LAB 18 - Tab Sheets

This lab demonstrates the functionality built into the standardized tab sheets. It highlights the ability to quickly modify the sheet's structure by adding and removing columns and dividing the sheet so that it will fit within the sheet border. The functionality is similar with all of the standardized tab sheets. This lab uses the DES_Tabulation of Surfacing.xls file for the exercises.

Chapter Objectives:

- Open and review the tab sheet instructions
- Update the Pay Item File location
- Add additional columns to the table
- Delete columns from the table
- Modify fields associated with asphalt pay items
- Add additional rows to the table
- Enter data in the new rows and columns
- Divide the main sheet into sub sheets
- Link the sub sheets to a MicroStation sheet border.

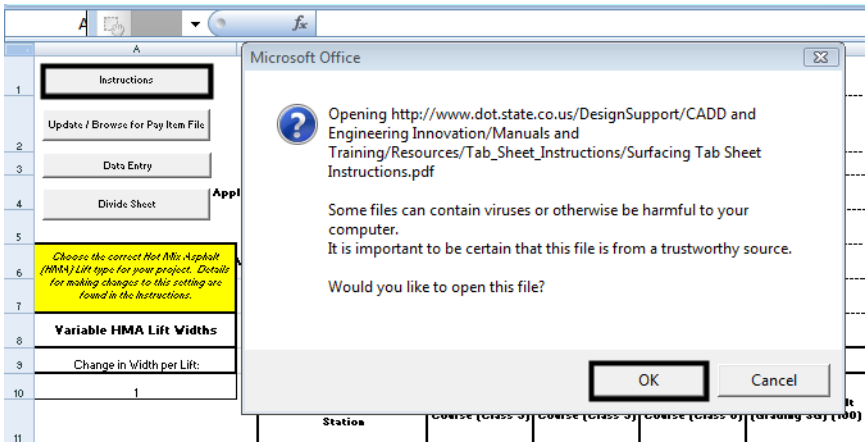
The files used in this lab are:

- C:\Projects\12345\Design\Drawings\Tabs\12345DES_Tabulation of Surfacing.xls
- C:\Projects\12345\Design\Drawings\12345DES_TabMisc##.dgn

Lab 18.1 - Review the Tab Sheet Instructions

1. Start Excel and ***Open*** the **12345DES_Tabulation of Surfacing.xls** file from ***C:\Projects\12345\Design\Drawings\Tabs***.

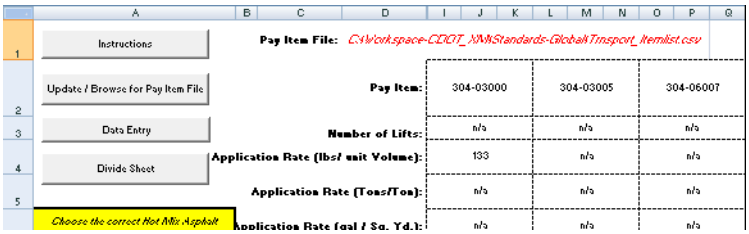
2. **<D>** the **Instruction**s button in the upper right corner of the spreadsheet. A warning message is displayed. **<D> OK** on the message window.



3. Take a few minutes and review the instructions and then minimize or dismiss them.

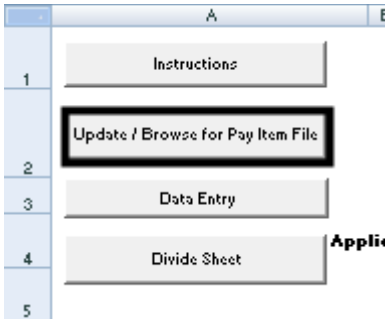
Lab 18.2 - Update the Pay Item File Location

In order for the tab sheet to function properly, it must access the ***Trnsport_Itemlist.csv*** file. The location of this file is specified in cell ***D1*** of the worksheet. This exercise demonstrates how to load the Trnsport_Itemlist.csv file.

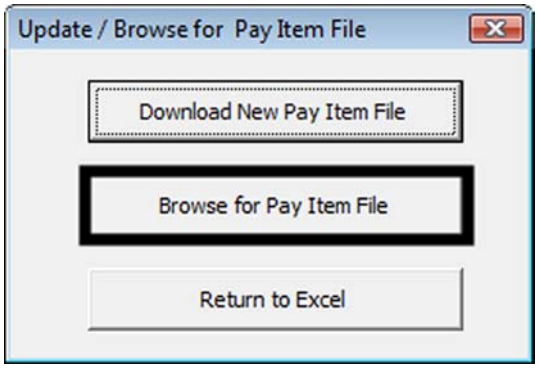


Notice that the text for the Pay Item File is red. This indicates that the file is not found. Without this file, additional pay items cannot be added. To locate the Trnsport_Itemlist.csv file:

4. **<D>** the **Update / Browse for Pay Item File** button. This displays the ***Update / Browse for Pay Item File*** dialog box.

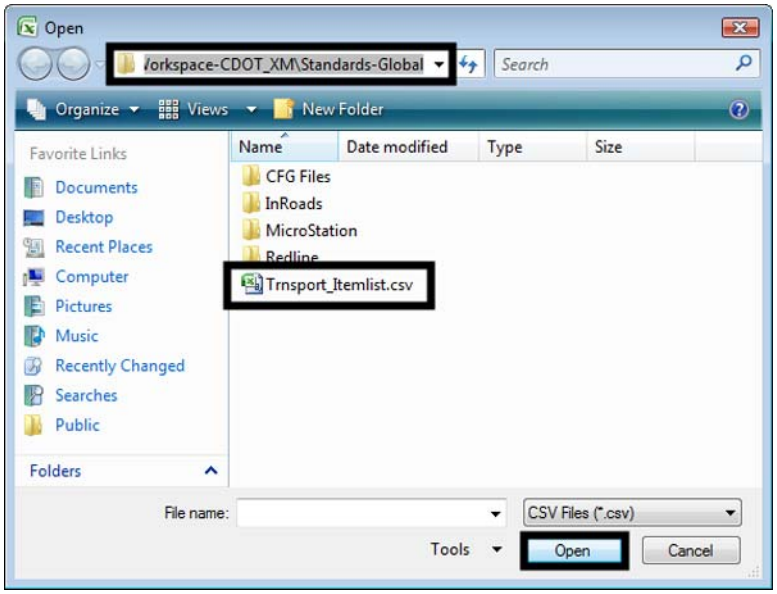


5. **<D>** The **Browse for Pay Item File** button. This displays the ***Open*** dialog box.

