



Production Support Office | CADD

FDOT Automated Quantities (Part 1)

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Objective

Explore the workflow for developing and recording/managing quantities for FDOT projects using tools and resources in the FDOTSS4 workspace for MicroStation/GEOPAK or PowerGEOPAK.

- FDOT Standards/Resources
- Overview Automated Quantities Workflow
- Calculate Quantities with D&C Manager
- Export to Quantity Manager Database
- Label Areas
- Add Quantities in Quantity Manager

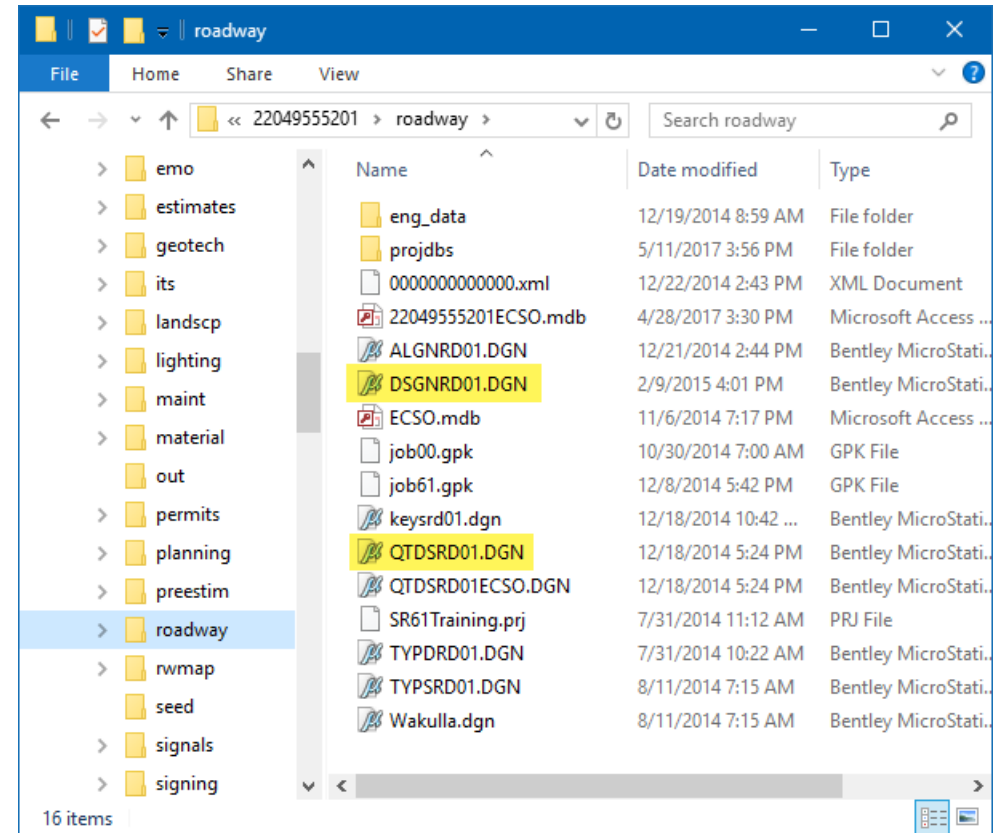
FDOT Standards

- Specifications
- Design Standards
- Basis of Estimates Manual
 - Master Pay Item List
 - Pay Item Computation Methods
 - Chapter 8, Plan Summary Boxes
- Plans Preparation Manual / Florida Design Manual
- CADD Manual



