OpenBridge Modeler CE Update 7

Release v10.07.00.50 April 29, 2019

Steve Willoughby
Senior Engineering Consultant

Bentley
Advancing Infrastructure

Primary Enhancements:

1. Substructure Functional Components
2. Internal code improvements resulting in enhanced product speed and stability

Additional Enhancements:

1. Place cells as bearings
2. Internal Code improvements resulting in enhanced stability
3. Multiple SupportLines dialog enhancements
4. Excavation – Bottom Vertical and Horiz. offsets
5. Import/Export Superstructure Templates
6. Pier and Abutment Footing offsets
7. Option to publish to imodel 2.0
8. Offset on Abutment and Pier Footings
9. Deck Constraints User Interface update
10. Variables for Stiffners/CrossFrames 2D Layout
11. Report on Tendon Lengths from RM
12. 2D Beam Layout on separate Levels
13. Build Order for Substructure Elements
14. Bing Map Background
15. Iowa DOT concrete beams added to Beam Library
16. Australia SuperTees updated in Beam Library
17. Updated to Power Platform 12
18. Updated to CIF - Open Roads Designer Update 7

System Requirements

Processor

Intel Pentium-based or AMD Athlon-based processor 2.0GHz or greater

Operating System

Windows 10 (64-bit), Windows 8 (64-bit)

Memory

8GB minimum, 32 GB recommended

Video

1GB of video RAM or higher recommended

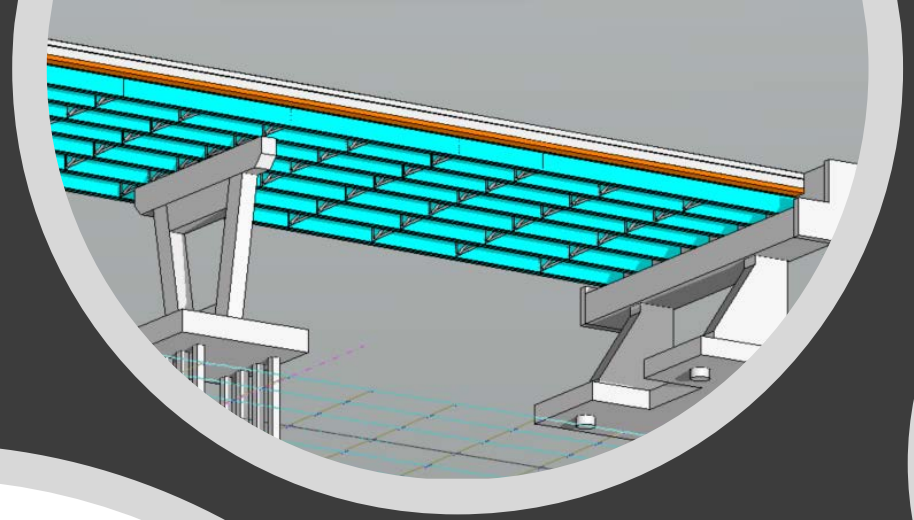
Disk Space

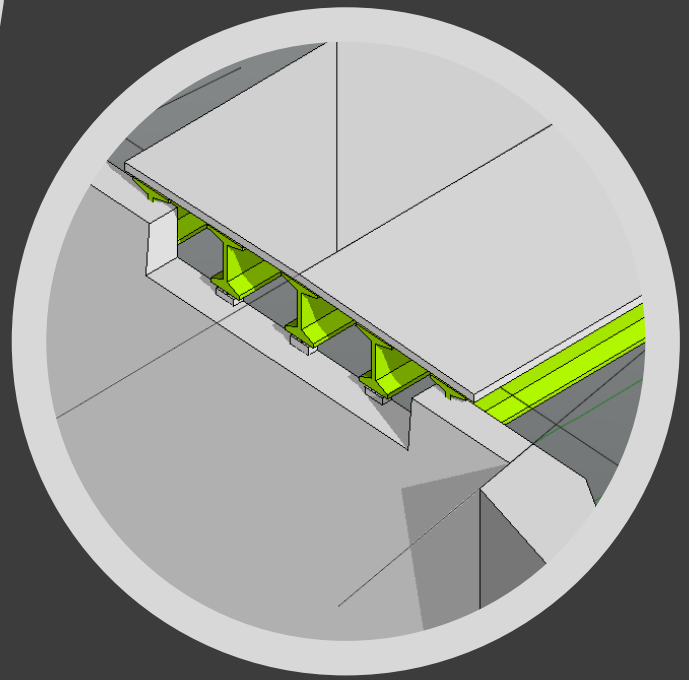
10 GB minimum free disk space

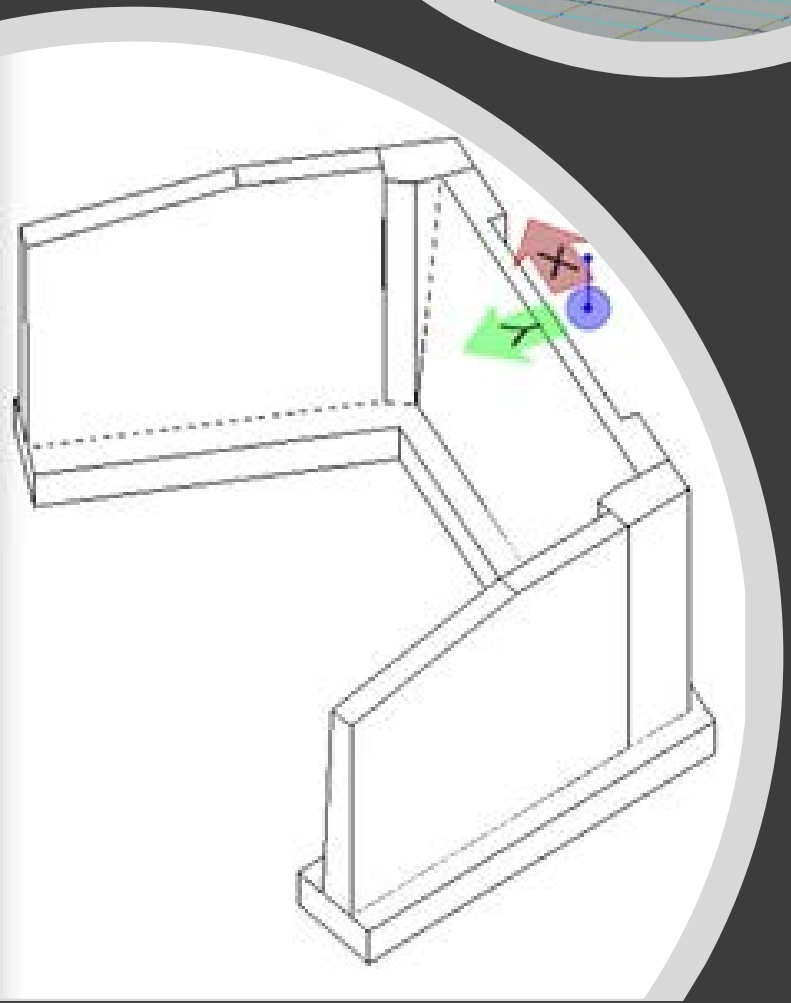
Software Compatibility

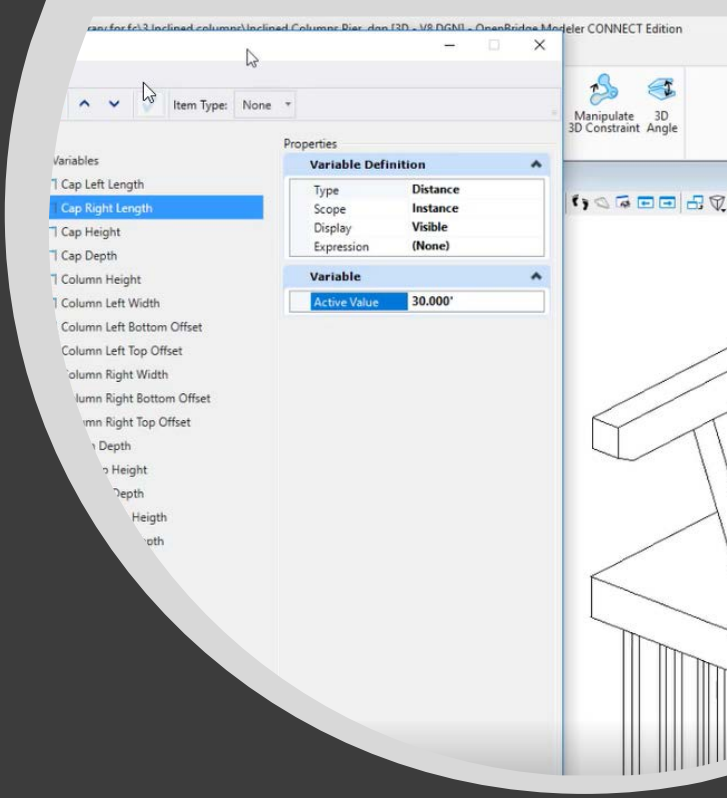
- LEAP Bridge Concrete: v19.00.00.22, v19.00.00.50
- LEAP Bridge Steel: v19.00.00.20, v19.00.00.51
- RM Bridge: v11.05.00.10
- OpenRoads Designer: Update 7 (v10.07.00.56)
- ProStructures CE: Update 2 (v10.02.00.20)
- ProjectWise: 10.00.03.167

Primary Enhancements









Functional Components for Substructure

Functional Components

The Functional Components enablement in MicroStation allows for you to experience true 3-D parametric design for advanced design modeling, leveraging both 2D and 3D constraints to accurately capture and model design intent.

The CONNECT Edition introduces a new smart and comprehensive workflow that is comprised of Parametric Cells and Item Types for creating intelligent and reusable content, ultimately minimizing the need for re-modeling.

Users can now create smart parametric models that can be driven by variables and placed as parametric cells, whose variation can be selected at placement or changed afterwards.

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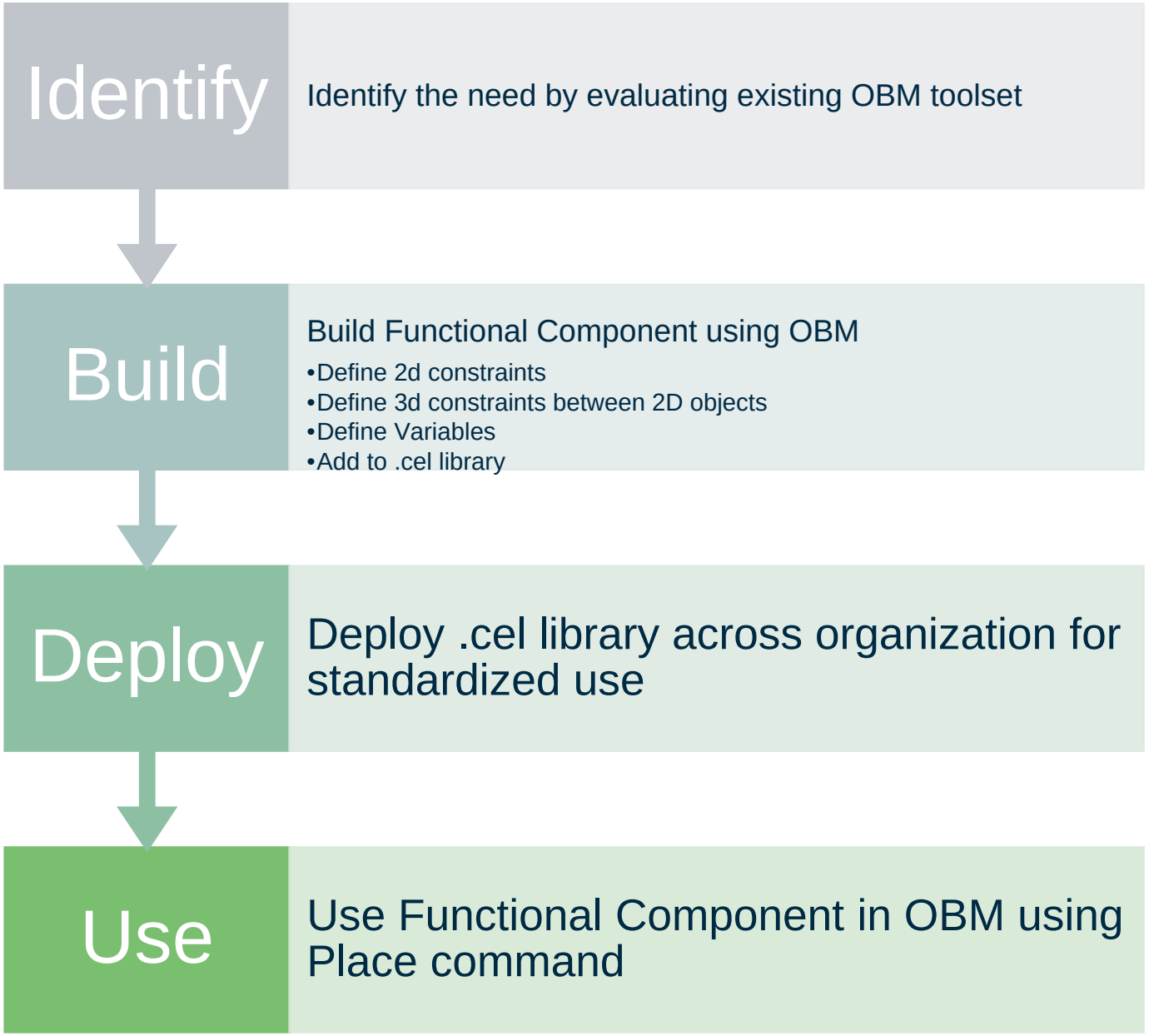
Typical WorkFlow



