

AASHTOWare BrDR 7.5.0

Feature Tutorial

WIZ1 – Wizards in BrDR

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A wide variety of wizards and tools are available in BrDR to provide shortcuts for entering data. This example describes the wizards and tools and describes how to access these tools in BrDR.

- What Wizards are Available?
 - Superstructure Definition Wizard
 - Diaphragm Wizard
 - Floorbeam Location Wizard
 - Stringer Unit Layout Wizard
 - Floorbeam Member Alternative Wizard
 - Reinforced Concrete Point of Interest Wizard
 - Culvert Wizard
- Other Tools Available
 - Compute Lane Position button
 - Compute Standard and LFD Live Load Distribution Factors from Typical Section button
 - Compute Deck Profile from Typical Section button
 - Stiffener Ranges – Apply at Diaphragms and Stiffeners Between Diaphragms buttons
 - Export to Prestress Design Tool
 - RC Box Culvert Design Tool Wizard

What Wizards are Available?

Superstructure Definition Wizard

Provides a shortcut for adding a girder system or girder line superstructure definition.

Diaphragm Wizard

Provides a shortcut for defining the diaphragms for a girder system superstructure definition.

Floorbeam Location Wizard

Provides a shortcut for creating floorbeam members in a floor system superstructure definition.

Stringer Unit Layout Wizard

Provides a shortcut for creating stringer member alternatives in a floor system superstructure definition.

Floorbeam Member Alternative Wizard

Provides a shortcut for creating floorbeam member alternatives in a floor system superstructure definition.

Reinforced Concrete Point of Interest Wizard

Provides a shortcut for creating and deleting points of interest in a reinforced concrete member alternative.

Culvert Wizard

Provides a shortcut for creating Culvert, Culvert Structure Alternative and assign Culvert Definition to the new bridge alternatives.

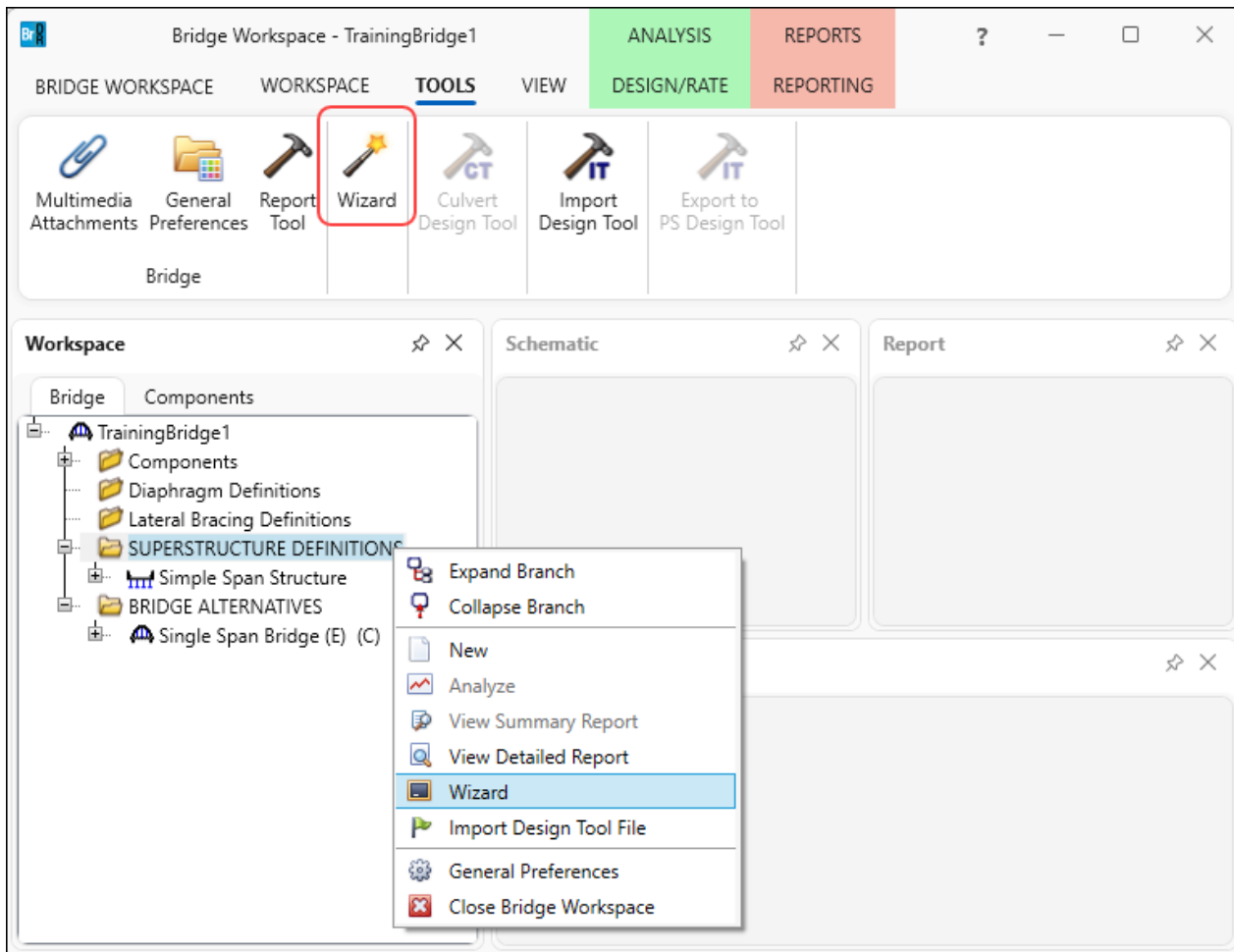
WIZ1 – Wizards in BrDR

Superstructure Definition Wizard

This wizard provides a shortcut for creating a girder system or girder line superstructure definition. The new superstructure definition can be composed of steel rolled beams or plate girders, or prestressed concrete I, Box, U or Tee beams.

