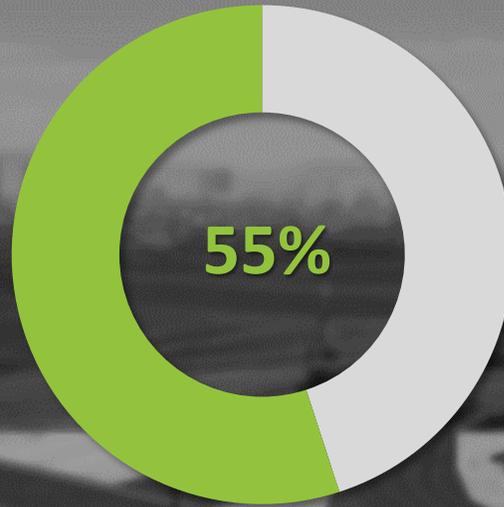




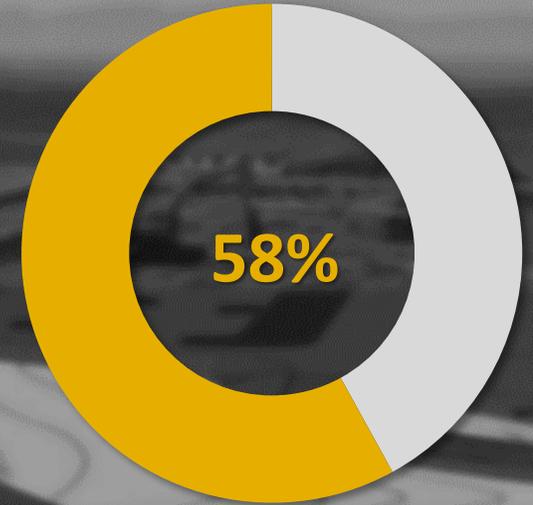
BIM Up Your Projects with OpenRoads

Ian Joyce
Senior Application Engineer

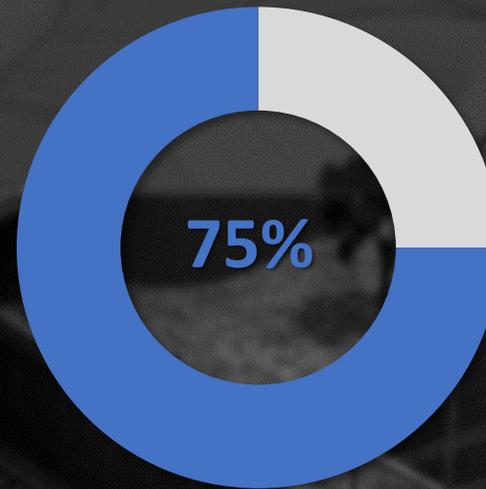




55% of engineers & contractors currently use BIM on 50+% of transportation projects



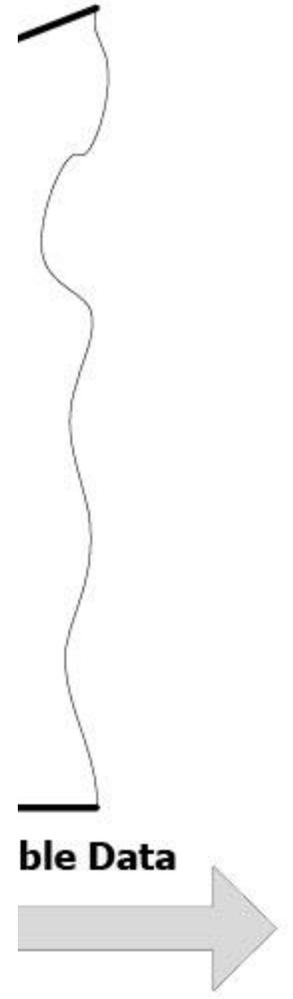
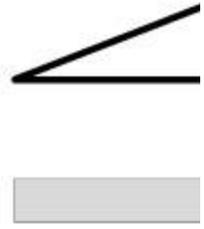
58% of owners request BIM on transportation projects



75% of transportation projects will use BIM by 2019

The National Building Information Model
Standard Project Committee defines BIM as:

Building Information Modeling (BIM) is a digital representation of physical and functional characteristics of a facility. A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.



ble Data





ASK AN
EXPERT!



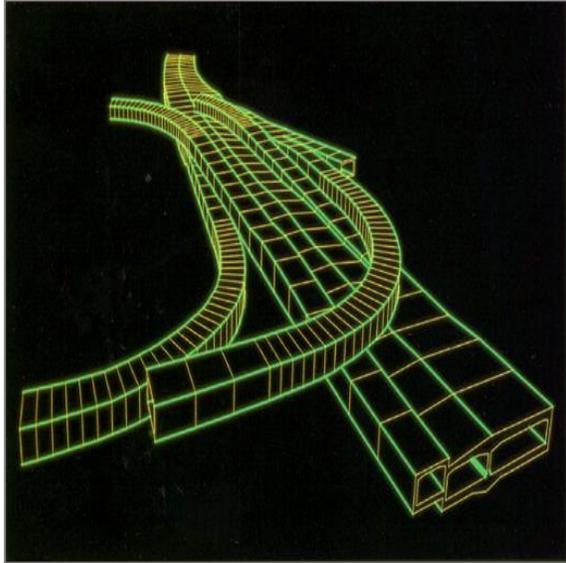
OpenRoads

From Conception through Construction

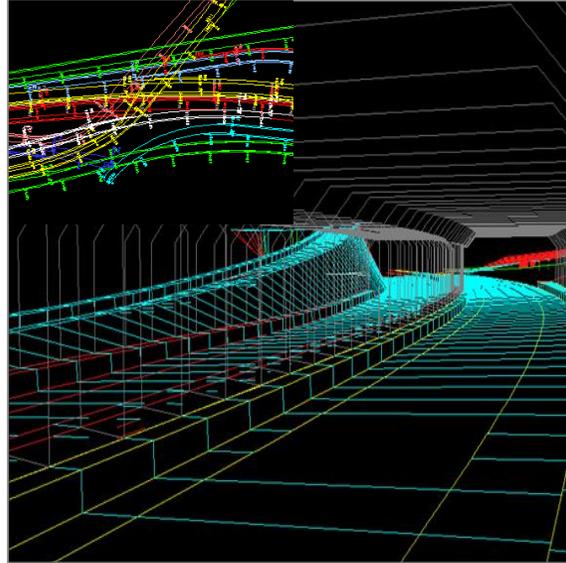


3D Modeling

3D Modeling: Evolution



1984 –
1994



1994 –
2004



2004 –
2014



2014 - ...

File Home Terrain Geometry Corridors Model Detailing Drawing Production Drawing View

Search Ribbon (F4) Sign in

Attributes: None, Default, 0, 0, 0, 0

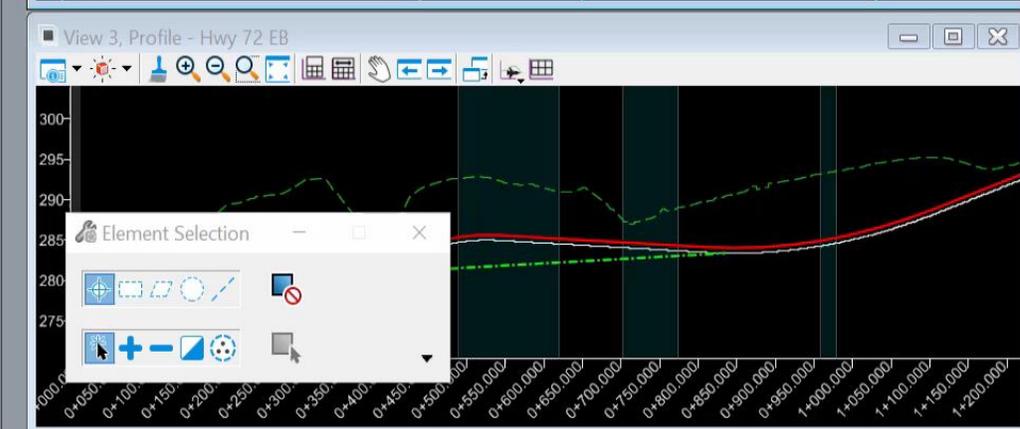
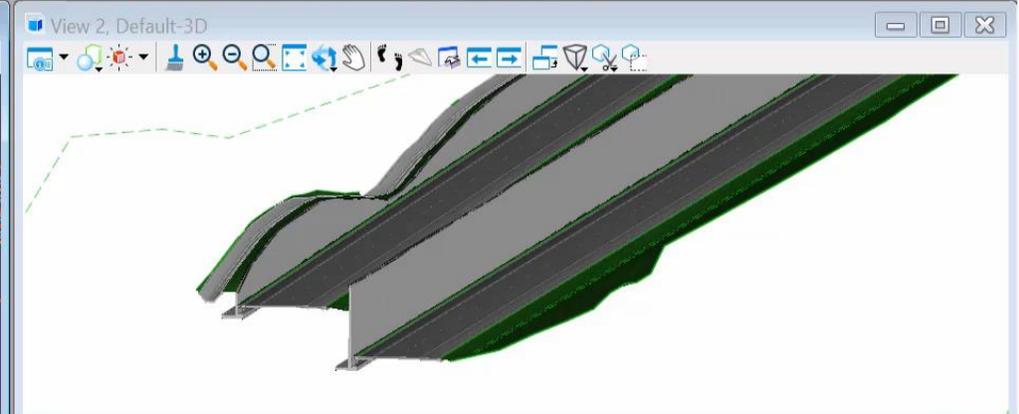
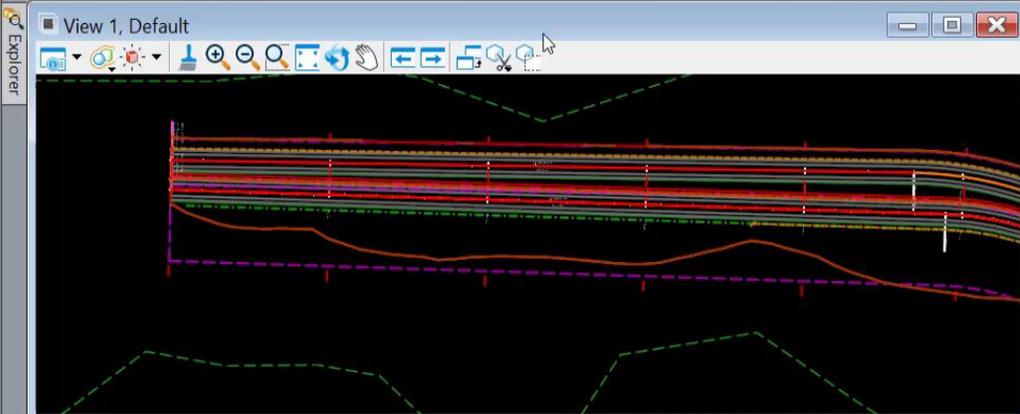
Primary: Explorer, Attach Tools, Models, Level Display

