

AASHTOWare Project Estimation

Unit Prices – Regression

Printable Companion Handout



What are Regression Prices?

AASHTOWare Project Estimation uses regression models to determine a suitable unit price based on the given quantity for a pay item. This is particularly useful because generally, pay items decrease in unit price as the quantity increases.

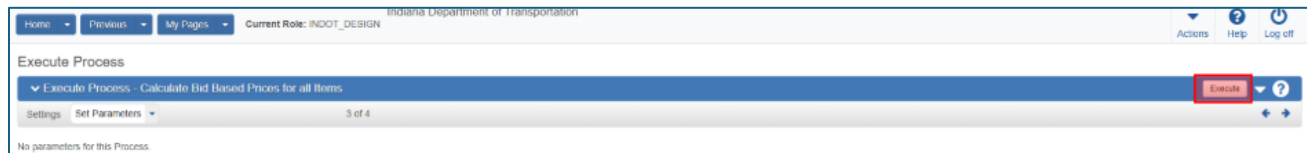
The data used for the regression model is dependent on the Bid Item History of the project. For information on how to change or modify the Bid Item History, see Creating a New Cost Estimate.

Applying Regression Unit Prices for Every Pay Item

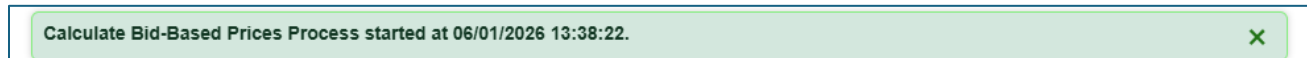
1. Navigate to the Item Pricing Worksheet
2. Ensure all desired pay items are in your cost estimate. For information on how to include pay items, see Adding & Removing Items and Importing Files to Item Pricing Worksheet.
3. Click on the Component Actions Menu (white carrot on the top right)

4. Click “Calculate Bid Based Prices for all Items”

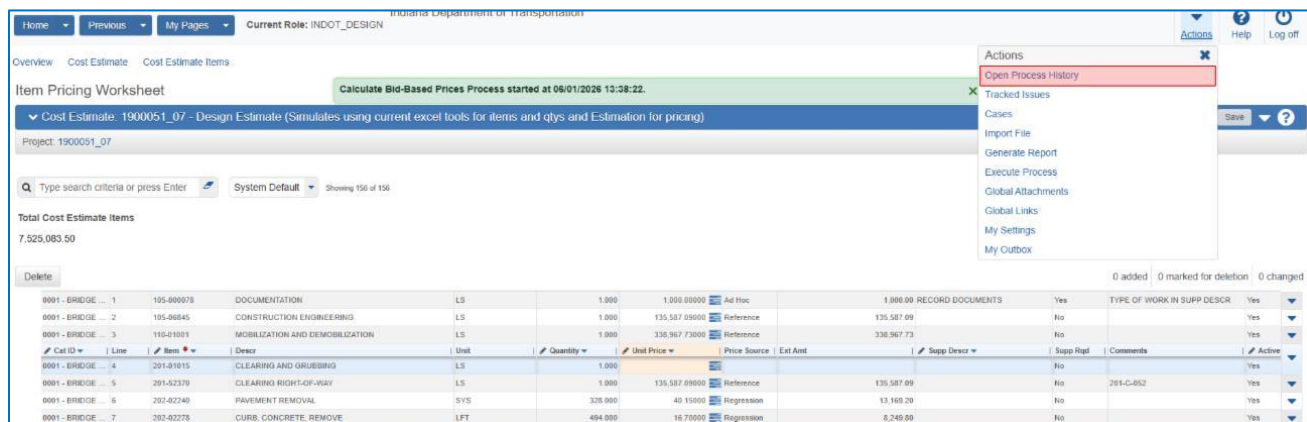
5. You will navigate to the Execute Process screen. Click “Execute” on the top right.



6. A pop-up will confirm that the process for calculating every pay item’s unit price has begun. This will be based on the bid item which was selected during the cost estimate setup.

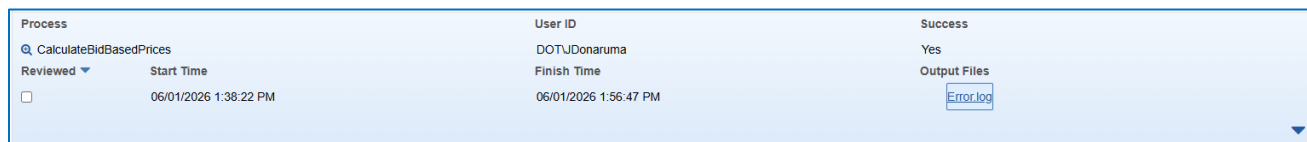


7. To check on the process, find the Global Actions Menu and click Open Process History



Note: When clicking on Open Process History, use Right-Click → Open Link in New Tab.

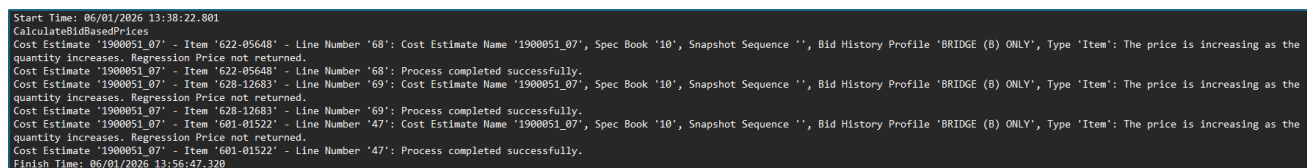
8. Once the process is completed, it should appear as CalculateBidBasedPrices with one output file named Error.log.



9. Click on Error.log to download the file, then open the file,

10. If every item was successfully imported, the error file should be empty. Otherwise, you will receive an error message for each item which couldn’t calculate a regression model.

Note: Some errors may be expected and/or unavoidable based on the pay item. For troubleshooting, see 203 - Understanding Bid Based Price Errors.



11. Return to the Item Pricing Worksheet. The unit prices should be updated to reflect the bid history profile selected for each item.

Note: If you open the Process History page using Open Link in New Tab, make sure to refresh the Item Pricing worksheet page to see the new prices.

Applying Regression Unit Prices for Specific Pay Items

Regression unit prices can be calculated for pay items in two ways:

Directly applying Regression Unit Prices

1. Navigate to the Item Pricing Worksheet
2. Click the Blue Bars next to the pay item's unit price 
3. Click the checkbox to set regression as active

Method	Price	Active
Bid Based		Calculate Price
		Price vs Quantity Analysis
Reference		
Cost Based		
Maintain Item Price Task		

4. Click the Save Button. The unit price should now be populated for the item you selected, if there are enough data points in the bid history.

Applying Regression Unit Prices to Multiple Items

When you want to select multiple items for a regression analysis without running every single one, you can use the “Select Cost Estimate Items to Calculate Big Based Prices” feature. This feature would typically be used if you add new pay items after already applying regression unit prices for every pay item, or if you want to rerun prices for a few volatile items you want to get updated prices for .

1. Navigate to the Item Pricing Worksheet
2. Open the Component Actions Menu
3. Click “Select Cost Estimate Items to Calculate Bid Based Prices”
4. Click the pay items you want to calculate the unit prices for. A green check mark should appear to the left of any selected items.

Note: You may observe that not every pay item is in the pop-up table. Some items are excluded from the table because they do not have Bid-based Unit Prices set to “Active” (i.e. the unit prices are Ad Hoc or Reference). To fix this for an item, find its respective row on the Item Pricing Worksheet, click on the Blue Bars logo on the right side of the Unit Prices cell, click the blue check box next to “Bid Based,” then click “Save.”