This wizard creates members and member alternatives as well as populating applicable windows within the **Superstructure Definition** portion of the **Bridge Workspace** tree. The wizard is primarily intended for a design based on LRFD.

The wizard can be accessed by selecting the **SUPERSTRUCTURE DEFINITION** folder in the **Bridge Workspace** tree and clicking the **Wizard** button from the **TOOLS** ribbon (or right click and select **Wizard**) as shown below.



WIZ1 – Wizards in BrDR

After a superstructure definition has been created using the wizard, the following windows may need to be visited to revise or enter additional data for both LFD and LRFD analysis.

Steel Bridge

Framing Plan Detail: Enter the diaphragm locations.

Structure Typical Section: Enter wearing surface data.

Bearing Stiffener Definition: Enter a bearing stiffener definition.

Deck Profile and Haunch Profile windows (for exterior girders): Enter the data for exterior girders.

Lateral Support: Enter the lateral support for the top flange.

Stiffener Ranges: Revise or enter the transverse stiffener ranges.

Bearing Stiffener Ranges: Assign bearing stiffener definitions to locations of bearing stiffeners.

Prestressed Concrete Bridge

Framing Plan Detail: Enter the diaphragm locations.

Structure Typical Section: Enter wearing surface data.

Shear Reinforcement Definitions: Enter a shear reinforcement definition.

Stress Limit Sets: Enter the final allowable slab compression.

Deck Profile and Haunch Profile windows (for exterior girders): Enter the data for exterior girders.

Strand Layout: Enter the strand layouts for the prestressed beams.

Interior Diaphragms: Enter the interior diaphragms for prestressed box beams.

Shear Reinforcement Ranges: Enter the shear reinforcement ranges.

The following windows may need to be visited to enter additional data for an LFR analysis:

Stress Limit Sets: Enter the LFR allowable stresses for a prestressed concrete bridge.

Live Load Distribution: Enter the standard (LFR) distribution factors.

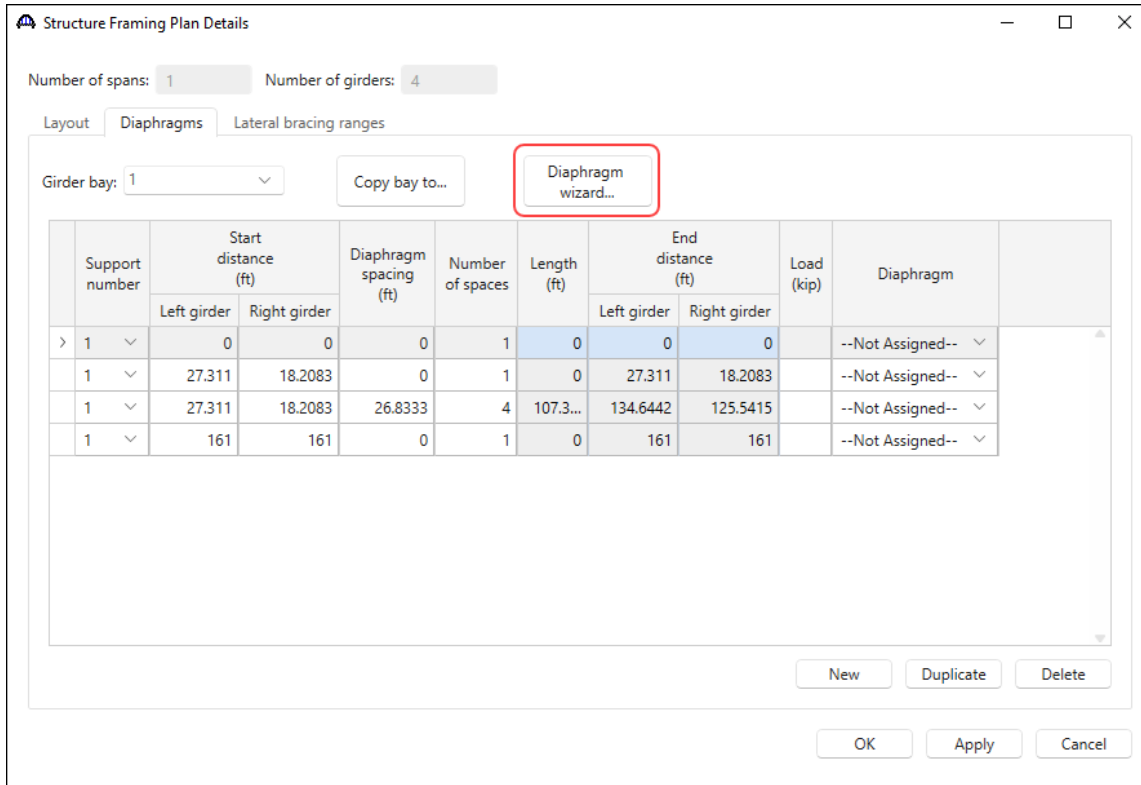
Deck Profile: Enter the standard (LFR) effective slab width.