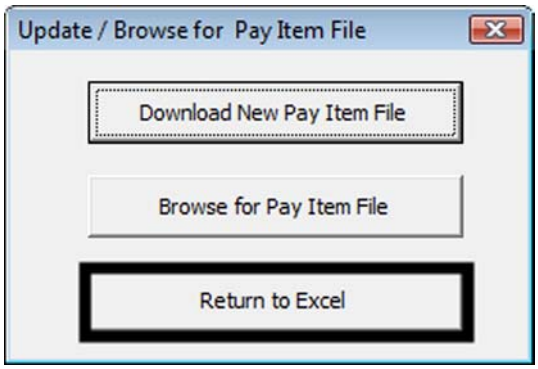


6. Navigate to the ***C:\Workspace\Workspace-CDOT_V8i\Standards-Global*** directory.

7. Highlight the **Trnsport_Itemlist.csv** file and **<D> Open**.



8. **<D>** the **Return to Excel** button in the ***Update / Browse for Pay Item File*** dialog box.



The text for the Pay Item File is now black, indicating that the Trnsport_Itemlist.csv file is available for use.

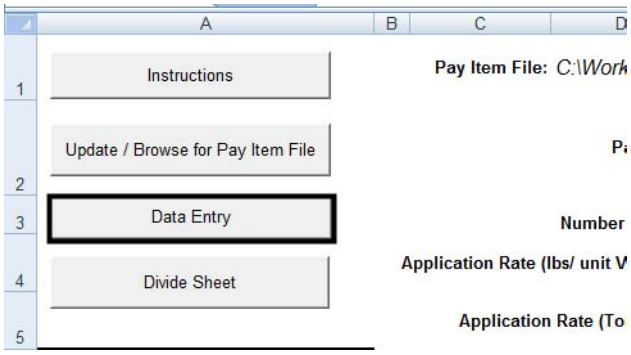
Lab 18.3 - Adding a Pay Item

There are times when additional pay items need to be added after work has begun on the tabulation sheet. The standardized tab sheet can add and sort the additional columns, keeping the existing data in the sheet with its proper pay item. In this exercise, a column for removal of concrete pavement is added.

											0															
Station		Sawing Concrete (10.5 Inch)			Aggregate Base Course (Class 6)			Hot Mix Asphalt (Patching) (Asphalt)			Hot Mix Asphalt (Grading SG) (100) (PG 64-22)												Hot Mix Asphalt (Grading SG) (100) (PG 76-28)		
		LF			TON			SY			TON												TON		
From	To										Bottom			Lift 2			Lift 3			Lift 4			Top		
xxx	xxx	xxx	xxx	LF	Wid (ft)	Thk (in)	TON	Wid (ft)	xxx	SY	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON
1+00	5+00			400	48	6	638			0	44	4	430	43	3	315	42	3	308	41	3	301	40	2.5	244
5+00	12+00			700	48	6	1117			0	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
12+00	19+00			700	48	6	1117			0	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
19+00	26+00			700	48	6	1117			0	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
26+00	33+00			700	48	6	1117			0	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428

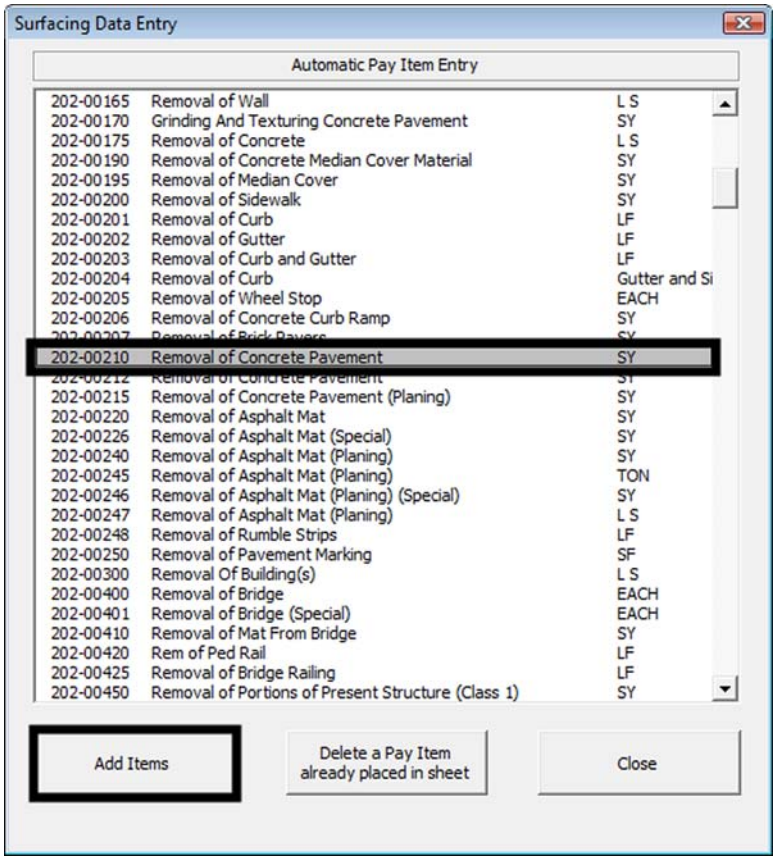
The illustration above shows the sheet before adding the column.

1. **<D>** the **Data Entry** button. This displays the ***Surfacing Data Entry*** dialog box.



2. Scroll down the list of pay items and highlight the **202-00210 Removal of Concrete Pavement** pay item.

3. **<D>** the **Add Items** button.



4. **<D> Close** to dismiss the ***Surfacing Data Entry*** dialog box.

Notice that the Removal of Concrete Pavement is now the first pay item column on the sheet. Also note that the data in the sheet was shifted to keep it with the proper pay item.