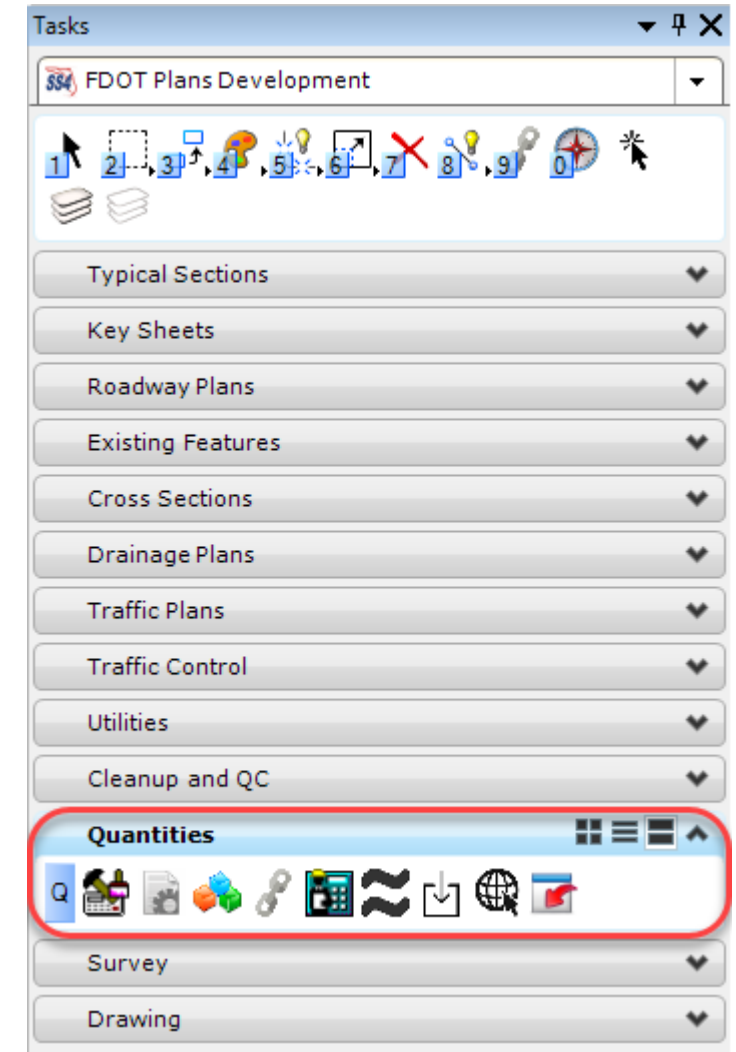
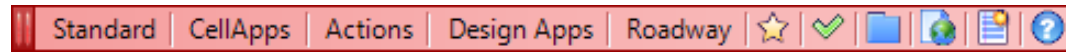
CADD Standards

- Files
 - DSGN**
 - Linear and Each items
 - QTDSRD**
 - Area/Tonnage/Cubic Yard items
- Quantity Design Files are to be located in the appropriate Discipline directory of the project. This also applies to the Quantity Manager *.mdb file.
- Create with the Create File/Project tool to insure correct locations and seed files.