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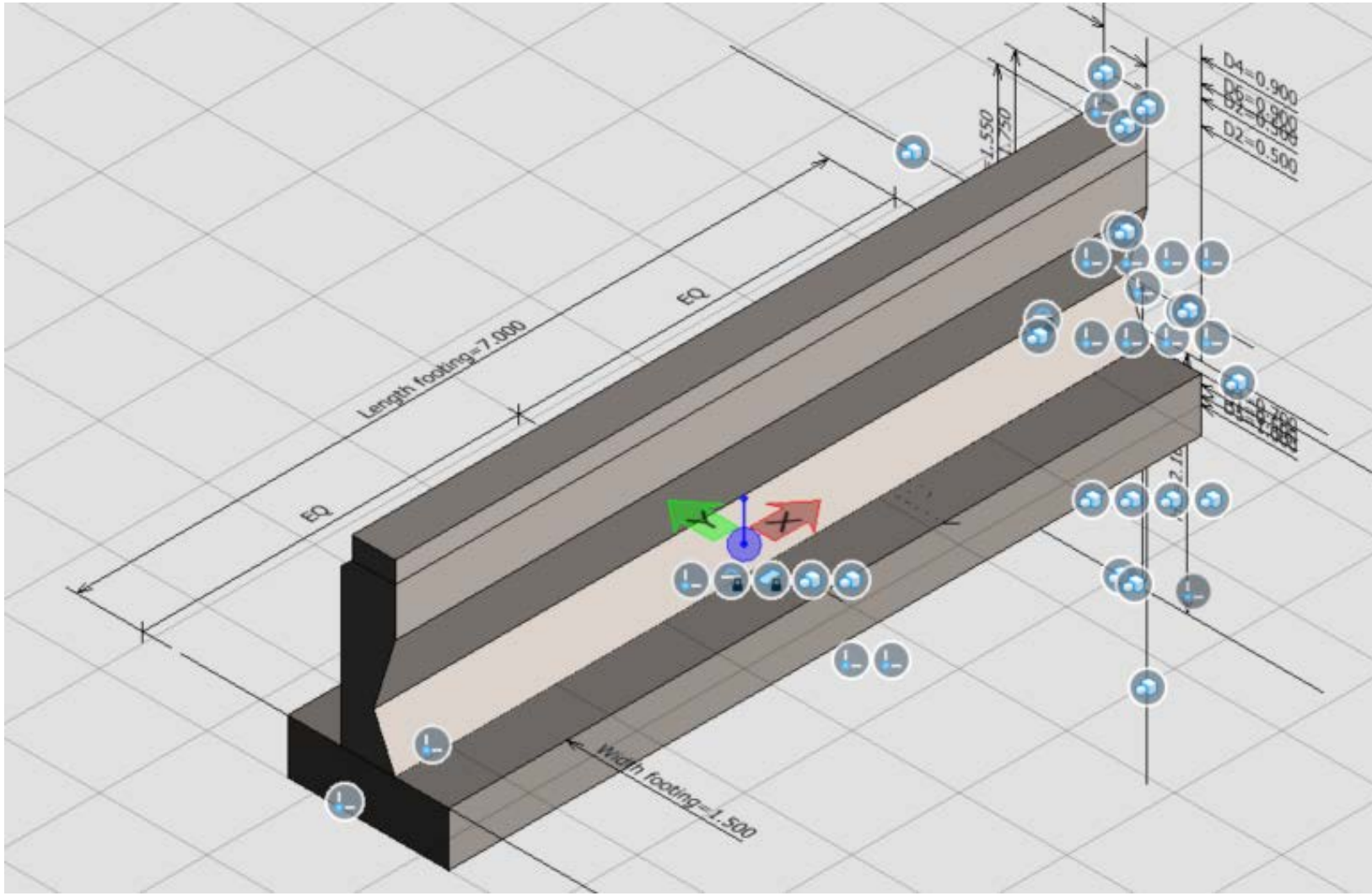
Building a Functional Component

- Modeling > 2D Constraints
- Modeling > 3D Constraints
- Modeling > Variables



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Building a Functional Component

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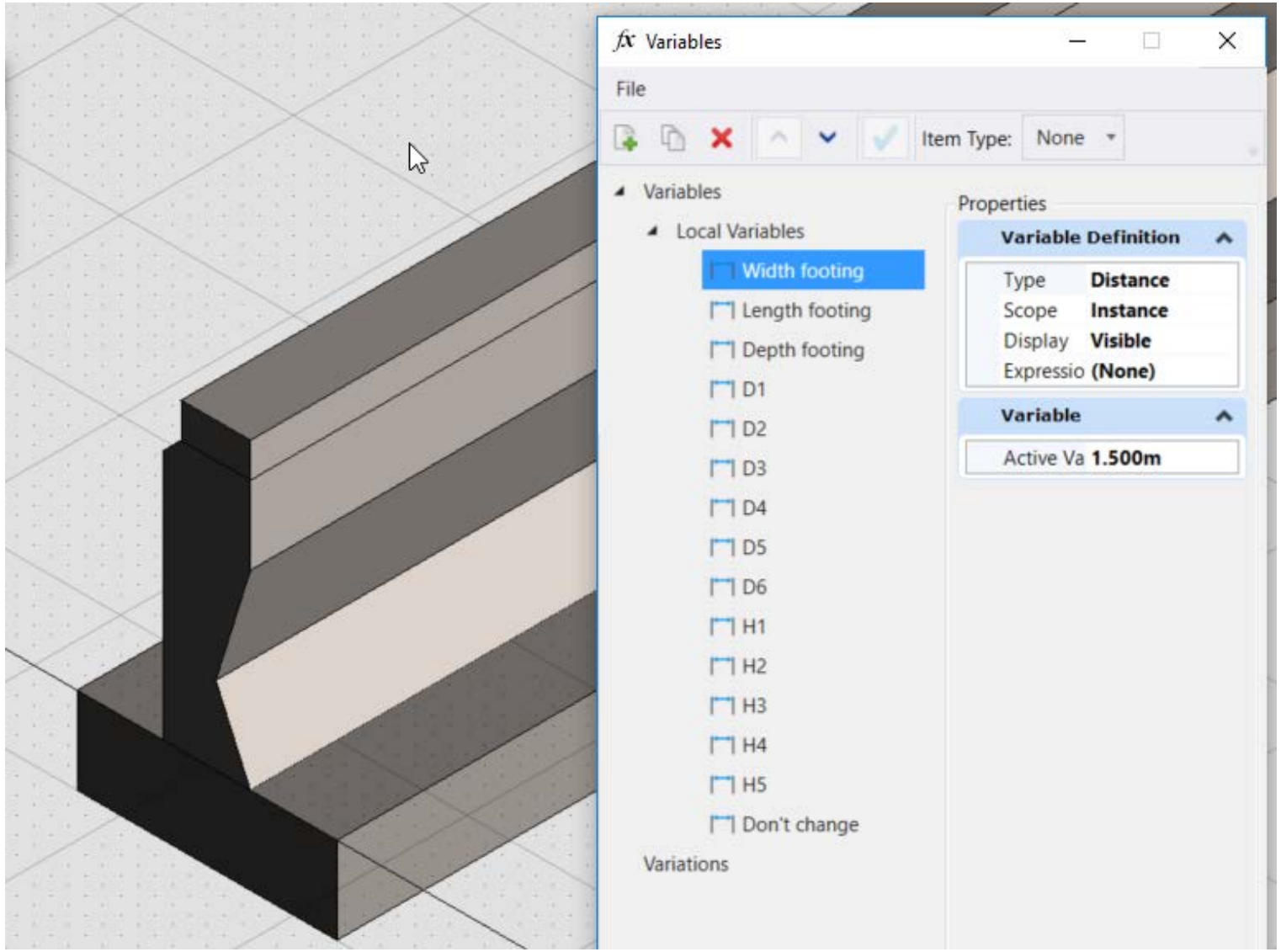
- Modeling > Variables



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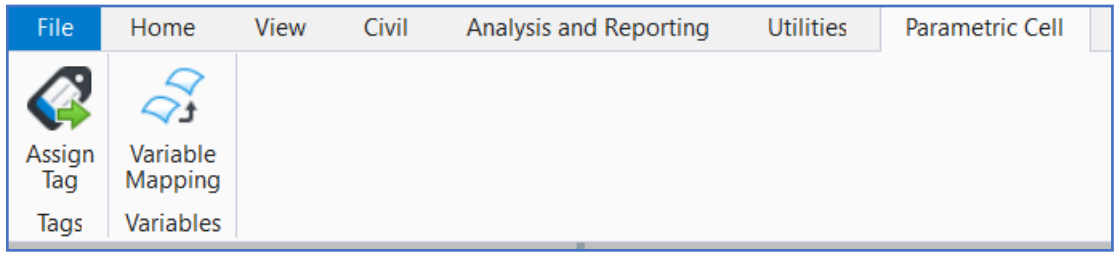
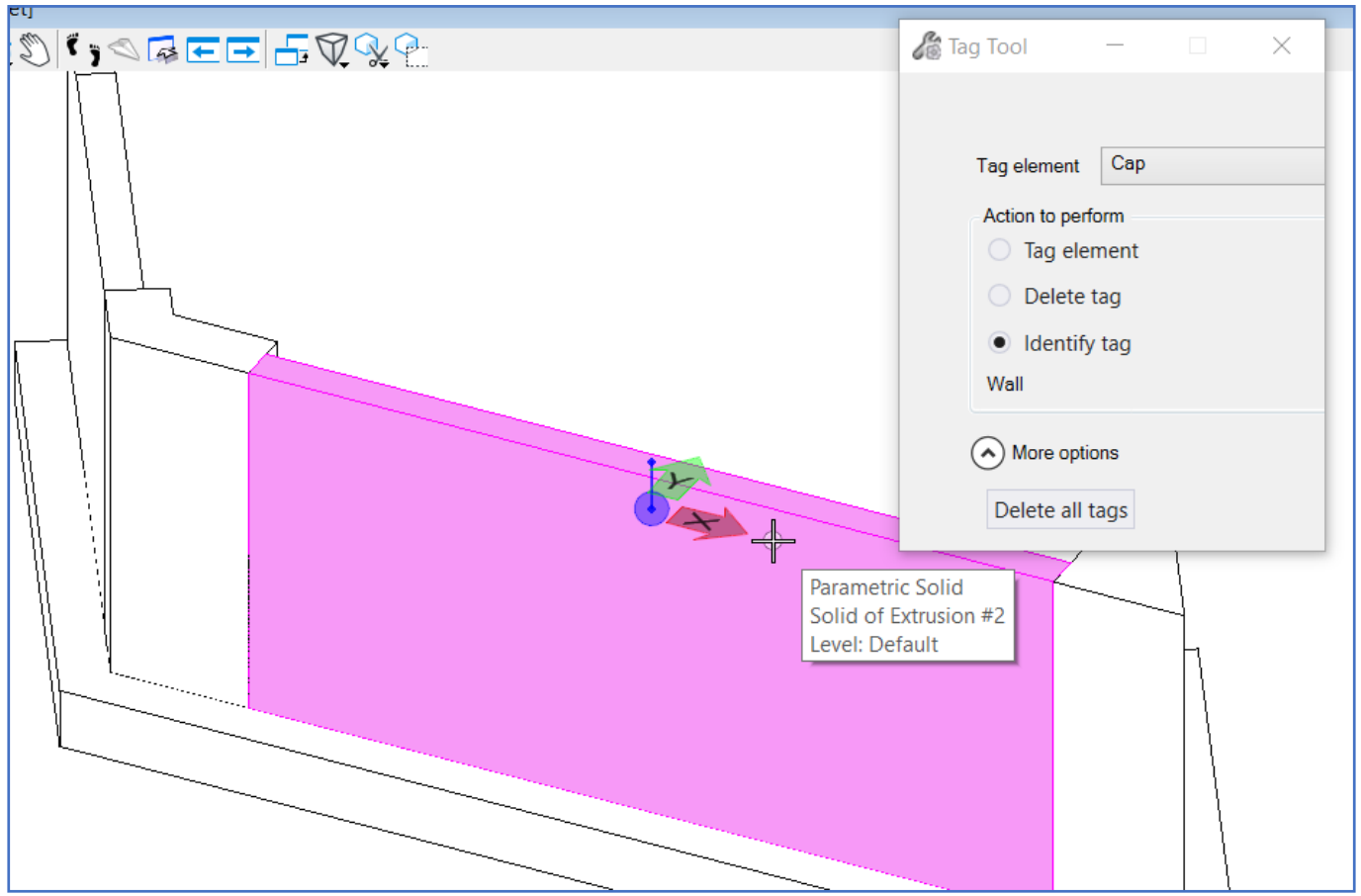
Creating Parametric Cells

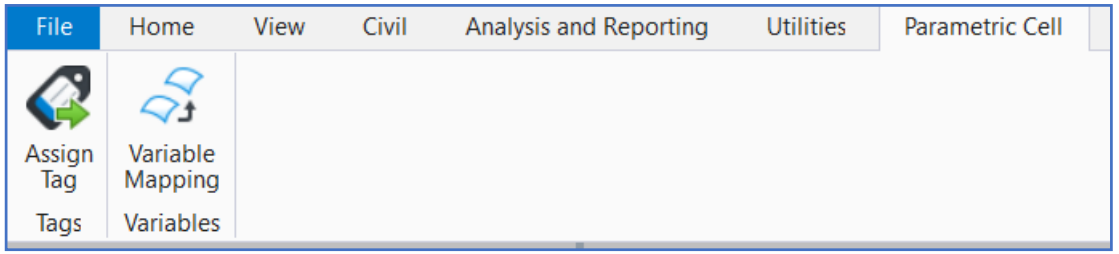
- Assign Tag
  - Tag different parts of the cell with OBM specific object tags, so they are recognized and reported on as needed. For example tagging a solid as a column allows OBM to report the volume, and as a pile to report the length.

