Staunton Estimating Tool

The Project Estimating spreadsheet uses regression based statistical models, as well as geographically based models to generate quantity-based estimates for VDOT road/bridge projects. The pricing databases are kept on the M:\ drive, along with new version of the spreadsheets.

Instructions:

Bid items are divided into categories, and onto different tabs in the spreadsheet. The categories are:

- Grading & Pavement (Maroon)
- Guardrail & Traffic Control (Orange)
- Erosion Control (Emerald Green)
- Landscaping (Sage Green)
- Utilities (Navy Blue)
- Signs & Signals (Red)
- Bridge (Royal Blue)
- Incidental (Black)

The tabs are color coded (see colors in parenthesis above), which correspond to the colors in the bid items when the complete estimate is generated.

To generate an estimate, choose a tab and enter the quantity on the in the column titled "QUAN." (Column D). Do not enter any other information, as the program will do that based on your chosen regression and geographical model. See screen shot below.

Do this for every bid item for which you wish to generate prices. Lump sum items will not generate prices, since they almost always have a value of 1, with widely varying values. The items will appear in the summary, but the user will have to assign a unit value.

Once you have completed all item code entries on each tab, select the "COMPLETE ESTIMATE" tab, which is white. You will need to select a geographic model (a district, or statewide), and a regression model. The regression models and an explanation are listed below:

- **Average**: This is a straight average (not a weighted average) of all bids for a particular item, within the selected geographic model. The unit price will be the same regardless of the quantity entered.
- **Linear**: This is a linear regression model of all bids within the selected geographic model. Typical orientation is higher for small quantities and lower for large quantities. The user should e careful, for very large quantities the unit price can become zero. See red line in graph below.
- **Non-Linear**: This is a non-linear (i.e. curvilinear) regression model of all bids for a particular item, within the selected geographical model. The unit price will be larger for small unit prices, but smaller for large unit prices. For very large unit prices it will become asymptotic to a horizontal line, indicative of the material cost for that item. For very small items, the unit cost can become tremendous. See blue Line in Figure 1 below.

|	
Idealized Pricing Models Figure 1	**Actual Bid Results** Figure 2
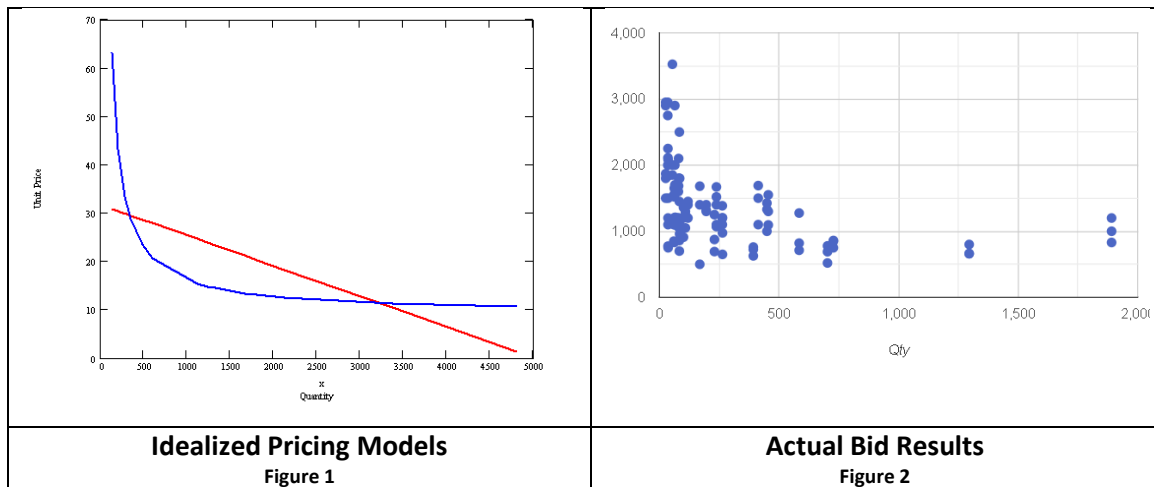
If you find odd looking, or missing bid items, check the "Min-Max" column (Col I) to see that your model is appropriate for the range of quantities for which bids were given. In mot cases, the Non-linear Regression model most closely represents the distribution of actual bid results. (See Figure 2 above)

