

# Data Entry Sheets - Formatting Guidelines

This section is to be used to create or edit Data Entry sheets for the Calc File program.

1	TabTitle	TABULATION OF SILT DIKES													
2	Number of Tab Columns	4													
3	DE Starter Row Number	23													
4	TabSheet Starter Row Number	9													
5	TabSheet Header Row Count	8													
6	Top Header Cell	L15													
7	Bottom Header Cell	O22													
8	DESheet Row Count	0													
9	Fixed Empty Rows	10													
10	Usable Empty Rows	0													
11	Total Rows Placed	0	xlRight	xlRight	xlRight	xlLeft				xlRight	xlRight	xlRight	xlLeft		
12	Total Rows Needed	10	#+00.0	#+00.0	0.0	General				#+00.0	#+00.0	0.0	General		
13	Last Tab DE Starter Row	0	16.00	16.00	10.00	14.00				16.00	16.00	10.00	14.00		
14	Last Tab TabSheet Starter Row	0	A	B	C	D				a	b	c	d		
15	Last Copy Starter Row	0	TABULATION OF SILT DIKES				Possible Contract Items							100-15	
16	Tab Loop Number	0	Refer to RL-9				SILT DIKES							04-20-10	
17	Revision Date	04-20-10	This Data Entry Sheet Fills Tab 100-15				2602-0000040	0.0							
18	Number of Contract Items	1													
19			Location												
20			Station to Station		No.	Length	Remarks								
21						LF									
22															
23															
24	Possible Contract Items														
25	SILT DIKES														
26	2602-0000040	0.0													
27															
28															

Figure 1 – General DE Sheet Layout

## Layout Description

To explain what each section of the data entry file is for and how they are populated.

1. Data Block – Refers to the information provided in A1:B18.
  - a. Tab Title – Populated by the title displayed above the DE sheet header (B1 = C15), Tabulation of Silt Dikes in this example.
  - b. Number of Tab Columns – Refers to the number of columns in the tab sheet header, four in this example.
  - c. DE Starter Row Number – Refers to the first row in which the designer is to add project information. This is always the next row below the double underlined orange columns, row 23 in this example.
  - d. Tab Sheet Starter Row Number – Refers to the number of rows down from the top of the tab sheet header (always row 15) that the program will begin populating with the designer's project information placed in the DE sheet tab. Row 23 is the first open row, so the corresponding number is 9.
  - e. Tab Sheet Header Row Count – Refers to the number of rows that are used by the tab sheet header. This header always begins in row 15 and for this example ends in row 22, thus the corresponding number is 8. This number will always be one less than the Tab Sheet Starter Row Number.
  - f. Top Header Cell – Refers to the cell in the top left corner of the tab sheet header, L15 in this example.
  - g. Bottom Header Cell – Refers to the cell in the bottom right corner of the tab sheet header, O22 in this example.
  - h. Rows 8 through 16 are for DE program and are not to be adjusted by the designer.

- i. Revision Date – Refers to the initial date this tab is valid. Methods is responsible for this date. However, if the tab is modified from its original release, the designer would need to replace the date in cell B17 with the word Modified.
  - j. Number of Contract Items – Refers to the number of possible contract items covered by this tab, not the number of contract items actually used; i.e. this number does not change from project to project.
2. DE Sheet Header – Refers to the information provided in the orange colored group of columns starting at C15 and continuing right to the end of the tab (G15 in Figure 1) and continuing down to row 2000. This section is populated by the designer using calculations, dropdown menus, or other means of providing project information.
  3. Tab Sheet Header – Refers to the information provided in the white colored group of columns. Column location varies but always begins in row 15. This section is populated by the DE program using the information provided by the designer under the DE sheet header.
  4. Possible Contract Items – Refers to the information provided between the DE sheet and tab sheet headers as well as below the Data Block. This section may or may not exist as this aspect of the DE program is not yet operational.
  5. Dropdown Menus – Refers to the information provided to the right of the tab sheet header. This section is further discussed below.

## Adding a Column for Calculations

For information you do not want displayed on the final tab.

1. Click the Unhide button.
2. Add a column in the desired location.
3. Add column heading and formula.
4. Highlight the formula that you want to copy down the column.
5. Change the Top Header and Bottom Header cells in the Data Block located at the top left corner of the spreadsheet.
  - Top Header Cell, top left cell of the tab sheet header
  - Bottom Header Cell, bottom right cell of the tab sheet header
6. Do not change the lettering above the header.
7. Click the Hide button.

