OpenBridge Modeler: What is it and how can I use it today?

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Agenda:

– Introducing OpenBridge Modeler
– OpenBridge Modeler Features
– OpenBridge Modeler Summary
– Q&A
What is OpenBridge Modeler (OBM)?

- A comprehensive bridge information modeling application built on Civil Framework addressing the geometric layout, connection to analysis and design, visualization and documentation for any type and scale of bridge project.
In English ...
OBM: Heart of Bentley Bridge Analysis

- Interoperable
  - Civil, Bridge Design, Detailing, Inspection
OBM Principal Benefits

• Direct connection/referencing of Civil data
  – Horizontal Alignment, Vertical Profile, Ground Contours
  – GEOPAK, InRoads, MXROAD

• Visualization, Rendering, Clash Detection, Quantities

• Interoperability with:
  – Analytics:
    • LEAP Bridge, RM Bridge
  – Operations and Maintenance
    • InspecTech
  – Detailing and Documentation:
    • ProStructures, MicroStation
OpenBridge Modeler - Features

Enabling Bridge Information Modeling and Data Reuse
User Interface

Ribbon Tool Bar

Element Info.

Bridge Explorer

3D

Element Handlers

Custom Rules

Built on Power Platform V8i
Supported Bridge Types in Version 1.0

- Pretensioned Concrete
  - Girder + slab bridges

- Steel girder + slab bridges
  - Rolled Shapes
  - Built-up
Supported Bridge Types in Version 1.0

• Segmental bridges
  – Span-by-span
  – Balanced cantilever

• Cast-in-Place Concrete Boxes and Slabs
Template Based Definitions

- Flexible and powerful geometric definition of Templates
- Define relationships between points and how they could vary along the bridge length
- Powerful graphics guide input
- No artificial parameter limits
- Start with predefined templates or create your own.
Precast Girder Bridge Modeling

- Quickly create/update complex bridges using simple parameters
- Use girders straight from your CONSPAN library
- Define your own girders in OBM Library
- Full 3D Model generated
- Send to LEAP Bridge Concrete with push of a button
Steel Girder Bridge Modeling

- Simply supported or continuous beams
- Beam path can be concentric to centerline alignment or an independent alignment
- Use standard rolled shapes or built up plate girders
- Girders can have linear, parabolic or circular haunches
- Flanges can vary in width and depth as well
- Send to LEAP Bridge Steel with push of a button
Segmental Bridge Modeling

- Quickly create/update complex bridges using simple parameters
- Typical, Pier, Closure Segments
- Flexible support for complex Section variations
- Report Segment Weight, Volume and Surface Area
- Full 3D Model generated
- Send to RM Bridge – with push of a button
Substructure Modeling: Abutments & Piers

• Abutments
  – Stem Wall
  – Pile Cap
  – User Defined

• Piers
  – Wall Piers
  – Multi-Column Piers
  – Hammer Head Piers
  – Pile Bents
  – User Defined / Custom
Bearings and Pedestals

- Detailed modeling for all bridge types
- Catalog Services: 3D Solids from manufacturers
- Individual Beam Seat modifications
- Stepped Cap Options
- Beam Seat Elevations Reports
- Quantities Report
Analytics Connection

• Model in OBM, and design using
  – RM Bridge
  – LEAP Bridge

• Direct links for Physical to Analytical model
  – Analytic Model confirmation option

• One way connection in initial version
Integration with ProStructures

• Concrete objects are automatically recognized for appropriate tool in ProStructures
  – Footings
  – Columns
  – Beams
  – Slabs

• Provide Reinforcing using ProConcrete tools and also to Label & Detail
Operations and Maintenance

- Generate i-models with rich data
- Reuse i-models in InspecTech
- Inspectors have accurate 3D Model during inspection and when filing reports
- Useful for Element Level inspections
Dynamic Views

- Efficient workflows for 2D view generation from 3D models
- Dynamically updates 2D views based on 3D Model updates
- Allows for rapid creation of section, plan and elevation views
Efficient Collaboration

- ProjectWise integration
  - Support for distributed project teams
- Conceptual phase through construction
- Information mobility using i-models
Reports:

- Quantities
  - Concrete in v1.0
  - Rebar in future versions
  - Cost Estimates included

- Deck Elevations
  - Flexible reporting point options

- Beam Seat Elevations

- Input Reports
Clash detection

- 3D Models help evaluate complex situations easily missed by 2D views
- Quickly verify vertical and horizontal clearances
- Check for clashes with subsurface utilities
- User selected objects and clash check criteria definition

Image Courtesy: Wisconsin DOT
Visualization

- Use native MicroStation visualization tools or LumenRT
- Integrate models with Civil Roadway information for more comprehensive project visuals
- Use in public hearing presentations, project proposals and in marketing campaigns
3D PDF

- Create 3D PDF directly from PBM
- 3D PDF’s invaluable for sharing information with users without access to CAD software
- View on supported mobile devices
Google Earth integration

• Accurately geo-locate project
• Export files directly from OBM to Google Earth
• View the bridge in the true/visual context of the site surroundings
• Create and share realistic presentations quickly
OpenBridge Modeler - Summary
Open Bridge Modeler Summary

• 3D Parametric Intelligent Bridge Modeler

• Interoperable with Bentley Civil, Structural, Detailing, Documentation and Operations & Maintenance Models.

• Seamless Response to Project Changes

• Facilitates Data-reuse and Collaboration
"As innovators of new technologies, our design engineers face numerous challenges. Bentley's OpenBridge Modeler helps us stay focused on the bigger picture by interacting seamlessly with other Bentley OpenRoads CONNECT Edition products."

Sayloung Oak Thammavong, Assistant Project Design Engineer
NCDOT Roadway Design Unit

"Finally, a purpose-built bridge modeling software that is parametric and easily editable. In just minutes, I had results that would have taken at least a half hour in other civil engineering programs."

André Tousignant, P.E., Construction Engineer
PCL Civil Constructors, Inc.