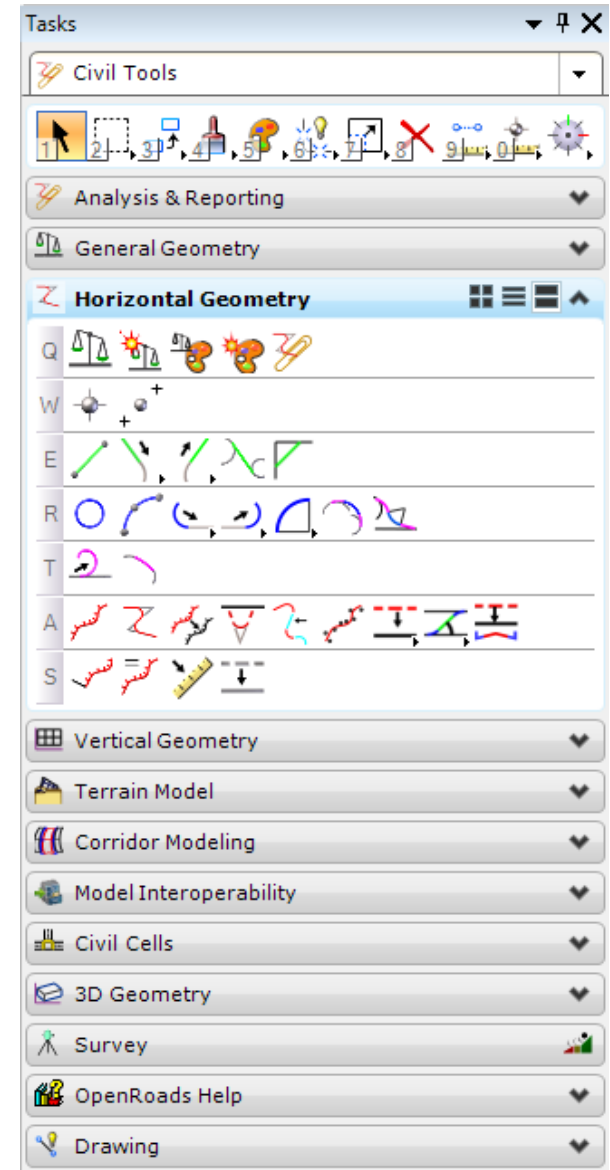
FDOT Workspace

- FDOT Menu
 - Standard
 - Links to Documentation for Standards
 - Actions
 - Label Shapes with ID
 - LDM
 - AASHTOWare Project Preconstruction links
- Quantities Task Menu
 - Located under FDOT Plans Development
 - Collection of Quantity related tools all in one place



Linear/Each Features

- Most linear and each quantity features are included in the plan view and therefore drawn in the DSGN** file.
- These elements can be drawn using:
 - D&C Manager in the Design mode
 - Using Civil Features
 - Many of the FDOT Features are set up to use “Native Style”. This means that in the background it is using the D&C settings to define the element. With most of the Civil Tools, this will include the adhoc attributes.
 - CHECK the adhoc set on the elements.
 - No ability to modify the default values when placing with Civil Tools. Do they need to be modified?
 - Use the 3pc AdHoc Attribute tool to make changes.

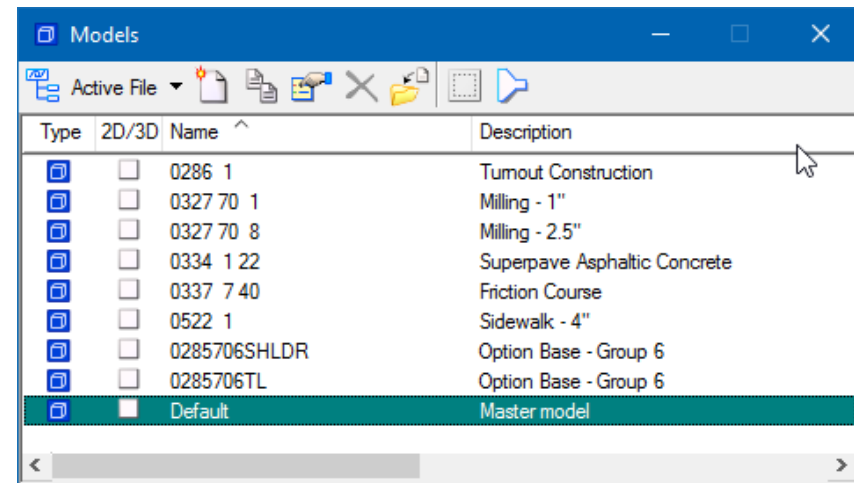
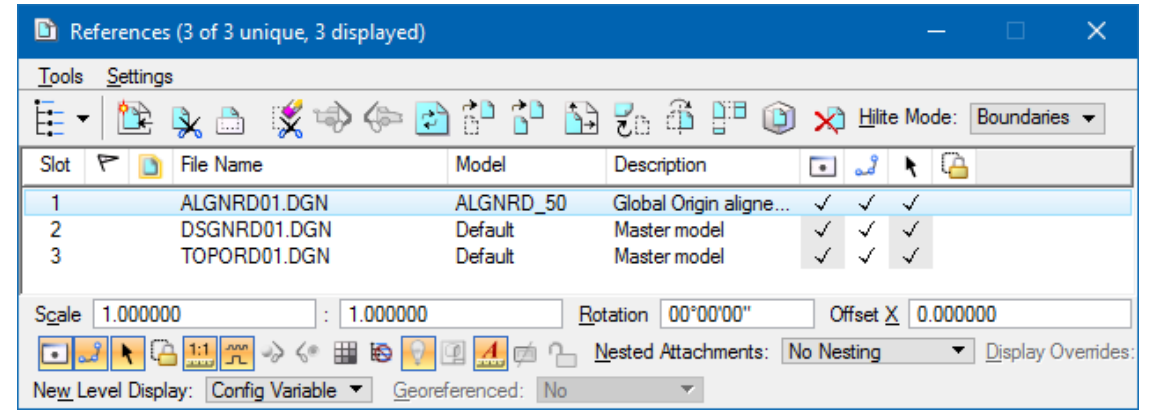


