 2" CAL. B&B)	EACH	7
802-01.08	TREES(PLATANUS OCCIDENTALIS) (1.5 - 2" CAL. B&B)	EACH	8
802-01.09	TREES (QUERCUS PHELLOS) (1.5 - 2" CAL. B&B)	EACH	9

To import a CSV file **as written** for other tabulated quantity worksheets, see macro description for **Import CSV**.

Sort Item Numbers

The item numbers need to be sorted in numerical order by the item number. This macro sorts the item numbers selected by the user and maintains the correct formatting. The macro prompts the user to select the items to be sorted.

The screenshot shows the Microsoft Excel interface with the following data in the spreadsheet:

Item Number	Description	Unit	Quantity
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	28
705-04.03	GUARDRAIL TERMINAL (TYPE 13)	EACH	1
705-04.04	GUARDRAIL TERMINAL (TYPE 21)	EACH	3
705-04.05	GUARDRAIL TERMINAL (TYPE-IN-LINE)	EACH	1
712-01	TRAFFIC CONTROL	LS	1
712-05.01	WARNING LIGHTS (TYPE A)	EACH	14
712-06	SIGNS (CONSTRUCTION)	S.F.	195
712-07.03	TEMPORARY BARRICADES (TYPE III)	L	
716-02.04	PLASTIC PAVEMENT MARKING(CHANNELIZATION STRIPING)	L	
716-05.01	PAINTED PAVEMENT MARKING (4" LINE)	L	
716-05.05	PAINTED PAVEMENT MARKING (STOP LINE)	L	
740-10.03	GEOTEXTILE (TYPE III)(EROSION CONTROL)	S	
801-01	SEEDING (WITH MULCH)	U	
801-01.07	TEMPORARY SEEDING (WITH MULCH)	U	
801-03	WATER (SEEDING & SODDING)	M.G.	59
803-01	SODDING (NEW SOD)	S.Y.	5905
607-03.02	18" CONCRETE PIPE CULVERT (CLASS III)	L.F.	310
607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	170
607-07.02	36" CONCRETE PIPE CULVERT (CLASS III)	L.F.	336
611-02.11	JUNCTION BOX, TYPE 2	EACH	2
611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	5
611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB	480
611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	6
611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	6
611-42.01	CATCH BASINS, TYPE 42, 0' - 4' DEPTH	EACH	1
611-43.02	CATCH BASINS, TYPE 43, > 4' - 8' DEPTH	EACH	2
709-05.06	MACHINE RIP-RAP (CLASS A-1)	TON	10

The 'Select Sort Area' dialog box is open, showing the selection range '\$B\$6:\$B\$47'.

On the right side of the spreadsheet, there are several macro buttons and a notes area:

- Download Items.dat from Web Page
- Import CSV File for Items
- Sort Item Numbers
- Select Sort Area (active)
- 3 Column Format
- Import CSV

The notes area contains the following text:

- The item numbers list can be viewed online at web page <http://www...>
- This macro opens a ".csv" (comma separated values) file created by description and units are entered from **Items.dat** file. The csv file format is as follows:
- This macro prompts for the rowsto sort and then sorts the rows selected. (*SortItems*)
- This macro creates merged cells and estimates the correct row height. The row height may need to be adjusted manually. (*V3FormatNotes*)
- This macro will format items to row 66. Delete any unneeded rows. Notes will need to be reformatted after formatting item numbers. (*V3FormatNotes*)
- When there is more than one project number, the project numbers can be entered in the same order as the project numbers. The notes area will need to be reformatted after changing columns. (*V3FormatNotes*)
- Imports a csv (comma separated values) file without any formatting or modifications.

After sorting, the blank lines at the bottom can be deleted and blank lines between groups can be inserted as desired. Select the row by the row number, and right click for row **Delete** and **Insert** tools.

ESTIMATED ROADWAY QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
607-03.02	18" CONCRETE PIPE CULVERT (CLASS III)	L.F.	310
607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	170
607-07.02	36" CONCRETE PIPE CULVERT (CLASS III)	L.F.	336
611-02.11	JUNCTION BOX, TYPE 2	EACH	2
611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	5
611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	480
611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	6
611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	6
611-42.01	CATCH BASINS, TYPE 42, 0' - 4' DEPTH	EACH	1
611-43.02	CATCH BASINS, TYPE 43, > 4' - 8' DEPTH	EACH	2
701-02	CONCRETE DRIVEWAYS	S.Y.	67
702-03	CONCRETE COMBINED CURB AND GUTTER	C.Y.	71
705-01.01	GUARDRAIL AT BRIDGE ENDS	L.F.	108
705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	28
705-04.03	GUARDRAIL TERMINAL (TYPE 13)	EACH	1
705-04.04	GUARDRAIL TERMINAL (TYPE 21)	EACH	3
705-04.05	GUARDRAIL TERMINAL (TYPE-IN-LINE)	EACH	1
709-05.06	MACHINE RIP-RAP (CLASS A-1)	TON	10
712-01	TRAFFIC CONTROL	LS	1
712-05.01	WARNING LIGHTS (TYPE A)	EACH	14
712-06	SIGNS (CONSTRUCTION)	S.F.	195
712-07.03	TEMPORARY BARRICADES (TYPE III)	L.F.	195
716-02.04	PLASTIC PAVEMENT MARKING(CHANNELIZATION STRIPING)	S.Y.	33
716-05.01	PAINTED PAVEMENT MARKING (4" LINE)	L.M.	1.2
716-05.05	PAINTED PAVEMENT MARKING (STOP LINE)	L.F.	67
717-01	MOBILIZATION	LS	1
740-10.03	GEOTEXTILE (TYPE III)(EROSION CONTROL)	S.Y.	64
801-01	SEEDING (WITH MULCH)	UNIT	9
801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	53
801-03	WATER (SEEDING & SODDING)	M.G.	59
803-01	SODDING (NEW SOD)	S.Y.	5905

Format Notes Area

Notes can be added after the item numbers but the notes area needs to be formatted differently from the item numbers. All of the text for each note should be placed into one cell. The macro prompts the user to select the last line of the item numbers area. The borders are removed from the notes area, the notes cells are merged and the row height is adjusted for multiline notes.

The screenshot shows the Microsoft Excel interface with the following elements:

- Spreadsheet Data:**

Row	Item Number	Description	Unit	Quantity
23	(2) 209-08.02	TEMPORARY SILT FENCE (WITH BACKING)	LF.	389
24	(2)(3) 209-08.04	TEMPORARY ENHANCED SILT FENCE	LF.	126
25	(2)(3) 209-09.01	SANDBAGS	BAG	1000
26	(2) 209-09.04	SEDIMENT FILTER BAG (15' X 10')	EACH	2
27	(2)(3) 209-10.01	TEMPORARY DEWATERING STRUCTURE	C.Y.	72
28	(2) 209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM)	S.Y.	67
29	(2)(3) 303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	4025
30	(4) 303-01.01	GRANULAR BACKFILL (ROADWAY)	TON	1349
31	303-10.01	MINERAL AGGREGATE (SIZE 57)	TON	16
32	(3) 307-01.01	ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING A	TON	1070
33	307-01.08	M2	TON	775
34	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	12
35	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	48
36	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	1
37	(5) 411-01.01	ASPHALT CEMENT (PG64-22) (ACS) GRADING D	TON	35
38	(6) 411-01.02	AGGREGATE (ACS) GRADING D	TON	546
39				
40				
41				
42		FOOTNOTES:		
43	(1)	TABULATED QUANTITIES SHEET NO. 2XX FOR REMOVAL OF		
44	(2)	SPECIFICATIONS FOR MAINTENANCE REPLACEMENT"		
45	(3)	STD. DWG. EC-STR-2.		
46	(4)	TOTAL INCLUDES 194 TONS FOR DRIVEWAYS.		
47	(5)	TOTAL INCLUDES 4 TONS FOR DRIVEWAYS.		
48	(6)	TOTAL INCLUDES 58 TONS FOR DRIVEWAYS.		
49	(7)	BE OBLITERATED OR SCARIFIED.		
50				
51				
52				
53				
54				
55				
56				
- Macro Interface:**
 - Buttons: Format Notes Area, Format Item Numbers, 1 Column Format, 2 Column Format, 3 Column Format, Import CSV.
 - Help text boxes:
 - "This macro creates merged cells and estimates the correct row height. The row height may need to be adjusted manually. (<V8FormatNotes)"
 - "This macro will format items to row 66. Delete any unneeded row notes will need to be reformatted after formatting item numbers."
 - "When there is more than one project number, the project number E5, F5 and G5. The project numbers must be in the same order. The notes area will need to be reformatted after changing column"
 - "Imports a csv (comma separated values) file without any formatting modifications. Can be used to build tabulated quantities block on other worksheets"
- Last Item Row Dialog:**

Select The Last Row of the Item Numbers

The rows following the item numbers will be formatted for notes.

Input: \$B\$44

Buttons: OK, Cancel

After re-formatting ...

(5)	411-01.01	ASPHALT CEMENT (PG64-22) (ACS) GRADING D	TON	35
(6)	411-01.02	AGGREGATE (ACS) GRADING D	TON	546

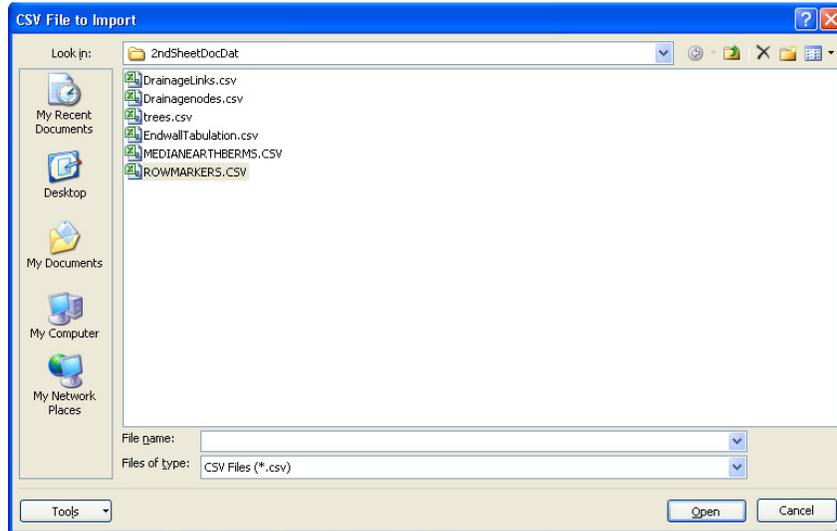
FOOTNOTES:

- (1) BID PRICE INCLUDES ALL SALVAGE VALUE OF MATERIAL. SEE TABULATED QUANTITIES SHEET NO. 2XX FOR REMOVAL OF BUILDINGS AND OBSTRUCTIONS DESCRIPTION BLOCK.
- (2) "SEE SUBSECTION 209.07 OF THE STANDARD SPECIFICATIONS FOR MAINTENANCE REPLACEMENT"
- (3) FOR USE WITH TEMPORARY SEDIMENT FILTER BAGS. SEE STD. DWG. EC-STR-2.
- (4) TOTAL INCLUDES 194 TONS FOR DRIVEWAYS.
- (5) TOTAL INCLUDES 4 TONS FOR DRIVEWAYS.
- (6) TOTAL INCLUDES 58 TONS FOR DRIVEWAYS.
- (7) INCLUDES BUT NOT LIMITED TO AREAS OF EXISTING ROAD TO BE OBLITERATED OR SCARIFIED.

Import CSV

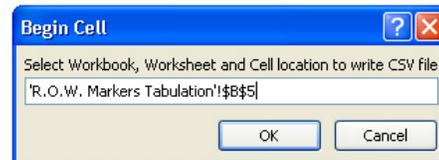
This macro brings in a CSV (comma separated values) file to the worksheet selected, starting at the cell selected. This is intended as a way to build tabulation blocks on other worksheets, but can be used to bring the CSV file in without having any processing done on the information to the estimated roadway quantities block.

You are first prompted for the CSV file to import ...



Then for the worksheet & cell location ...

R.O.W. MARKERS				
SHEET NO.	QUANTITIES			
	"A"	"B"	"C"	TOTALS
				0
				0
				0
				0
				0
TOTALS	0	0	0	0



After import ...

R.O.W. MARKERS				
SHEET NO.	QUANTITIES			
	"A"	"B"	"C"	TOTALS
4	8	0	0	8
5	12	2	2	16
6	10	0	1	11
7	12	1	2	15
8	18	2	0	20
9	8	0	2	10
TOTALS	68	5	7	80

Auto-Build Tabulated Quantity Block Macro Access

These macros are provided as a way to access the macros in the Excel auto-build tabulated quantity block templates. When those templates are inserted as worksheet templates, their macros are not brought in. The macro buttons can be re-assigned to these macros to access the programs from the original template files.

BuildCatchBasinsBlock

runcheckitemsCB

BuildGRBlock

runcheckitemsGR

BuildStormDrainagePipes

runcheckitemsSS

See the section **Auto-Build Tabulated Quantity Blocks** for full descriptions of these macros.

Alternate Pay Items

All alternate items **must** be placed after all of the other roadway items.

In column C (the description column) on the line preceding the alternate items, enter the designation for the alternate as **ALTERNATE AA1, ALTERNATE AA2, ALTERNATE AA3**, etc. AA1 will alternate with AA2 and AA3.

If there were another set of items to be alternated, they would be labeled **ALTERNATE AB1, ALTERNATE AB2, ALTERNATE AB3**, etc. AB1 will alternate with AB2 and AB3. A third set of alternates would be **AC1, AC2, AC3**, etc.

The screenshot shows a Microsoft Excel spreadsheet with the following data table:

ESTIMATED ROADWAY QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
713-15	REMOVAL OF SIGNS, POSTS AND FOOTINGS	LS	1
713-16.03	CHANGEABLE MESSAGE SIGN	EACH	1
713-17.02	INSTALL AUXILIARY SUPPORT FOR EXIT NUMBER PANEL	EACH	5
716-01.10	SNOWPLOWABLE REFLECTIVE MARKER	EACH	266
716-01.30	REMOVAL OF SNOWPLOWABLE REFLECTIVE MARKER	EACH	30
716-02.04	PLASTIC PAVEMENT MARKING(CHANNELIZATION STRIPING)	S.Y.	151
716-02.05	PLASTIC PAVEMENT MARKING (STOP LINE)	L.F.	10
716-02.06	PLASTIC PAVEMENT MARKING (TURN LANE ARROW)	EACH	2
716-02.10	PLASTIC PAVEMENT MARKING (6" LINE)	L.M.	12
716-02.11	PLASTIC PAVEMENT MARKING (6" DOTTED LINE)	L.F.	147
716-04.07	PLASTIC PAVEMENT MARKING (EXIT ONLY ARROW)	EACH	2
716-05.20	PAINTED PAVEMENT MARKING (6" LINE)	L.M.	0.56
716-10.15	PREFORMED PLASTIC PAVEMENT MARKING (6" LINE)	L.M.	3
716-08.01	REMOVAL OF PAVEMENT MARKING (LINE)	L.F.	30
716-08.06	REMOVAL OF PAVEMENT MARKING (TURN LANE ARROW)	EACH	2
717-01	MOBILIZATION	LS	1
ALTERNATE AA1			
203-06	WATER	M.G.	1953
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	62742
307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	9083
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	116
402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	461
ALTERNATE AA2			
203-06	WATER	M.G.	1589
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	43906

Macro buttons and their descriptions:

- Select Items Numbers From List**: For this program to run, the file "Items.dat" must be present in the same folder as the Project Data worksheet.
- Fill In Description and Unit**: This program will fill in the description and unit for the selected items.
- Download Items.dat from Web Page**: The item numbers list can be downloaded from the web page.
- Import CSV File for Items**: This macro opens a "Items.csv" file and imports the description and units are.
- Sort Item Numbers**: This macro prompts for a sort order (SortItems).
- Format Notes Area**: This macro creates a new notes area. The row height may need to be adjusted.
- Format Item Numbers**: This macro will format the item numbers. The notes area will need to be formatted.
- 1 Column Format**: When there is more than one column, the program will format the notes area. The program will format the notes area. The program will format the notes area.
- 2 Column Format**: When there is more than one column, the program will format the notes area. The program will format the notes area. The program will format the notes area.
- 3 Column Format**: When there is more than one column, the program will format the notes area. The program will format the notes area. The program will format the notes area.
- Import CSV**: Imports a csv (comma separated) file and makes modifications.