## Adding a Column

For information you want to display on the tab sheet header.

1. Click the Unhide button.
2. Unmerge any necessary cells.
  - Check to make sure no information from the header will be lost.
  - If needed, unmerge cells and move information to another cell.
3. Insert Column.
4. Adjust column widths to fit the tab width (1/4, 1/2, 3/4, or full sheet). It is preferred to adjust the Remarks column first as that has no defined minimum width.
  - There is no magic formula to correctly adjust the column widths. The reason is that column separators have a width value, but that value doesn't stay the same. Note that most columns are rounded to a whole number. It is preferred that the tabulation be short of its official width as this ensures that two 1/2 sheet tabs (for example) still fit on the sheet.
5. Adjust the lettering above the header and copy the cell width formula to the new column.

- Adjust the lettering above the header to have a capital letter above every column that will appear in the tab sheet header. Letters should be in alphabetical order from left to right.
  - Copy the formula for cell width to the new column.
6. Repeat 2-5 on the tab sheet header.
  7. Correct any references that have changed including the lowercase letters above the tab sheet header.
  8. In the data block, change the Top Header Cell, Bottom Header Cell, and Number of Tab Columns.
    - Top Header Cell, top left cell of the tab sheet header
    - Bottom Header Cell, bottom right cell of the tab sheet header
    - Number of Tab Columns, enter the number of columns in the tab sheet header
  9. Click the Hide button.

## Deleting a Column

For columns that previously appeared in the tab sheet header. If the column was for calculations only, use steps 1-4, 9 and 10.

1. Click the Unhide button.
2. Unmerge any necessary cells.
  - Check to make sure no information from the header will be lost.
  - If needed, unmerge cells and move information to another cell.
3. Delete Column.
4. Merge any cells that were unmerged in step 2.
5. Adjust column widths to fit the tab width (1/4, 1/2, 3/4, or full sheet). It is preferred to adjust the Remarks column first as that has no defined minimum width.
  - Change the width of the remaining columns to keep the overall width of the tab the same as it was before deleting the column. Any incremental width lost by the column separator is negligible.
6. Adjust the lettering above the header so that a capital letter appears above every column that will appear in the tab sheet header. Letters should be in alphabetical order from left to right.
7. Repeat steps 2-5 on the tab sheet header to the right of the data entry sheet header.
8. Correct any references that have changed including the lowercase letters above the tab sheet header.
9. In the data block, change the Top Header Cell, Bottom Header Cell, and Number of Tab Columns.
  - Top Header Cell, top left cell of the tab sheet header
  - Bottom Header Cell, bottom right cell of the tab sheet header
  - Number of Tab Columns, enter the number of columns in the tab sheet header
10. Click the Hide button.

## Column Formatting

The information provided above the tab headers for both the data entry sheet header and tab sheet header fields tell the program how to format data when placing the tab onto plan sheets. It is **critical** that the information above any column appearing in the tab sheet header matches the corresponding data entry sheet header information. Formatting information **must** appear in rows 11-14. It is not necessary to provide this information for columns not appearing in the tab sheet header.

- Row 11 – Horizontal Alignment
  - These values indicate the horizontal alignment. See Figure 3 for guidance.
  - It is suggested that designers manually select the column and adjust its horizontal alignment to match how it will appear in the tab sheet header, although doing this alone will not set the final alignment.
  - There is no need to manually adjust the alignment of the tab sheet header. Those alignments are covered by the value placed in this row.
  
- Row 12 – Cell Formatting
  - These values indicate to what precision the column values are. If the column is populated by text or number and text, use 'General' instead of a number. If the column is populated by numbers, see Figure 4 for guidance. **In all cases**, this row should be formatted as 'Text' (Highlight row beginning with C12 > Right Click - Format Cells > Number Tab > Text) in order for the correct precision to be shown.
  - It is suggested that designers manually select the column and adjust its precision to match how it will appear in the tab sheet header. See Figure 4 for guidance on new columns. Existing tabs should already have their precision set.
  