		0																												
Station		Removal of Concrete Pavement			Sawing Concrete (10.5 Inch)			Aggregate Base Course (Class 6)			Hot Mix Asphalt (Patching) (Asphalt)			Hot Mix Asphalt (Grading SG) (100) (PG 64-22)											Hot Mix Asphalt (Grading SG) (100) (PG 76-28)		
		SY			LF			TON			SY			TON											TON		
From	To													Bottom			Lift 2			Lift 3			Lift 4			Top		
xxx	xxx	Wid (ft)	xxx	SY	xxx	xxx	LF	Wid (ft)	Thk (in)	TON	Wid (ft)	xxx	SY	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON
1+00	5+00			0			400	48	6	638			0	44	4	430	43	3	315	42	3	308	41	3	301	40	2.5	244
5+00	12+00			0			700	48	6	1117			0	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
12+00	19+00			0			700	48	6	1117			0	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
19+00	26+00			0			700	48	6	1117			0	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
26+00	33+00			0			700	48	6	1117			0	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428

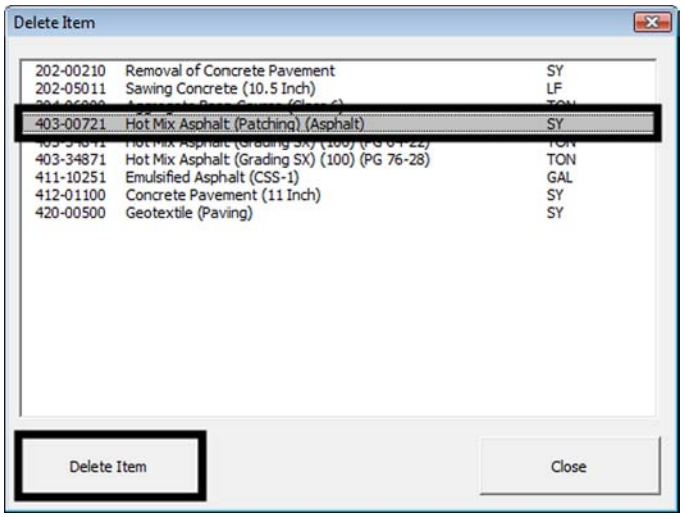
The illustration above shows the sheet after the new column is added.

5. Next, add pay item ***411-10300 Emulsified Asphalt (Prime Coat)***.

Lab 18.4 - Deleting a Pay Item

Sometimes pay items originally added to the sheet are not used. The standardized tab sheet can remove the specified columns and reorganize the remaining data. In this exercise, the column for patching asphalt is removed.

1. **<D>** the **Data Entry** button. This displays the ***Surfacing Data Entry*** dialog box.
2. **<D>** the **Delete a Pay Item already placed in sheet** button. This displays the ***Delete Item*** dialog box.
3. Highlight the **403-00721 Hot Mix Asphalt (Patching) (Asphalt)** pay item.
4. **<D>** the **Delete Item** button.



5. **<D> Close** on the ***Delete Item*** and the ***Surfacing Data Entry*** dialog boxes.

Notice that the patching asphalt column is gone and the columns to the right have shifted over. The illustration below shows the final layout.

																									0
Station		Removal of Concrete Pavement			Sawing Concrete (10.5 Inch)			Aggregate Base Course (Class 6)			Hot Mix Asphalt (Grading SG) (100) (PG 64-22)												Hot Mix Asphalt (Grading SG) (100) (PG 76-28)		
		SY			LF			TON			TON												TON		
From	To										Bottom			Lift 2			Lift 3			Lift 4			Top		
xxx	xxx	Wid (ft)	xxx	SY	xxx	xxx	LF	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON
1+00	5+00			0			400	48	6	638	44	4	430	43	3	315	42	3	308	41	3	301	40	2.5	244
5+00	12+00			0			700	48	6	1117	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
12+00	19+00			0			700	48	6	1117	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
19+00	26+00			0			700	48	6	1117	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428
26+00	33+00			0			700	48	6	1117	44	4	753	43	3	552	42	3	539	41	3	526	40	2.5	428

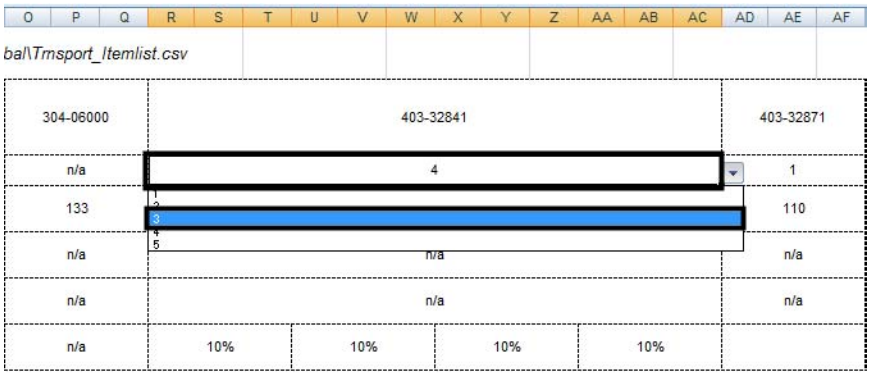
Lab 18.5 - Additional Fields Associated with HMA Pay Items

Unlike concrete, asphalt pavement is laid down in a series of lifts. Each lift making up the total pavement could be a different thickness, width, and/or a different grade (which uses a different pay item code). In addition, the tab sheet can account for assumed irregularities in the paving process. These items are accounted for in the tabulation sheet with three fields outside of the table and a heading row within the table.

For the exercise below, the final pavement consists of three lifts of PG 64-22 asphalt and one lift (the Top lift) of PG 76-28 asphalt. The existing tab sheet consists of four lifts of PG 64-22 asphalt which will be corrected in this exercise. An irregularity factor of 5% will be used for the Bottom lift only.

1. **<D>** in the Number of Lifts cell for the ***403-32841 Hot Mix Asphalt (Grading SG) (100) (PG 64-22)*** pay item.

2. Use the drop down menu and select **3** from the list.



0					
Aggregate Base Course (Class 6)	Hot Mix Asphalt (Grading SG) (100) (PG 64-22)				Hot Mix Asphalt (Grading SG) (100) (PG 76-28)
TON	TON				TON
	Bottom	Lift 2	Lift 3	Lift 4	Top

The pay item now consists of three lifts instead of four. The original Lift 2 row was deleted (including the data). The Lift 3 and Lift 4 rows were shifted over and renamed. The illustration below shows the results.

0														
Aggregate Base Course (Class 6)			Hot Mix Asphalt (Grading SG) (100) (PG 64-22)									Hot Mix Asphalt (Grading SG) (100) (PG 76-28)		
TON			TON									TON		
			Bottom			Lift 2			Lift 3			Top		
Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON
48	6	638.4	44	4	430.2	42	3	308	41	3	300.7	40	2.5	244.4
48	6	1117	44	4	752.9	42	3	539	41	3	526.2	40	2.5	427.8

Now change the irregularity factor for the PG 64-22 pay item. The irregularity factor for the PG 76-28 does not have to be changed because it is already 0.