	A	B	C	D	E	F	G	H	I
1	PROJ.:	BROS-085-8(043)(NFO)0744-085-289,M501,B657 Letting: 11/25/2009						PROJ.:	BROS-085-8(043)(NFO)0744-085-289,M501,B
2	SITE:	C00077275M01						SITE:	C00077275M01
3									
4	ITEM	ITEM DESCRIPTION	UNITS	QUAN.	UNIT PRICE	AMOUNT	Locked	MOBILIZATION $	90,432.76
5									
6	101	CONSTRUCTION SURVEYING	LS	1		$ -		SUBTOTAL $	1,299,087.97
7	125	GRADING & PAVEMENT ITEMS	LS	1		$ -			
8	140	BORROW EXCAVATION	CY	300	$19.47	$ 5,841.00		ENGINEERING $	155,890.56
9	590	COMB. UNDERDRAIN CD-1	LF	26	$18.64	$ 484.64			
10	591	COMB. UNDERDRAIN CD-2	LF	36	$18.88	$ 679.68		CONTINGENCIES $	129,908.80
11	595	OUTLET PIPE	LF	53	$19.19	$ 1,017.07			
12	596	ENDWALL EW-12	EA	3	$546.99	$ 1,640.97		TOTAL $	1,584,887.32
13	4130	21" X 15" ARCH PIPE	LF	36	$54.33	$ 1,955.88			
14	4180	28" X 20" ARCH PIPE	LF	78	$62.33	$ 4,861.74		Regression Model	Linear
15	10128	AGGR. BASE MATL. TY. I NO. 21B	TON	728	$22.55	$ 16,416.40		Locality	Staunton
16	13320	GUARDRAIL GR-2	LF	260	$19.69	$ 5,119.40			
17	13331	RAD. GUARDRAIL GR-2	LF	318	$21.03	$ 6,687.54			
18	13345	ALTERNATE BREAKWAY CABLE TERMINAL (GR-9)	EA	4	$2,472.96	$ 9,891.84		Click here to run New Estimate	
19	13383	FIXED OBJECT ATTACH. GR-FOA-1 TY. I	EA	4	$2,029.65	$ 8,118.60			
20	16241	NS AGGR. MATL.	TON	11	$65.00	$ 715.00			NOTE:
21	24100	ALLAYING DUST	HR	100	$31.18	$ 3,118.00		Load Tool Bar	enter th
22	24152	TYPE III BARRICADE 8'	EA	4	$405.65	$ 1,622.60			descript
23	24160	CONSTRUCTION SIGNS	SF	200	$19.69	$ 3,938.00			
24	24260	CR. RUN AGGR. NO. 25 OR 26	TON	67	$25.83	$ 1,730.61			
25	24278	GROUP 2 CHANNELIZING DEVICES	DAY	9600	$1.10	$ 10,560.00		Help	
26	24282	FLAGGER SERVICE	HR	2500	$13.99	$ 34,975.00			
27	24601	NS REMOVE EXIST. GUARDRAIL	LF	234	$2.83	$ 662.22			
28	25506	FIELD OFFICE TY.I	MO	18	$1,439.45	$ 25,910.10			
29	26127	DRY RIPRAP CL.I 26"	TON	247	$45.49	$ 11,236.03		Click here for Instructions	
30	27022	TOPSOIL CLASS B 2"	ACRE	1	$5,135.73	$ 5,135.73			
31	27102	REGULAR SEED	LB	77	$16.31	$ 1,255.87			
32	27103	OVERSEEDING	LB	48	$5.33	$ 255.84			
33	27215	FERTILIZER(15-30-15)	TON	1	$1,204.58	$ 1,204.58			

Defaults | Grading & Pavement | Guardrail & Traffic Control | Erosion Control | Landscaping | Utilities | Signs & Signals | Bridge | Incidental | COMPLETE ESTIMATE

Once at the complete estimate sheet, select the Regression Model and Locality (Geographic region) for which you would like prices generated. Click the "CLICK HERE TO RUN NEW ESTIMATE" button, and the application will begin the pricing and summarization routines. You can review the prices and quantity range on each item by going back to the original colored category tabs (See below).

