
Corridor Modeler - Bridge Berm

Design Manual
Chapter 20
Project Automation
Information

Originally Issued: 09-20-10
Revised: 06-12-18

Necessary items to get started:

Bridge Plans -

Bridge Plans Include:

- Abutment Details / Wing Details
- Barrier Rail Details
- Wing Armoring Details
- Slope Protection Details

The TS&L Plan will provide station callouts for the:

- CL of Abutments
- Station, offsets for the end of the wing locations
- Station, offset, and elevations for the top of the berm along the abutments

Check the final Bridge layout information against the information found in the Bridge “.str” file. If there are discrepancies between the two layouts, contact Prelim Bridge.

Draw the final bridge layout in the file that is being used for the corridor modeler line work, the “CM_Linework.dsn” file. Items that need to be drawn include:

- Abutment, Wings / Wing Extensions
- Slope Protection
- Bridge Endposts

Roadway Typicals -

Develop appropriate roadway typicals through the bridge approach area.

- Transition shoulder slopes to be the same slope as the bridge before or at the bridge approach section to ensure correct elevations through these areas.
- Transition foreslopes to be 3:1 by the time the Bridge Wings are encountered.
- See the Design Manual for shoulder slope transition.

Key Points / Elevations Needed: (See Figure [B-1](#))

Top of the Berm Bench Elevation

This can be found in the TS&L information. Double check the final plans for this elevation.

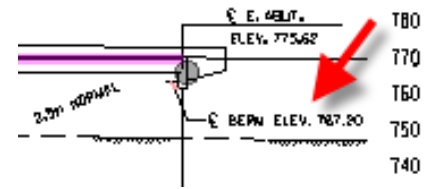
Outside Elevation of Slope Protection (Point A)

The Point A elevation (See Figure [B-1](#)) will be at the end of the “Wing / Bridge Endpost”. This elevation can be determined by locating a known Profile Grade CL elevation, then work the elevation across the pavement, the shoulder, the wing, and the slope protection. The wing will be at the same slope as the adjacent pavement, and the slope protection will be at minus 4%. The slope protection will typically be 3 feet outside of the wing walls.

Intersection of the Berm Bench and the 3:1 Slope (Point B)

(See figures [B-1](#) and [B-2](#))

The Point B elevation is the Berm Bench Elevation, which is found on the Bridge Plans, as shown in the example at the right.



Horizontal location of Point B (X)

(See figures [B-1](#) and [B-2](#))

To determine the rise, subtract the Point B elevation from the Point A elevation; (A minus B). Take the rise, (A minus B), and multiply by 3, (which is due to the 3:1 slope). This will give the horizontal distance from the outside edge of the “slope protection” to Point B, measured perpendicularly from the face of the wing. This value will be used to draw the “Berm Bench Transition” to the side slopes of the roadway.

Layout the Plan View Linework – (See Figure [B-1](#))

The abutment, wings, endpost, and slope protection should be drawn in a plan view at this time.

- Locate Point B, as described above, and draw the berm plan view break lines A-A, C-C, D-D, and lines A-B and A-C on both sides of the bridge.
- Draw the berm plan view arcs B-A-C and B-A-D, on both the left and right sides of the bridge. (The arc ends should tie-in tangent to lines C-C and D-D, and should be perpendicular to line A-B.) The converging arcs represent the horizontal transition of the berm bench elements from the “wedge” portion of the bridge berm, (D-D), through the “cone” portion, (B-A-D), to the roadway side slopes.