5. Click “Calculate Prices” to confirm the regression calculation of the items with the active Bid History Profile.

Select Cost Estimate Items to Calculate Bid Based Prices

Q Type search criteria or press Enter Advanced Showing 18 of 183

Select: All None 4 selected

Select	Line	Item	Descr	Unit	Quantity	Price	Category
✓	5	202-02240	PAVEMENT REMOVAL	SYS - SQUARE YARDS		328.000	40 15000 0001
	7	202-02278	CURB, CONCRETE, REMOVE	LFT - LINEAR FEET		494.000	16 70000 0001
	8	202-02637	PIPE ABANDON AND GROUT FILL	LFT - LINEAR FEET		500.000	44 11000 0001
✓	11	202-52710	SIDEWALK CONCRETE, REMOV	SYS - SQUARE YARDS		106.000	30 69000 0001
✓	12	202-62420	BRIDGE RAILING, REMOVE	LFT - LINEAR FEET		596.000	5 07000 0001
	17	202-96133	PIPE, REMOVE	LFT - LINEAR FEET		400.000	21 36000 0001
✓	18	202-96133	PIPE, REMOVE	LFT - LINEAR FEET		300.000	21 36000 0001
	19	203-02000	EXCAVATION, COMMON	CYS - CUBIC YARDS		222.000	75 39000 0001
	20	203-02070	BORROW	CYS - CUBIC YARDS		332.000	48 80000 0001
	24	206-51220	EXCAVATION, WET	CYS - CUBIC YARDS		936.000	70 12000 0001
	25	206-51230	EXCAVATION, FOUNDATION, UN	CYS - CUBIC YARDS		2,435.000	40 33000 0001
	26	206-51230	EXCAVATION, FOUNDATION, UN	CYS - CUBIC YARDS		2,435.000	40 33000 0001

Calculate Prices

6. The regression calculation process will begin. To check the status of the calculation, click on Open Process History found at the Global Actions Menu.

Home Previous My Pages Current Role: INDOT_DESIGN Indiana Department of Transportation

Overview Cost Estimate Cost Estimate Items

Item Pricing Worksheet Calculate Bid-Based Prices Process started at 06/01/2026 13:38:22.

Cost Estimate: 1900051_07 - Design Estimate (Simulates using current excel tools for items and qtys and Estimation for pricing)

Project: 1900051_07

Q Type search criteria or press Enter System Default Showing 156 of 156

Total Cost Estimate Items
7,525,083.50

Delete 0 added | 0 marked for deletion | 0 changed

Cal ID	Line	Item	Descr	Unit	Quantity	Unit Price	Price Source	Ext Amt	Supp Descr	Supp Rpt	Comments	Active
0001 - BRIDGE ...	1	105-900078	DOCUMENTATION	LS	1,000	1,000.00000	Ad Hoc	1,000.00	RECORD DOCUMENTS	Yes	TYPE OF WORK IN SUPP DESCR	Yes
0001 - BRIDGE ...	2	105-90845	CONSTRUCTION ENGINEERING	LS	1,000	135,587.09000	Reference	135,587.09		No		Yes
0001 - BRIDGE ...	3	110-01001	MOBILIZATION AND DEMOBILIZATION	LS	1,000	336,967.73000	Reference	336,967.73		No		Yes
0001 - BRIDGE ...	4	201-01015	CLEARING AND GRUBBING	LS	1,000	135,587.09000	Reference	135,587.09		No		Yes
0001 - BRIDGE ...	5	201-52370	CLEARING RIGHT-OF-WAY	LS	1,000	135,587.09000	Reference	135,587.09		No	201-C-052	Yes
0001 - BRIDGE ...	6	202-02240	PAVEMENT REMOVAL	SYS	328.000	40 15000	Regression	13,169.29		No		Yes
0001 - BRIDGE ...	7	202-02278	CURB, CONCRETE, REMOVE	LFT	494.000	16 70000	Regression	8,249.00		No		Yes

Actions

- Open Process History
- Tracked Issues
- Cases
- Import File
- Generate Report
- Execute Process
- Global Attachments
- Global Links
- My Settings
- My Outbox

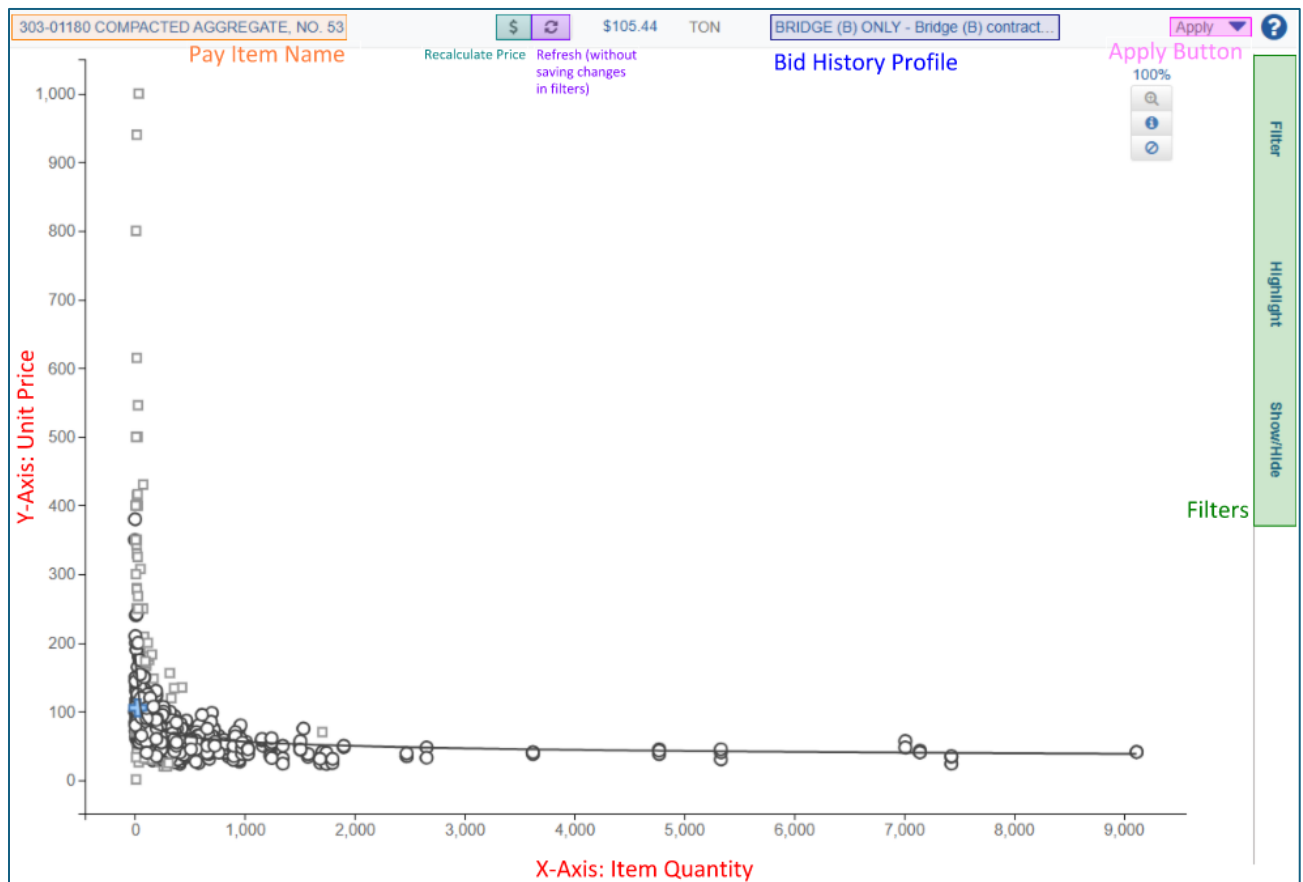
Viewing and Modifying a Regression Curve

Being able to view and modify the data point used to calculate Unit Prices ensures that unit prices are accurate. If the default bid history item's unit price seems inaccurate or unexpected, viewing the regression curve may aid with this. To view a unit price's regression curve, complete the following:

1. Navigate to the Item Pricing Worksheet
2. Click the Blue Bars next to the pay item's unit price 
3. Click "Price vs. Quantity Analysis."

Method	Price	Active
Bid Based	30.69000	☒
Reference		
Cost Based		
Maintain Item Price		
Task		

4. A pop-up window displaying a scatter plot and a curve should appear.



Each point in the scatter plot displays a unit price which was determined for the relevant pay item. Data points which are squares were automatically ruled as outliers and were not used to calculate the regression curve.

Although the axes are not labeled, the x-axis represents the **quantity** and the y-axis represents the **unit price** of the pay item.

