

2nd Sheets using Office 2010 and MicroStation V8i

General Information

Instructions in this document are for development of 2nd sheets using Office 2010 and MicroStation V8i.

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. CADD Support has embedded several Word documents in MicroStation 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.

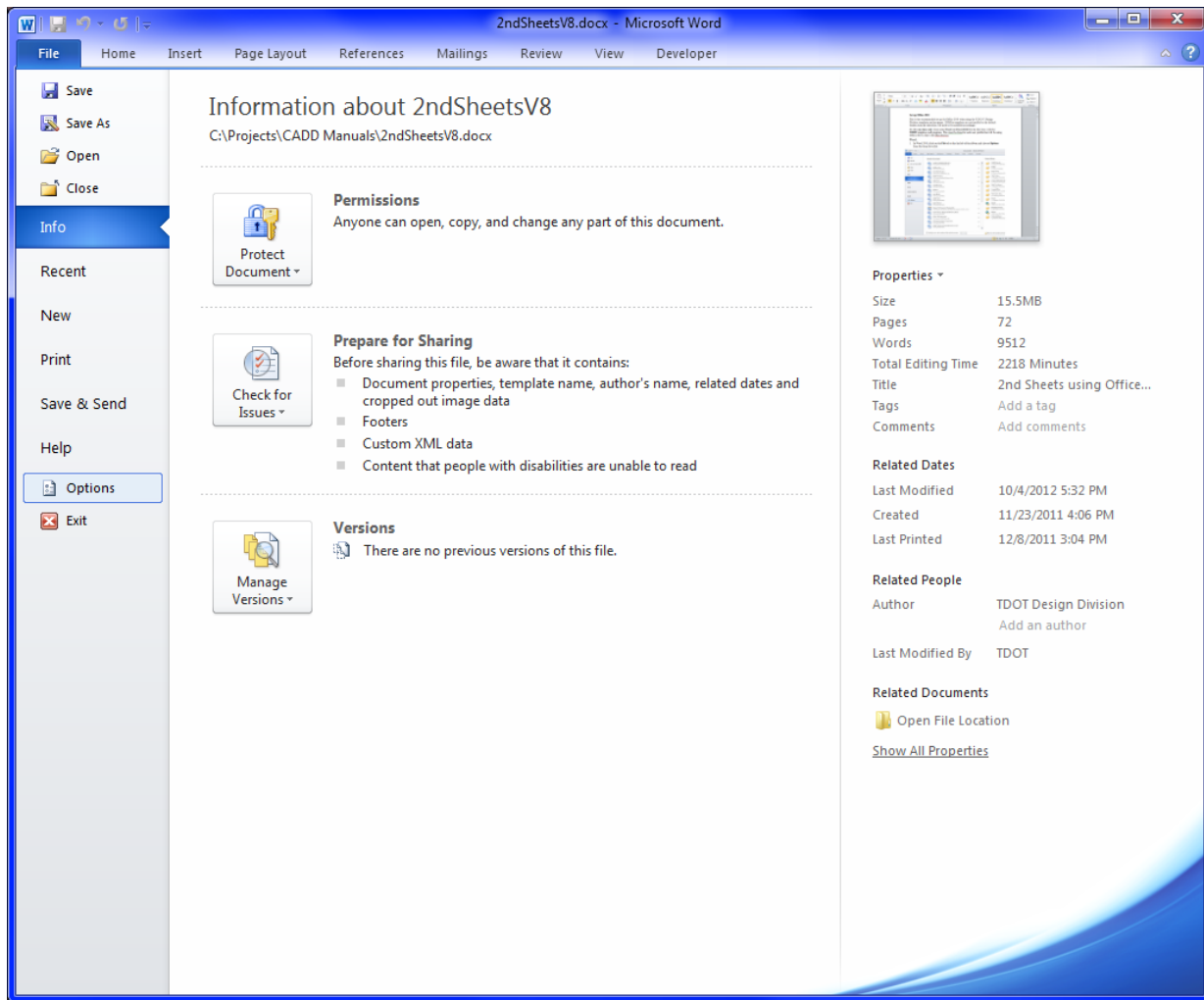
Set up Office 2010

This is the recommended set up for Office 2010 when using the T.D.O.T. Roadway 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.

Word:

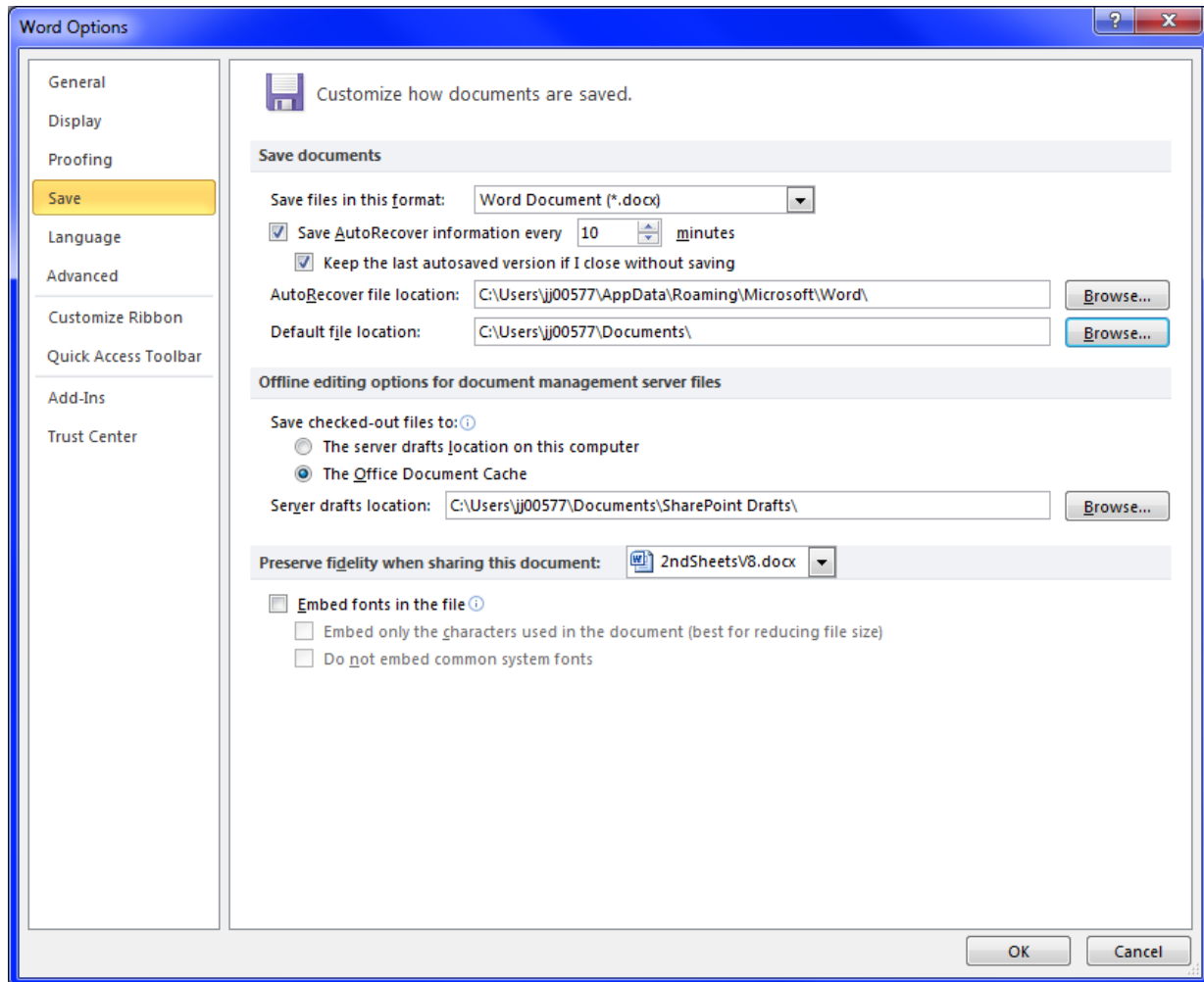
1. In Word 2010, click on the **File** tab at the far left of the ribbon and choose **Options** from the drop down list.



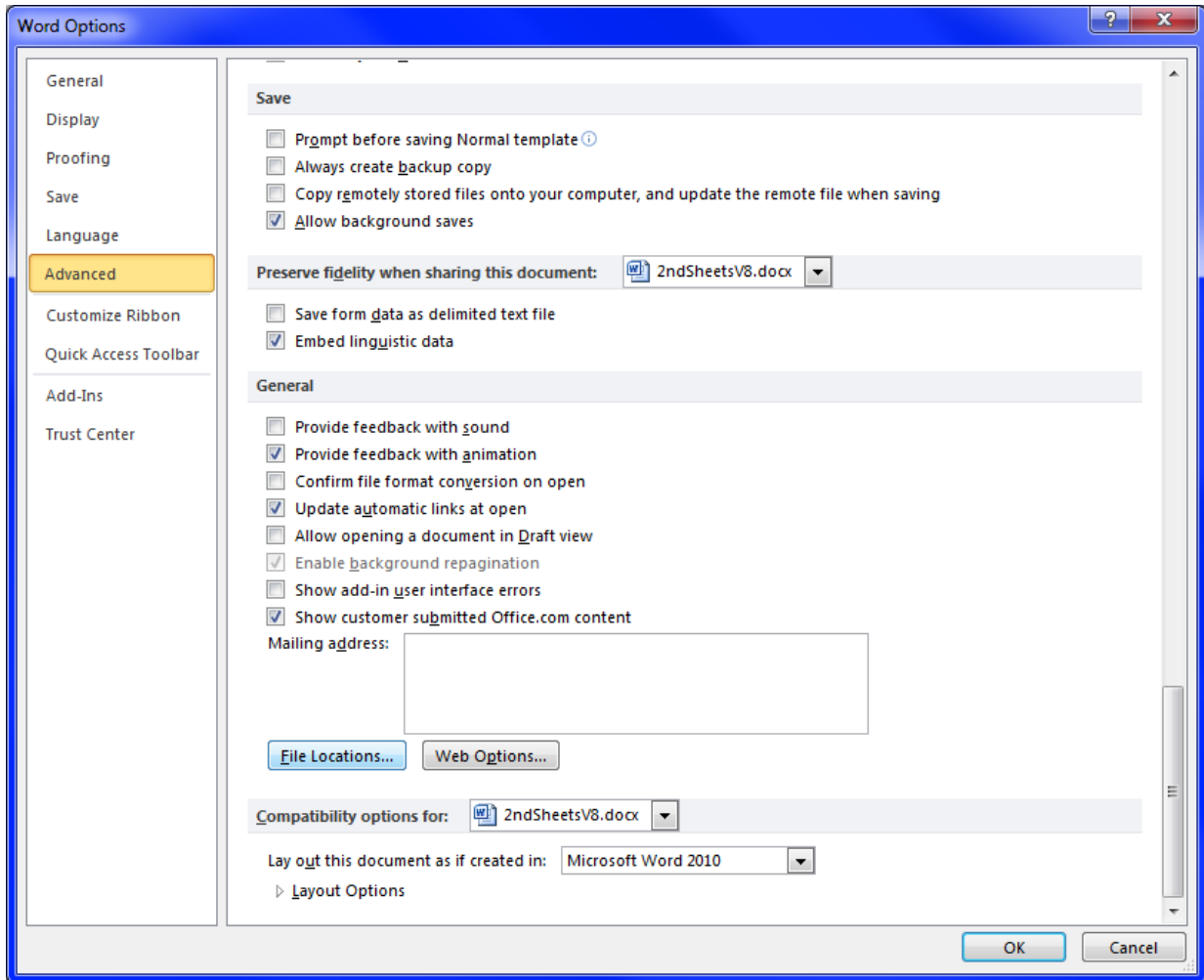
2. In the Word Options dialog click on **Save** in the options on the left.

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.



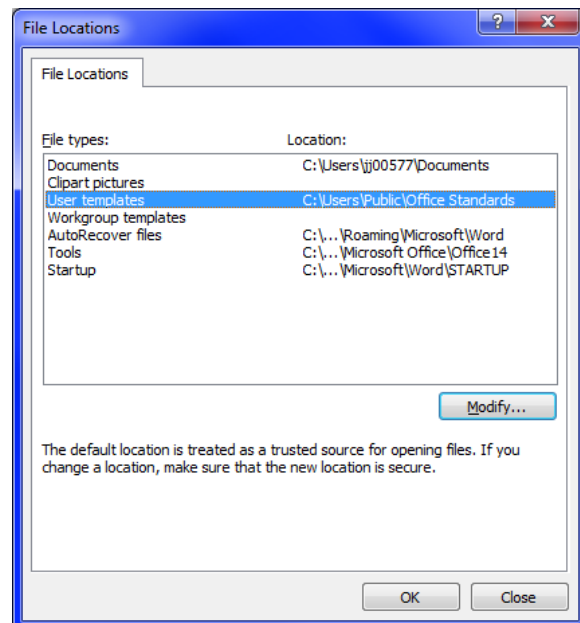
3. In the Word Options dialog, click on **Advanced** in the options on the left. Scroll down to the **General** section and click the **File Locations** button.



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

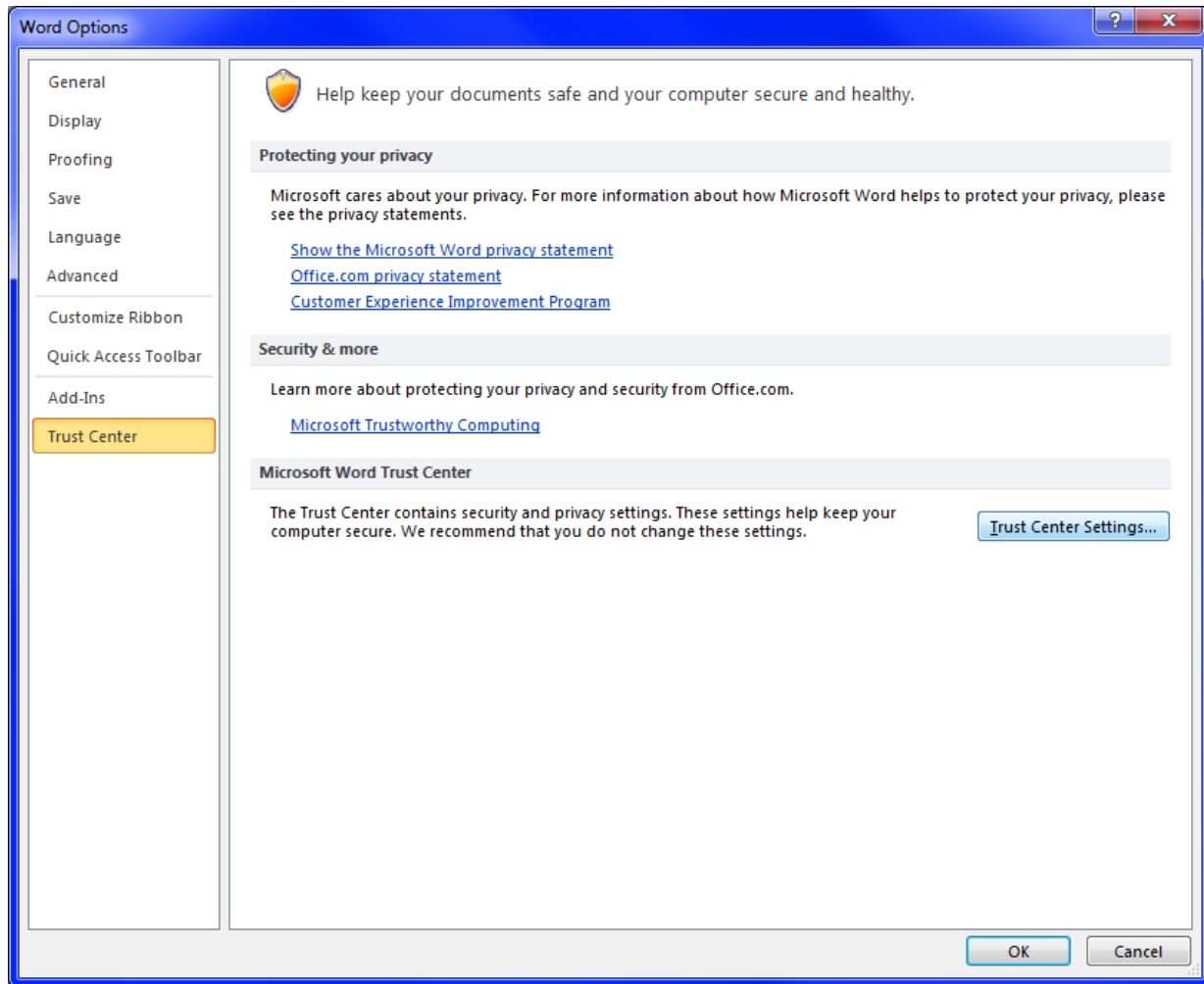
Navigate to and set the folder **C:\Users\Public\Office Standards**. Click **OK** to save the setting.

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



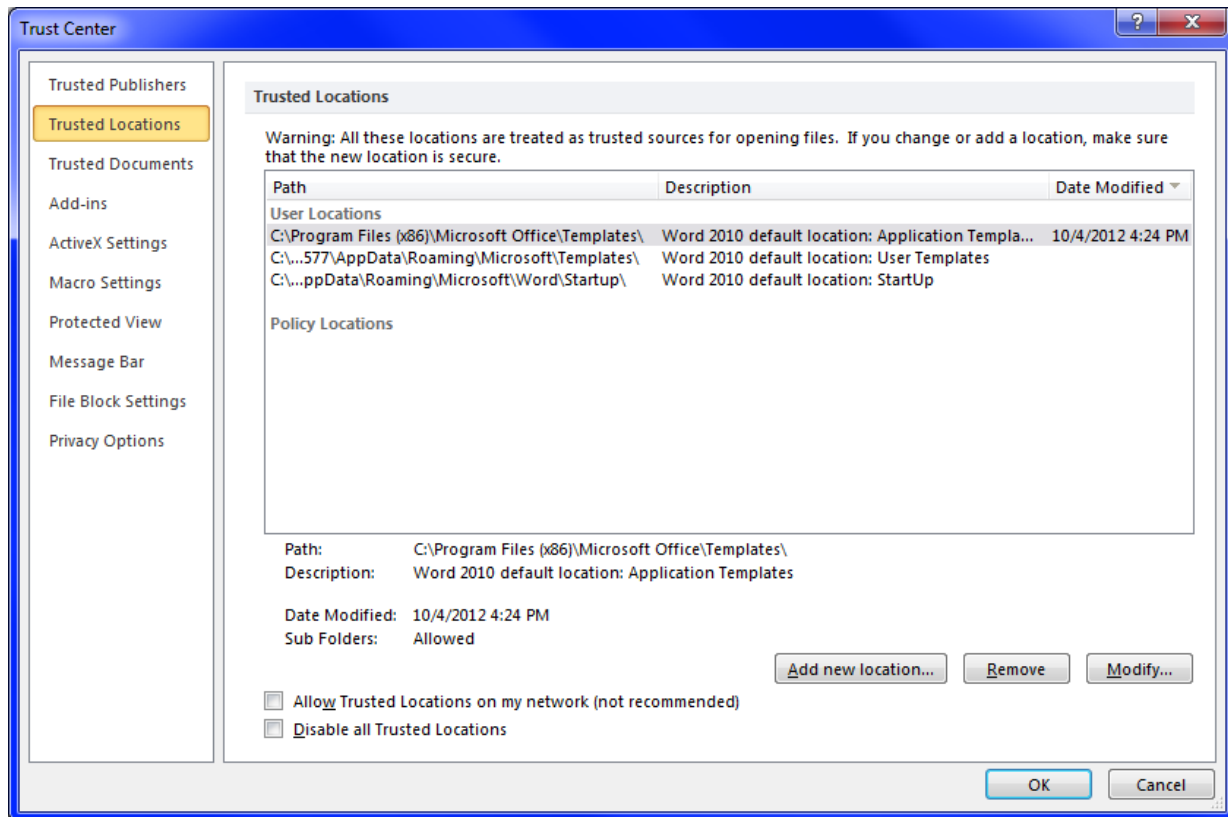
4. In the Word Options dialog, click on **Trust Center** in the options on the left.

Click on the **Trust Center Settings** button.



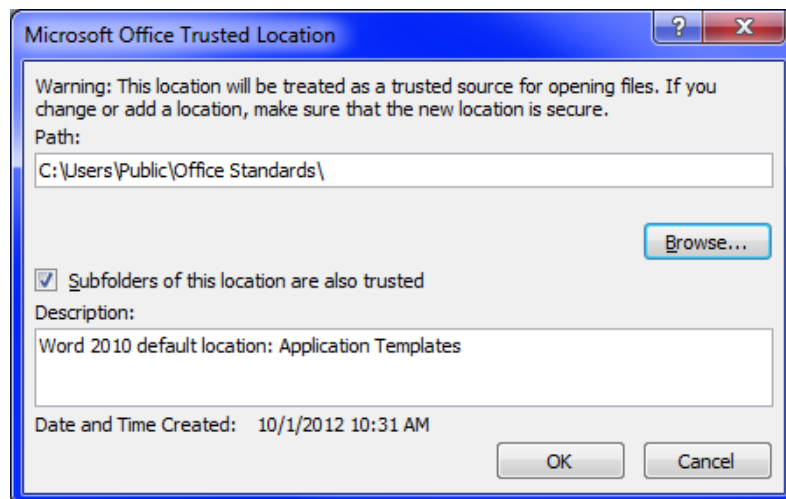
5. In the Trust Center dialog, click on **Trusted Locations** in the options on the left. Select the trusted location for **Application Templates**.

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:\Users\Public\Office Standards** and **Sub Folders** should be set to **Allowed**.

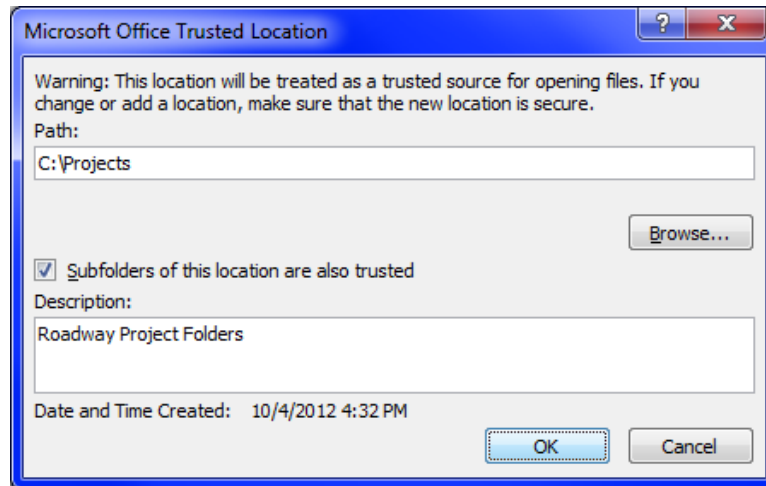
Click on the **Modify** button. In the dialog which opens, click on the **Browse** button and set the path. Then click on the **Subfolders of this location are also trusted** option and click **OK**.