Additional Estimated Roadway Quantities Worksheets Needed

To add an additional Col #-Est. Rdwy. Quantities worksheet

1. Select the worksheet tab, right click and select **Move or Copy...**

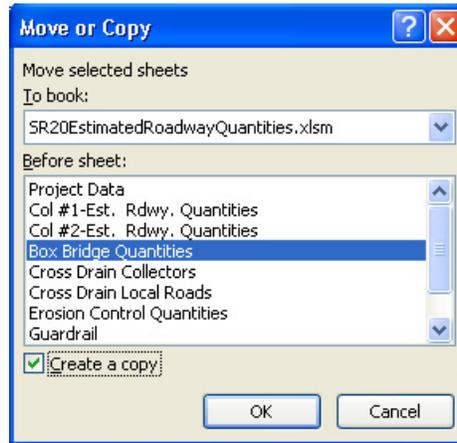
The screenshot shows the Microsoft Excel interface with the following data in the 'ESTIMATED ROADWAY QUANTITIES' worksheet:

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
607-03.02	18" CONCRETE PIPE CULVERT (CLASS III)	L.F.	310
607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	170
607-07.02	36" CONCRETE PIPE CULVERT (CLASS III)	L.F.	336
611-02.11	JUNCTION BOX, TYPE 2	EACH	2
611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	5
611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	480
611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	6
611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	6
611-42.01	CATCH BASINS, TYPE 42, 0' - 4' DEPTH	EACH	1
611-43.02	CATCH BASINS, TYPE 43, > 4' - 8' DEPTH	EACH	2
701-02	CONCRETE DRIVEWAYS		
702-03	CONCRETE COMBINED CURB AND GUTTER		
705-01.01	GUARDRAIL AT BRIDGE ENDS		
705-02.02	SINGLE GUARDRAIL (TYPE 2)		
705-04.03	GUARDRAIL TERMINAL (TYPE 13)		
705-04.04	GUARDRAIL TERMINAL (TYPE 21)		
705-04.05	GUARDRAIL TERMINAL (TYPE-IN-LINE)		
709-05.06	MACHINE RIP-RAP (CLASS A-1)		
712-01	TRAFFIC CONTROL		
712-05.01	WARNING LIGHTS (TYPE A)		
712-06	SIGNS (CONSTRUCTION)		

The context menu is open over the table, with 'Move or Copy...' selected. To the right, there are several macro buttons and their descriptions:

- Select Items Numbers From List**: For this program to run, 1 A word (no asterisks) ca
- Fill In Description and Unit**: This program will fill in or
- Download Items.dat from Web Page**: The item numbers list ca
- Import CSV File for Items**: This macro opens a ".c description and units are
- Sort Item Numbers**: This macro prompts for t (*SortItems*)
- Format Notes Area**: This macro creates merc The row height may nee
- Format Item Numbers**: This macro will format ite Notes will need to be ref
- 1 Column Format**: When there is more than E5, F5 and G5. The pr
- 2 Column Format**: The notes area will need

- Identify the workbook and worksheet that should come after the new worksheet. Select the **Create a copy** option and click **OK**.



31				
32	712-01	TRAFFIC CONTROL	LS	1
33	712-05.01	WARNING LIGHTS (TYPE A)	EACH	14
34	712-06	SIGNS (CONSTRUCTION)	S.F.	195
35	712-07.03	TEMPORARY BARRICADES (TYPE III)	L.F.	195
36	716-02.04	PLASTIC PAVEMENT MARKING(CHANNELIZATION STRIPING)	S.Y.	33
37	716-05.01	PAINTED PAVEMENT MARKING (4" LINE)	L.M.	1.2
38	716-05.05	PAINTED PAVEMENT MARKING (STOP LINE)	L.F.	67
39				
40	717-01	MOBILIZATION	LS	1
41				
42	740-10.03	GEOTEXTILE (TYPE III)(EROSION CONTROL)	S.Y.	64
43				
44	801-01	SEEDING (WITH MULCH)	UNIT	9
45	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	9

2 Column Format

3 Column Format

Import CSV

Imports a csv (comma separated values) file with modifications.

- Select the new worksheet's tab, right click and select **Rename**. You **must** keep the first three letters as **Col** so the database program will read the worksheet as estimated items. Change the column number and the remaining portion of the name as desired.

31				
32	712-01	TRAFFIC CONTROL	LS	1
33	712-05.01	WARNING LIGHTS (TYPE A)	EACH	14
34	712-06	SIGNS (CONSTRUCTION)	S.F.	195
35	712-07.03	TEMPORARY BARRICADES (TYPE III)	L.F.	195
36	716-02.04	PLASTIC PAVEMENT MARKING(CHANNELIZATION STRIPING)	S.Y.	33
37	716-05.01	PAINTED PAVEMENT MARKING (4" LINE)	L.M.	1.2
38	716-05.05	PAINTED PAVEMENT MARKING (STOP LINE)	L.F.	67
39				
40	717-01	MOBILIZATION	LS	1
41				
42	740-10.03	GEOTEXTILE (TYPE III)(EROSION CONTROL)	S.Y.	64
43				
44	801-01	SEEDING (WITH MULCH)	UNIT	9
45	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	9

2 Column Format

3 Column Format

Import CSV

Imports a csv (comma separated values) file with modifications.

Note:

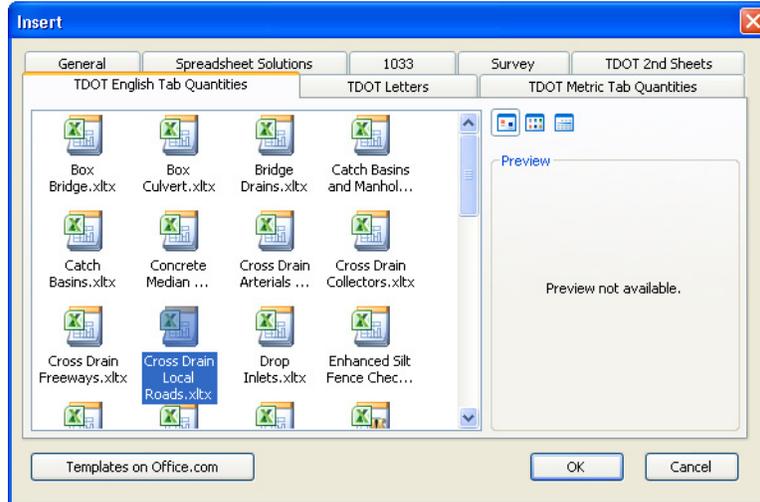
The **Project Data** worksheet **must** be the first worksheet in the file, the estimated roadway quantities worksheets (the worksheet names that start with **Col**) need to be next and then the **Box Bridge Quantities** worksheet (if there is a box culvert or bridge on the project). Any unused worksheets can be deleted.

Add other Tabulated Quantities Blocks

Note: Cells with a red border on tabulated quantity sheets indicate that the cell contains a formula to sum the contents of the column or row.

To add other tabulated quantities blocks:

1. Highlight a worksheet tab, right click the mouse and select **Insert**.
2. Select the template group wanted, for example **TDOT English Tab Quantities**.



3. Select the template wanted and click **OK**. The template is used to create the new worksheet.

SR20EstimatedRoadwayQuantities.xlsm - Microsoft Excel

CROSS DRAIN TABULATION																	
STATION	RCP CLASS III OR CMP 12 GA. OR HDPE (L.F.) FILL HEIGHT < OR = 18 FT.										SKEW	RIP-RAP 709-05.06 (TON)	END TREATMENT				CLASS A CONC 611.07 (C.Y.)
	18"					24"							INLET		OUTLET		
	18"	24"	30"	36"	48"	18"	24"	30"	36"	48"			TYPE	DRAWING NO.	TYPE	DRAWING NO.	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	
21																	
22																	

The template will come in ahead of the worksheet selected. To change the order of the worksheets, select the worksheet tab, hold the left mouse button down and then drag and drop to the location wanted; or select the worksheet tab of the worksheet to be moved, right click and go to **Move or Copy...**

The **Project Data** worksheet **must** be the first worksheet in the file, the estimated roadway quantities worksheets (the worksheet names that start with **Col**) need to be next and then the **Box Bridge Quantities** worksheet (if there is a box culvert or bridge on the project) before the tabulated quantities worksheets.

Standard Tabulated Quantity Template Formatting

1. All fonts are **Arial**.
2. Body text is size **10**, not bold.
3. The main heading text is size **15, bold**.
4. The sub heading text is size **10, bold**.
5. The body horizontal lines are light weight.
6. The heading borders and vertical lines are medium weight.
7. Select body cells and set justification as wanted.
8. Use **Center Across Selection** under Format Cells > Alignment > Horizontal to center heading text across multiple columns.
9. Cells for non-quantity data, footnote numbers or footnotes should be formatted as **Text** under Format Cells > Number.
10. Cells for quantity data should be formatted as either **General** if no control of decimals is needed or as **Number** to control the number of decimal places under Format Cells > Number.
11. Multi-line footnote formatting:
 - Entire note should go in column C cell
 - Select all cells from column C to end of tabulation block
 - Under Format Cells > Alignment
 - Set justification to Horizontal: **Left** & Vertical: **Top**
 - Turn on **Wrap Text & Merge Cells**
 - Adjust row height so that all lines of footnote are visible
 - Set Vertical justification to **Top** for footnote number cell in column B

Auto-Build Tabulated Quantity Blocks

The following Excel templates include macros that automatically build the tabulation blocks using data files generated by Geopak.

Guardrail Tab Builder.xltn

Storm Drainage Pipe Tab Builder.xltn

Storm Drainage Structure Tab Builder.xltn

Guardrail Tab Builder

The macro in template **Guardrail Tab Builder.xltn** builds the guardrail block from a guardrail output file created with Geopak's Design & Computation Manager Pay Items. The macro also runs the **Check Items Numbers** program to verify all item numbers which are used.

See the **GEOPAK Road Course Guide, D&C Manager – Additional Functions, Section 20c. Quantities** for directions to create the guardrail output file using the **Comp Book** format. An example is shown below.

The screenshot shows a Notepad window titled 'GR.txt - Notepad' with three pages of data. Each page contains a 'LINEAR MEASUREMENT COMPUTATION' table. The first page (Page No. 1) is for 'Proposed single guardrail line type 2' with pay item SR95. The second page (Page No. 2) is for 'Proposed Type 13 terminal' with pay item SR95. The third page (Page No. 3) shows 'Page Totals' and 'Totals' for the second page's data.

Baseline	[B E G I N]		[E N D]		[O R I G I N A L]			[F I N A L]			over/ Under Run	Remarks	
	Station	offset	Station	offset	Gross Length	Deduct	Net Length	Gross Length	Deduct	Net Length			
SR95	289+00.57	-53.73	292+13.07	-53.73	312.50	0.00	312.50						
SR95	329+89.70	91.59	340+04.41	92.93	973.10	0.00	973.10						
SR95	299+85.43	42.97	321+05.25	38.02	2140.20	0.00	2140.20						
Totals Unit:LF							3425.80	0.00	3425.80				

Baseline	[B E G I N]		[E N D]		[O R I G I N A L]			[F I N A L]			over/ Under Run	Remarks	
	Station	offset	Station	offset	Gross Length	Deduct	Net Length	Gross Length	Deduct	Net Length			
SR95	289+00.57	-53.73	289+00.57	-53.73	1.00	0.00	1.00						
SR95	299+85.43	42.97	299+85.43	42.97	1.00	0.00	1.00						
Page Totals Unit:EA							2.00	0.00	2.00				
Totals Unit:EA							2.00	0.00	2.00				

Do not use the Append function in Geopak to add guardrail quantities from multiple roadways together in the same file. Instead, generate each roadway guardrail tabulation in separate files and then combine using any text editor. **The Append function uses line feeds that are not recognized by Excel and will cause this program to fail.**

In Excel, click the **Build Guardrail Block** button and the user is given a file open dialog to **Select Geopak Guardrail Pay Items Output File**. Once the file is identified, the macro reads the data and builds the block.

Build Guardrail Block	This program builds the guardrail block from a guardrail output file created with Geopak D&C Manager Pay Items. See Geopak the GEOPAK Road Course Guide, D&C Manager – Additional Functions - Section 20c. Quantities for directions to create the guardrail output file. This program also runs the Check Items Numbers program to verify all item numbers which are used.	Check Item Numbers	Use this program only if a new Items.dat file was downloaded after running the 'Build Guardrail Block' program. This program checks to see if the guardrail pay items listed in the guardrail block are in the current item numbers file, items.dat. This items.dat file is downloaded from the internet to C:\Program Files\Microsoft Office\Templates\dot 2nd Sheets for use in	If Insert is used to add this file as a worksheet in the Estimated Roadway Quantities file then it will be necessary to re-assign the macros for the buttons. Select a location away from the button, right click over the button and choose the Assign Macro option. From the macro list, pick BuildGRBlock for the top button & click OK to finish. Assign runcheckitemsGR to the bottom button.
	WARNING: Do not use the Append function in Geopak to add guardrail quantities from multiple roadways together in the same file. Instead, generate each roadway guardrail tabulation in separate files and then combine using any text editor. The Append function uses line feeds that are not			

PROPOSED GUARDRAIL										
SHEET NO.	LOCATION	SIDE		STATION		BRIDGE END GUARDRAIL	SINGLE TYPE 2 GUARDRAIL	TYPE 13 TERMINAL	TYPE 38 TERMINAL	REMARKS
		LT	RT	FROM	TO	705-01.01 (L.F.)	705-02.02 (L.F.)	705-04.03 (EACH)	705-04.07 (EACH)	
	SR95	53.73		289+00.57	292+13.07		312.50			
	SR95	53.73		289+00.57	289+00.57			1		
	SR95	53.73		292+13.07	292+63.07				1	
	SR95		42.97	299+85.43	321+05.25		2140.20			
	SR95		42.97	299+85.43	299+85.43			1		
	SR95		92.53	329+39.70	329+89.70				1	
	SR95	94.29		329+58.90	330+08.90				1	
	SR95		91.53	329+89.70	340+04.41		973.10			
	WESTOVER		20.00	25+86.99	28+75.34		288.35			
	WESTOVER	20.00		28+73.35	29+00.24	26.90				
	WESTOVER		20.00	28+75.34	29+25.34				1	
	WESTOVER	20.00		29+00.24	29+50.24				1	
TOTALS						26.90	3714.15	2	5	

Different roadways are sorted alphabetically based on the roadway chain name from the output file.

If **Insert** is used to add this file as a worksheet in the Estimated Roadway Quantities file then it will be necessary to re-assign the macros for the buttons. Select a location away from the macro button, right click over the button and choose the **Assign Macro** option. From the macro list, pick **BuildGRBlock** for the top button & click **OK** to finish. Assign **runcheckitemsGR** to the bottom button. If you do not see these macros listed in your estimated roadway quantities file, then you will have to either set it up in a file by itself or update your estimated roadway quantities Excel file to the latest version of that file which includes these macros.

Storm Drainage Pipe Tab Builder

The macro in template **Storm Drainage Pipe Tab Builder.xltm** builds the storm drainage pipe tabulation block from the drainage report file created with **Geopak Drainage** using the drainage report format file **TDOTlinksFULL.drf**. The macro also runs the **Check Items Numbers** program to verify all item numbers which are used.

In Excel, click the **Build Storm Drainage Pipe Block** button and the user is given a file open dialog to **Select Storm Drainage Link Report File**. Once the file is identified, the macro reads the data and builds the block.