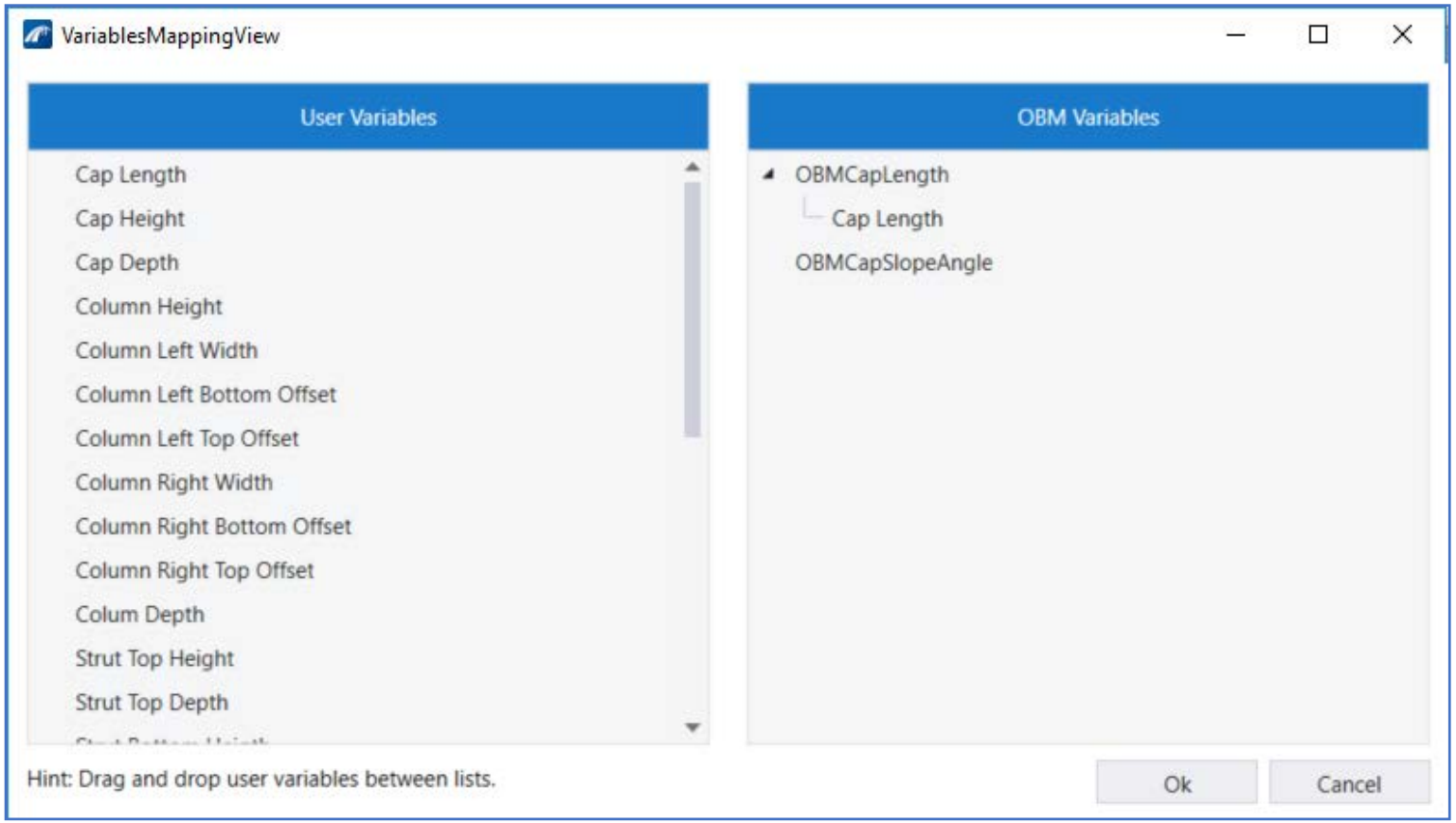




Creating Parametric Cells

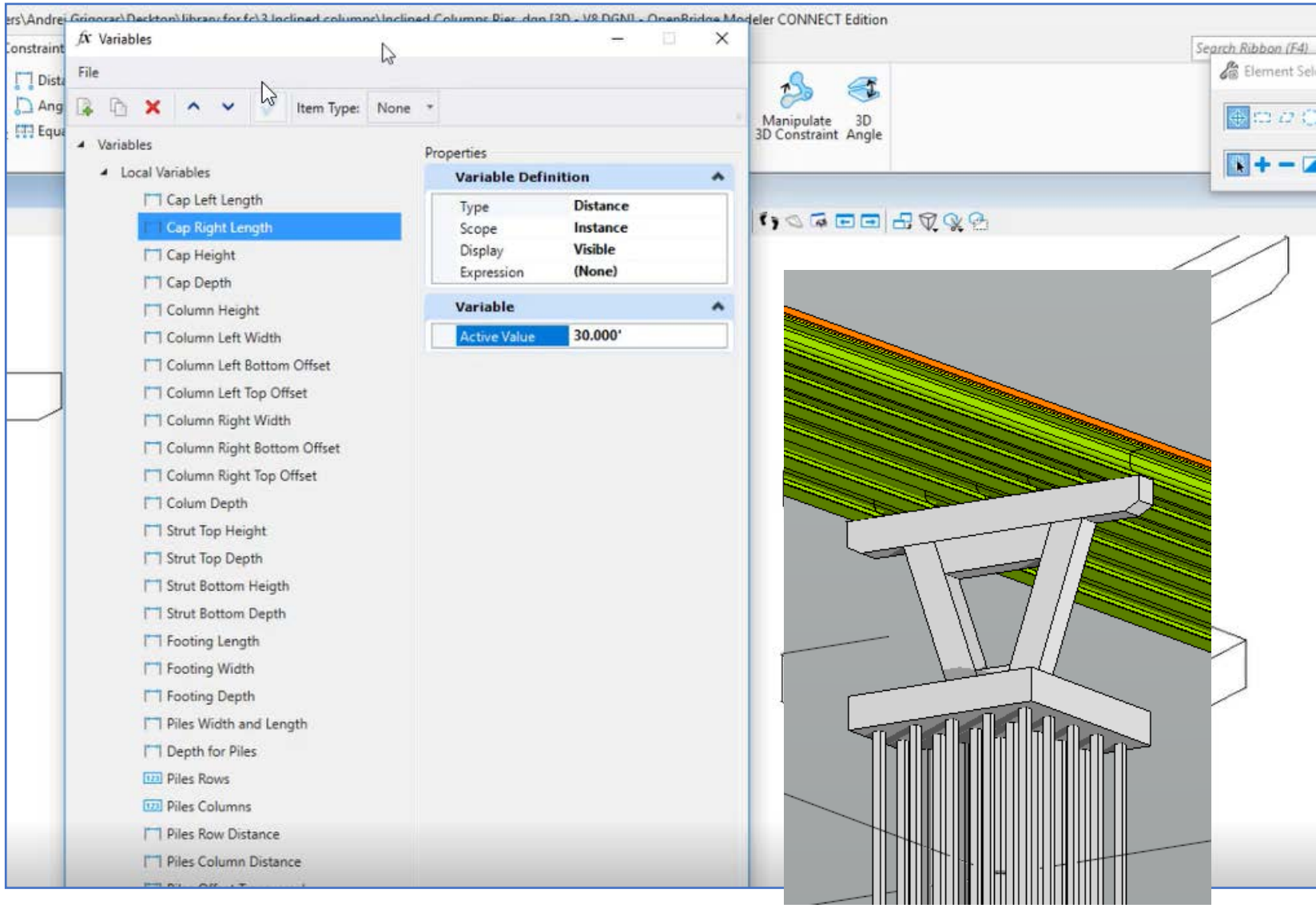
- Variable Mapping
  - Map user defined variables to OBM specific variables to allow the functional component to react to changes parametrically in OBM.
  - 2 variables exposed in this release
    - Cap Length
    - Cap Slope





Using Functional Components in OBM

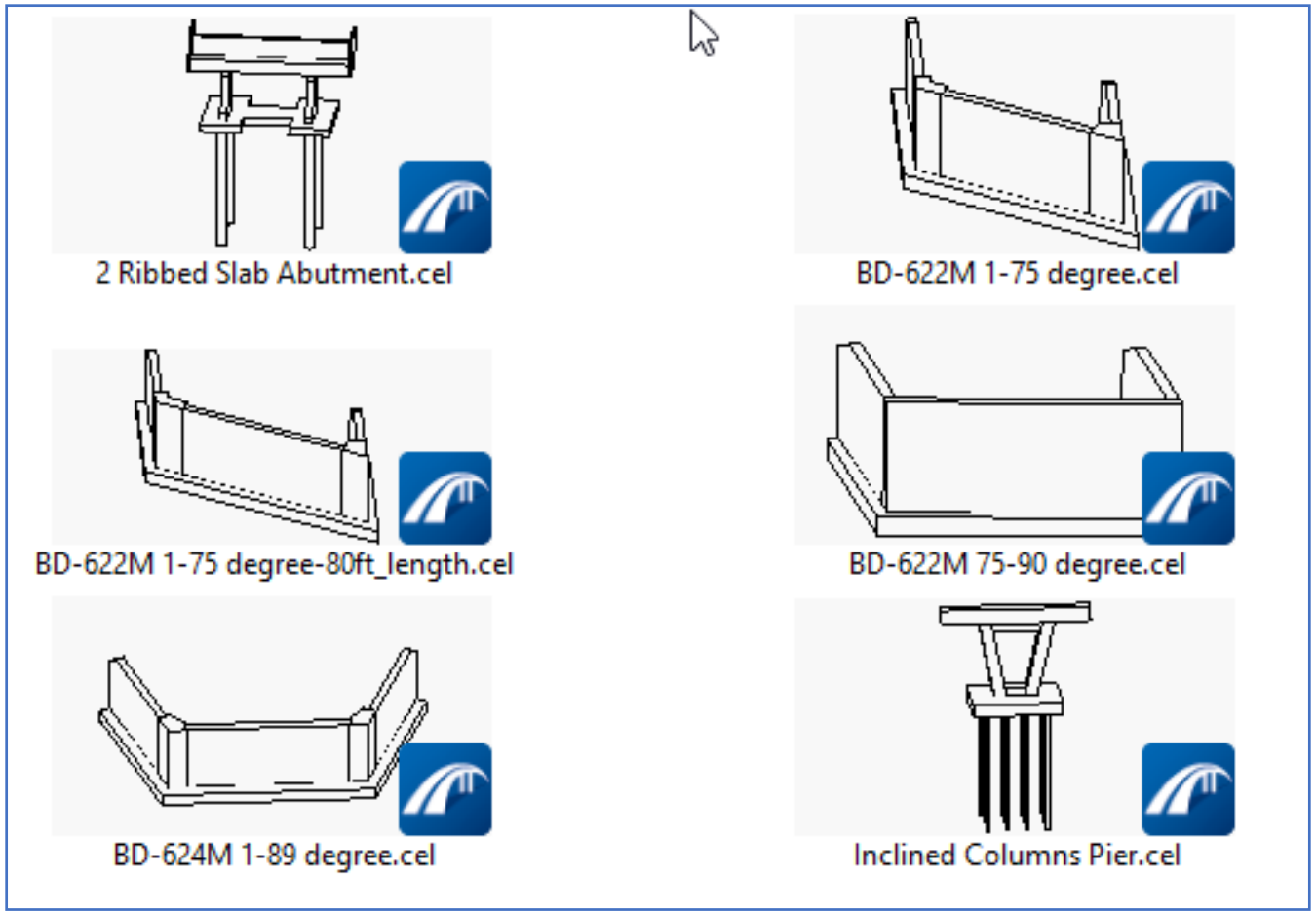
- Place FC in OBM file.
  - Substructure > Place Custom
- Either as Piers or as Abutments
- Adjust Variables on the fly
- Reacts to changes:
  - Slope and Cap length reacts automatically
  - Moving a Support Line moves the FC
- Quantities Report
- Future – ProConcrete Detailing