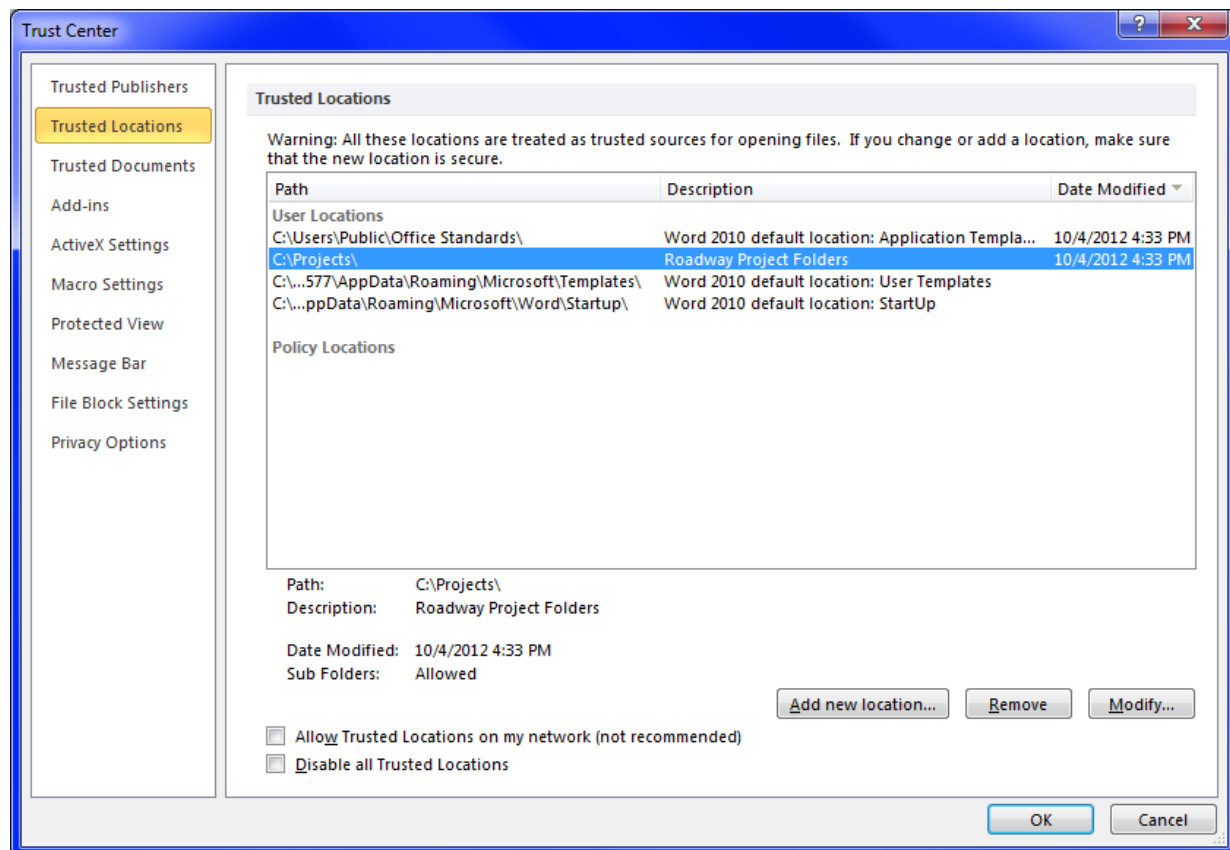
6. In the Trust Center dialog, click on the **Add new location** button.

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**.

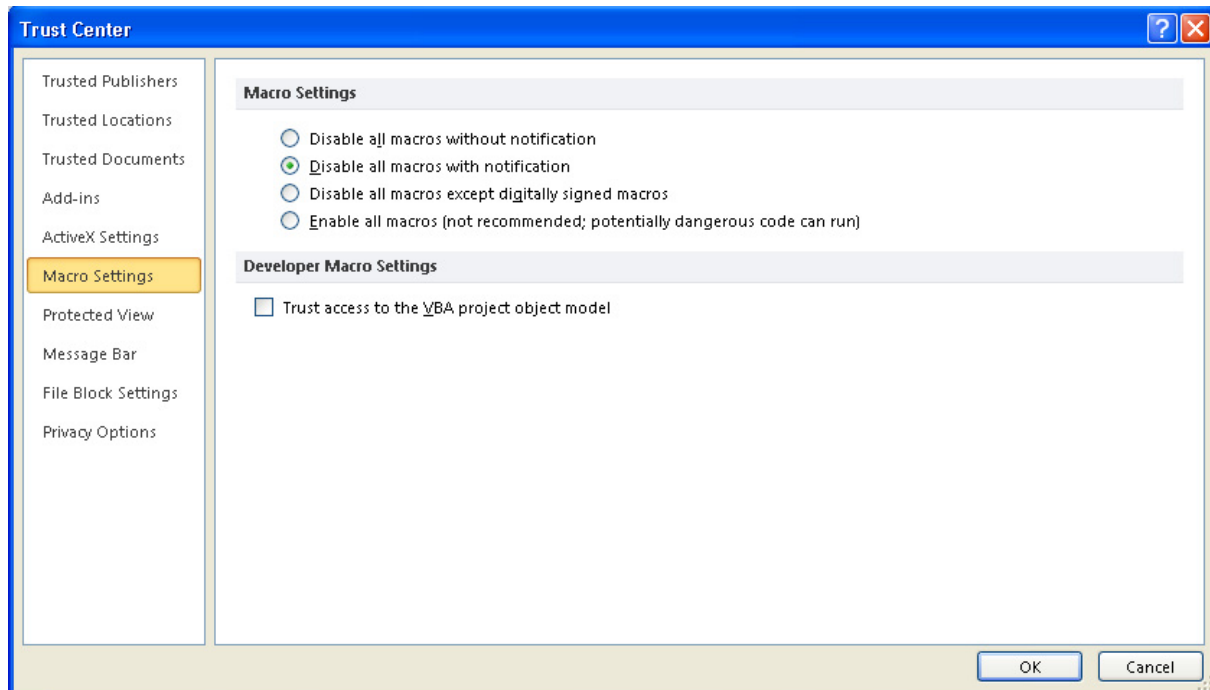


With your project folders defined as trusted locations, all macros will automatically be enabled.

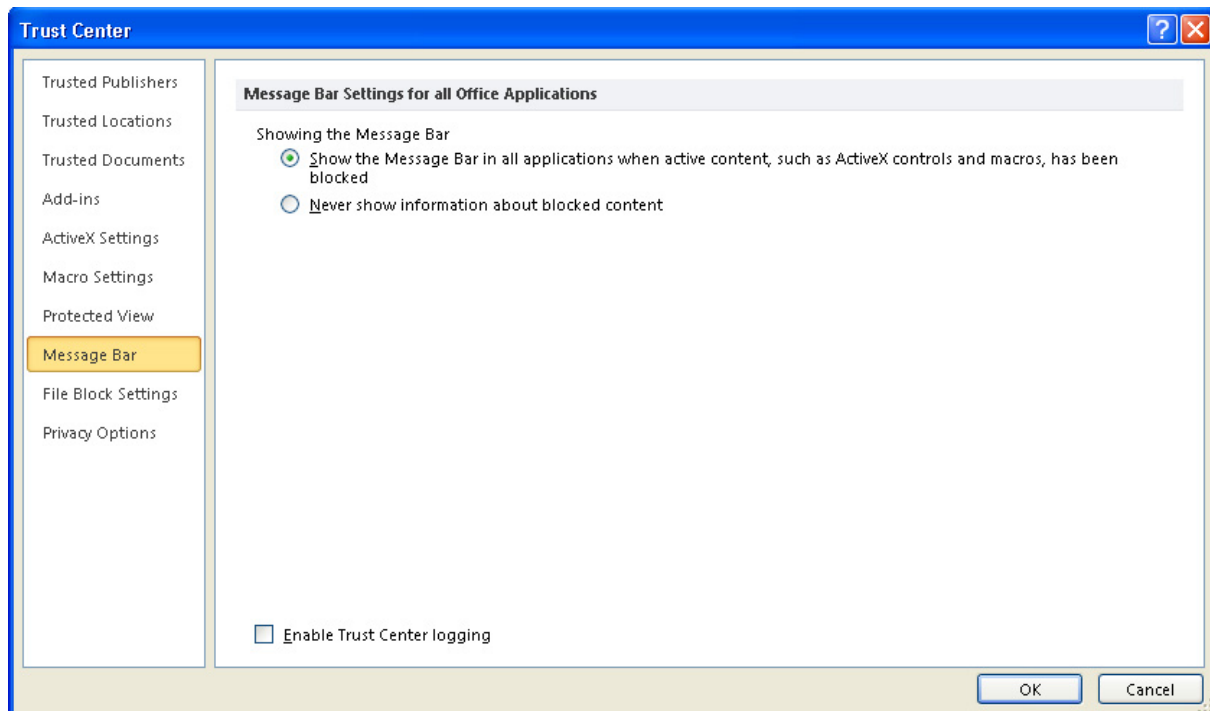


If you open a Word 2010 file with macros that is not in a trusted location, the following two settings will provide you the opportunity to enable the macros as needed.

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.



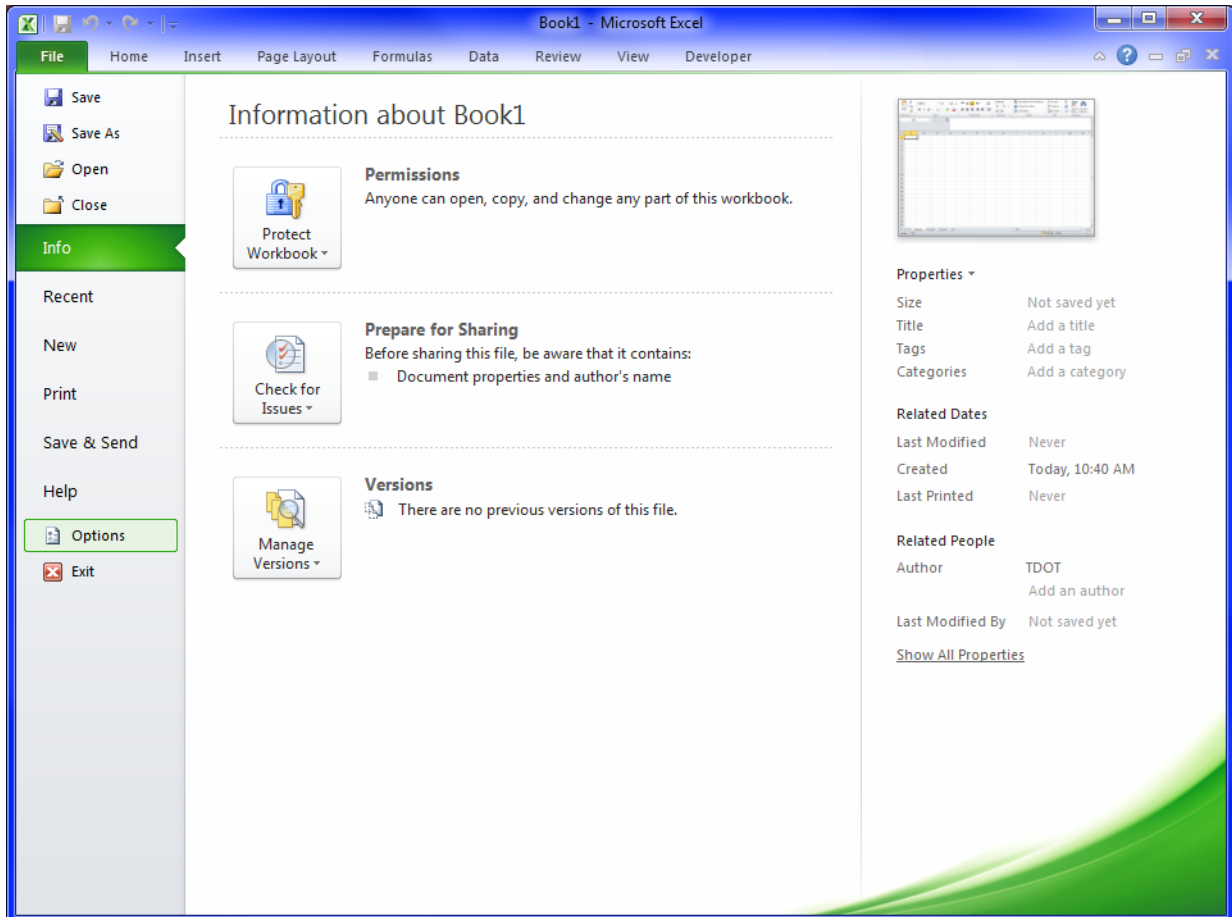
8. In the Trust Center dialog, click on **Message Bar** in the options on the left. The option **Show the Message Bar in all applications when active content, such as ActiveX controls or macros, has been blocked** should be set.



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:

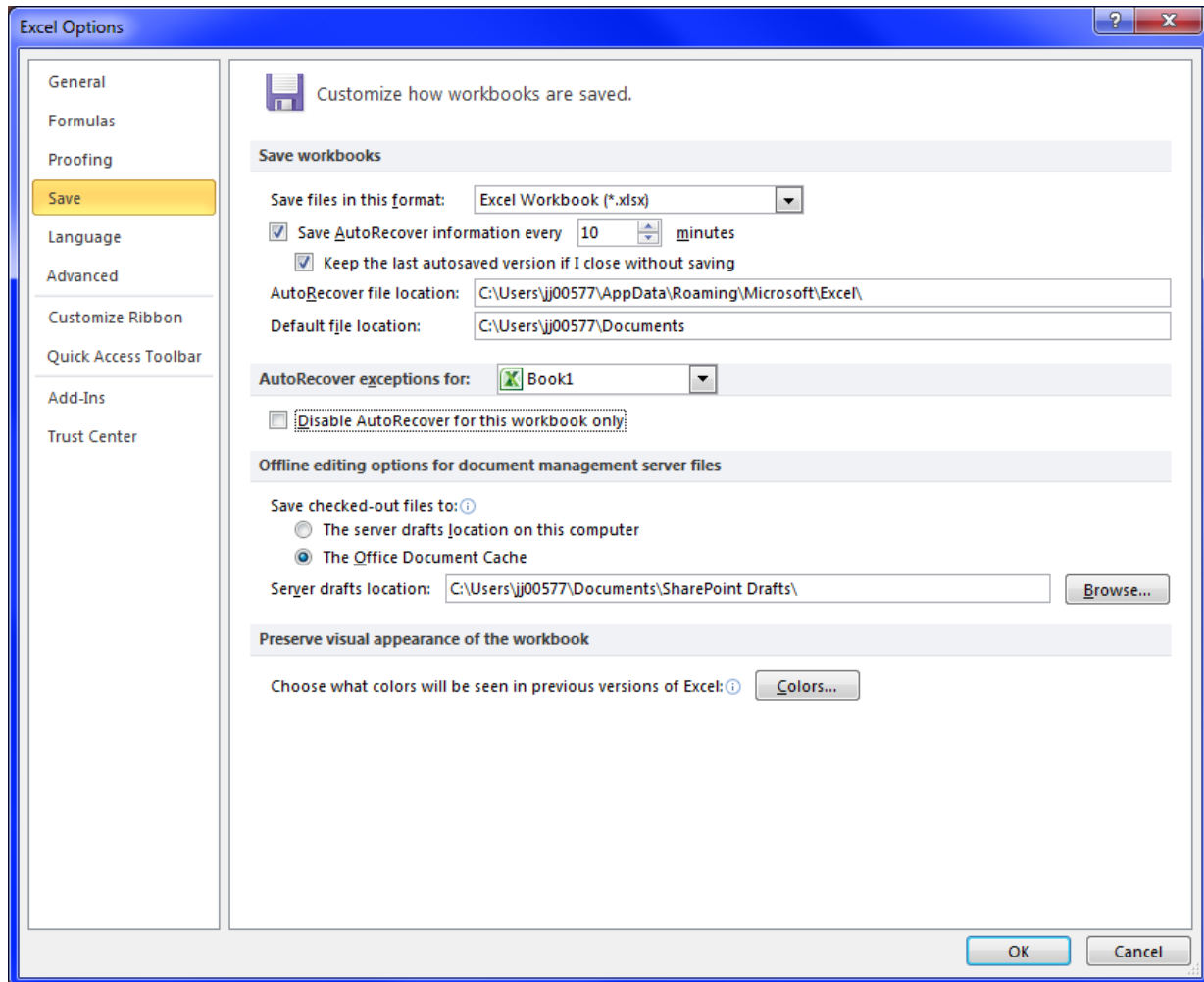
1. In Excel 2010, click on the **File** tab at the far left of the ribbon and choose **Options** from the drop down list.



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

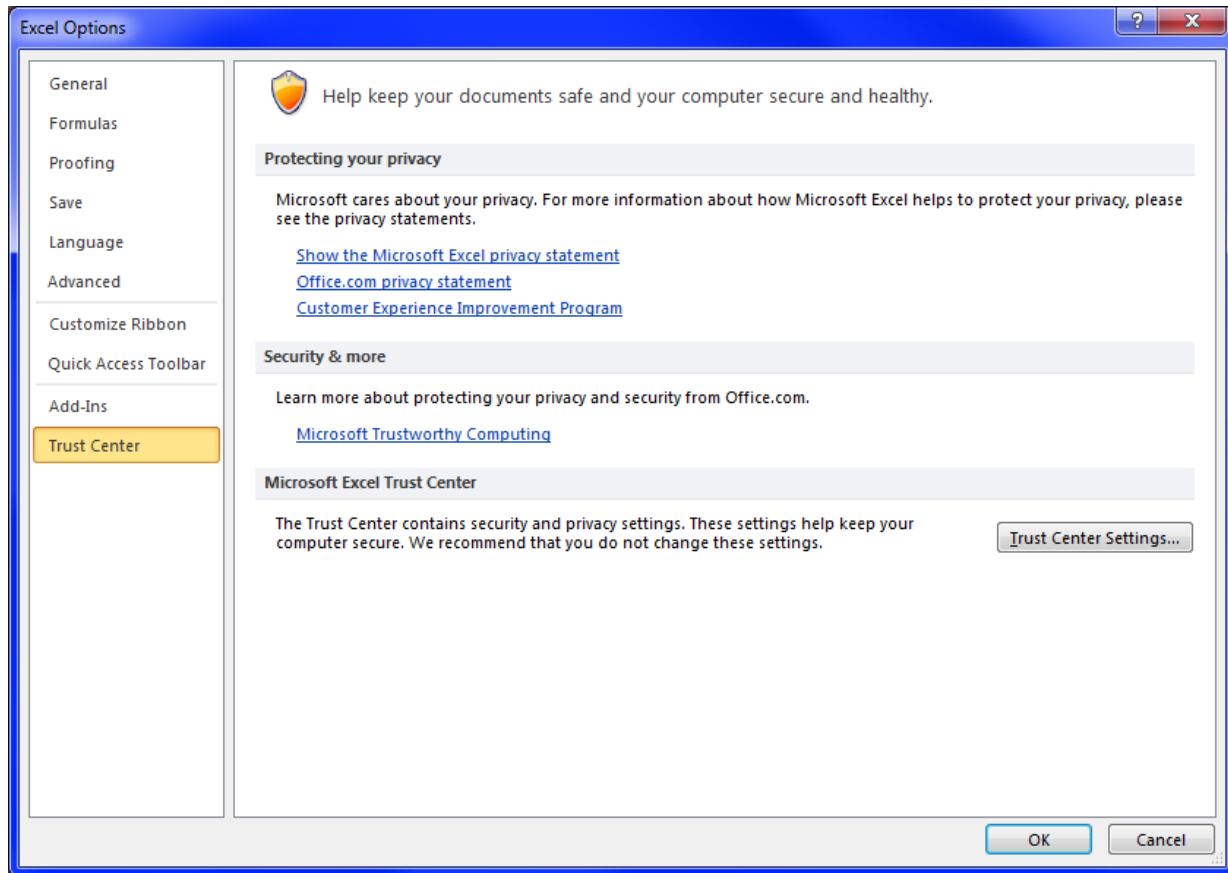
Set the **Save Files in this format:** option to **Excel Workbook (*.xlsx)**.

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



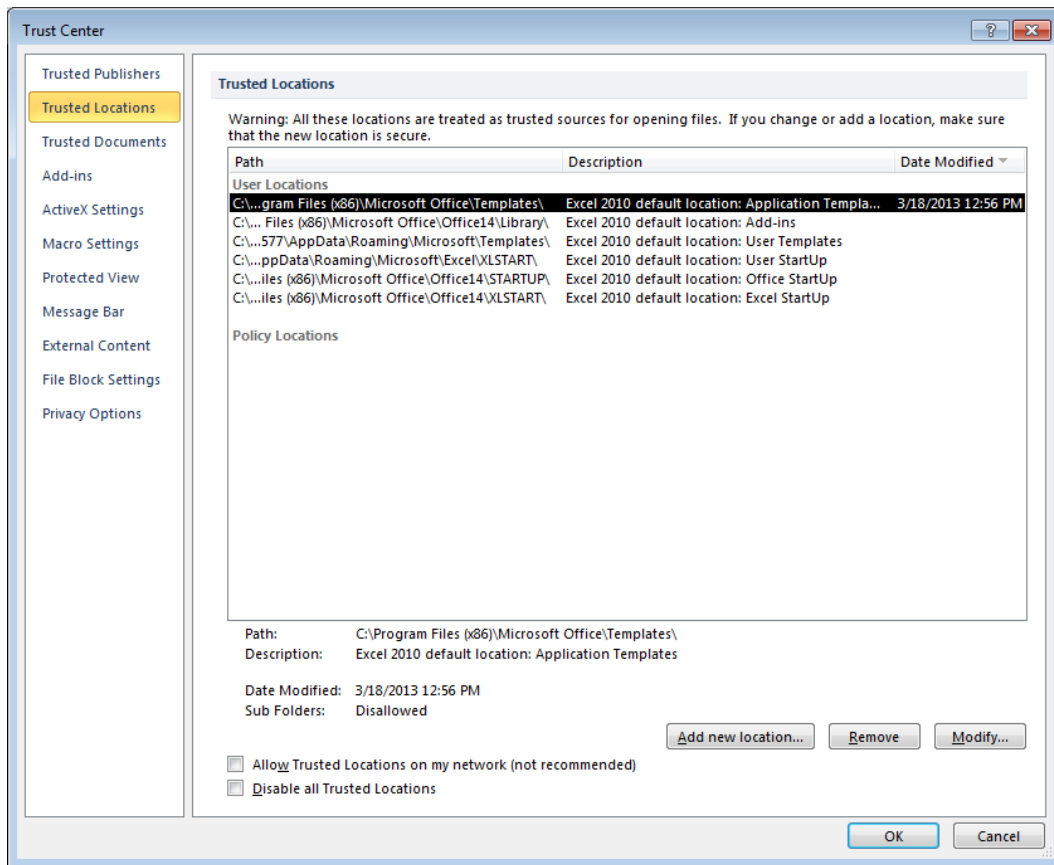
3. In the Excel Options dialog, click on **Trust Center** in the options on the left.