Diaphragm Wizard

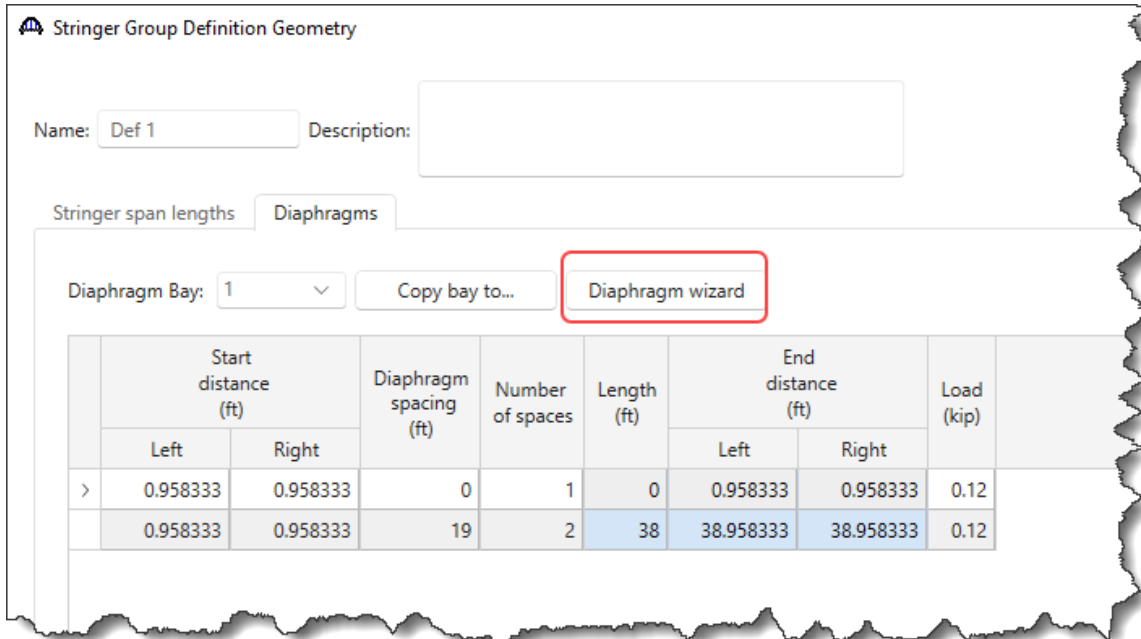
This wizard provides a shortcut for defining the diaphragms for a girder system superstructure definition. This wizard will create diaphragms for all the girder bays in the structure based on the diaphragm layout and the spacing input. Using the wizard causes previously entered diaphragm locations to be deleted and replaced by newly computed locations.

This wizard can be accessed by clicking the **Diaphragm Wizard** button on the **Structure Framing Plan Details: Diaphragms** tab as shown below.

WIZ1 – Wizards in BrDR



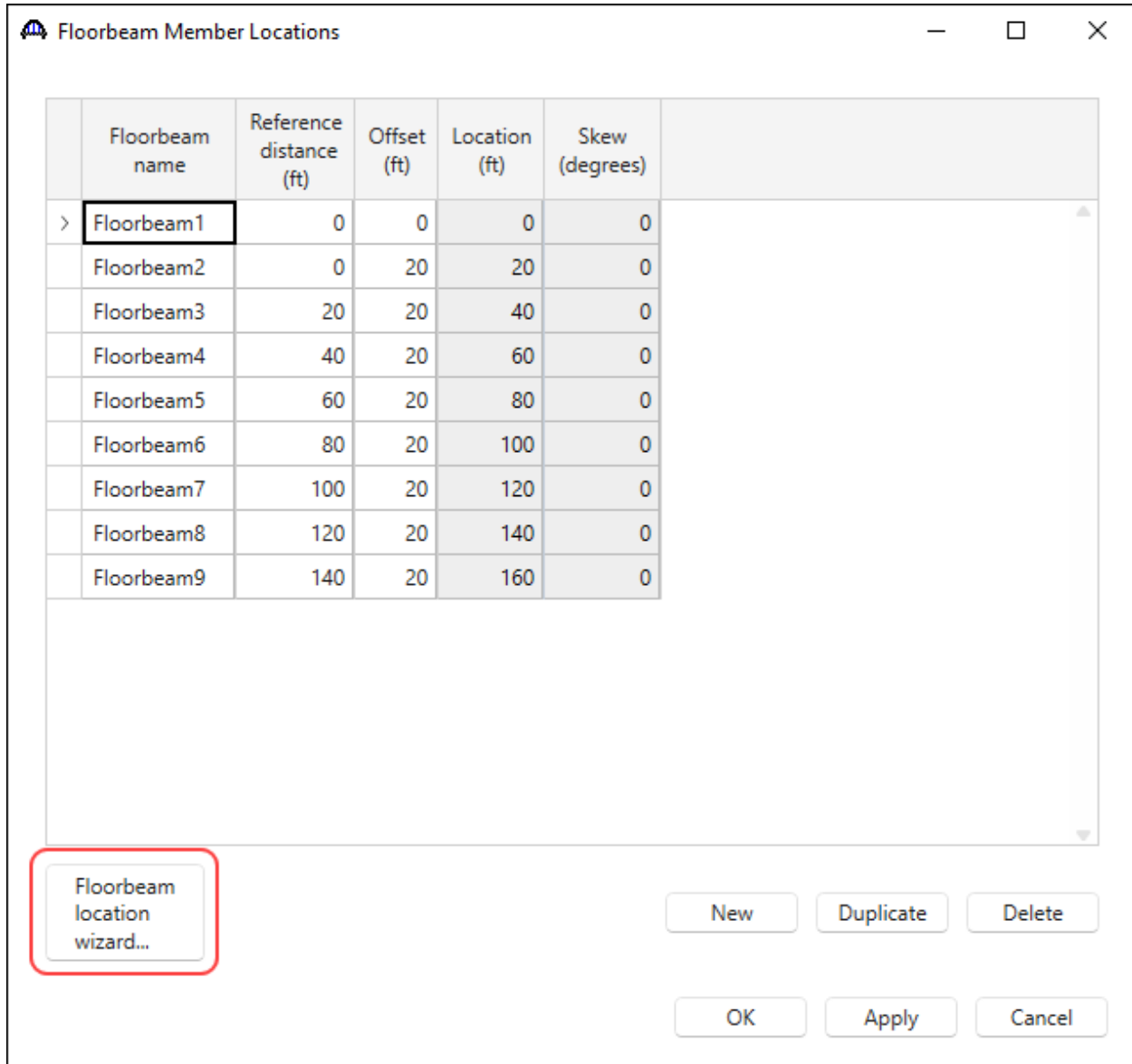
A diaphragm wizard is also available for creating diaphragms for a **Stringer Group Definition Geometry** in a floor system superstructure definition. It is accessed by clicking the **Diaphragm Wizard** button on the **Stringer Group Definition Geometry** window as shown below.



