Bentley®
Sustaining Infrastructure

Road and Site Are Now One!

Presented by: Robert Nice – Bentley Systems

Learning Objectives

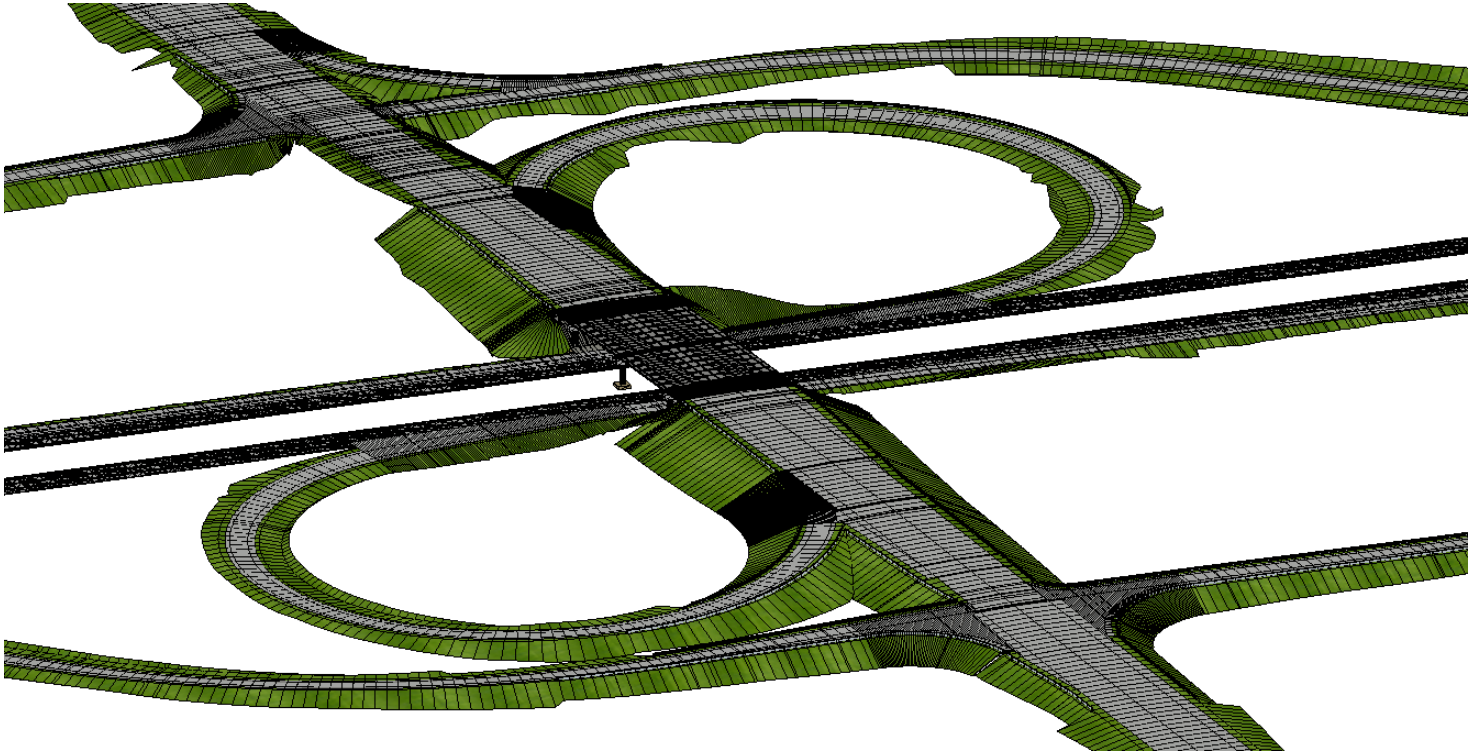
After this session you will be able:

- Create terrain models and apply surface templates.
- Apply linear templates around the edge of a terrain.
- Use point controls to connect to adjacent corridors.
- Learn the power of civil cells to automate development of complex design areas such as intersections.

The Challenges of COMPLETE Modeling…

- The process of pushing a template along an alignment to create a 3D model is not a new concept.
- On the contrary, when was the last time you thought about modeling a driveway or the nose of a median?
- Connecting corridors with non-corridors?
- What about interaction between different alignments…
  - Gores
  - Loop Infields
  - Bridge Abutments
  - Etc.

Modeling Everything Could Be Challenging…



But Remember…There's Power in Change!