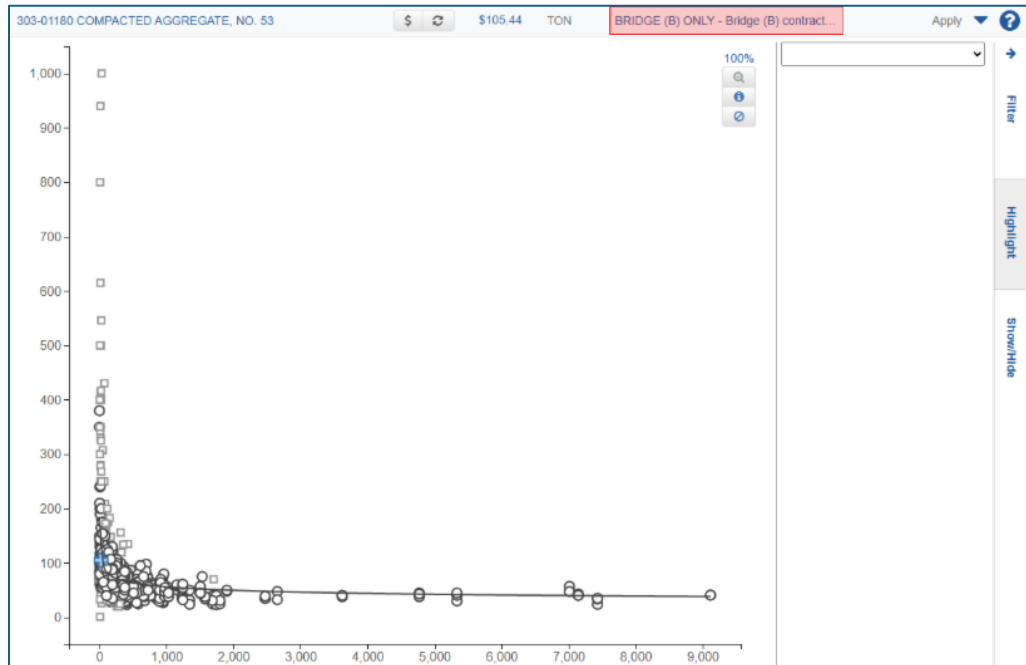
The Price vs. Quantity Analysis pop-up is a powerful tool. Below is an overview of the most common functions for determining a more accurate unit price.

Changing a Bid History Profile on an Item

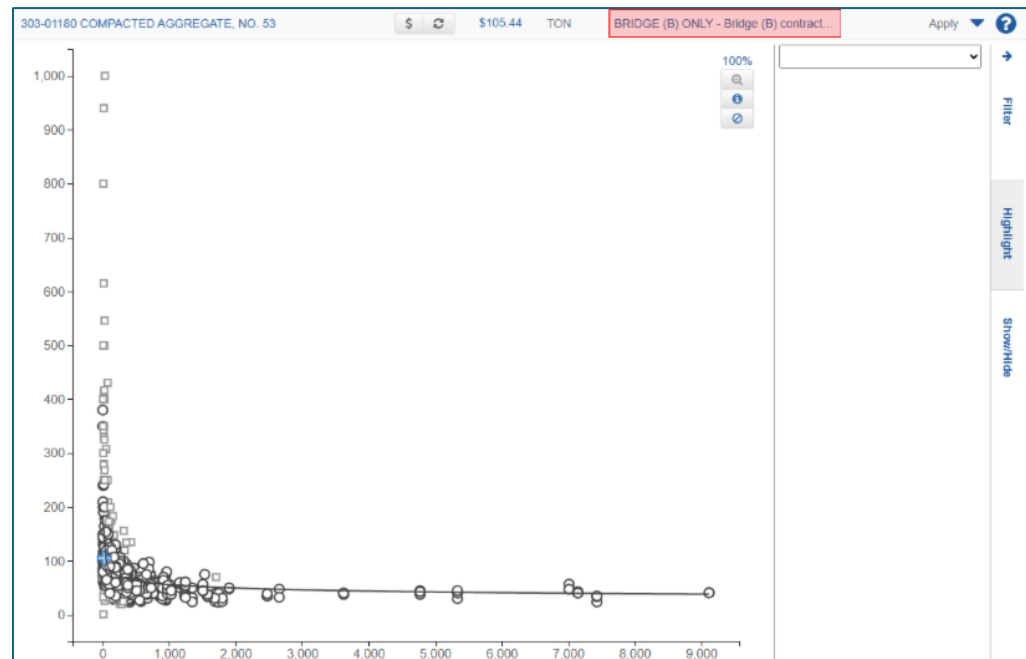
The default bid history profile will be applied to the regression curve by default. For example, if the project's main profile is Bridge Only (B), then the data used to calculate the regression curve will be from the Bridge Only (B) Bid History Item.

To change the bid history profile, do the following:

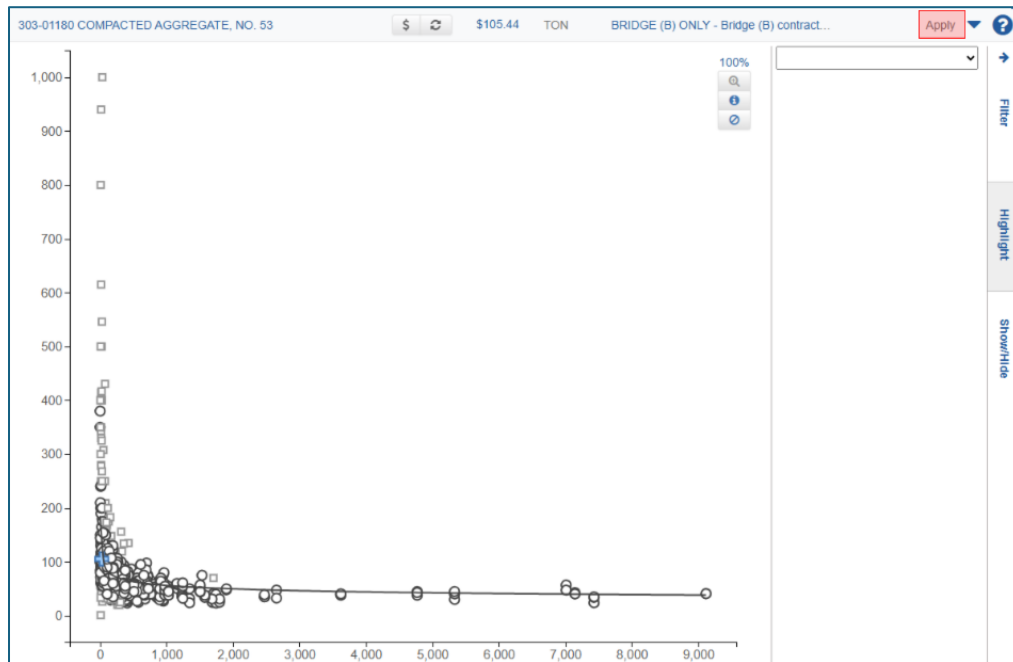
1. Click on the title of the current Bid History Profile



2. A menu of available profiles should pop up. Select the desired profile and click “Reload Analysis with Profile.”



3. The scatterplot should refresh with the new profile.
4. To confirm the selection, click “Apply” in the top right corner. Once applied, the Price vs. Quantity Analysis pop-up will close.



Filter

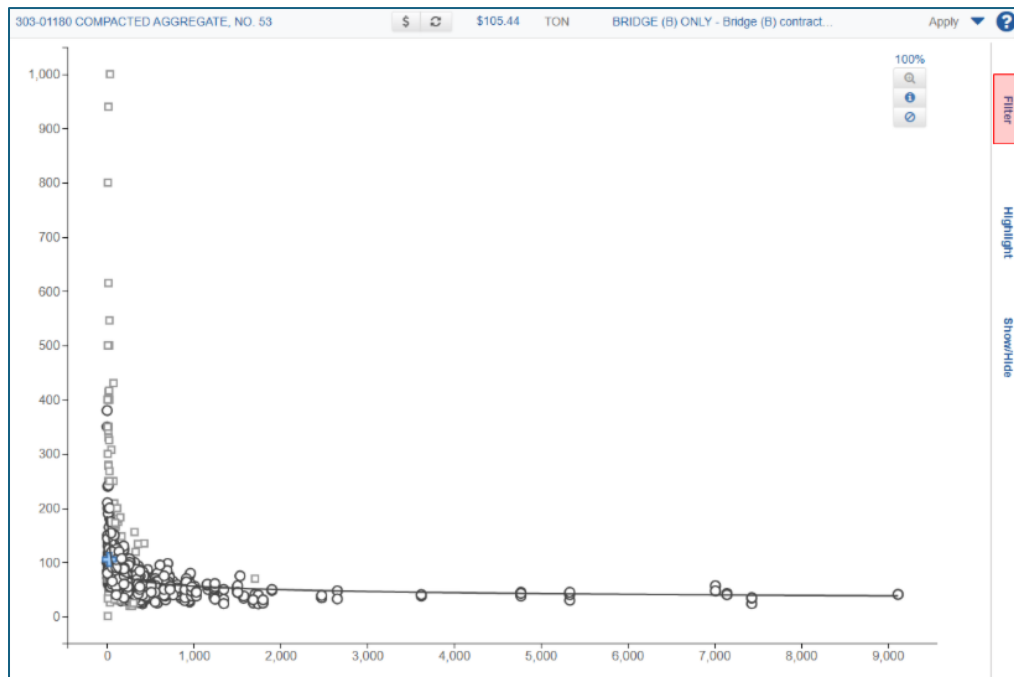
The Filter tool allows you to exclude points from the scatter plot depending on a number of factors:

Using filters to only include points relevant to your project can give a more accurate unit price.