STORM DRAINAGE PIPES										
SHEET NO.	FROM		TO		%	RCP CLASS III				
	CODE	OUTLET ELEV.	CODE	INLET ELEV.		607-03.02	607-05.02	607-07.02	607-08.02	
						18" (L.F.)	24" (L.F.)	36" (L.F.)	42" (L.F.)	
	CB-1	442.23	CB-2	441.54	0.50			139		
	CB-3	442.89	CB-2	442.71	0.50	37				
	CB-16	444.88	CB-15	444.59	0.50	58				
	CB-15	444.42	MH-1	444.03	0.50	79				
	CB-17	440.98	MH-1	438.51	4.00	62				
	MH-1	438.30	CB-2	434.99	5.00	66				
	CB-2	433.20	CB-4	432.56	0.50			128		
	CB-5	445.82	CB-4	445.23	2.37	25				
	CB-4	432.27	CB-6	431.12	0.50			230		
	CB-6	426.31	CB-7	424.04	1.00			228		
	CB-7	421.54	CB-8	420.21	1.00			133		
	CB-9	424.63	CB-8	421.71	6.00	49				
	CB-8	419.60	CB-11	418.09	1.00			152		
	CB-11	417.31	CB-10	416.83	2.00			24		
	CB-10	416.33	CB-13	416.21	0.50				24	
	CB-12	421.60	CB-13	419.00	11.00	24				
	CB-13	416.00	MH-3	415.48	0.50				103	
	CB-14	418.46	MH-3	418.18	0.50	56				
	MH-3	415.27	EW-1	413.96	0.50				264	
	CB-18	439.08	MH-2	438.06	5.05	20				
	MH-2	437.94	CB-19	427.91	7.62	132				
	CB-20	429.65	CB-19	427.91	5.00	35				
	CB-19	427.74	CB-21	424.03	1.76	211				
	CB-21	423.86	CB-22	420.67	6.06	53				
	CB-24	421.71	CB-23	421.38	2.00	17				
	CB-23	421.05	CB-22	420.67	2.42	16				
	CB-22	420.34	CB-25	419.99	0.77	45				
	CB-25	419.49	CB-26	419.29	0.50			39		
	CB-26	418.96	MH-4	417.97	0.50			198		
	MH-4	417.76	EW-2	416.82	0.50			188		
TOTALS						982	425	1033	390	

If **Insert** is used to add this file as a worksheet in the Estimated Roadway Quantities file then it will be necessary to re-assign the macros for the buttons. Select a location away from the macro button, right click over the button and choose the **Assign Macro** option. From the macro list, pick **BuildStormDrainagePipes** for the top button & click **OK** to finish. Assign **runcheckitemsSS** to the bottom button. If you do not see these macros listed in your estimated roadway quantities file, then you will have to either set it up in a file by itself or update your estimated roadway quantities Excel file to the latest version of that file which includes these macros.

Storm Drainage Structures Tab Builder

The macro in template **Storm Drainage Structure Tab Builder.xltm** builds the storm drainage catch basins, junction boxes and manholes tabulation block from the drainage report file created with **Geopak Drainage** using the drainage report format file **TDOTnodesFULL.drf**. The macro also runs the **Check Items Numbers** program to verify all item numbers which are used.

In Excel, click the **Build Catch Basins and Manholes Block** button and the user is given a file open dialog to **Select Storm Drainage Node Report File**. Once the file is identified, the macro reads the data and builds the block.

Build Catch Basins and	This program builds the catch basins, junctions boxes and manholes block from the drainage node report file created with Geopak Drainage using the drainage report format file TDOTnodesFULL.drf. This program also runs the Check Item Numbers program to verify all item numbers which are used.	If Insert is used to add this file as a worksheet in the Estimated Roadway Quantities file then it will be necessary to re-assign the macros for the buttons. Select a location away from the button, right click over the button and choose the Assign Macro option. From the macro list, pick BuildCatchBasinsBlock for the top button & click OK to finish. Assign runcheckitemsCB to the bottom button.
Check Item Numbers	Use this program only if a new 'Items.drf' file was downloaded after running the 'Build Catch Basins and Manholes Block' program. This program checks to see if the storm drainage structure pay items listed are in the current item numbers file. The 'Items.drf' file is downloaded from the internet to 'C:\Program Files\Microsoft Office\Templates\TDOT 2nd Sheets' for use in estimated quantities tabulation.	

CATCH BASINS AND MANHOLES																		
SHEET NO.	LOCATION	STATION	OFFSET (FT.)	DRAINAGE CODE	GRATE/ELEV.	STRUCTURE TYPE	INSIDE DIMENSIO	DEPTH (FT.)	TANDARD DRAWING	TYPE 3	TYPE 3	TYPE 12	TYPE 12	TYPE 12	TYPE 14	TYPE 42	TYPE 42	REMARKS
										M.H.	M.H.	C.B.	C.B.	C.B.	C.B.	C.B.	C.B.	
	CPDRW9	0+56.13	-11.5	CB-24	428.13	#14	8X8	6.42		611-01.04	611-01.05	611-12.01	611-12.02	611-12.03	611-14.04	611-42.01	611-42.02	
	CPDRW9	0+60.37	11.5	CB-23	428.24	#14	8X8	7.19										
	MAINLINE	15+05.10	-81.1	CB-1	457.55	#14	8X8	15.32							1			
	MAINLINE	15+68.96	34	CB-15	456.17	#12	4X3	11.75						1				
	MAINLINE	15+68.96	96.74	CB-16	448.55	#42	4X4	3.67									1	
	MAINLINE	16+45.00	-34	CB-2	454.85	#12	7X7	21.65										
	MAINLINE	16+45.00	-76.75	CB-3	446.56	#42	4X4	3.67										1
	MAINLINE	16+50.00	37.5	MH-1	456.86	MH	5X5	18.55		1								
	MAINLINE	16+90.00	87.02	CB-17	444.65	#42	4X4	3.67										1
	MAINLINE	17+86.12	-34	CB-4	452.98	#12	7X7	20.71										
	MAINLINE	17+86.12	-64.94	CB-5	449.49	#42	4X4	3.67										1
	MAINLINE	20+34.72	-34	CB-6	445.5	#12	7X7	19.19										
	MAINLINE	24+09.03	-34	CB-6	429.09	#12	4X4	3.48						1				
	MAINLINE	24+09.03	-87.36	CB-9	438.52	#42	4X4	13.88										
	MAINLINE	24+82.58	34	CB-21	427.7	#12	4X3	3.84			1							
	MAINLINE	25+41.30	34	CB-22	427.09	#14	8X8	6.75										
	MAINLINE	25+64.65	-34	CB-11	426.37	#12	4X4	3.66					1					
	MAINLINE	25+94.65	-34	CB-10	426.31	#14	8X8	10.58										
	MAINLINE	25+94.65	34	CB-25	426.31	#14	8X8	7.42										
	MAINLINE	26+09.75	-58.08	CB-12	427.84	#42	4X4	6.24										1
	MAINLINE	26+24.65	-34	CB-13	426.96	#12	5X5	10.96						1				
	MAINLINE	26+41.65	34	CB-26	427.05	#14	8X8	8.09										
	MAINLINE	27+32.81	-34	MH-3	428.78	MH	5X5	13.5		1								
	MAINLINE	28+46.23	34	MH-4	429.43	MH	5X5	11.67										1
	STOBEND	10+34.96	28.47	CB-14	425.84	#42	4X4	7.38										
TOTALS										1	1	1	0	4	1	4	2	

If **Insert** is used to add this file as a worksheet in the Estimated Roadway Quantities file then it will be necessary to re-assign the macros for the buttons. Select a location away from the macro button, right click over the button and choose the **Assign Macro** option. From the macro list, pick **BuildCatchBasinsBlock** for the top button & click **OK** to finish. Assign **runcheckitemsCB** to the bottom button. If you do not see these macros listed in your estimated roadway quantities file, then you will have to either set it up in a file by itself or update your estimated roadway quantities Excel file to the latest version of that file which includes these macros.

Link Tabulated Quantity Block to Estimated Roadway Quantities Worksheet

To link cells from tabulated quantity block worksheets to the estimated roadway quantities worksheet:

1. Select the cell where the linked value **will be displayed**. Enter the equal sign, =
2. Click to the worksheet and cell to be linked.
3. When the correct worksheet name and cell address are entered into the formula bar entry window, click on the check mark, ✓ on the formula bar.

Note: The cell must be formatted as “number” or “general” or the link will display as text.

Do not have quantities linked to values in separate workbooks. The Estimating and Bid Analysis Office will not accept files with links to separate Excel files. A **Copy and Paste Special> Values** to the same location will replace the link with the current value.

The screenshot shows an Excel spreadsheet with the following table data:

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
(4)	202-03.01	REMOVAL OF ASPHALT PAVEMENT	S. Y. 389
(2)	202-03.02	REMOVAL OF RIGID PAVEMENT	C. Y. 2193
(4)	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C. Y. 248
(3)	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C. Y. 500
(2)	203-07	FURNISHING & SPREADING TOPSOIL	C. Y. 1481
	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON 194
	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON 5762
	313-03	TREATED PERMEABLE BASE	S. Y. 10040
	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON 12
	411-01.07	ACS MIX (PG64-22) GRADING E SHOULDER	TON 2597
	501-01.02	PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 9"	S. Y. 9065
	502-08.10	SAWING & RESEALING JOINTS (SILICONE SEALANT)	L. F. 4339
	702-03	CONCRETE COMBINED CURB & GUTTER	C. Y. 7
	705-01.01	GUARDRAIL AT BRIDGE ENDS	L. F. 279
	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L. F. 3686
	705-04.03	GUARDRAIL TERMINAL (TYPE 13)	EACH

The sidebar on the right contains the following buttons and their descriptions:

- Select Items Numbers From List**: For this program to run, you must enter a word (no asterisks) in the "Item Numbers" field.
- Fill In Description and Unit**: The file "Items.dat" must be present in the same folder as the Project Data worksheet. This program will fill in the Description and Unit columns.
- Download Items.dat from Web Page**: The item numbers list must be entered in the "Item Numbers" field.
- Import CSV File for Items**: This macro opens a dialog box to select a CSV file to import item data.
- Sort Item Numbers**: This macro prompts you to enter a sort order (SortItems).
- Format Notes Area**: This macro creates a notes area for each row. The row height may need to be adjusted.
- Format Item Numbers**: This macro will format the item numbers in the "Item Numbers" column. Notes will need to be formatted.

Excel Linking to MicroStation

In Excel

1. Prepare the Excel file as needed. Save the Excel file to your project folder. The link will not be correct if the Excel file is not saved onto your computer or computer network before attaching to MicroStation V8.
2. Select the information in Excel wanted for linking to MicroStation. Select an extra row and column on each side of the block so that the width of the border lines on the edges of the tabulated block are not cut in half.
3. Go to the ribbon menu at **Home > Clipboard** and choose **Copy** or right click on your mouse and pick Copy from the choices given. This puts the selected information into the Windows Clipboard.

The screenshot displays the Microsoft Excel interface with the file 'SR20EstimatedRoadwayQuantities.xlsxm'. The main spreadsheet is titled 'ESTIMATED ROADWAY QUANTITIES' and contains the following data:

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1
201-01	CLEARING AND GRUBBING	LS	1
202-01	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1
(1) 202-06.04	REMOVAL OF BUILDINGS (TRACT NO.10)	LS	1
(1) 202-06.05	REMOVAL OF BUILDINGS (TRACT NO.11)	LS	1
203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	619
203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	4876
203-06	WATER	MG	52
(7) 203-07	FURNISHING & SPREADING TOP SOIL	C.Y.	984
(2) 209-08.02	ROCK CHECK DAM	EACH	24
(2) 209-08	SEDIMENT REMOVAL	C.Y.	195
(2) 209-08.02	TEMPORARY SILT FENCE (WITH BACKING)	L.F.	359
(2) 209-08.04	TEMPORARY FENCE (SILT FENCE)	L.F.	155
(2) 209-09.01	SANDBAGS	BAG	1990
(2) 209-09.04	SEDIMENT FILTER BAGS (5' X 10')	EACH	2
(2) 209-10.01	TEMPORARY DEWATERING STRUCTURE	C.Y.	72
(2) 209-20.01	POLYETHYLENE SHEETING (6 MIL. MINIMUM)	S.Y.	67
(2) 303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	4025
(4) 303-01.01	GRANULAR BACKFILL (ROADWAY)	TON	1349
(4) 303-01.01	MINERAL AGGREGATE (SS&S)	TON	36
(3) 307-01.01	ASPHALT CONCRETE (HPG4-23) (SPMB-HH)	TON	1970
(3) 307-01.03	ASPHALT CONCRETE (HPG4-23) (SPMB-HH)	TON	775
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (P)	TON	52
402-02	AGGREGATE FOR COVER MATERIAL (F)	TON	49
403-01	BITUMINOUS MATERIAL FOR TACK COAT (T)	TON	1
(4) 411-01.01	ASPHALT CEMENT (PG4-22) (AC3) GRADING D	TON	39
(4) 411-01.02	AGGREGATE (AC3) GRADING D	TON	546

Below the table are footnotes:

FOOTNOTES:
 (1) BID PRICE INCLUDES ALL SALVAGE VALUE OF MATERIAL. SEE TABULATED QUANTITIES SHEET NO. 203 FOR REMOVAL OF BUILDINGS AND OBSTRUCTIONS DESCRIPTION BLOCK.
 (2) SEE SUBSECTION 209.07 OF THE STANDARD SPECIFICATIONS FOR MAINTENANCE REPLACEMENT.
 (3) FOR USE WITH TEMPORARY SEDIMENT FILTER BAGS. SEE STD. DWG. EO-STR-2.
 (4) TOTAL INCLUDES 144 TONS FOR DRIVEWAYS.
 (5) TOTAL INCLUDES 4 TONS FOR DRIVEWAYS.
 (6) TOTAL INCLUDES 58 TONS FOR DRIVEWAYS.
 (7) INCLUDES BUT NOT LIMITED TO AREAS OF EXISTING ROAD TO BE OBLITERATED OR SQUARED.

The right sidebar contains instructions for linking to MicroStation:

- Select Item Numbers from List:** For this program to run, the item code must be in the table CSProgram ItemNumbersOffOfficeTemplate of D01 and sheets. A word processor entry can be entered in the search, example: guard or pipe. Click on OK or IP to begin listing items selected. (ContactForConstruction)
- Fill in Description and Unit:** The item code must be in the table CSProgram ItemNumbersOffOfficeTemplate of D01 and sheets for this program to work. This program will fill in or update the description and unit for item numbers previously entered in column B. (ContactForConstruction)
- Download Item code from Web Page:** The item numbers list can be viewed online at web page: http://www.fhwa.dot.gov/roaditemlist/download_item_codes.htm (InternetConnection)
- Import CSV File for Items:** This macro opens an "as is" (comma separated values) file created by Geopak and enters the item number and quantity into the quantities tabulation block. The item numbers and quantities are entered from item code file. The file is small from Geopak (1 item number, Geopak description, unit and quantity). (OpenCSV)
- Sort Item Numbers:** This macro prompts for the rows to sort and then sorts the rows selected by item number. (SortItems)
- Format Make Area:** This macro enables merged cells and estimates the correct row height for each row. The row height may need to be adjusted manually. (FormatNotes)
- Format Item Numbers:** This macro will format items to row(s). Delete any unneeded rows. Notes will need to be reformatting after removing item numbers. (FormatItemNumbers)
- 1 Column Format:** When there is more than one coded number, the coded numbers can be entered into the column headers in table ES, FS and OS. The coded numbers must be in the same order as entered on the Project Database sheet. The notes area will need to be reformatting after changing columns. (TabularView), (TabularView), (TabularView)
- 2 Column Format:**
- 3 Column Format:**
- Import CSV:** Import CSV (comma separated values) file for any remaining or can be used to build tabulated quantities block on the worksheet. (ImportCSV)

The status bar at the bottom shows: Average: 817.4230769 Count: 152 Sum: 21253

In MicroStation V8

Have a 2d design file ready with a sheet border placed in it or open the plans sheet MicroStation DGN file. As with most design files for T.D.O.T. projects, the design file should be created from the T.D.O.T. Design Division **Seed2d.dgn** seed file, which is part of the T.D.O.T. Design Division standard CADD files downloads.

Name the MicroStation DGN sheet file according to [CADDV8.pdf](#), Section **Standard Filenames**, part **Standard Sheet File Types: (Use .SHT extension)**. For example, use the name **002A.sht** for the first **ESTIMATED ROADWAY QUANTITIES** MicroStation sheet file.