Geopak Chains / Profiles – (See Figure [B-2](#))

- Create “Berm_FT” (green) chain and profile along the front, or outer edge of the berm, (B-D-D-B). Use the linework previously drawn (above) for the “Berm_FT” horizontal alignment elements. This alignment should be all one elevation unless the bridge is in superelevation. If the bridge is in super, determine the B-D-D-B elevations and develop the chain / profile accordingly.
- Create a plan graphic for the back of the berm bench. (Berm_BK, light blue)
- (Refer to the bottom graphic in Figure B-2) Develop a chain from Point B(1) to Point A(2), down the slope protection to the face of the abutment Point C(3) along the face of the abutment to Point C(4), up the slope protection to Point A(5) and back down to Point B(6). This represents the wedge created by transitioning the slopes along the wing wall to the slopes along the roadway.
- Develop the “Berm_Wedge” (light blue) profile for the chain created in the previous step.
- Create a plan Graphic connecting the wings together horizontally; this will represent the grade slope horizontal location from the back of the berm bench (Berm_BK) to the intersection of the upper roadway. This graphic should be located from Point A to Point A or from the outside slope protection from both sides of the roadway. (Horizontal Grade Line, peach colored)

Note: The surface created by (Horizontal Grade Line) is an approximation of the grading surface. All other surfaces are final design surfaces.

Corridor Modeler

See the [Video on building the Berm Corridor](#)