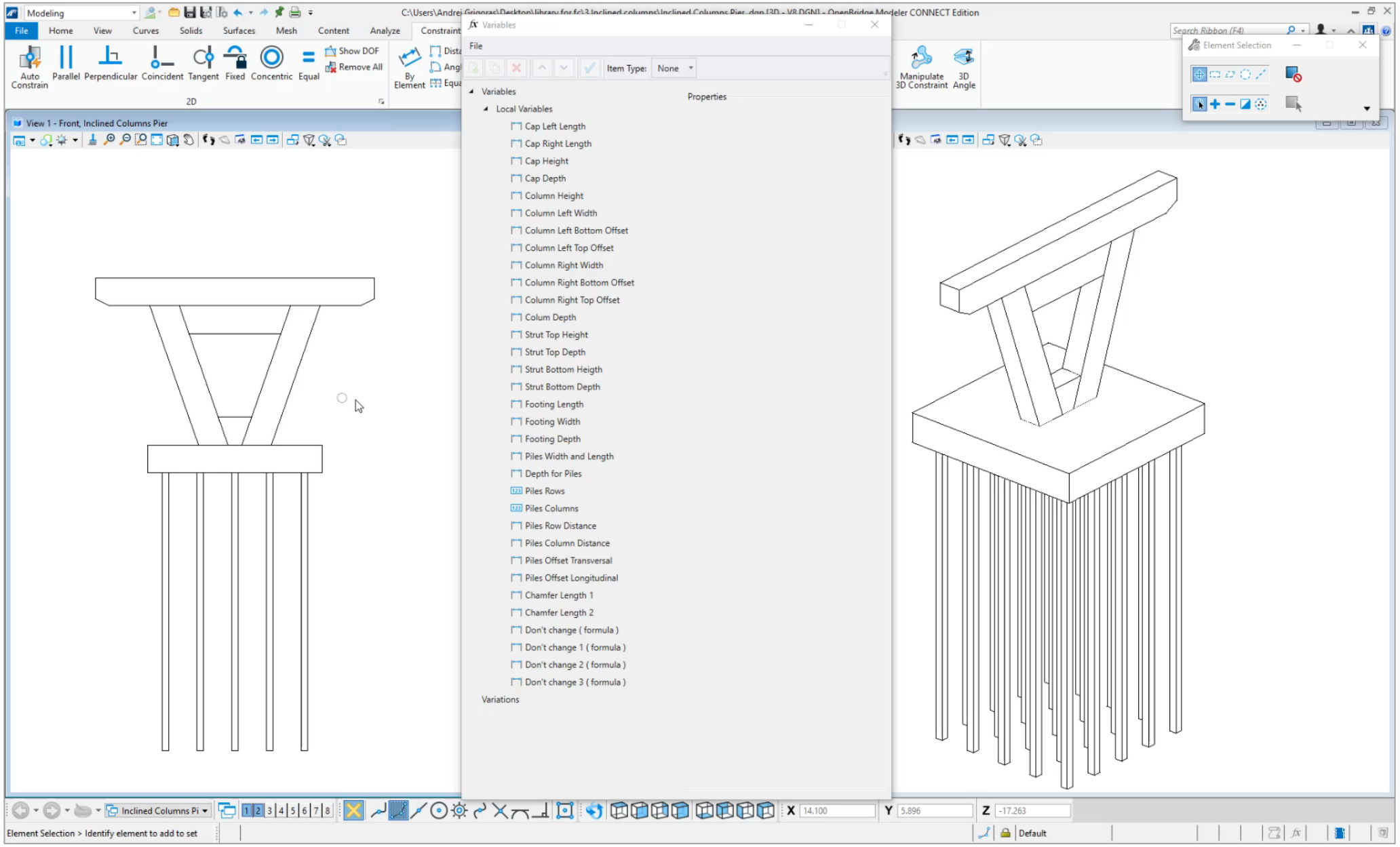
Library of Functional Components added

- Install Path
  - C:\ProgramData\Bentley\OpenBridge Modeler CONNECT Edition\Configuration\Organization-Civil_Civil Default Standards - Imperial\Bridge Templates\Functional Components

- Parametric Cells:
  - Inclined Columns Pier
  - PENNDOT Flared Wing Wall Abutment (< 75 degrees)
  - PENNDOT Flared Wing Wall Abutment (75-90 degrees)
  - PENNDOT U Type Abutment (2)
  - Ribbed Slab Abutment (China)



Substructure Modeling



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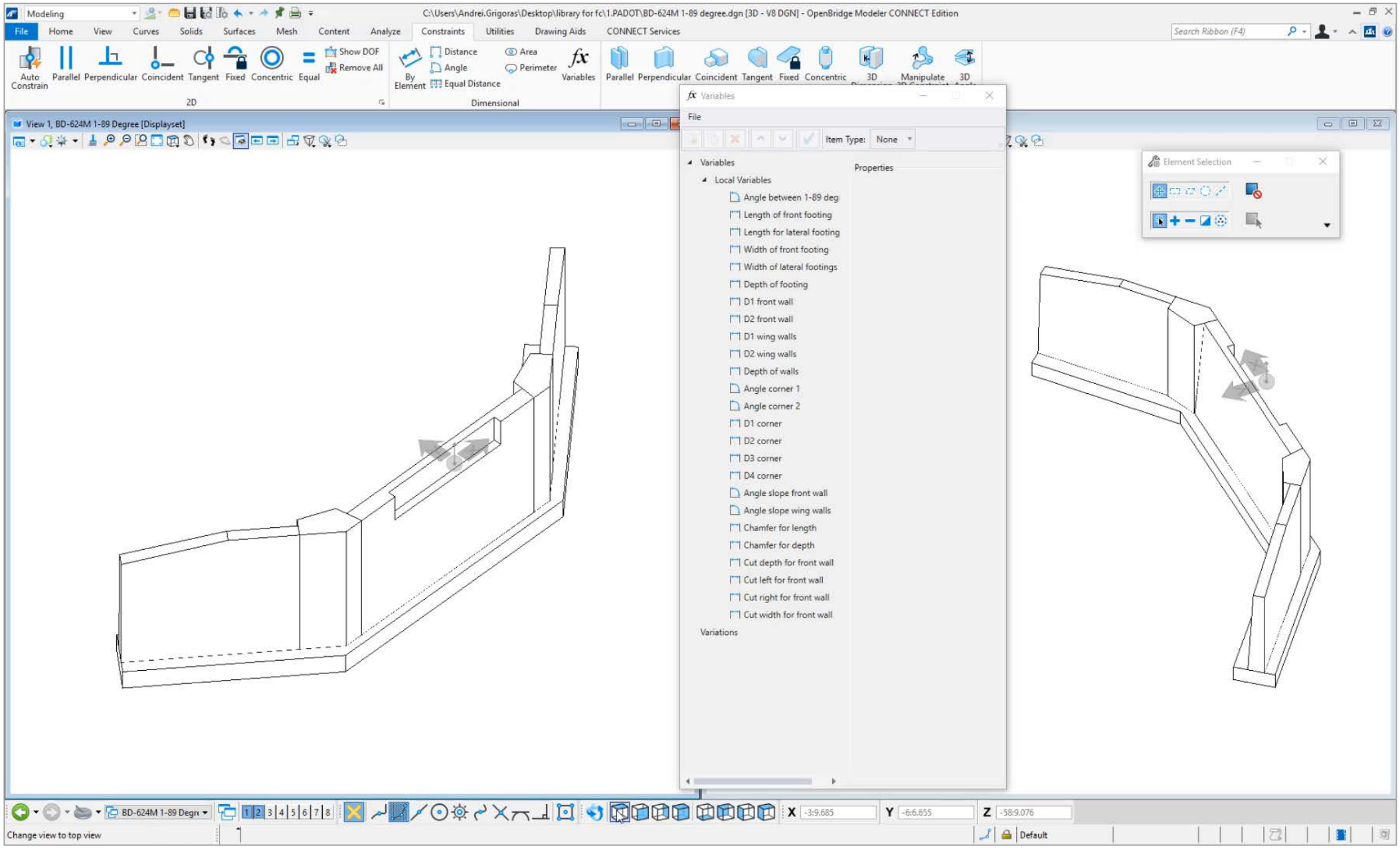
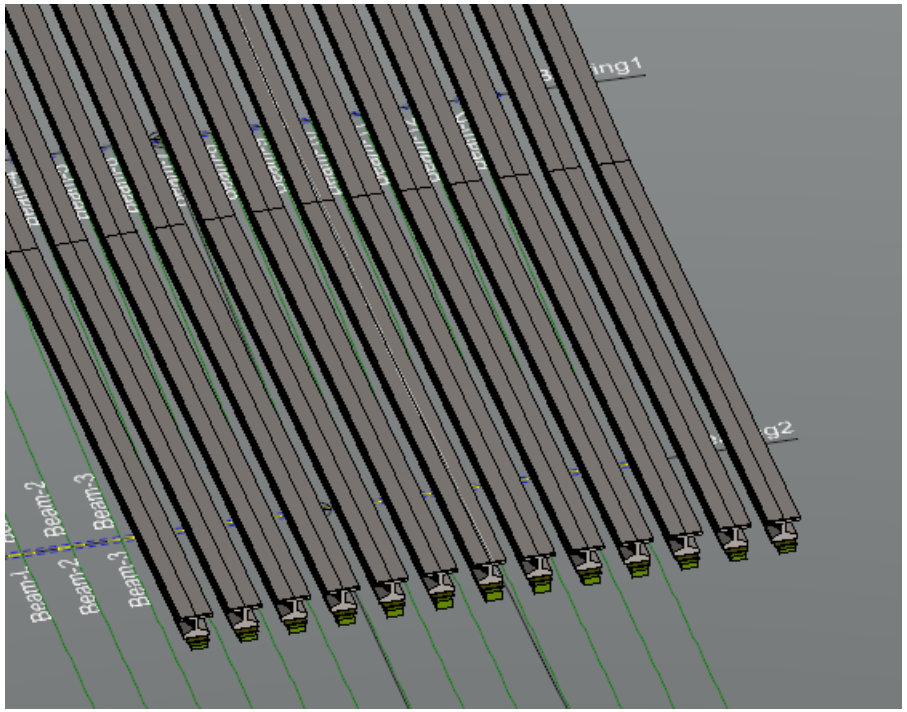
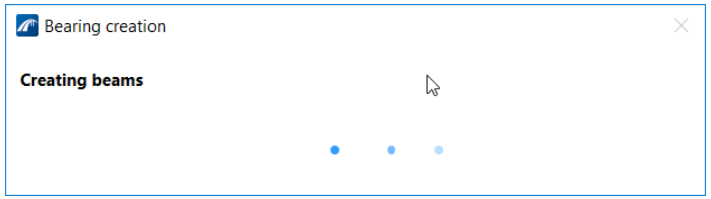


Speed & Stability

- Internal source code refactor
- Civil Schema related changes
- Fewer random crashes
- Wait Cursors added
  - Several actions which take a long time, now display a MS style progress message
- Bearing Placement Improvement:
  - From over 20+ minutes to a minute





Additional Enhancements

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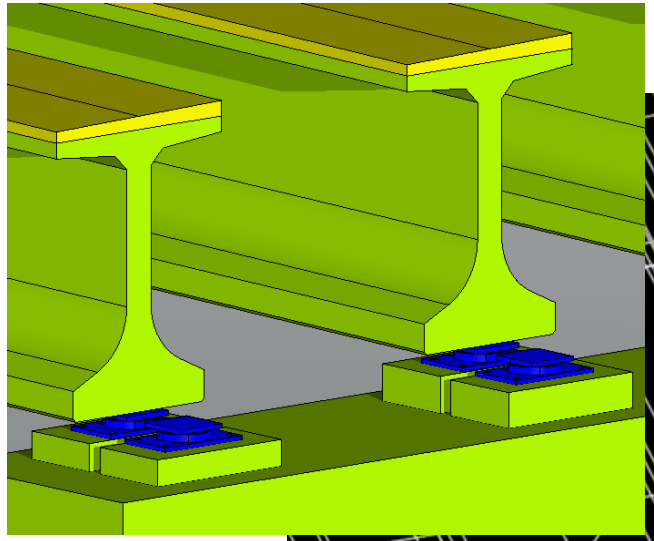
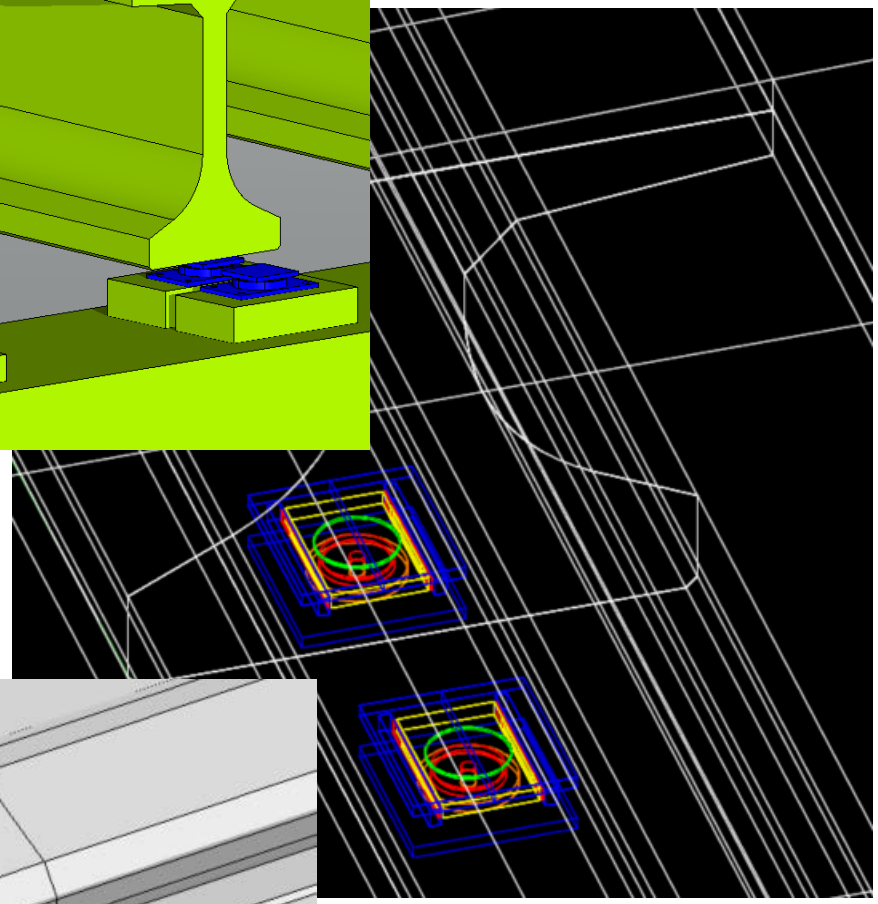
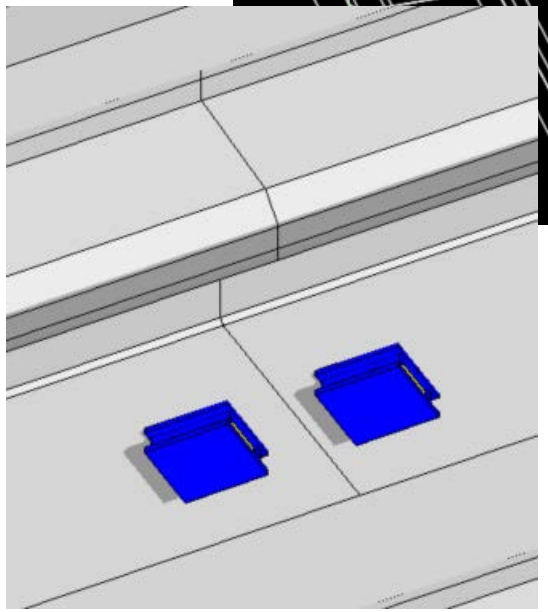
15. Updated to MicroStation, Power Platform 12
16. Updated to Civil - Open Roads Designer Update 7