3. **<D>** in cell **R7**. This is the***% Irreg to Apply:*** cell for the Bottom lift of the 4***03-32841 Hot Mix Asphalt (Grading SG) (100) (PG 64-22)*** pay item.

4. Key in ***5*** and press the ***Tab*** key. The change is made in cell R7. This value is used to determine the total amount of material used for irregularities at the bottom of the sheet.

5. Using the ***Tab*** has moved the cursor to the ***U7*** cell. Press the ***Delete*** key to clear this cell.

6. ***Tab*** again and ***Delete*** the contents of cell ***X7***. The Irregularities quantity is shown at the bottom of the sheet in the totals area.

O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
bal\Trnsport_Itemlist.csv														

304-06000	403-32841	403-32871
n/a	3	1
133	110	110
n/a	n/a	n/a
n/a	n/a	n/a
n/a	5%	

0														
Aggregate Base Course (Class 6)			Hot Mix Asphalt (Grading SG) (100) (PG 64-22)									Hot Mix Asphalt (Grading SG) (100) (PG 76-28)		
TON			TON									TON		
			Bottom			Lift 2			Lift 3			Top		
Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON
48	6	638.4	43	4	420.4	42	3	308	41	3	300.7	40	2.5	244.4
48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8
		0	43		0	42		0	41		0	40		0
		0			0			0			0			0
		0			0			0			0			0
			783											
23780			15662			11473			11200			9106		
23780			16445			11473			11200			9106		

The width for each asphalt lift may be fixed, so that they are all the same, or they may be variable with each successive lift one foot wider than the lift above.

The width for each HMA lift is based on the width of the Top lift. The values for the Top widths were entered prior to deleting the extra lift and were entered as Variable HMA Lift Widths. Notice that the data entered in the table has not been re-calculated since deleting the extra lift. Therefore, the bottom lift is one foot too wide.

0														
Aggregate Base Course (Class 6)			Hot Mix Asphalt (Grading SG) (100) (PG 64-22)									Hot Mix Asphalt (Grading SG) (100) (PG 76-28)		
TON			TON									TON		
			Bottom			Lift 2			Lift 3			Top		
Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON
48	6	638.4	44	4	430.2	42	3	308	41	3	300.7	40	2.5	244.4
48	6	1117	44	4	752.9	42	3	539	41	3	526.2	40	2.5	427.8
48	6	1117	44	4	752.9	42	3	539	41	3	526.2	40	2.5	427.8
48	6	1117	44	4	752.9	42	3	539	41	3	526.2	40	2.5	427.8
48	6	1117	44	4	752.9	42	3	539	41	3	526.2	40	2.5	427.8
48	6	1117	44	4	752.9	42	3	539	41	3	526.2	40	2.5	427.8
48	6	1117	44	4	752.9	42	3	539	41	3	526.2	40	2.5	427.8
48	6	798	44	4	537.8	42	3	385	41	3	375.8	40	2.5	305.6

To correct the Bottom width:

7. **<D>** in cell **AA15**.

   Note: Changing the width of an HMA Top lift triggers a re-calculation of HMA lower lift widths on a row by row basis.

8. Key in ***40*** and press ***Enter***.

9. Repeat step 8 for the remaining rows that contain data.

0															
Aggregate Base Course (Class 6)			Hot Mix Asphalt (Grading SG) (100) (PG 64-22)									Hot Mix Asphalt (Grading SG) (100) (PG 76-28)			Emuls
TON			TON									TON			
			Bottom			Lift 2			Lift 3			Top			
Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)	Thk (in)	TON	Wid (ft)
48	6	638.4	43	4	420.4	42	3	308	41	3	300.7	40	2.5	244.4	43
48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8	43
48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8	43
48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8	43
48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8	43
48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8	43
48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8	43
48	6	798	43	4	525.6	42	3	385	41	3	375.8	40	2.5	305.6	43

Note: Values for any column can also be entered manually. However, re-entering the width in the Top column ensures that all columns of HMA items using a unit of TONs are updated correctly.

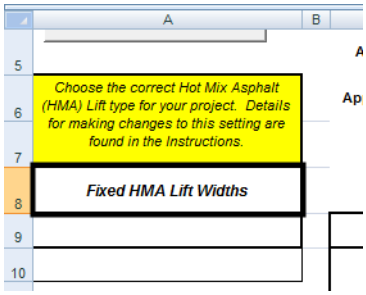
Important! Non-HMA quantities based on pavement widths (like Aggregate Base Course) are not automatically updated and must be corrected manually.

The next series of steps will illustrate the difference between fixed and variable lift width by entering additional data into rows 37 and 38.

10. Verify that cell ***A8*** is set to **Variable HMA Lift Widths**.
11. **<D>** in cell **C37** and enter ***157+00*** for the ***From*** station, then ***Tab*** to the next column.
12. In cell ***D37***, key in ***164+00*** for the ***To*** station.
13. **<D>** in cell **AA37**. This is the cell for the Top lift of all of the HMA pay items.
14. Key in ***40*** for the width. Notice that the widths for each of the other HMA lifts on the row are automatically calculated, increasing by one foot for each lift.

C	D	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
136+00	143+00			0			700	48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8
143+00	150+00			0			700	48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8
157+00	164+00			0			700			0	43		0	42		0	41		0	40		0
				0			0			0			0			0			0			0
				0			0			0			0			0			0			0
Irregularities											783											
SubTotals		0			15600			23780			15662			11473			11200			9106		
Project Totals		**0**			**15600**			**23780**			**16445**			**11473**			**11200**			**9106**		

15. Change cell ***A8*** to **Fixed HMA Lift Widths**.



16. **<D>** in cell **C38** and enter ***164+00*** for the ***From*** station, then ***Tab*** to the next column.
17. In cell ***D37***, key in ***171+00*** for the ***To*** station.
18. **<D>** in cell **AA38**. This is the cell for the Top lift of all of the HMA pay items.

19. Key in ***40*** for the width. Notice that the widths for each of the other HMA lifts on the row are populated with the same value for each lift.