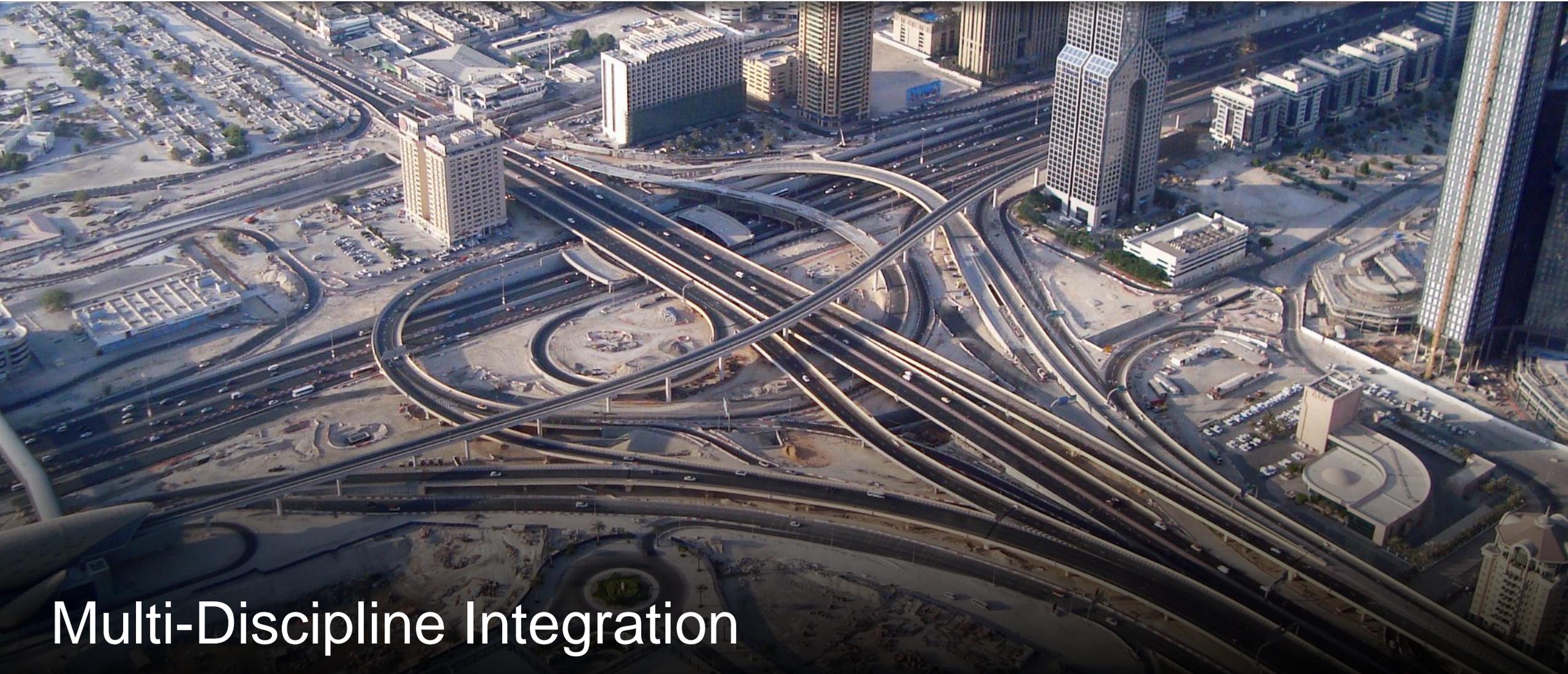
Selection: Element Selection

Model Analysis and Reporting: Reports, Civil Analysis, Corridor Reports

Model Import/Export: Terrain Import, Import Geometry, Import IRD

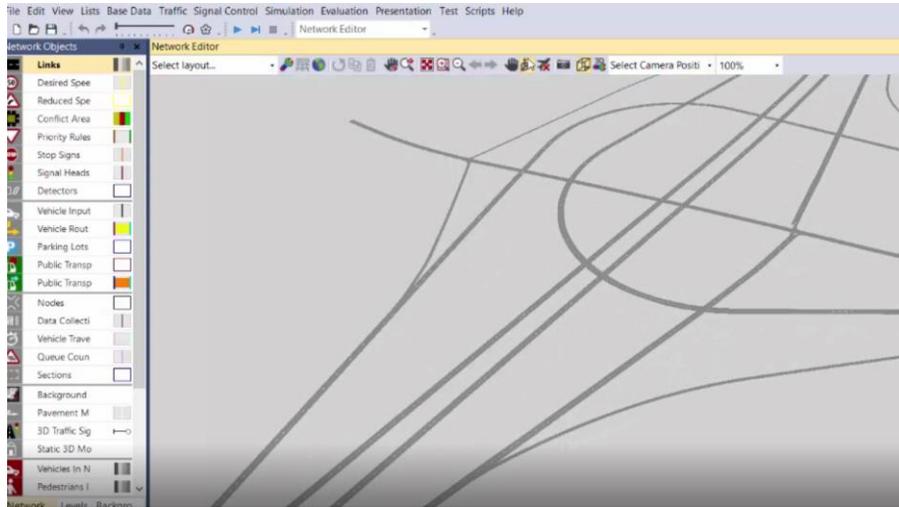
OpenRoads Help, Open RSS Reader





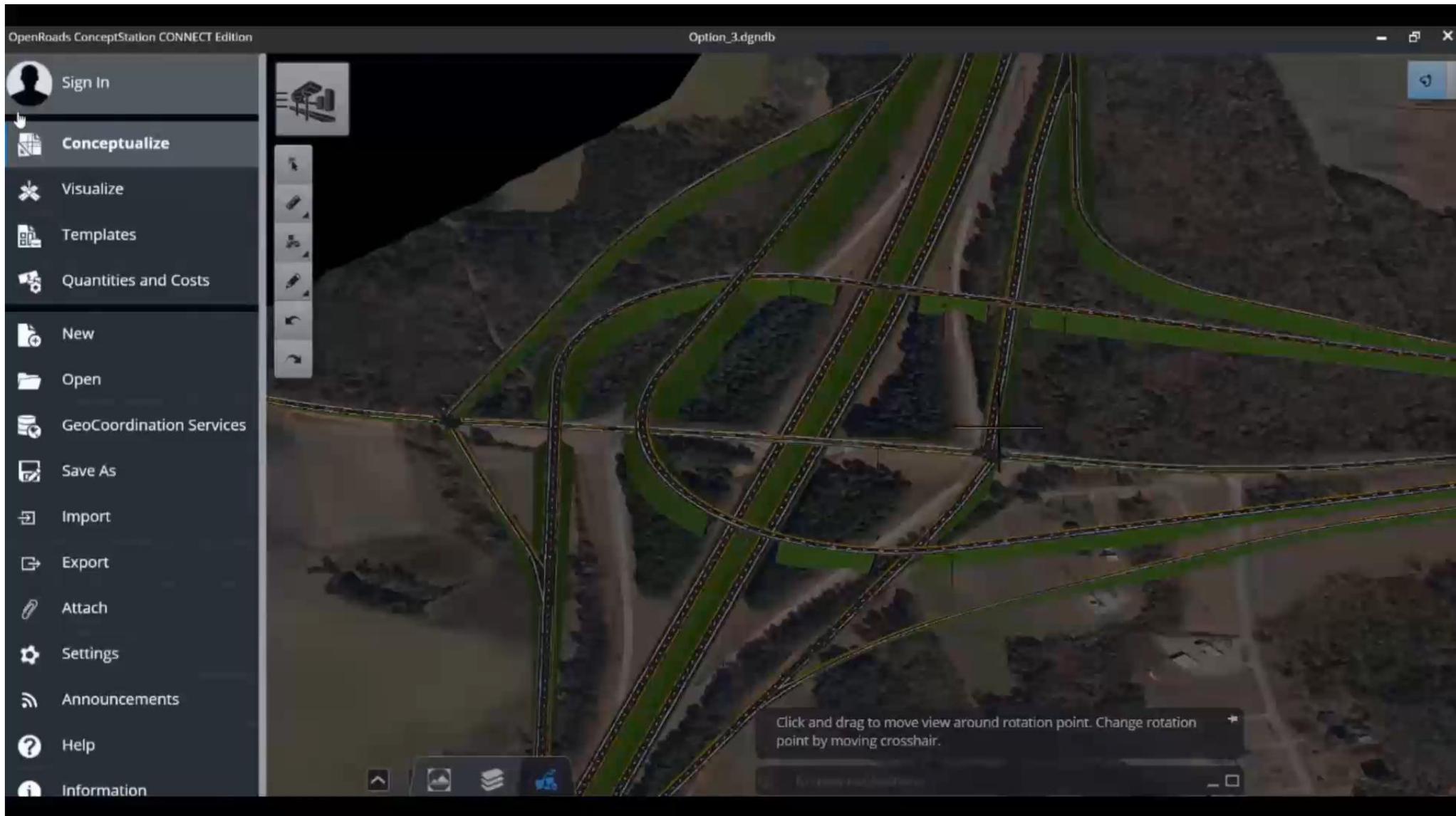
Multi-Discipline Integration

Interoperability with VISSIM