Click on the **Trust Center Settings** button.



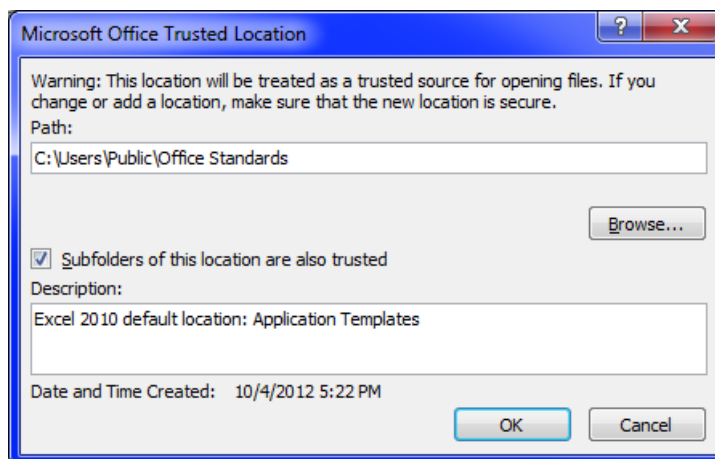
4. In the Trust Center dialog, click on **Trusted Locations** in the options on the left. Select the trusted location for **Application Templates**.

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:\Users\Public\Office Standards** and **Sub Folders** should be set to **Allowed**.

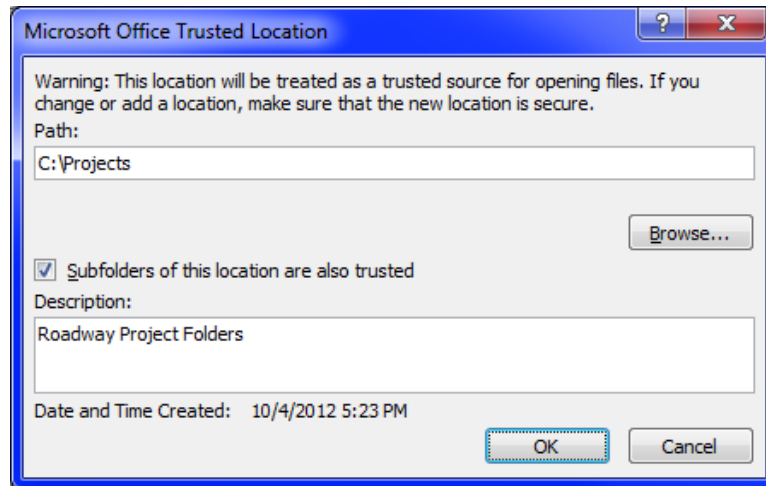
If sub folders are Disallowed, click on the **Modify** button. In the dialog which opens, click on the **Browse** button and set the path. Then click on the **Subfolders of this location are also trusted** option and click **OK**.



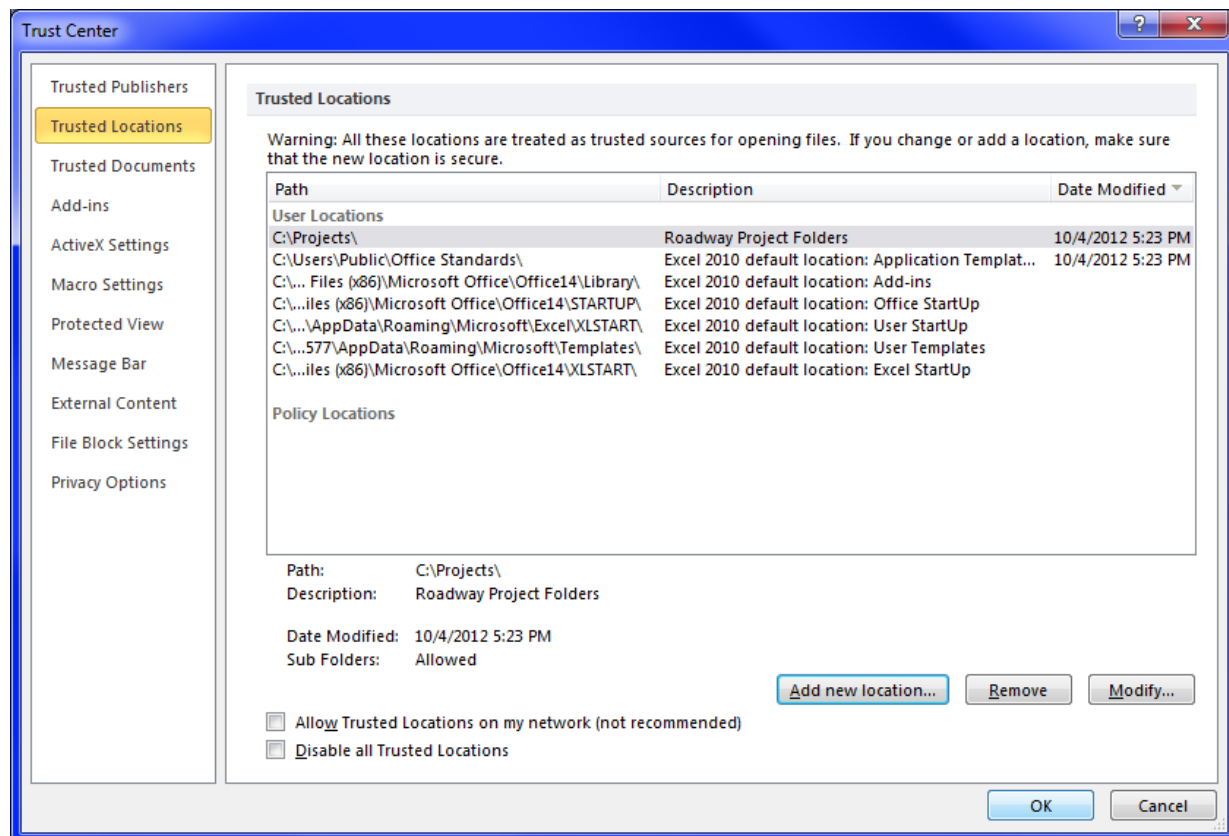
5. In the Trust Center dialog, click on the **Add new location** button.

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**.

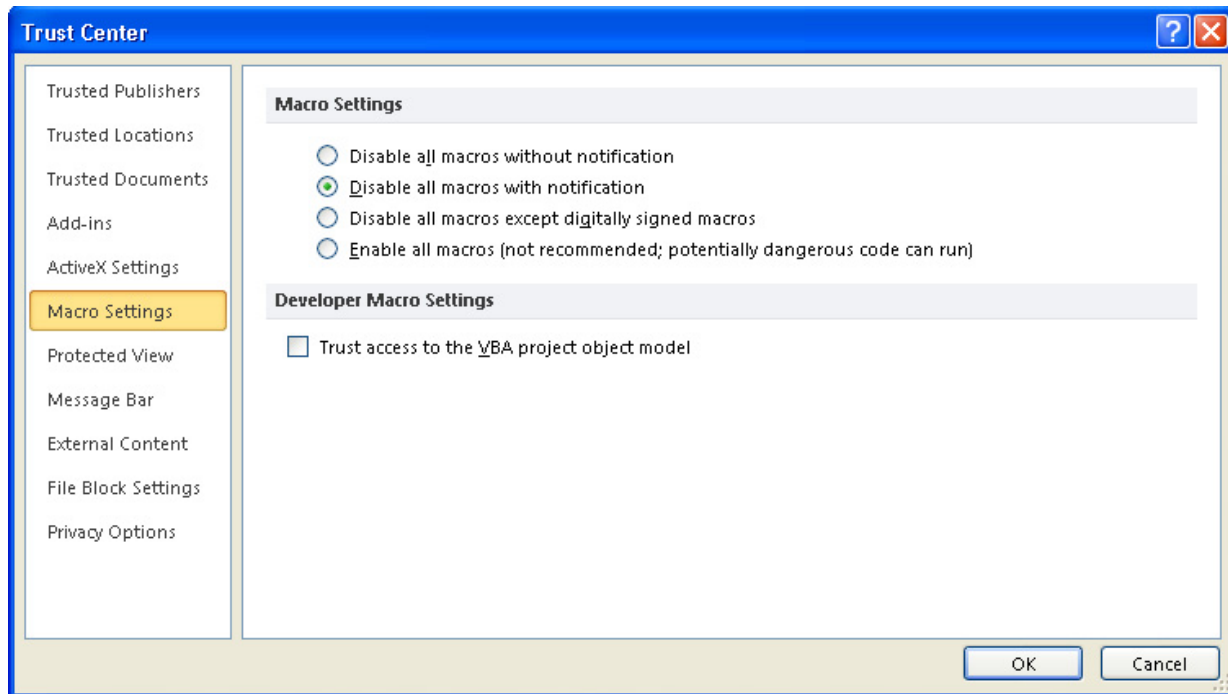


With your project folders defined as trusted locations, all macros will automatically be enabled.

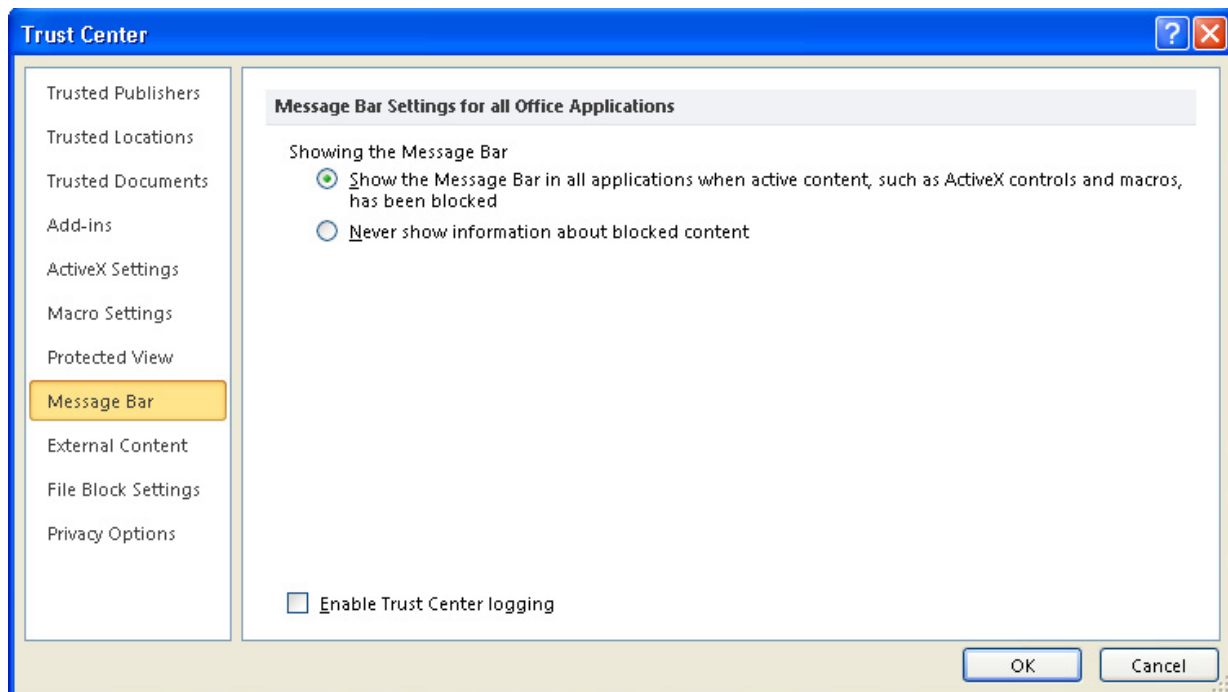


If you open an Excel 2010 file with macros that is not in a trusted location, the following two settings will provide you the opportunity to enable the macros as needed.

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.



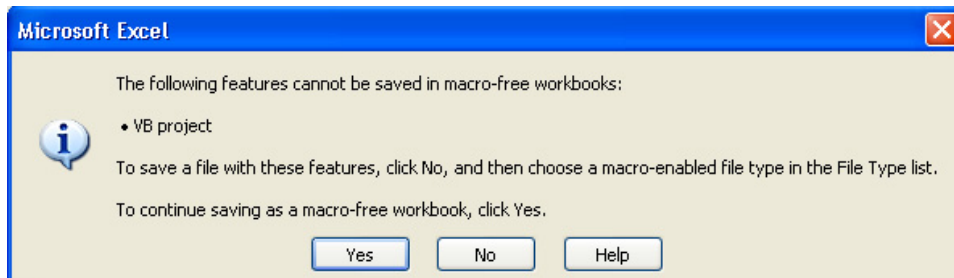
7. In the Trust Center dialog, click on **Message Bar** in the options on the left. The option **Show the Message Bar in all applications when active content, such as ActiveX controls or macros, has been blocked** should be set.



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.

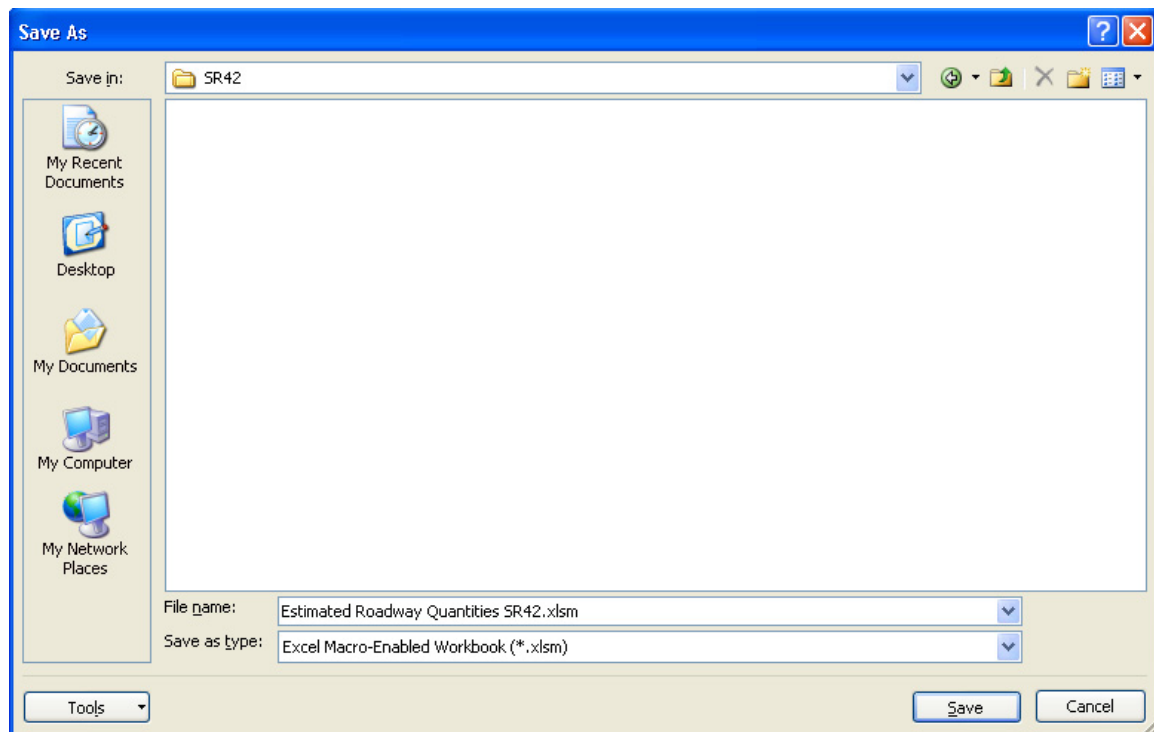
Saving Documents with Macros

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

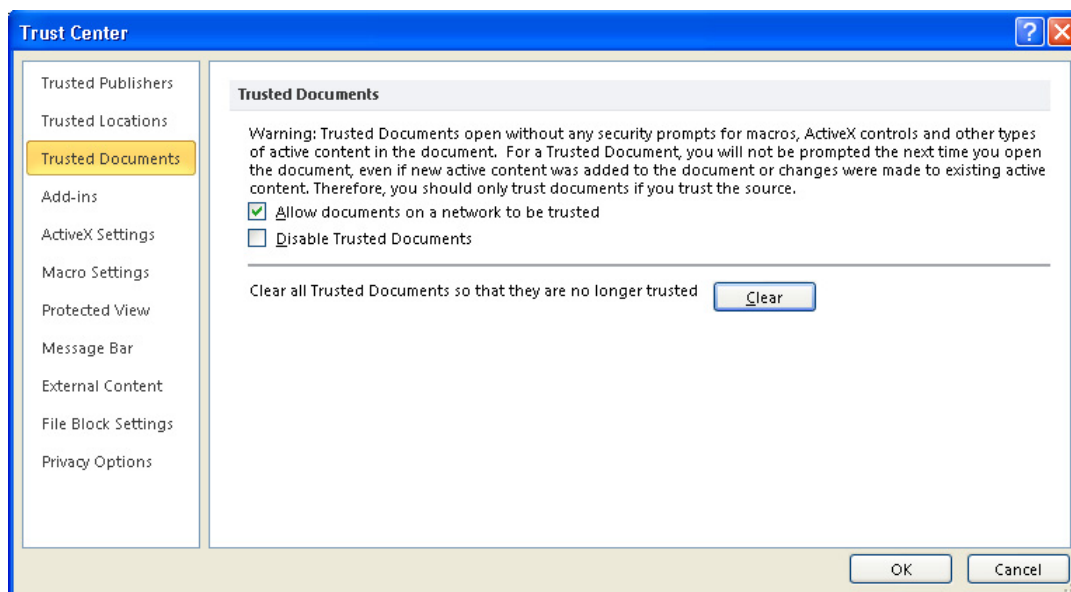
If you open a file with macros that is not in a trusted location, a **Security Warning** message bar will appear.

The screenshot shows the Microsoft Excel interface with a yellow Security Warning message bar at the top. The message bar contains a 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 with tabs for File, Home, Insert, Page Layout, Formulas, Data, Review, View, Developer, Add-Ins, and Acrobat. The Home tab is active, showing options for Clipboard, Font, Alignment, Number, and Styles. The worksheet area displays a table titled "ESTIMATED ROADWAY QUANTITIES" with columns for ITEM NO., DESCRIPTION, UNIT, and QUANTITY. The table contains 20 rows of data. To the right of the table, there is a sidebar with a text box containing a note about program names in parentheses, a link to a website, and buttons for "Select Items", "Fill In Desc", "Download Items", "Import CSV", and "Sort Item".

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 20" 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	

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.



Excel Template Files

T.D.O.T. Roadway Design Division Excel templates used with MicroStation 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:\Users\Public\Office Standards\Survey

ROWAcqTable.xltn

ROWAcqMetric.xltx

Utility Owners.xltx

C:\Users\Public\Office Standards\TDOT 2nd Sheets

Bridge Quantities.xltn

Maintenance Quantities.xltn

Estimated Roadway Quantities.xltn

Project Commitments.xltx

C:\Users\Public\Office Standards\TDOT English Tab Quantities

Box Bridge.xltx

Removal Of Buildings & Obstructions.xltx

Box Culvert.xltx

Removal Of Structures.xltx

Bridge Drains.xltx

Rip Rap Basins.xltx

Catch Basins and Manholes.xltx

Rip Rap Ditches.xltx

Catch Basins.xltx

Roadway Approaches.xltx

Concrete Median Barrier.xltx

ROW Markers.xltx

Cross Drain Arterials.xltx

Sediment Control Structure Dimensions.xltx

Cross Drain Collectors.xltx

Sediment Control Structure Quantities.xltx

Cross Drain Endwalls.xltx

Side Drain Endwalls.xltx

Cross Drain Freeways.xltx

Side Drain.xltx

Cross Drain Local Roads.xltx

Slab Bridge.xltx

Drop Inlets.xltx

Slab Culvert.xltx

Enhanced Silt Fence Check Design Dimensions.xltx

Slope Rehabilitation.xltx

Erosion Prevention and Sediment Control.xltx

Special Ditches.xltx

Grading Quantities Composition Known.xltx

Spring Drains.xltx

Grading Quantities Composition Unknown.xltx

Storm Drainage Endwalls.xltx

Guardrail Tab Builder.xltn

Storm Drainage Pipe Tab Builder.xltn

Guardrail.xltx

Storm Drainage Pipes.xltx

Manholes.xltx

Storm Drainage Structure Tab Builder.xltn

Median Drain Endwalls.xltx

Traffic Control.xltx

Median Drains.xltx

Trees.xltx

Pavement.xltx

C:\Users\Public\Office Standards\TDOT Metric Tab Quantities

Box Bridge.xltx

Pavement.xltx

Box Culvert.xltx

Removal Of Buildings & Obstructions.xltx

Bridge Drains.xltx

Removal Of Structures.xltx

Catch Basins and Manholes.xltx

Rip Rap Basins.xltx

Catch Basins.xltx

Rip Rap Ditches.xltx

Concrete Median Barrier.xltx

Roadway Approaches.xltx

Cross Drain Arterials.xltx

ROW Markers.xltx

Cross Drain Collectors.xltx

Sediment Control Structure Dimensions.xltx

Cross Drain Endwalls.xltx

Sediment Control Structure Quantities.xltx

Cross Drain Freeways.xltx

Side Drain Endwalls.xltx

Cross Drain Local Roads.xltx

Side Drain.xltx

Drop Inlets.xltx

Slab Bridge.xltx

Enhanced Silt Fence Check Design Dimensions.xltx

Slab Culvert.xltx

Erosion Prevention and Sediment Control.xltx

Slope Rehabilitation.xltx

Grading Quantities Composition Known.xltx

Special Ditches.xltx

Grading Quantities Composition Unknown.xltx

Spring Drains.xltx

Guardrail Tab Builder.xltn

Storm Drainage Endwalls.xltx

Guardrail.xltx

Storm Drainage Pipes.xltx

Manholes.xltx

Traffic Control.xltx

Median Drain Endwalls.xltx

Trees.xltx

Median Drains.xltx

Estimated Roadway Quantities Excel File

The Estimated Roadway Quantities Excel file is required on all jobs per the [T.D.O.T. Roadway 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 4-140.06**. 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.