- Row 13 – Width
  - These values show the column widths. The values are not absolutes, but they should be wide enough to fit standard column entries.
  - The formula used is =CELL("width",E13). This formula would show the width of column E, rounded to the nearest whole number. It is important that these numbers show two decimal places for programming. Generally, adjusting the actual column width to match the formula width is preferred. These numbers are what the designer adjusts when correcting the tab to occupy a certain plan sheet width (1/4, 1/2, 3/4, full).
  - If the intent is to have a tab exactly occupy the maximum width available for a certain plan sheet width, remove the formula on the last column and manually type in a value, say 28.29 for example (one of the seven auto-widths in Excel when viewed at 100%). Remember to match this to the tab sheet header as well. The tabs (as of October 2010) were not fine tuned to match plan sheet width exactly, as a fraction of one width was deemed not significant when the tab was placed on a plan sheet. Instead, the tabs were adjusted to nearest whole number widths that collectively brought the tab within one width value of being exact, always landing on the short side to guarantee they fit within their designated plan sheet area.
  
- Row 14 – Tab Placement
  - These values represent the alphabetical order in which the columns appear on the tab sheet header. Columns within the data entry sheet header have capital letters. The corresponding column in the tab sheet header show the lowercase version using the formula =LOWER(C14). This formula would place a lowercase 'a' above the first column in the tab sheet header, matching Figure 2 below.
  - Any column appearing in the data entry sheet header that **is not** to be shown in the tab sheet header **does not** get a letter assigned to it. To skip over a column, simply stop the letter progression before that column and continue with it after that column.
  - All columns under the tab sheet header receive a letter.

	A	B	C	D	E	F	G	
1	TabTitle	ELECTRICAL DUCTS						
2	Number of Tab Columns	5						
3	DE Starter Row Number	20						
4	TabSheet Starter Row Number	7						
5	TabSheet Header Row Count	6						
6	Top Header Cell	I15						
7	Bottom Header Cell	M20						
8	DESheet Row Count	0						
9	Fixed Empty Rows	10						
10	Usable Empty Rows	0						
11	Total Rows Placed	0	xlRight	xlRight	xlRightxlRight		xlLeft	
12	Total Rows Needed	10	General	General	0.0	0.0	General	
13	Last Tab DE Starter Row	0	16.00	13.00	8.00	9.00	28.00	
14	Last Tab Tabsheet Starter Row	0	A	B	C	D	E	
15	Last Copy Starter Row	0	ELECTRICAL DUCTS					

Figure 2 – Overview of Column Formatting

xlLeft	xlCenter	xlRight
Type	Item Code	Station
Remarks	Unit	Offset
Text (general)	Single Letter values	Quantities (general)

Figure 3 - Typical Column Horizontal Alignments

Calc File Bid Quantities, Abbreviations, Precision and Format					
English Item	Abbreviation	Metric Item	Abbreviation	Precision	Format
1000 Feet Board Measure	MFBM	--	--	X.XX	0.00
1000 Gallons	MGAL	--	--	X.XX	0.00
Acre	ACRE	Hectacre	HA	X.X	0.0
Calendar Day	CDAY	Calendar Day	CDAY	X	0
Cubic Yards	CY	Cubic Meter	M <sup>3</sup>	X.X	0.0
Day	DAY	Day	DAY	X.X	0.0
Each	EACH	Each	EACH	X	0
Gallon	GAL	--	--	X.X	0.0
Hours	HOUR	Hours	HOUR	X	0
Linear Feet	LF	Meter	M	X.X	0.0
Lump Sum	LS	Lump Sum	LS	X.XX	0.00
Miles	MILE	Kilometer	KM	X.X	0.0
Pounds	LB	Kilogram	KG	X	0
Square Feet	SF	--	--	X	0
Square Yards	SF	Square Meter	M <sup>2</sup>	X.X	0.0
Squares	SQ	--	--	X.X	0.0
Stations	STA	--	--	X.X	#+00.0
Station-Yards	ST-Y	Station-Meter	ST-M	X	0
Tons	TON	Megagram	MG	X.XXX	0.000
Track Linear Feet	TLF	Track Linear Meter	TLM	X.X	0.0
Unit	UNIT	Unit	UNIT	X	0
--	--	Liter	L	X	0
--	--	Kiloliter	KL	X.XXX	0.000

Figure 4 - Quantity, Abbreviations, Precision and Formats

## Column Colors

Indicating designer action by colors helps the designer take advantage of the automation the Calc Files provide. The color and use of each are as follows, starting from the center cell. See Figure 5 for the color pinwheel.