WIZ1 – Wizards in BrDR

Floorbeam Location Wizard

The **Floorbeam Location Wizard** provides a shortcut for creating floorbeam members in a floor system superstructure definition. This wizard will create floorbeam members based on the naming convention and spacing being input. The floorbeam member locations can then be modified on the **Floorbeam Member Locations** window. The **Floorbeam Location Wizard** can be accessed by clicking the **Floorbeam location wizard...** button on the **Floorbeam Member Locations** window as shown below.

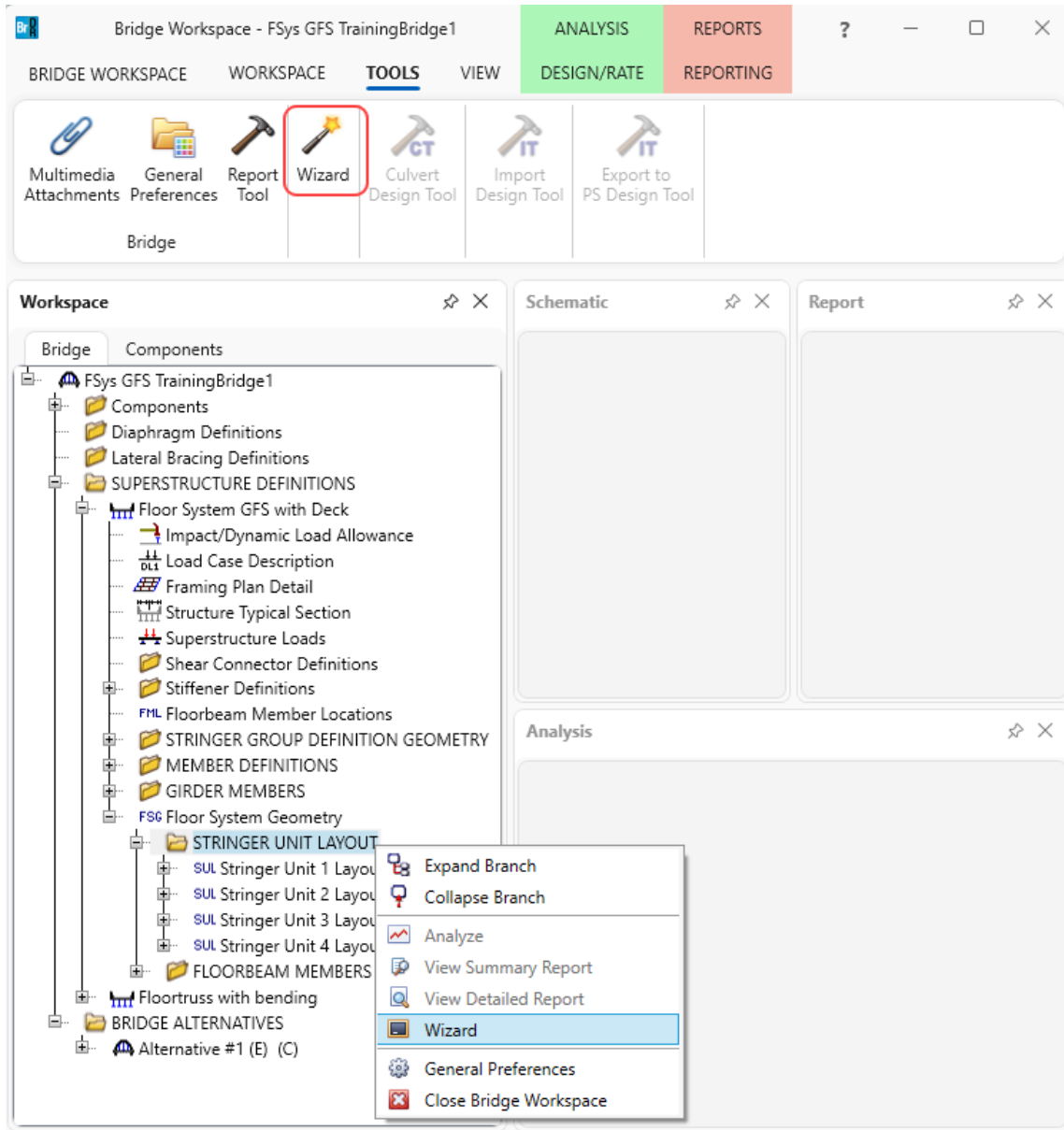


WIZ1 – Wizards in BrDR

Stringer Unit Layout Wizard

The **Stringer Unit Layout Wizard** provides a shortcut for creating stringer member alternatives in a floor system superstructure definition. This wizard permits the assignment of stringer definitions and live load distribution factors to the newly created stringer member alternatives. **Stringer Group Definition Geometry** objects should be created before using this wizard as the wizard requires these objects.

The **Stringer Unit Layout Wizard** can be accessed by clicking on **STRINGER UNIT LAYOUT** in the **Bridge Workspace** and then clicking the **Wizard** button from the **TOOLS** ribbon (or right click and select **Wizard**) as shown below.