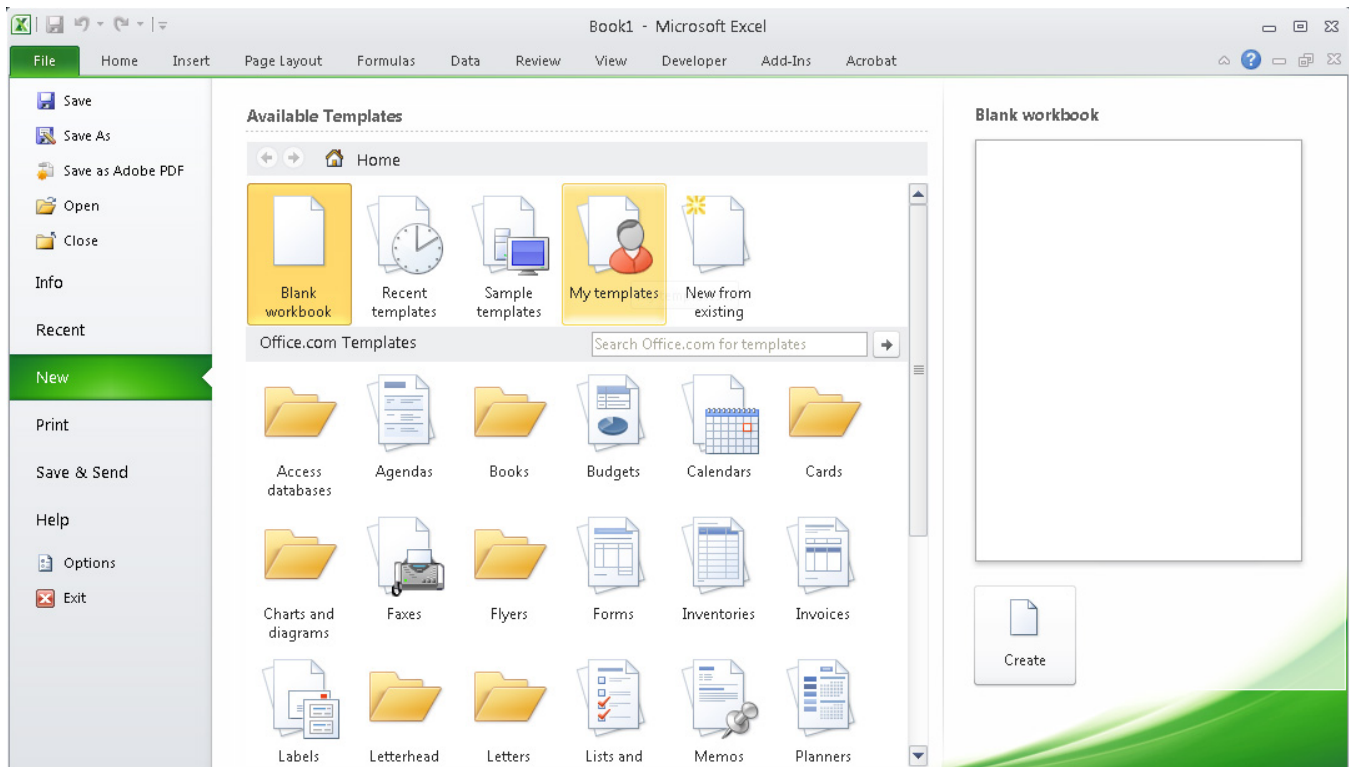
The Utilities Office of the Right-of-Way Division also has an estimated quantities worksheet they submit to the Estimating and Bid Analysis Office. The Utility Office provides their estimated quantities Excel worksheet to their users. The Utility Office will send a copy of the utility Excel worksheet to the Roadway 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. Roadway Design Division Roadway Design Guidelines.

Create TDOT Estimated Roadway Quantities in Excel

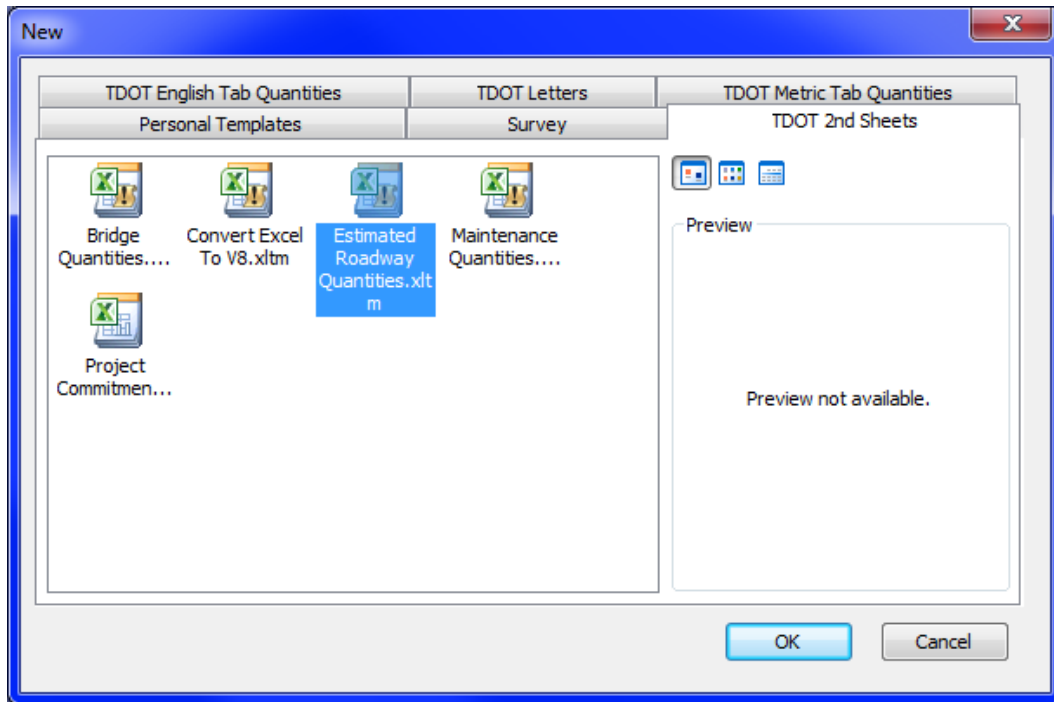
It is recommended that the user have all of the tabulated quantity blocks in the same file with the estimated roadway quantities. By putting all of the worksheets together in the same Excel file, the quantities on the different tab block sheet quantities can be linked to the estimated quantities sheet. 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.

Estimated Roadway Quantities.xltn1 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Paste Clipboard Font Alignment Number Styles Cells Editing

B2

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

Project Data Col #1-Est. Rdwy. Quantities Col #2-Est. Rdwy. Quantities Box Bridge Quantities

Ready 90%

5. Go to **Col #1-Est. Rdwy. Quantities** worksheet. Several macros are available to help fill out the estimated quantities block. On this worksheet, buttons are provided to access the macros with descriptions to the right.

Estimated Roadway Quantities.xltn1 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Paste Font Alignment Number Conditional Formatting Styles Cells Editing

A1 fx

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
2	ESTIMATED ROADWAY QUANTITIES													
3	ITEM NO.	DESCRIPTION								UNIT	QUANTITY			
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
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32														

These programs can also be accessed under **View > Macros** on the ribbon. NOTE: This estimated roadway quantities file is designed to "Tab" name of the **Project Data** worksheet. The worksheets with the total

For more detailed information on use of the Item Programs, see **2ndSheet** http://www.tdot.state.tx.us/Chief_Engineer/assistant_engineer_design/desi

Select Items Numbers From List
For this program to run, t
A word (no asterisks) ca

Fill In Description and Unit
The file "**Items.dat**" mus
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 ti
(SortItems)

Format Notes Area
This macro creates merg
The row height may need

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 pro
The notes area will need

2 Column Format

Ready Project Data Col #1-Est. Rdwy. Quantities Col #2-Est. Rdwy. Quantities Box Bridge Quantities 90%

Note:

The file **Items.dat** must be in the folder **C:\Users\Public\Office Standards\TDOT 2nd Sheets** for the ‘Select Item Numbers...’, ‘Fill in Description...’ and ‘Import CSV File for Items’ macros to work. The macros will direct the user to the website to download the **items.dat** file if the file is not on the computer in the correct location or if it is more than 30 days old.

Estimated Roadway Quantities Macros

Select Item Numbers From List

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

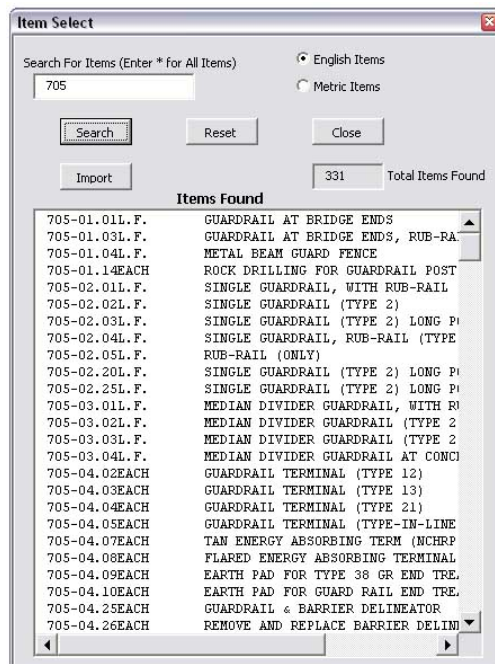
Search – If the **Search for Items** field is left blank, the search button will open all of the items for either **English** or **Metric** items. Put in one or more numbers or letters to pull up all items containing those characters. Do **not** use any wild card characters. Use the **Shift** or **Ctrl**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

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

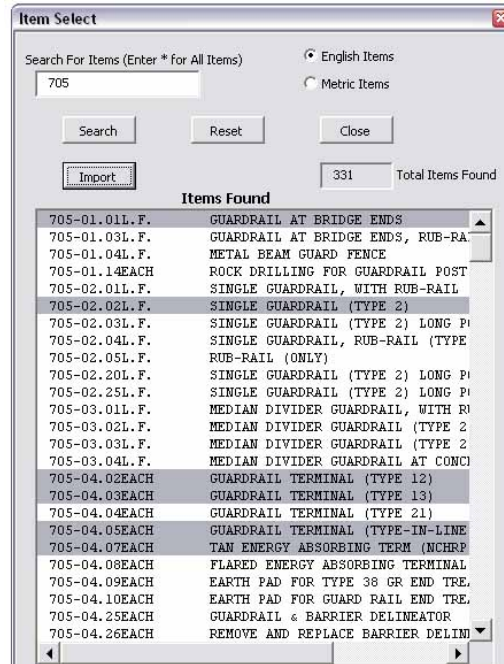
Reset – Clears the **Items Found** list box.

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	

Fill In Description and Unit

Uses the **Items.dat** file located at **C:\Users\Public\Office Standards\TDOT 2nd Sheets** to fill in the current description and units for the item numbers selected. If the description and unit are left blank, then the item number is not in the **items.dat** file. Check for the item number on the web since it is updated daily and save a fresh copy of **items.dat** as needed to include new item numbers. If the item number should be valid but is not found, contact the TDOT manager for the project.

Select item numbers for fill in ...

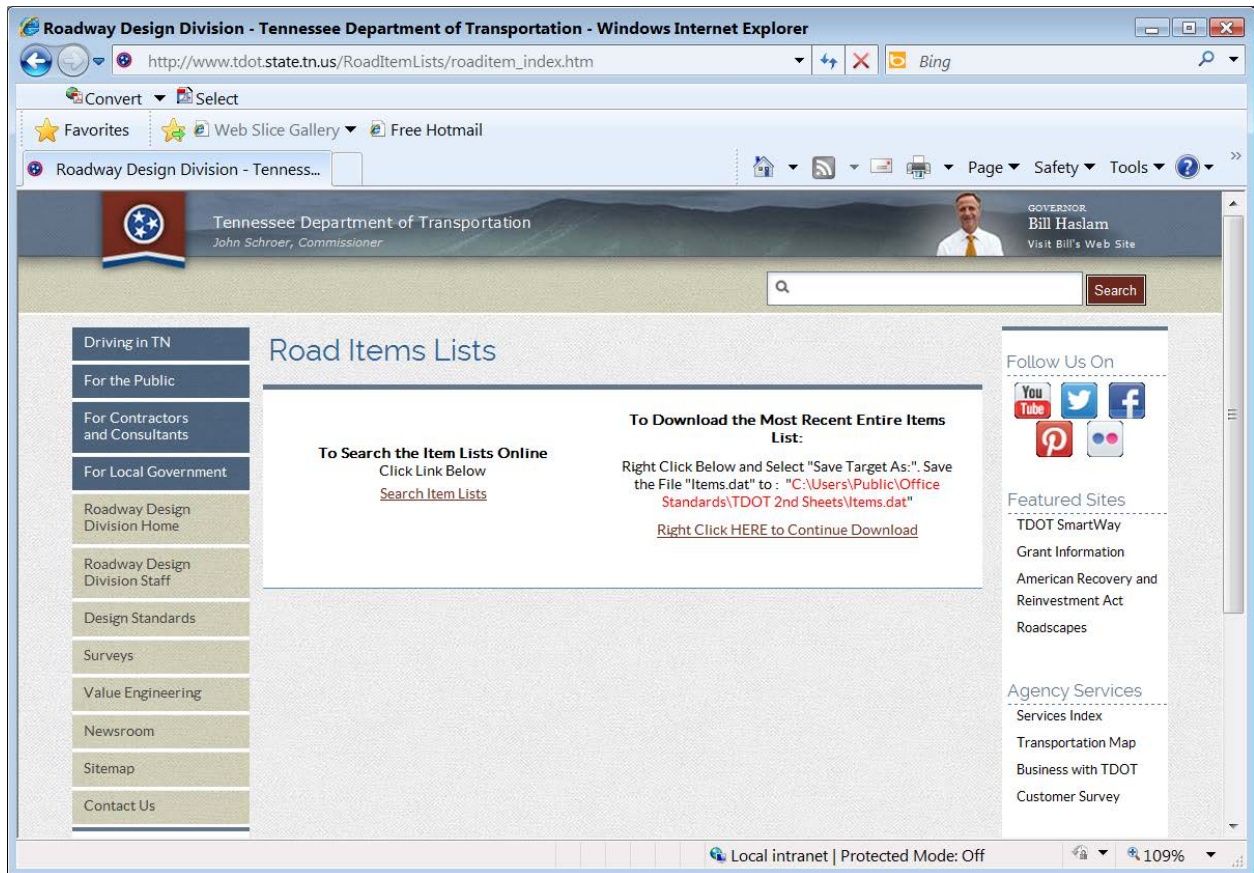
[illegible]

After fill in ...

[illegible]

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:\Users\Public\Office Standards\TDOT 2nd Sheets** for use with the other macros.



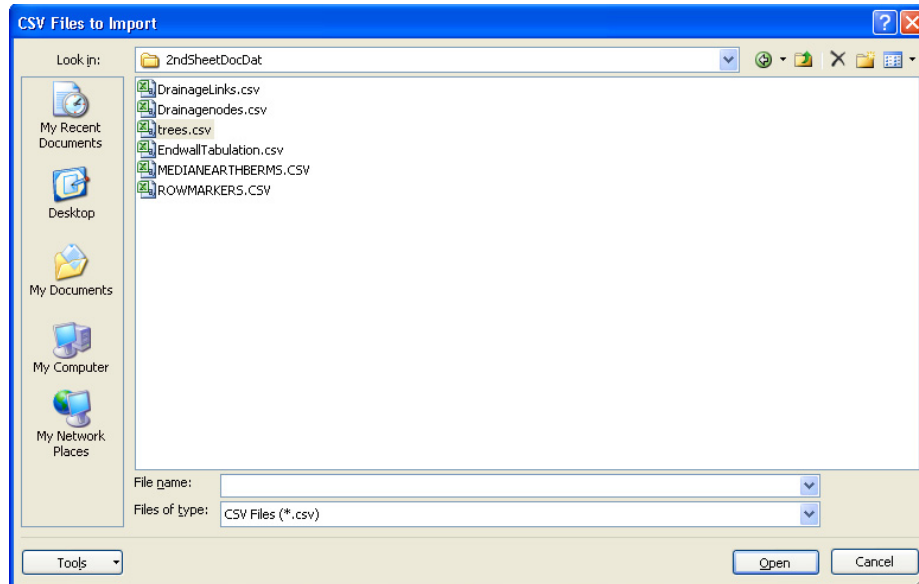
The item number information can be reviewed, cut from the web page and pasted into the Excel estimate file using the **Search Item Lists** option on the left side of the web page. A direct Paste or Paste Special as HTML will paste the text into separate cells on the Excel estimated items worksheet but 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

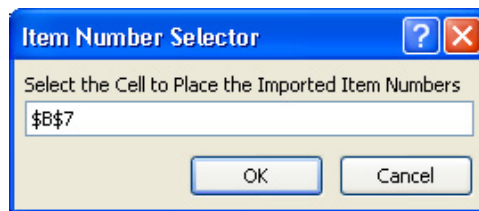
Geopak produces quantity calculation files in CSV (comma separated values) format that can be input directly into the Excel estimated roadway quantities file. The default CSV file format from Geopak is item number, Geopak description, units and quantity.

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 displays the Microsoft Excel interface with the 'SR16EstimatedRoadwayQuantities.xlsm' file open. The spreadsheet contains a list of road construction items in columns A through E. A 'Select Sort Area' dialog box is open, prompting the user to select the items to be sorted. The dialog shows the range '\$B\$6:\$B\$47'.

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	1
716-02.04	PLASTIC PAVEMENT MARKING (CHANNELIZATION STRIPING)	S	1
716-05.01	PAINTED PAVEMENT MARKING (4" LINE)	L	1
716-05.05	PAINTED PAVEMENT MARKING (STOP LINE)	L	1
740-10.03	GEOTEXTILE (TYPE III)(EROSION CONTROL)	S	1
801-01	SEEDING (WITH MULCH)	U	59
801-01.07	TEMPORARY SEEDING (WITH MULCH)	U	59
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 range '\$B\$6:\$B\$47'.

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.

SR20EstimatedRoadwayQuantities.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Clipboard Font Alignment Number Styles Cells Editing

303-01

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
23	(2)	209-08-02	TEMPORARY SILT FENCE (WITH BACKING)	L.F.	389													
24	(2)(3)	209-08-04	TEMPORARY ENHANCED SILT FENCE	L.F.	126													
25	(2)(3)	209-08-01	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)																	
30		303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	4025													
31	(4)	303-01-01	GRANULAR BACKFILL (ROADWAY)	TON	1349													
32		303-10-01	MINERAL AGGREGATE (SIZE 57)	TON	16													
33	(3)																	
34		307-01-01	ASPHALT CONCRETE MIX (PG64-22) (BFMB-HM) GRADING A	TON	1070													
35		307-01-08	M2	TON	775													
36																		
37		402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	12													
38		402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	48													
39																		
40		403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	1													
41																		
42	(5)	411-01-01	ASPHALT CEMENT (PG64-22) (ACS) GRADING D	TON	35													
43	(6)	411-01-02	AGGREGATE (ACS) GRADING D	TON	546													
44																		
45																		
46			FOOTNOTES:															
47	(1)		TABULATED QUANTITIES SHEET NO. 2XX FOR REMOVAL OF															
48	(2)		SPECIFICATIONS FOR MAINTENANCE REPLACEMENT"															
49	(3)		STD. DWG. EC-STR-2.															
50	(4)		TOTAL INCLUDES 194 TONS FOR DRIVEWAYS.															
51	(5)		TOTAL INCLUDES 4 TONS FOR DRIVEWAYS.															
52	(6)		TOTAL INCLUDES 58 TONS FOR DRIVEWAYS.															
53	(7)		BE OBLITERATED OR SCARIFIED.															
54																		
55																		
56																		

Col #1-Est. Rdwy. Quantities Col #2-Est. Rdwy. Quantities Col #3-Est. Rdwy. Quantities Box Bridge Quantities

Point 75%

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.

Format Item Numbers

The borders, text sizes, fonts, etc. may be changed as the estimate table is being filled in. This macro reformats the estimated quantities block to the original size. If there are notes, use the **Format Notes Area** macro to reset that area as needed.

The **Column format** macros listed below will **Hide** and **Unhide** the extra quantity columns. The macros **should always be used** so that the macro buttons and description text will be moved with the columns.

1 Column format

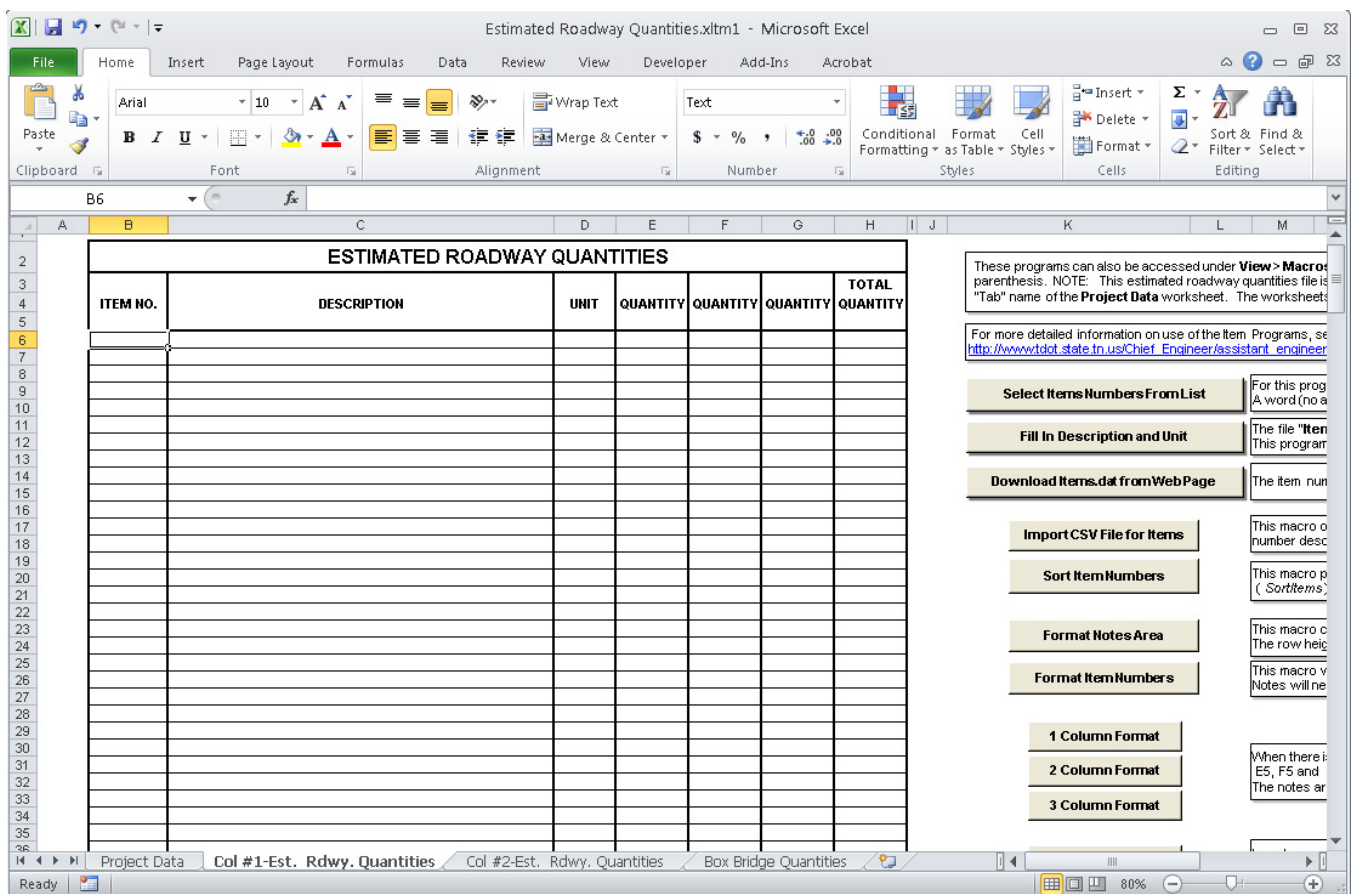
For most projects, where there is only one project number, the one column format is used.