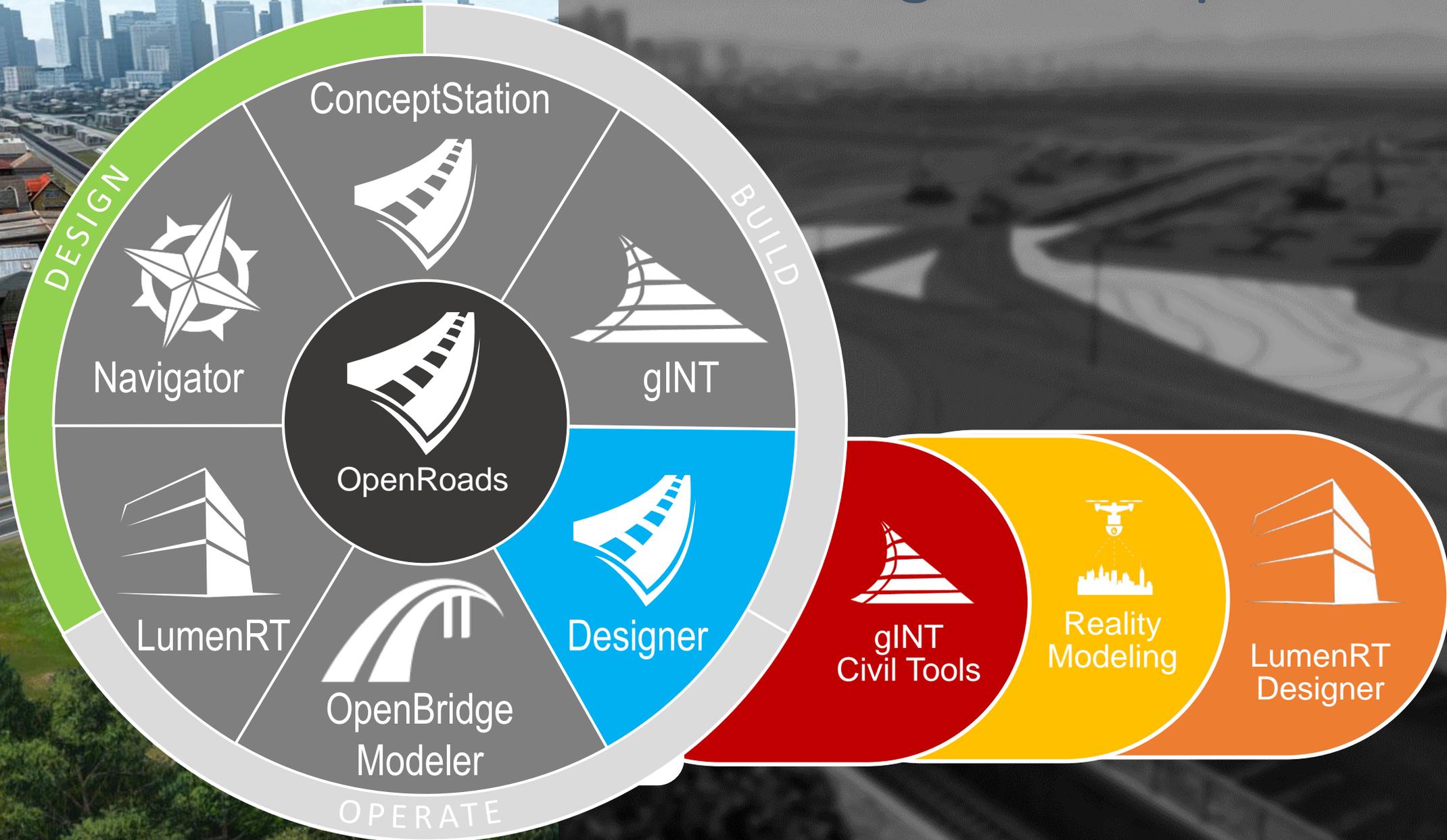


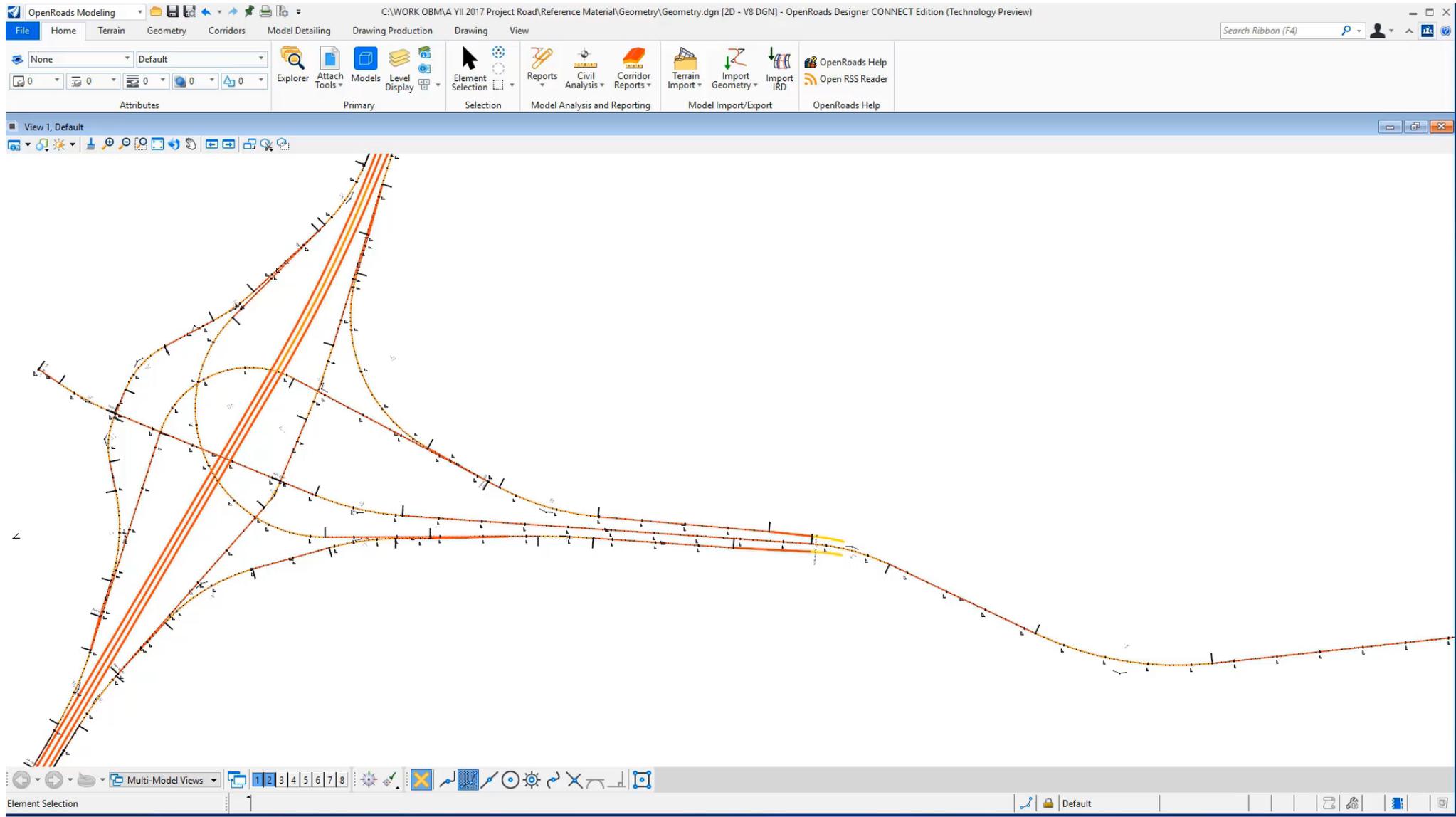
From OpenRoads ConceptStation
to VISSIM

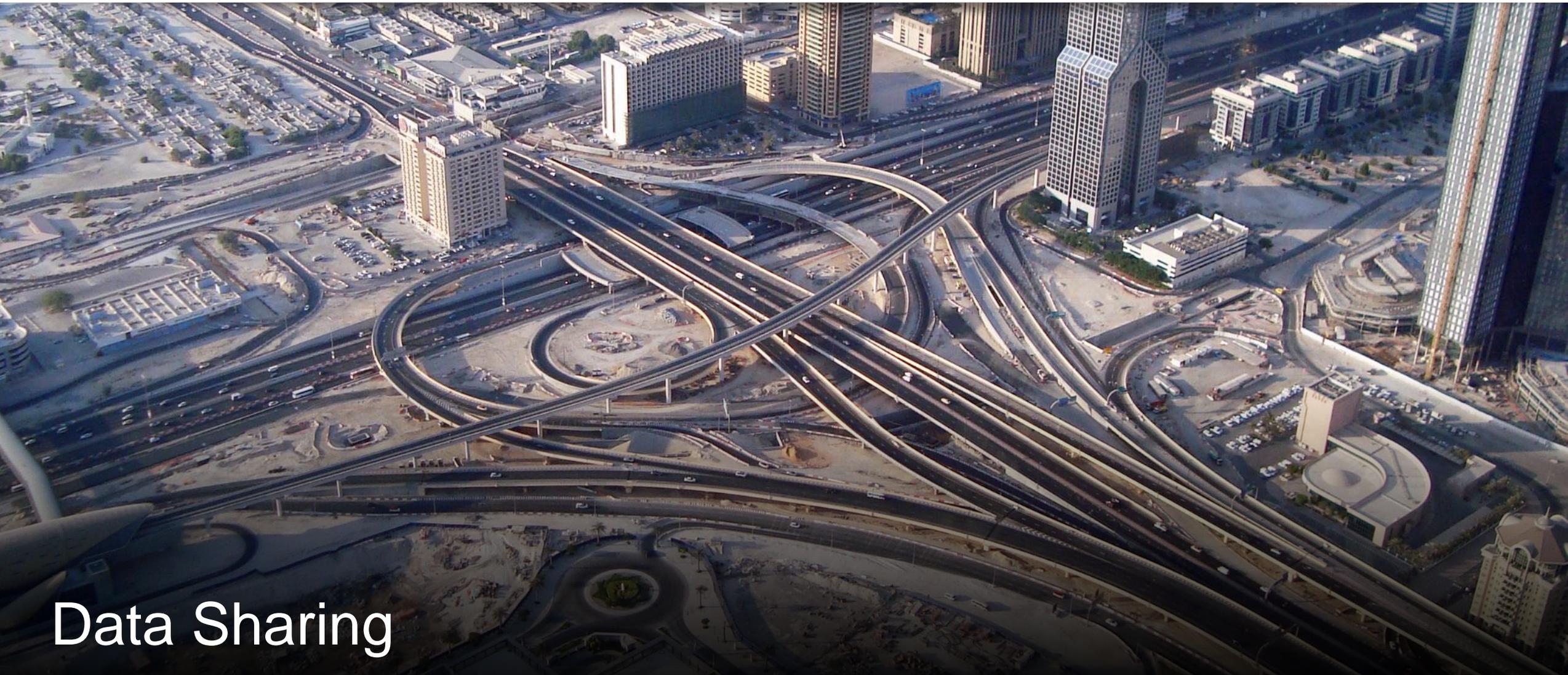
From VISSIM to OpenRoads
ConceptStation (Import traffic
simulation)



Integrated Capabilities







Data Sharing



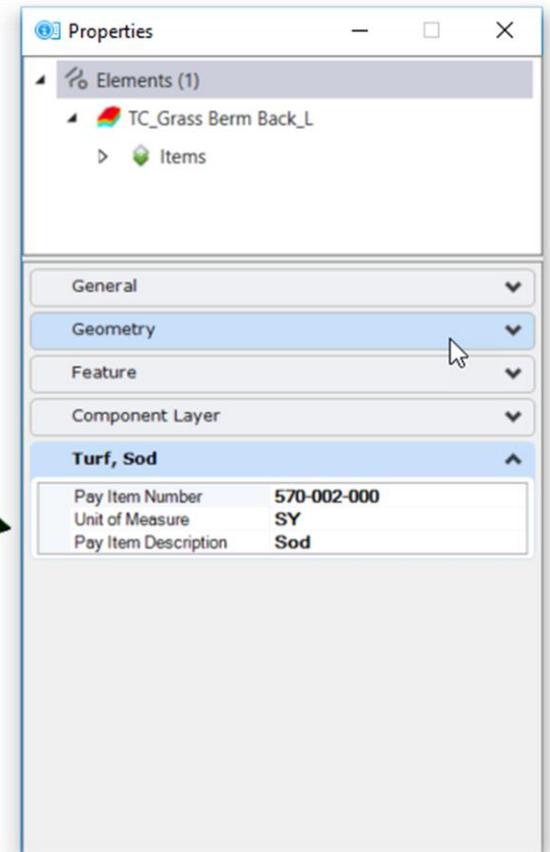
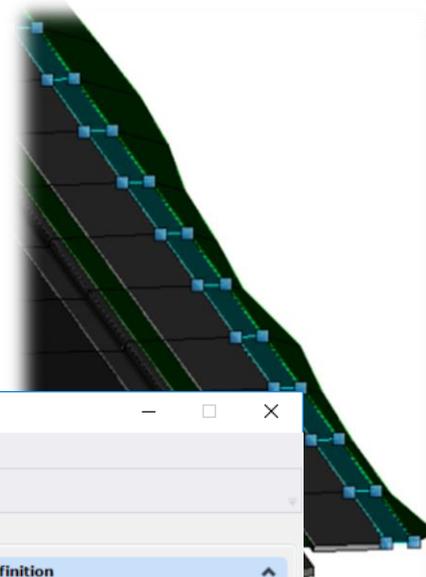
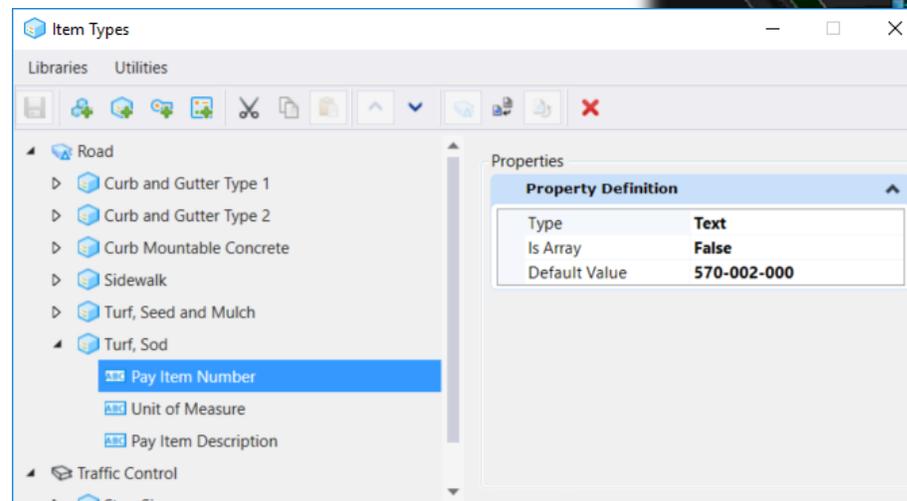
More Intelligence