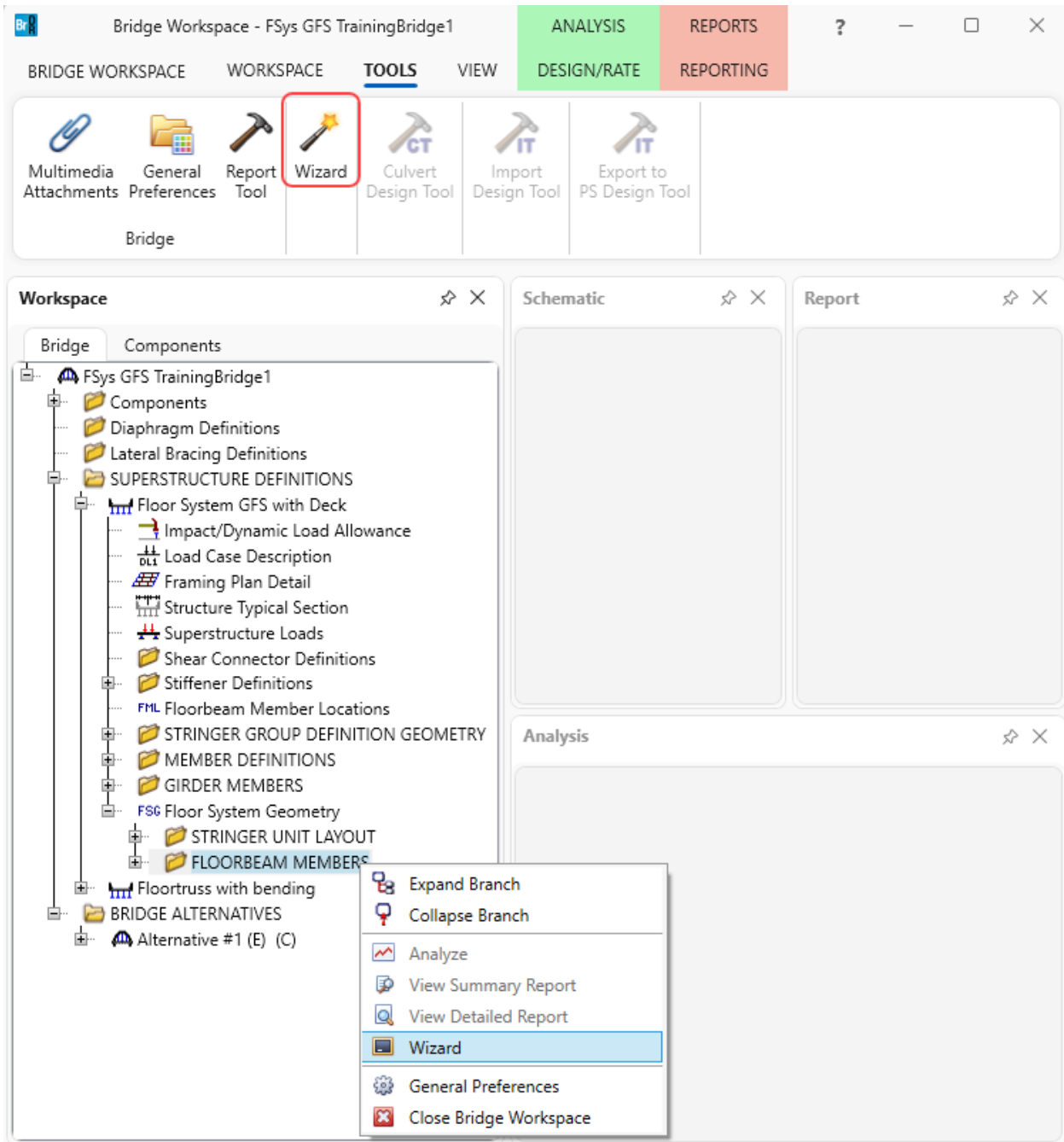


WIZ1 – Wizards in BrDR

Floorbeam Member Alternative Wizard

The **Floorbeam Member Alternative Wizard** provides a shortcut for creating floorbeam member alternatives in a floor system superstructure definition. This wizard permits the assignment of floorbeam definitions to the newly created floorbeam member alternatives.

The **Floorbeam Member Alternative Wizard** can be accessed by clicking **FLOORBEAM MEMBERS** in the **Bridge Workspace** and then clicking the **Wizard** button from the **TOOLS** ribbon (or right click and select **Wizard**) as shown below.