2 Column Format

For projects that go across two counties or for another reason have two project numbers with a total quantities column, there is the two column format.

3 Column Format

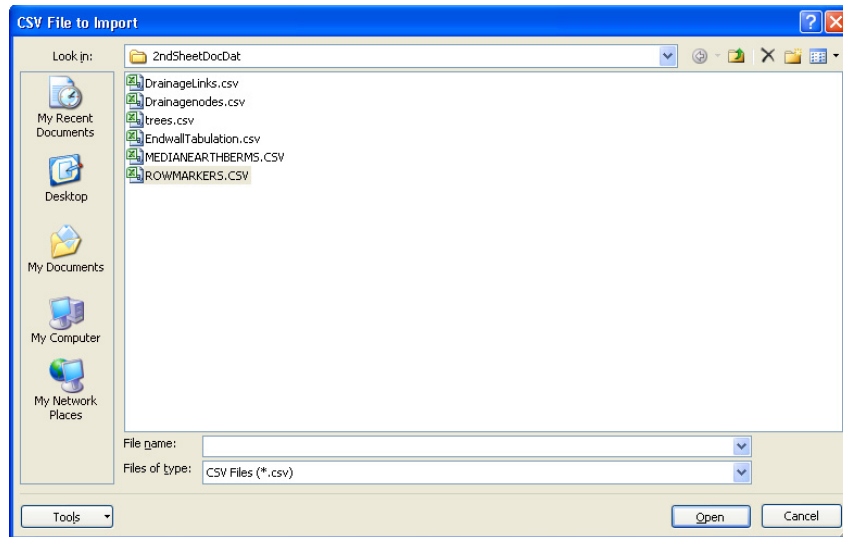
For projects that go across three counties or for another reason have three project numbers with a total quantities column, there is the three column format.



Import CSV

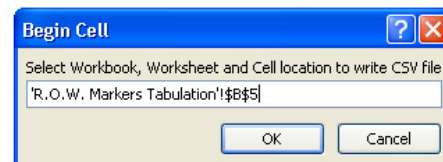
This macro brings in a CSV (comma separated values) file to the worksheet selected, starting at the cell selected. This is intended as a way to build tabulation blocks on other worksheets, but can be used to bring the CSV file in without having any processing done on the information to the estimated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



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.

SR105EstimatedRoadwayQuantities.xlsm - Microsoft Excel

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Clipboard Font Alignment Number Styles Cells Editing

C40

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

These programs can also be accessed under **View > Macros** on the ribbon end of the notes below in parenthesis. NOTE: This estimated roadway read correctly, do not change "Tab" name of the **Project Data** worksheet

For more detailed information on use of the Item Programs, see **2ndSheet** http://www.tdot.state.in.us/Chief_Engineer/assistant_engineer_design/de

Select Items Numbers From List

Fill In Description and Unit

Download Items.dat from Web Page

Import CSV File for Items

Sort Item Numbers

Format Notes Area

Format Item Numbers

1 Column Format

2 Column Format

3 Column Format

Import CSV

For this program to run, f
A word (no asterisks) ca
The file "Items.dat" mus
This program will fill in o
The item numbers list ca
This macro opens a "A.c
description and units are
This macro prompts for t
(SortItems)
This macro creates merg
The row height may need
This macro will format it
Notes will need to be ref
When there is more than
E5, F5 and G5. The pr
The notes area will need
Imports a csv (comma se
modifications.

Col #1-Est. Rdwy. Quantities Col #2-Est. Rdwy. Quantities Box Bridge Quantities Guardrail

Ready 80%

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...**

SR20EstimatedRoadwayQuantities.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Clipboard Font Alignment Number Styles Cells Editing

B49

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		
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)		

These programs can also be accessed under **View > Macros** on the ribbon end of the notes below in parenthesis. NOTE: This estimated roadway read correctly, do not change "Tab" name of the **Project Data** worksheet

For more detailed information on use of the Item Programs, see **2ndSheet** http://www.tdot.state.in.us/Chief_Engineer/assistant_engineer_design/de

Select Items Numbers From List

Fill In Description and Unit

Download Items.dat from Web Page

Import CSV File for Items

Sort Item Numbers

Format Notes Area

Format Item Numbers

1 Column Format

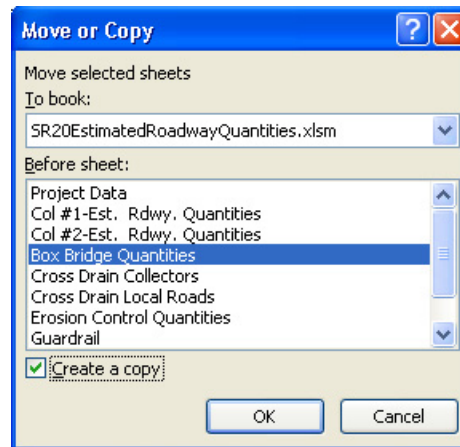
2 Column Format

3 Column Format

Col #1-Est. Rdwy. Quantities Col #2-Est. Rdwy. Quantities

Ready 80%

- 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	

Col #1-Est. Rdwy. Quantities

Col #2-Est. Rdwy. Quantities

Col #2-Est. Rdwy. Quantities (2)

Box Bridge Quantities

2 Column Format

3 Column Format

Import CSV

E5, F5 and G5. The project numbers must be i

The notes area will need to be reformatted after

Imports a csv (comma separated values) file wit

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	

Col #1-Est. Rdwy. Quantities

Col #2-Est. Rdwy. Quantities

Col #3-Est. Rdwy. Quantities

Box Bridge Quantities

2 Column Format

3 Column Format

Import CSV

E5, F5 and G5. The project numbers must be i

The notes area will need to be reformatted after

Imports a csv (comma separated values) file wit

modifications.

Note:

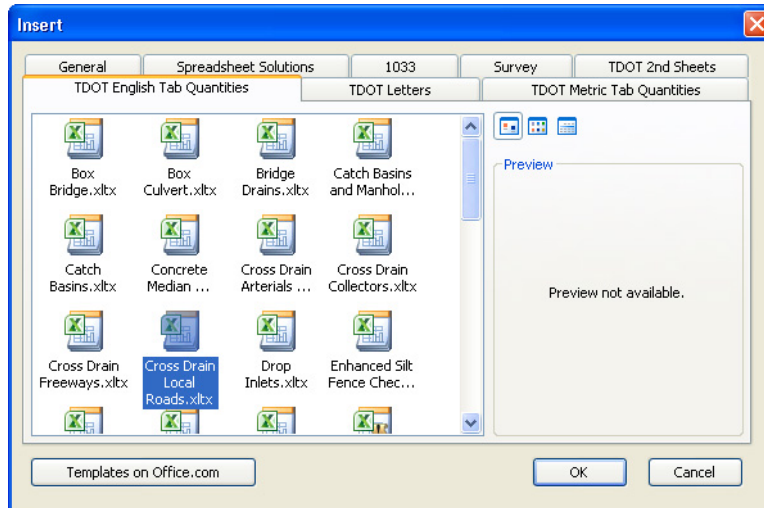
The **Project Data** worksheet **must** be the first worksheet in the file, the estimated roadway quantities worksheets (the worksheet names that start with **Col**) need to be next and then the **Box Bridge Quantities** worksheet (if there is a box culvert or bridge on the project). Any unused worksheets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

FileHomeInsertPage LayoutFormulasDataReviewViewDeveloperAdd-InsAcrobat

Paste

Clipboard

Arial10

B*I*U

Font

Wrap Text

Merge & Center

Alignment

General

\$ %

Number

Conditional Formatting

Format as Table

Cell Styles

Styles

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Cells

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Editing

Sort & Filter

Find & Select

A1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1																			
2	CROSS DRAIN TABULATION																		
3	STATION	RCP CLASS III OR CMP 12 GA. OR HDPE (L.F.) FILL HEIGHT < OR = 18 FT.					RCP CLASS IV OR CMP 12 GA. (L.F.) FILL HEIGHT > 18 FT. AND < OR = 27 FT.					SKEW	RIP-RAP 709-05.06 (TON)	END TREATMENT				CLASS A CONC 611.07 (C.Y.)	
4		INLET		OUTLET		INLET		OUTLET											
5		TYPE	DRAWING NO.	TYPE	DRAWING NO.	TYPE	DRAWING NO.	TYPE	DRAWING NO.										
6	18"	24"	30"	36"	48"	18"	24"	30"	36"	48"									
7																			
8																			
9																			
10																			
11																			
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16																			
17																			
18																			
19																			
20																			
21																			
22																			

Box Bridge QuantitiesCross Drain CollectorsCross Drain Local RoadsErosion Control QuantitiesGuardrailPavement

Ready

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.xltm

Storm Drainage Pipe Tab Builder.xltm

Storm Drainage Structure Tab Builder.xltm

Guardrail Tab Builder

The macro in template **Guardrail Tab Builder.xltm** 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.

GR.txt - Notepad

Date: 4/24/2008 9:25:49 AM

Page No. 1

LINEAR MEASUREMENT COMPUTATION

Pay Item No. 705-02.02
Unit:LF File Name: D:\Projects\GUARDRAIL\sr95.txt
Pay Item Name: Proposed single guardrail line type 2

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					

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Page No. 2

LINEAR MEASUREMENT COMPUTATION

Pay Item No. 705-04.03
Unit:EA File Name: D:\Projects\GUARDRAIL\sr95.txt
Pay Item Name: Proposed Type 13 terminal

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					

Date: 4/24/2008 9:25:49 AM

Page No. 3

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.						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									
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									

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.

Build Storm Drainage Pipe Block

Check Item Numbers

This program builds the storm drainage pipe block from a drainage report file created with Geopak Drainage using the drainage report format file **TDOTlinksFULL.drf**. This program also runs the **Check Items Numbers** program to verify all item numbers which are used.

Use this program only if a new "Items.dat" file was downloaded after running the "Build Storm Drainage Pipe Block" program. This program checks to see if the storm drainage pipe pay items listed are in the current item numbers file. The "Items.dat" file is downloaded from the internet to "C:\Program Files\Microsoft Office\Templates\TDOT 2nd Sheets" for use in estimated quantities tabulation.

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 **Build Storm Drainage Pipes** for the top button & click OK to finish. Assign **runcheckitems** to the bottom button.

STORM DRAINAGE PIPES									
SHEET NO.	FROM		TO		GRADE	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 Manholes Block This program builds the catch basins, junction 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 Sheet' for use in estimated quantities tabulation.			

CATCH BASINS AND MANHOLES																		REMARKS
SHEET NO.	LOCATION	STATION	OFFSET (FT.)	DRAINAGE CODE	GRATE/ELEV.	STRUCTURE TYPE	INSIDE DIMENSIO	DEPTH (FT.)	TANDARD DRAWING	TYPE 3 M.H. 12' - 16'	TYPE 3 M.H. 16' - 20'	TYPE 12 C.B. 0' - 4'	TYPE 12 C.B. 4' - 8'	TYPE 12 C.B. 8' - 12'	TYPE 14 C.B. 12' - 16'	TYPE 42 C.B. 0' - 4'	TYPE 42 C.B. 4' - 8'	
	CPDRW3	0+56.13	-11.5	CB-24	428.13	#14	8X8	6.42										
	CPDRW3	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+68.36	34	CB-15	456.17	#12	4X3	11.75						1				
	MAINLINE	15+68.36	36.74	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	452.38	#12	7X7	20.71										
	MAINLINE	17+86.12	-64.34	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-8	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	426.36	#12	5X5	10.36						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										
	STOBEND	10+34.36	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.

SR105EstimatedRoadwayQuantities.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Clipboard Font Alignment Number Styles Cells Editing

E27 =Guardrail!H15

ESTIMATED ROADWAY QUANTITIES			
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	

These programs can also be accessed under **View > Macros** on the end of the notes below in parenthesis. NOTE: This estimated roadway correctly, do not change "Tab" name of the **Project Data** worksheet.

For more detailed information on use of the Item Programs, see **2ndSI** http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/d

Select Items Numbers From List For this program, to r A word (no asterisks)

Fill In Description and Unit The file "Items.dat" r This program will fill

Download Items.dat from Web Page The item numbers lis

Import CSV File for Items This macro opens a description and units

Sort Item Numbers This macro prompts (SortItems)

Format Notes Area This macro creates r The row height may

Format Item Numbers This macro will forma Notes will need to be

Col #1-Est. Rdwy. Quantities Col #2-Est. Rdwy. Quantities Box Bridge Quantities Guardrail

Ready 100%

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.
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.

SR20EstimatedRoadwayQuantities.xlsm - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Clipboard Font Alignment Number Styles Cells Editing

ESTIMATED ROADWAY QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
105-01	CONSTRUCTION STAKES, LINES AND GRADES	L.S.	1
201-01	CLEARING AND GRUBBING	L.S.	1
202-01	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.S.	1
(1) 202-06.01	REMOVAL OF BUILDINGS (TRACT NO. 10)	L.S.	1
(1) 202-06.02	REMOVAL OF BUILDINGS (TRACT NO. 11)	L.S.	1
203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	6199
203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	4876
203-06	WATER	M.G.	52
203-07	FURNISHING & SPREADING TOP SOIL	C.Y.	954
(2) 209-03.02	ROCK CHECK DAM	EACH	24
(2) 209-05	SEDIMENT REMOVAL	C.Y.	195
(2) 209-03.04	TEMPORARY SILT FENCE (WITH BACKING)	L.F.	319
(2) 209-03.05	TEMPORARY FENCE (SILT FENCE)	L.F.	155
(2) 209-09.04	SANDBAGS	BAG	1000
(2) 209-09.04	SEDIMENT FILTER BAGS (1' W)	EACH	1
(2) 209-10.01	TEMPORARY DEWATERING STRUCTURE	C.Y.	72
(2) 209-20.05	POLYETHYLENE SHEETING (4 MIL. MINIMUM)	S.Y.	67
(3) 303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	4025
(3) 303-01.01	GRANULAR BACKFILL (ROADWAY)	TON	1349
(3) 303-01.01	MINERAL AGGREGATE (SSS-5)	TON	36
(3) 307-01.01	ASPHALT CONCRETE (HP-4-22) (SPMB-HH)	TON	9729
(3) 307-01.02	ASPHALT CONCRETE (HP-4-22) (SPMB-HH)	TON	775
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PO)	TON	52
402-02	AGGREGATE OR COVER MATERIAL (PO)	TON	49
402-01	BITUMINOUS MATERIAL FOR TACK COAT (TO)	TON	1
(4) 411-01.01	ASPHALT CEMENT (PG-4-22) (AC-3) GRADING D	TON	39
(4) 411-01.02	AGGREGATE (AC-3) GRADING D	TON	946

FOOTNOTES:

- (1) BID PRICE INCLUDES ALL SALVAGE VALUE OF MATERIAL. SEE TABULATED QUANTITIES SHEET NO. 238 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-ST-2.
- (4) TOTAL INCLUDES 144 TONS FOR DRIVEWAYS.
- (5) TOTAL INCLUDES 4 TONS FOR DRIVEWAYS.
- (6) TOTAL INCLUDES 50 TONS FOR DRIVEWAYS.
- (7) INCLUDES BUT NOT LIMITED TO AREAS OF EXISTING ROAD TO BE OBLITERATED OR SCRAPED.

Project Data Col #1-Est. Rdwy. Quantities Col #2-Est. Rdwy. Quantities Col #3-Est. Rdwy. Quantities Box Bridge Quantities

Average: 817.4230769 Count: 152 Sum: 21253

In MicroStation

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. Roadway Design Division **Seed2d.dgn** seed file, which is part of the T.D.O.T. Roadway 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.

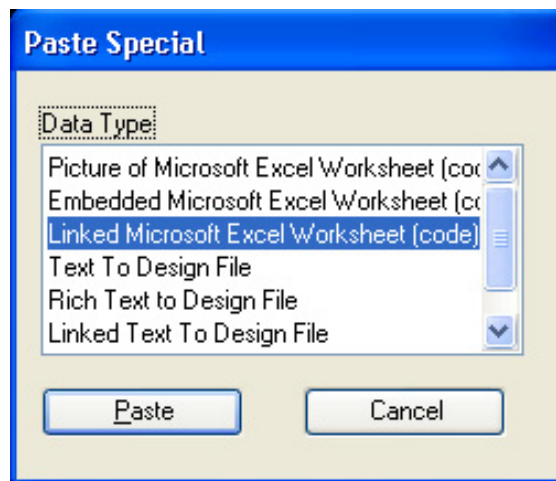
There are several reasons why the MicroStation DGN sheet files need to be named according to the **Standard Sheet File** naming recommendations. One, the project will be very easy to plot using InterPlot Organizer where the sheets will automatically be in order. Two, the names of the sheet files must 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.

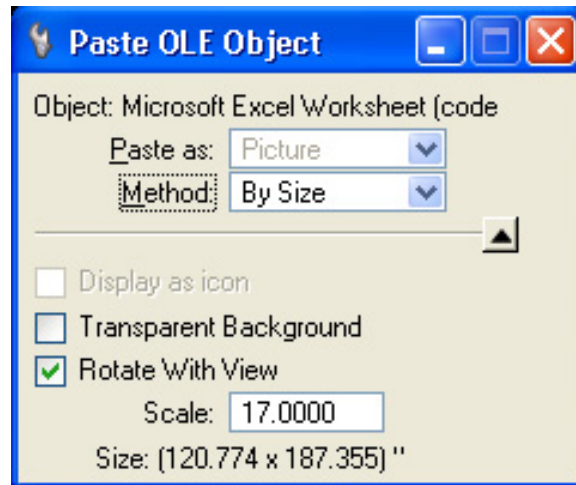
The Excel link will be placed on the active level in MicroStation.

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

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



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



3. 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**)

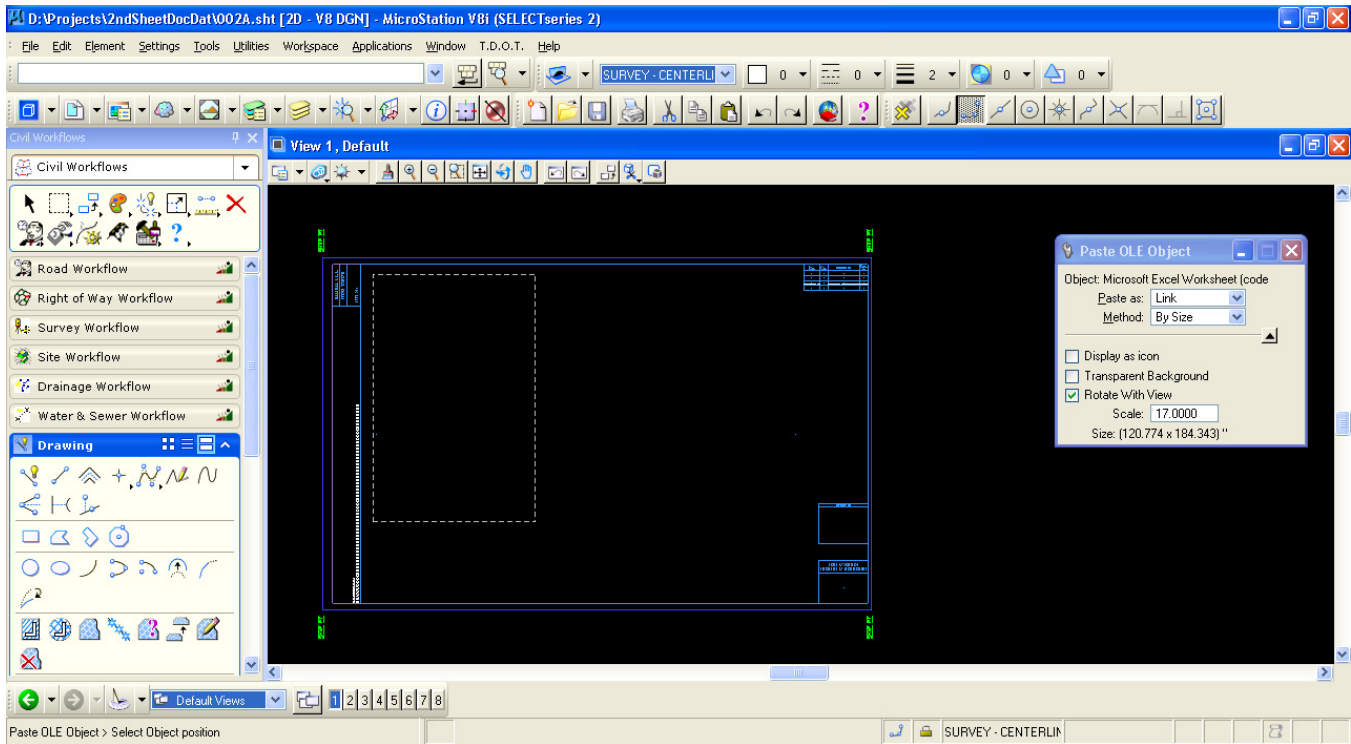
For sheets at other scales, multiply the 1-scale above by the scale of the sheet:

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.

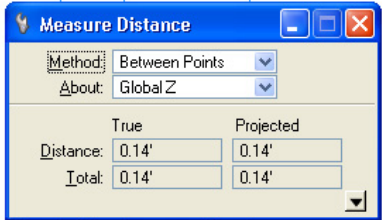


After placement, the OLE attachment can be manipulated as a graphic element. It can be moved, copied and scaled as needed.