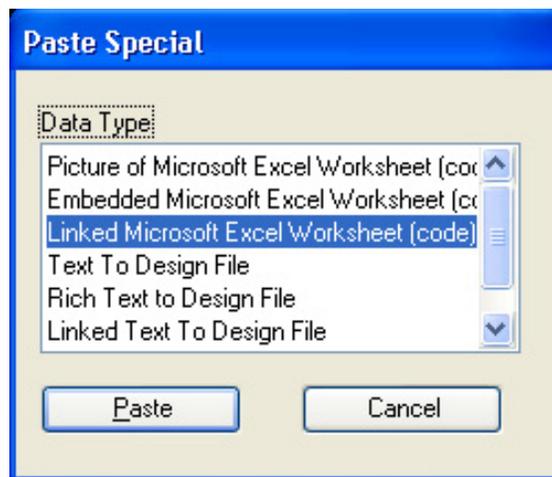
There are several reasons why the MicroStation DGN sheet files need to be named according to the **Standard Sheet File** naming recommendations. One, the project will be very easy to plot using InterPlot Organizer where the sheets will automatically be in order. Two, the names of the sheet files must be the same as the sheet number so that when the sheet is published on FileNet, other divisions, such as Right-of-Way and Construction, can easily find and use the files produced by the Design Division.

It works best to use a one-scale sheet border for the 2nd sheet files. Other links can be placed on a plans sheet at the scale of the sheet, such as an erosion control quantities block or a right-of-way acquisition table.

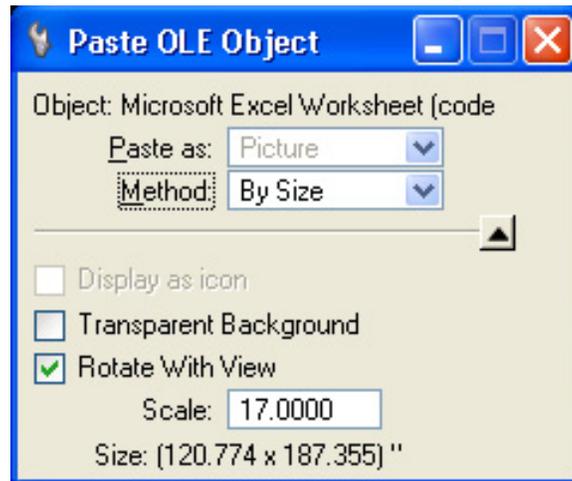
The Excel link will be placed on the active level in MicroStation V8.

1. On the MicroStation menu bar, go to **Edit > Paste Special...**

Select the **Linked Microsoft Excel Worksheet** option and click the **Paste** button,



- In the Tool Settings dialog, Set Paste as: **Link** and Method: **By Size**. Under the extra options, click on **Rotate With View** (MicroStation V8i).



- Set the **Scale** as needed from the table below. The scale values for .14 text size are recommended for the best legibility in the plans.

English:

For Arial font, text size 10 in Excel (font and size in TDOT templates):

1-scale size sheet, set the scale to:

17 for **.14** text size - this will measure **0.14 feet** in MicroStation and will measure **0.14 inch** on the printed sheet

15 for **.12** text size

13 for **.10** text size

50-scale size sheet, multiply the scale above by **50**:

850 for **.14** text size

750 for **.12** text size

650 for **.10** text size

For sheets at other scales, multiply the 1-scale above by the scale of the sheet:

17 x Scale for **.14** text size

15 x Scale for **.12** text size

13 x Scale for **.10** text size

Metric:

For Arial font, text size 10 in Excel (font and size in TDOT templates):

1-scale size sheet, set the scale to:

1.4 for **.14** text size - this will measure **0.0035 meters** in MicroStation and will measure **0.14 inch** on the printed sheet

1.2 for **.12** text size (**0.0030**)

1.0 for **.10** text size (**0.0025**)

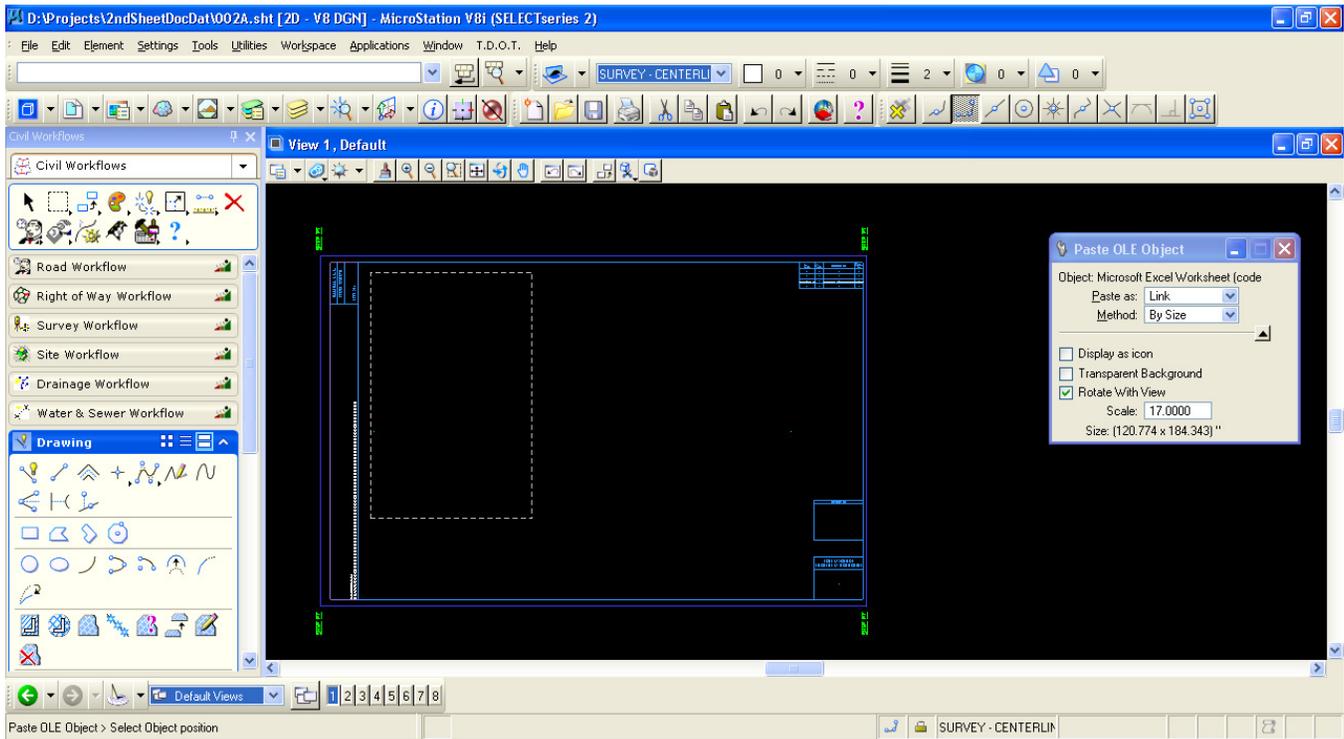
For sheets at other scales, multiply the 1-scale above by the scale of the sheet:

1.4 x Scale for **.14** text size

1.2 x Scale for **.12** text size

1.0 x Scale for **.10** text size

4. You are prompted to **Select Object Position**. Data point to place the link.



After placement, the OLE attachment can be manipulated as a graphic element. It can be moved, copied and scaled as needed.

If the Office document is open at the time you are looking at the link in MicroStation, it will appear shaded.

ESTIMATED ROADWAY QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1
201-01	CLEARING AND GRUBBING	LS	1
202-01	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1

Because the Excel file link is attached as a picture, the text cannot be measured directly. Zoom in and use the measure tool to see if the body (not the headings) text is approximately the correct size.

The screenshot shows a software interface with a 'Measure Distance' dialog box on the left and a table on the right. The dialog box has the following fields:

- Method: Between Points
- About: Global Z
- Distance: True (0.14'), Projected (0.14')
- Total: True (0.14'), Projected (0.14')

The table on the right is titled 'ESTIMATED ROADWAY' and has two columns: 'ITEM NO.' and 'DESCRIPTION'. The table contains the following rows:

ESTIMATED ROADWAY	
ITEM NO.	DESCRIPTION
105-01	CONSTRUCTION STAKES, LINES AND GRADE
201-01	CLEARING AND GRUBBING
202-01	REMOVAL OF STRUCTURES AND OBSTRUCTIONS
(1) 202-06.01	REMOVAL OF BUILDINGS (TRACT NO.10)

A vertical dimension line to the left of the table indicates a height of 0.14' for the row containing item 105-01.

Open & Update the Excel OLE Attachment

The changes made to the Excel files outside of MicroStation will not be changed in MicroStation until the Excel links have been opened & updated.

Use one of the following methods:

1. In MicroStation, start the **Element Selection** tool and double click on the link to be revised. The Excel file is opened. Make any changes that may be needed and save the file. The link is updated in MicroStation.
2. In MicroStation, go to **Edit > Links...** In the Links dialog, select the link to be revised and click **Open Source**. The Excel file is opened. Make any changes that may be needed and save the file. The link is updated in MicroStation.

You should not use the Update Now option in the Links dialog without opening the document first. The link may be updated but errors are generated and you may corrupt your MicroStation file.

3. In MicroStation, select the link to be revised and the **Worksheet Object** tools are enabled. Go to **Edit > Macro-Enabled Worksheet Object > Edit**. The Excel file is opened Make any changes that may be needed and save the file. The link is updated in MicroStation.
4. Open all linked files in Excel. In MicroStation, go to **Edit > Update Links**.

This function should update all of the links in the file without opening the links. When used with Office 2010, errors are generated and nothing may be updated.

Relinking

When the sizes of the rows or columns are changed, the area linked will still be displayed in MicroStation but will be warped or truncated. It will need to be relinked to correct the display in graphics.

To relink an Excel file:

1. Move the existing link graphics away from the sheet border.
2. Open the Excel file.
3. Follow the directions for a new link. See section **Excel Linking to MicroStation**.
4. After the new link has been established and is correct, the link graphics from the old link can be deleted.

Word Embedded in MicroStation

Word Documents Embedded in MicroStation DGN Seed Files

There are MicroStation design file seed files set up for the 2nd sheets with the T.D.O.T. Word documents embedded. These seed files have sheet borders set up at a one-scale.

MicroStation seed files with embedded Word documents:

EnglishDropOffNotes.dgn

EnglishEPSCSpecialNotes.dgn

EnglishGeneralNotes.dgn

Ind&StdDwgsEng.dgn

Ind&StdDwgsMet.dgn

MetricDropoffNotes.dgn

MetricEPSCSpecialNotes.dgn

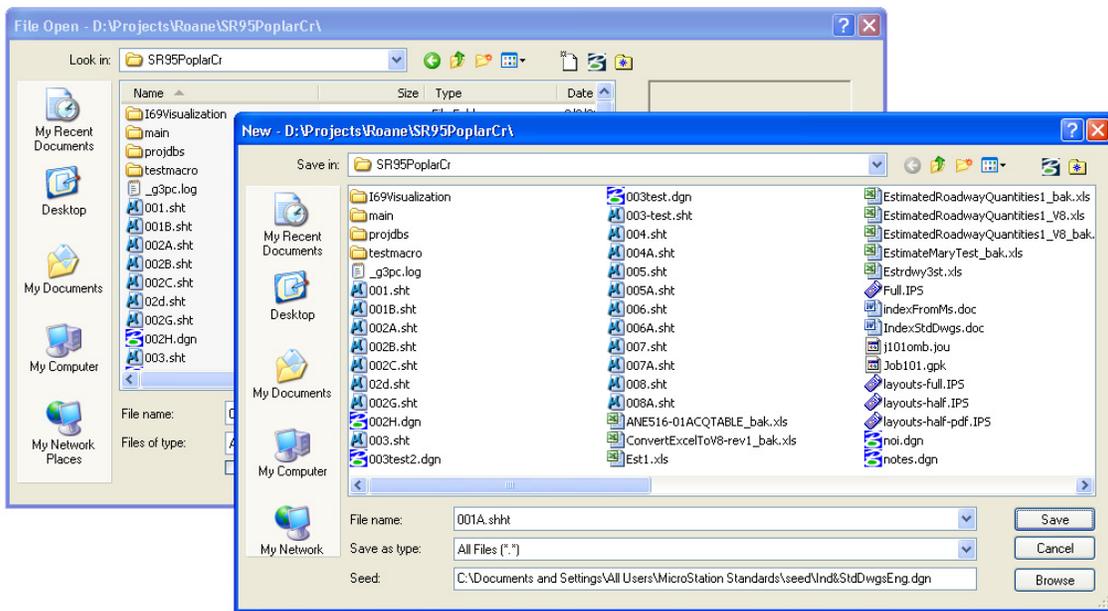
MetricGeneralNotes.dgn

In MicroStation

1. From MicroStation or MicroStation manager,

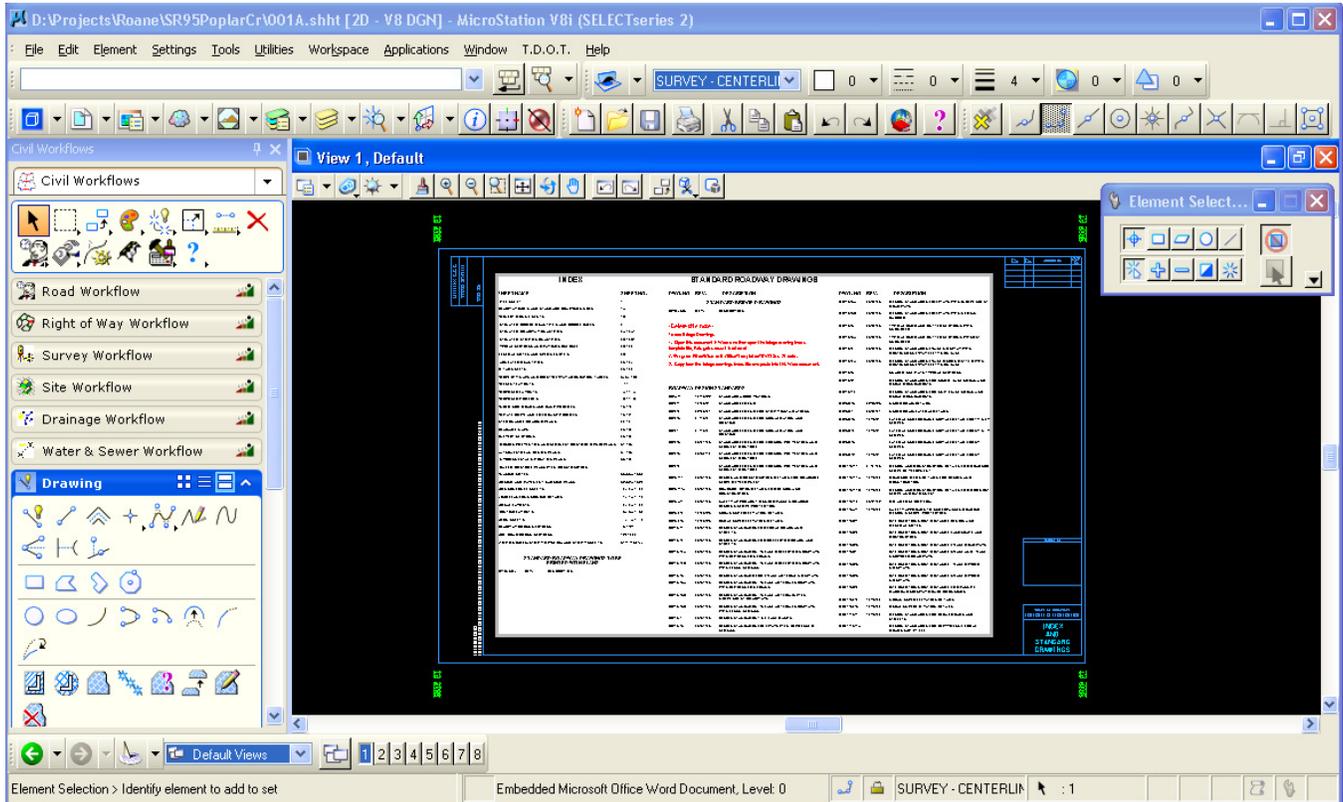
Go to **File > New** in MicroStation or click the **New File** icon in MicroStation Manager ..., and in the project folder, **Browse** to select the seed file needed for the sheet, assign the name according to the sheet name directions and assign a *.sht extension. See [CADDV8.pdf](#), Section **Standard Filenames**, part **Standard Sheet File Types: (Use .SHT extension)**. For example, use the name **001A.sht** for the **ROADWAY INDEX AND STANDARD DRAWINGS INDEX** MicroStation sheet file.