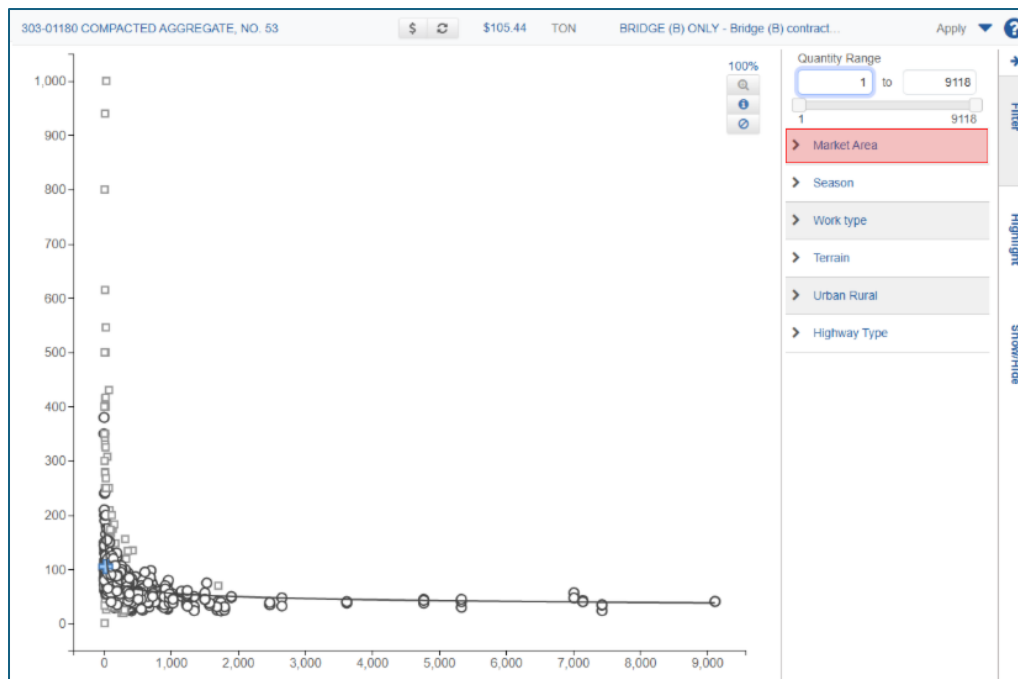
For example, follow the instructions below to only include prices from the Vincennes district for a pay item:

1. Navigate to Price vs. Quantity Analysis for the desired pay item

Click “Filter” on the right side of the scatter plot



2. Click “Market Area” in the pop-up bar

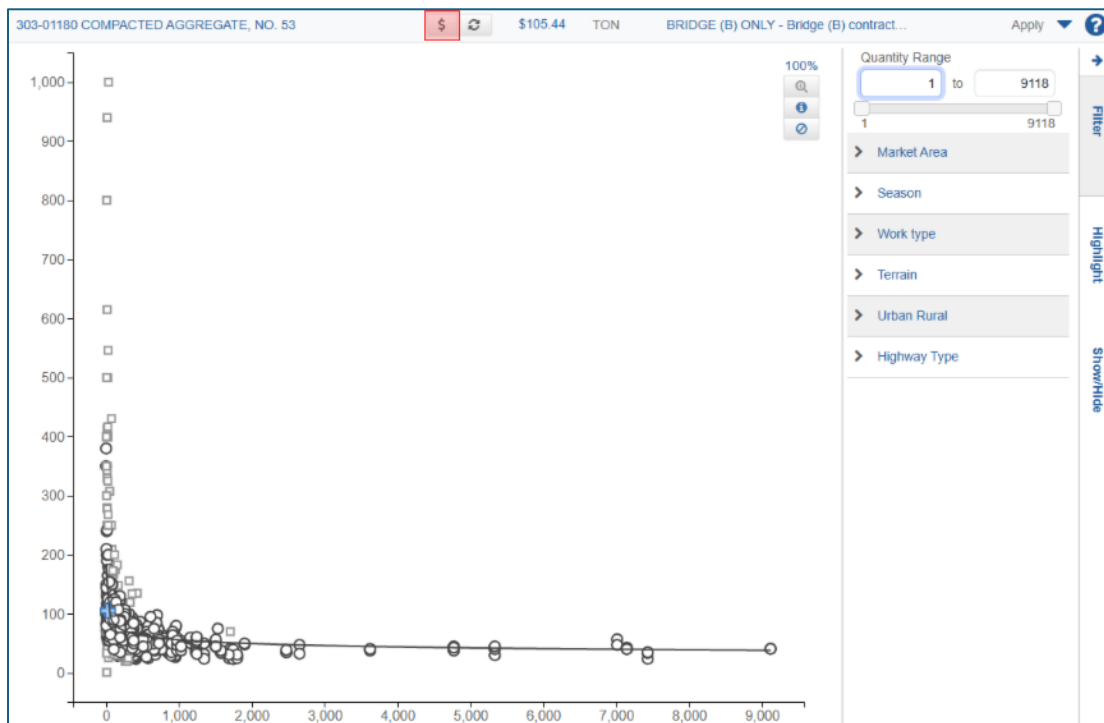


3. Uncheck the boxes for each district you don't want to include in the price calculation. In this case, uncheck every district except Vincennes.

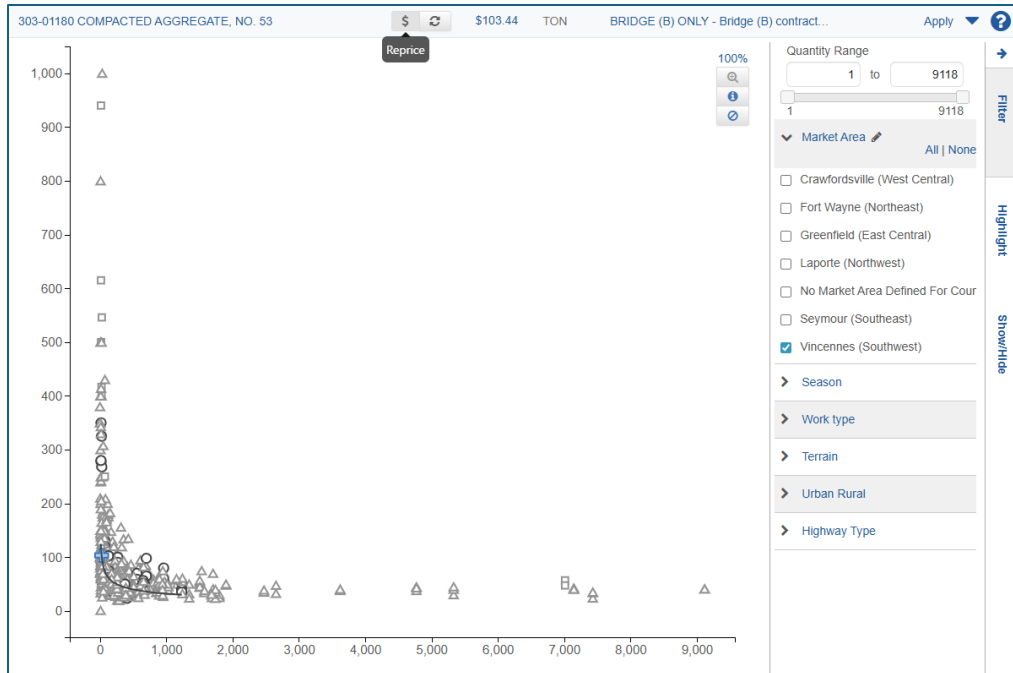
Note: If you're using a Bid History profile that restricts districts by default (i.e. District 620 Only Bid), you will only see options relevant to that bid history profile. To see all options for Market Area, etc., select a Bid History Profile with "ALL" in the title.