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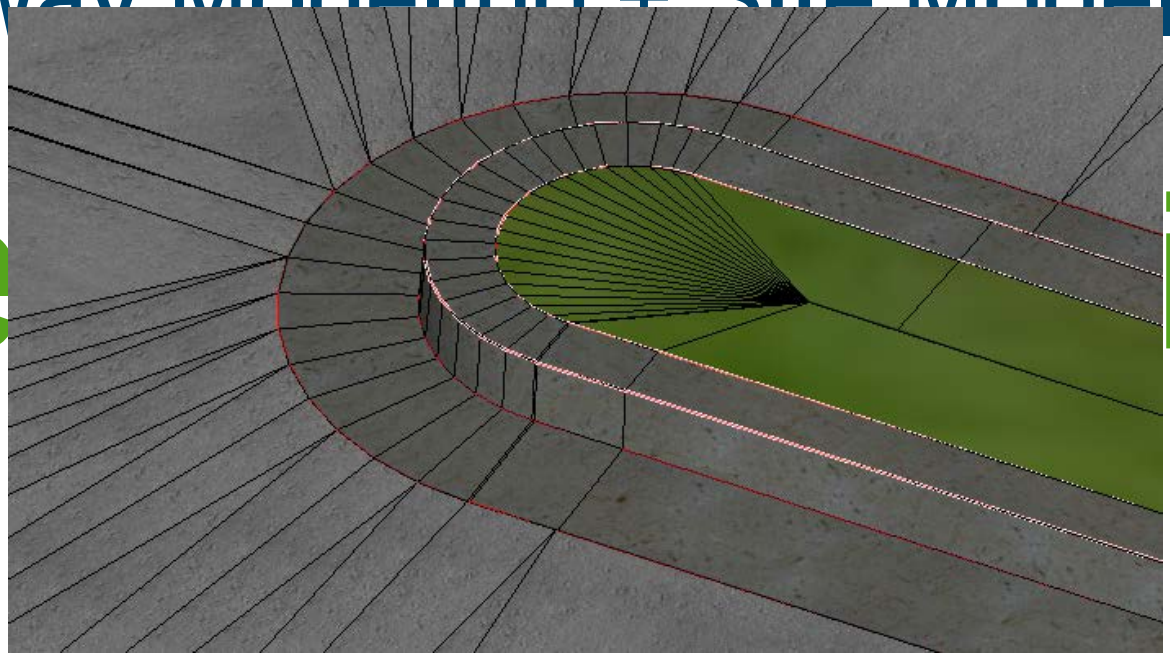
** V8*i* SELECTseries 3 **

Roadway Modeling + Site Modeling =

The ion



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Seamless Modeling

- With the release of V8*i* SELECTseries 3, Site and Corridor Modeling are a unified technology
- DGN based model removes all limitations of data integrity
- Applying templates is the same for baselines as it is for parking lots
- Seamless integration between adjacent corridors

Designing a Park and Ride Facility

- Step 1 – Establishing the geometry of the perimeter
  - Horizontal Geometry
  - Vertical Geometry
  - All civil geometry is DGN based and graphically redefinable

Step 1 – Designing the Geometry

DEMO

Step 1 – Designing the Geometry

Designing a Park and Ride Facility

- Step 2 – Creating a Terrain Model
  - Create the terrain model of the concrete boundary
  - Adjust stroking tolerances of the terrain model
    - Terrain models are now built into the DGN file format as a MicroStation element with controllable parameters
    - All terrain model properties and settings are controlled through element information

Step 2 – Creating a Terrain Model

DEMO

Step 2 – Creating a Terrain Model

Designing a Park and Ride Facility

- Step 3 – Applying a surface model template
  - Apply a pavement template to the terrain model
    - Adding a template component to a terrain model allows a designer to provide material depth to any terrain model surface

Step 3 – Applying the Surface Model Template

DEMO

Step 3 – Surface Model Template

Designing a Park and Ride Facility

- Step 4 – Applying a linear template
  - Apply a linear template to the pavement boundary
    - Templates can be applied along any civil geometry element.
    - Does not require a corridor
    - No need to make special components – uses traditional components from template library

Step 4 – Applying a Linear Template

DEMO

Step 4 – Applying a Template

Designing a Park and Ride Facility

- Step 5 – Applying point controls
  - Apply point controls to the fill slope of the Park and Ride facility to tie into the mainline ditch bottom
    - Point controls provide the necessary tools to connect points from one corridor to another
      - Adjacent corridors
      - Linear template objects

Step 5 – Applying Point Controls

DEMO

Step 5 – Applying Point Controls

Designing a Park and Ride Facility

- Step 6 – Applying clipping references
  - Apply a clipping reference to the mainline corridor, using the Park and Ride to clip the mainline where overlap occurs
    - Complete clipping control now available with ability to add multiple clipping references to a corridor
    - Ability to add any MicroStation shape as a clipping reference

Step 6 – Applying Clipping References

DEMO

Step 6 – Applying Clipping References

Designing a Park and Ride Facility

- Step 7 – Applying parametric constraints
  - Apply a parametric constraint to the curb to modify the curb's width
    - Parametric constraints allow the user to create and customize the design to the specific standards
    - Widths, slopes, heights, variable adjustments, etc.

Step 7 – Applying Parametric Constraints

DEMO

Step 7 – Applying Parametric Constraints

Designing a Park and Ride Facility

- Step 8 – Placing a Civil Cell
  - Place a Civil Cell to connect the mainline corridor to the park and ride facility.
    - Civil cells allow for the automation of complex geometry (2D and 3D)
    - Help to ensure design standard compliance
    - The possibilities are endless
      - Traffic Islands
      - Driveways
      - Intersections
      - Roundabouts
      - Etc.