Area Quantities

QTDSRD** Set Up

Recommended workflow:

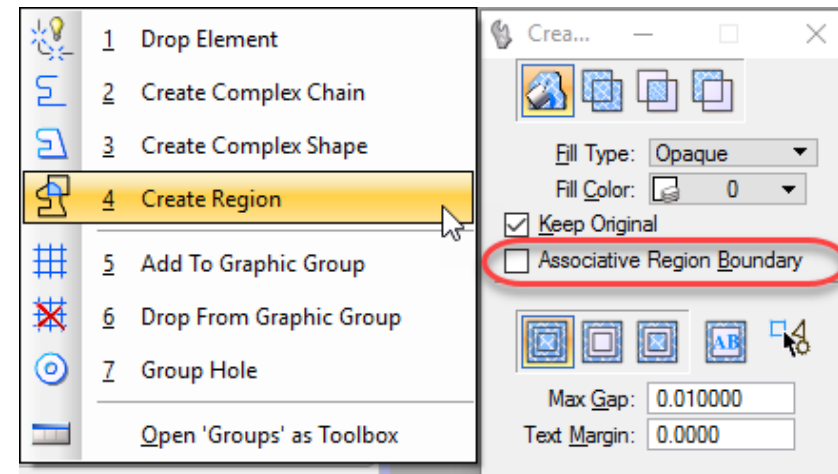
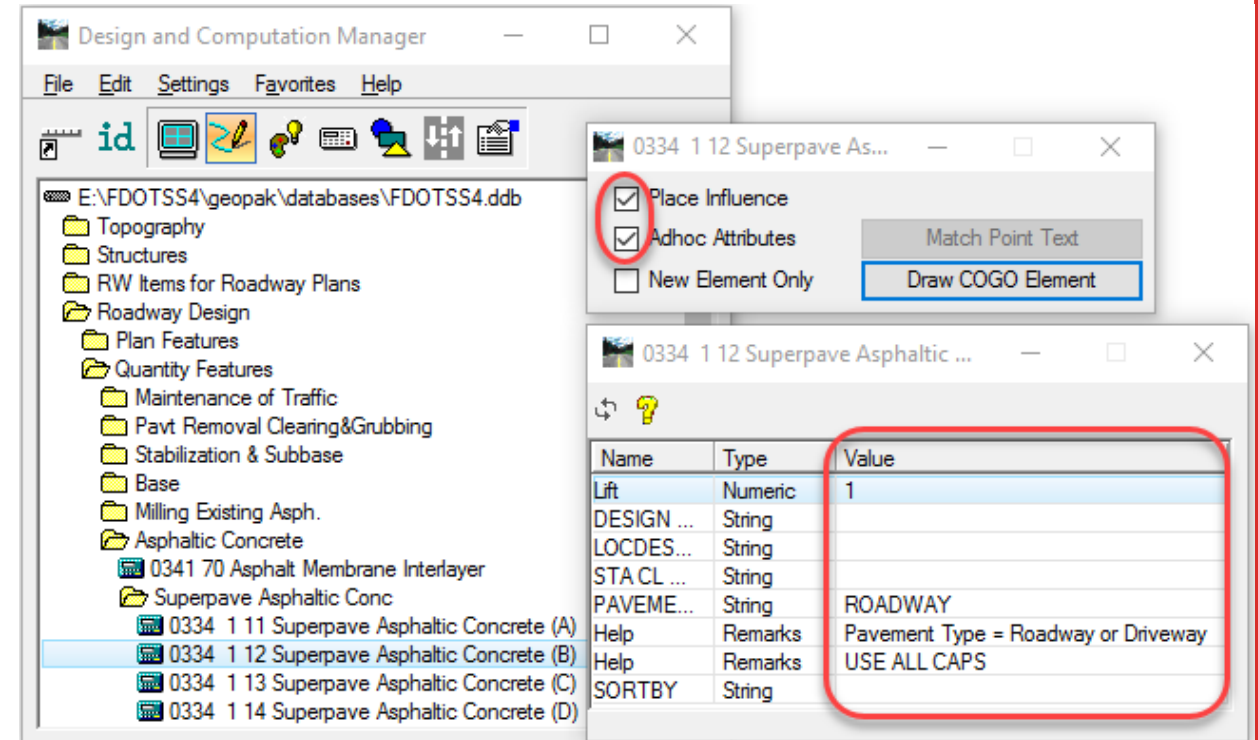
1. In the Default model, attach all the reference files that may be needed for calculations.
2. Copy the pre-referenced Default model to create new models for each individual quantity/pay item.