There are several reasons why the MicroStation DGN sheet files need to be named according to the **Standard Sheet File** naming recommendations. One, the project will be very easy to plot using InterPlot Organizer where the sheets will automatically be in order. Two, the names of the sheet files must be the same as the sheet number so that when the sheet is published on FileNet, other divisions, such as Right-of-Way and Construction, can easily find and use the files produced by the Design Division.



The OLE link is displayed as a 'picture' of the Word document. It has a shape around the edge. The OLE link can be copied, moved or scaled using the graphics commands.

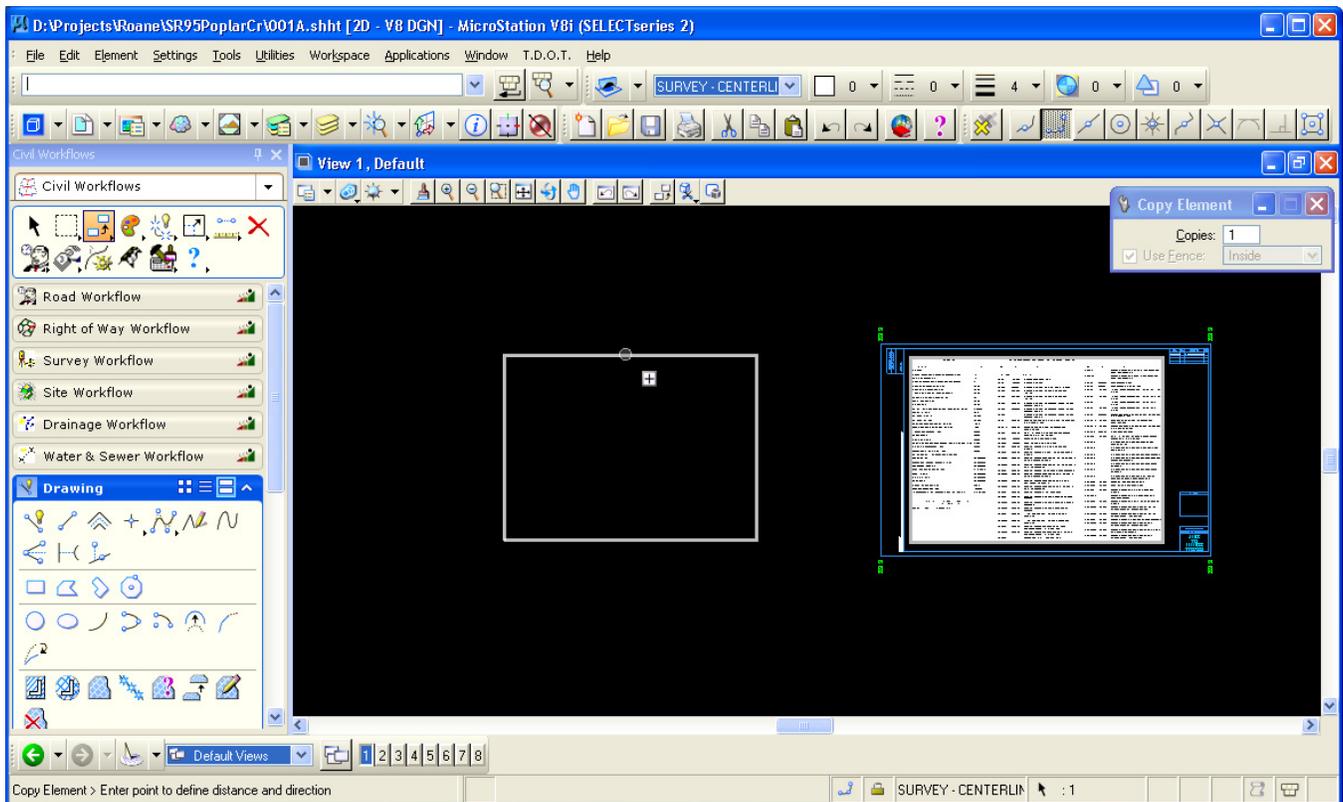
2. In MicroStation, use the **Element Selection** tool and double click on the embedded Word document. The embedded document will open in Word.



- The only access to an embedded document is from the graphics in the MicroStation design file. If the graphic display of the embedded Word document is deleted, the Word document will be deleted. If MicroStation has not been closed and the file has not been compressed then the graphics and the Word document can be recovered through the **Undo** command.

For this reason, it is recommended that a copy of the Word file information be made after significant edits have been done.

This can be done several ways. In the Word document, go to the **File** tab at the upper left and select **Save As** to make a copy to the project folder. In MicroStation, the OLE link graphics can be copied to the side creating separate OLE link of the edits at that moment which creates an additional separate embedded Word document. Of course, a backup copy of the entire MicroStation DGN file can be made as well.



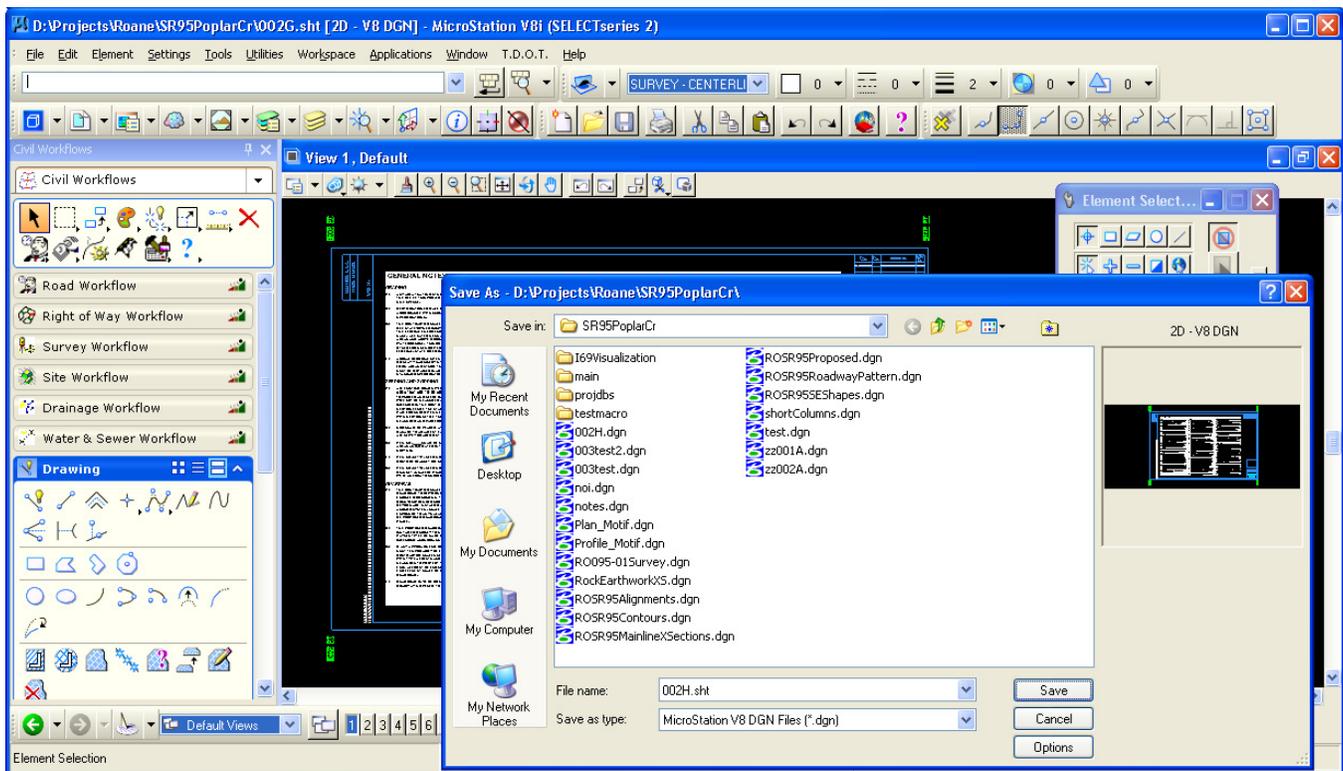
More than one Sheet Needed

If more than one plan sheet will be needed for General Notes or Index sheets:

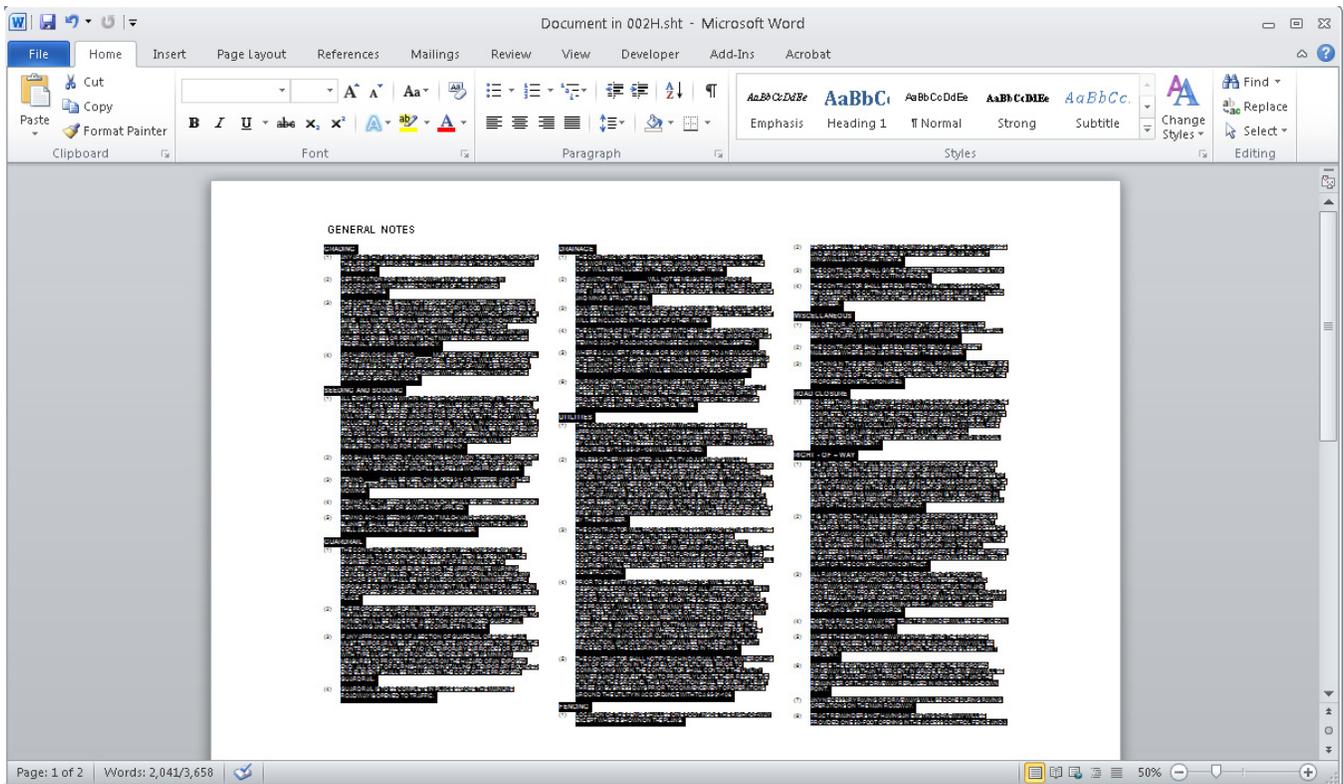
1. Make edits as needed to the Word document embedded in the first sheet and close the Word document.

Since the text is not easily moved from one MicroStation design file to another, it is recommended that **all** of the edits be made to the first MicroStation General Notes or Index design file before creating the additional sheets.

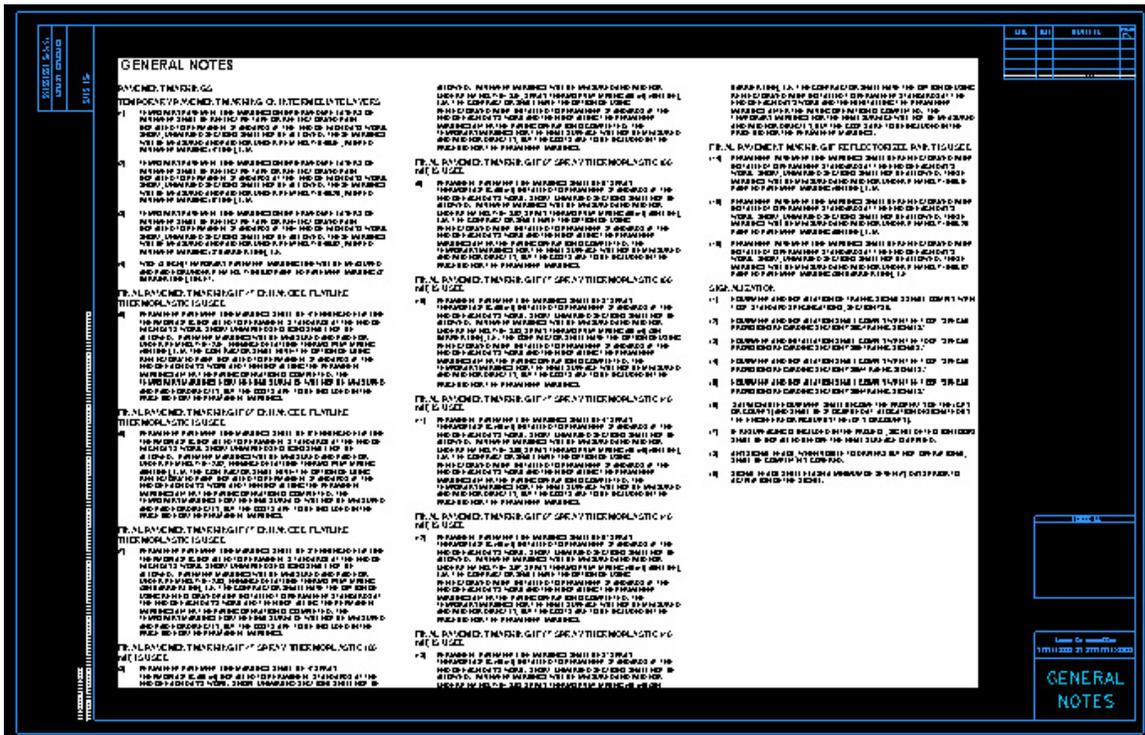
2. In MicroStation, go to **File> Save As** and save as the next sheet needed. There should be a separate design file for each sheet in the set of plans except for cross-section sheet files. For example, do a 'Save As' on the General Notes design file **002G.sht** to **002H.sht**.



- In the new MicroStation sheet file, edit the Word document. Highlight all of the text (except the heading if needed) on the first page in the Word document and delete it. Save & close the Word document to see the changes in the MicroStation file.



- Repeat as needed for additional sheets.



Embedding Word Documents in Existing MicroStation DGN Sheet Files

Sometimes you need to add small groups of notes to existing plan sheets in MicroStation V8. This section describes the process of embedding the Word documents in MicroStation. A good example of this is ROW notes.

The TDOT Word documents embedded in the MicroStation seed files are also available as Word templates. These can be used to add notes or standard drawings back into full sheets as needed.

T.D.O.T. Design Division Word templates used with MicroStation V8 at

C:\Program Files\Microsoft Office\Templates\TDOT 2nd Sheets:

Bridge Index.dotx	IB_To Be Printed with Plans_Metric.dotx
English Drop Off Notes.dotx	Metric Drop Off Notes.dotx
English EPSC Special Notes.dotx	Metric EPSC Special Notes.dotx
English General Notes.dotx	Metric General Notes.dotx
English Index & Std Dwgs.dotx	Metric Index & Std Dwgs.dotx
IB_To Be Printed with Plans_English.dotx	ROW Notes.dotx

1. In Word, go to the File tab at the upper left, choose **New > My Templates > TDOT 2nd Sheets**, and select the type note file needed. (Or use your own notes.)
2. Edit the notes as needed. **Select and copy** to put the text into the Windows Clipboard.
3. In MicroStation, go to **Edit > Paste Special...**, select the **Embedded Microsoft Office Word Document** option and click the **Paste** button.