### Data Entry Sheet Header

- Blue Header (Pinwheel - Northeast 2 dots) indicates a formula is generating the value.
- Grey Column (Theme Colors - White, Background 1, Darker 25%) indicates that column does not appear in the tab sheet header.
- Orange Header (Pinwheel - Southwest 4 dots, East 1 dot) indicates designer input.
- Pink Header (Theme Colors - Red, Accent 2, Lighter 40%) indicates an assumed value is automatically calculated, but user may override if the assumed value is for a situation different than their own.
- Yellow Header (Standard Colors - Yellow) indicates either a Contract Item quantity total when located within the data entry sheet header or a column requiring designer input (similar to Orange) but not showing in the tab sheet header.

### Tab Sheet Header

- White Header (No Color) indicates that column appears in the plan sheet. These columns are separated from Data Entry columns and should not be adjusted unless a column appearing on the plan sheet is being added or removed.

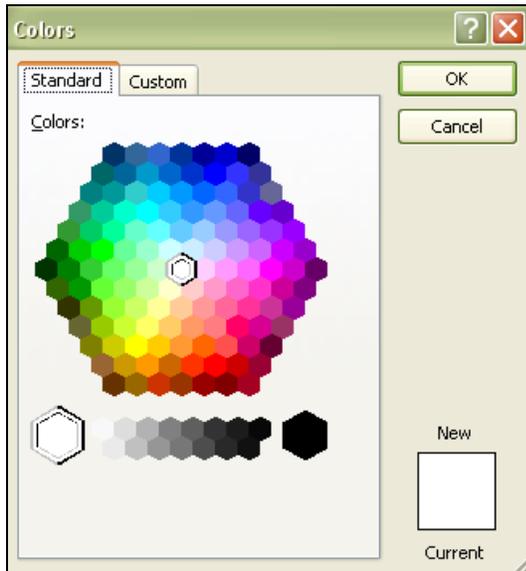


Figure 5 - Color Pinwheel

## Comment Boxes

Comment boxes are provided to inform designers of helpful tips and formula explanations. They can be as simple as explaining the calculation made in that column or as complex as explaining when to use various design choices given the parameters provided elsewhere on the tab. Comments appear as red triangles in the upper right corner.

Although the presence of comment boxes is subject to perceived need, they should appear above columns containing the following regardless of perceived need:

- Calculated values
  - Indicated by a blue colored header. Provide an appropriate amount of explanation as to what the formula is calculating.
- Assumed values
  - Indicated by a pink colored header. Provide the assumed value and where that value comes from (Spec, Standard, etc.) and note that the designer should check that the assumed value is the one they want to use. See Figure 6 for an example.

The steps to create and correctly place a comment box are following:

1. Select the cell that will contain the comment.
2. Click the Review tab at the top of the file and click New Comment under the Comments ribbon.
3. Add any commentary needed and resize the box appropriately.
4. Drag the comment box anywhere on the left half of the entire tab. This allows the program to run the hide function correctly. The comment will still appear adjacent to its anchor column when the designer moves the cursor over it. The comment layouts may look similar to Figure 7 but will appear like Figure 6 during final presentation.

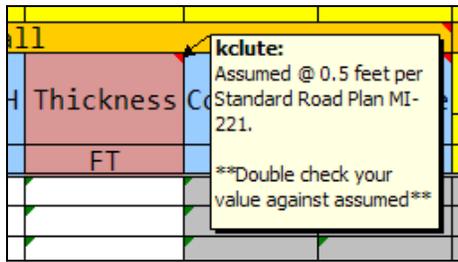


Figure 6 - Assumed Value with Comment

WALK AND RETAINING WALL									
Reinforcing Steel									
Type 'A' Wall					Type 'B' Wall				
Count	LF	Count	LF	Count	LF	Count	LF	Count	LF
<p><b>Concrete:</b> Retaining Wall, Sidewalk Footing, Porous Backfill</p> <p><b>Reinforcing Steel:</b> L6</p> <p><b>Rustication:</b></p>									
<p><b>Comments:</b></p> <ul style="list-style-type: none"> <li>kclute: Length of wall Count (Average wall height - 6" clear from top) divided by spacing, rounded up to the next whole bar + 2 sidewalk</li> <li>kclute: Length of wall Count (Average wall height - 6" clear from top) divided by 15" mat spacing and then rounded up to the next whole bar + 2 bars in sidewalk + 4 bars in footing</li> <li>kclute: Count Length of wall Length of wall / 14" spacing, rounded up to the next whole bar. End clearances not taken into account because joint locations unknown, thus count may be high by 1 bar. Max distance between joints are 20 ft (per standard).</li> <li>kclute: Count (Average height of wall + sidewalk depth + 18" into the footing - 3" top clear - 3" bottom clear)</li> <li>kclute: Length of wall / 14" spacing, rounded up to the next whole bar. End clearances not taken into account because joint locations unknown, thus count may be high by 1 bar. Max distance between joints are 20 ft (per standard).</li> </ul>									

