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 be 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.

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)
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).

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 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](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.

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

**Statewide** | **$185.90** | **$127.59** | **$151.54** | **407** | **2** | **21,062**

TOTAL $ 2,624,490.10
• 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.