Quantity Range
1 to 9118
1 9118
▼ Market Area All | None
☐ Crawfordsville (West Central)
☐ Fort Wayne (Northeast)
☐ Greenfield (East Central)
☐ Laporte (Northwest)
☐ No Market Area Defined For Cour
☐ Seymour (Southeast)
☒ Vincennes (Southwest)

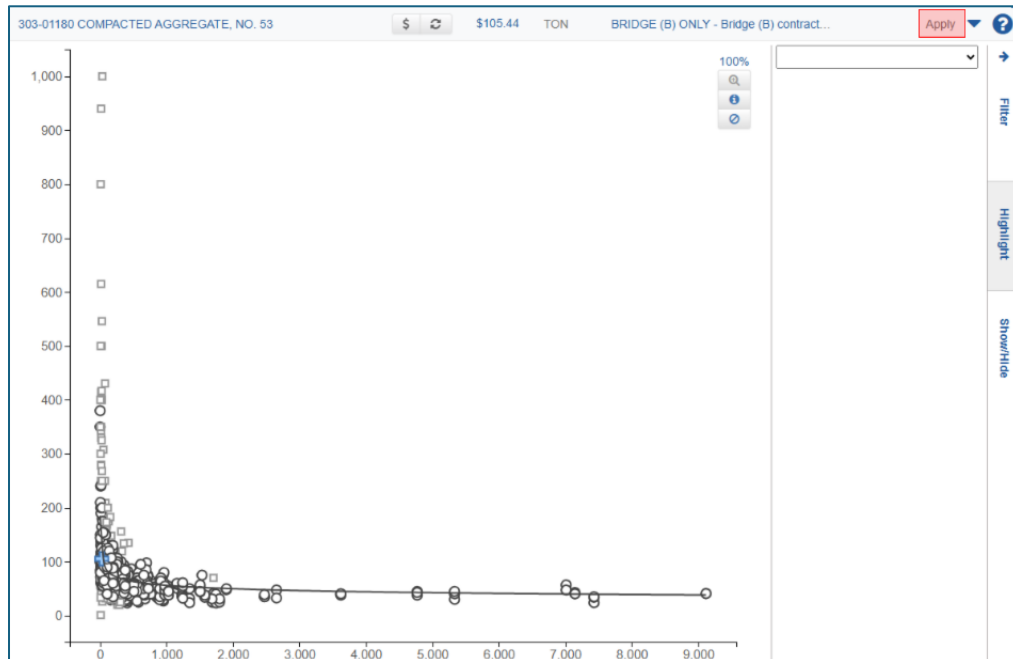
4. Click the \$ symbol at the top of the page to reprice the item and allow the page to refresh.



5. The unit price should recalculate, and the page should show filtered points as greyed out triangles.



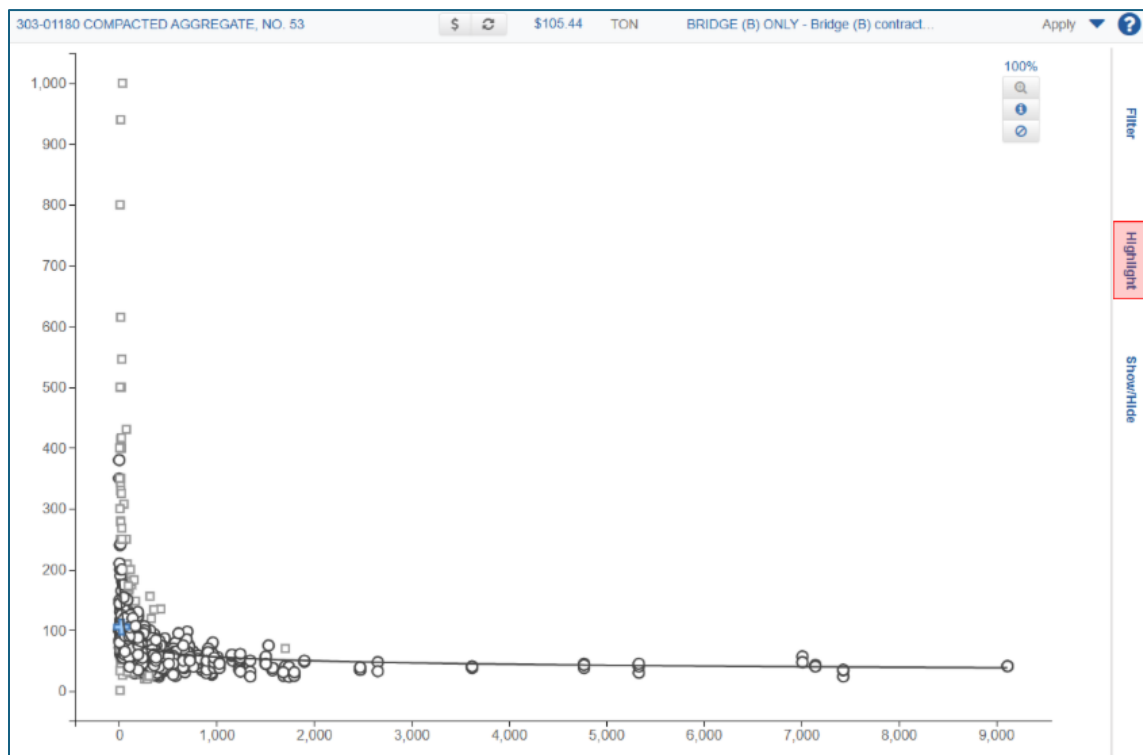
6. To confirm the selection, click “Apply” in the top right corner.



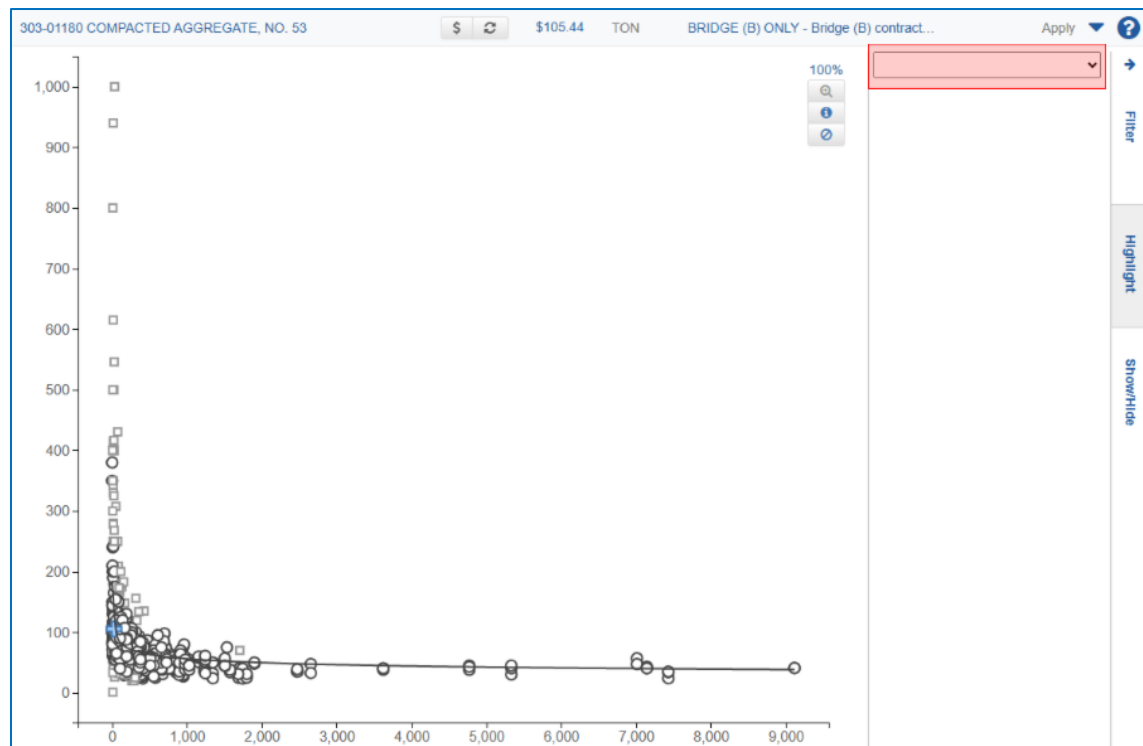
Highlight

The highlight feature can quickly show a visual for existing data points. This tool is not for repricing, but for visualization. For example, you can highlight the bids done for Vincennes district by doing the following:

1. Click “Highlight” on the right



A menu should pop up. Click on the drop-down menu at the top.