	A	B	C	D	E	F	H	I
	A6	fx	98					
	A	B	C	D	E	F	H	I
1		GRADING & PAVEMENT ITEMS						
2	ITEM	DESCRIPTION	UNITS	QUAN	UNIT PRIC	AMOUNT	SPEC#	min-max
93	571	ENDWALL PIPE GRATE EW-11 TY.I	LF			$ -	302	
94	572	ENDWALL PIPE GRATE EW-11 TY.II	LF			$ -	302	
95	573	ENDWALL PIPEGRATE EW-11 TY.III	LF			$ -	302	
96	574	ENDWALL GRATE & FRAME EW-11A	EA			$ -	302	
97	580	UNDERDRAIN UD-1	LF			$ -	501	
98	585	UNDERDRAIN UD-2	LF			$ -	501	
99	587	UNDERDRAIN UD-3	LF			$ -	501	
100	588	UNDERDRAIN UD-4	LF			$ -	501	
101	589	UNDERDRAIN UD-5, GEOCOMPOSITE	LF			$ -	ATTD501	
102	590	COMB. UNDERDRAIN CD-1	LF	26	$ 18.64	$ 484.58	501	13 to 532
103	591	COMB. UNDERDRAIN CD-2	LF	36	$ 18.88	$ 679.65	501	18 to 769
104	592	COMB. UNDERDRAIN CD-1&2	LF			$ -	501	
105	593	OUTLET PIPE UD-5	LF			$ -	ATTD	
106	594	UNDERDRAIN UD-6	LF			$ -	501	
107	595	OUTLET PIPE	LF	53	$ 19.19	$ 1,017.21	501	12 to 1552
108	596	ENDWALL EW-12	EA	3	$ 546.99	$ 1,640.98	302	2 to 68
109	597	UNDERDRAIN UD-7	LF			$ -	501	
110	598	NS UNDERDRAIN	LF			$ -	302	
111	700	POST INSTALLATION INSPECTION	LF			$ -	302	
112	1060	6" PIPE	LF			$ -	302	
113	1062	6" CONC. PIPE	LF			$ -	302	
114	1080	8" PIPE	LF			$ -	302	
115	1082	8" CONC. PIPE	LF			$ -	302	
116	1120	12" PIPE	LF			$ -	302	
117	1121	JACKED 12" PIPE	LF			$ -	302	
118	1122	12" CONC. PIPE	LF			$ -	302	
119	1124	12" RADIAL PIPE	LF			$ -	302	
120	1126	STORM SEWER PIPE 12"	LF			$ -		
121	1150	15" PIPE	LF			$ -	302	

Defaults | Grading & Pavement | Guardrail & Traffic Control | Erosion Control | Landscaping | Utilities | Signs & Signals | Bridge | Incident

By Amburn & Weakley

More tools are available by clicking the "LOAD TOOLBAR" button. A new menu will open with additional tools.
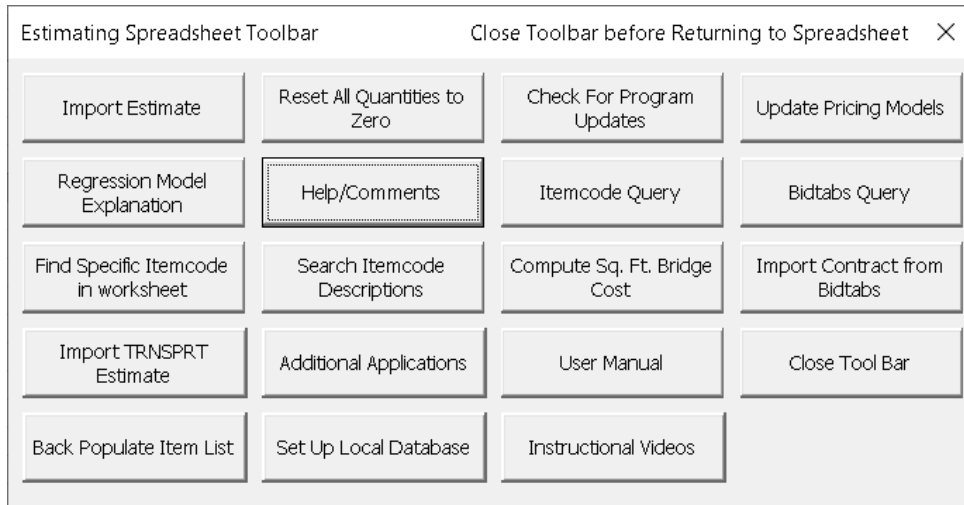
- **Import Estimate:** This allows you to import an estimate from a previous version of this application into the current version.
- **Reset All Quantities to Zero:** This clears a current sheet by setting all quantities to zero, so you can begin a new estimate from scratch.
- **Check for Program Updates:** This checks the server for a new version, and prompts a download if a newer version exists. This is checked each time you open the spreadsheet.
- **Update Pricing Models:** imports pricing models. The models are checked against the current model each time you open the spreadsheet.
- **Regression Model Explanation**: Opens a webpage that will give a brief overview of each of the pricing models. (Only Available on VDOT System)
- **Help/Comments**: Generates an email to the developer with version information so you can ask questions, or report errors.
- **Itemcode Query**: Launches a web application to allow users to search for Itemcodes based on a portion of the item description. It also provides links to pricing model information, to generate unit prices.   (Only Available on VDOT System)
- **Bidtabs Query**: Launches a web application to allow users to search bid tabs (previous bid results for 3 low bidders). This can be by itemcode, item description, contractor, quantity range, district, etc. Regression models and statistics are generated for results. Historical inflation rates (FHWA Highway Construction Cost Index) can be applied to adjust past bids to present day dollars. It is useful to research non-Standard and specialty items.
- **Find Specific Itemcode in Spreadsheet**: Allows the user to search all category tabs for a specific itemcode, if the user is unsure of the category for that code.
- **Search Itemcode Descriptions**: Allows the user to search all itemcodes for a specific description, like "Pipe", or "Concrete". It returns a list of itemcodes, descriptions, and locations in the sheet.
- **Compute Sq. Ft. Bridge Cost**: Allows the user to separate the bridge items from a full estimate, and supply the length and width for a SF structure cost. Uses bridge items but does not include Cofferdams, Causeways, or any Dismantle & Remove items.