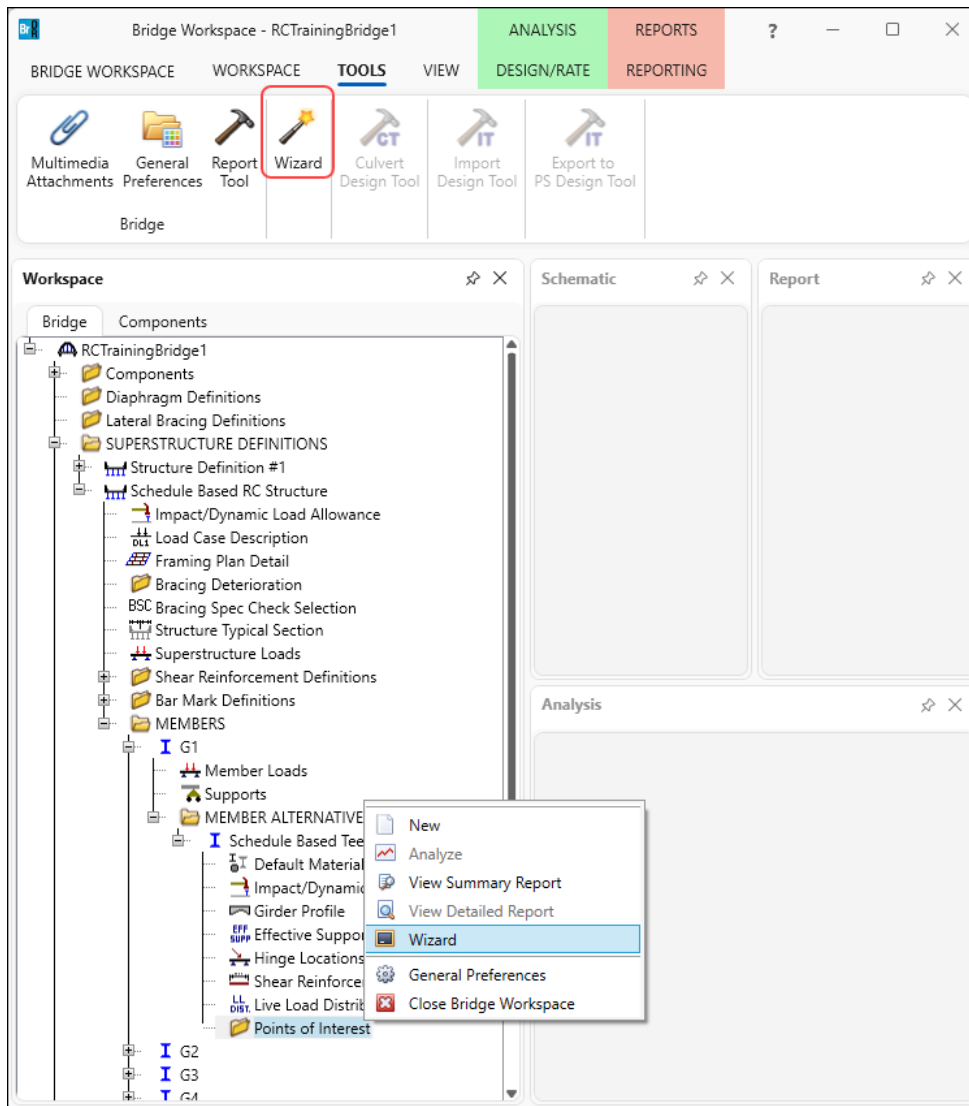


WIZ1 – Wizards in BrDR

Reinforced Concrete Point of Interest Wizard

The **Reinforced Concrete Point of Interest Wizard** provides a shortcut for creating and deleting points of interest in a reinforced concrete member alternative. This wizard is available for schedule-based reinforced concrete member alternative. The wizard will create or delete points of interest based on the source types selected. The available source types are **Location of interest**, **Location of change of girder properties**, **Schedule based reinforcement development – Std Specs**, and **Schedule based reinforcement development – LRFD Specs**. Detailed information on the point of interest can then be entered on the **Point of Interest** window.

The **Reinforced Concrete Point of Interest Wizard** can be accessed by selecting **Points of Interest** in the **Bridge Workspace** tree and then clicking the **Wizard** button from the **TOOLS** ribbon (or right click and select **Wizard**) as shown below.



WIZ1 – Wizards in BrDR

Culvert Wizard

This wizard permits the creation of an initial culvert based on the properties entered including the number of culverts and distance of the location of the culvert.

The button for the culvert wizard can be found in the **Bridge Alternative** window as shown below.

The screenshot shows the 'Bridge Alternative' window with the following fields and controls:

- Alternative name:
- Substructures tab selected, with a Description:
- Horizontal curvature
- Reference line length: ft
- Start bearing, End bearing
- Starting station: ft
- Bearing:
- Global positioning section:
 - Distance: ft
 - Offset: ft
 - Elevation: ft
- Bridge alignment section:
 - Curved
 - Tangent, curved, tangent
 - Tangent, curved
 - Curved, tangent
- Start tangent length: ft
- Curve length: ft
- Radius: ft
- Direction: (dropdown)
- End tangent length: ft
- Buttons: Superstructure wizard..., **Culvert wizard...** (highlighted with a red box), OK, Apply, Cancel

WIZ1 – Wizards in BrDR

Other Tools Available

Compute Lane Position Button

This button will compute the locations of travelways based on the appurtenances entered. This button, labeled **Compute**, is available on the **Structure Typical Section: Lane Position** tab as shown below.

The screenshot shows the 'Structure Typical Section' window with the 'Lane position' tab selected. The diagram at the top illustrates a bridge cross-section with a 'Superstructure Definition Reference Line' and two travelways, 'Travelway 1' and 'Travelway 2'. Distances (A) and (B) are indicated from the reference line to the start and end of the travelways, respectively.

Travelway number	Distance from left edge of travelway to superstructure definition reference line at start (A) (ft)	Distance from right edge of travelway to superstructure definition reference line at start (B) (ft)	Distance from left edge of travelway to superstructure definition reference line at end (A) (ft)	Distance from right edge of travelway to superstructure definition reference line at end (B) (ft)
1	-14	14	-14	14

Below the table, there is an 'LRFD fatigue' section with a 'Lanes available to trucks' input field, an 'Override' checkbox, and a 'Truck fraction' input field. A 'Compute' button is highlighted with a red box. Other buttons include 'New', 'Duplicate', 'Delete', 'OK', 'Apply', and 'Cancel'.

WIZ1 – Wizards in BrDR

Compute LFD and LRFD Live Load Distribution Factors from Typical Section Button

This button, labeled **Compute from typical section**, will compute the LFD live load distribution factors for a member alternative in a girder system superstructure definition. The travelway locations on the **Structure Typical Section: Lane Position** tab must be entered prior to using this button. This button is available on the **Live Load Distribution Factor: Standard** tab and **LRFD** tab as shown below.