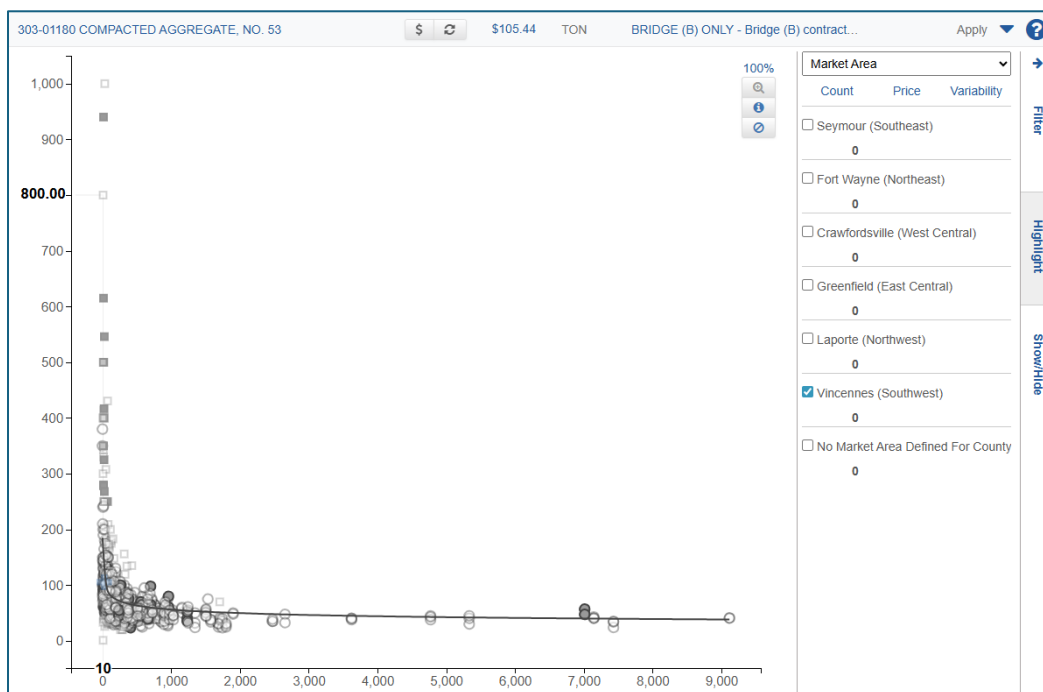


- From the drop-down menu, click on “market area”



- Click the “Vincennes” checkbox to highlight only points from the Vincennes district.

Note: If you’re using a Bid History profile that restricts districts by default (i.e. District 620 Only Bid), you will only see options relevant to that bid history profile. To see all options for Market Area, etc., select a Bid History Profile with “ALL” in the title.



All non-Vincennes points will be greyed out. Darker points are selected as the highlighted portion of the graph, indicating the point is from Vincennes.

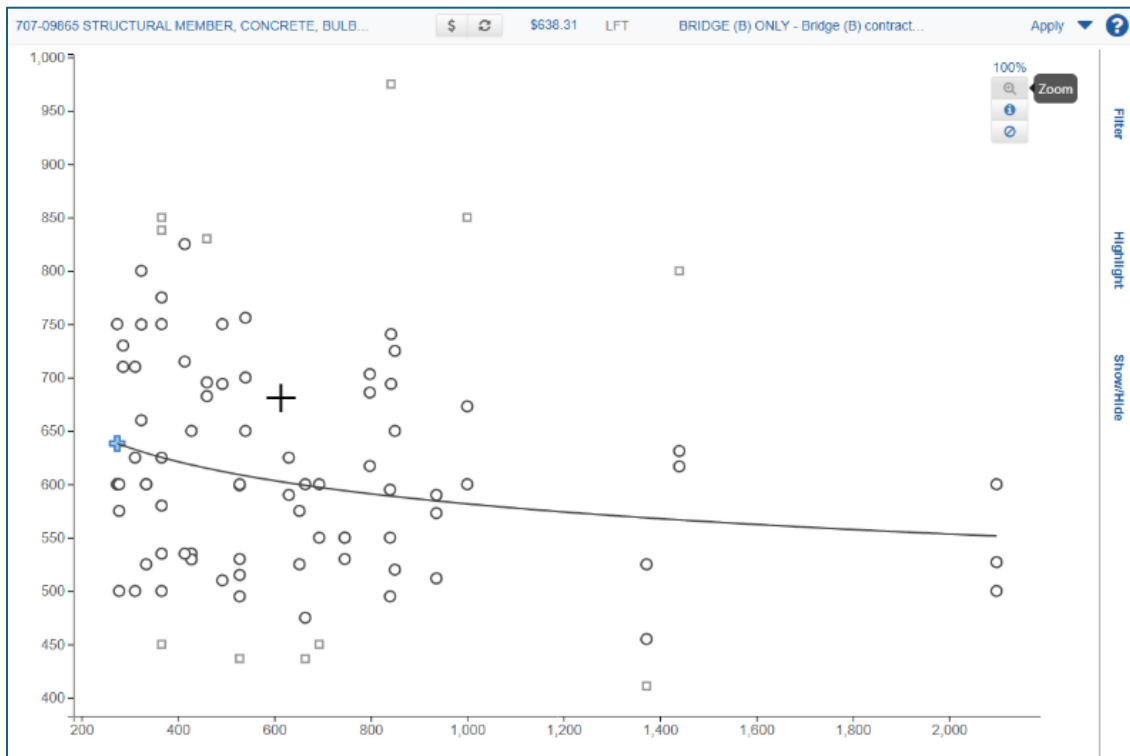
To remove your highlight, click on the drop-down menu at the top of the Highlight tool and select the blank field.

Zoom

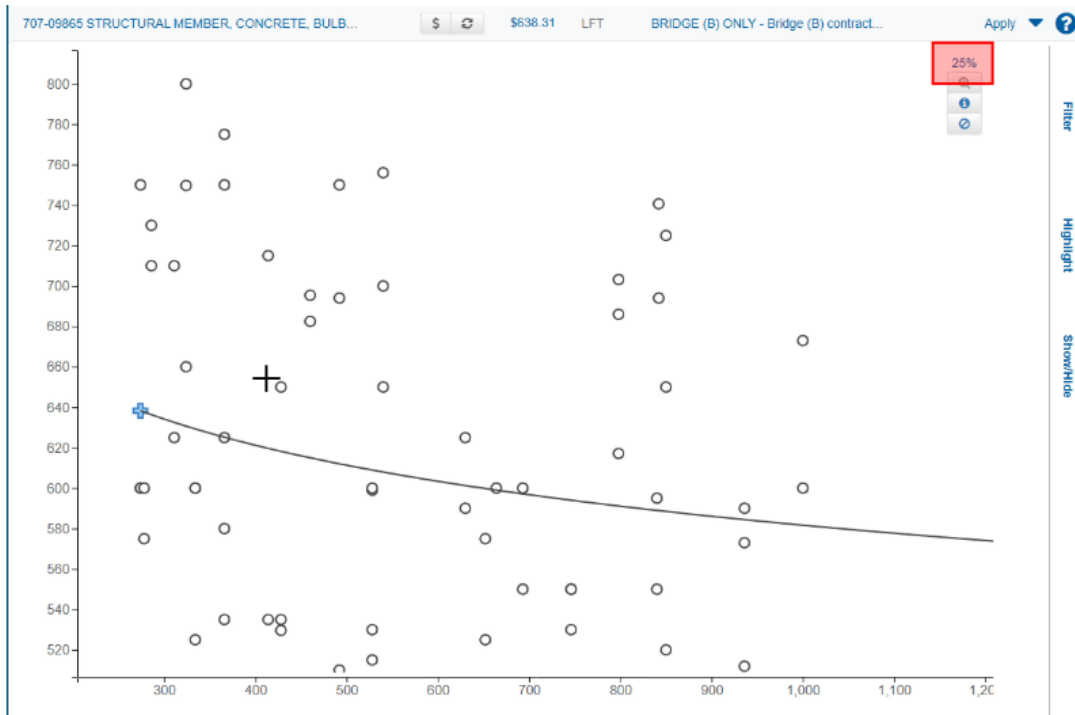
To toggle the zoom feature, click on the magnifying glass icon on the top right of the scatter plot.



