Advanced End Conditions

Robert Nice – Bentley Systems

Bentley® Advancing Infrastructure

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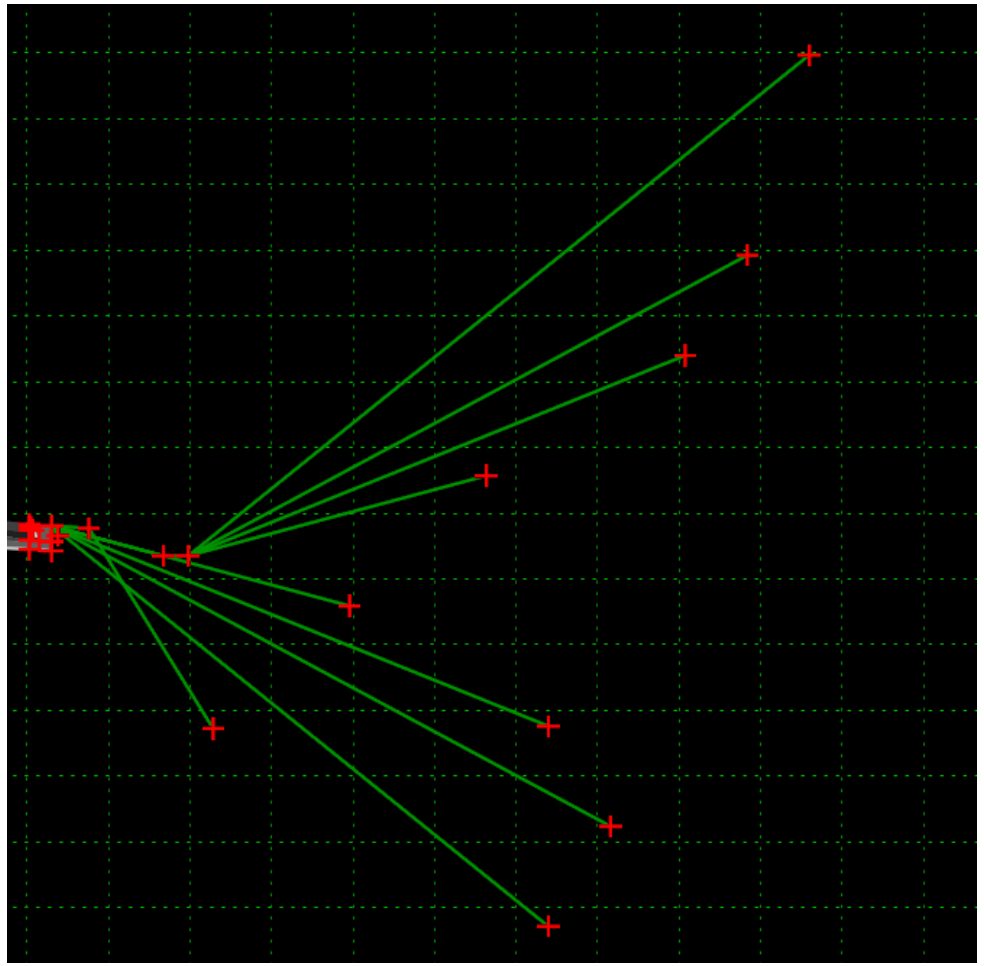
Advanced End Conditions

- *What we are going to cover*
  - General Principals
  - Variable Slope – Fixed Width
  - Fill Slope Ditch
  - Retaining Walls
  - Stepped Retaining Walls
  - Gabion Retaining Walls
  - Benching



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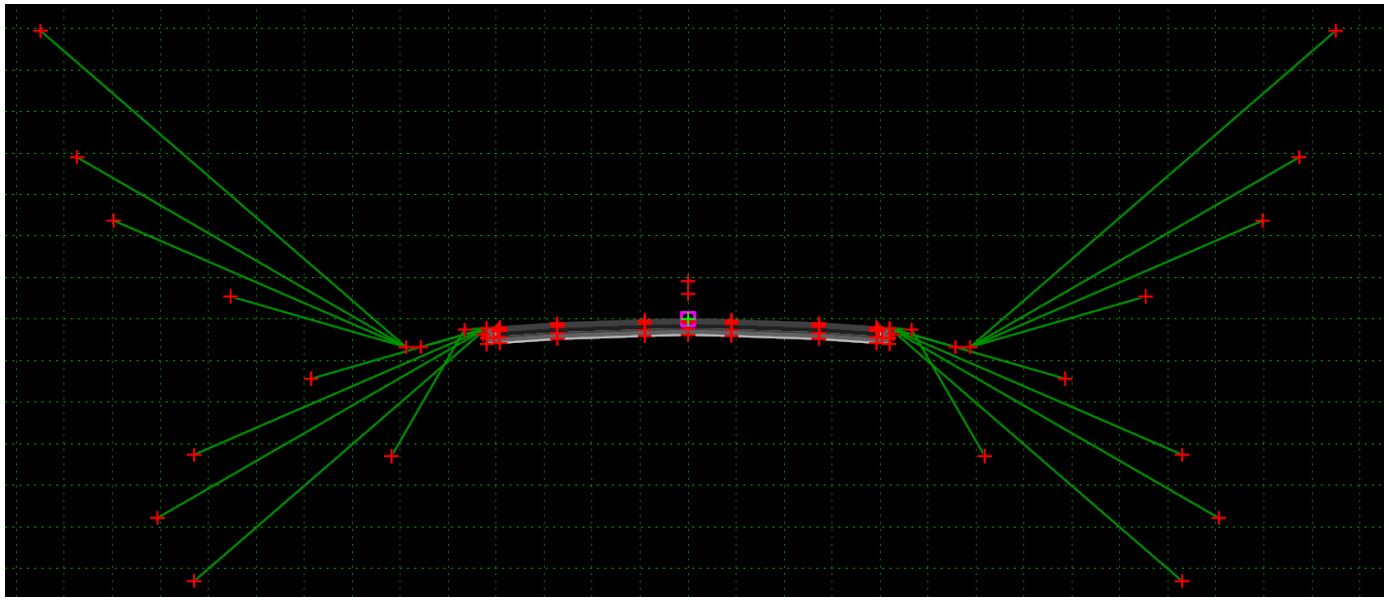
General Principals