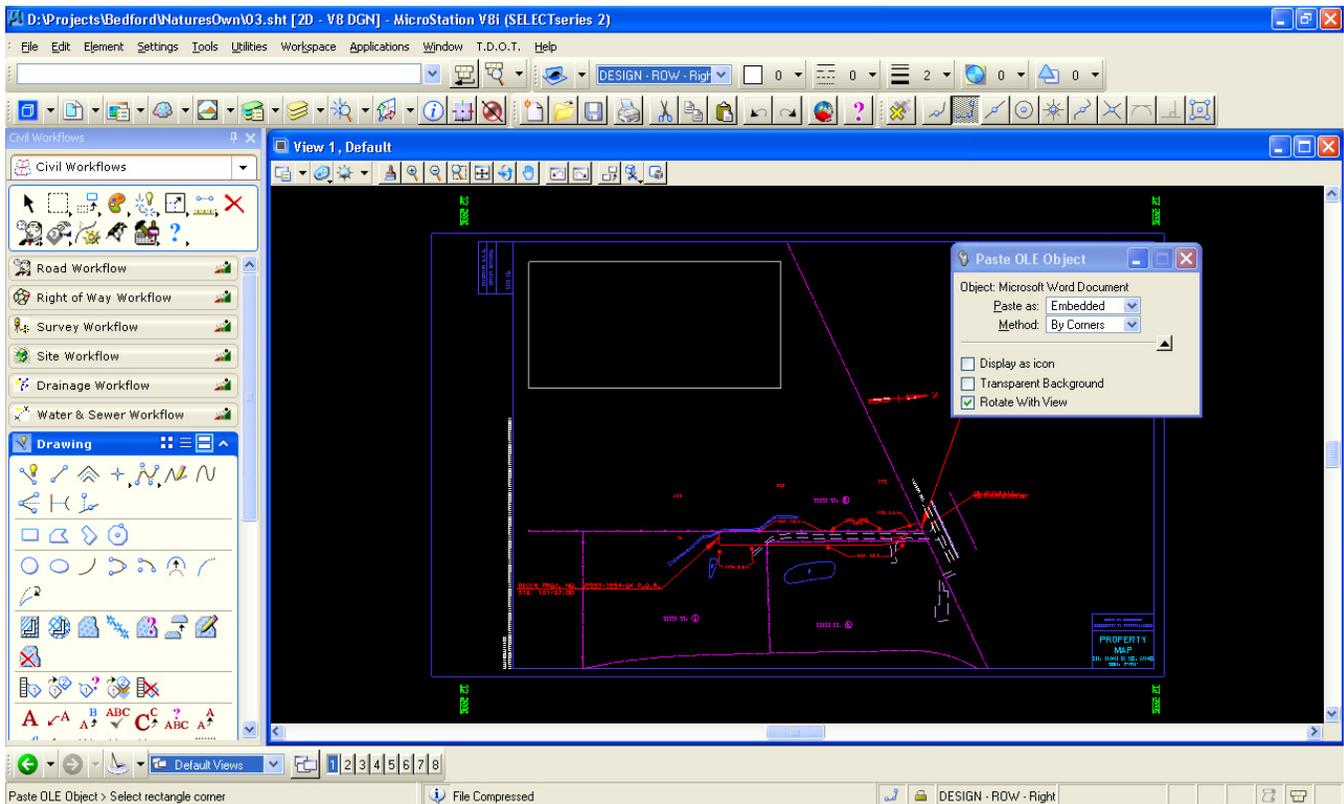


The OLE attachment will be placed on the active level, reset as desired before embedding.

4. Select **Paste as: Embedded** and **Method: By Corners**. Under the extra options, click on **Rotate With View** (MicroStation V8i).



5. Data point at the location where the upper left corner of the notes need to start. This sets the first corner and you are prompted to **Select Rectangle Corner**.



In the MicroStation keyin field we now need to enter a **dx=** precision keyin to set the corner across from our first point. The dimension used in this keyin is determined by the scale of the plan sheet as well as the width dimension of the document inside of Word. Full sheets in Word are set up as 11" X 17" but small groups of notes are 8 ½" X 11". **All dimensions listed below are for 8 ½" X 11" documents; for 11" X 17" documents attached in this manner take the dimension values and multiply by 2**

English:

For Arial font, text size 7 in Word (font and size in TDOT templates):

1-scale size sheet, use dimension keyin:

dx=13 for **.14** text size - this will measure **0.14 feet** in MicroStation and will measure **0.14 inch** on the printed sheet

dx=11 for **.12** text size

dx=9 for **.10** text size

100-scale size sheet, multiply the dimension above by **100**:

dx=1300 for **.14** text size

dx=1100 for **.12** text size

dx=900 for **.10** text size

For other scales, multiply the 1-scale dimension above by the scale of the sheet:

13 x Scale for **.14** text size

11 x Scale for **.12** text size

9 x Scale for **.10** text size

Metric:

For Arial font, text size 7 in Word (font and size in TDOT templates):

1-scale size sheet, set the dimension keyin to:

dx=0.33 for **.14** text size - this will measure **0.0035 meters** in MicroStation and will measure **0.14 inch** on the printed sheet

dx=0.28 for **.12** text size (**0.0030**)

dx=0.23 for **.10** text size (**0.0025**)

For other scales, multiply the 1-scale dimension above by the scale of the sheet:

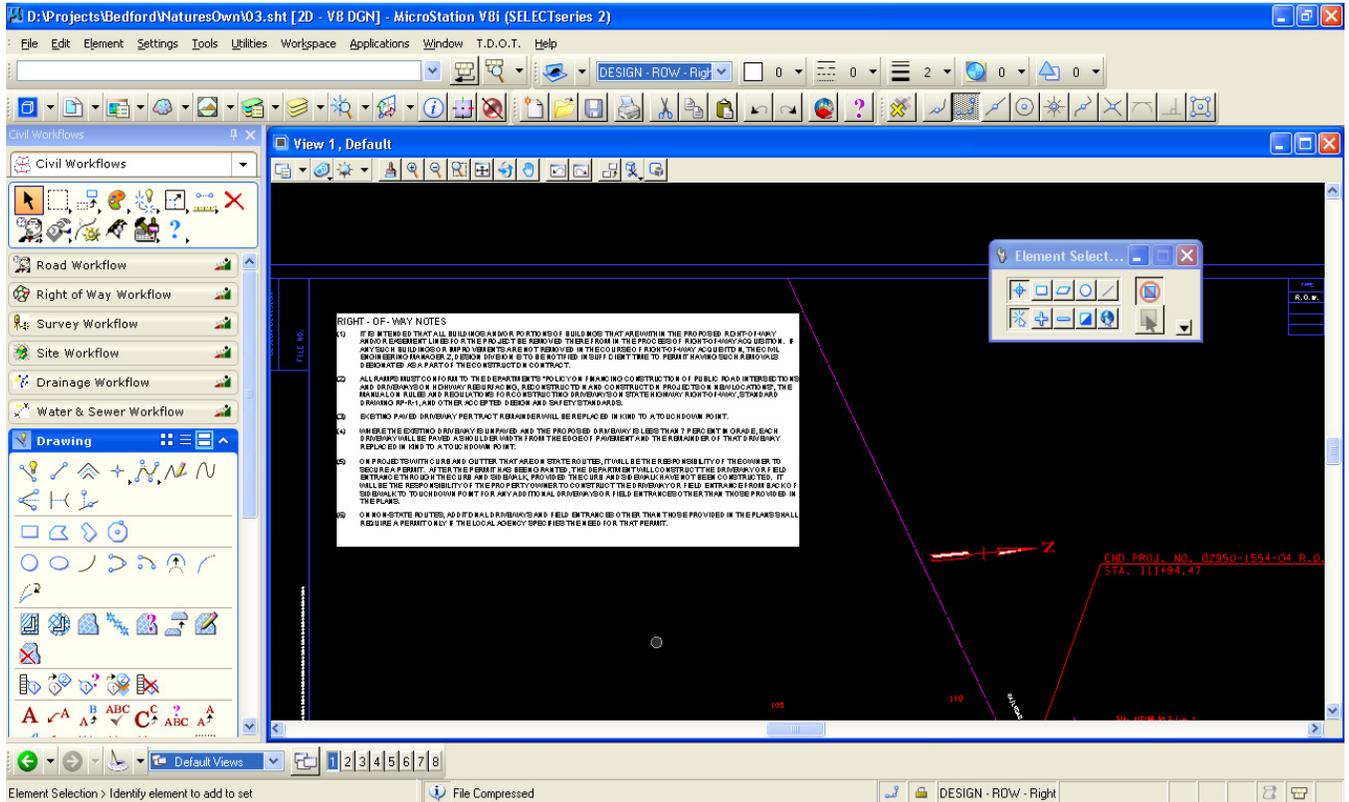
0.33 x Scale for **.14** text size

0.28 x Scale for **.12** text size

0.23 x Scale for **.10** text size

- To determine the required dimension, take the dimension used for a 1 scale sheet and multiply it by the scale of the plan sheet. In our example, we are adding some ROW notes to a 100 scale property map sheet (13 X 100 = 1300).

Enter **dx=1300**. The document now appears on the sheet. The dx=1300 keyin yields 0.14 tall body text when plotted at a scale of 100.



- Use MicroStation’s **Move Element** command to position the link as needed. The temporary Word document used to copy the notes from can be closed without saving since the document is now embedded in the MicroStation DGN file.

Additional Notes concerning this method of Embedding

The By Corners method is used for Word documents to ensure that the text comes in at the correct size. The By Scale method does not yield consistent results when used with Word attachments. That method is used with Excel attachments.

The dimension keyin given only specifies the dimension across the sheet. Depending on the contents of the Word document the height will vary while the width remains constant based on the width of the document in Word.

Because the embedded Word file is attached as a picture, the text cannot be measured directly. Zoom in and use the measure tool to see if the body (not the headings) text is approximately the correct size.

Open & Update the Word OLE Attachment

Embedded Word Documents

In MicroStation, start the **Element Selection** tool and double click on the document to be revised. The Word file is opened. Make any changes that may be needed and save the file. The document is updated in MicroStation.

Linked Word Documents

Linking Word 2010 documents instead of embedding them **is not** recommended due to several compatibility issues between Word 2010 and older versions of MicroStation V8. Any made with Office 2010 will have to consider the following if it is necessary to open & update them in MicroStation V8 versions prior to MicroStation V8i including MicroStation V8 2004.

Word 2010 documents linked to MicroStation cannot be opened from inside MicroStation and they cannot be updated until they are open in Word.

In order to update these after being linked, you must first open the document through Word 2010. After making any needed edits, save the file and then with it open in Word, use one of the following methods to update what appears in MicroStation.

1. In MicroStation, go to **E**dit > **L**inks... In the Links dialog, select the link to be updated and click **Update Now**.
2. In MicroStation, go to **E**dit > **U**ppdate **L**inks.

To use this method, it will be necessary to open all linked files first.

It should update all of the links in the file without opening the links but when used with Office 2010 without the files open, errors are generated and nothing is updated.

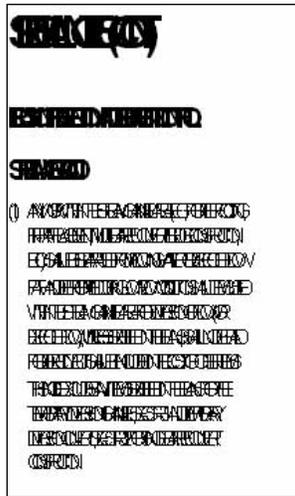
Correcting Overlapping Text from Embedded Word Documents

With previous versions of Office and MicroStation when the height of the text area in the embedded Word document was reduced from what it was when originally set up then the text became warped causing text characters to overlap. This could occur when more than one plan sheet is needed and the last sheet does not have full text columns or perhaps in a case where you have less than one full sheet and the columns are adjusted to be the same height. It could also happen if after you have added a small set of notes, one or two are removed.

This problem appears to be corrected with Office 2010 and MicroStation V8i. If you are using MicroStation V8 2004 then you may still run into it.

Take the following steps to re-embed the document and correct this problem:

1. After edits are done to the embedded Word document, the text becomes warped and overlaps in MicroStation.



2. Open the document and in Word go to the Office button at the upper left and select **Save Copy As...** to save the document outside the MicroStation DGN file to your project folder.
3. Open the Word document from your project folder, select and copy to put the text into the Windows Clipboard.
4. In MicroStation, delete the original embedded document or move it to the side off the sheet.
5. The OLE attachment will be placed on the active level, reset as desired.
6. In MicroStation, go to **Edit > Paste Special...**, select the **Embedded Microsoft Office Word Document** option and click the **Paste** button.

8. Select **Paste as: Embedded** and **Method: By Corners**. Under the extra options, click on **Rotate With View** (MicroStation V8i)
7. Data point at the location where the upper left corner of the data needs to start on the sheet. This sets the first corner and you are prompted to **Select Rectangle Corner**.
8. In the MicroStation keyin field enter the required **dx=** keyin to set the corner across from the first point.

The dimension used in this keyin is determined by the scale of the plan sheet as well as the width dimension of the document inside of Word. General Notes and Index sheets are set up as full sheets in Word at 11" X 17" and in MicroStation at a scale of 1 so you should use dx=26 for them. Refer to the table of values in the previous section for use when embedding Word documents in MicroStation.

After re-embedding ...

SPECIAL NOTES (CONT.)

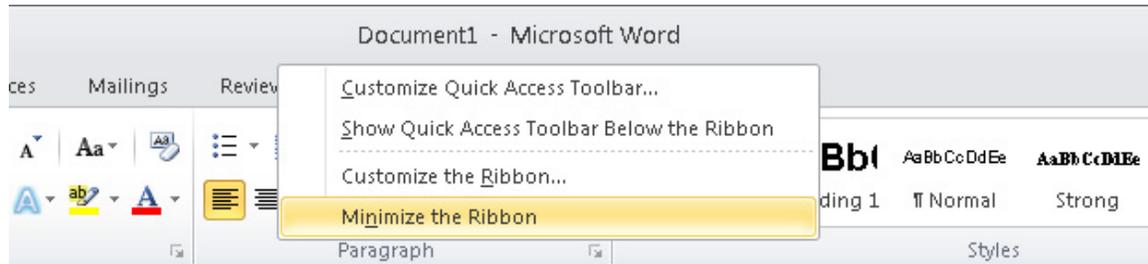
EROSION PREVENTION AND SEDIMENT CONTROL

STREAM/WETLAND

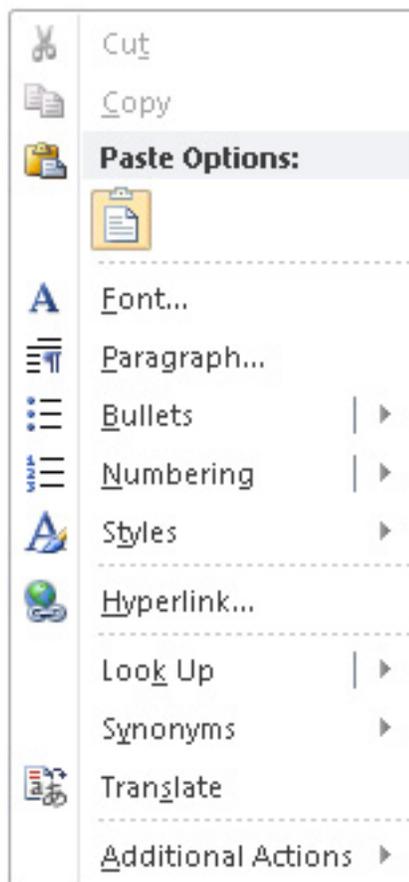
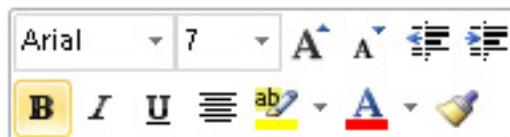
- (1) ANY WORK WITHIN THE STREAM CHANNEL AREA (E.G., FOR PIER FOOTING, RIP-RAP PLACEMENT, MULTI-BARREL CULVERT/BRIDGE CONSTRUCTION, ETC.) SHALL BE SEPARATED FROM FLOWING WATER OR EXPECTED FLOW PATH AND PERFORMED DURING LOW FLOW CONDITIONS. ALL ITEMS USED WITHIN THE STREAM CHANNEL AREA FOR DIVERSION OF FLOW (OR EXPECTED FLOW), UNLESS SPECIFIED IN THE PLANS, SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE COST OF OTHER ITEMS. THIS NOTE EXCLUDES ANY ITEMS SPECIFIED IN THE PLANS FOR THE TEMPORARY DIVERSION CHANNELS, EC-STR-31 AND TEMPORARY DIVERSION CULVERTS, EC-STR-32 FOR SINGLE BARREL CULVERT CONSTRUCTION.

