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…
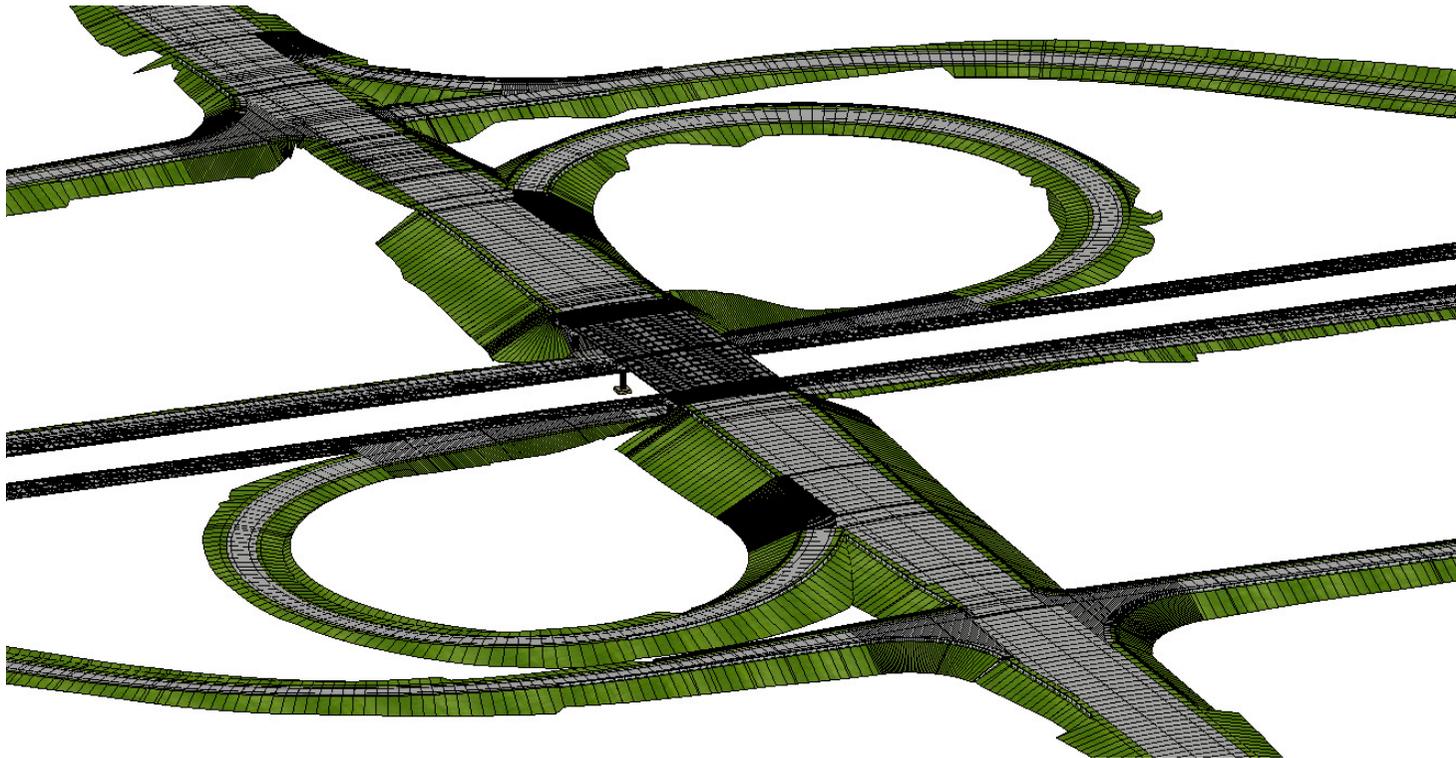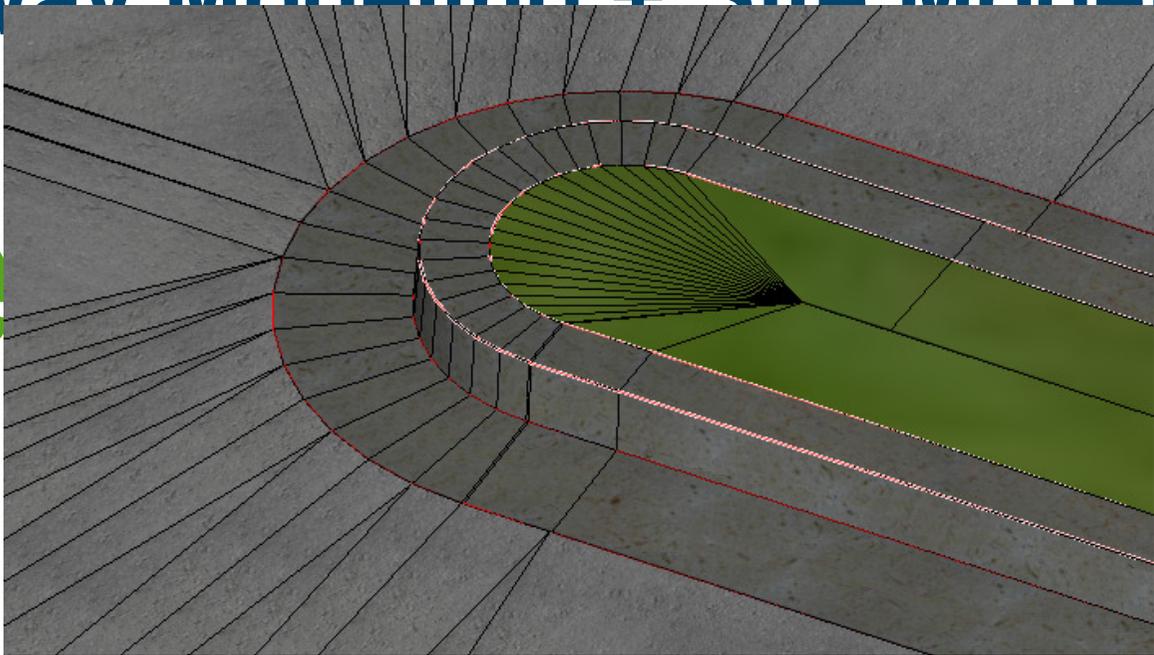
But Remember…There's Power in Change!

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** V8*i* SELECTseries 3 **

Roadway Modeling + Site Modeling =

The ~~Integration~~

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

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Step 1 – Designing the Geometry

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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

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Step 2 – Creating a Terrain Model

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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

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Step 3 – Applying the Surface Model Template

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Step 3 – Surface Model Template

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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

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Step 4 – Applying a Template

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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

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Step 5 – Applying Point Controls

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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

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Step 6 – Applying Clipping References

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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

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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

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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

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Step 9 – Target Aliasing

Step 9 – Parametric Constraints

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Step 9 – Template Drop Edits

Step 9 – Modifying a Radius

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– Language

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– Multiple learning paths

This session's Learning Path:

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

Assessment

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

2. <u>True or False</u>: 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***

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Questions?

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