Area Quantities

Use the Create Region tool (recommended) to create area shapes with Place Influence from the D&C Manager

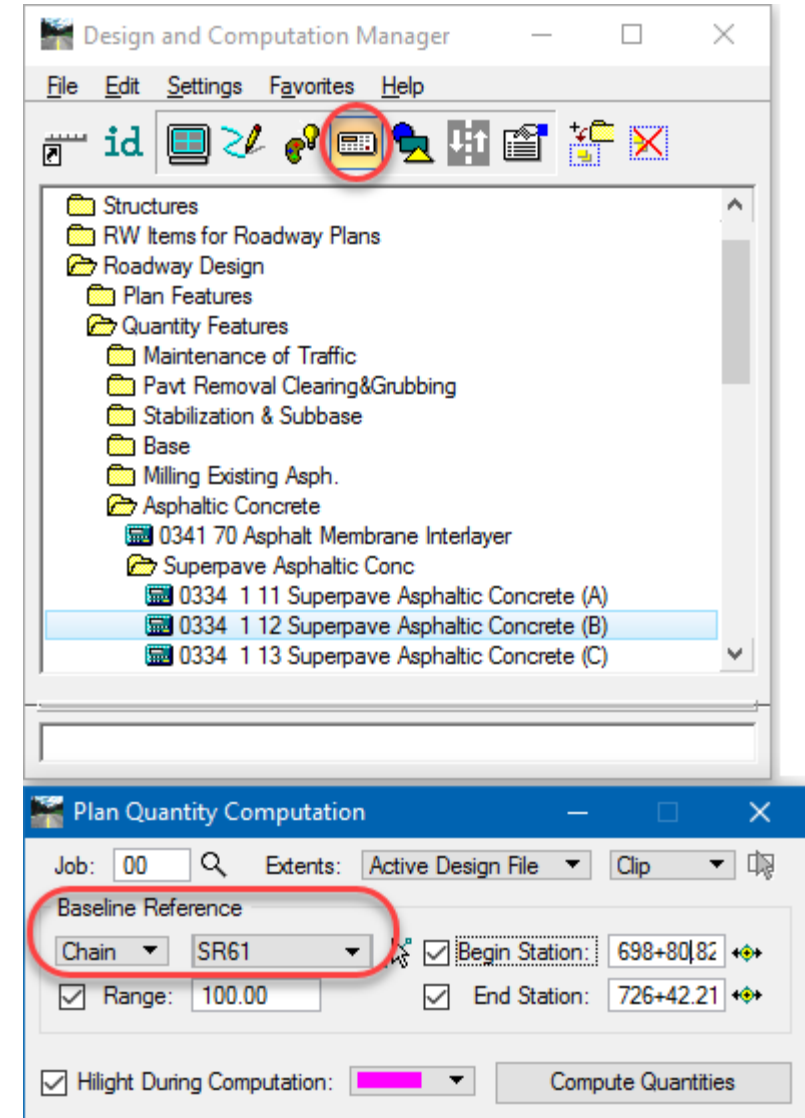
- D&C Manager Shape tool does NOT “play well” with Civil Elements.
- Make sure the setting for Associative Region Boundary is NOT checked.
- D&C will NOT recognize the shape if this option is on!!!
- Adjust the Adhoc Values before creating the shapes.



Calculate Quantities

Use the D&C Manager – Compute Mode

- Calculate by single item, Category, or Collection Set
- Make sure to use the option for Chain
 - Automated quantities must have a station associated with the quantity for LDM to include in the summary box.