Formatting Word Documents

The Office 2010 interface includes a series of tab options across the top, each of which displays a “ribbon” of command options. As you expand or shrink the width of the Office window, these commands are adjusted to show less or more. You can right click over the top of the ribbon to minimize it when not in use if desired.



When you right click from text in your document, some quick formatting tools are shown above the regular right click option list.

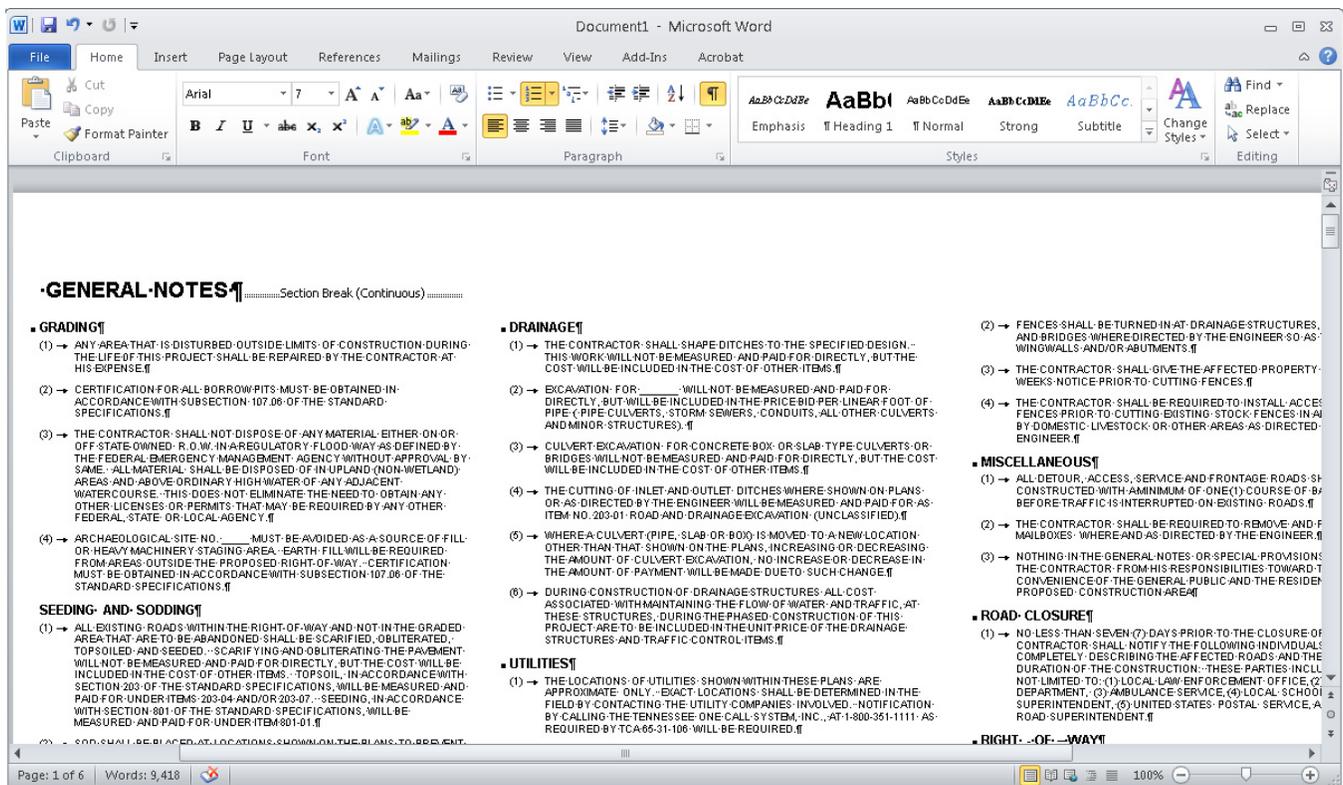


Show/Hide Formatting

The Word documents created for TDOT plans production contain special formatting so they will appear correctly on the plan sheets. Text styles, tabs, bullets and numbering, paragraph indents, hanging indents, columns, column breaks, page breaks and more are used. These are non-printing characters and do not show in the normal view in Word. In order to edit the Word documents successfully, it is often helpful to see these formatting characters.

To display the formatting characters, use the **Show/Hide** display command. It is located on the Office 2010 ribbon under the **Home** tab in the **Paragraph** section. It appears as a paragraph mark.

Click on the **Home** tab. Look at the **Paragraph** section of the ribbon and click on the Paragraph mark to **Show/Hide** formatting characters.



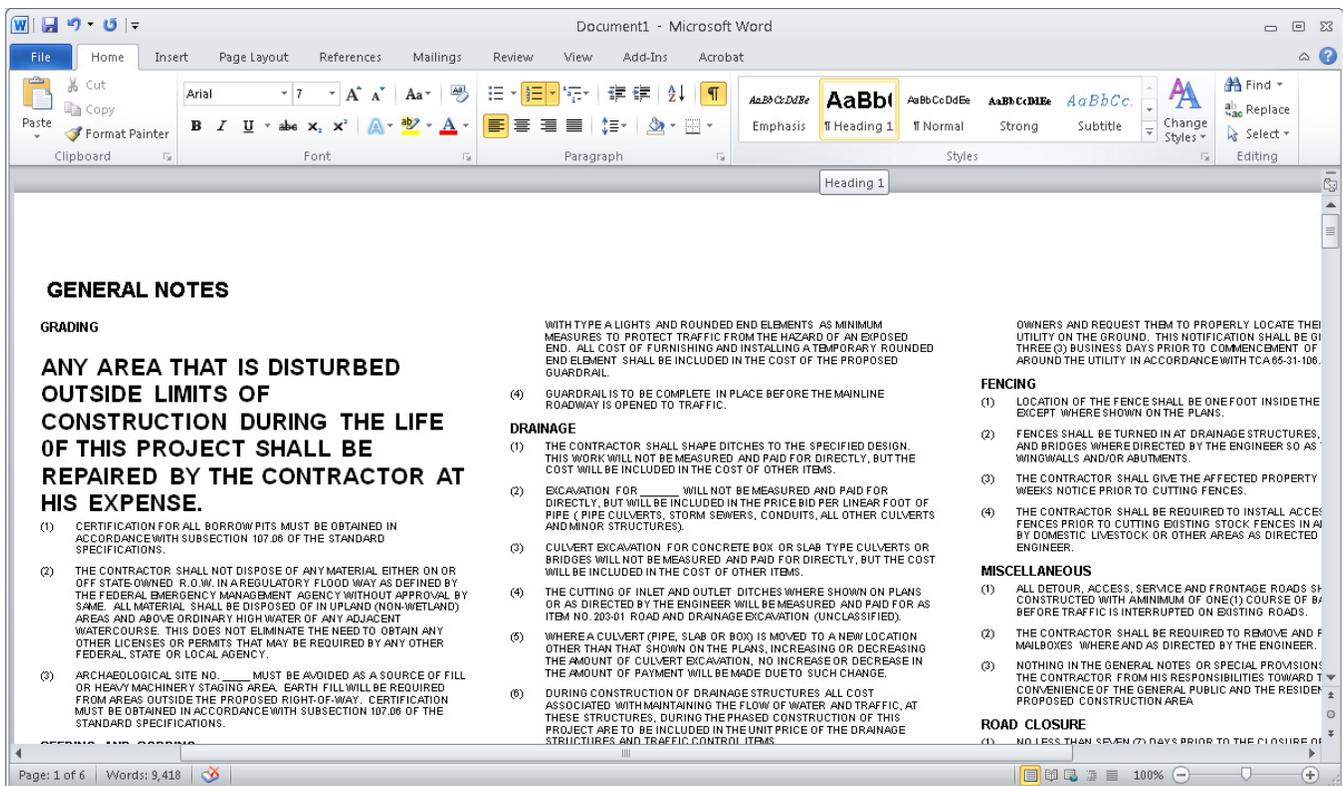
Clicking the paragraph mark will toggle off and on the display of the formatting characters. When it is toggled on, we can see section breaks, paragraph marks, tabs, etc.

Text Styles in Word

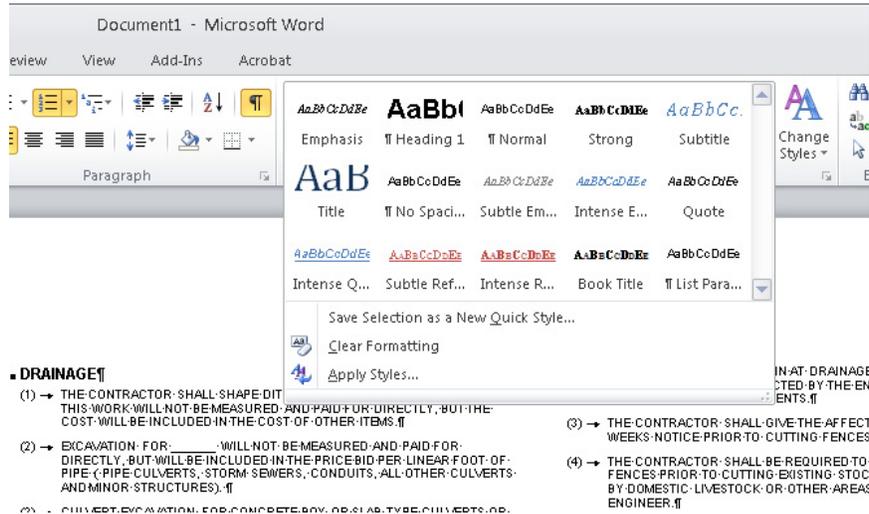
A text style will set all of the characteristics for the specified text. This includes font, font size, tabs, indents, color, heading, bullets and numbering, etc. There are text styles for each type of text used in the TDOT 2nd sheet Office templates. These text styles all start with **V8**.

Text style controls can be found on the Word 2010 ribbon under the **Home** tab in the **Styles** section.

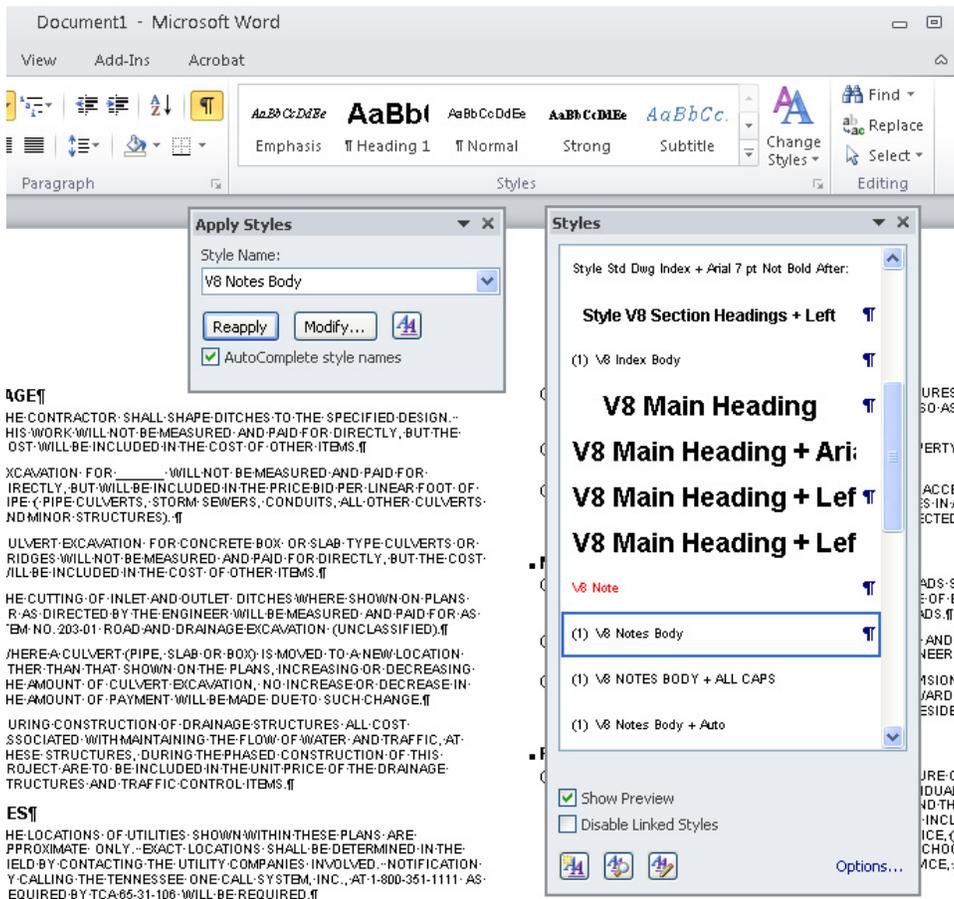
Word 2010 includes a type of style control called **Quick Styles**. When you move your cursor mark over the quick style it temporarily applies that style to the entire paragraph where your typing insertion point is currently located. In the example below, I was in the first note and it dynamically shows what it would look like with the style **Heading 1** applied to it. To apply the style permanently, left click on your mouse.



Click the arrow with the line above it at the bottom of the Quick Styles scroll bar to see all of the quick styles currently available.



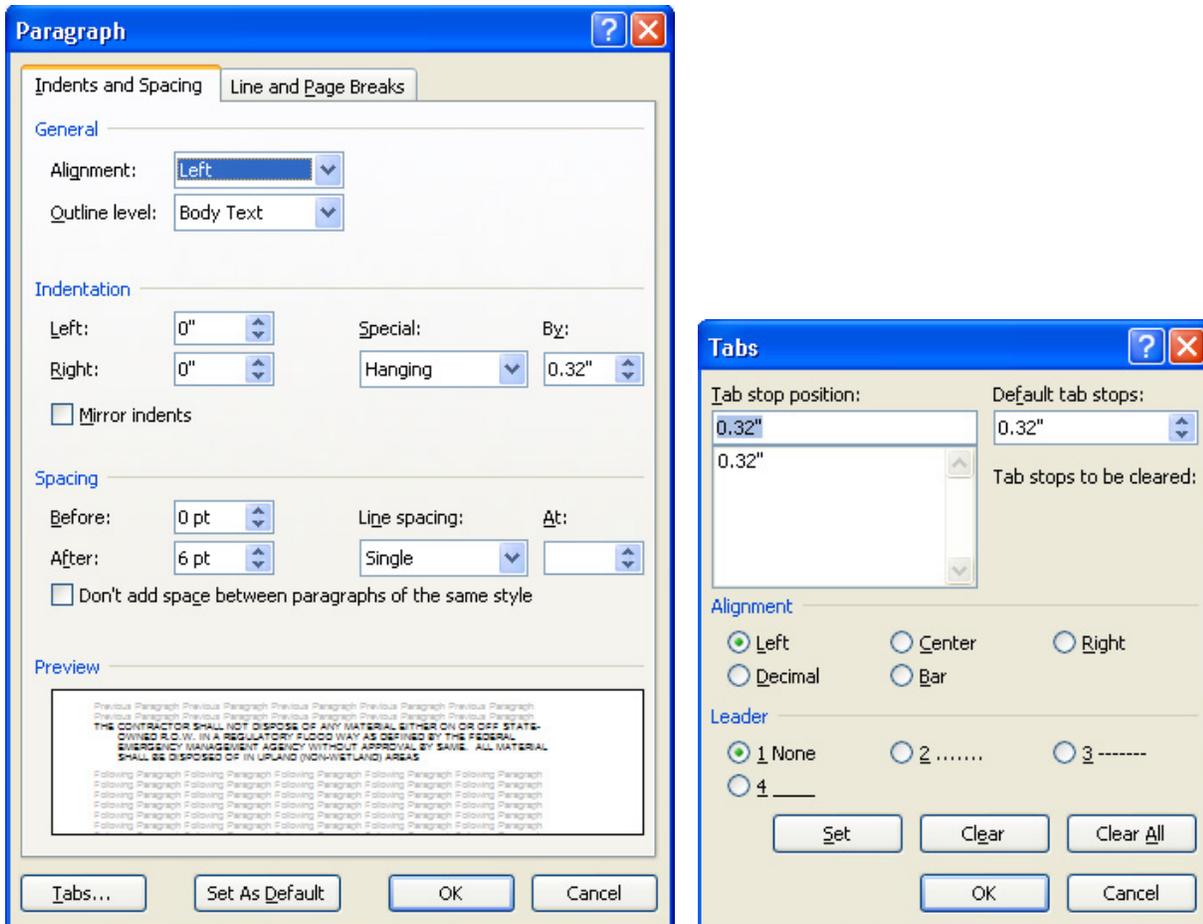
There are 2 ways to access the standard TDOT 2nd sheet text styles. You can click on the **Apply Styles** option which appears at the bottom of the Quick Styles drop down menu shown above. This opens up the Apply Styles dialog. You could also click the small square with the arrow in it at the lower right of the Styles section title bar. This opens up the **Styles** list.