- Templates are made from components
- Regular Components
- End Condition Components
- Milling and Overlay Components



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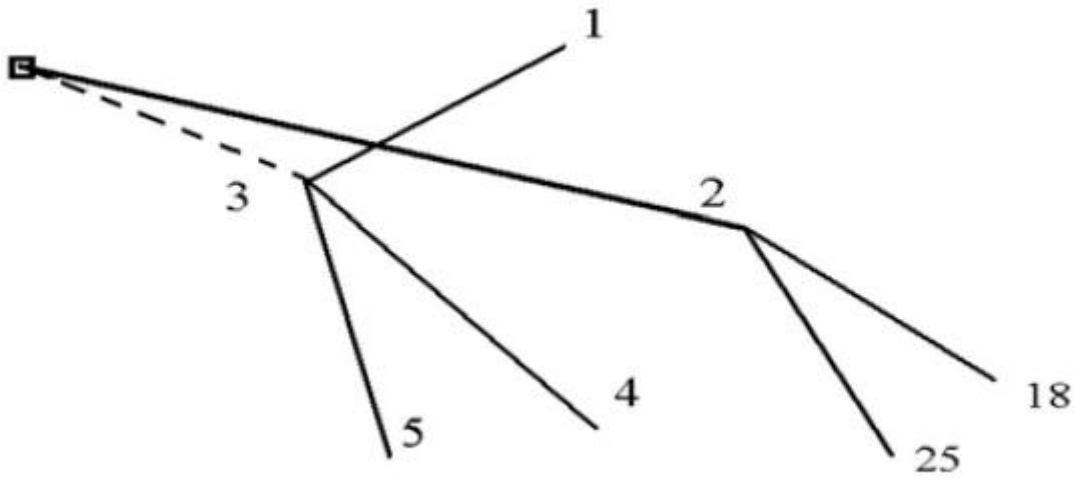
General Principals

- End Conditions Seeks Targets
  - Terrain
  - Alignment
  - Profile
  - Elevation
- Succeeds or Fails
- Branches
- Priorities



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General Principals

- Parent Components
  - When parent is displayed children are displayed. When parent is not displayed child is not displayed.
- Display Rules
  - Algebraic control of when a component is displayed.
  - Do not recommend using them on end conditions. (End conditions may be turned off if successful.)

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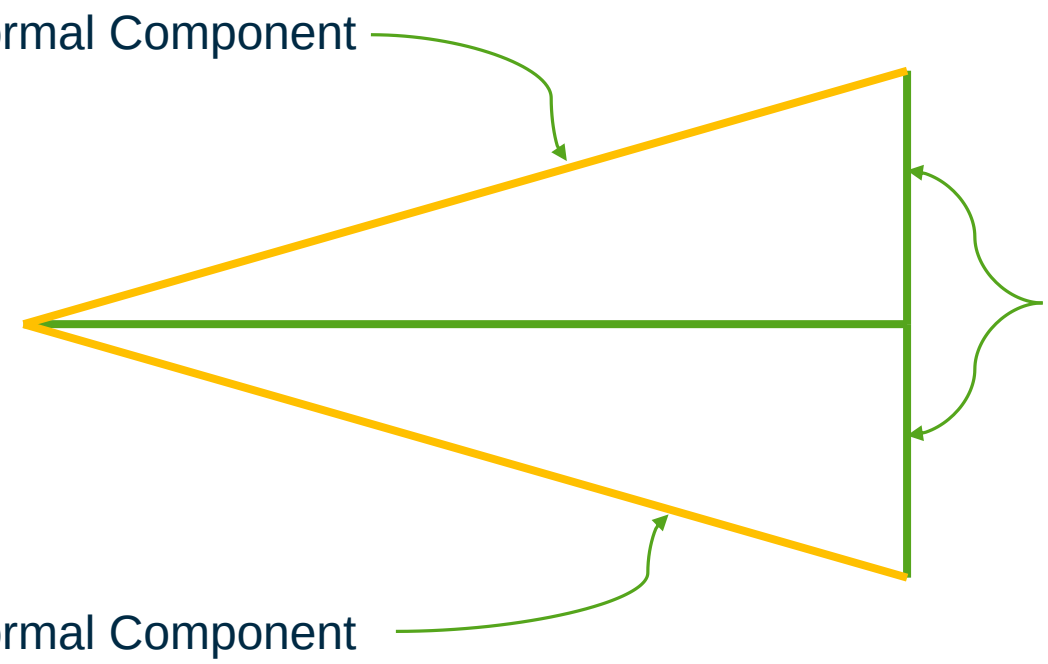
Variable Slope – Fixed Width

- Use End Conditions but NOT Visible
- Use Normal Components



End Conditions to find cut or fill position. Do Not Construct toggles on all points.