Your cursor will turn into a cross. To zoom in on a certain area, click on the desired portion of the screen. Click multiple times to zoom in further.



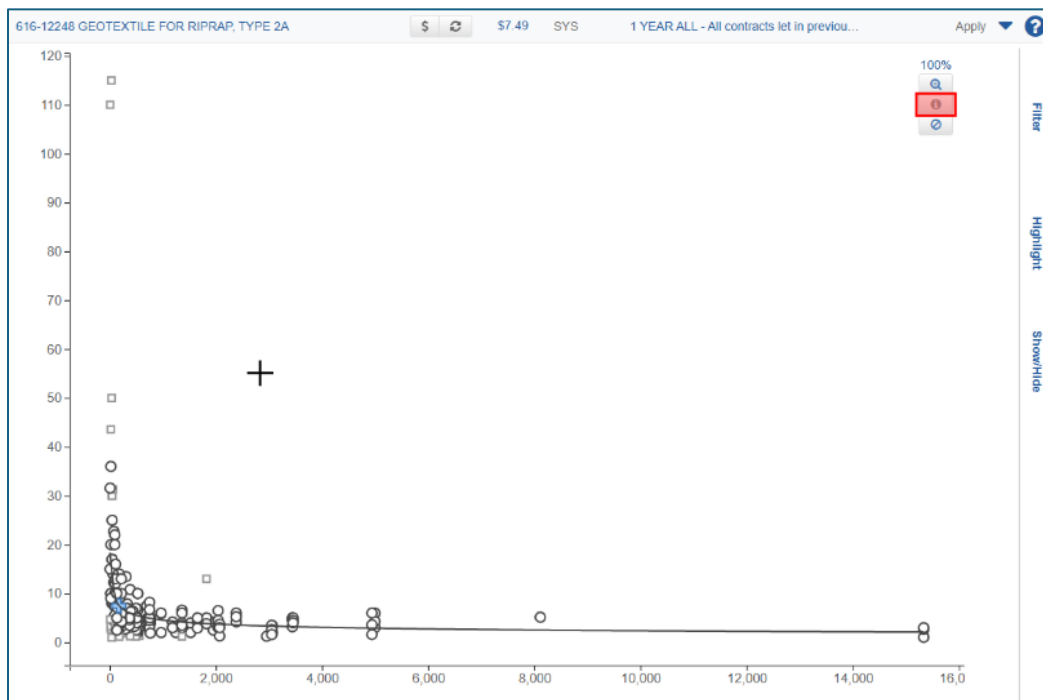
To revert to the original zoom, click the zoom percentage on the top right corner of the screen.



Identify

Using the Identify feature allows you to view key information about a particular data point. To use Identify, follow the instructions below:

1. Click the circled i icon at the top right corner.



2. The Identify icon should be greyed out. Within the scatterplot, click on the data point you would like to learn about to view its basic information.
3. A pop-up should appear next to the data point with basic information based on the filter settings (season, district, etc.).

D: 2/15/2024

H: * No Value *

I: * No Value *

M: Seymour (Southeast)

S: Winter

T: * No Value *

U: * No Value *

W: Roadside Work

proposal and vendor

exclude

Clicking on “proposal and vendor” will show more detailed information about the actual bid. When you’re in this menu, click “pricing info” to revert back to the original bid information.

Proposal: R -42290-A

SLIDE CORRECTION

County: SWITZERLAND

Vendor: 31-1323837

Sunesis Construction Company

Rank: Bid Total:

1 \$7,277,003.30

pricing info

Clicking on “exclude” will cross out the data point and not include it in the regression analysis. Once clicked, the data point will grey out and “exclude” will turn into “include.”

D: 2/15/2024

H: * No Value *

I: * No Value *

M: Seymour (Southeast)

S: Winter

T: * No Value *

U: * No Value *

W: Roadside Work

☒ proposal and vendor

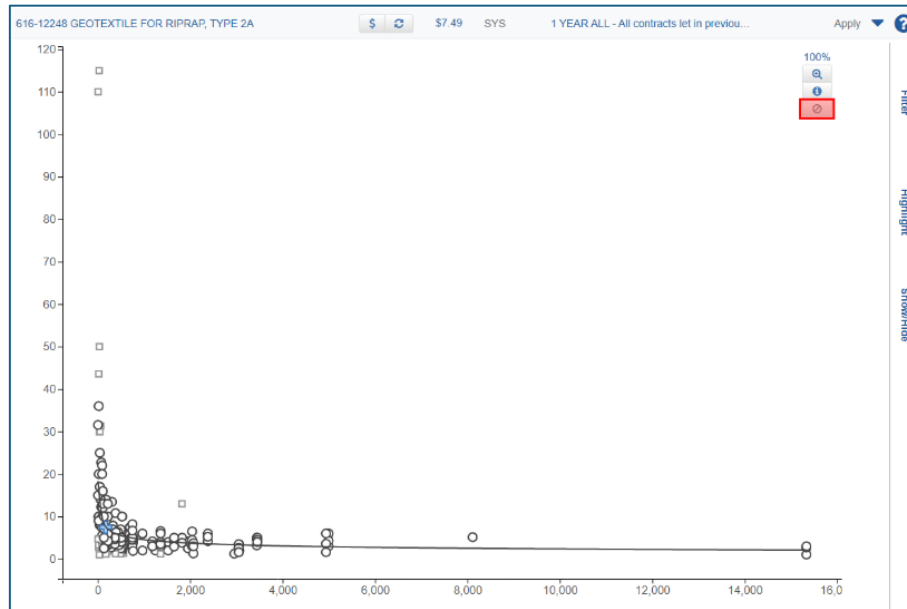
include

Click “include” to revert your data point exclusion.

Include/Exclude

The Include/Exclude tool allows you to toggle which data points will be used in the regression analysis. Excluding outliers can help the accuracy of your unit price. To use Include/Exclude, follow the instructions below:

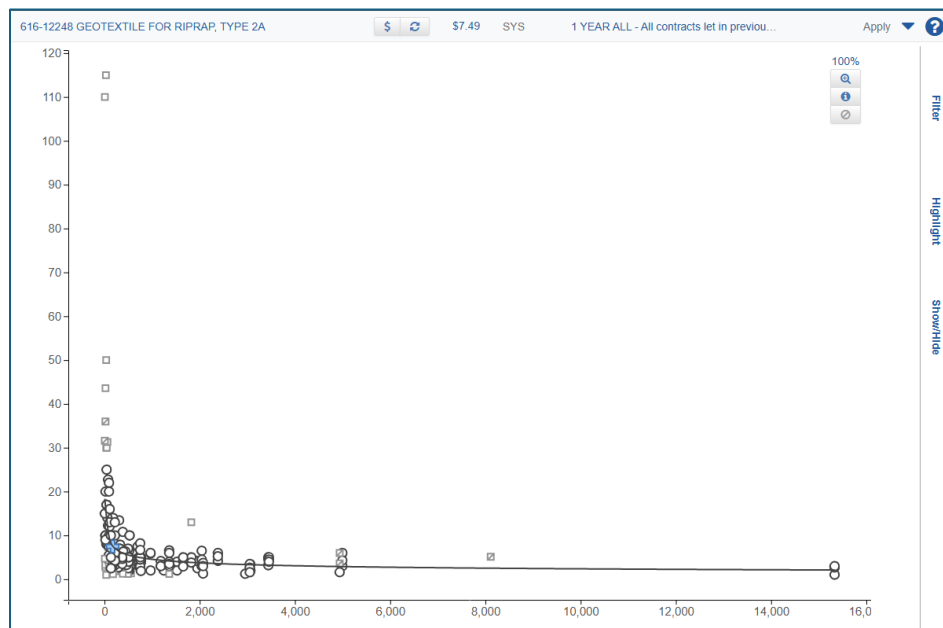
1. Click on the “do not” sign on the top right corner.



2. Your cursor will turn into a cross. Select any data point to toggle them on and off:

☐ Included ☒ Excluded

3. Once you have toggled your desired points, click the \$ symbol at the top of the screen to reprice the unit price based on the modified data set.



Troubleshooting Insufficient Bid Data

Some items may not have enough data to properly generate a regression formula and estimate a unit price. Any items with insufficient data will not produce a unit price and show an error once you enter the Price vs Quantity Analysis:



To troubleshoot this issue, do one of the following:

Change your Bid History profile

1. Click the Bid History Profile name on the top right corner



2. A pop-up menu will appear. Select a bid history profile with a wider letting date range. “2 YEAR ALL,” “3 YEAR ALL,” and “BRIDGE (B) ONLY” are good options for this.