Place cells as bearings

- This functionality was available in V8i.
- Now in CONNECT Edition
- A sample library of cells is part of the installation
    - C:\ProgramData\Bentley\OpenBridgeModeler CONNECT Edition\Configuration\Organization-Civil_Civil Default Standards - Imperial\Bridge Templates\BearingLib.cel



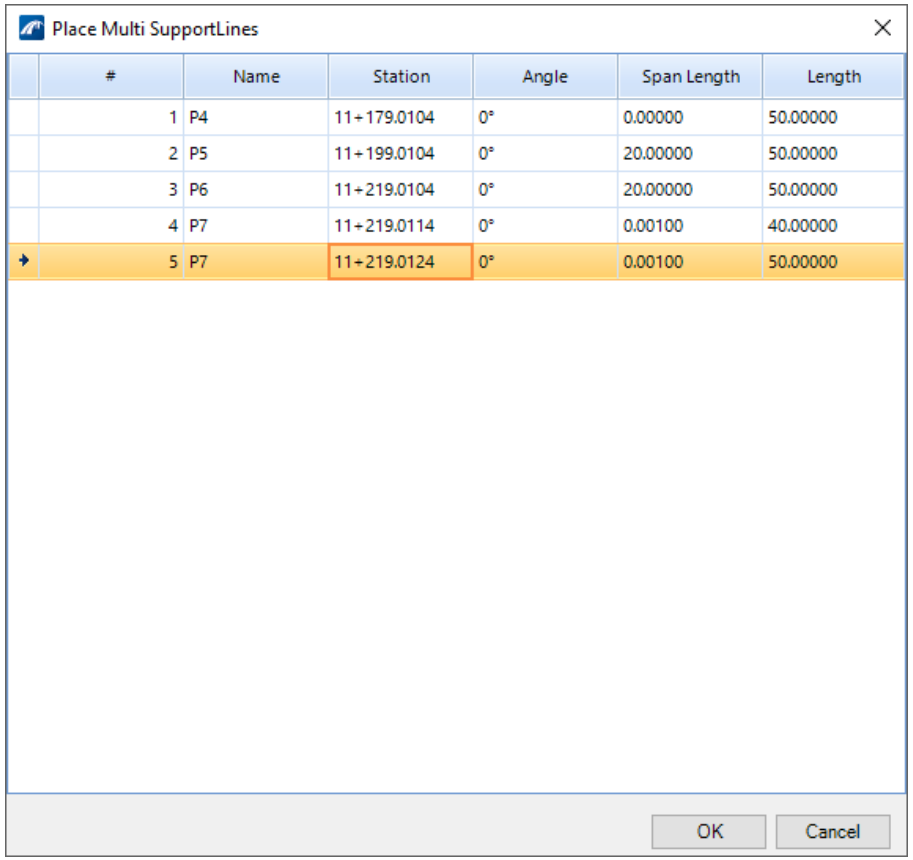




Multiple Support Lines dialog

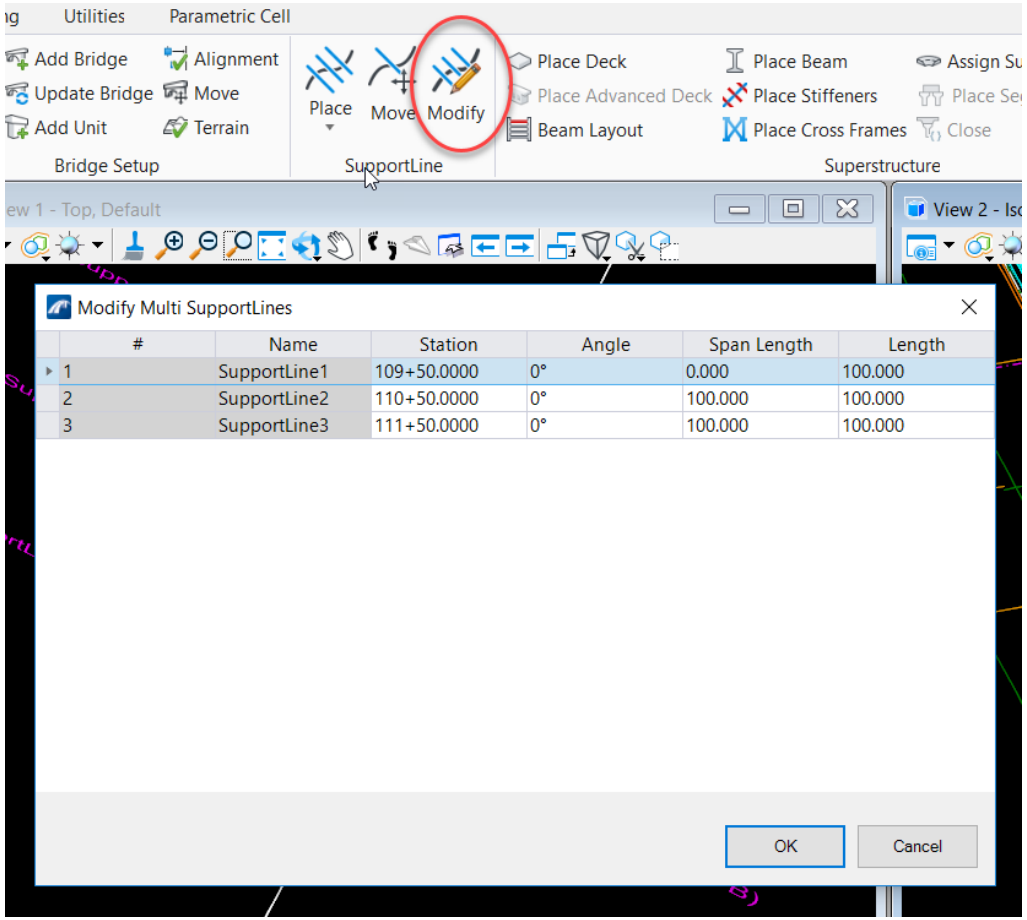
- Now supports cut and paste from Excel
- Makes users more efficient

- Note: On copy/paste from Excel, the Stations govern…. Not the span lengths. Make sure the Stations are correct in the Excel.



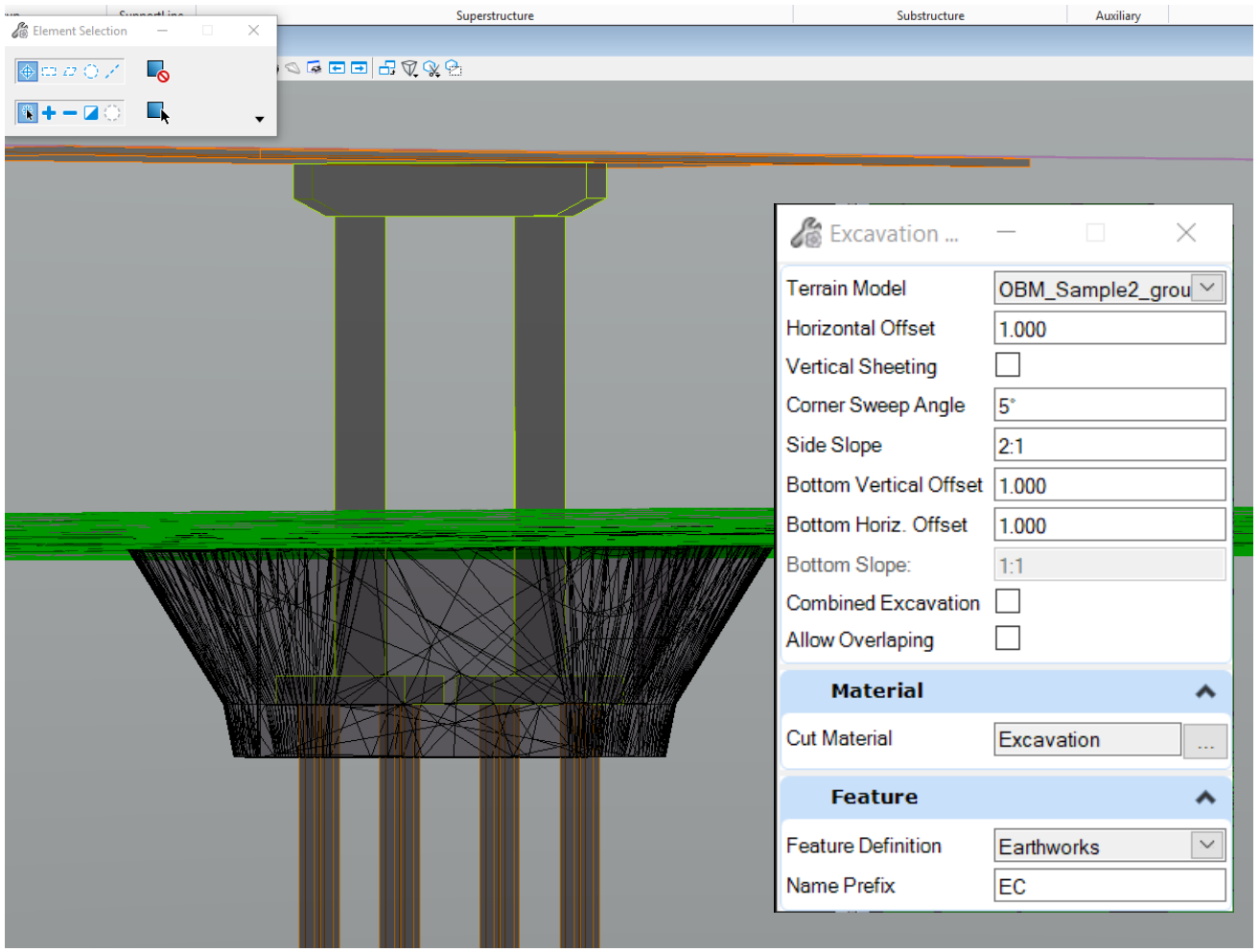
Modify Multiple Support Lines dialog

- Edit after placement
- Full Bridge reacts to changes in SupportLines lengths or stationing changes
- No “delete” or “add” options in the dialog



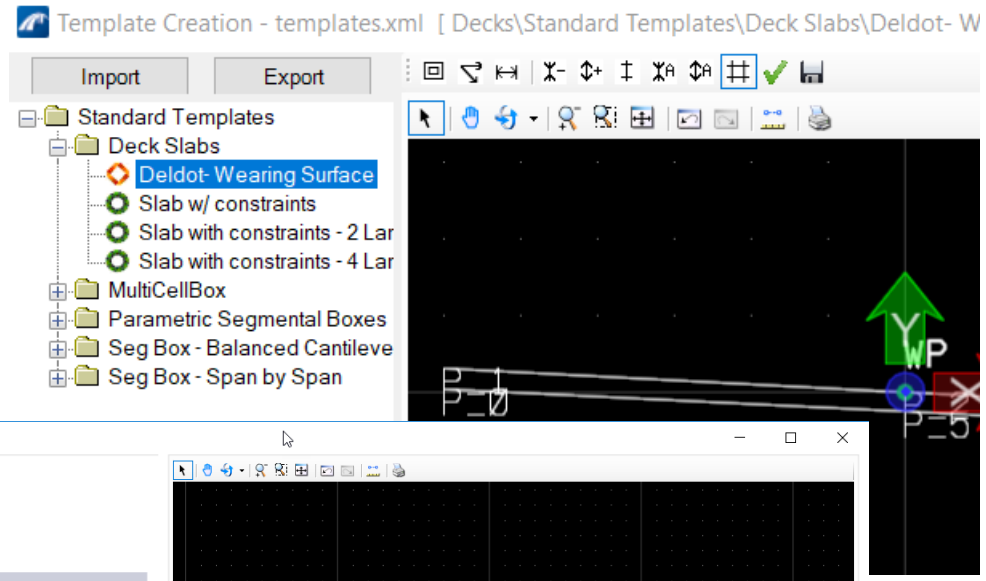
Excavation - Enhancement

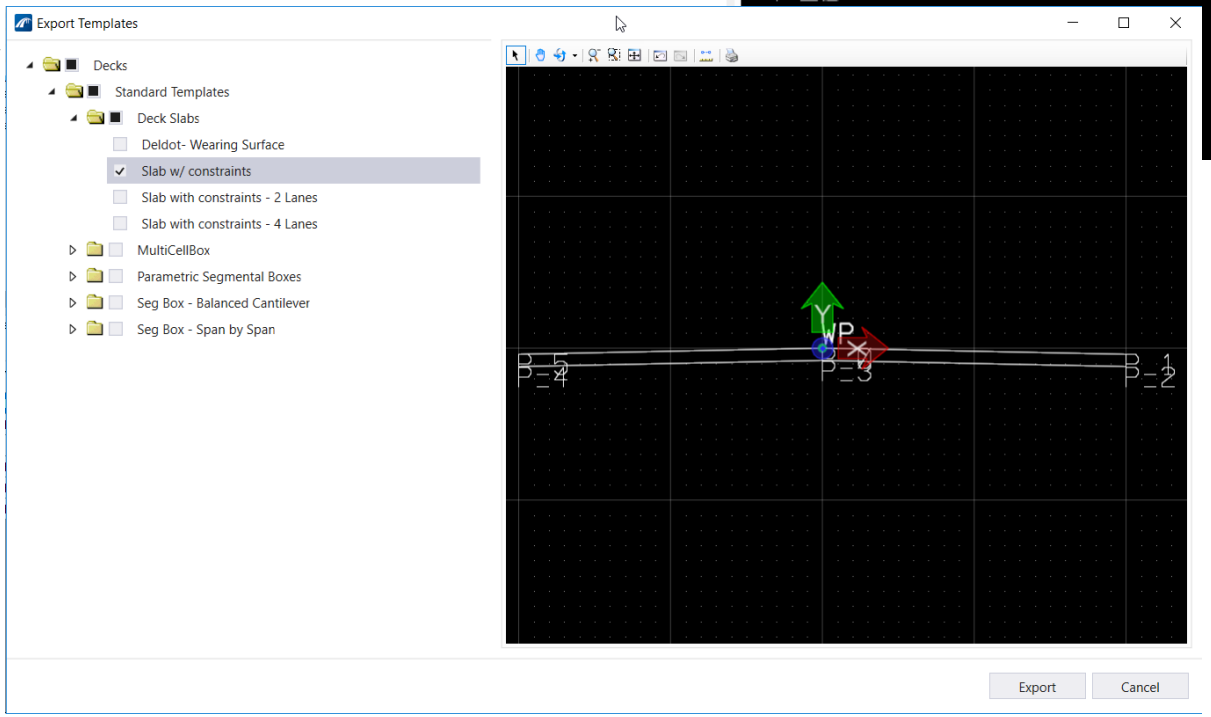
- To accommodate certain agency practices of excavating below the footing bottom elevation:
  - Bottom Vertical Offset
  - Bottom Horizontal Offset