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Create Template

File Edit Add Tools

Template Library:

- C:\ProgramData\Bentley\OpenRoa
  - Variable
  - Point Name List
  - Components
  - End Conditions
  - Linear Templates
  - Surface Templates
  - Templates
    - Rail
    - Ramp
    - Rural
      - Asphalt Pavt w/ Asphal
        - Divided
        - Undivided
          - 2 Lanes
          - 2 Lanes + Guar
          - 2 Lanes + Turn
      - Concrete Pavt w/ Asph
      - Concrete Pavt w/ Conc
      - Overlay w/ Widening
    - Tunnels
    - Urban

Library | Active Template

Preview:

Current Template

Name: Variable

Description:

Display

Components | Constraints

Display Point Names

Display All Components

Close

Help

Dynamic Settings

X: 14.00000 Step: 0.10000

Y: -4.30000 Step: 0.10000

Point Name:

Point Style: Linear\Template

Apply Affixes

hs=

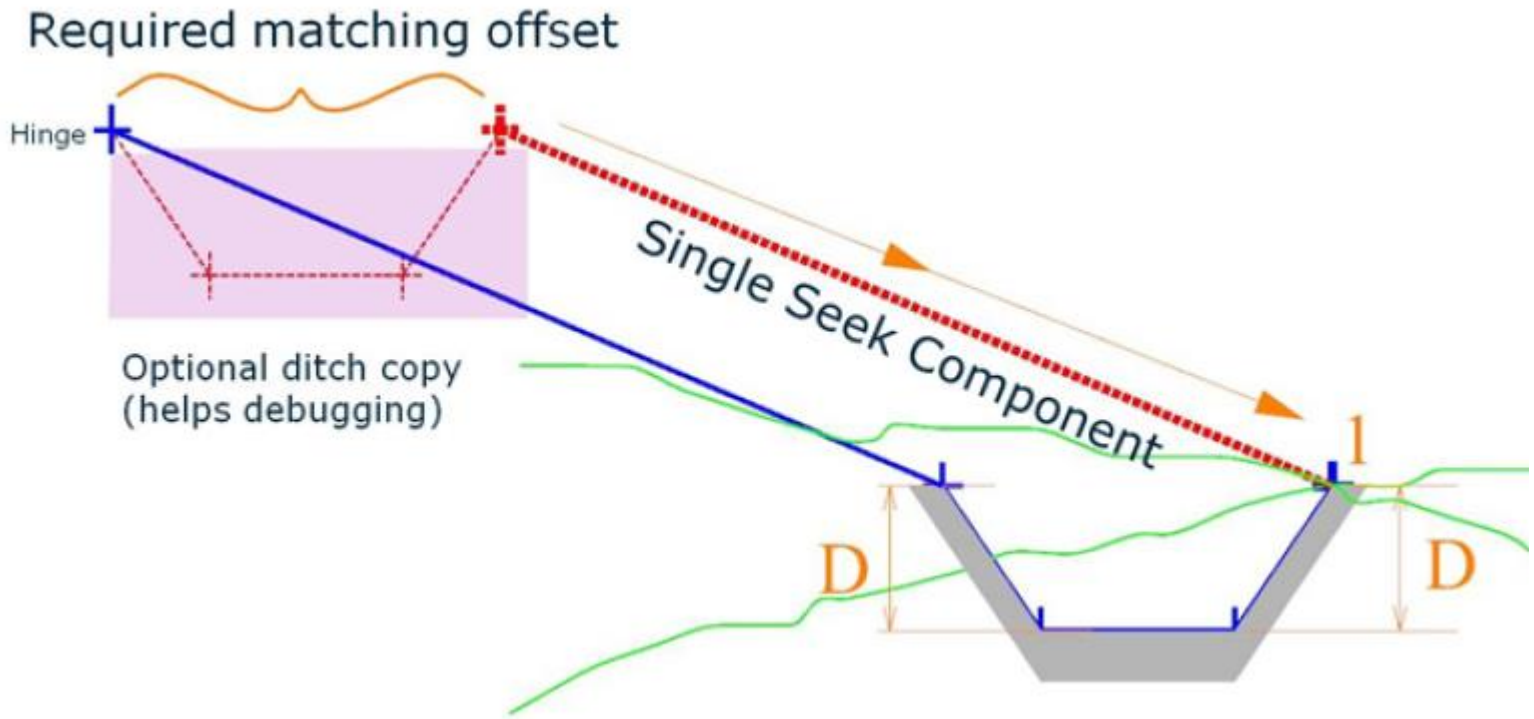
Set Dynamic Origin

Test...