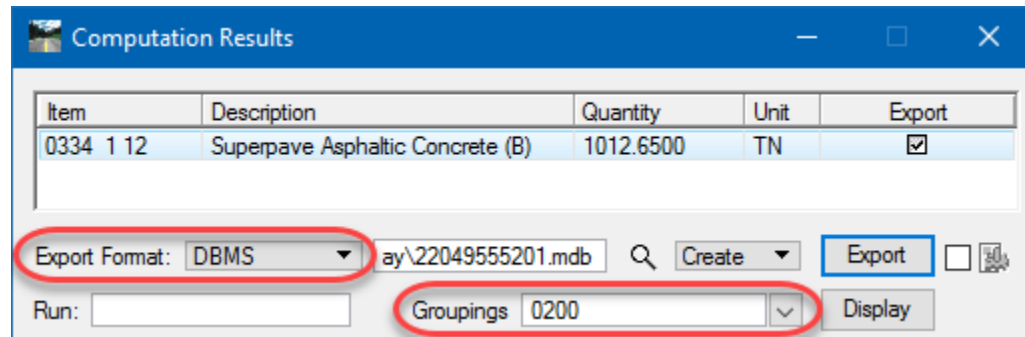


Export Quantities

To export to Quantity Manager the Export Format needs to be set to DBMS

- Computation Results dialog allows the option to Export the quantities in multiple formats.

Make sure to modify the Groupings to the correct AASHTOWare Project Preconstruction category. (See BOE Chapter 9)



Items are categorized by pay item range:

Item Numbers (Specification Sections)	SUBJECT/GROUP	Category Design Group/ Plans
100-102	MOT	0200 Roadway
103	Temporary Structures	
104	Erosion Control Drainage Environmental	
106-108	Environmental Coordinator	
	Water/Erosion Control	
	Air Quality	
	Decontamination/Hazardous Materials	
109	Field Office	
110-199	"Dirt" Earthwork Roadway Erosion Control Topsoil/Vegetation	
200-299	Base Courses	
300-399	Surface Courses, Concrete Pavement	
except 346-347	Concrete	0100 Structures or 0200 Roadway
400-499	Structures	0100 Structures
except 425-449	Drainage Structures	0200 Roadway
500-515	Incidental Construction- Structures	0100 Structures
516-559	Incidental Construction- Roadway Items	0200 Roadway
560-569	Incidental Construction- Structural Paint	0100 Structures
570-599	Incidental Construction- Turf & Landscaping	0200 Roadway or 0600 Landscaping
600-699	Traffic Control Devices (Signals & ITS) Conduit and other "common use" items	0500 Signals Other categories, as needed
700-714	Traffic Control	0300 Signing
715	Traffic Control- Lighting	0400 Lighting
720-740	Incidental Construction- Other	0200 Roadway
741-749	Incidental Construction- Traffic Monitoring (TMS)	
750-770	Incidental Construction- Other	
780-789	Intelligent Transportation Systems (ITS)	0550 ITS
800-899	Mass Transit (Railroad)	0900 Mass Transit
1000-1999	Utilities	0100 Structures

NOTE: While pay item ranges are generally grouped by category, some items may be used in multiple categories. Refer to the specific items for details.

Category 550 ITS: This category may be used through June 2018 lettings. All projects with ITS components let July 2017 or later should include the ITS work in the signalization plans. Additional information will be posted in the 2018 Design Manual (PPM replacement) in November 2017.

