Extracting Design Quantities using InRoads

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**InRoads Quantity solution**

- Cross Section End Area Volumes
  - Earthwork and Component volumes
  - XML reporting output
- DTM quantities
  - Feature based computation
- MicroStation plan graphic quantities
  - Assign pay items
- Quantity Manager
  - For reporting and cost estimating
Cross Section End Area Volumes

- Computes closed component volumes based on material (style).
- Standard End Area Volume earthwork.
- Unsuitable Materials computed by several methods.
- Volume exceptions, additions and forced balance.
- XML report output
  - Used in Mass Haul diagram
  - Direct entry into Quantity Manager for cost estimating
End Area Volume Demonstration
DTM Quantities

- InRoads quantities are defined by a Pay Item database.
  - Uses a formula manager to perform computation.
- The Pay Items are associated with Styles in the XIN.
- The quantities are computed from features in the DTM.
- The quantities output to the Quantity Manager.
What is Quantity Extraction?

A workflow using InRoads tools to associate design quantities with Pay Item numbers and extract those quantities from InRoads surfaces and MicroStation graphics to output the quantities.
Create Design Surfaces and Graphics

Associate Pay Items with Feature Styles

Setup Pay Items and Computation Formulas

Report Trns*port Bentley OnSite

Output

Quantity Manager

Harvest Quantities

MicroStation and InRoads
Quantity Extraction Setup Workflow

• Setup Quantity Formulas
  Quantities > Quantity Formula Manager

• Setup Pay Items
  Quantities > Pay Item Manager

• Add Pay Items to Feature Styles (Optional)
  Tools > Style Manager
Pay Items on Feature Styles

- Limited to 1 Pay Item per style
- 1:1 relationship
  - Need a feature style for each type of construction element such as type of curb or guardrail.
- Cannot be modified once associated with a design feature
Quantity Extraction Design Workflow

• Associate Pay Items with Design
  Automatic through Feature Styles
  Quantities > Assign Pay Items
  Quantities > Shapes Tool
  Surfaces > Feature > Feature Properties
Graphic Quantities

- New for XM V8.9 service pack 1
- Provides direct assignment of Pay Items to MicroStation elements.
- Uses Compute Quantities command along with DTM feature quantities
Quantity Extraction Output Workflow

• Harvest Quantities
  Quantities > Compute Quantities

• Review and Report Quantities
  Quantities > Pay Item Manager
Compute Quantities Demonstration
# Quantity Manager

![Quantity Manager Interface](image)

**Project Tree**
- 201-208 Clearing, Grubbing and Removal
- 210-214 Excavation and Backfill
- 301-315 Base Course and Aggregate Materials
- 327 Asphalt Base
- 401-405 Erosion Control, Slurry Seal
- 411-420 Asphalt Paving, Leveling, Binder and Finishing
- 530-538 Drainage Pipe
- 630-650 Mobilization, Raw Materials and Field Facilities
- 619 Concrete Sidewalk and Driveway
- 619 Pipe End Treatments
- 620-822 Minor Structures, Concrete, Junction Bases
- 623-659 Curbs and Gutter, Median Safety Barriers
- 634-637 Fences and Gates
- 650-659 Top Soil Seeding and Erosion Control
- 701-706 Striping, Markers and Reflectors
- 812-817 Masonry and Fiber Framing

**Payitem Table**

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**Powered By:** BENTLEY Systems
Conclusion

• InRoads does quantities!
Questions?