MIRROR REFLECT

Fixed Fill Ditch

- Ditch Depth is fixed
- Ditch Width is fixed
- Slope from hinge is constant



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Create Template

File Edit Add Tools

Template Library:

- C:\ProgramData\Bentley\OpenRoa
  - Fill Ditch
  - Variable
  - Point Name List
  - Components
  - End Conditions
  - Linear Templates
  - Surface Templates
  - Templates
    - Rail
    - Ramp
    - Rural
      - Asphalt Pavt w/ Asphal
        - Divided
        - Undivided
          - 2 Lanes
          - 2 Lanes + Guar
          - 2 Lanes + Tum
      - Concrete Pavt w/ Asph
      - Concrete Pavt w/ Conc
      - Overlay w/ Widening
    - Tunnels
    - Urban

Library | Active Template

Preview:

Current Template

Name: Fill Ditch

Description:

Display

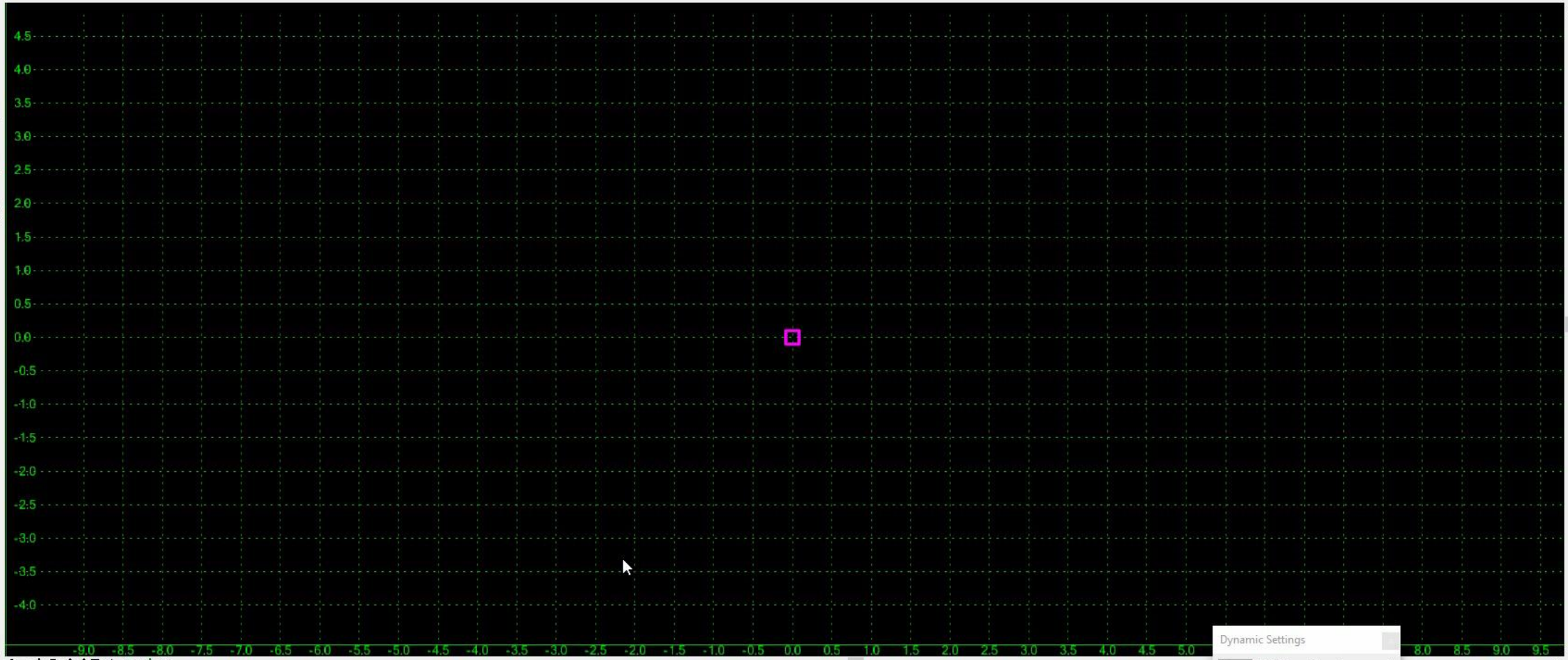
(•) Components ( ) Constraints

[x] Display Point Names

[ ] Display All Components

Close

Help



Dynamic Settings

X: 8.00000 Step: 0.10000

Y: -2.50000 Step: 0.10000

Point Name:

Point Style: Linear\Template

[x] Apply Affixes

hs=

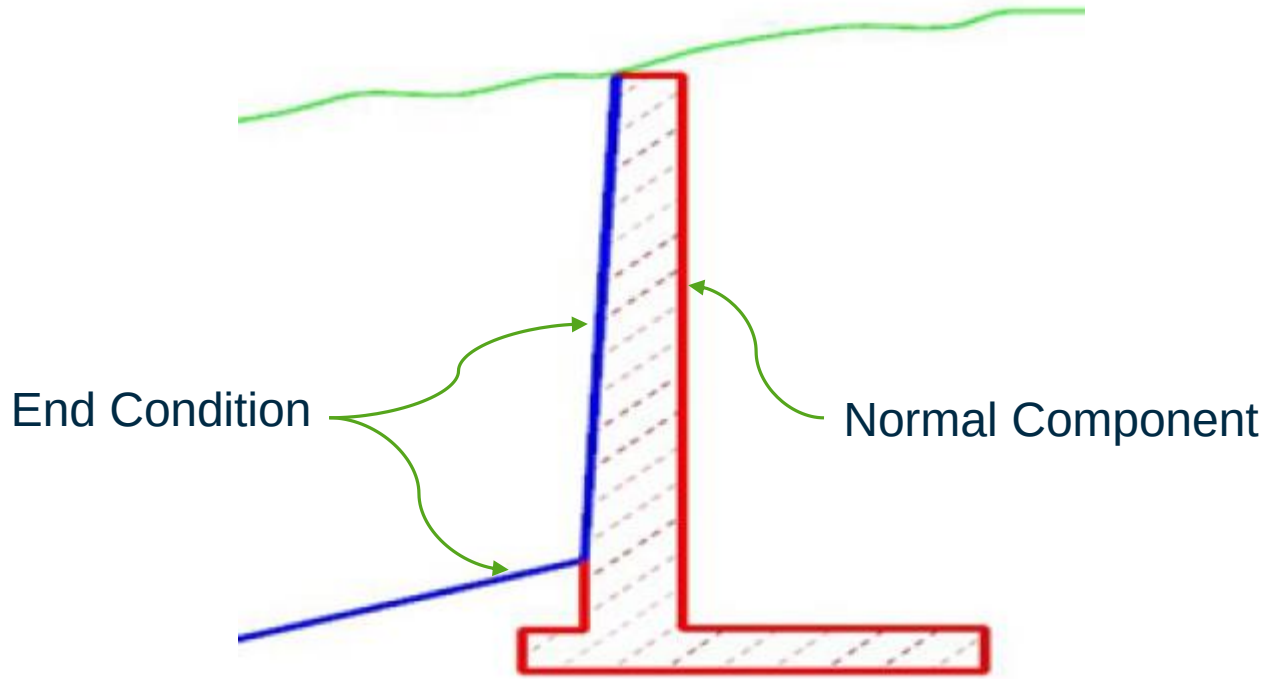
Set Dynamic Origin

Test...

MIRROR REFLECT

Variable Height Retaining Walls

- Uses End Condition to find Catch
- Retaining wall is child component and a regular component



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Create Template

File Edit Add Tools

Template Library:

- C:\ProgramData\Bentley\OpenRoa
  - Fill Ditch
  - Variable
  - Point Name List
  - Components
  - End Conditions
  - Linear Templates
  - Surface Templates
  - Templates
    - Rail
    - Ramp
    - Rural
      - Asphalt Pavt w/ Asphal
        - Divided
        - Undivided
          - 2 Lanes
          - 2 Lanes + Guar
          - 2 Lanes + Turn
      - Concrete Pavt w/ Asph
      - Concrete Pavt w/ Conc
      - Overlay w/ Widening
    - Tunnels
    - Urban
  - Walls
    - Variable Slope Wall
    - Wall

Library | Active Template

Preview:

Current Template

Name: Variable Slope Wall

Description:

Display

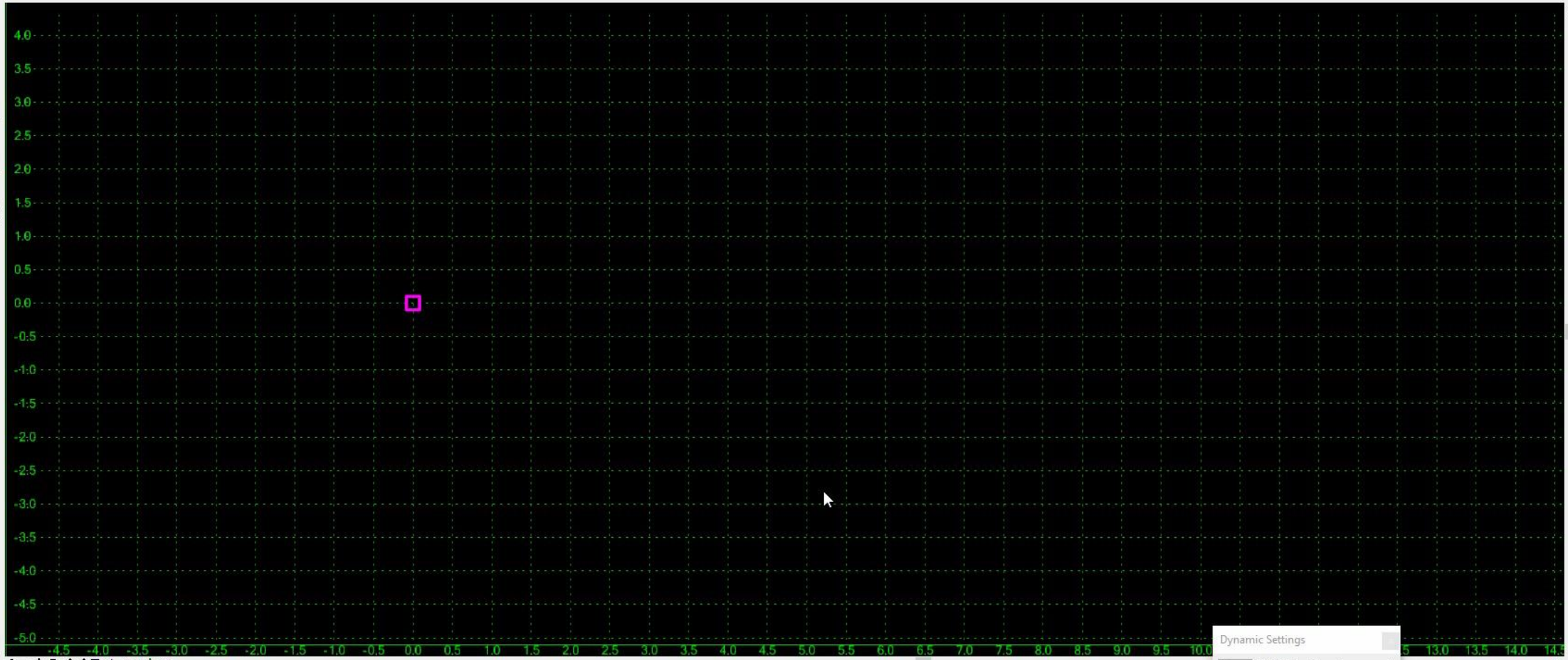
Components | Constraints

Display Point Names

Display All Components

Close

Help



Dynamic Settings

X: 12.20000 Step: 0.10000

Y: -4.50000 Step: 0.10000

Point Name:

Point Style: Linear\Template

Apply Affixes

hs=

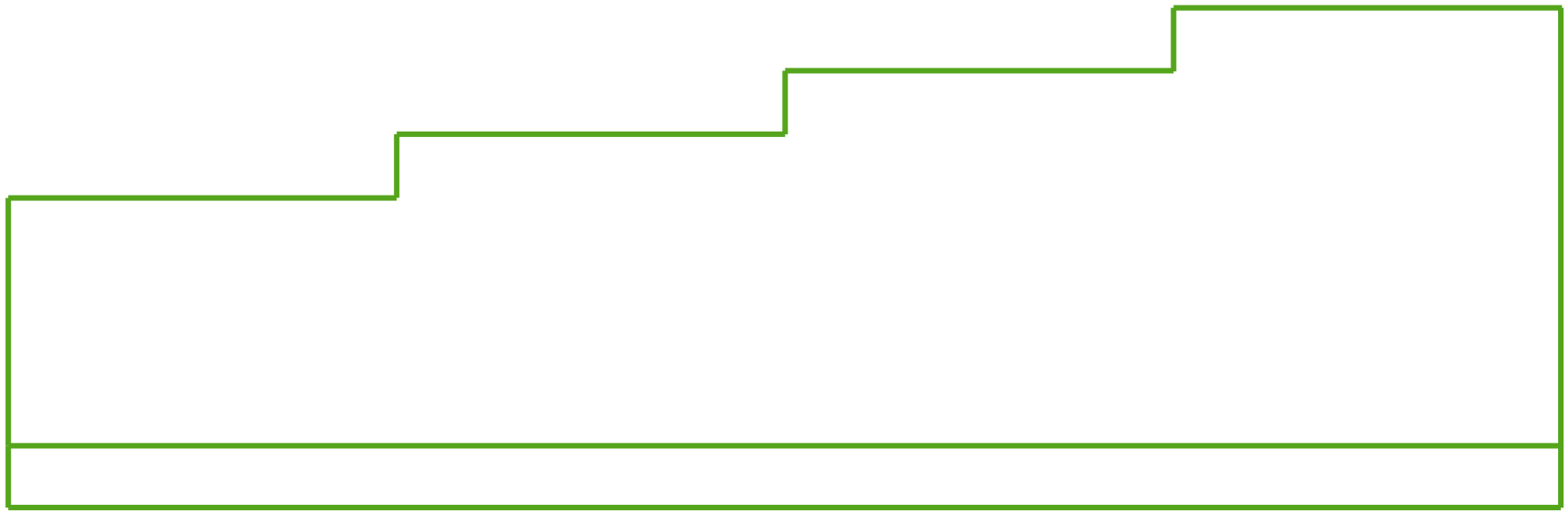
Set Dynamic Origin

Test...