Figure B-1

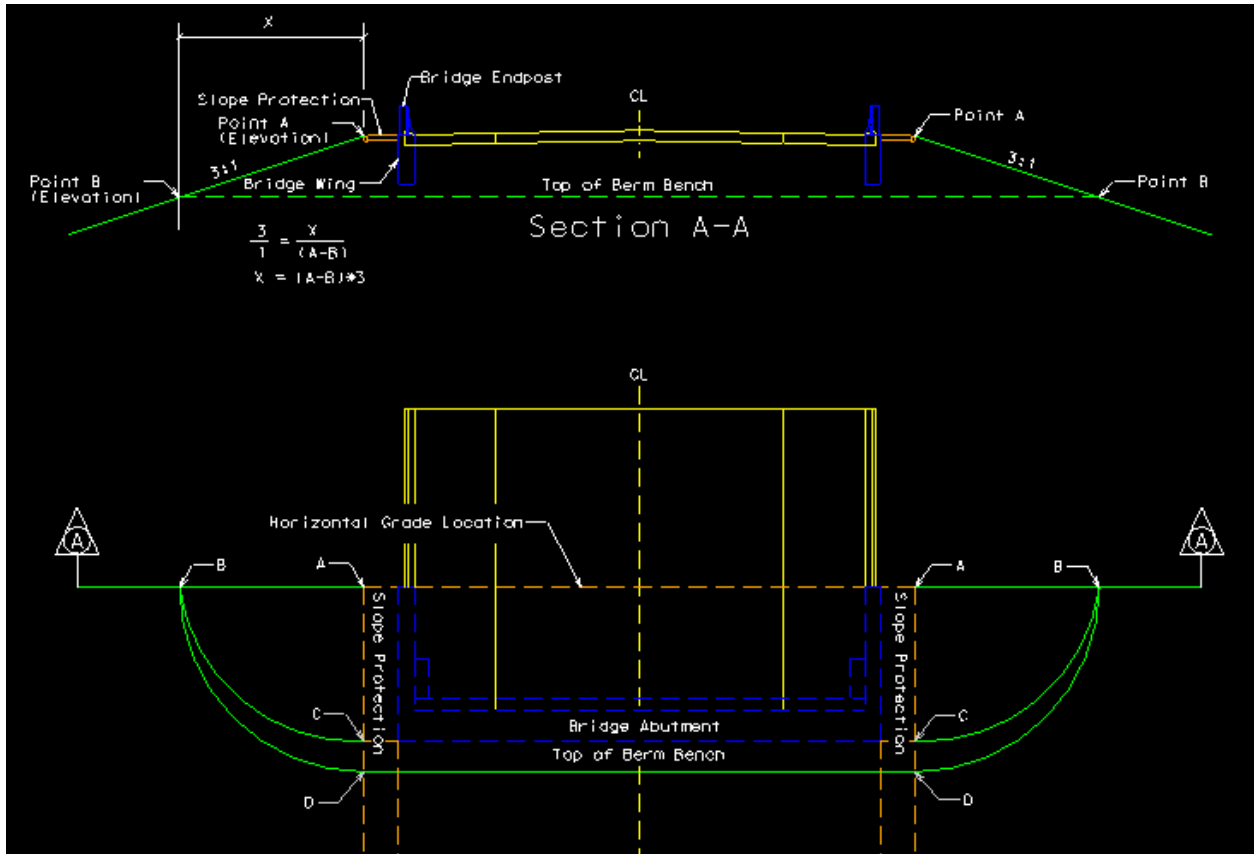
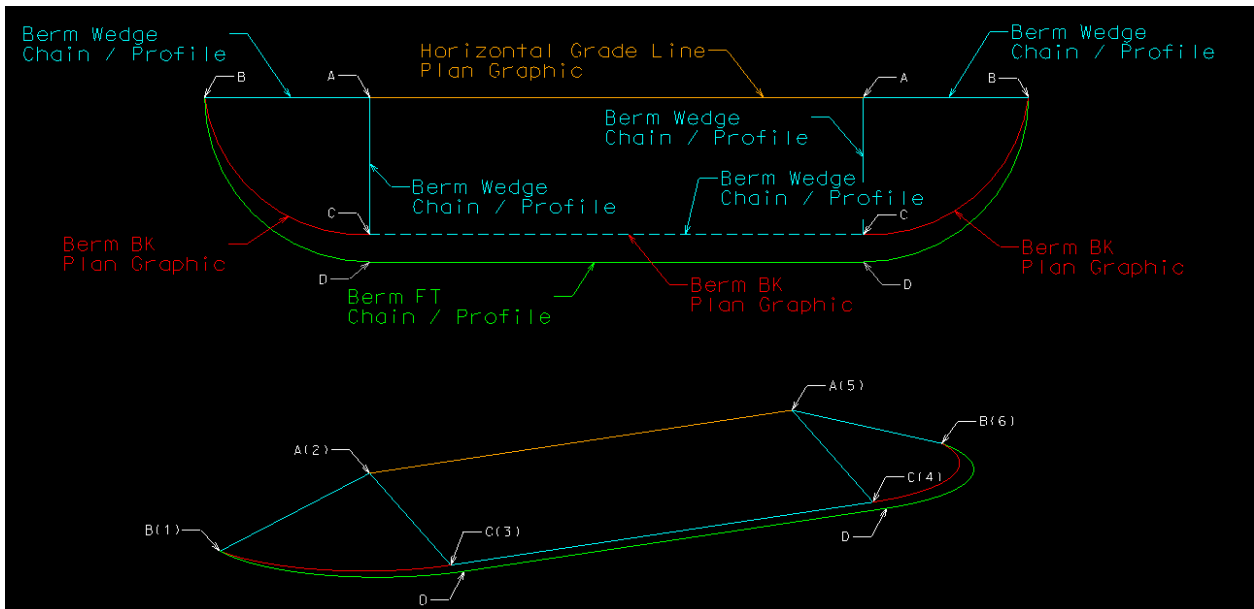
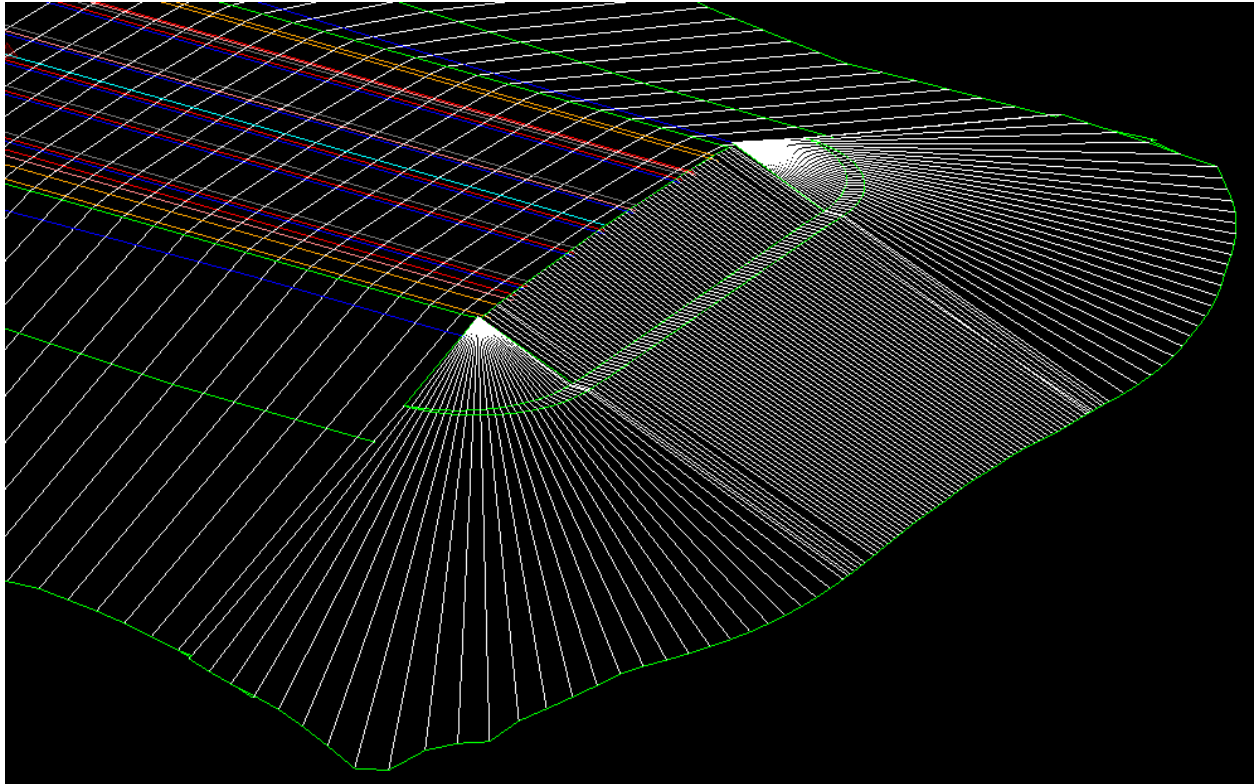