Import/Export Super and Substructure Templates

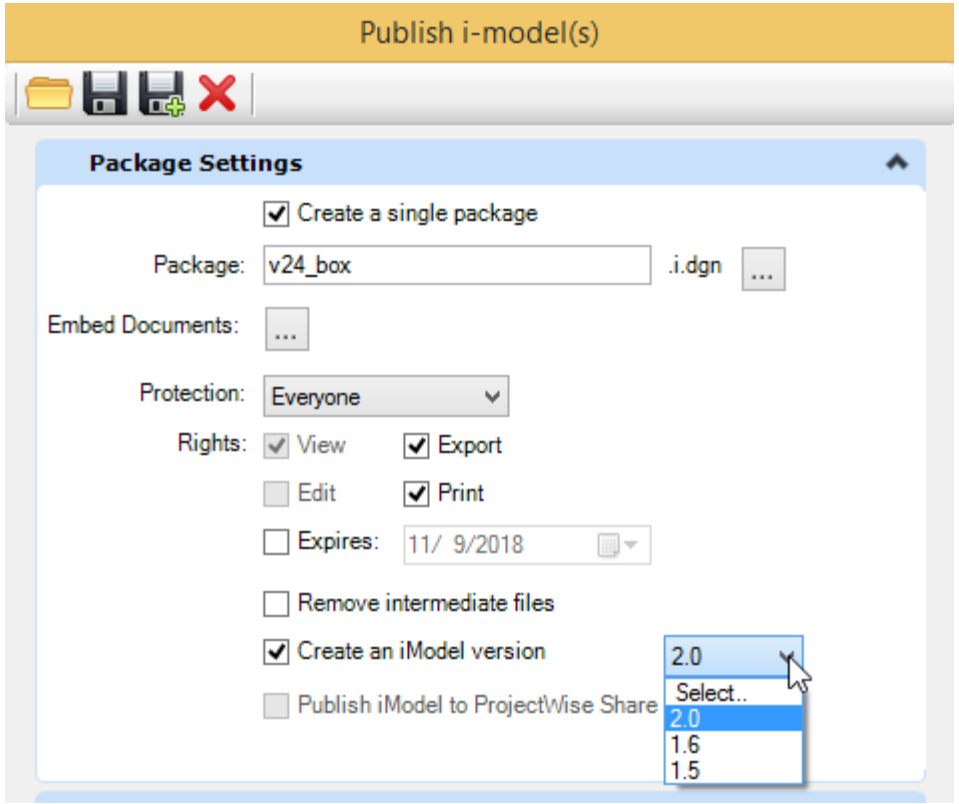
- Enhanced functionality
- Barriers, Beams, Column section, Decks, Piers Abutments
- Two options
  - From within the template library
  - Utilities > Import/Export > Super or SubStructure
- Select multiple/specific templates
- Preview Window





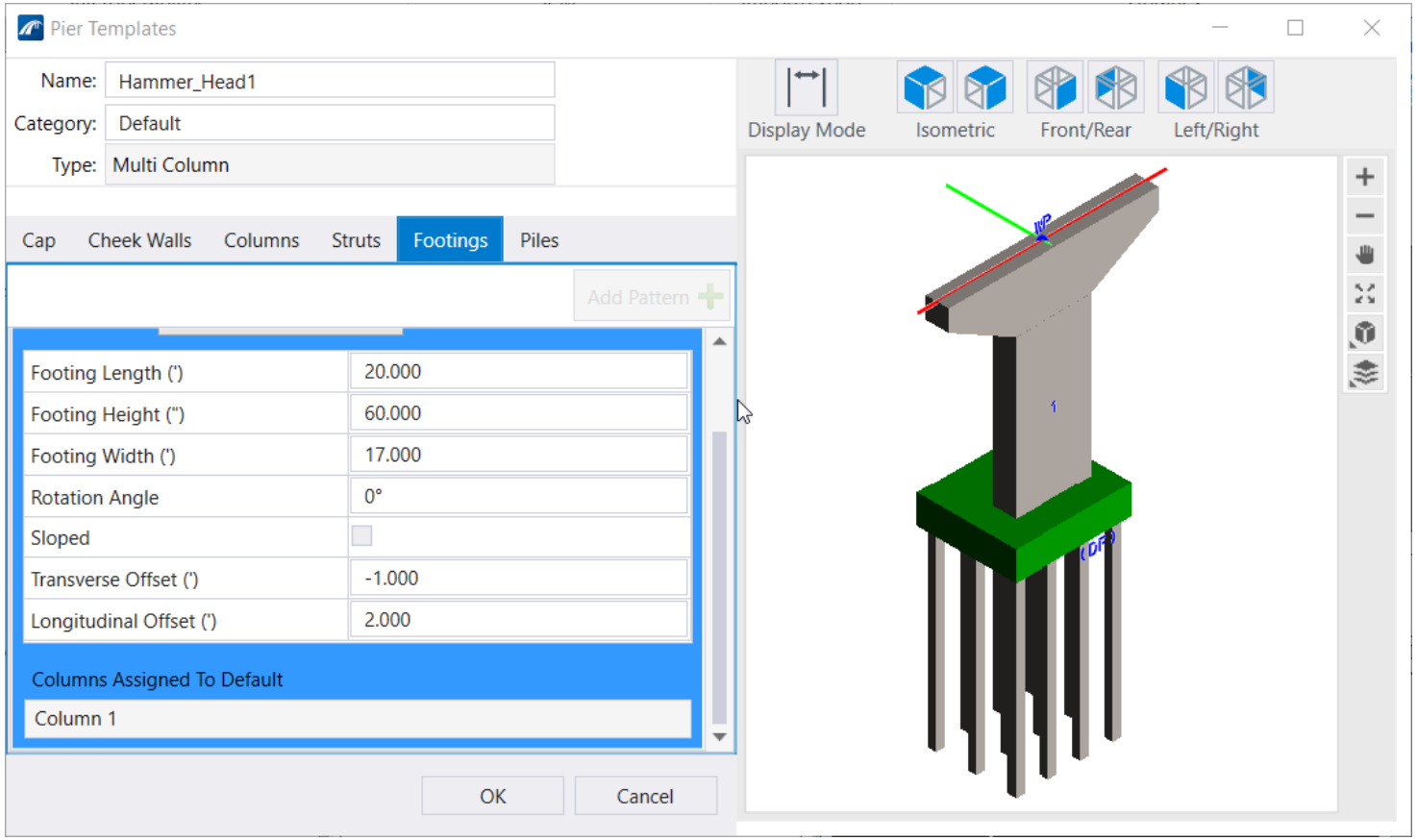
Publish to i-model 2.0 directly from OBM

- Required files now included explicitly as part of install



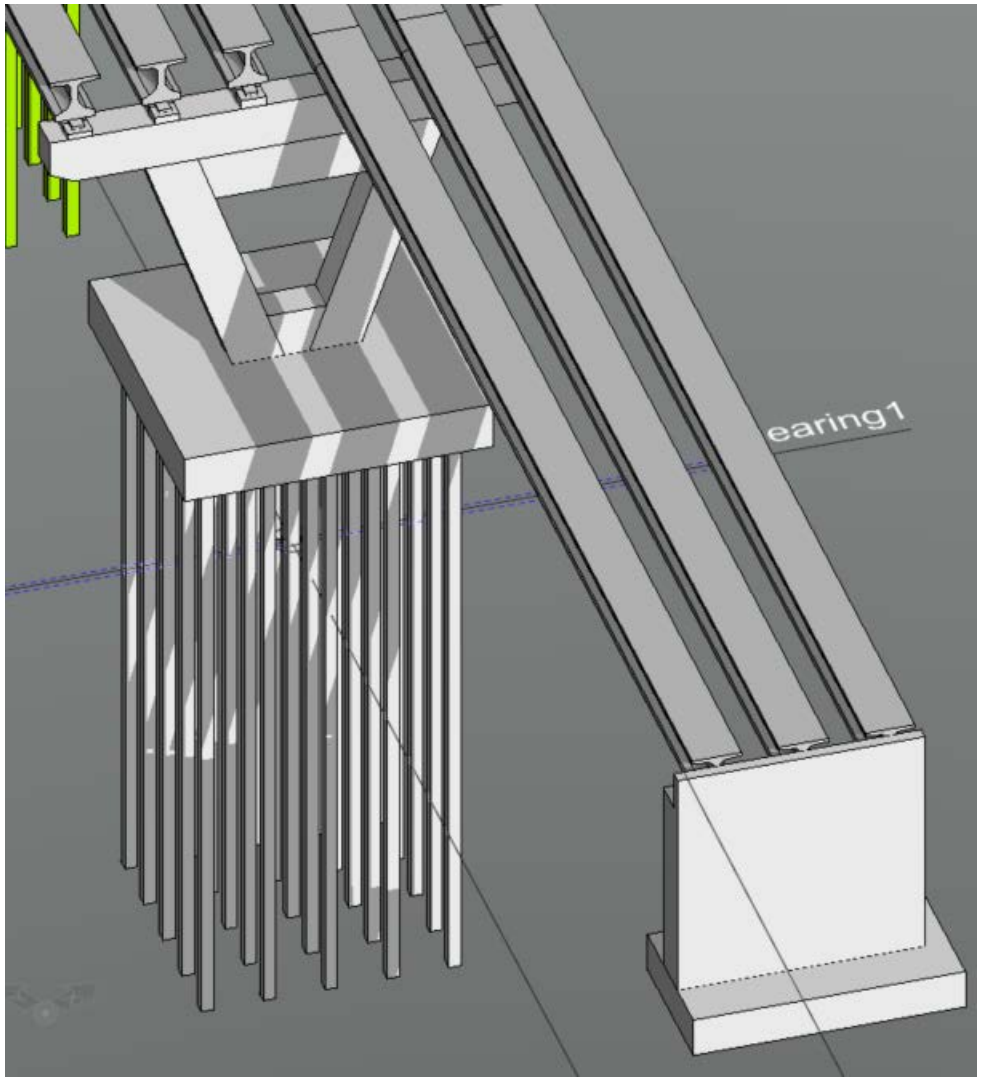
Offsets on Abutment and Pier footings

- Transverse offset
- Longitudinal offset
- Applicable to
  - Footings under Columns
  - Footings in Abutments
- Transfer to Analytics