MIRROR REFLECT

Stepped Retaining Walls

- Height Increments
- Takes Multiple End Conditions



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Create Template

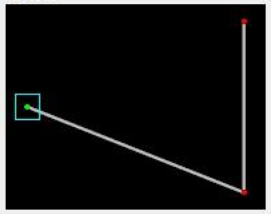
File Edit Add Tools

Template Library:

- C:\ProgramData\Bentley\OpenRoa
  - Fill Ditch
  - Variable
  - Point Name List
  - Components
  - End Conditions
  - Linear Templates
  - Surface Templates
  - Templates
    - Rail
    - Ramp
    - Rural
      - Asphalt Pavt w/ Asphal
        - Divided
        - Undivided
          - 2 Lanes
          - 2 Lanes + Guar
          - 2 Lanes + Turn
      - Concrete Pavt w/ Asph
      - Concrete Pavt w/ Conc
      - Overlay w/ Widening
    - Tunnels
    - Urban
  - Walls
    - Variable Slope Wall
    - Stepped Ret Wall
      - 1 meter Wall
      - 2 meter Wall
      - 3 meter Wall
      - 4 meter Wall
      - 5 meter Wall
      - 6 meter Wall
      - Wall

Library | Active Template

Preview:



Current Template

Name: 5 meter Wall

Description:

Display

(•) Components ( ) Constraints

[x] Display Point Names

[ ] Display All Components

Close

Help

Dynamic Settings

X: 3.00000 Step: 0.10000

Y: 0.50000 Step: 0.10000

Point Name:

Point Style: Linear\Template

[ ] Apply Affixes

hs=

Set Dynamic Origin

Test...

MIRROR REFLECT

Gabion Wall

- Similar to Stepped Retaining Wall
- Has Horizontal Offset with each Row

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Create Template

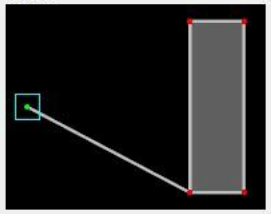
File Edit Add Tools

Template Library:

- C:\ProgramData\Bentley\OpenRoa
  - Fill Ditch
  - Variable
  - Point Name List
  - Components
  - End Conditions
  - Linear Templates
  - Surface Templates
  - Templates
    - Rail
    - Ramp
    - Rural
      - Asphalt Pavt w/ Asphal
        - Divided
        - Undivided
          - 2 Lanes
          - 2 Lanes + Guar
          - 2 Lanes + Turn
      - Concrete Pavt w/ Asph
      - Concrete Pavt w/ Conc
      - Overlay w/ Widening
    - Tunnels
    - Urban
  - Walls
    - Variable Slope Wall
    - Stepped Ret Wall
      - 1 meter Wall
      - 2 meter Wall
      - 3 meter Wall
      - 4 meter Wall
      - 5 meter Wall
      - 6 meter Wall
      - Multiple Walls
      - Wall
    - Gabion Wall
      - 1 meter Wall
      - 3 meter Wall
      - 2 meter Wall
      - 4 meter Wall

Library | Active Template

Preview:



Current Template

Name: 1 meter Wall

Description:

Display

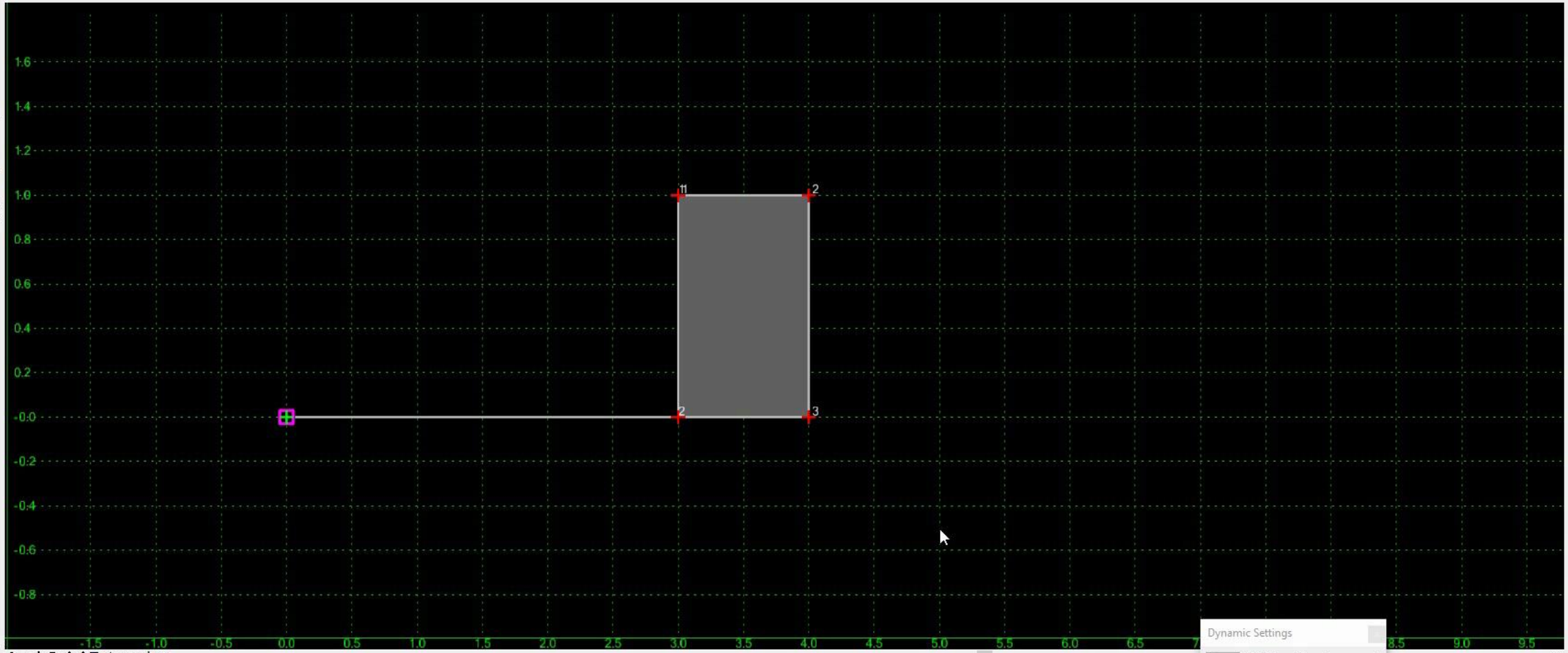
(•) Components ( ) Constraints

[x] Display Point Names

[ ] Display All Components

Close

Help



Dynamic Settings

X: 3.00000 Step: 0.10000

Y: -0.50000 Step: 0.10000

Point Name:

Point Style: Linear\Template

[ ] Apply Affixes

hs=

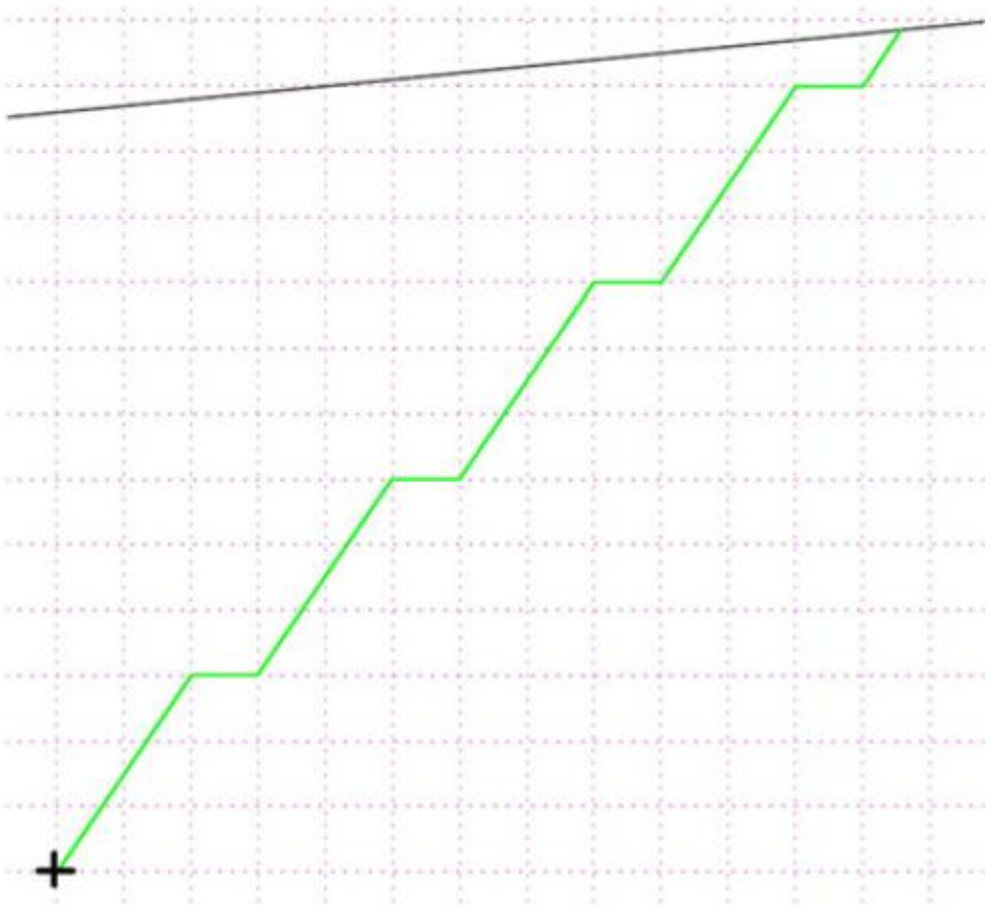
Set Dynamic Origin

Test...

MIRROR REFLECT

Benching

- Benching based on End Condition
  - Number of Benches
  - Bench Continuously
- Benching based on Datum
  - Bench follows elevation
- Benching based on Feature Point



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Create Template

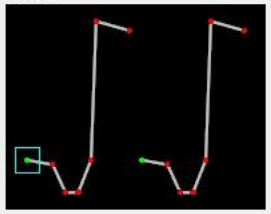
File Edit Add Tools

Template Library:

C:\ProgramData\Bentley\OpenRoad
- Point Name List
- Components
- End Conditions
- Linear Templates
- Surface Templates
- Templates
- Walls
- Fill Ditch
- Variable
- Benching
  - Benching

Library | Active Template

Preview:



Current Template

Name: Benching

Description:

Display

(•) Components ( ) Constraints

[x] Display Point Names

[ ] Display All Components

Close

Help

Dynamic Settings

X: 7.11304 Step: 0.10000

Y: 1.69565 Step: 0.10000

Point Name:

Point Style: Linear\Template

[ ] Apply Affixes

hs=

Set Dynamic Origin

Test...

MIRROR REFLECT