C	D	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
136+00	143+00			0			700	48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8
143+00	150+00			0			700	48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8
157+00	164+00			0			700			0	43		0	42		0	41		0	40		0
164+00	171+00			0			700			0	40		0	40		0	40		0	40		0
				0			0			0			0			0			0			0
Irregularities												783										
SubTotals		0			16300			23780			15662			11473			11200			9106		
Project Totals		**0**			**16300**			**23780**			**16445**			**11473**			**11200**			**9106**		

Note: Category 411 pay items with a unit of GALs use the same value as the Bottom HMA width to calculate quantities.

20. Copy the Thickness value down to the two new rows for each of the HMA columns.

C	D	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
136+00	143+00			0			700	48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8
143+00	150+00			0			700	48	6	1117	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8
157+00	164+00			0			700			0	43	4	735.8	42	3	539	41	3	526.2	40	2.5	427.8
164+00	171+00			0			700			0	40	4	684.4	40	3	513.3	40	3	513.3	40	2.5	427.8
				0			0			0			0			0			0			0
Irregularities												854										
SubTotals		0			16300			23780			17082			12525			12239			9961		
Project Totals		**0**			**16300**			**23780**			**17936**			**12525**			**12239**			**9961**		

Rows 4, 5, and 6 in the spreadsheet are reserved for the application rates of various materials. Although standard default values are automatically entered when a pay item is added to the tab sheet, these values can be changed manually. In this exercise, the application rate for 411-10300 Emulsified Asphalt (Prime Coat) needs to be changed from 0.1 gallons per square yard to 0.2 gallons per square yard.

21. **<D>** in cell **AH6**.

22. Key in ***0.2*** and press ***Enter***.

411-10251	411-10300
n/a	n/a
n/a	n/a
n/a	n/a
0.1	0.2
n/a	n/a

Emulsified Asphalt (CSS-1)			Emulsified Asphalt (Prime Coat)		
GAL			GAL		
Wid (ft)	xxx	GAL	Wid (ft)	xxx	GAL
43		764.4	43		1529
43		1338	43		2676
43		1338	43		2676

Notice that the quantities in column ***AI*** automatically update to reflect the new application rate.

Lab 18.6 - Add Additional Data to the Sheet

Two additional rows are needed for this next exercise.

1. **<R>** on the row number **39** and follow the steps in ***Section 2.4*** of the ***Tabulation of Surfacing*** instructions to add two additional rows.

   The next few steps will consist of entering new station extents for the last three rows, removing unwanted data values for Sawing Concrete pay item, and adding pay item quantities for Removal of Concrete Pavement, Sawing Concrete Pavement, and 11" Concrete Pavement

2. First, enter the station extents for the last three lines using the following data:

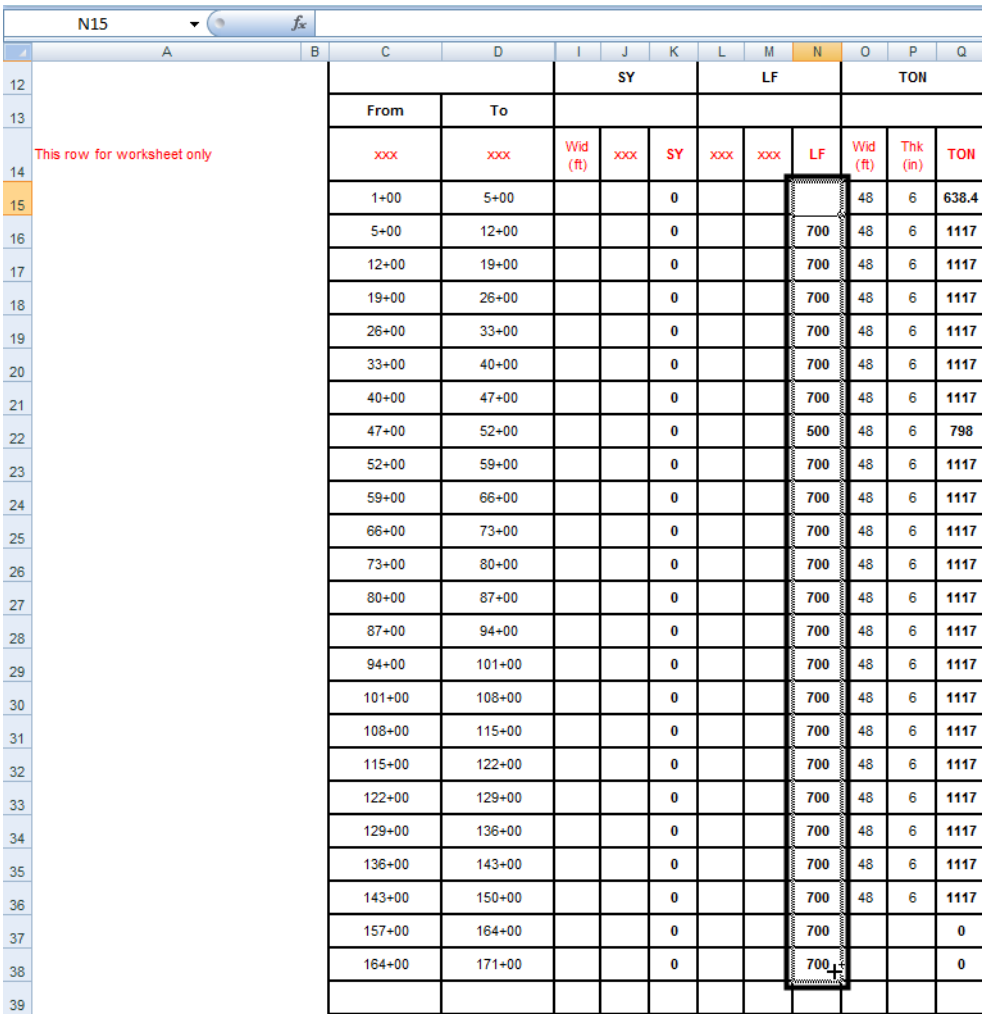
   - 171+00 to 178+00
   - 178+00 to 185+00
   - 185+00 to 192+00

3. Next, remove the quantities for Sawing Concrete for all rows except for station 185+00 to 192+00. **<D>** in cell **N15**. This is the first quantity cell of the sawing concrete pavement pay item.

4. Press the ***Delete*** key to remove the quantity.

5. **<D> and hold** on the little box in the lower right corner of the ***N15*** cell.

6. Drag down the ***N*** column to row ***40*** then release the mouse button. This deletes all of the unneeded quantities.