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.



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

0.14'

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

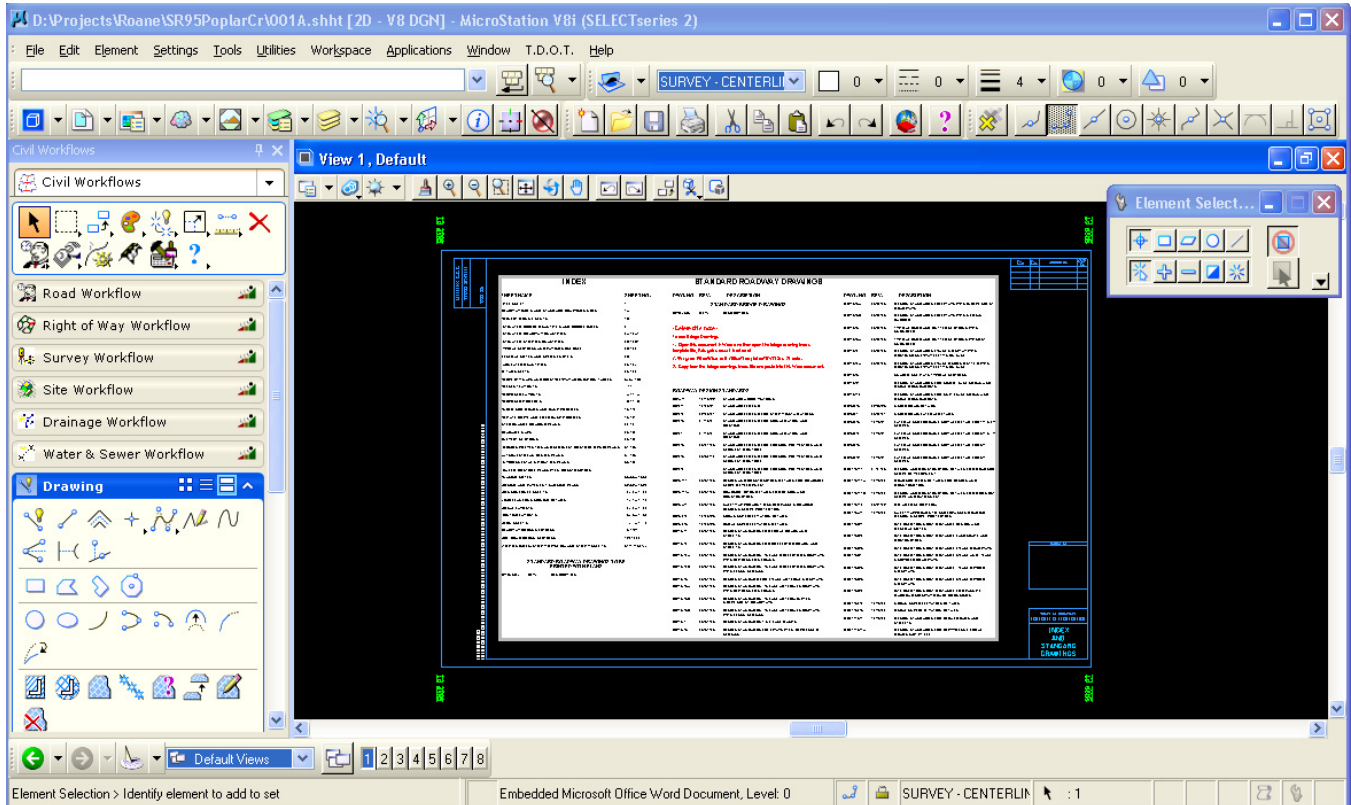
When the sizes of the rows or columns are changed, the area linked will still be displayed in MicroStation but will be warped or truncated. It will need to be relinked to correct the display in graphics.

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.

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.

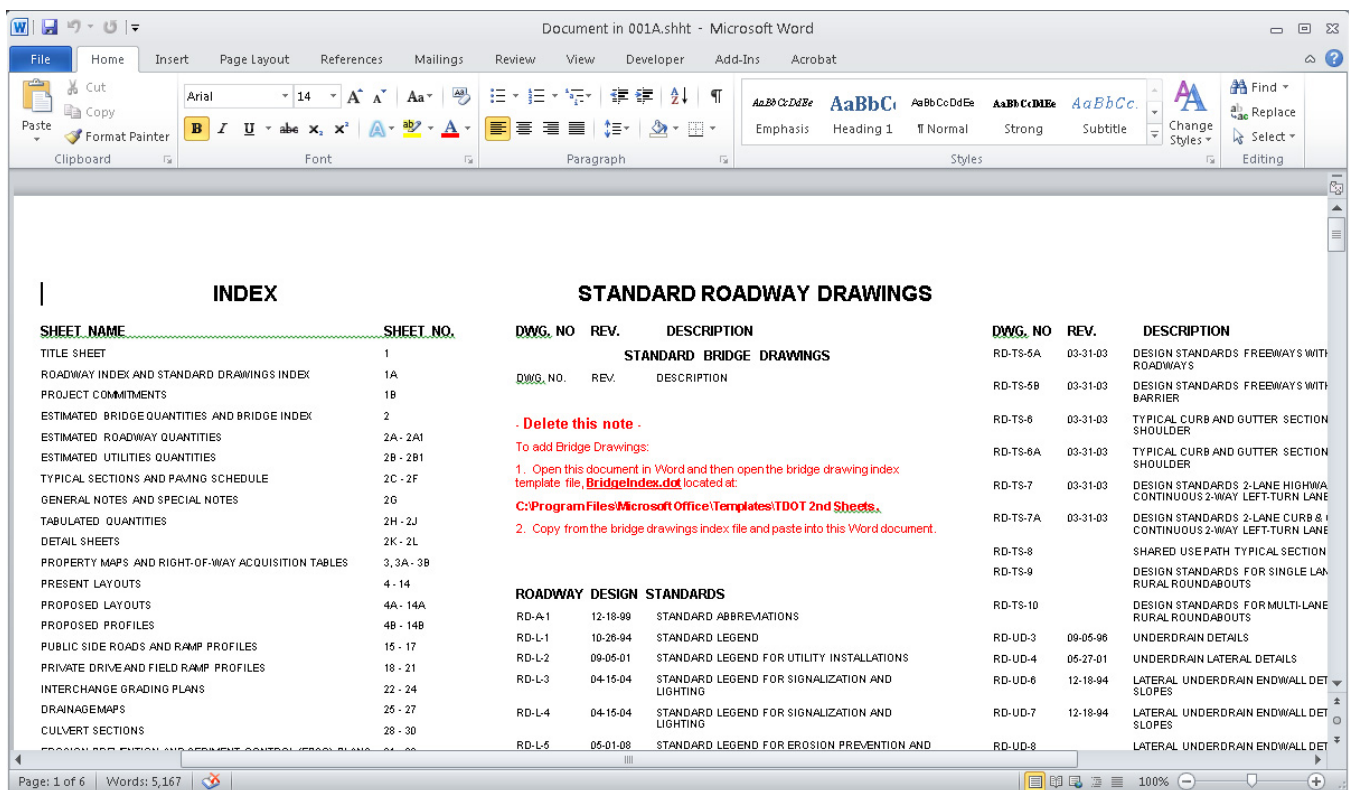


- Note that the Word document header says **Document in DesignFileName.sht**. Make edits as needed

Editing Notes:

Occasionally information previously deleted needs to be added back into the Word document. This can be accomplished by cutting and pasting from other open Word documents. To open a temporary General Notes or Index and Standard Drawings file in Word, go to the **File** tab at the far left of the ribbon and choose **New > My Templates > TDOT 2nd Sheets > English General Notes.dotx** or **English Index & Std Dwgs.dotx**. Cut from the temporary document and paste to the document in the sheet file. Close the temporary document without saving.

In General Notes documents, each section is numbered starting at 1 (one). If the 1st note in a section is deleted, the remaining notes will pick up the numbering sequence from the previous section. To correct this, highlight the first note in the section, right click and choose the option **Restart at 1**.

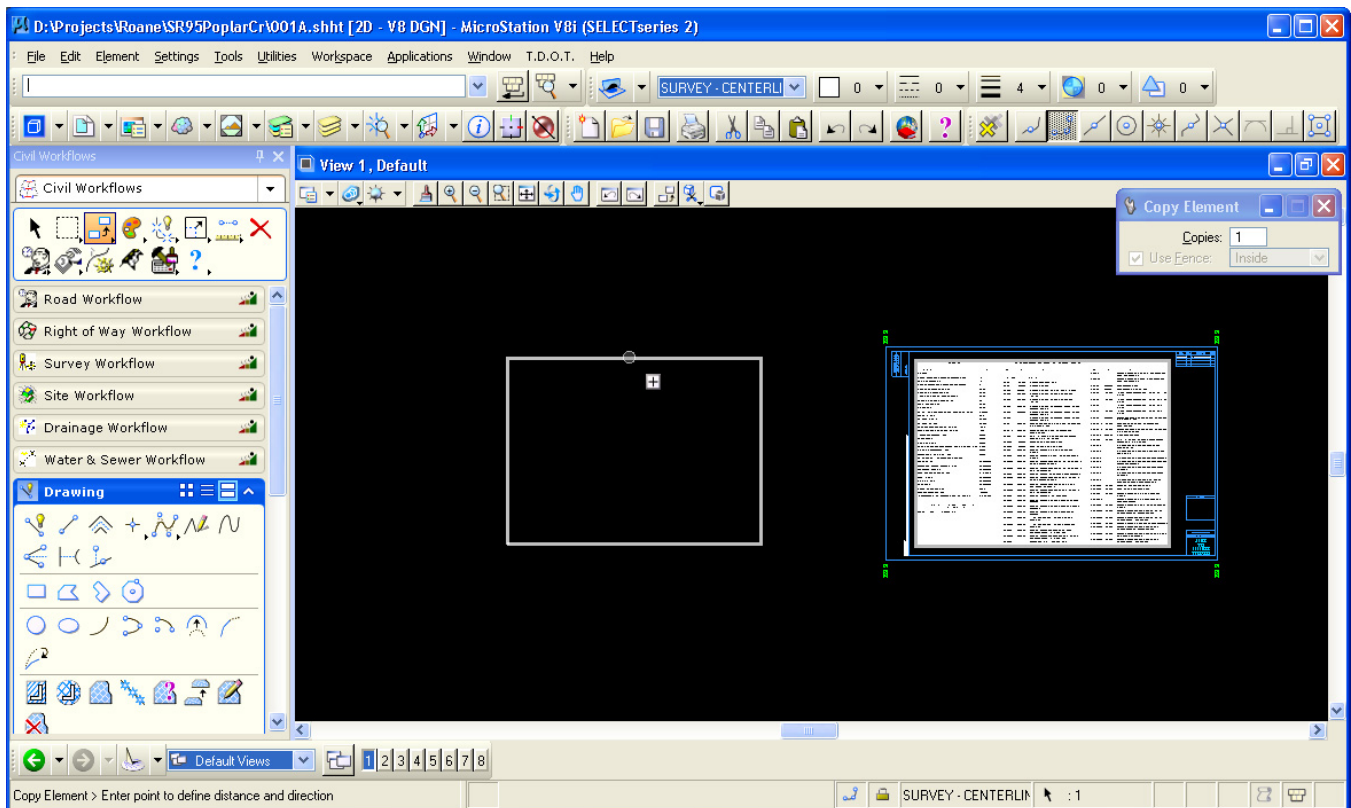


- After making the edits wanted, go to the File tab at the upper left and choose **Save** or click on the **Save** icon at the upper left. Changes made in the Word document will not be shown in MicroStation until the Word document is closed.

5. 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.



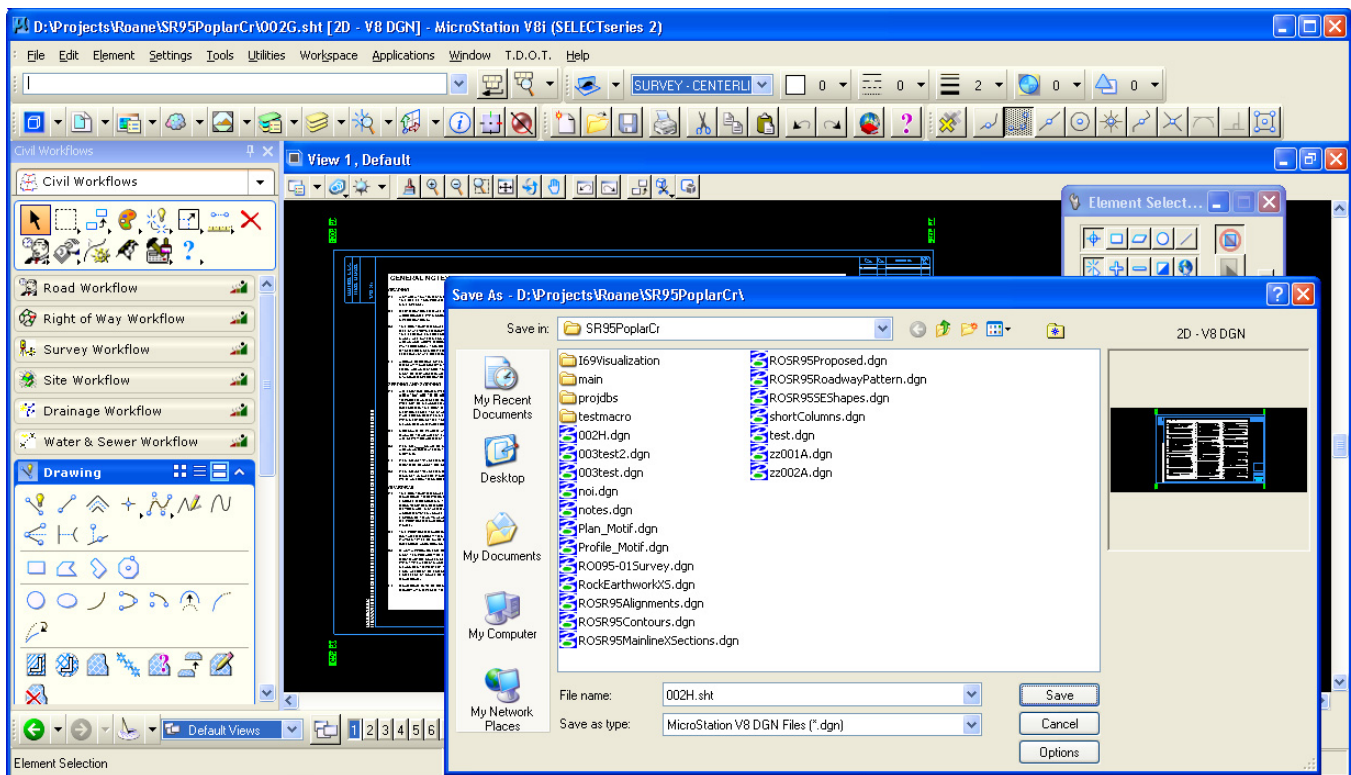
More than one Sheet Needed

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

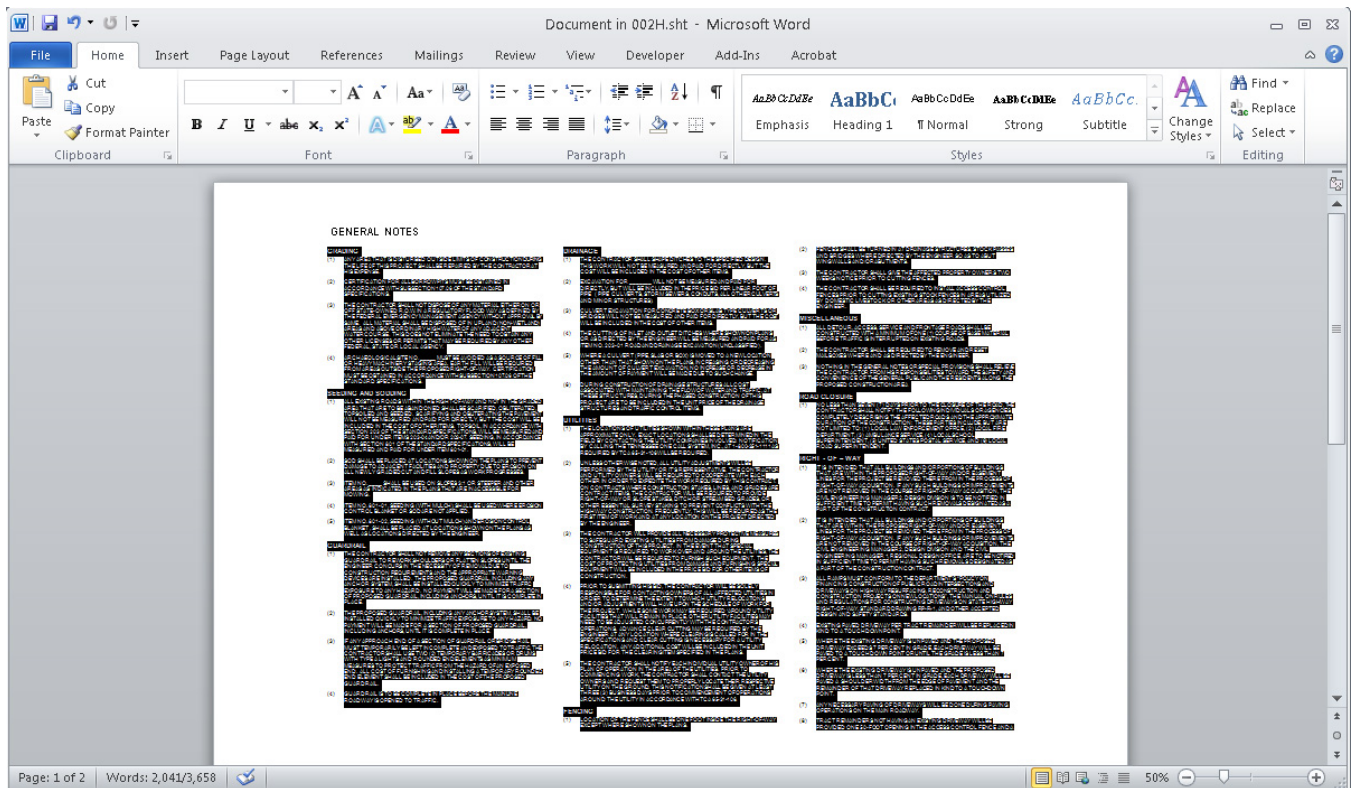
1. Make edits as needed to the Word document embedded in the first sheet and close the Word document.

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.

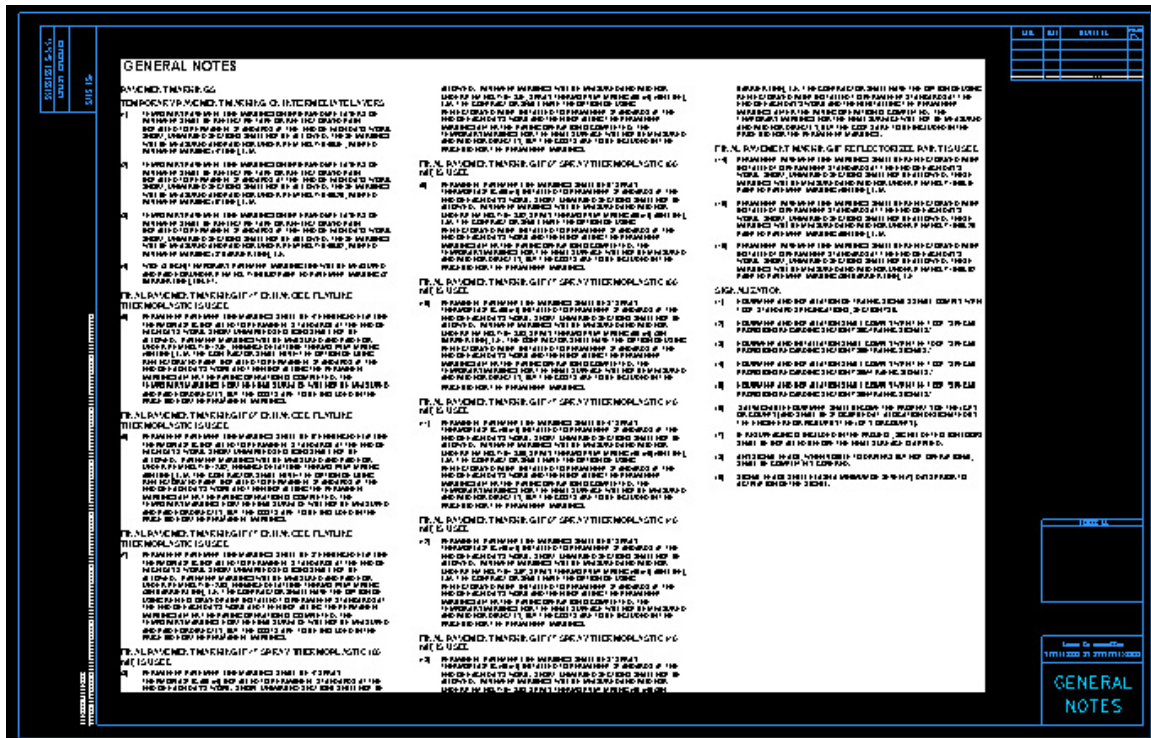
2. In MicroStation, go to **File> Save As** and save as the next sheet needed. There should be a separate design file for each sheet in the set of plans except for cross-section sheet files. For example, do a 'Save As' on the General Notes design file **002G.sht** to **002H.sht**.



3. 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.



4. 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. 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. Roadway Design Division Word templates used with MicroStation at

C:\Users\Public\Office Standards\TDOT 2nd Sheets:

Bridge Index.dotx

English Drop Off Notes.dotx

English EPSC Special Notes.dotx

English General Notes.dotx

English Index & Std Dwgs.dotx

Metric Drop Off Notes.dotx

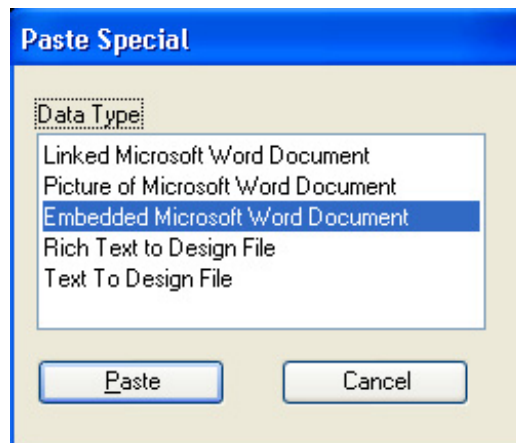
Metric EPSC Special Notes.dotx

Metric General Notes.dotx

Metric Index & Std Dwgs.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.