- Item types
- Asset tagging
- **BIM Advancements in Project Delivery *Winner*** - Mott MacDonald and the Costain, VINCI Construction Grands Projets, Bachy Soletanche Joint Venture – East Section of the Thames Tideway Tunnel – (London, England, United Kingdom)

What are Item Types?

An “Item Type” is a user defined set of properties used to describe an object or an element.

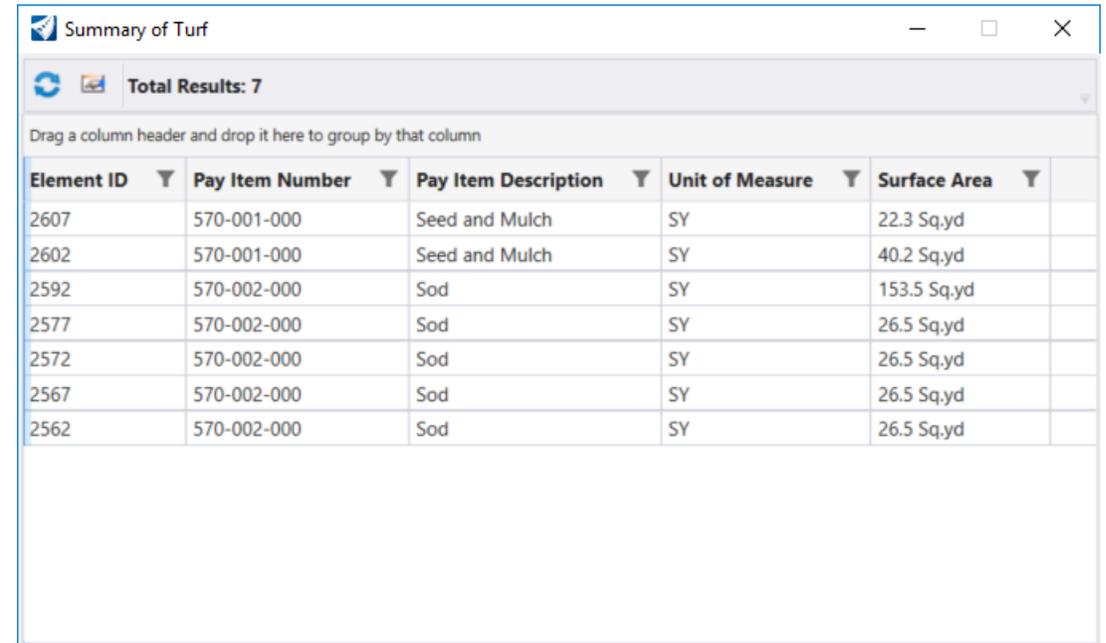
- Specification number
- Pay item data
- Element’s state
 - Existing to remain
 - To be removed
- Designer’s notes



How Can Item Types Be Used?

The properties in Item Types provide additional information about elements that can be used to:

- Generate reports
- Dynamic annotation
- Apply display styles



Summary of Turf

Total Results: 7

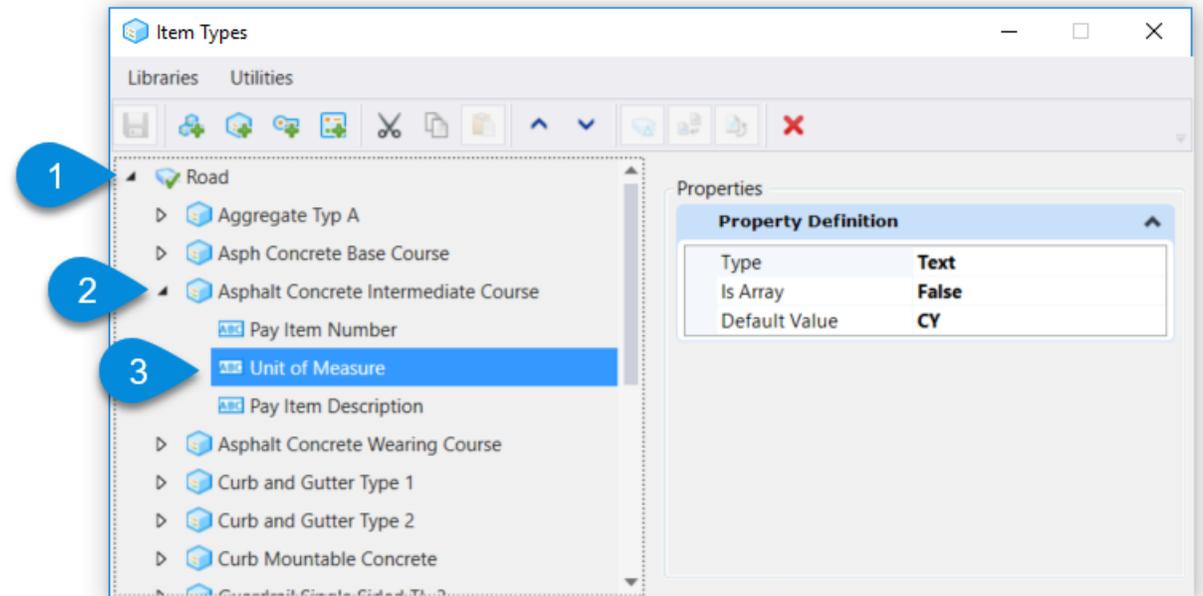
Drag a column header and drop it here to group by that column

Element ID	Pay Item Number	Pay Item Description	Unit of Measure	Surface Area
2607	570-001-000	Seed and Mulch	SY	22.3 Sq.yd
2602	570-001-000	Seed and Mulch	SY	40.2 Sq.yd
2592	570-002-000	Sod	SY	153.5 Sq.yd
2577	570-002-000	Sod	SY	26.5 Sq.yd
2572	570-002-000	Sod	SY	26.5 Sq.yd
2567	570-002-000	Sod	SY	26.5 Sq.yd
2562	570-002-000	Sod	SY	26.5 Sq.yd

Creating Item Types

It's as simple as 1, 2, 3

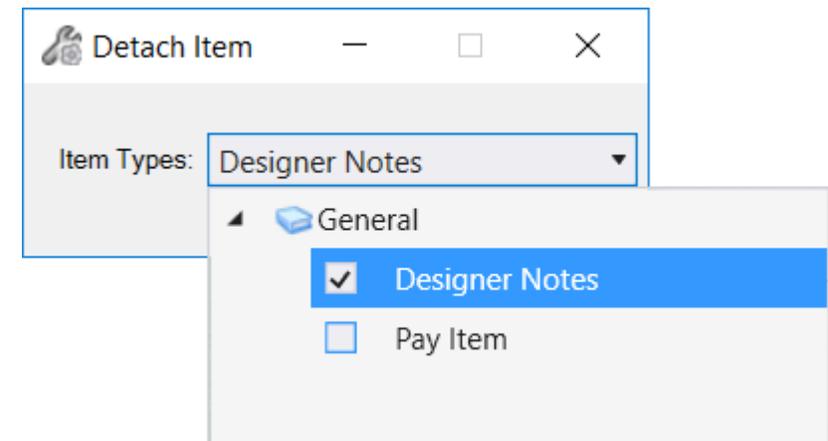
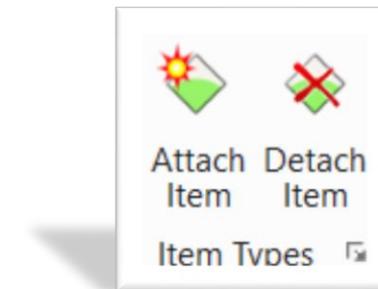
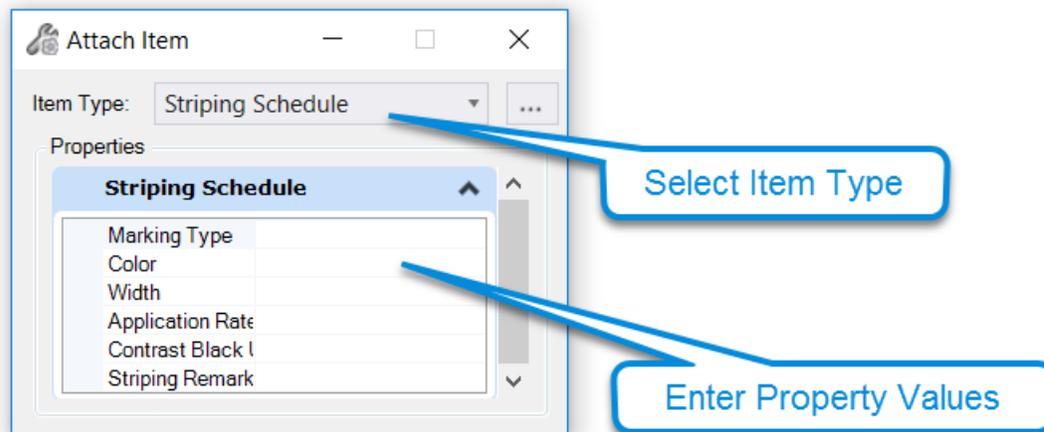
1. Create an Item Type Library
2. Add an Item Type
3. Add Property Definitions



Attaching Item Types

In its simplest form, Item Types can be added and removed from elements using the Item Types group on the ribbon

- You can access the Item Types dialog from the following:
 - Ribbon: Drawing > Content > Item Types
 - Ribbon: Drawing > Attach > Item Types
 - Ribbon: Modeling > Content > Item Types