	A	B	C	D	I	J	K	L	M	N	O	P	Q
12					SY			LF			TON		
13			From	To									
14	This row for worksheet only		xxx	xxx	Wid (ft)	xxx	SY	xxx	xxx	LF	Wid (ft)	Thk (in)	TON
15			1+00	5+00			0				48	6	638.4
16			5+00	12+00			0			700	48	6	1117
17			12+00	19+00			0			700	48	6	1117
18			19+00	26+00			0			700	48	6	1117
19			26+00	33+00			0			700	48	6	1117
20			33+00	40+00			0			700	48	6	1117
21			40+00	47+00			0			700	48	6	1117
22			47+00	52+00			0			500	48	6	798
23			52+00	59+00			0			700	48	6	1117
24			59+00	66+00			0			700	48	6	1117
25			66+00	73+00			0			700	48	6	1117
26			73+00	80+00			0			700	48	6	1117
27			80+00	87+00			0			700	48	6	1117
28			87+00	94+00			0			700	48	6	1117
29			94+00	101+00			0			700	48	6	1117
30			101+00	108+00			0			700	48	6	1117
31			108+00	115+00			0			700	48	6	1117
32			115+00	122+00			0			700	48	6	1117
33			122+00	129+00			0			700	48	6	1117
34			129+00	136+00			0			700	48	6	1117
35			136+00	143+00			0			700	48	6	1117
36			143+00	150+00			0			700	48	6	1117
37			157+00	164+00			0			700			0
38			164+00	171+00			0			700			0
39													

7. The illustration below shows the completed station columns.

129+00	136+00			0				48	6	1117	43
136+00	143+00			0				48	6	1117	43
143+00	150+00			0				48	6	1117	43
157+00	164+00			0						0	43
164+00	171+00			0						0	40
171+00	178+00			0						0	
178+00	185+00			0						0	
185+00	192+00			0			700			0	
Irregularities											
SubTotals		0			700			23780			
Project Totals		**0**			**700**			**23780**			

The project requires 36’ of concrete sawing for the extents from Sta. 171+00 to Sta.178+00 and from Sta. 185+00 to Sta. 192+00.

8. **<D>** in cell **N39**.

9. Key in a value of ***36*** in cell ***N39*** and cell ***N41***.

This completes the changes for Sawing Concrete.

Next, the Removal of Concrete Pavement quantities are added. This occurs from Sta. 171+00 to the end of the job. The width of the pavement being removed is 36’

10. **<D>** in cell **I39**.

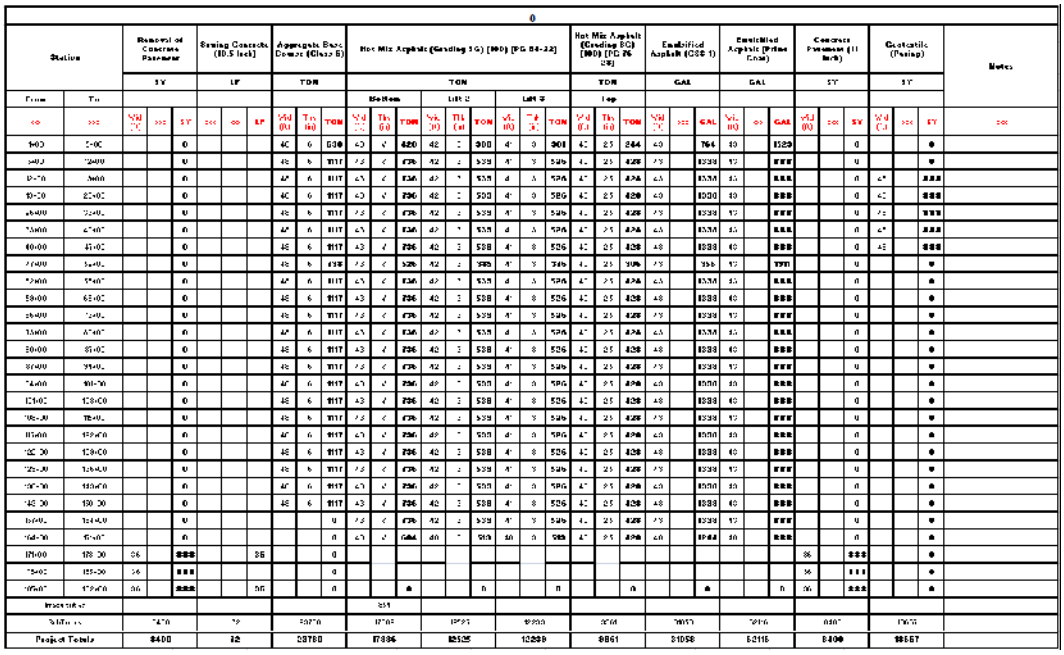
11. Key in ***36***.

12. **<D> and hold** on the little box in the lower right corner of the ***I39*** cell.

13. Drag down the ***I*** column to row ***41*** then release the mouse button. This adds the 36’ width to each row.

14. To calculate the quantity for 11” Concrete Pavement, enter ***36*** in cells ***AJ39*** through ***AJ41***.

Below is an illustration of the completed sheet.

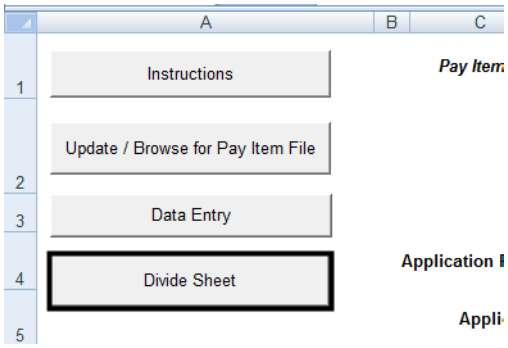


15. **Save** the file.

Lab 18.7 - Dividing the Surfacing Sheet into Sub Sheets

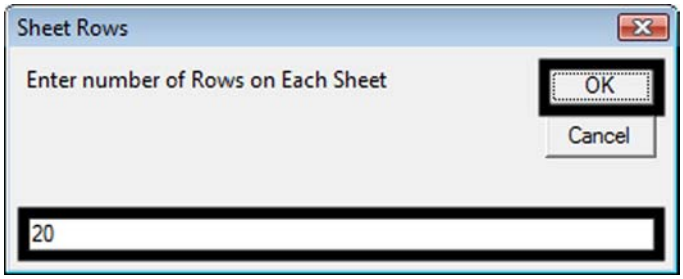
It the sheet is too long to fit inside the sheet border, there is a option to divide the master sheet into sub sheets of a specified number of data rows. When this option is selected, additional worksheets are added to the file that contain a part of the master sheet along with a sheet totals table. In this exercise, it was decided that 20 rows of data was the maximum per sheet. (this number will vary based on the tab sheet being used and additional information that may be included in the printable sheet.)