Figure 7 - Potential Comments Layout

### Hiding Cell Values Until Populated

If the formula is in a column that will appear within the tab sheet header, use an "IF statement" to keep zeros from appearing in the tab sheet. Not doing this will cause the program to pick up every row (down to Row 2000) and bring it into the tab sheet. Hiding the values in unused rows tells the program that no more data remains and it will stop importing after the last filled row. See Figure 8 for an example.

Example: =IF(G26<>"",0.5,"") tells the cell to remain blank unless G26 is populated.

CONCATENATE					
F	G	H	I	J	K
Retaining Wall					
Length	Type	Height		Height, H	Thickness C
FT		H1	H2	FT	FT
		FT	FT		0.5,"")

Figure 8 - Formula for Hiding Cell Values

## Designer Info Button

The Designer Info button links to additional information for designers. It is placed in the top right corner of the data entry sheet columns. The steps to build a Designer Info button are below, or simply copy it from an existing tab (100-26, 104-4, 108-30, 112-10 and others). See Figure 9 for an example.

- Shape Base: Rounded Rectangle
- Shape Outline: White, Background 1, Darker 35%
- Shape Fill: Darker 25%
- Height: 0.5"
- Width: 1.5"
- Text: White, Bold, Consolas 12.5
- Hyperlink to: Design Manual 1E-7 (<http://www.iowadot.gov/design/dmanual/01e-07.pdf>)



Figure 9 - Designer Info Button

## Dropdown Menus

Dropdown menus assist in assuring columns are being filled out in a similar manner. They are especially useful when formulas in other columns require consistent wording. To build a dropdown menu, follow the steps below.

1. Start in Row 15, two columns to the right of the tab sheet header. Match the dropdown title to the column that it will be populating.
2. Starting in Row 16 and continuing down, place the data that the designer should choose from.
3. Highlight all cells in the populated column (through Row 2000) that will draw from the first dropdown menu.
4. Click the Data tab > Data Validation
  - Settings
    - Allow: List
    - Check Ignore blank and In-cell dropdown
    - Source: cells containing menu choices, but not menu title (BD16:BD17 for example)
  - Error Alert
    - Uncheck the Show error alert box to allow designers to overwrite if need be
5. Click OK. The populated cells should now appear blank but have a dropdown tab showing the available menu choices when you click on them.

In tabs where more than one dropdown menu is utilized, indicate the break by adding a separation line and bolding the column title. This should help define where one menu stops and another starts. Set the background color to a blue hue (Blue, Accent 1 is shown) to indicate these cells belong to dropdown menus. See Figure 10 for an example layout.

	AZ	BA	BB	BD
7				
8				
9				
10				
11	xlRight	xLeft	xLeft	
12	0.0	General	General	
13	9.00	18.00	19.00	
14	v	w	x	
15	100-7			Side
16	10-19-10			LT
17				RT
18				<b>Chain Link Height</b>
19				42 IN.
20				48 IN.
21				60 IN.
22	Channel Crossing			72 IN.
23	Length*	Type**	Remarks	84 IN.
24	LF			96 IN.
25				120 IN.
26				72 IN., SECURITY TOP
27				72 IN., ON WALL
28				VINYL COATED
29				<b>Chain Link Gate Assembly</b>
30				16 FT.
31				SEE REMARKS
32				<b>Deer Fence Gate Type</b>
33				Deer, As Per Plan
34				As Per Plan
35				<b>Field Fence Gate Type</b>
36				12 FT.
37				16 FT.
38				18 FT.
39				20 FT.
40				22 FT.
41				24 FT.
42				<b>Field Fence Channel Crossing</b>
43				A
44				B
45				FLOOD PLATN

Figure 10 - Dropdown Menu Displays

# Chronology of Changes to Design Manual Section:

**070A-010**

## **Date Entry Sheets - Formatting Guidelines**

6/15/2010 NEW

Show how to format Calc Files