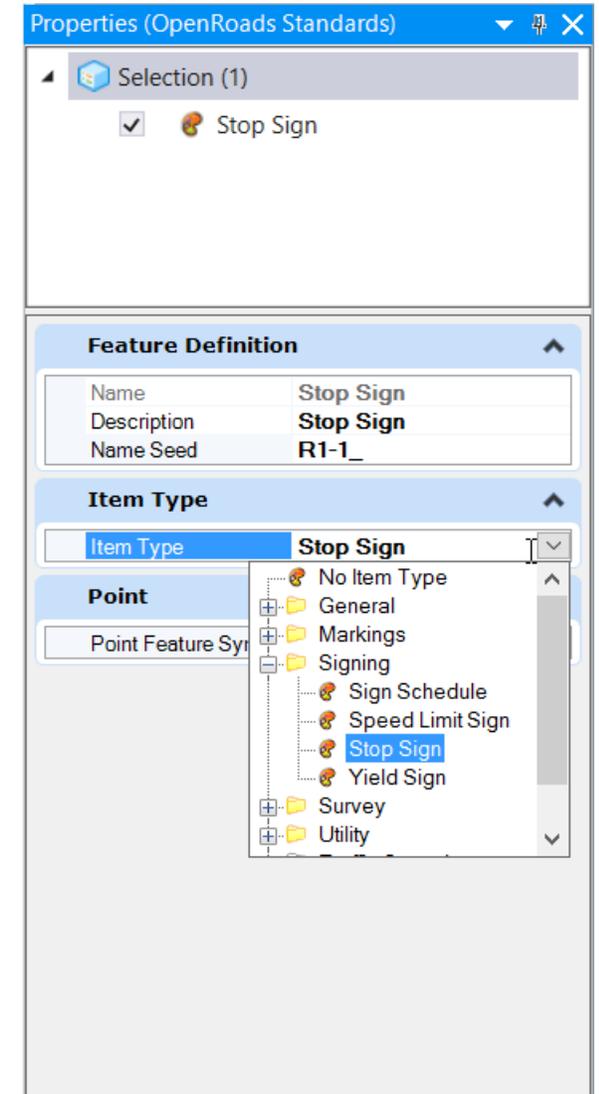


Including Item Type in Feature Definitions

Item Types can easily be included as part of a Feature Definition.

- Create Item Type first
- Edit Feature Definition
- Use Picklist to select Item Type

Note: Only 1 Item Type can be linked per Feature Definition



Apply Item Types to Feature Definitions

Item Types can be included as part of a Feature during creation

- Item Types are attached as the elements are placed
- Integrated with Horizontal Geometry tools
- Property Values can be entered in the dialog

The 'Line' dialog box is shown with the following settings:

- Distance: 196.754
- Line Direction: N90°00'00.0"E
- Feature**
 - Feature Definition: Curb and Gutter Type 1
 - Name: RdCF
- Curb and Gutter Type 1**
 - Pay Item Number: 520-021-000
 - Unit of Measure: LF
 - Pay Item Description: Curb and Gutter Type 1

- Limited functionality :
 - Picklists and Lookup Tables are not available

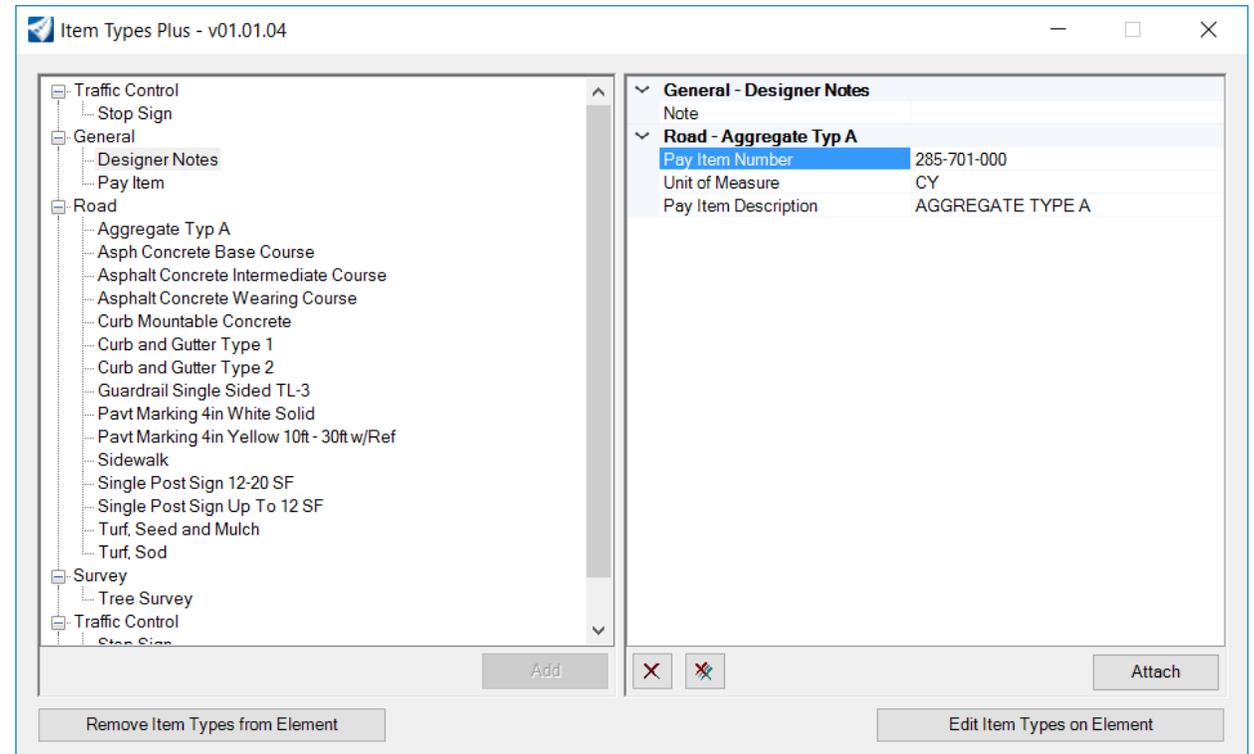
The 'Properties (OpenRoads Standards)' dialog box is shown with the following settings:

- Selection (1)**
 - Curb and Gutter Type 1
- Feature Definition**
 - Name: Curb and Gutter Type 1
 - Description: Curb Face
 - Name Seed: RdCF
- Item Type**
 - Item Type: Curb and Gutter Type 1
- Linear**
 - Create Template: True
 - Linear Feature Sy: Road_Curb_Face
 - Profile Feature Sy: Road_Curb_Face

Item Types Plus

Item Types Plus is an application to assist in the attachment of Item Types to elements.

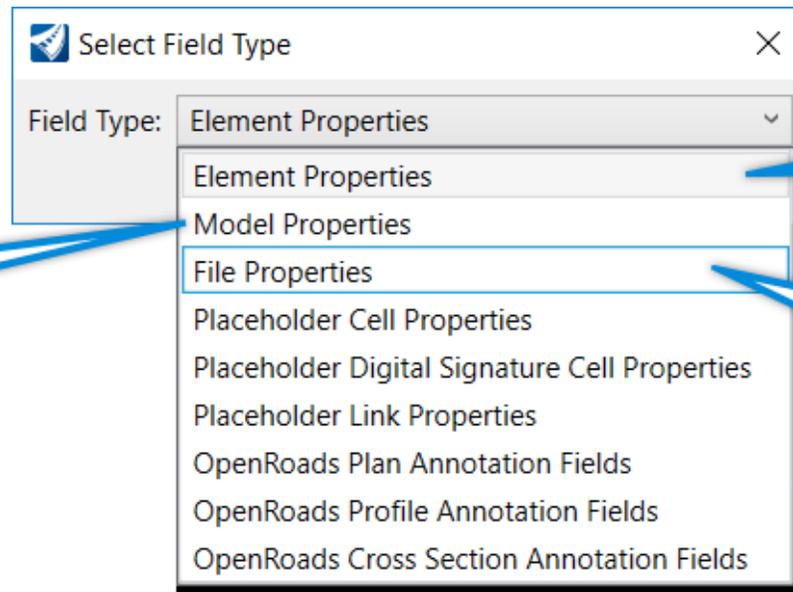
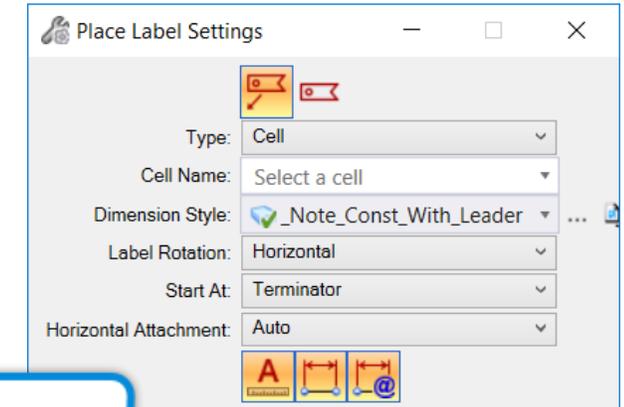
- Attach Multiple Items at Once
- Customizable
 - Provides drop-down lists
 - Automatically populate some properties based on others



Property Driven Annotations

Take advantage of added intelligence with property driven annotation.

- Place Labels using Cells or Text Favorites
- Use “Fields” to retrieve properties



-Item Types
-Geometry

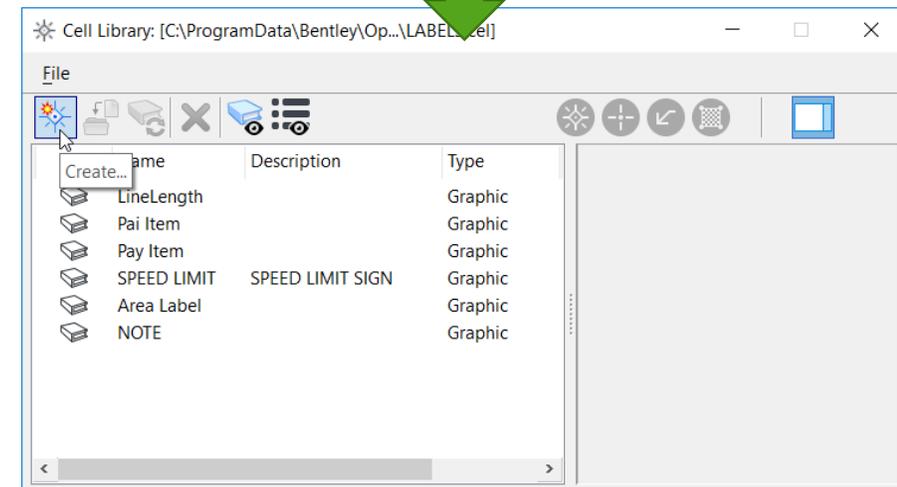
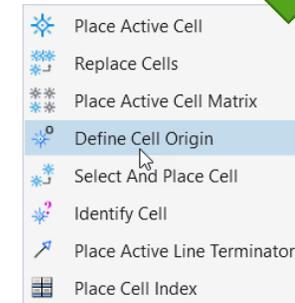
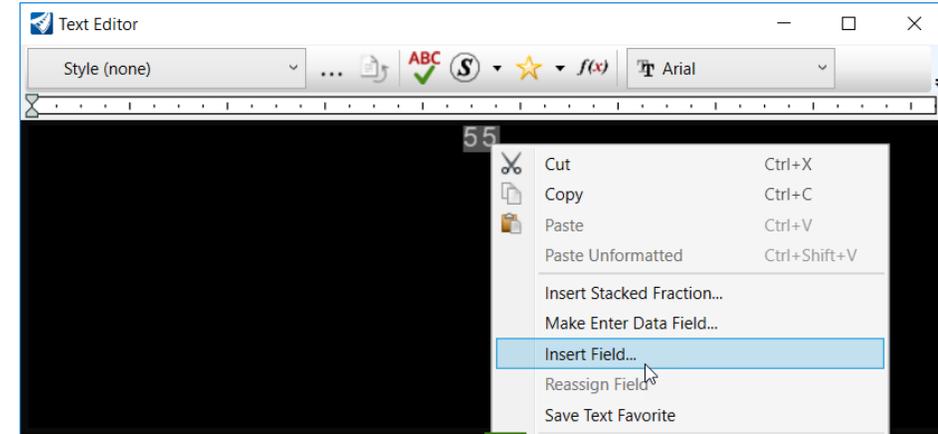
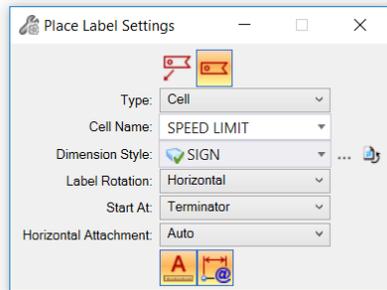
-Annotation Scale