Step 8 – Placing a Civil Cell

DEMO

Step 8 – Placing a Civil Cell

Designing a Park and Ride Facility

- Step 9 – Fine Tuning the Model
  - Adding Target Aliasing to the radius returns
  - Using Parametric Constraints to taper the curb height and fill slopes
  - Customizing template drops
  - Radius value change

Step 9 – Fine Tuning the Model

DEMO

Step 9 – Target Aliasing

Step 9 – Parametric Constraints

Step 9 – Template Drop Edits

Step 9 – Modifying a Radius

Learning Paths: Ready-Made Training Plans

Choose from:

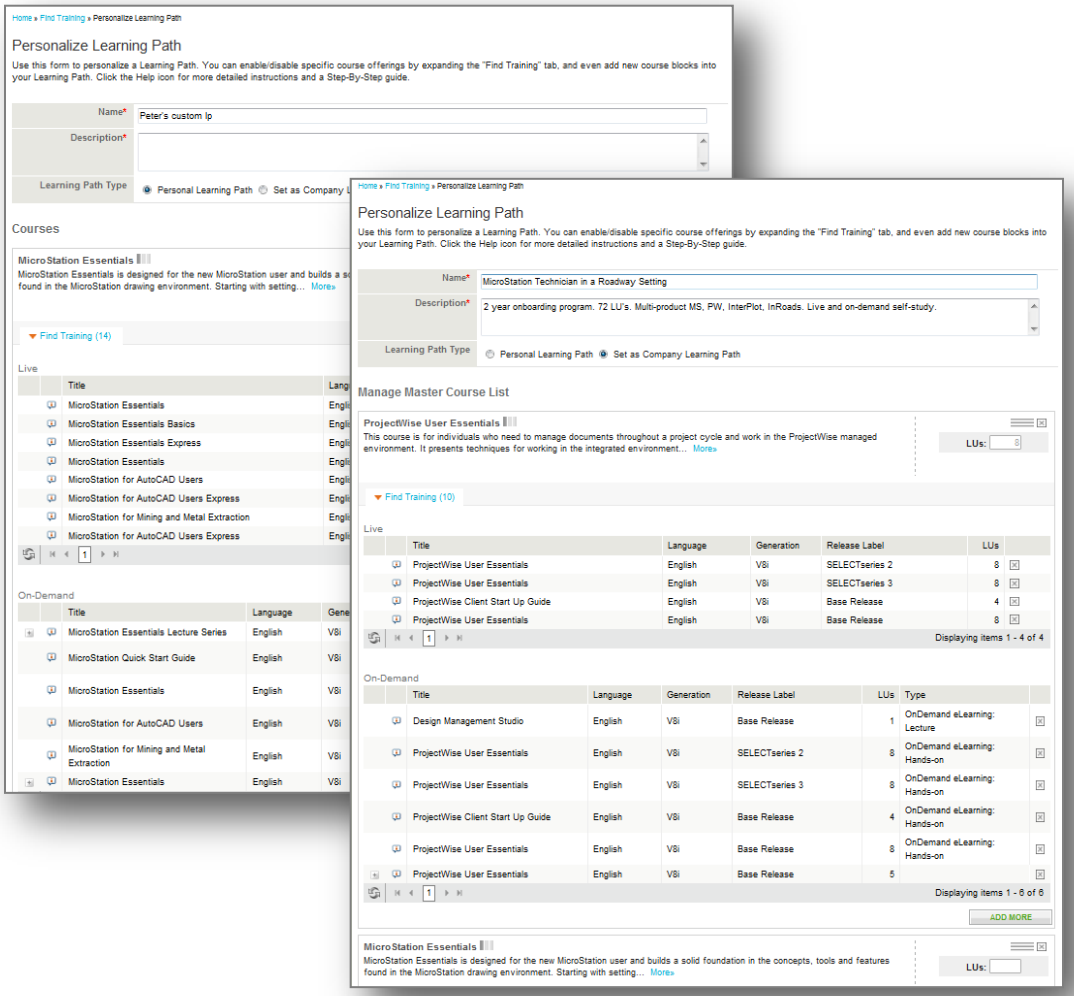
- Bentley recommendations
- Configure your own
  - Organizational
  - Personal

Select:

- Product(s) and version(s)
- Language
- Training type

Enroll team members in:

- One learning path
- Multiple learning paths



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This session’s Learning Path:

A link to this session’s Learning Path will be emailed to you.

Assessment

1. True or False: A surface template is a special type of template in the template library? - *False*

2. True or False: Parametric Constraints allow the designer to override constraint values initially set by the template such as slope and distance values? - *True*

3. Fill in the blank: _____ _____ allow the user to automate the design and placement of complex and/or redundant 2D and 3D geometry? - *Answer: Civil Cells*

Questions?