The screenshot shows the 'Live Load Distribution' dialog box with the 'Standard' tab selected. The 'Distribution factor input method' section has three radio buttons: 'Use simplified method' (selected), 'Use advanced method', and 'Use advanced method with 1994 guide specs'. There is also a checkbox for 'Allow distribution factors to be used to compute effects of permit loads with routine traffic'. Below this is a table with the following data:

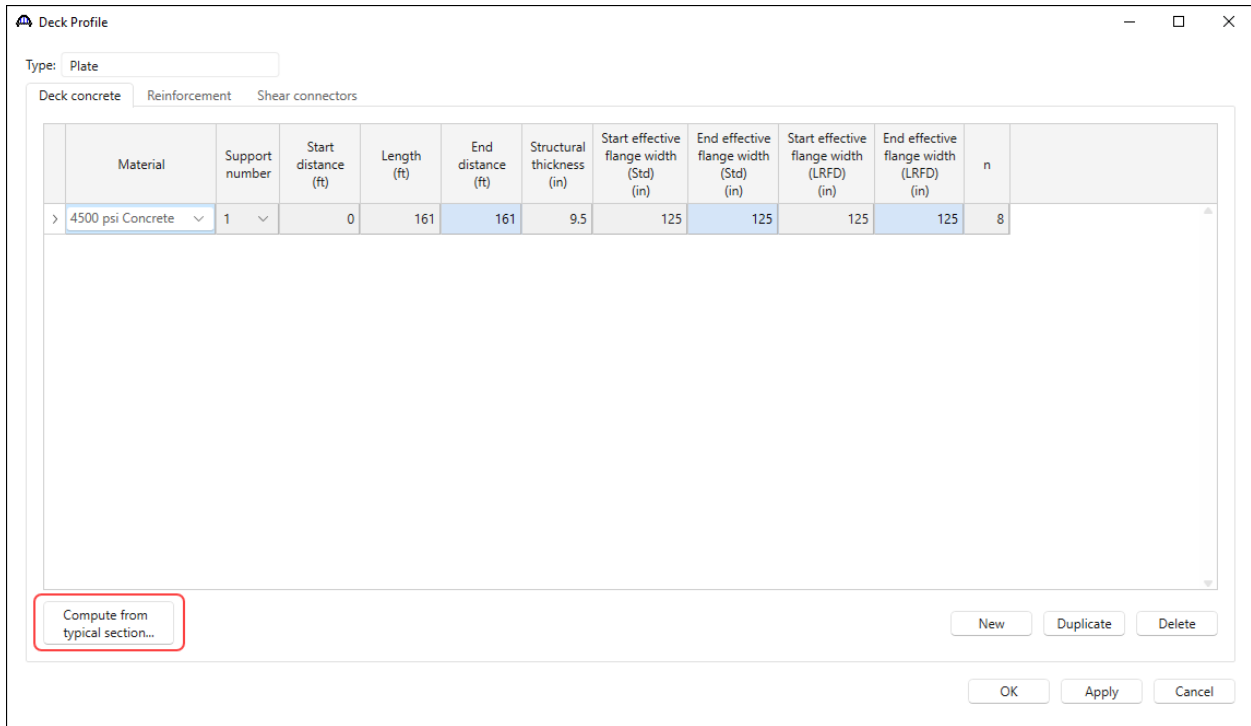
	Lanes loaded	Distribution factor (wheels)			
		Shear	Shear at supports	Moment	Deflection
>	1 Lane	1.25	1.25	1.25	0.5
	Multi-lane	1.25	1.25	1.25	1

At the bottom of the dialog, the 'Compute from typical section...' button is highlighted with a red box. Other buttons include 'View calcs', 'OK', 'Apply', and 'Cancel'.

WIZ1 – Wizards in BrDR

Compute Deck Profile from Typical Section button

This button, labeled **Compute from typical section**, will generate the deck profile ranges for member alternative including computing the Standard and LRFD effective deck widths. This button is available only for girder system superstructure definitions with concrete decks. This button is available on the **Deck Profile: Deck Concrete** tab as shown below.



WIZ1 – Wizards in BrDR

Stiffener Ranges – Apply at diaphragms and Stiffeners between diaphragms buttons

These buttons (see below) are available on the **Stiffener Ranges: Transverse** tab for steel girder member alternatives in a girder system or girder line superstructure definition. Transverse and bearing stiffener definitions must be created prior to using these buttons.

The **Apply at diaphragms** button places transverse stiffener and bearing stiffener definitions at the locations of previously defined diaphragms. This button will not delete any existing transverse stiffener locations. It will create new, additional transverse stiffener locations.

The **Stiffeners between diaphragms** button places transverse stiffener definitions at equal spaces between the locations of previously defined diaphragms. This button will not delete any existing transverse stiffener locations. It will create new, additional transverse stiffener locations.

The screenshot shows the 'Stiffener Ranges' dialog box. At the top, there is a diagram of a girder with several vertical lines representing stiffeners. Below the diagram, there are labels for 'Start Distance' and 'Spacing'. The main part of the dialog is a table with two tabs: 'Transverse stiffener ranges' (selected) and 'Longitudinal stiffener ranges'. The table has the following columns: Name, Support number, Start distance (ft), Number of spaces, Spacing (in), Length (ft), and End distance (ft). The first row is highlighted in blue. Below the table, there are two buttons: 'Apply at diaphragms...' and 'Stiffeners between diaphragms...', which are enclosed in a red box. To the right of these buttons are 'New', 'Duplicate', and 'Delete' buttons. At the bottom of the dialog are 'OK', 'Apply', and 'Cancel' buttons.