[WorkSet Properties]
-Project Number
-Project Manager (custom)

Creating Property Driven Cells

When combining text with other graphics a cell can be created for use with the Place Label tool.

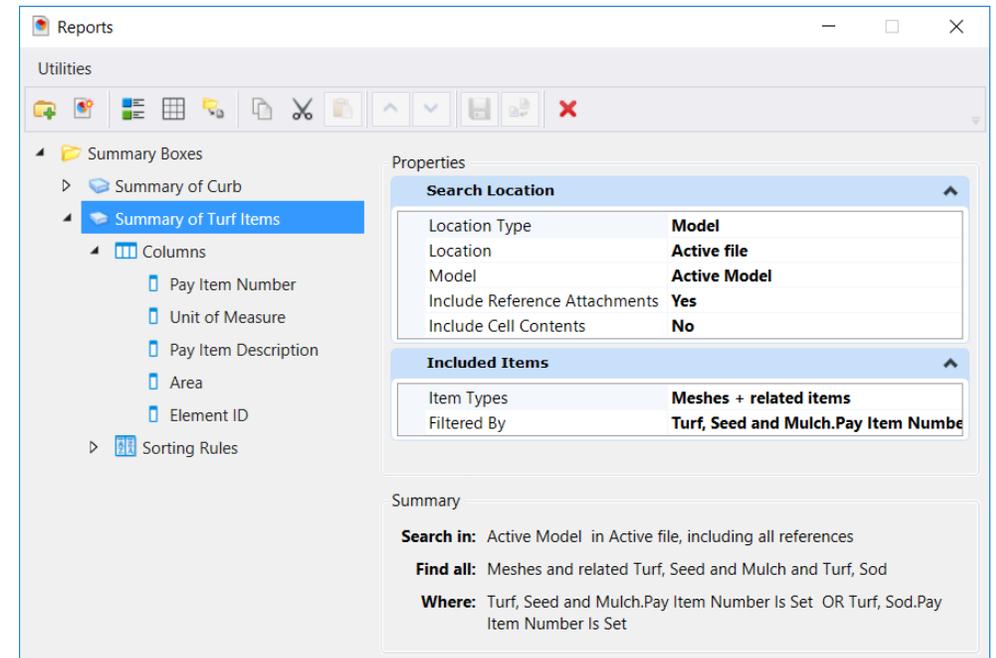
- Insert Text and Fields in graphics
- Make Selection Set
- Define Cell Origin
- Create new Cell



Report Definitions

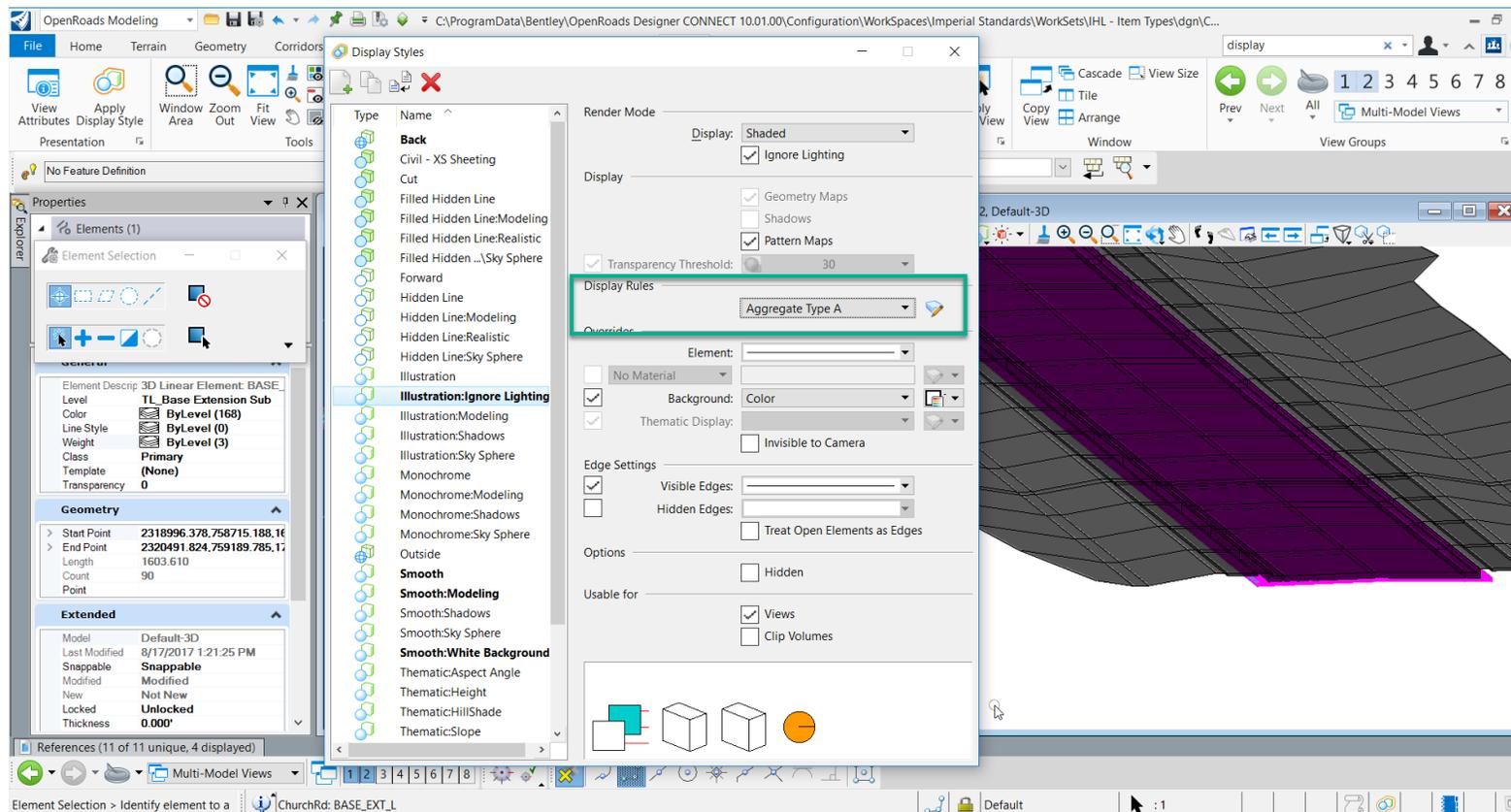
A “Report Definition” is a way to extract data from a DGN file in tabular format. The result is a report that can be placed as a table or exported to an Excel workbook or *.csv files.

- Reports can also join related sets of properties into a single row
 - Design file properties
 - WorkSet properties
 - Item Type properties and properties of an element to which the item is attached can be listed together in a report
- Define sorting and formatting options



Applying Display Rules

You can either create a new Display Style that can be applied to any view or simply define a rule for the active Display Style in a view.

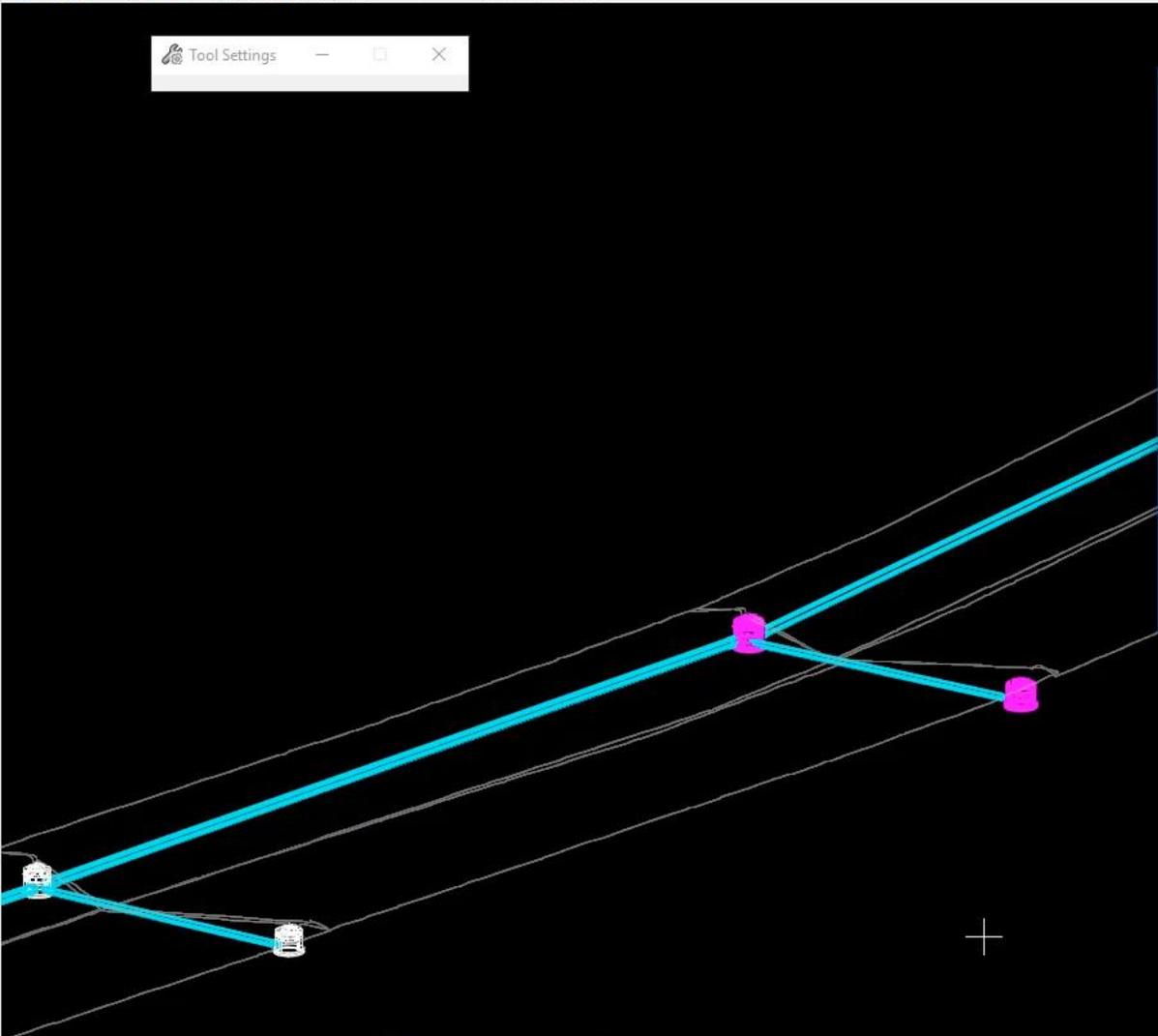


The display rule applied here shows how Display Rules can be used to QC which elements have quantities applied

Aggregate Type A is highlighted and everything else is grayed out.