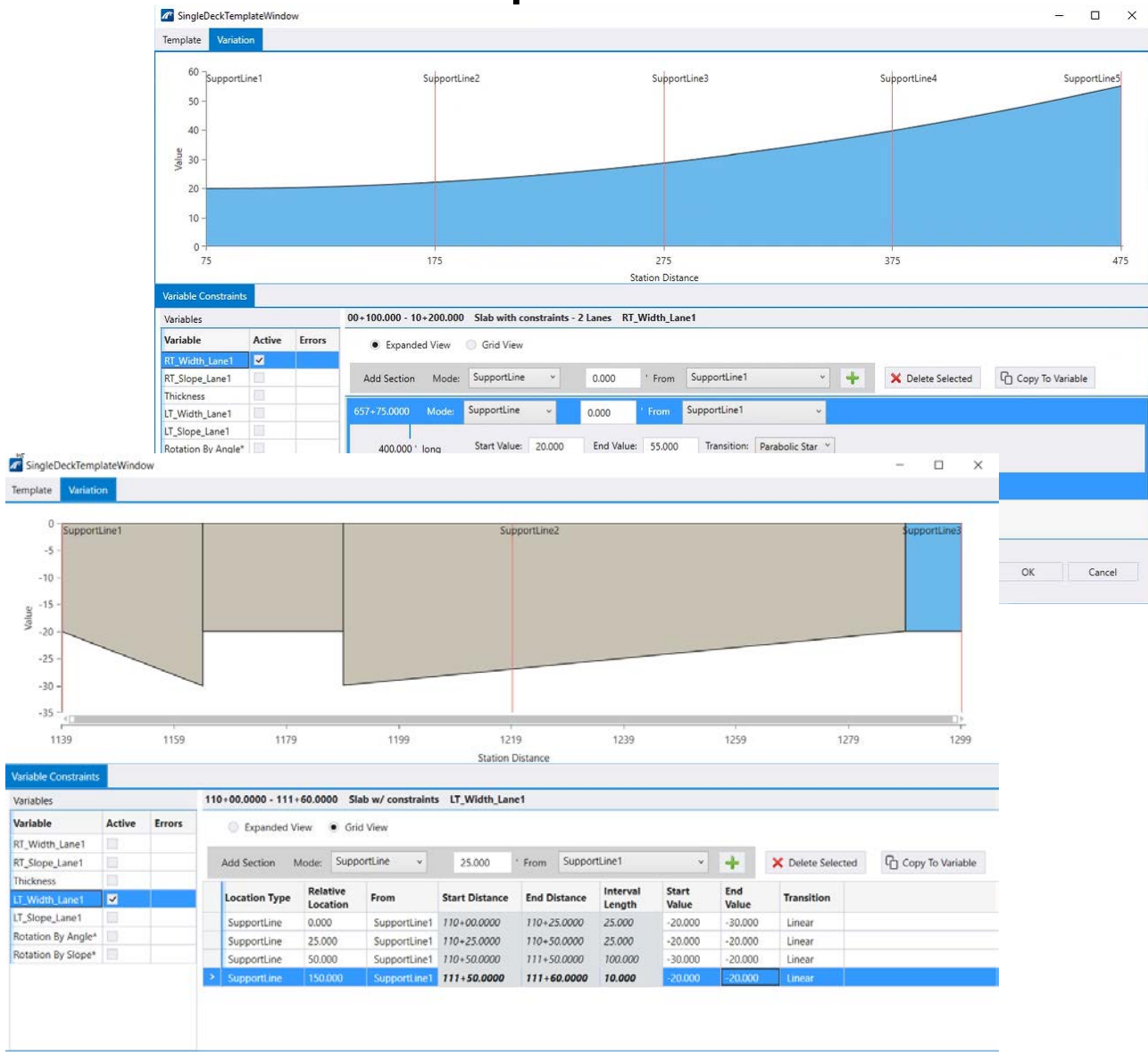
Footing Offset on Abutments and Piers

- Useful for staged construction modeling



Deck Constraints - User Interface Updated

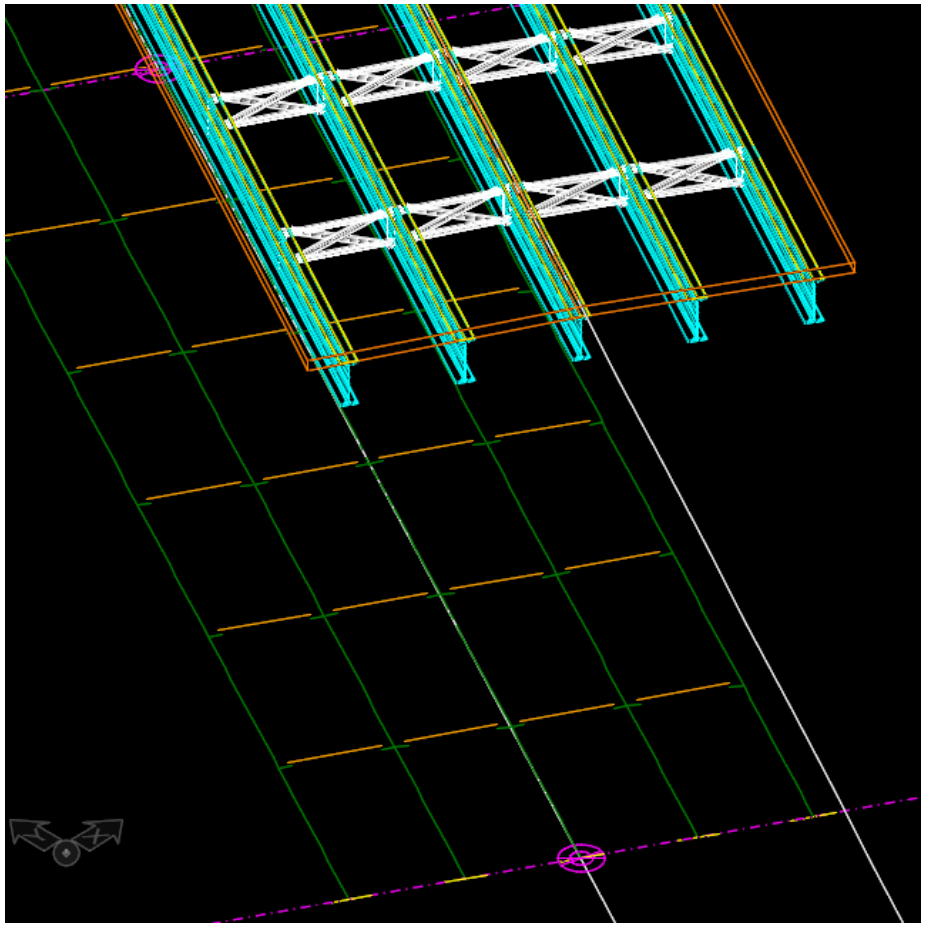
- Variable Constraints input improved
- Consistent user interface
- Updated Graphics provide better feedback for validation
- Grid View or Expanded View for enhanced clarity of input
- Allows copy/paste from Excel



Variable for Stiffeners/Crossframes

- To Control the distance between the Stiffeners and CrossFrames in the 2D Layout
- Edit Config file located at C:\Program Files\Bentley\OpenBridge Modeler CONNECT Edition\OpenBridgeModeler\config\appl\openbridge modeler.cfg

- OBM_CROSSFRAME_2D_LINES_OFFSET_METRIC
- OBM_CROSSFRAME_2D_LINES_OFFSET_IMPERIAL



OpenBridgeModeler.cfg - Notepad

File Edit Format View Help

```
# For Metric the value is measured in meters
OBM_CROSSFRAME_2D_LINES_OFFSET_METRIC=0.15
# For Imperial the value is measured in feets
OBM_CROSSFRAME_2D_LINES_OFFSET_IMPERIAL=0.50
```

Report on Tendon Lengths from RM

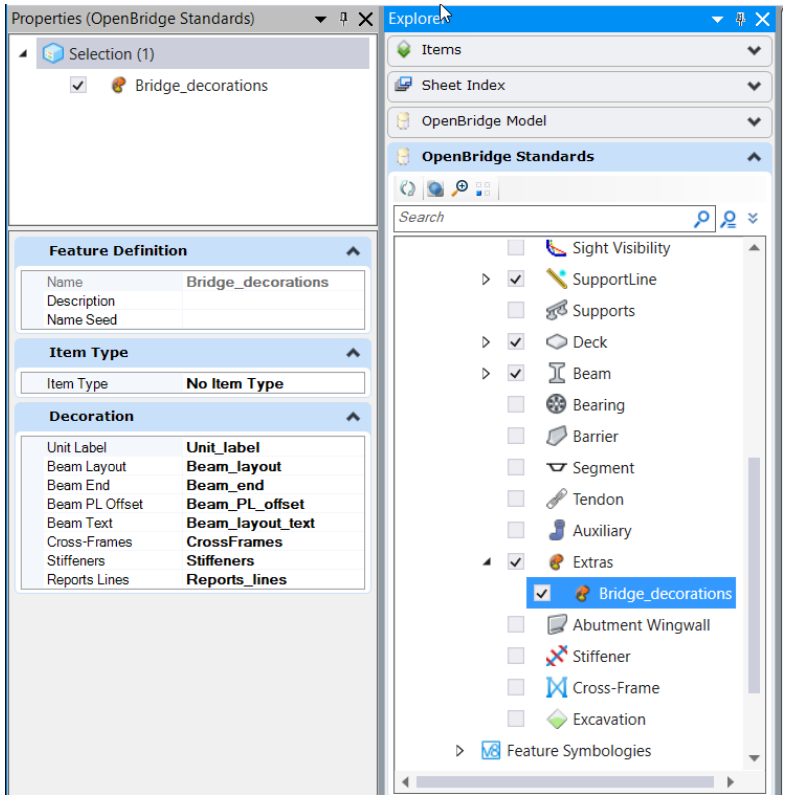
- OBM quantity reports now include Tendon quantity reports.
- Tendons are modeled in RM and transferred to OBM

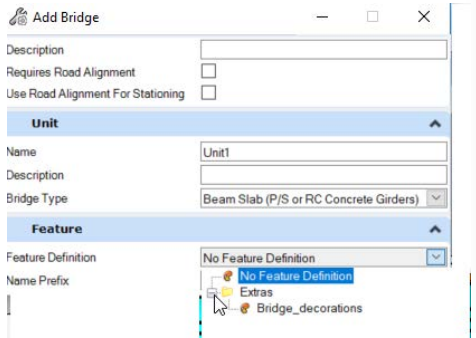
Miscellaneous Quantities

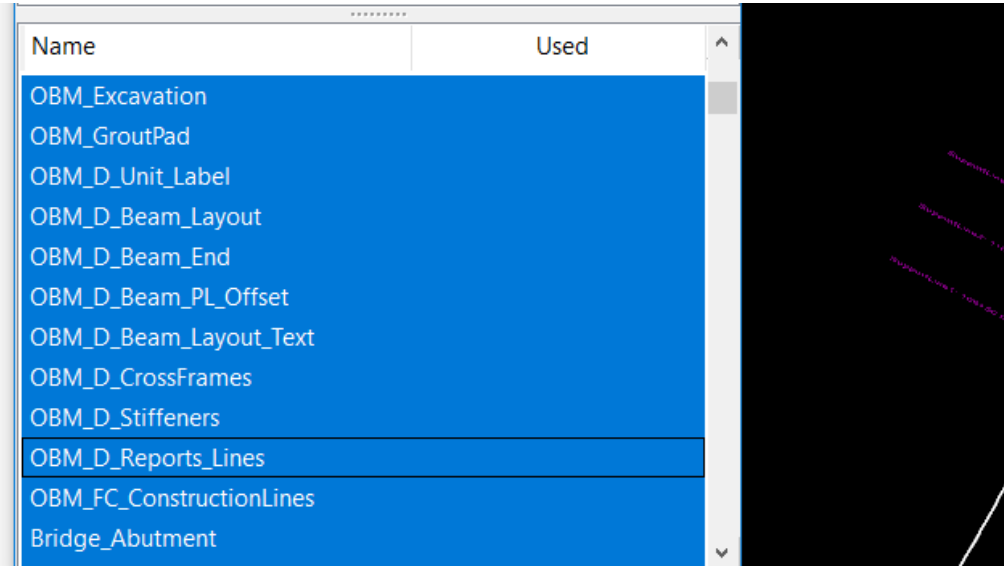
Segment Type	Material Name	Pay Unit	Unit Price	Quantity	Cost
Bearing	None	Each	1.00	9.000	9.00
Tendon	Strand-1570/1770	Meter	0.00	99.842	0.00
Tendon	Strand-1640/1860	Meter	0.00	50.167	0.00
				Total	9.00

Bridge - Features

- Decorations for Unit Label, Beam Layout lines, Beam End lines, Beam PL_Offset lines, Beam Lines Labels, Cross Frame and Stiffener 2D lines, Deck Elevation (Report lines)
- No longer using the OBM_Default Level
- Several Levels defined but not yet used