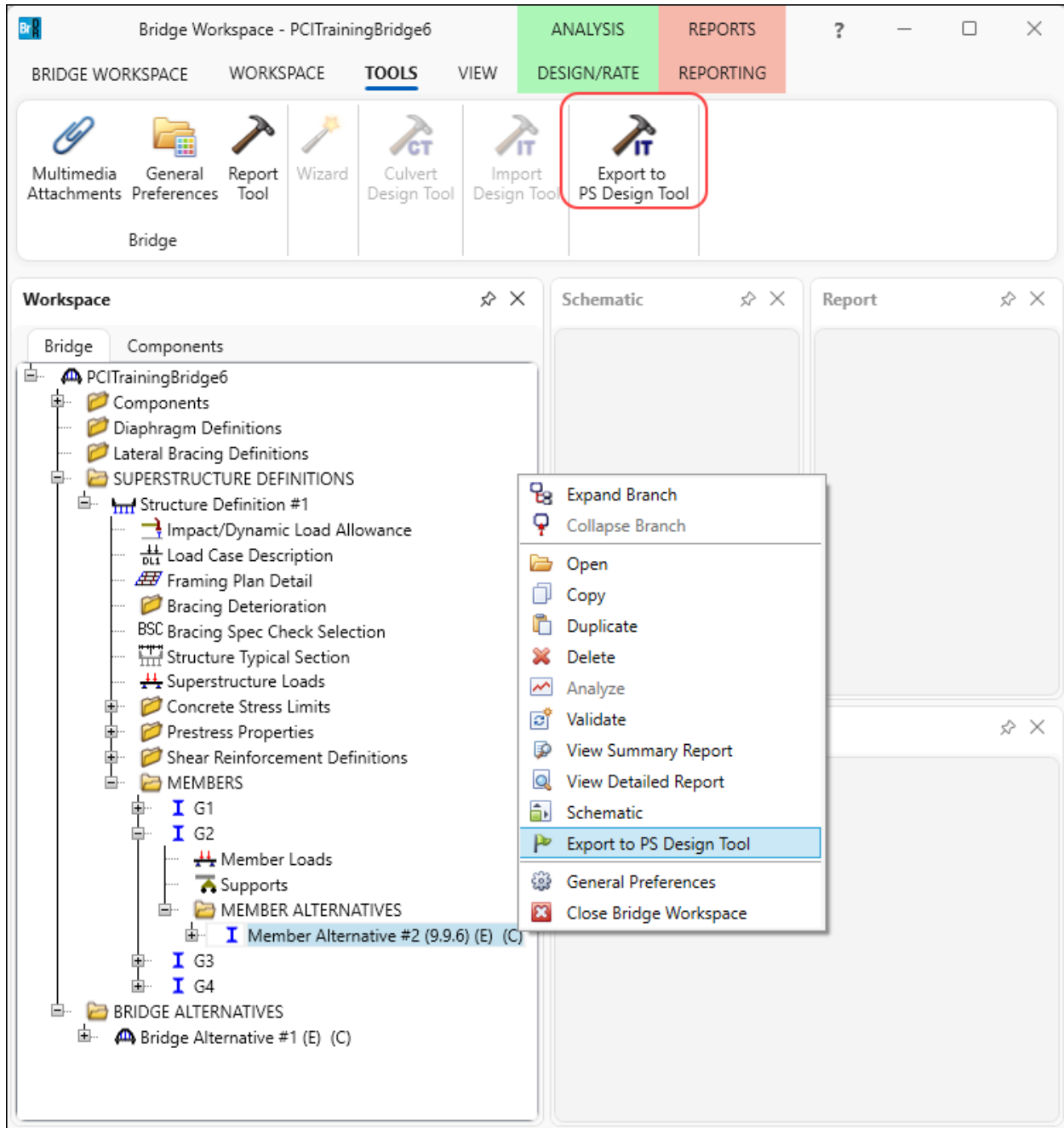
Name	Support number	Start distance (ft)	Number of spaces	Spacing (in)	Length (ft)	End distance (ft)
> Stiffener	1	0	1	58	4.833333	4.833333
Stiffener	1	4.83333	1	135	11.25	16.08333
1 Sided Dia Conn PL	1	27.31	1	0	0	27.31
Stiffener	1	27.31	1	207	17.25	44.56
1 Sided Dia Conn PL	1	54.14	1	0	0	54.14
1 Sided Dia Conn PL	1	54.14	2	322	53.666667	107.806667
Stiffener	1	107.806...	1	161	13.416667	121.223334
1 Sided Dia Conn PL	1	107.80667	1	322	26.833333	134.640003
Stiffener	1	134.640...	1	130	10.833333	145.473336
Stiffener	1	134.64	1	258.32	21.526667	156.166667

WIZ1 – Wizards in BrDR

Prestress Design Tool

BrDR/BrD contains a prestress design tool that can be used to compute a preliminary strand pattern for a prestressed concrete I beam or box beam member alternative. Harped and straight strand layouts are determined according to AASHTO LRFD specifications.

The **Prestress Design Tool** is available during the BrDR/BrD installation and can be accessed from Start menu once the installation is complete. From BrDR, **Export to PS Design Tool** option is available by selecting the name of the prestressed I beam or box beam member alternative in the **Bridge Workspace** and then clicking the **Export to PS Design Tool** button from the **TOOLS** ribbon (or right click and select **Export to PS Design Tool**) as shown below.



WIZ1 – Wizards in BrDR

RC Box Culvert Design Tool

BrDR/BrD contains a culvert design tool that can be used to design a preliminary reinforced concrete box culvert member alternative.

The button for the culvert wizard can be found on the **TOOLS** ribbon while sitting on the **CULVERT ALTERNATIVES** in a culvert bridge (or right click and select **Culvert Design Tool**).