Asset Tagging

- Are you asset tagging?
- No?
- You will be soon, I'm sure.

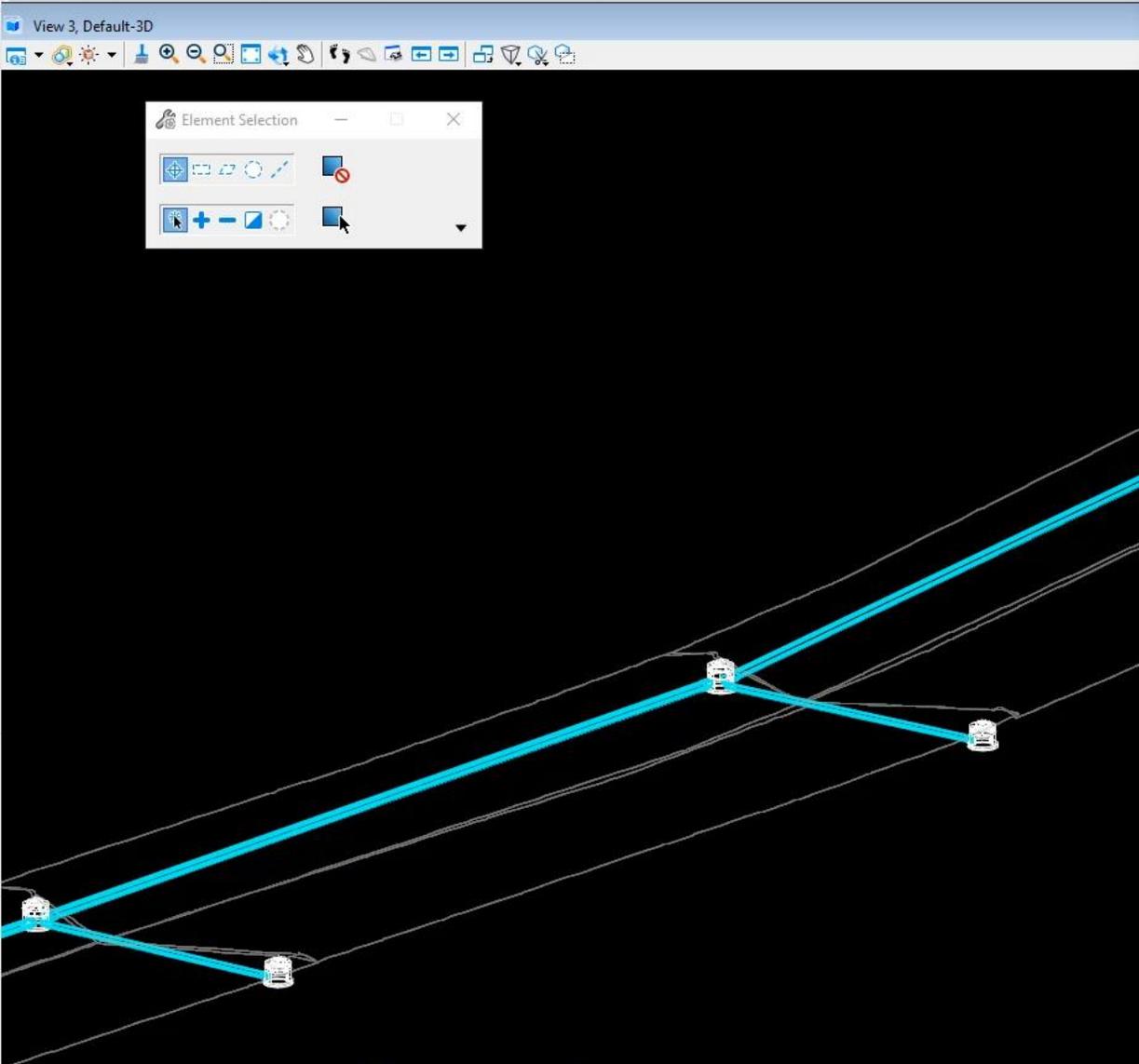


Tool Settings

Create Asset - Modify Instance - Construction Elements

Description	Value
<input type="checkbox"/> Speed of Operation (kph)	0
<input type="checkbox"/> System Uniq Id	000000903
<input type="checkbox"/> InstanceId	0
<input type="checkbox"/> schemaName	
<input checked="" type="checkbox"/> className	MHL
<input type="checkbox"/> Name	
<input type="checkbox"/> Description	CE recording
<input type="checkbox"/> RevisionSeq	0
<input type="checkbox"/> ApprovalStatus	
<input type="checkbox"/> OperationalStatus	
<input type="checkbox"/> Quantity	0
<input type="checkbox"/> PrimaryPhysicalItemId	
<input type="checkbox"/> ClassCode	

< Back Next > Cancel



Element Selection

- Selection tools: pan, zoom, rotate, move, delete

Properties - BSY-000000904

Attributes | Links | Summary

Description	Value
Asset Ownership	
<input type="checkbox"/> HS2 or Third-Party	
Configuration	
<input type="checkbox"/> Type	
General	
<input type="checkbox"/> Memo	
<input type="checkbox"/> Number of	0
Key Dimensions	
<input type="checkbox"/> Depth (Millimetres)	0
<input type="checkbox"/> Inlet Diameter (Millimetres)	0
<input type="checkbox"/> Length (Millimetres)	0
<input type="checkbox"/> Nominal Diameter (Millimetres)	0
<input type="checkbox"/> Outlet Diameter (Millimetres)	0
<input type="checkbox"/> Pipe Invert Level D/S	0.0000
<input type="checkbox"/> Pipe Invert Level U/S	0.0000
<input type="checkbox"/> Rail Depth	
<input type="checkbox"/> Rail Section	
<input type="checkbox"/> Thickness - Primary Layer (Millimetres)	0
<input type="checkbox"/> Thickness - Secondary Layer (Millimetres)	0
<input type="checkbox"/> Thickness (Millimetres)	0
<input type="checkbox"/> Weight (Kilograms)	0.00 kg
<input type="checkbox"/> Weight Per Metre (Kilogram/Metre)	0.00 kg/m
Material Properties	
<input type="checkbox"/> Density (Kg/m3)	0.00 Kg/m3
Operational	
<input type="checkbox"/> Speed of Operation (kph)	0
System Uniq Id	
<input type="checkbox"/> instancelid	0
<input type="checkbox"/> schemaName	
<input type="checkbox"/> className	MHL
<input type="checkbox"/> Name	
<input type="checkbox"/> Description	CE recording

OK Cancel Apply

Planner | pw:\alim-pw.bentley.com:HS2JV_PWDEMO\Documents\Projects\1234000 - HS2 JV Demo Project\0100 WP - Ecological Mitigation Sites\N1 Wide - Long Itchington Wood Tunnel to Birmingham Interchange\Bentley\Civil\01 - Model\11EW03-B...

File Home View Annotate Facilities Planner Tools

Search Ribbon (F4)

Element Selection | Move | Copy | Rotate | Asset display | Label Display | Facility Maps | Clear Display | Create Asset | Unpack container | Delete Asset | Modify Asset | Modify Space | Update Areas | Delete Space | Move Assets and Labels | Move Assets with Leader | Remove Asset Leader | Object List | Change Management | Commands List | Settings | Catalog Wizard | Class Filter | Browse Search Properties Dialog

Selection | Manipulate | Display Tools | Manage Assets | Manage Spaces | Tools | Navigation Tools

View 3, Default-3D

Element Selection

+

-

+

-

alim-pw.bentley.com:HS2JV_PWDEMO - Browse

View Favorites Tools

Navigate Search History Favorites List

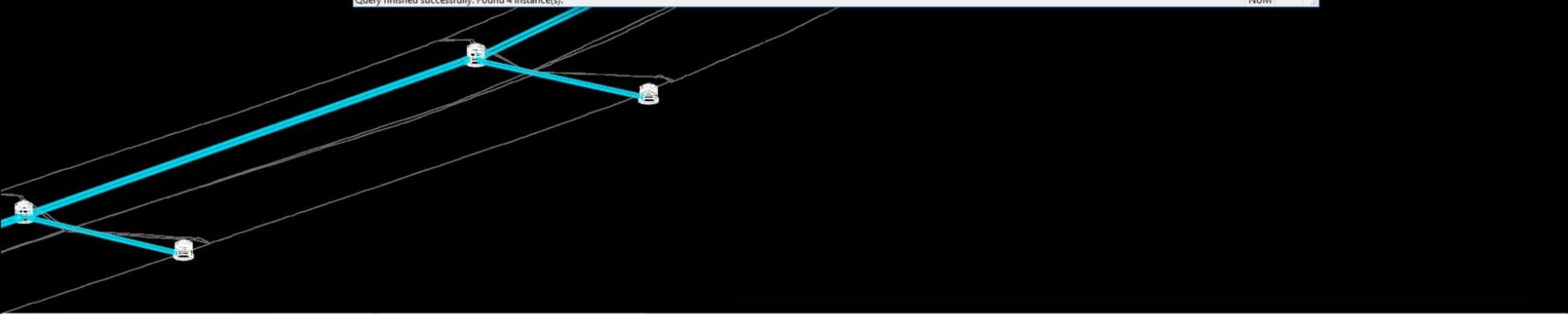
Navigate

- HS2-00000155 VS-040-S1 - Amersham Vent Shaft
- HS2-00000156 VS-043-S1 - Little Missenden Vent Shaft and
- BSY-00000808 BSY-00000808 - Space/Location
- BSY-00000813 BSY-00000813 - Space/Location
- BSY-00000819 BSY-00000819 - Space/Location
- BSY-00000820 BSY-00000820 - Systems
- BSY-00000824 BSY-00000824 - Systems
- BSY-00000884 Storm water gravity drainage system
 - BSY-00000882 BSY-00000882 - Constructional Element
 - BSY-00000883 BSY-00000883 - Constructional
 - BSY-00000887 BSY-00000887 - Constructional
 - BSY-00000888 BSY-00000888 - Constructional
 - BSY-00000889 BSY-00000889 - Constructional
 - BSY-00000890 BSY-00000890 - Constructional
 - BSY-00000898 BSY-00000898 - Constructional

List

Instance	System Uniq Id	instanceld	schemaName	className	Name	Description	RevisionSeq	ApprovalStatus	Operatio
BSY-00000903	00000903	0		MHL		CE recording	0		
BSY-00000904	00000904	0		MHL		CE recording	0		
BSY-00000905	00000905	0		MHL		CE recording	0		
BSY-00000906	00000906	0		MHL		CE recording	0		

Query finished successfully. Found 4 instance(s).