1. In the top left portion of the tab sheet, **<D>** the **Divide Sheet** button. This displays the ***Sheet Rows*** dialog box.

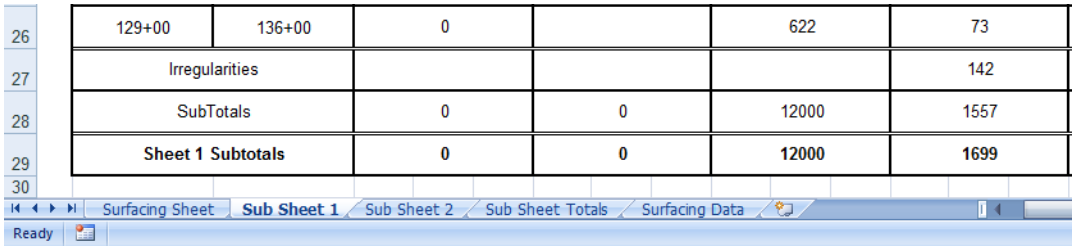


2. Key in ***20***. This is the number of data rows used on each sub sheet.

3. **<D> OK**.



Two sub sheets (Sub Sheet 1 and Sub Sheet 2) are created along with Sub Sheet Totals.



The master sheet (Surfacing Sheet) is left intact. To re-divide the master sheet by a different number of rows, delete all the Sub Sheet and Sub Sheet Totals worksheets and run through the process again.

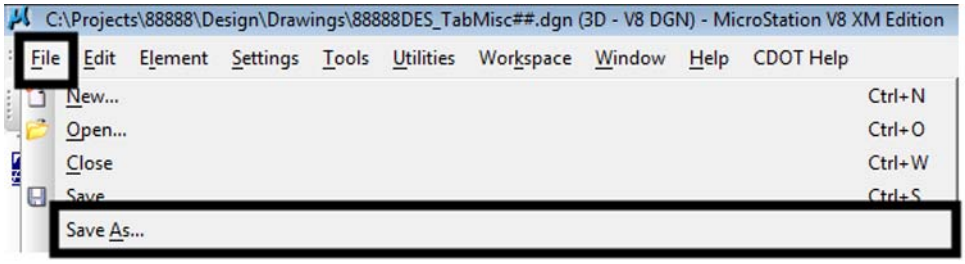
4. **Save** but do not close the file.

Lab 18.8 - Link the Sub Sheets to a MicroStation Sheet Border

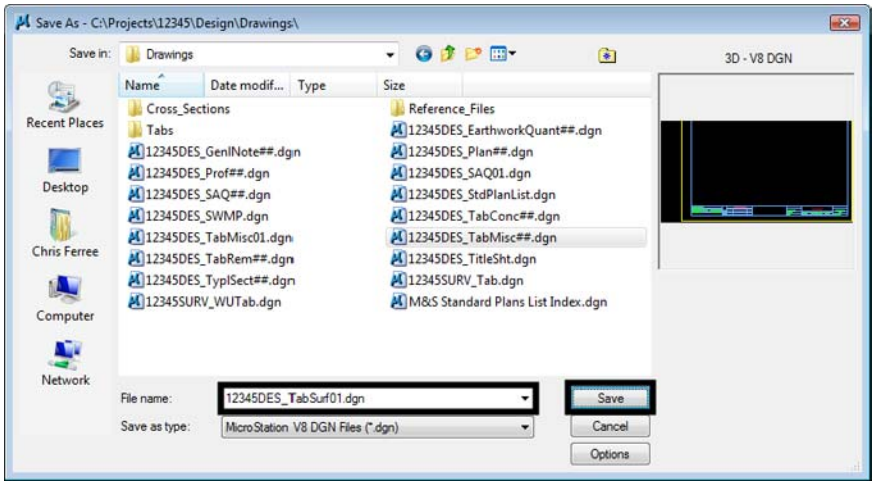
The final step in creating the tab sheet is to link the Excel file to the MicroStation sheet border. Linking allows the Excel file to be updated and reflect those updates in the MicroStation file. In this exercise, Sub Sheet 1 is linked to the sheet border file. The process is the same for the other sub sheets.

The first step in linking the spreadsheet is to prepare the MicroStation file. The miscellaneous tab sheet border is copied and renamed to be the surfacing tab sheet.

1. Start MicroStation and open **12345DES_TabMisc##.dgn**.
2. Select **File > Save As** from the MicroStation menu bar.

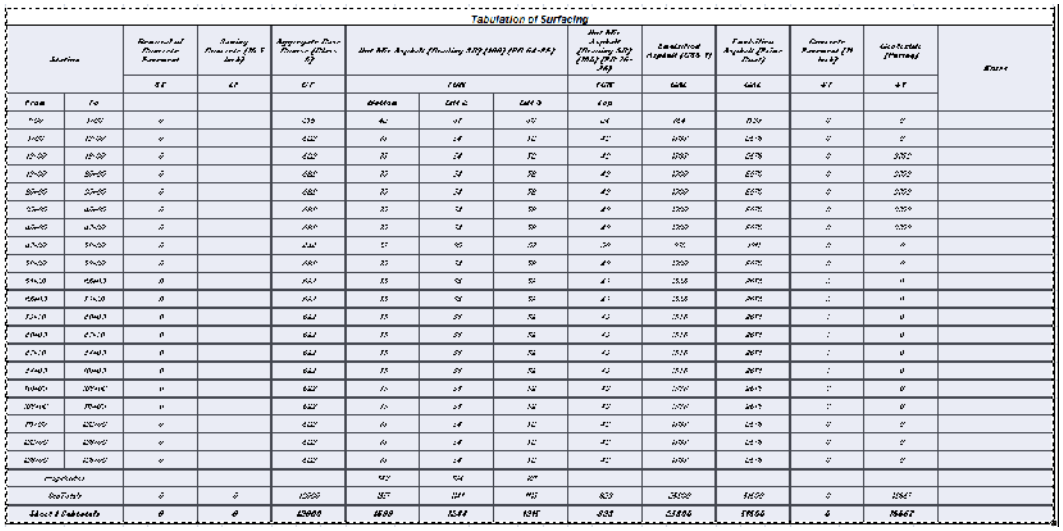


3. Key in ***12345DES_TabSurf01.dgn*** in the ***File name*** field.
4. **<D> Save**. This creates the new file and opens it.