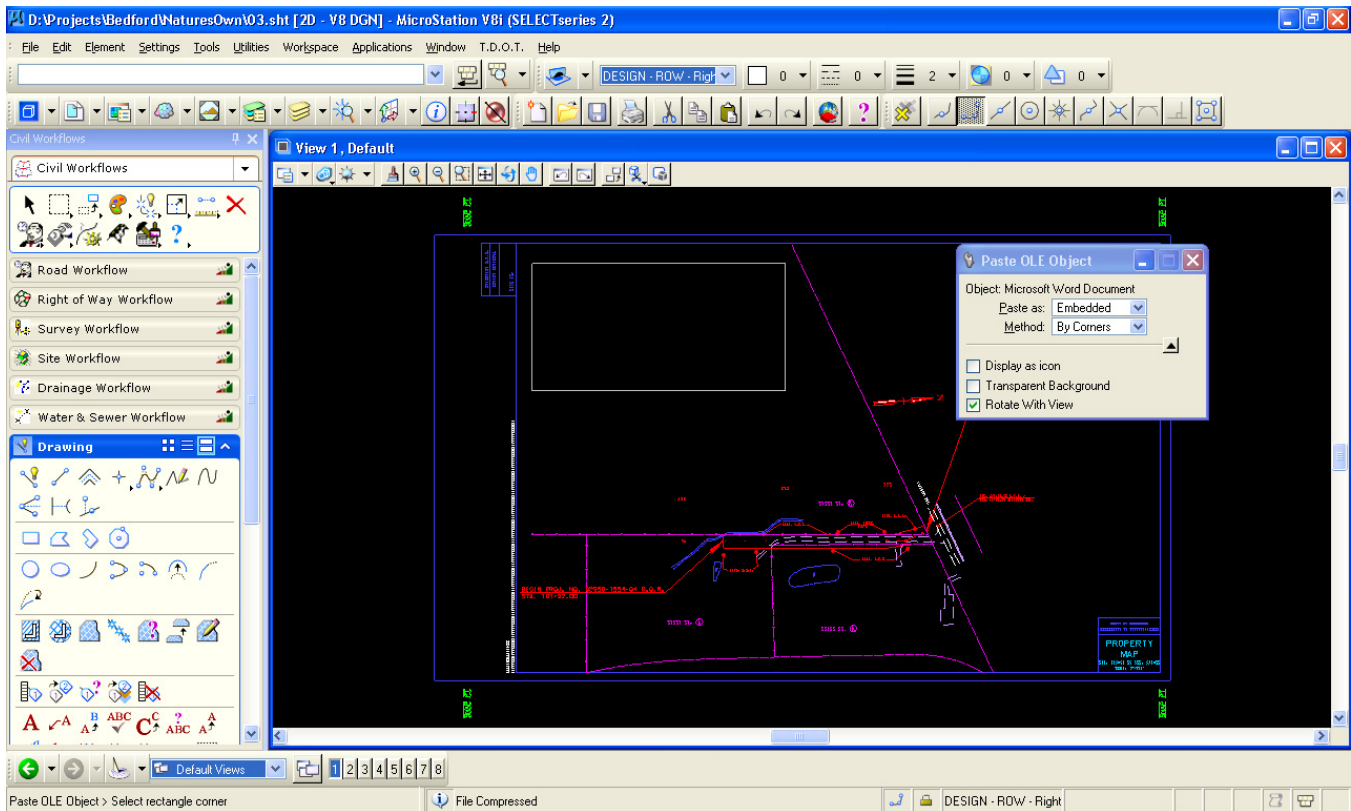


The OLE attachment will be placed on the active level, reset as desired before embedding.

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



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:

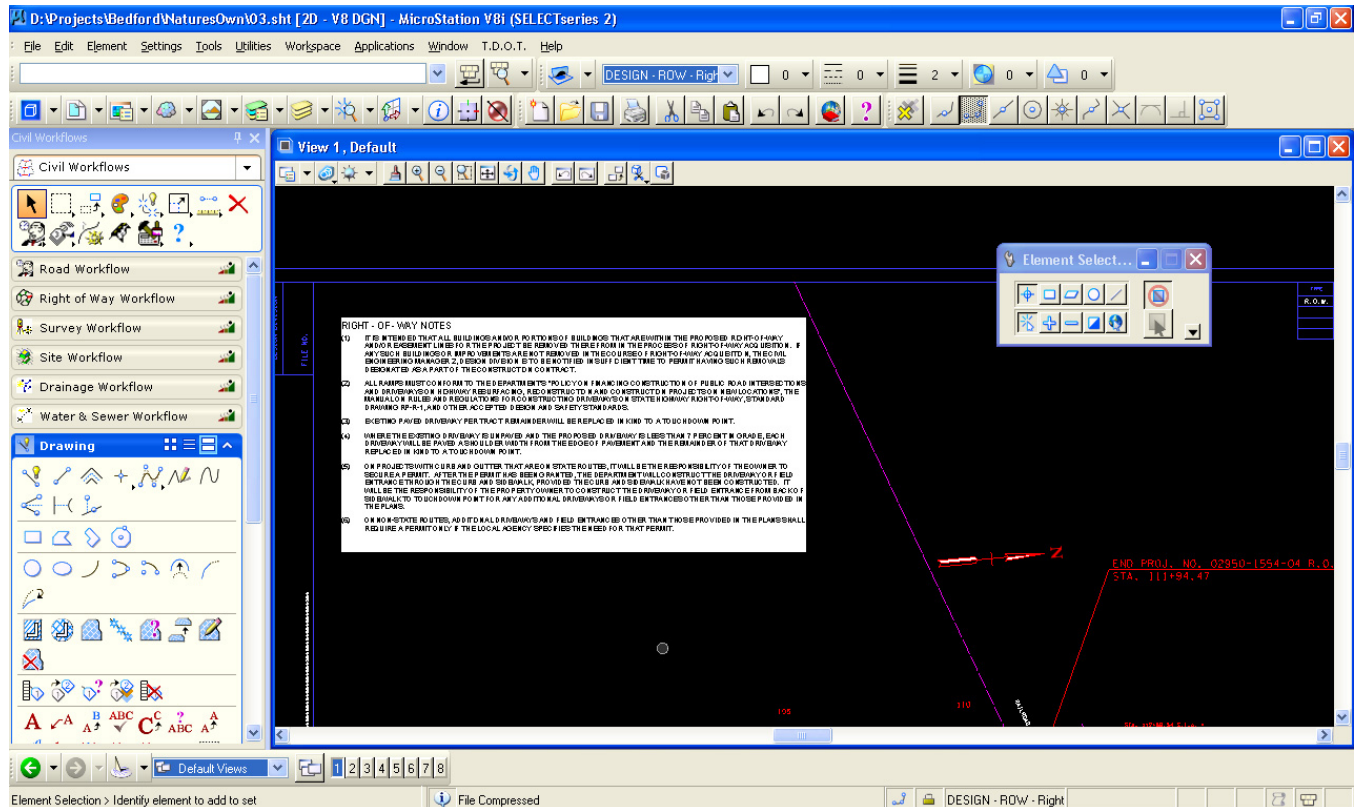
0.33 x Scale for **.14** text size

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

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

6. 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 ($13 \times 100 = 1300$).

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.



7. 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 key in 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. Any made with Office 2010 will have to consider the following if it is necessary to open & update them in MicroStation 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 **Edit > Links...** In the Links dialog, select the link to be updated and click **Update Now**.
2. In MicroStation, go to **Edit > Uppdate Links**.

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.

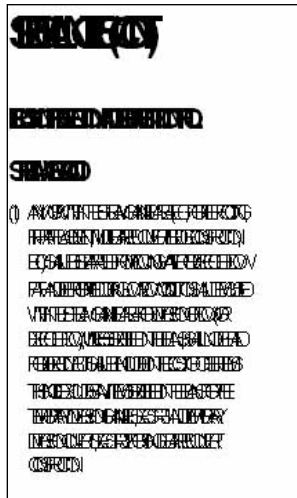
Correcting Overlapping Text from Embedded Word Documents

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**.
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.)

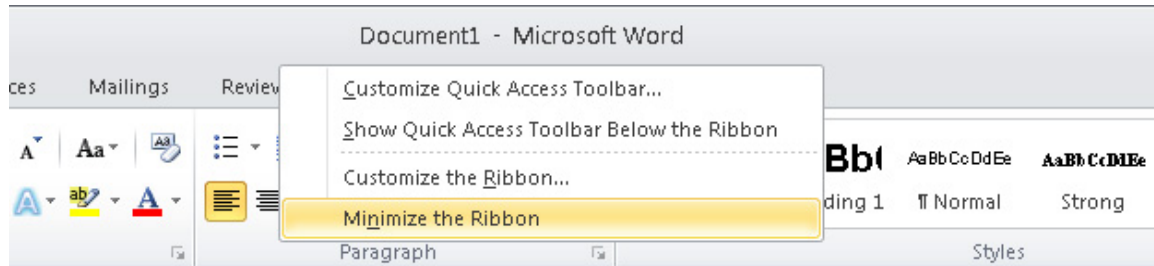
EROSION PREVENTION AND SEDIMENT CONTROL

STREAM/WETLAND

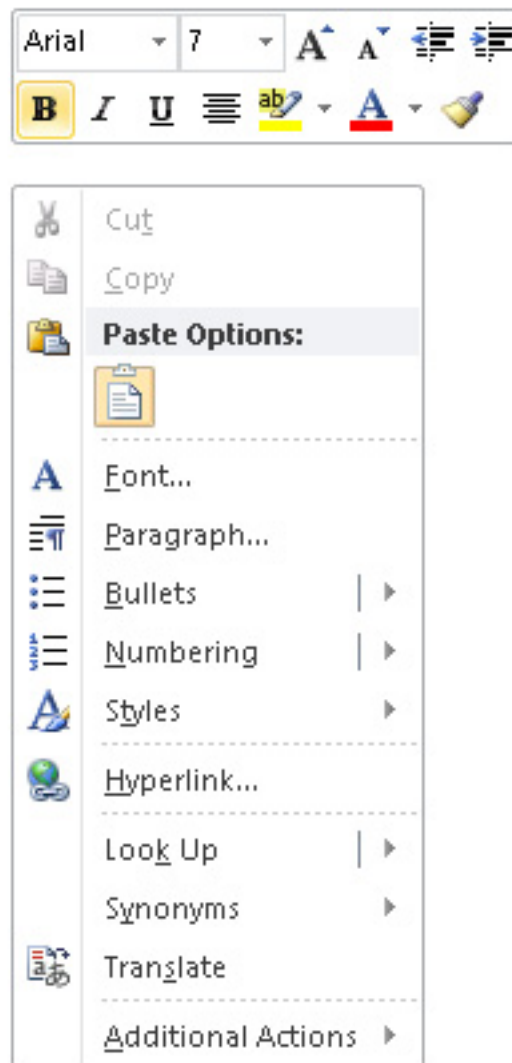
- (1) ANY WORK WITHIN THE STREAM CHANNEL AREA (E.G., FOR PIER FOOTING, RIP-RAP PLACEMENT, MULTI-BARREL CULVERT/BRIDGE CONSTRUCTION, ETC.) SHALL BE SEPARATED FROM FLOWING WATER OR EXPECTED FLOW PATH AND PERFORMED DURING LOW FLOW CONDITIONS. ALL ITEMS USED WITHIN THE STREAM CHANNEL AREA FOR DIVERSION OF 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.

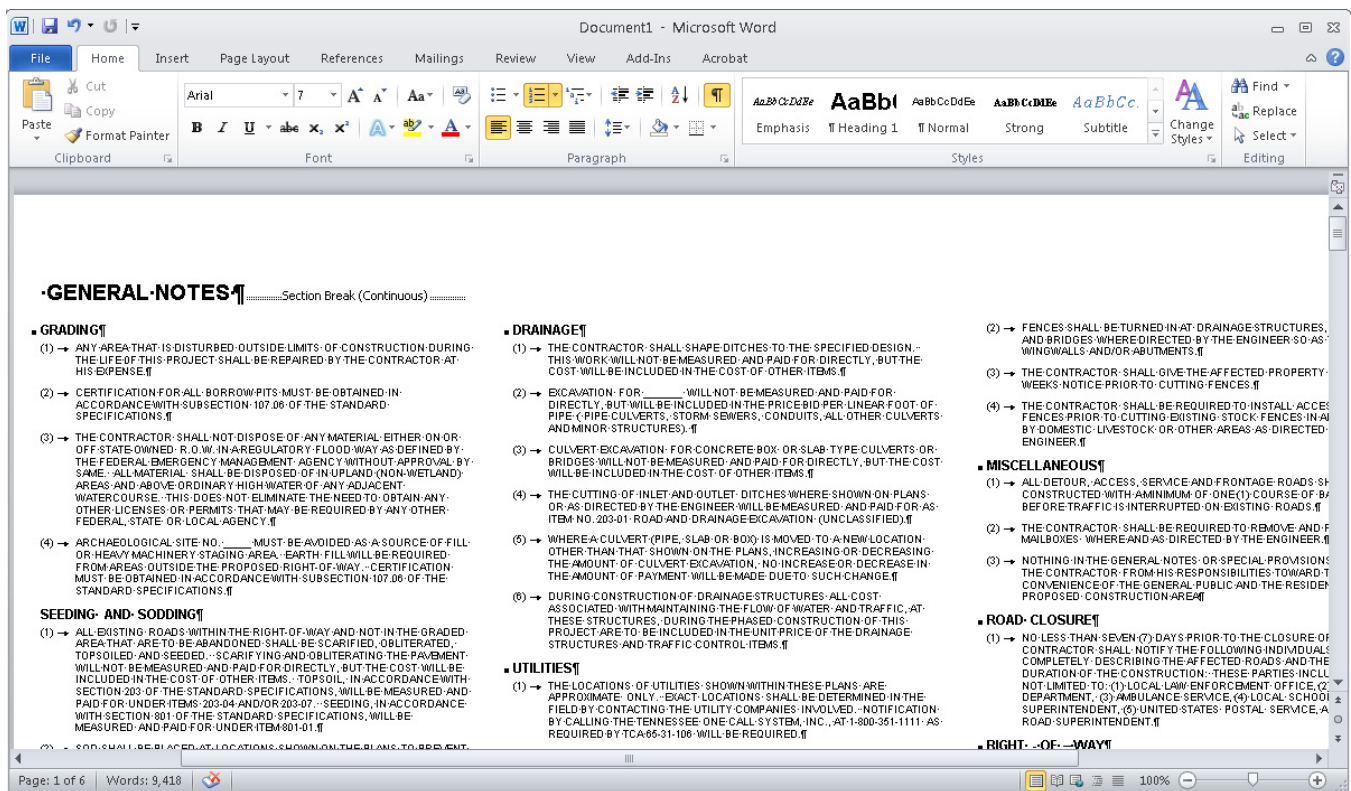


Show/Hide Formatting

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.



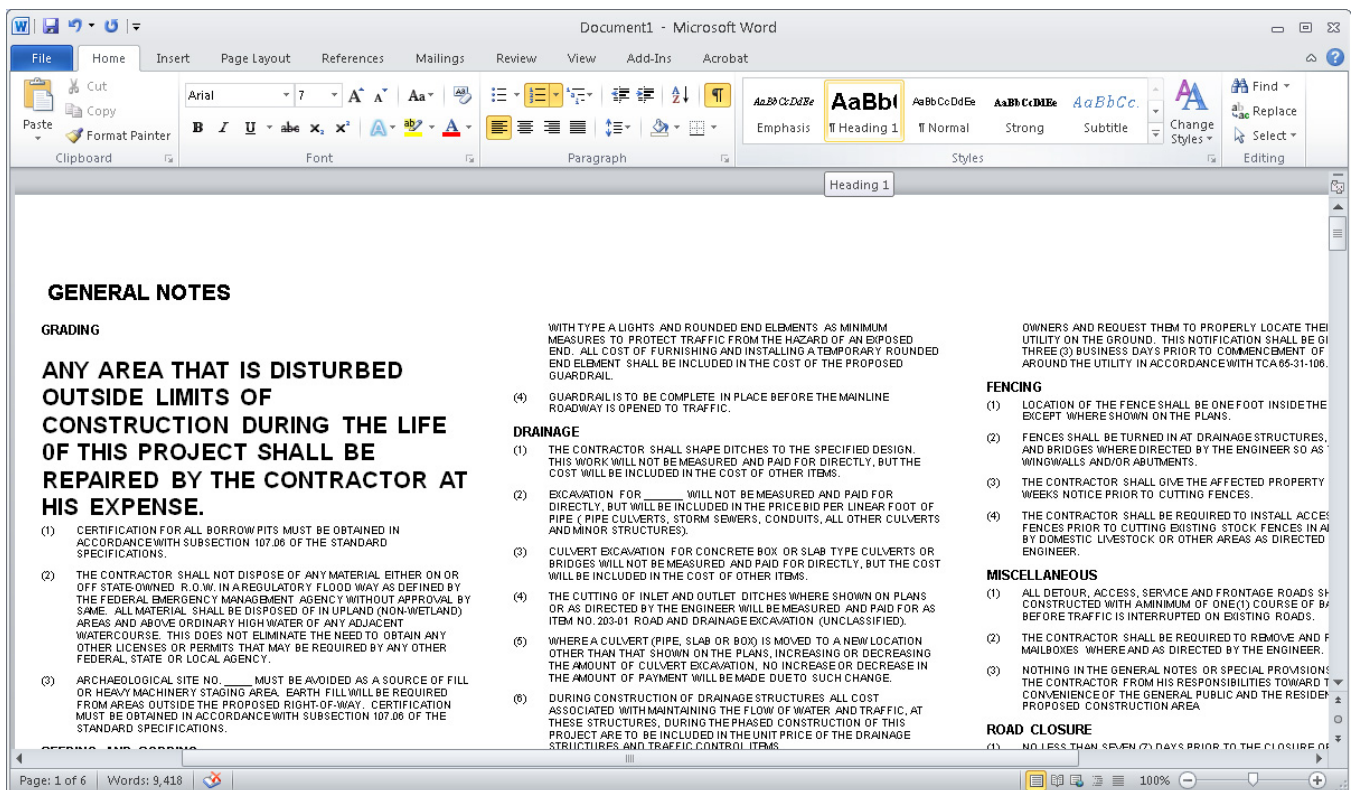
Clicking the paragraph mark will toggle off and on the display of the formatting characters. When it is toggled on, we can see section breaks, paragraph marks, tabs, etc.

Text Styles in Word

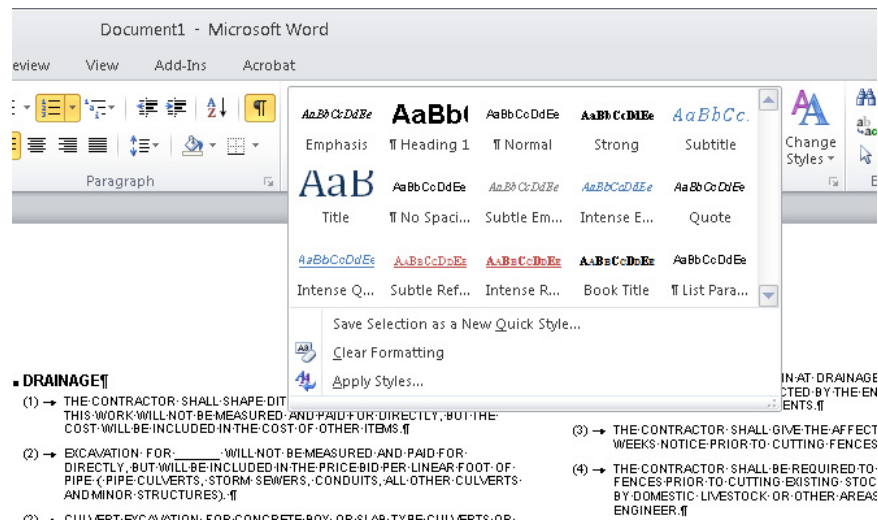
A text style will set all of the characteristics for the specified text. This includes font, font size, tabs, indents, color, heading, bullets and numbering, etc. There are text styles for each type of text used in the TDOT 2nd sheet Office templates. These text styles all start with **V8**.

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

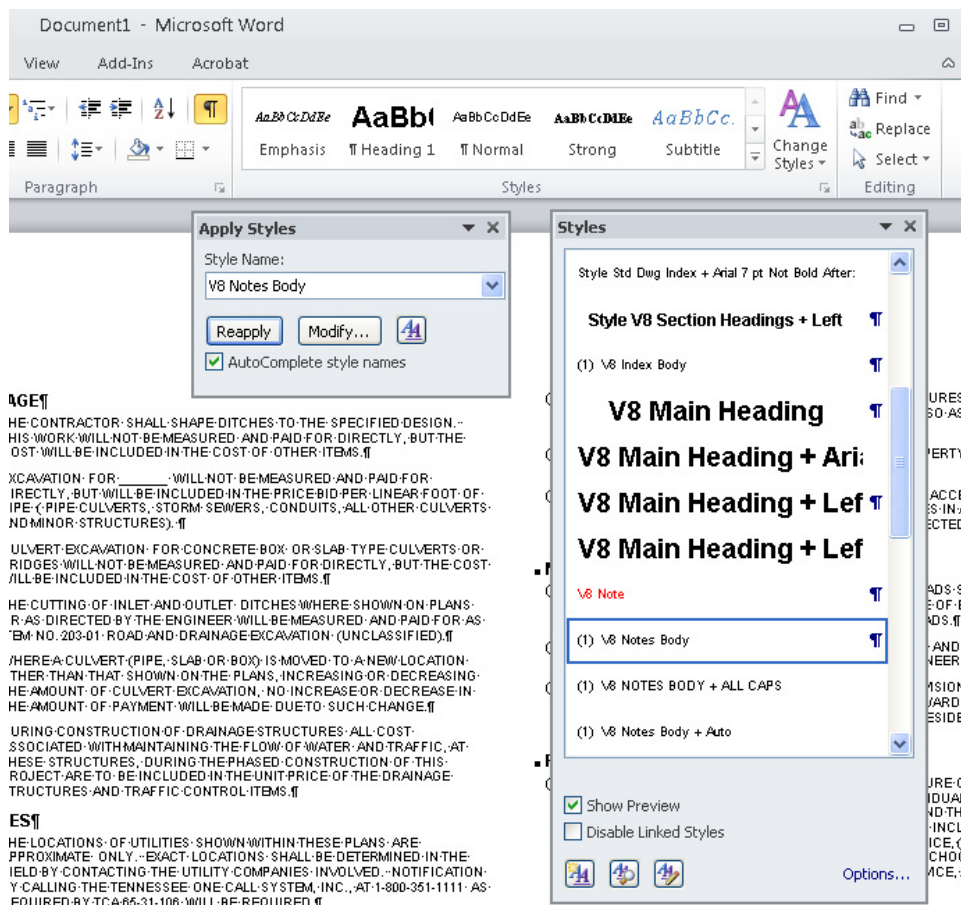
Word 2010 includes a type of style control called **Quick Styles**. When you move your cursor mark over the quick style it temporarily applies that style to the entire paragraph where your typing insertion point is currently located. In the example below, I was in the first note and it dynamically shows 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.