Multi-Model Views | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8

Element Selection > Identify element to add to set

CONNECTED project information has been updated to match the current ProjectWise document.

Drain_Inlet



Connected Data Environment

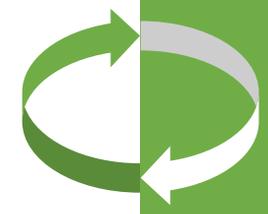
AssetWise
CONNECT Edition

ProjectWise
CONNECT Edition

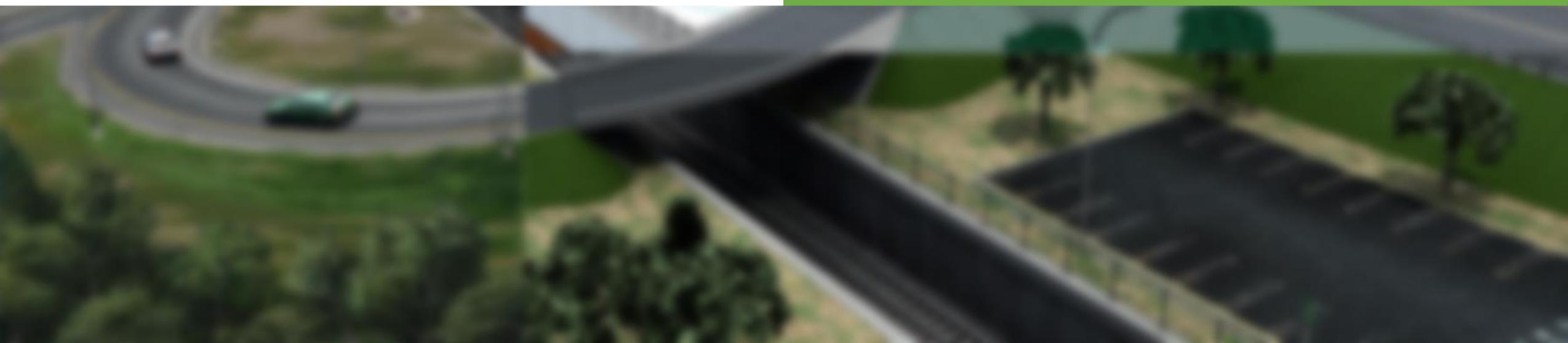
The central graphic features a blue cloud shape containing the Windows logo, the Autodesk logo, and the logos for AssetWise CONNECT Edition and ProjectWise CONNECT Edition. Below the cloud, the text "Connected Data Environment" is displayed. To the right of the cloud, the logos for AssetWise and ProjectWise are shown in circular icons.



TOPCON

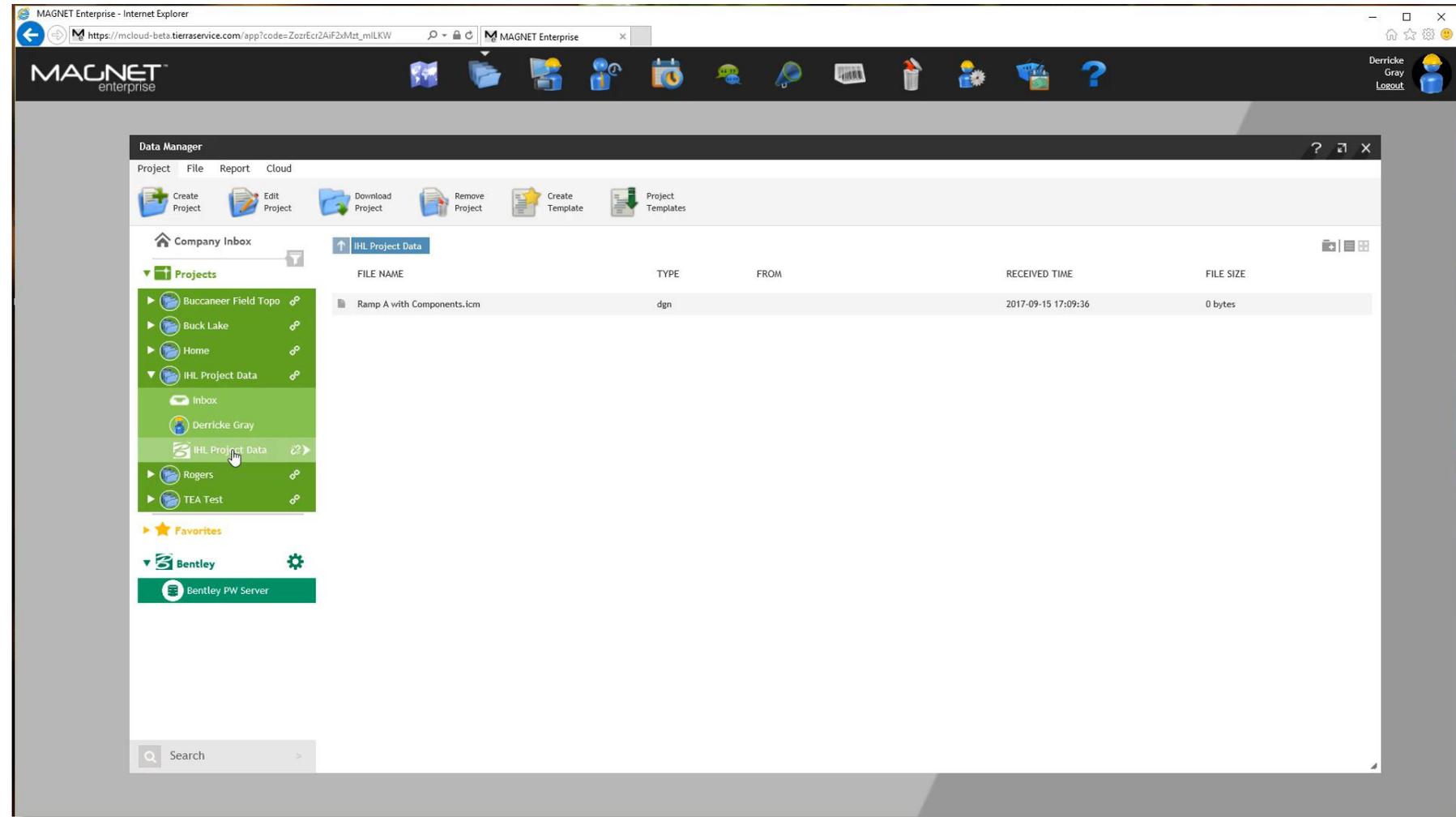


Bentley[®]
Advancing Infrastructure

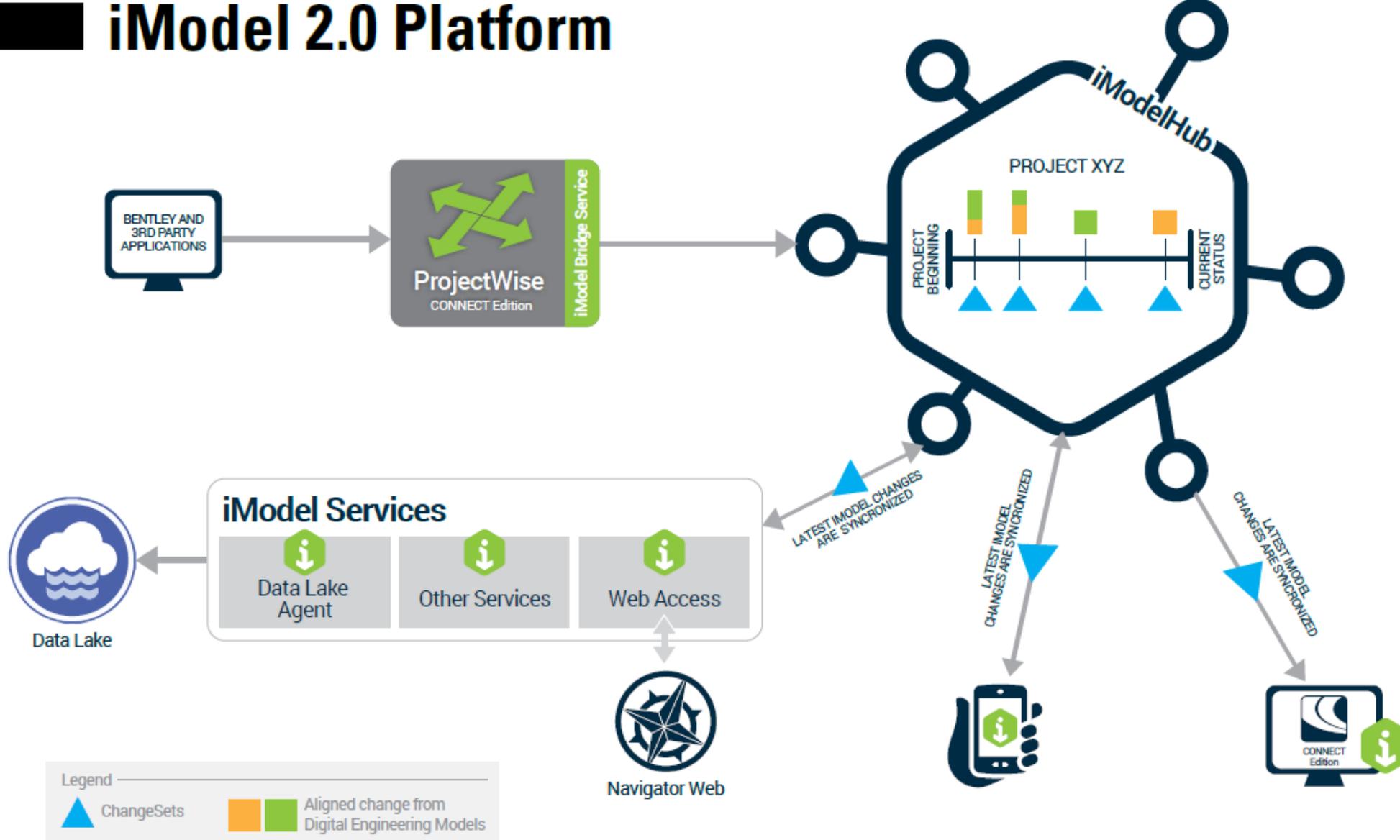


Design to Construction

- Transfer to Field
 - Full Digital Workflow
 - Push to Topcon Sitelink3D
- Benefits
 - Single Source of Truth
 - Confidence in Data



iModel 2.0 Platform



- <https://www.bentley.com/en/perspectives-and-viewpoints/topics/campaign/imodelhub>

Let's Summarize

- 3D Modeling
- Multi Discipline Integration
- Data Sharing
- Are you doing BIM?
- When Does BIM start?



Thanks