Bid History Profile	Description	User Defined	Cost Estimate Name
1 YEAR ALL	All contracts let in previous 12 months (Feb 2024	No	
1 YEAR ALL	All contracts let in previous 12 months (Feb 2024	Yes	Filter
1 YEAR ALL Test	All contracts let in previous 24 months	Yes	Test 1900051_07
18 Greenfield		No	
2 YEAR ALL	All contracts let in previous 24 months	No	
2 YEAR ALL	All contracts let in previous 24 months	Yes	JD1
3 MONTH ALL	All contracts let in previous 3 months (Nov 2024	No	
3 YEAR ALL	All contracts let in previous 36 months	No	
6 MONTH ALL	All contracts let in previous 6 months (Aug 2024	No	
✓ BRIDGE (B) ONLY	Bridge (B) contracts only	No	

Load next 10 Showing 10 of 22

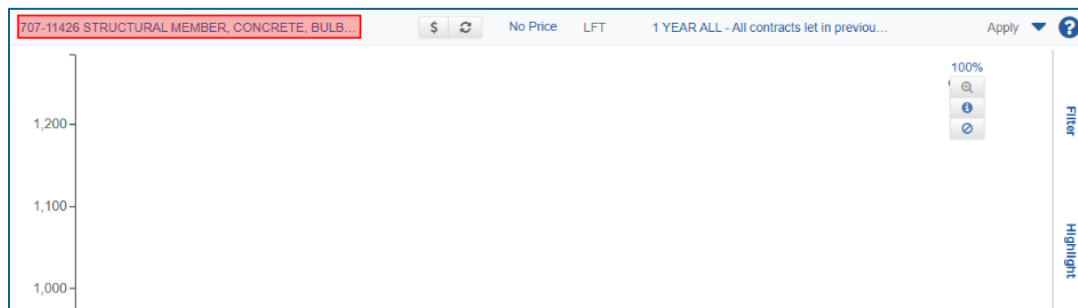
Reload analysis with Profile

3. Click “Reload analysis with Profile” on the bottom right corner when you have selected the appropriate Bid History Profile.
4. Repeat this process with multiple bid history profiles.

Select a Similar Item with More Data

For items with insufficient data in any bid history profile, you can replace the bid history of one item with another.

1. Click the pay item name on the top left of the pop-up.



2. A pop-up menu will appear. Using the search bar at the top, type in either the description or the number of a similar pay item. For example, you may type a more commonly used version of a member type (i.e. A 36 in. X 61 in. concrete bulb tee beam is replaced with a 36 in. x 49 in. concrete bulb tee beam).

Select Item

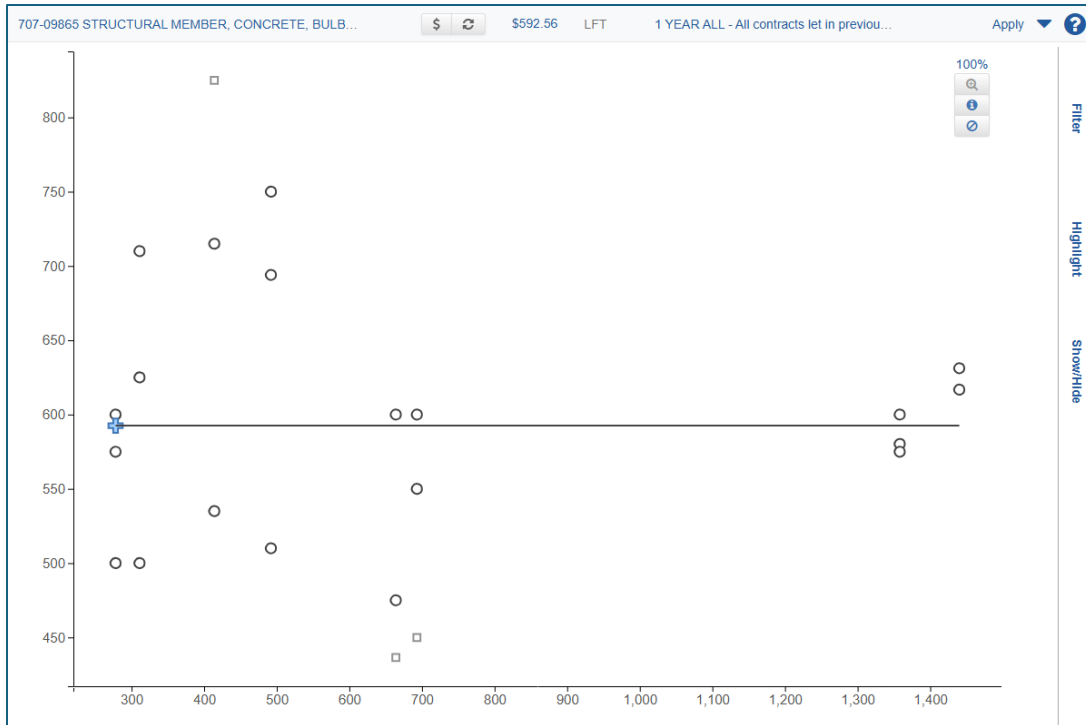
707-09865

Item ID	Short Description	Unit of Measure
707-09865	STRUCTURAL MBR CONC BULB-T 36 X 49 IN	LFT - LINEAR FEET

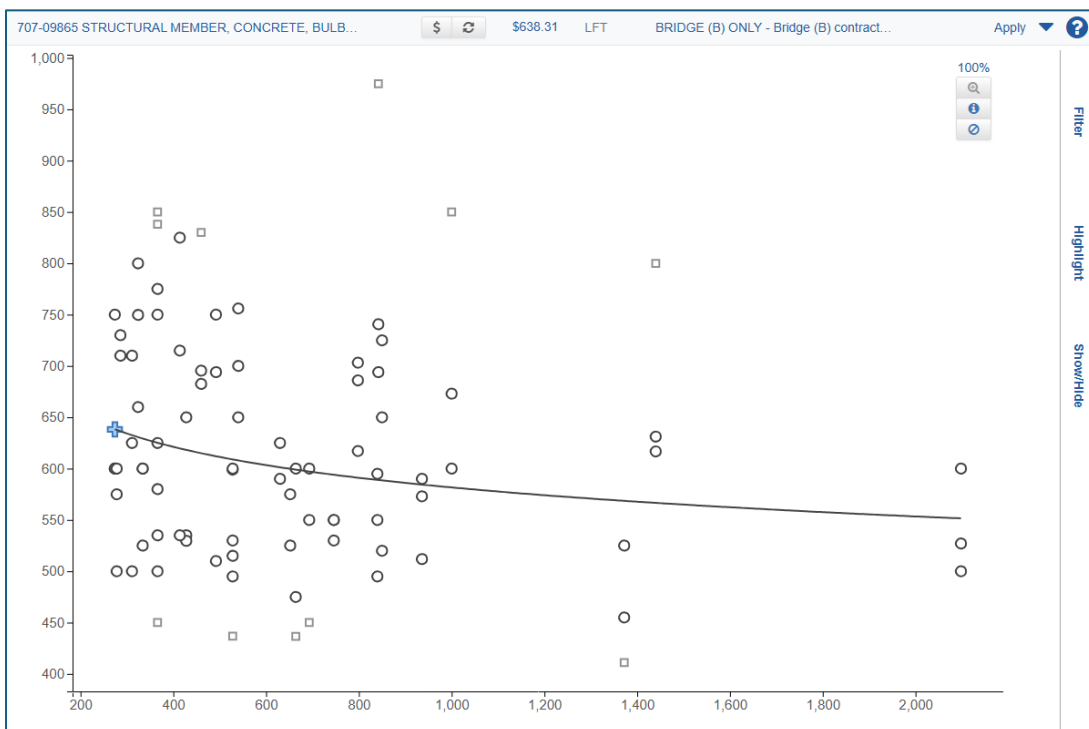
Showing 1 of 1

Reload analysis with Item

- Click on the item to select it.
- Once your item is selected, click “Reload analysis with Item.”
- The pop-up menu will close, and your unit price will be calculated using the bid history of the selected item instead.



- If the data is still insufficient or calculating an average, try switching Bid History Profiles using the same procedure as with the original pay item.



- Repeat steps 1-6 until you find an item and Bid History combo that calculates a proper regression curve.