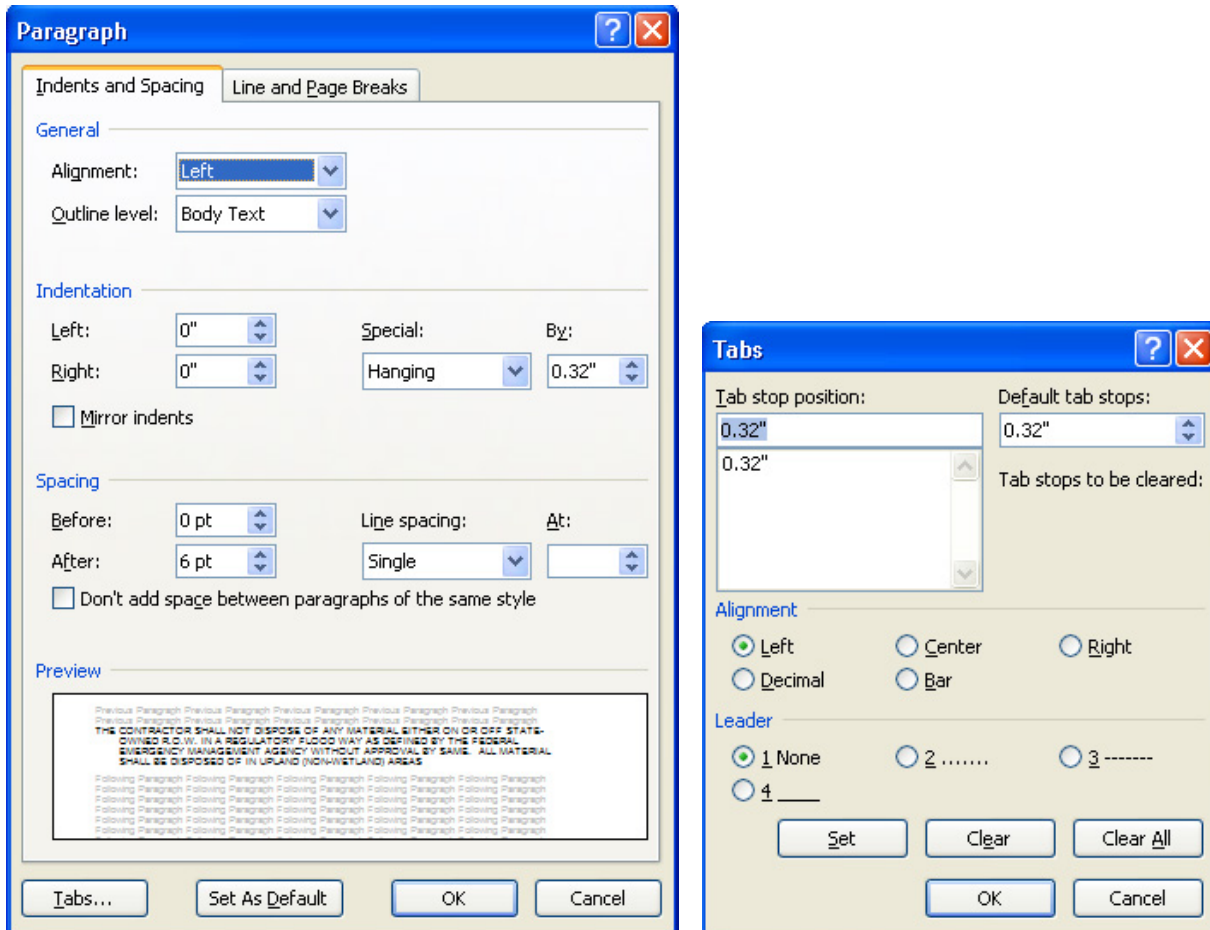
There are 2 ways to access the standard TDOT 2nd sheet text styles. You can click on the **Apply Styles** option which appears at the bottom of the Quick Styles drop down menu shown above. This opens up the Apply Styles dialog. You could also click the small square with the arrow in it at the lower right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



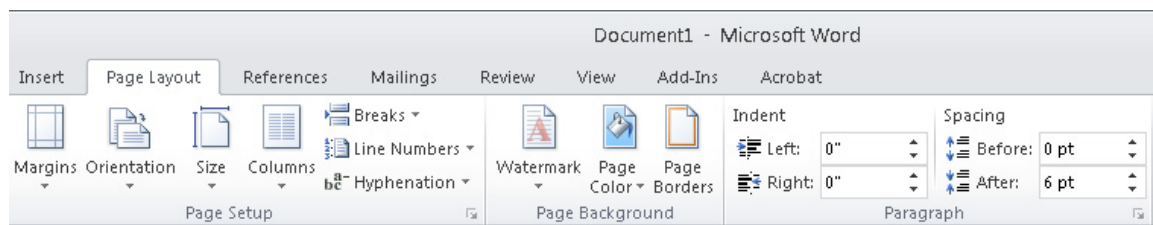
Indents, Hanging Indents, Line Spacing, Tabs, etc.

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.

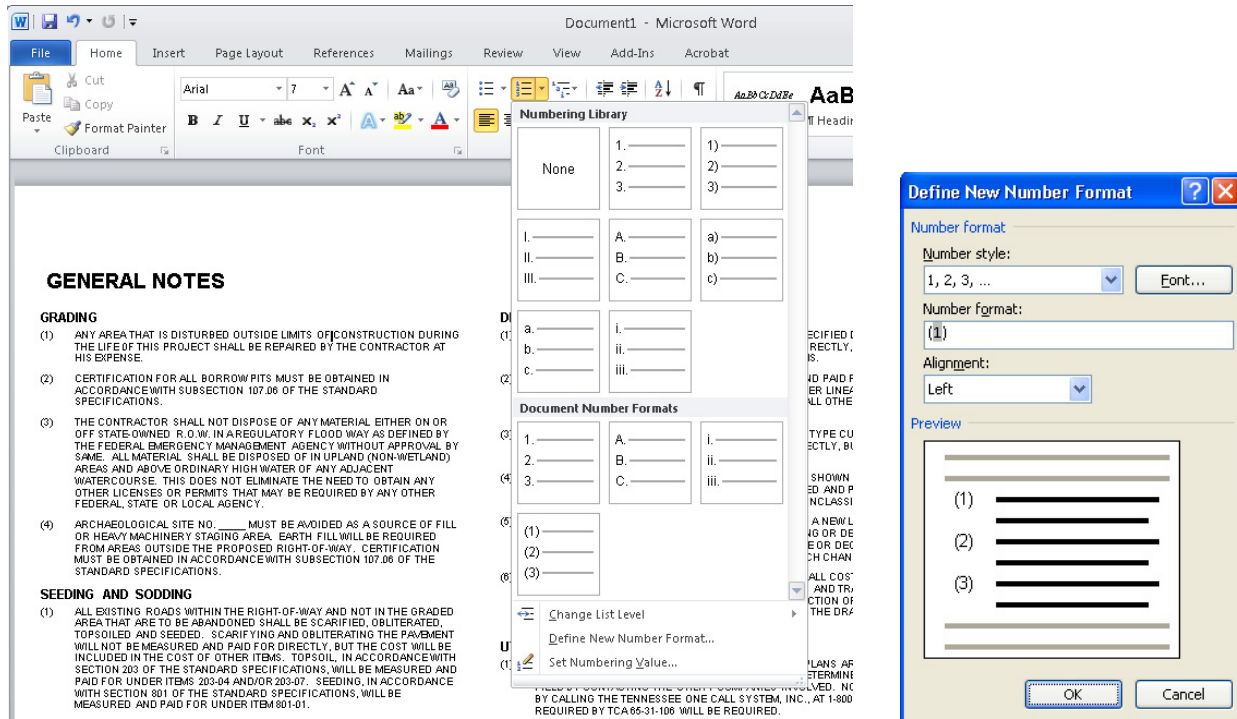


Indent & Spacing controls can also be found on the Office 2010 ribbon under the **Page Layout** tab in its **Paragraph** section.

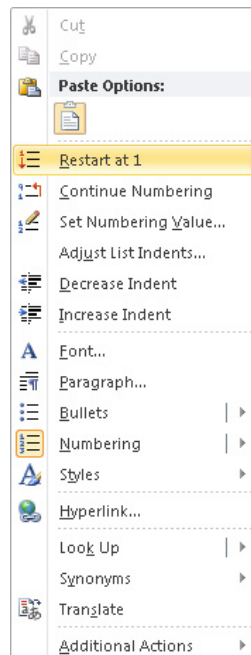


Numbering & Bullets

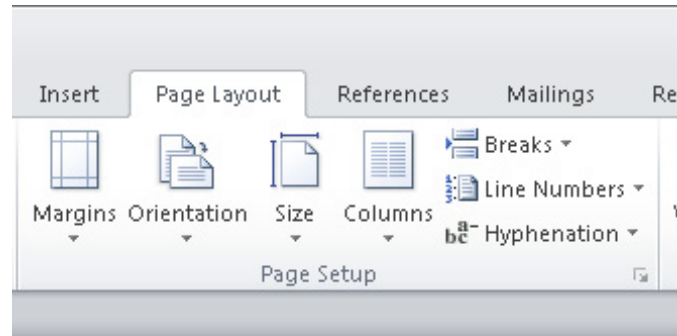
You can access **Numbering** and **Bullets** on the Office 2010 ribbon under the **Home** tab in the **Paragraph** section. Click either of these to use the current active format or click the arrow next to them to pull out the drop down menu for them. From the drop down menus choose **Define New Number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



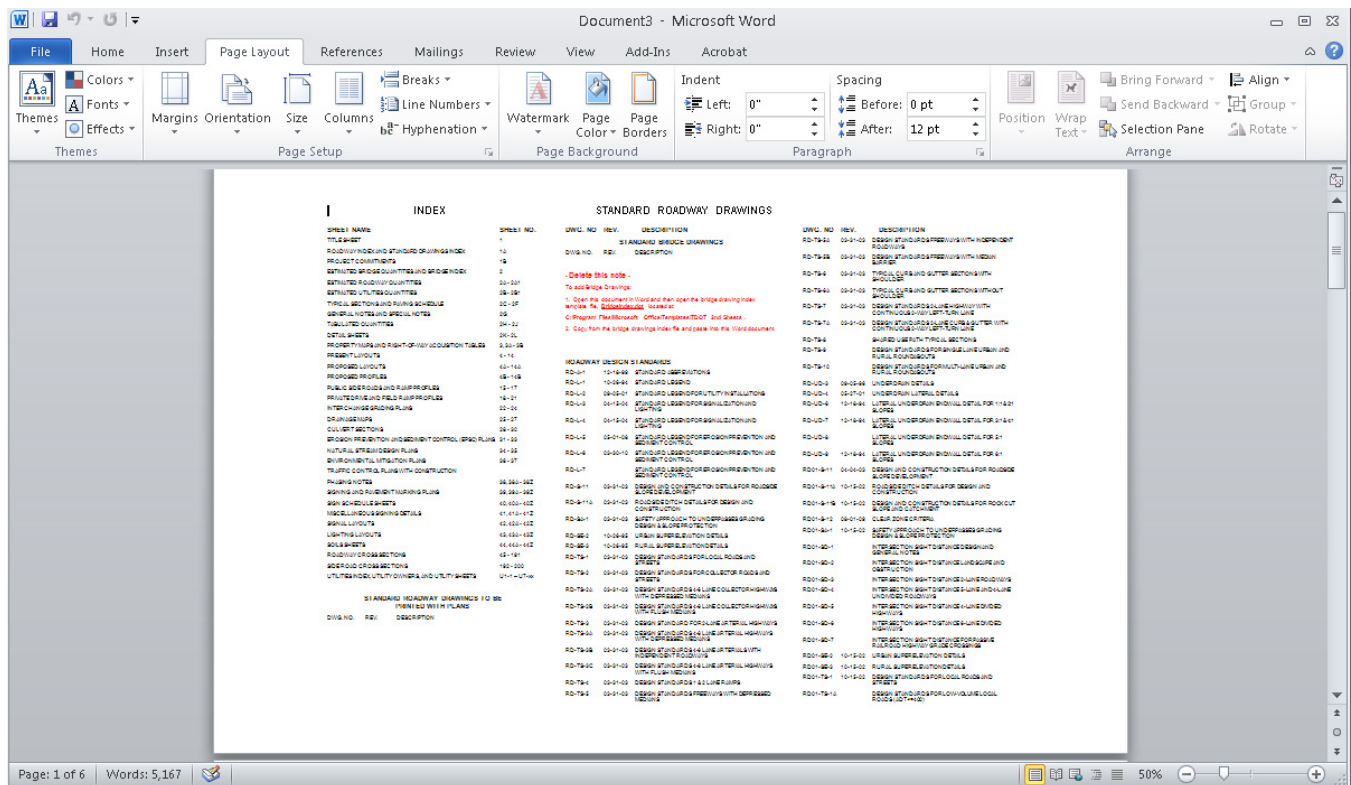
Position yourself in a given numbered paragraph and right click for various numbering controls.



You can access **Page Setup** on the Office 2010 ribbon under the **Page Layout** tab. The **Page Setup** section includes controls for the margins, orientation, size and columns of the page.



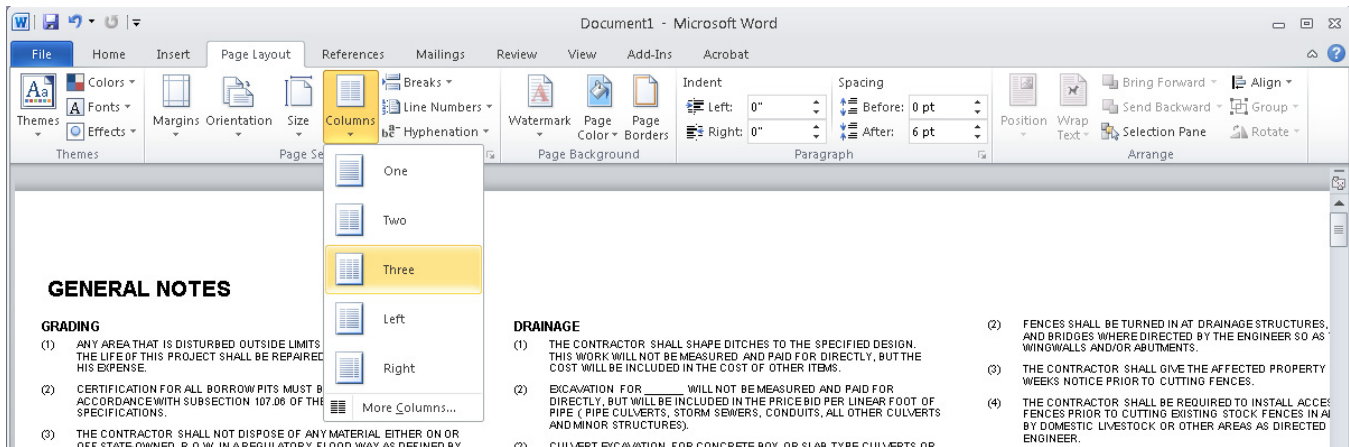
The TDOT General Notes and Index & Standard Drawings templates have a paper size of 11" x 17" and use a landscape orientation



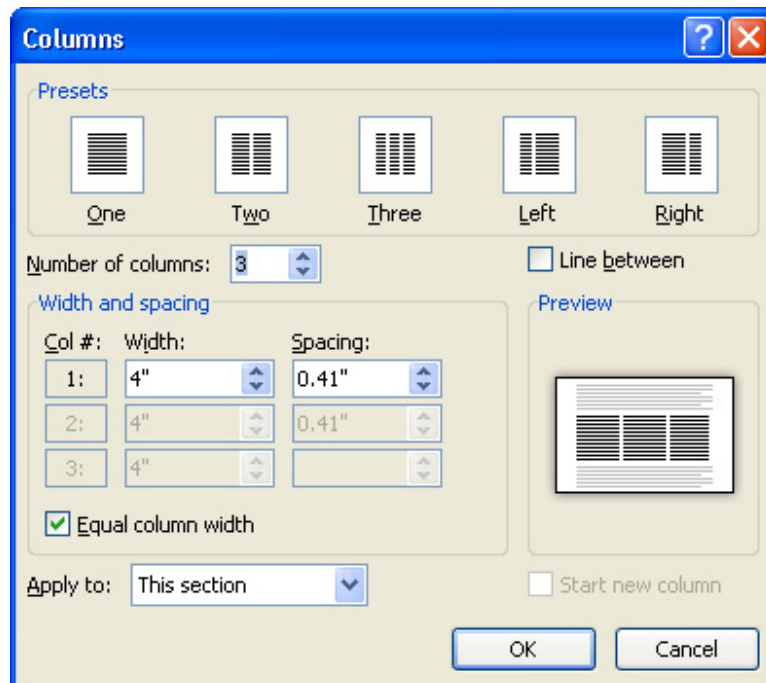
Columns

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.



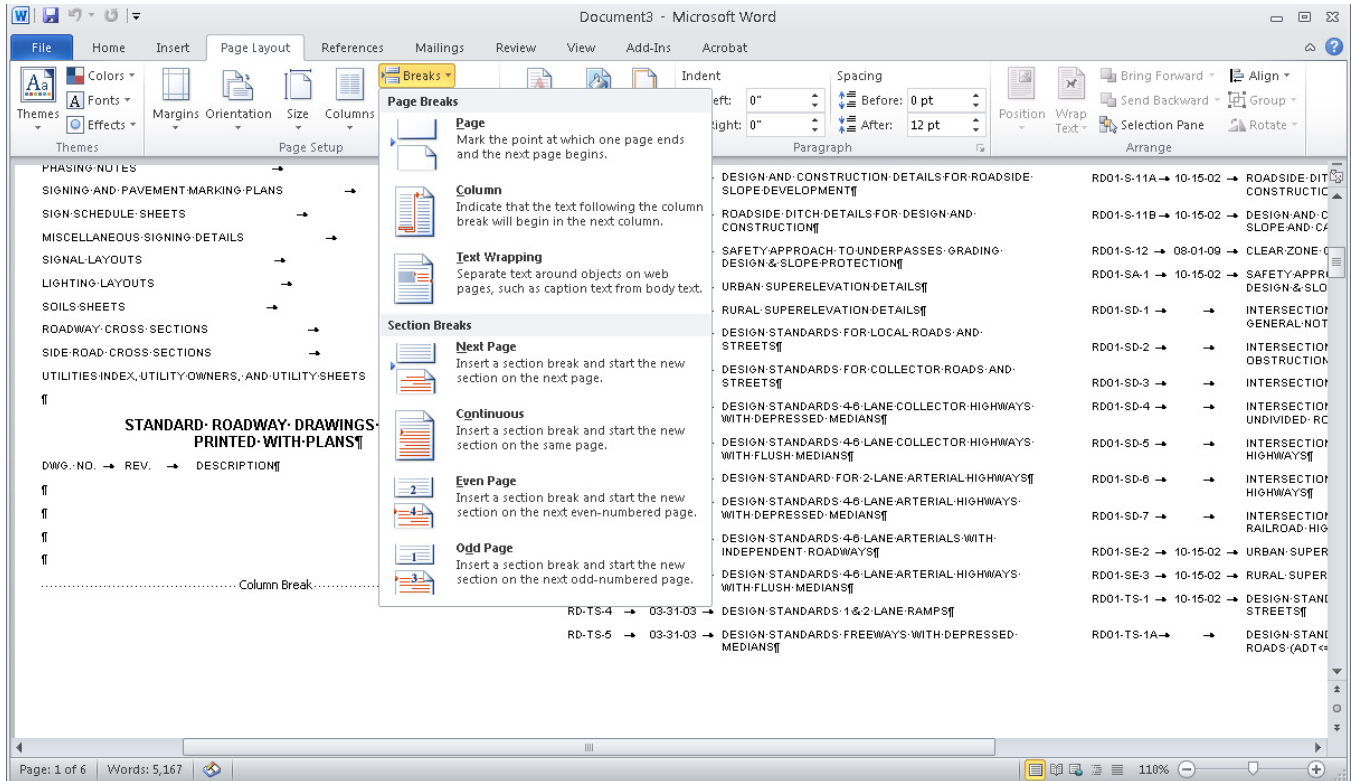
To set widths and other column settings, select the **More Columns** option from the drop down menu to open the **Columns** dialog.



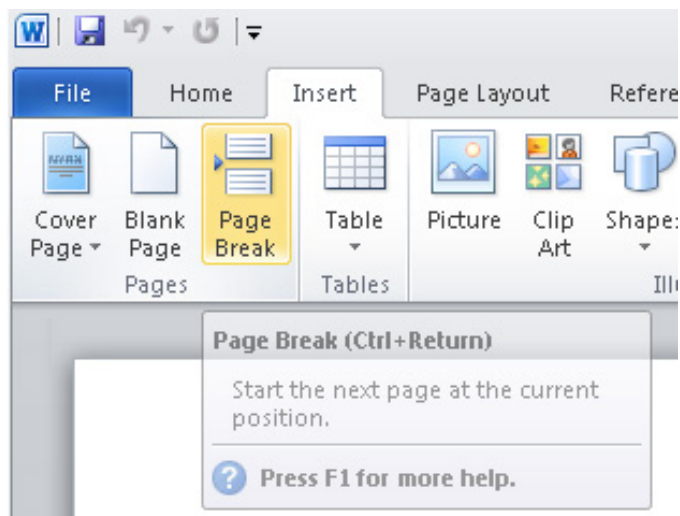
Breaks

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

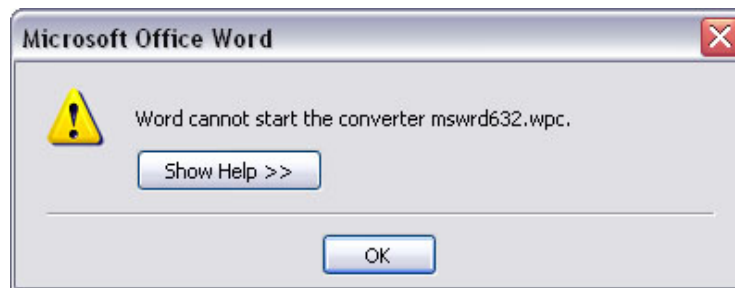
This section describes current known issues with Office documents that are linked or embedded in MicroStation.

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

This error is caused because of an operating system security update for Windows first 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 Roadway 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.