- **Import Contract from Bidtabs**: Imports a contract that has already been bid in the spreadsheet, based on the contract ID. (Only Available on VDOT System)

- **Import TRNSPRT Estimate**: Imports a text file from TRNSPRT so that it can be repriced by the spreadsheet.
- **Additional Applications**: Opens the "Staunton Applications" Main page, with links to all of the Staunton Apps (Structure Query, Itemcode Query, Bidtab Query, etc.)   (Only Available on VDOT System)
- **User Manual**:   Link to the User Manual (this document).
- **Close Toolbar**: Closes the toolbar.
- **Back populate Item List**: If you have a list of Itemcodes & quantities from another spreadsheet, you can use this function to populate them into the appropriate category tabs. Just paste them into the spreadsheet in the respective columns (starting on Row #6) on the "COMPLETE ESTIMATE" Tab, then click this button. You can then price the estimate (Clicking the "Click Here to run New Estimate" button.
- **Set Up Local Database**: a one-time setup for a local folder and downloads pricing models to allow users to use this tool in situations where internet or access to the VDOT network is not available.   After this, selecting "Local Version" on the "COMPLETE ESTIMATE" Tab, it will

TOTAL	$	2,624,450.10	
			Network Version
Regression Model		Non-Linear	
Locality		Richmond	

eliminate errors when operating the spreadsheet.

- **Instructional Videos:** Opens a dialogue box to select any of the instructional video modules for viewing. These can also be found here:
  http://www.virginiadot.org/business/locdes/project_estimating_training_modules.asp

Helpful Functions/Shortcuts

- Single click on the Itemcode on launch the pricing model window for average, linear regression, & nonlinear Regression for the selected locality and the specified quantity.
- Right click on the Itemcode (in column "A") to generate a matrix of all unit prices (average, linear regression & nonlinear regression), as well as min and max quantities, and number of data points for all districts and Statewide.

District	Average	Linear	Nonlinear	# Data Points	Min Qty	Max Qty
1	$ 157.10	$ 134.39	$ 116.84	73	5	19,094
2	$ 158.19	$ 70.61	$ 137.37	65	11	7,493
3	$ 178.22	$ 32.60	$ 133.49	52	22	6,198
4	$ 182.24	$ 111.48	$ 79.10	32	30	9,972
5	$ 165.25	$ 141.53	$ 98.87	35	31	21,062
6	$ 134.83	$ (477.39)	$ 97.68	28	97	690
7	$ 283.83	$ (615.87)	$ 207.29	23	2	2,218
8	$ 213.77	$ 38.01	$ 139.11	56	4	6,763
9	$ 250.08	$ (120.68)	$ 139.83	43	6	4,421
Statewide	$ 185.90	$ 127.59	$ 151.54	407	2	21,062

- After the "Right click", switch to the "Graphing" tab to see the graphical representation of the actual quantity, along with the 3 pricing models, and the min & Max Quantities.