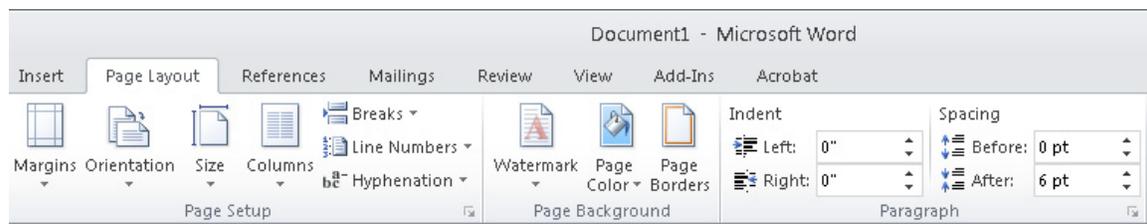
Indents, Hanging Indents, Line Spacing, Tabs, etc.

To see the indents, hanging indents, tabs, etc. put the cursor at the text/paragraph in question, right click and select **Paragraph**. Note that the **Tabs** can be accessed at the lower left of the dialog. To change any of these settings, select the text to be changed, go to the **Paragraph** dialog and make the changes as needed.

You can also access the Paragraph dialog on the Office 2010 ribbon under the **Home** tab in the **Paragraph** section. Click the small square with the arrow in it at the lower right of the Paragraph section title bar.

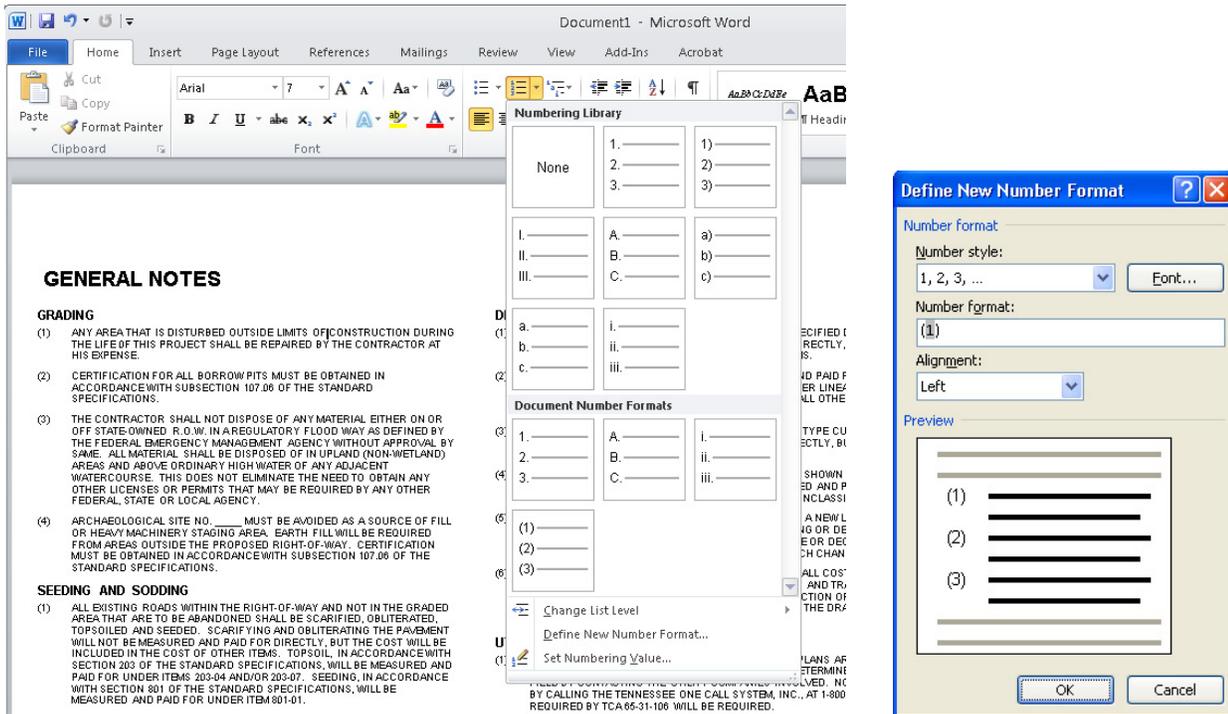


Indent & Spacing controls can also be found on the Office 2010 ribbon under the **Page Layout** tab in its **Paragraph** section.

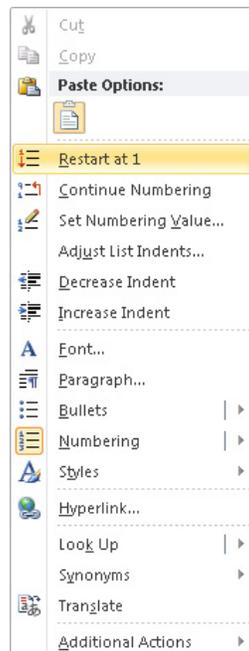


Numbering & Bullets

You can access **Numbering** and **Bullets** on the Office 2010 ribbon under the **Home** tab in the **Paragraph** section. Click either of these to use the current active format or click the arrow next to them to pull out the drop down menu for them. From the drop down menus choose **Define New Number Format** or **Define New Bullet** to set up a new format.



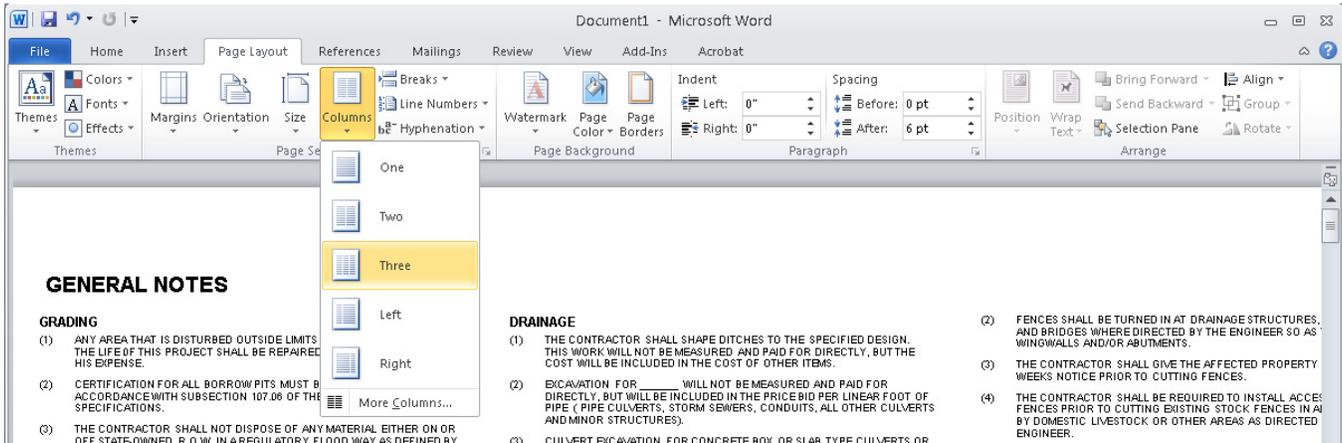
Position yourself in a given numbered paragraph and right click for various numbering controls.



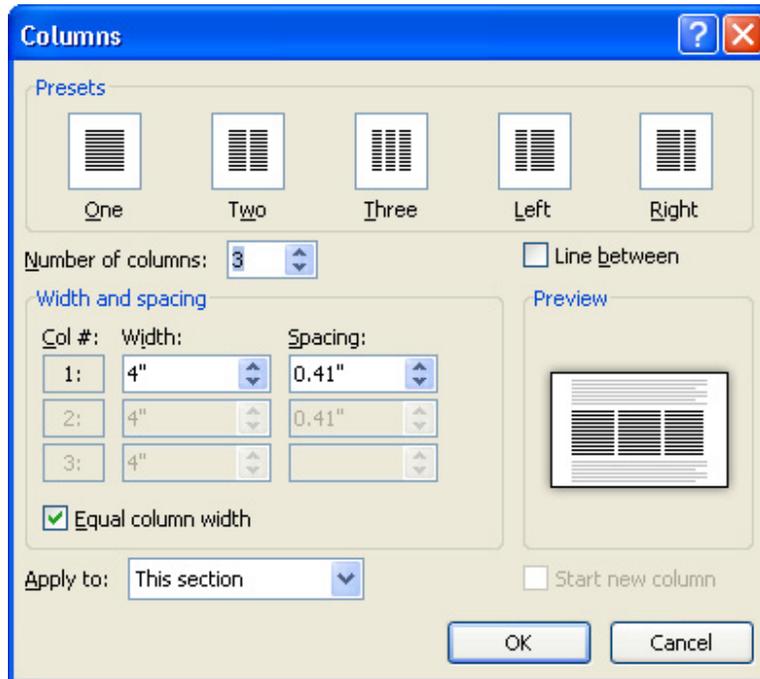
Columns

You can also access **Column** formatting controls in the **Page Setup** section on the Office 2010 ribbon under the **Page Layout** tab.

The TDOT General Notes and Index & Standard Drawings templates are set up into three columns. The number of columns and justification can be set from the Column drop down menu.



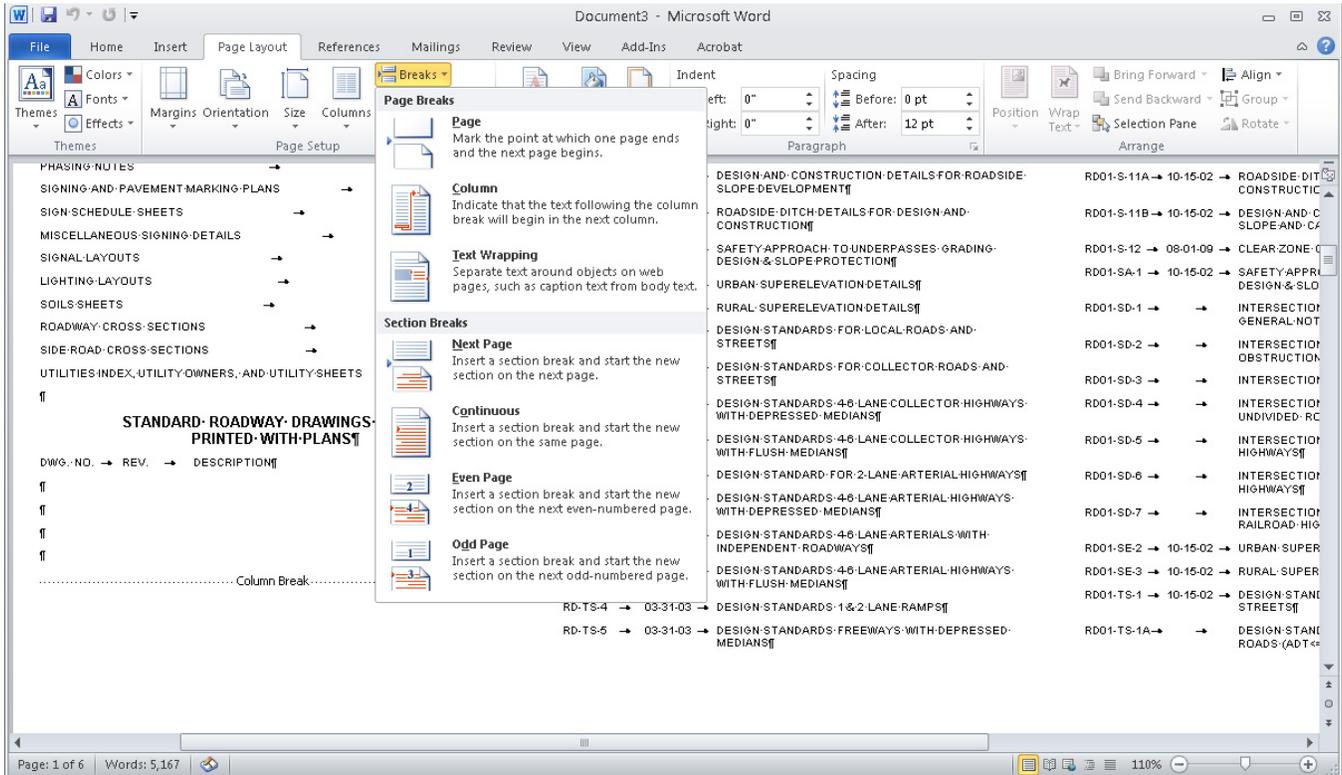
To set widths and other column settings, select the **More Columns** option from the drop down menu to open the **Columns** dialog.



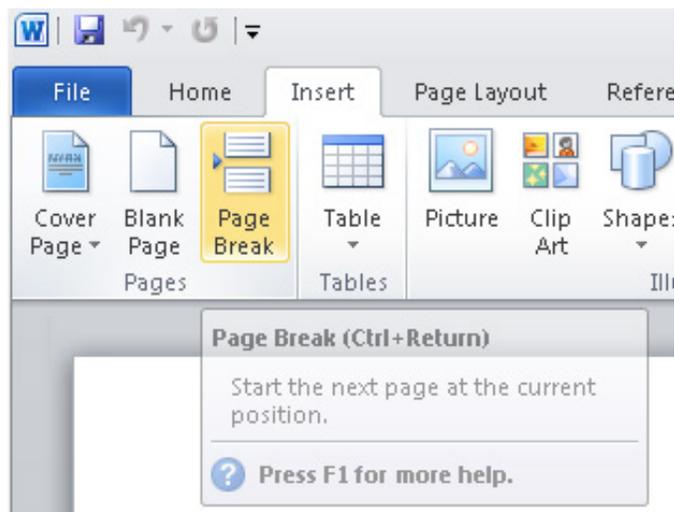
Breaks

You can also access the **Break** controls in the **Page Setup** section on the Office 2010 ribbon under the **Page Layout** tab.

Turn the **Show / Hide** formatting display on to see page, column and section breaks. Use the Delete key to remove a break. Use the drop down menu from **Breaks** in the Page Setup section to insert a page, column or section break as needed.



You can also insert a **Page Break** from the **Pages** section on the Office 2010 ribbon under the **Insert** tab.



Current Office\MicroStation Issues

This section describes current known issues with Office documents that are linked or embedded in MicroStation.

“Word cannot start the converter mswrd632.wpc” Error Message

This error is caused because of the operating system security update for Windows XP, Windows 2000, and Windows Server 2003 published on December 8, 2009.

Microsoft Office uses its own text converters to open Word attachments to MicroStation so this does not truly present a problem. The error message appears anytime you either open a Word document embedded in MicroStation or when you are embedding a Word document in MicroStation.

When the error message is encountered, simply click the OK button or the red X in the upper right corner. The message will pop up 1 or 2 times more, continue to click until it stops. When the message stops displaying you may need to click on the MicroStation title bar to make it active once more. At that point your document will open in Word or if attaching to MicroStation, the Paste OLE option settings come up so you can complete the attachment.



Note:

This issue can be resolved through unregistering the mswrd632 converter by editing the operating system registry. The change will effectively unregister the converter and disable it for third-party applications and for Microsoft Office.

Consultants who wish to apply this solution should go to Microsoft online for the appropriate steps to take for their systems. As of May 2010, there are no current plans to try to apply the fix on Design Division computers due to the time it would take and since it does not present a serious issue.

Word Document Text Not Visible In MicroStation

After editing a Word document embedded in MicroStation and closing the document, the text no longer appears in MicroStation; instead, the attachment appears completely white.

Although this has only been encountered a few times, it does warrant mention. The cause of this problem is not currently known but it can be easily fixed.

Open the document in Word; it should appear normally in there. Then use one of the following methods to rebuild the attachment...

Select all of the text and copy it to the clipboard. In MicroStation, create a new DGN file from the standard seed file for those sheets. Open its embedded Word document, select all text and paste from the clipboard and save.

or ...

Use Save As and save the Word document outside of MicroStation. Create a blank MicroStation DGN file and using regular embedding methods described previously in this document, embed the saved Word document in MicroStation.