Label Area IDs

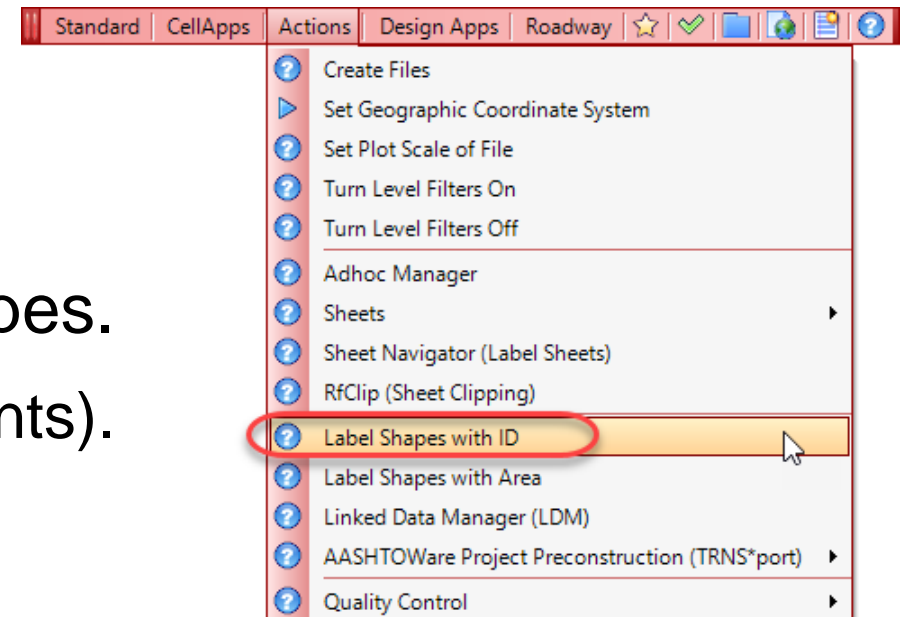
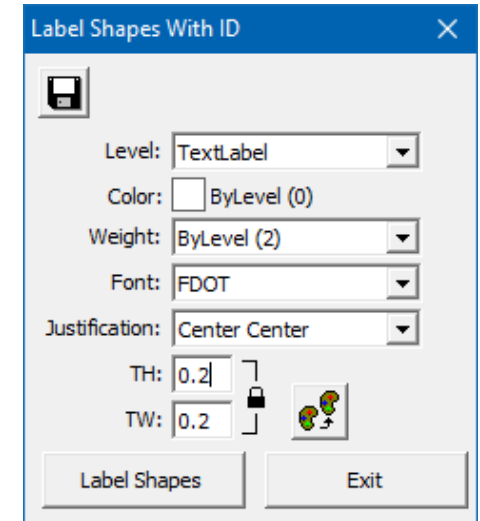
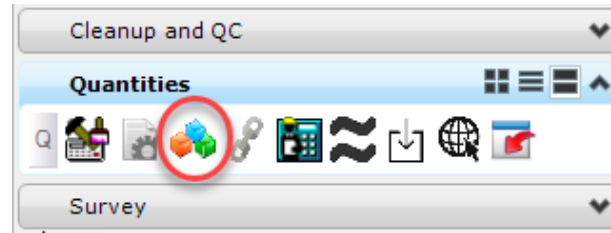
Labeling Area IDs is REQUIRED.

Use the VBA to label these areas.

- Found on the FDOT Plans Development > Quantities Task Menu
- **OR** on the FDOT Menu under Actions > Label Shapes with ID

Create a selection set & then click Label Shapes.

- Only labels shapes (you can select ALL elements).

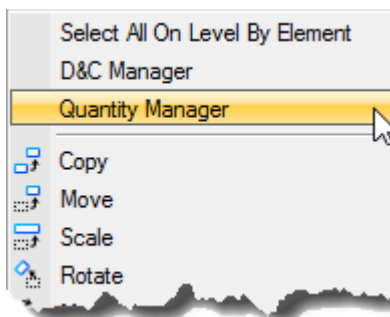


Quantity Manager

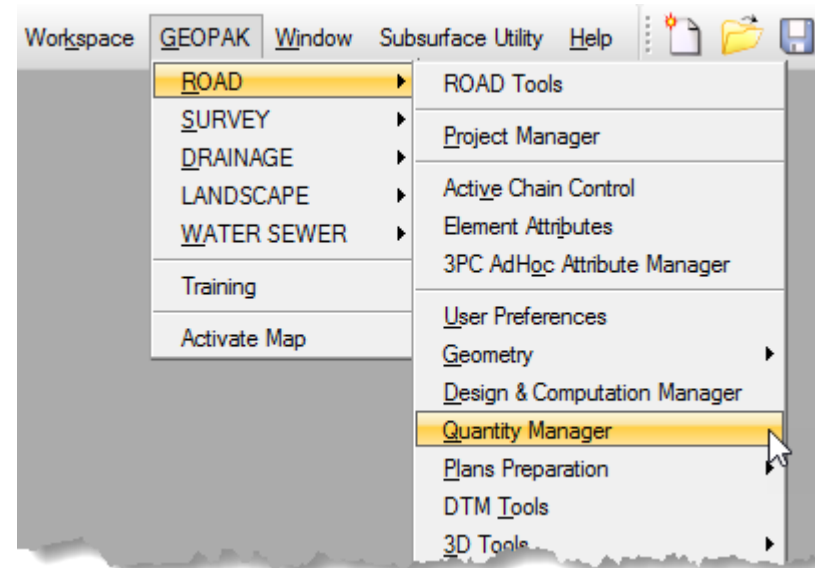
Quantity Manager is a GEOPAK application used to manage quantities.