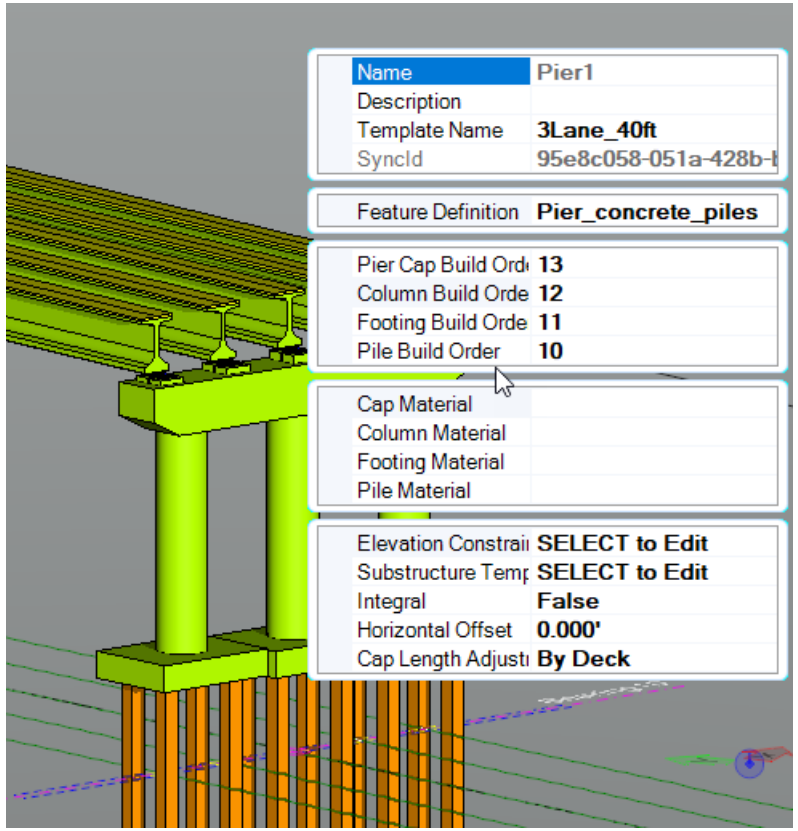






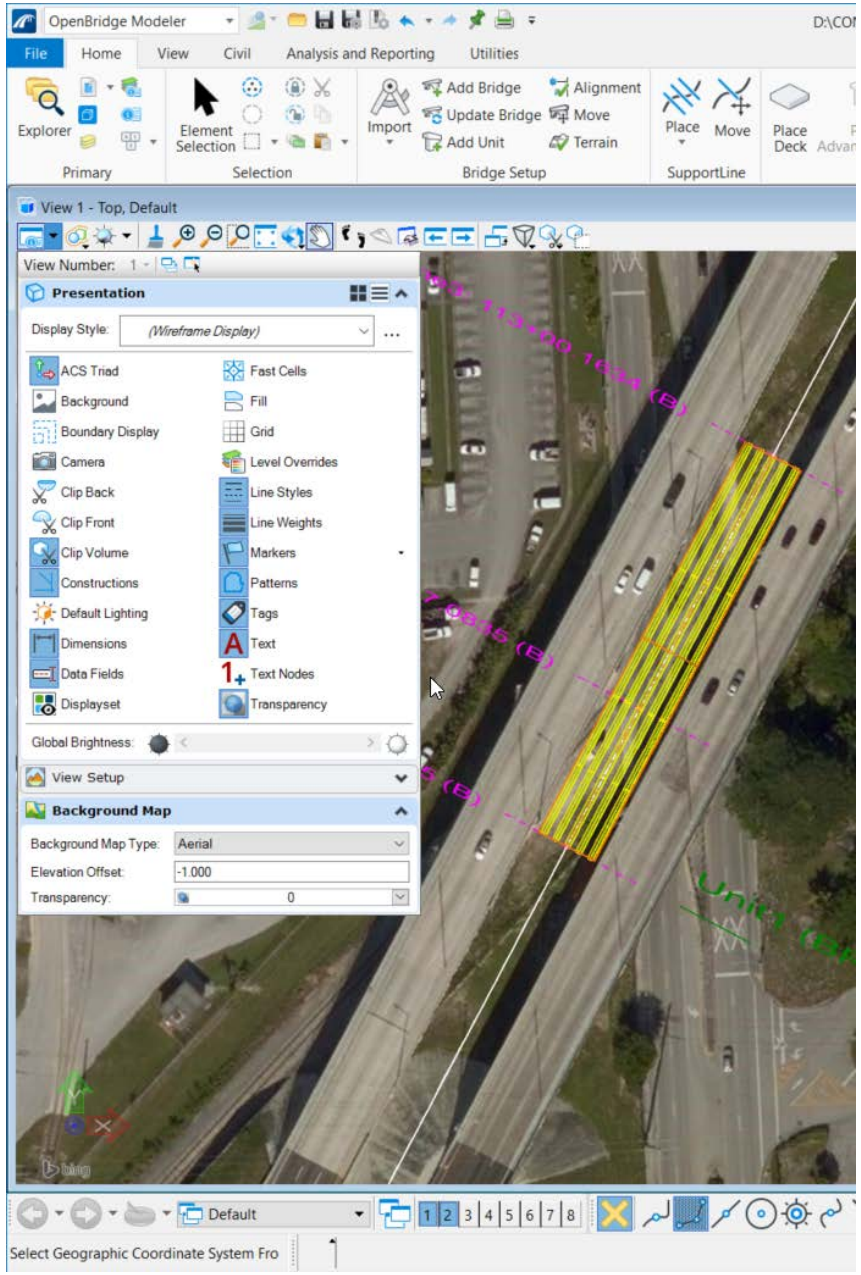
Build Order for Substructure

- Previously entire pier had one build order.
- Now broken up by cap, columns, footing, piles
- Build order was part of Feature. Now separated to keep symbology separate from Bridge specific functionality
- Used for providing accurate staging information to RM



Bing Map Background enabled

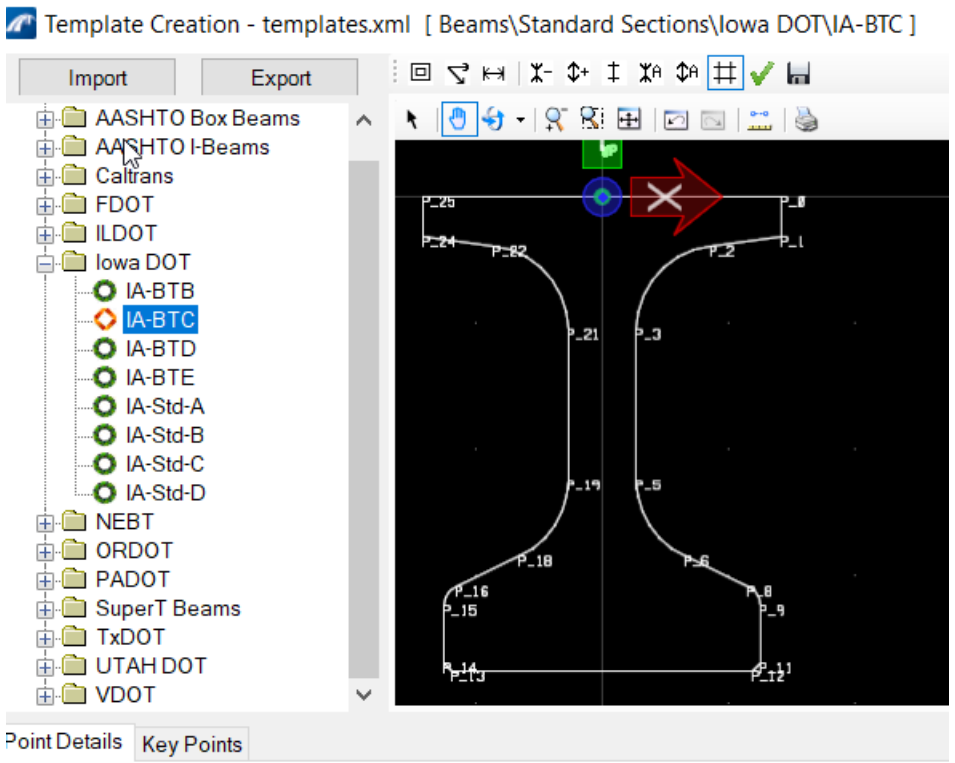
- Provides real world context for project
- User must be “CONNECTED”, i.e. signed into CONNECTION client
- Geographical Coordinates must be set
- Set Background Map options in View/Presentation

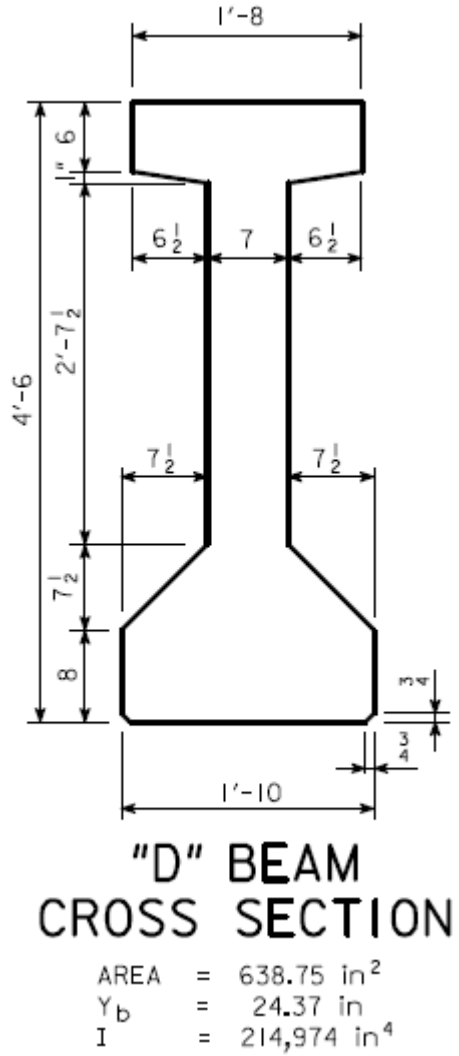


Beam Template Library:

- Iowa DOT sections added
- BTB, BTC, BTD, BTE
- A, B, C and D

Beam Designation	Height in	Area in^2
BTB	36.00	631.24
BTC	45.00	689.74
BTD	54.00	748.24
BTE	63.00	806.74
A	32.00	310.94
B	39.00	381.94
C	45.00	563.94
D	54.00	638.19



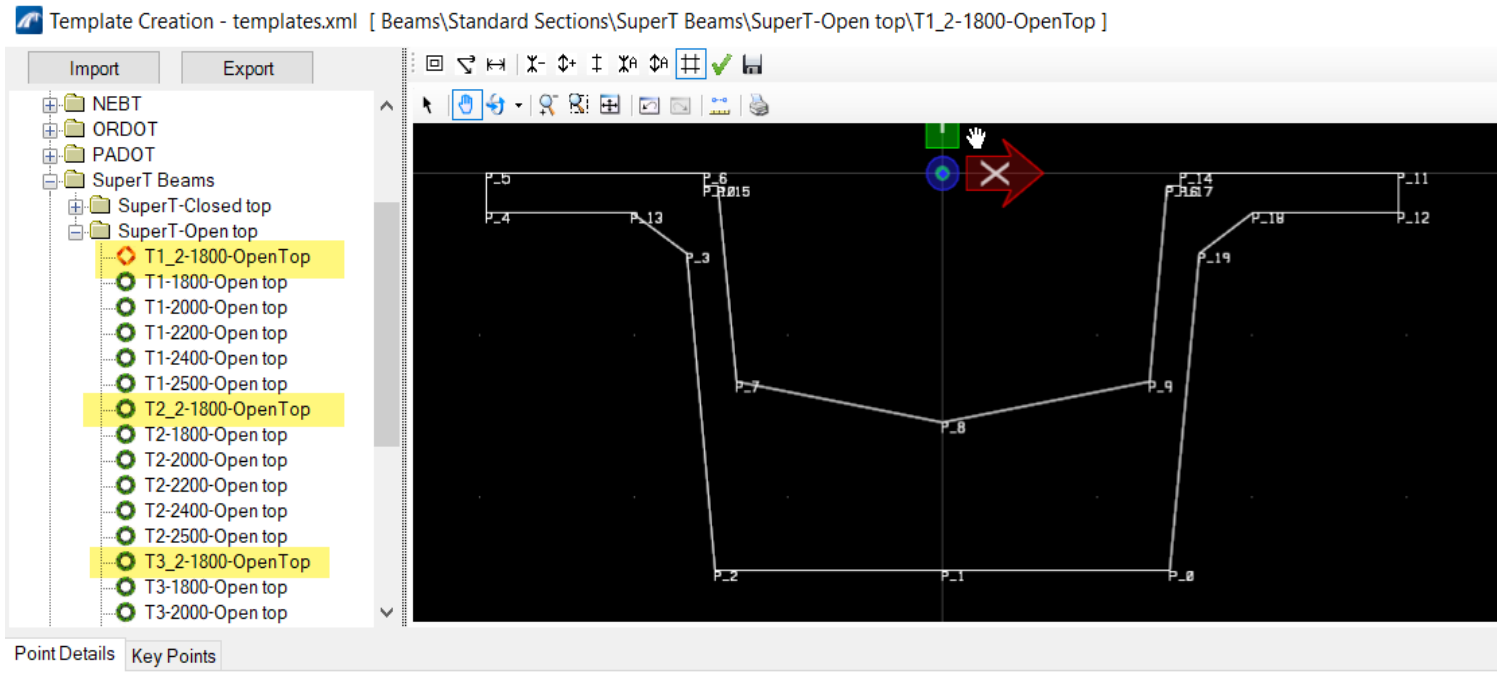


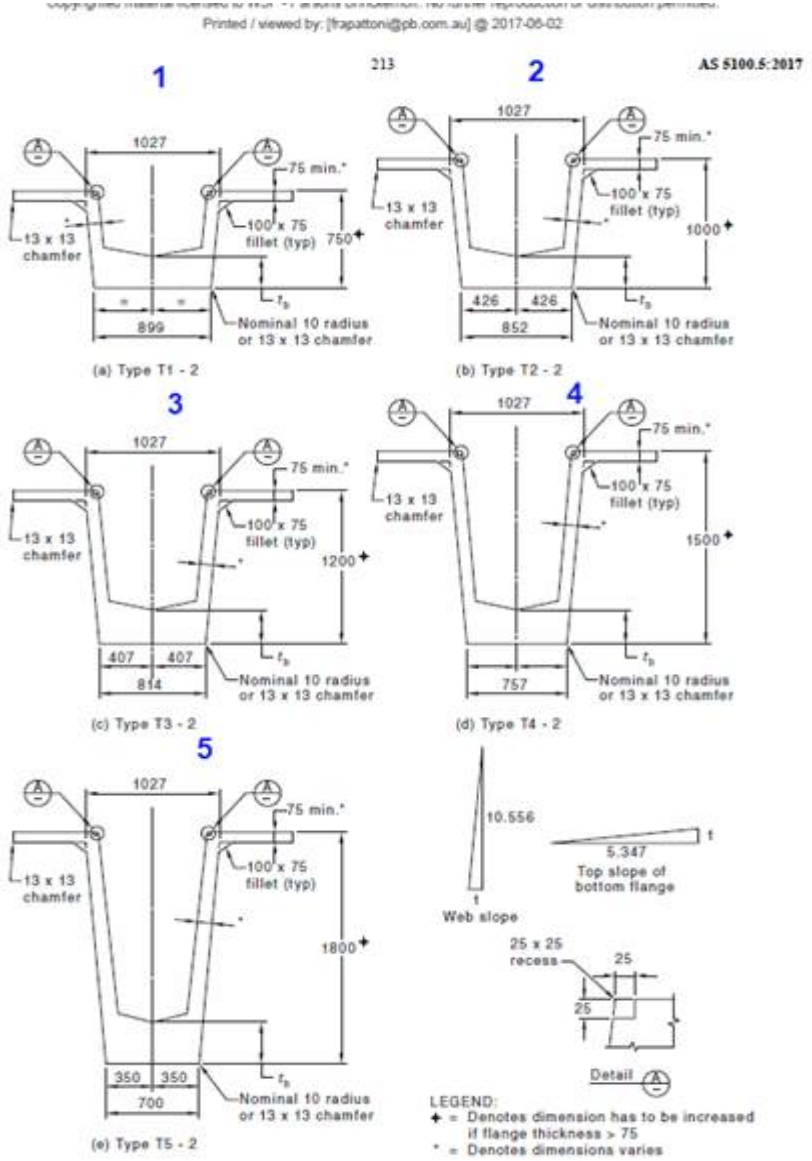
"D" BEAM
CROSS SECTION

AREA = 638.75 in^2
Y_b = 24.37 in
I = 214,974 in^4

Beam Template Library:

Australia Super Tee Beams added.
Updated sections T1_2, T2_2, T3_2 etc.





Thank You !

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