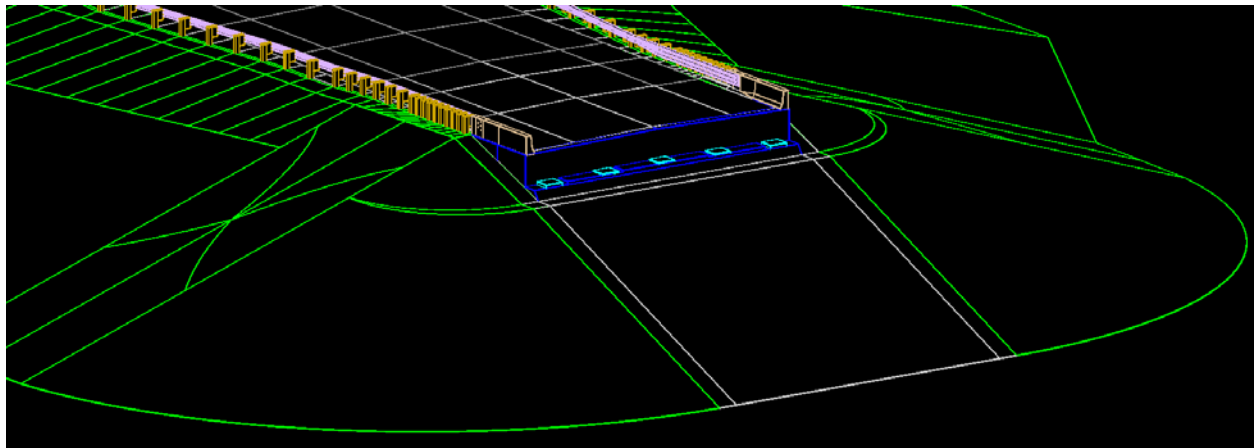
Figure B-2



Roadway Designer Features drawn with Transverse Features.



MicroStation Elements



Chronology of Changes to Design Manual Section:

020F-021 Corridor Modeler - Bridge Berm

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|-----------|---|
| 6/12/2018 | Revised
Corrected header and fixed broken hyperlinks. |
| 9/20/2010 | NEW
Added Section to detail the process of modeling bridge berms in corridor modeler |