5. Bring Excel to the front.
6. Select the **Sub Sheet 1** worksheet.

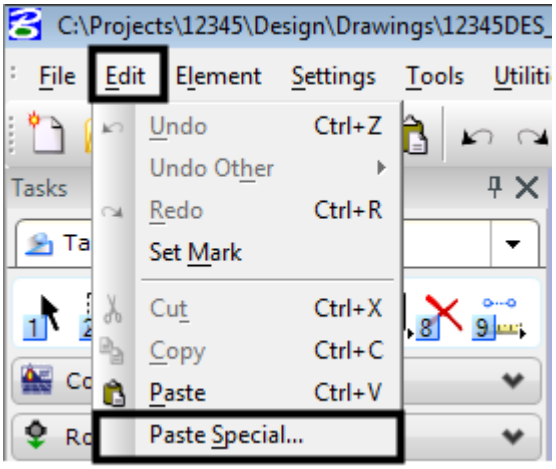
7. Highlight the entire table (cells **C2** through **AP29**).



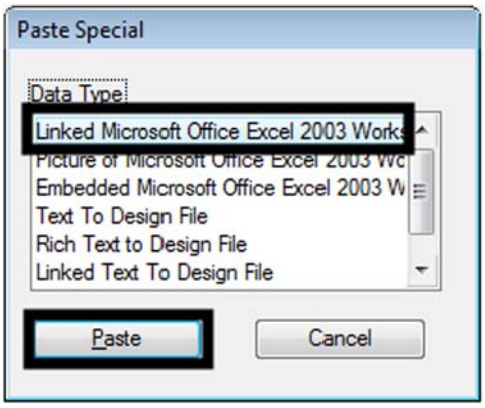
8. Select **Edit > Copy** from the Excel menu bar.

9. Bring MicroStation to the front.

10. Select **Edit > Paste Special** from the menu bar. This displays the ***Paste Special*** dialog box.



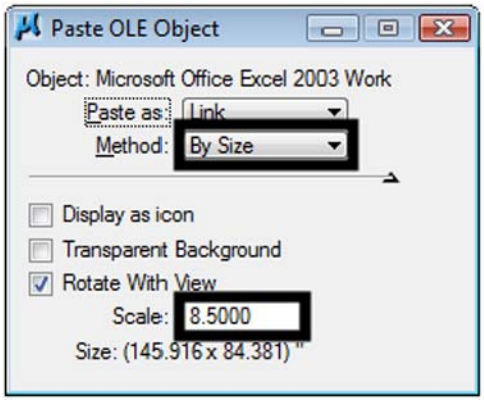
11. In the ***Paste Special*** dialog box, highlight **Linked Microsoft Office Excel 2003 Worksheet**.



12. **<D> Paste**. This displays the ***Paste OLE Object*** tool settings box.

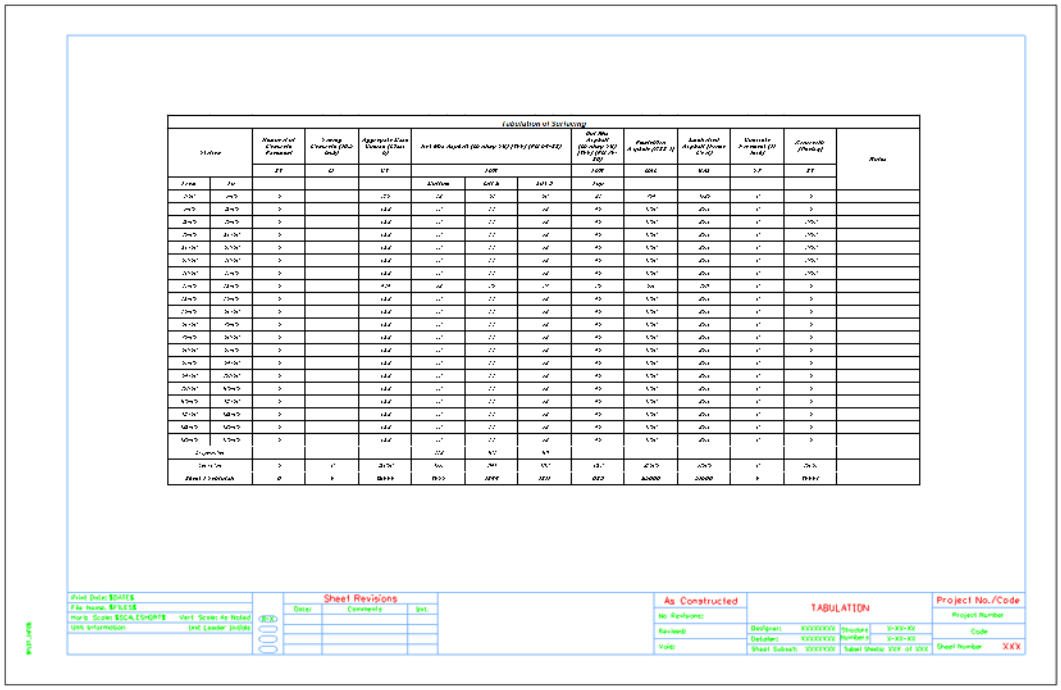
13. In the ***Paste OLE Object*** tool settings box, set the ***Method*** to **By Size**.

14. In the ***Scale*** field key in ***8.500***. This makes the text in the Excel file the proper size for the MicroStation file.



15. A box is connected to the cursor. This represents the size of the table that is being placed. Center it inside the sheet border and **<D>**. The file is now linked to the sheet border file.

16. The hatching in the table indicates that the Excel file is open. Bring Excel to the front and close it to remove the hatching. The illustration shows the final result.



17. **Close** MicroStation.

Chapter Summary:

- The tab sheets use the Trnsport_Itemlist.csv file to set the column headings for the tab sheet.
- The Trnsport_Itemlist.csv file is updated by ServerCop at log in or it can be manually updated.
- Programming that automates the layout and revision of the column headings is accessed through various buttons placed in the worksheet.
- Rows are added or deleted using standard Excel functionality.
- Large tab sheets can be divided to fit into multiple sheet borders.
- If the tab sheet is divided, a sheet totals table is also created.
- The tab sheets are linked to a MicroStation sheet border for printing