Access Options:

Right click in the MicroStation window and select Quantity Manager from the context pop up menu



Select GEOPAK > ROAD > Quantity Manager from the MicroStation menu



Select the Quantity Manager icon on the FDOT Plans Development > Quantities Task Menu



Quantity Manager

The screenshot displays the Quantity Manager application window. The interface is divided into several panes:

- Pay Item Tree:** A hierarchical tree view on the left showing project structure. The selected item is "0334 1 12 Superpave Asphaltic Concrete".
- Pay Item Table:** A table in the center showing a list of items with columns for Category, Payitem, Trms*port..., Chain, Net Value, Remarks, Description, and Ext. A red box labeled "Quantity Pane" highlights this table.
- Element Pane:** A table at the bottom showing element details with columns for Name, Type, Radius, Delta, Length, Direction, Native Id, and Docu. A red box labeled "Element Pane" highlights this table.
- Pay Item Pane:** A red box labeled "Pay Item Pane" is positioned over the bottom-left area of the interface.

Category	Payitem	Trms*port...	Chain	Net Value	Remarks	Description	Ext
root/Roadwa...	0334 1 12	0200	SR61	14.330			
root/Roadwa...	0334 1 12	0200	SR61	25.890			
root/Roadwa...	0334 1 12	0200	SR61	14.400			
root/Roadwa...	0334 1 12	0200	SR61	22.290			
root/Roadwa...	0334 1 12	0200	SR61	0.340			
root/Roadwa...	0334 1 12	0200	SR61	8.170			
root/Roadwa...	0334 1 12	0200	SR61	22.650			
root/Roadwa...	0334 1 12	0200	SR61	0.100			
root/Roadwa...	0334 1 12	0200	SR61	2.600			
root/Roadwa...	0334 1 12	0200	SR61	32.670			

Name	Type	Radius	Delta	Length	Direction	Native Id	Docu
17156 (Com...	Line			100.000	239.991	17156	C:\e\pr
17156 (Com...	Line			68.436	329.991	17156	C:\e\pr
17156 (Com...	Line			20.290	59.973	17156	C:\e\pr
17156 (Com...	Line String			52.545		17156	C:\e\pr
17156 (Com...	Line			5.857	80.127	17156	C:\e\pr
17156 (Com...	Line String					17156	C:\e\pr
17156 (Com...	Line				8.991	17156	C:\e\pr

- Right click on the Quantity or Element Pane headers to change the column options.
- Right click in the Pay Item Pane for context sensitive menu options to add, edit and delete categories, items and quantities

Quantity Manager

New Quantity Properties dialog boxes:

New Quantity Properties - For Payitem: 0334 1 52

General Location Adhoc Attributes

Measurement Basis: Each

Measurement Value: 0.000

Computed Quantity: 0.000

Rounded Quantity: 0.000

Deduction Quantity: 0.000

Net Quantity: 0.000

Boundary Type: None

Boundary Name: Boundary

Run Name:

Trns*port Groupings: 0200

Date / Time: 2017-05-10 13:12:28

Remarks:

Description:

Extended Description:

Create Close

New Quantity Properties - For Payitem: 0334 1 52

General Location Adhoc Attributes

Baseline Chain:

Minimum Station

Station: Region:

Offset:

Maximum Station

Station: Region:

Offset:

Create Close

**VERY IMPORTANT!
INCLUDE CHAIN AND
STATION INFORMATION
FOR AUTOMATION**

Edit Quantity Properties - Payitem: 0334 1 52- Computed Quantity: 0.0

General Location Adhoc Attributes

Name	Type	Value	Source	Dirty
New 1	String		Manual	<input type="checkbox"/>

Update Close

Questions?

Thank you for joining today's session!

Need HELP? Contact me...

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<http://www.fdot.gov/cadd/>

FDOT CADD Support Forum On-line

https://communities.bentley.com/communities/user_communities/fdot_cadd_support/