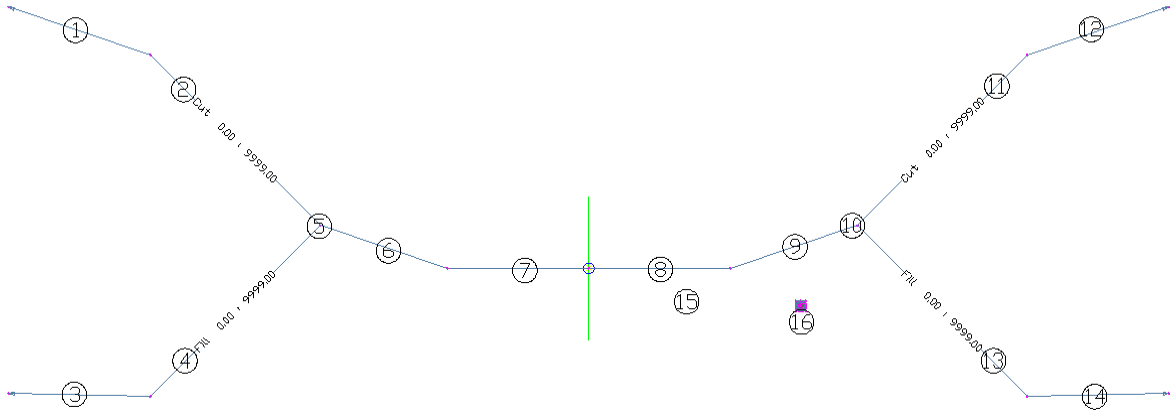
This guide covers the *Conditional CutFill Waterway With Support Tile* assembly, shown in the diagram below. This assembly utilizes a conditional cut and fill subassembly that controls how the cross section is plotted depending on whether or not the section is in a cut or fill condition when the side slopes reach a specified design depth.

The individual subassembly components of this assembly objects are discussed in further detail below.



Subassembly Components

1. <u>Cond CutFill Wway wTile – Upper Left Side Slope in Cut</u>

   LinkSlopeToSurface subassembly object. This subassembly is placed when the left hand side slope is in cut, or below the ground surface, when it reaches the design depth.

   Controlling Parameters

Slope	The default value is 33.33% or 3:1. This is the slope at which to continue the left hand slope when below the original ground surface at the design depth. Slope values can be entered as a numeric value (i.e. 33.3) or as a ratio (i.e. 3:1). If you enter “3:1” the slope will automatically be converted to its numeric value.
Add Link in	The default value is Cut Only. Setting this value to Cut Only will cause the line segment to slope upward until it ties into the original ground surface, rather than checking the cut condition (sloping upward) and the fill condition (sloping downward) and selecting the shortest option of the two.

2. <u>Cond CutFill Wway wTile – Link to Cut Section on Left Side</u>

   This component of the assembly object is merely a visual representation of the link between the point at the top of the left hand slope where the cross section is evaluated to determine whether it is in cut or fill, and the subassembly object that will be used if the section is in cut at that point.

3. <u>Cond CutFill Wway wTile – Upper Left Side Slope in Fill</u>

   LinkSlopeToSurface subassembly object. This subassembly is placed when the left hand side slope is in fill, or above the ground surface, when it reaches the design depth.

   Controlling Parameters

Slope	The default value is 2%. This is the slope at which to continue the left hand slope when above the original ground surface at the design depth.
Add Link in	The default value is Fill Only. Setting this value to Fill Only will cause the line segment to slope down until it ties into the original ground surface, rather than checking the cut condition (sloping upward) and the fill condition (sloping downward) and selecting the shortest option of the two.

4. Cond CutFill Wway wTile – Link to Fill Section on Left Side

   This component of the assembly object is merely a visual representation of the link between the point at the top of the left hand slope where the cross section is evaluated to determine whether it is in cut or fill, and the subassembly object that will be used if the section is in fill at that point.

5. Connection point for conditional cut and fill subassembly object on left side of cross section

6. Cond CutFill Wway wTile – Lower Left Side Slope

   LinkSlopeAndVerticalDeflection subassembly object. This component represents the left side slope of the waterway below the design depth of the channel.

   Controlling Parameters

   Slope — The default value is 33.33% or 3:1. This is the slope at which to continue the left hand slope when below the original ground surface at the design depth.

   Slope values can be entered as a numeric value (i.e. 33.3) or as a ratio (i.e. 3:1). If you enter "3:1" the slope will automatically be converted to its numeric value.

   Vertical Deflection — The design depth for the channel. The default value is 3 feet.

7. Cond CutFill Wway wTile – Left Side of Channel

   LinkOffsetAndSlope subassembly object. This component represents the left half of the waterway channel.

   Controlling Parameters

   Offset from Baseline — This is the distance between the channel centerline and the left hand edge of the channel. If the centerline is located at the middle of the channel, this value will be one half the width of the channel. The default value is 10 feet.

   Slope — The default value is 0% to provide a flat bottom channel. This value can be changed if the intention is to provide a waterway with a sloped bottom.

8. Cond CutFill Wway wTile – Right Side of Channel

   LinkOffsetAndSlope subassembly object. This component represents the right half of the waterway channel.

   Controlling Parameters

   Offset from Baseline — This is the distance between the channel centerline and the right hand edge of the channel. If the centerline is located at the middle of the channel, this value will be one half the width of the channel. The default value is 10 feet.

   Slope — The default value is 0% to provide a flat bottom channel. This value can be changed if the intention is to provide a waterway with a sloped bottom.

9. Cond CutFill Wway wTile – Lower Right Side Slope

   LinkSlopeAndVerticalDeflection subassembly object. This component represents the right side slope of the waterway below the design depth of the channel.

   Controlling Parameters

   Slope — The default value is 33.33% or 3:1. This is the slope at which to continue the left hand slope when below the original ground surface at the design depth.

   Slope values can be entered as a numeric value (i.e. 33.3) or as a ratio (i.e. 3:1). If you enter "3:1" the slope will automatically be converted to its numeric value.

   Vertical Deflection — The design depth for the channel. The default value is 3 feet.

10. Connection point for conditional cut and fill subassembly object on right side of cross section

11. Cond CutFill Wway wTile – Link to Cut Section on Right Side

    This component of the assembly object is merely a visual representation of the link between the point at the top of the right hand slope where the cross section is evaluated to determine whether it is in cut or fill, and the subassembly object that will be used if the section is in cut at that point.

12. Cond CutFill Wway wTile – Upper Right Side Slope in Cut

    LinkSlopeToSurface subassembly object. This subassembly is placed when the left hand side slope is in cut, or below the ground surface, when it reaches the design depth.

    Controlling Parameters

    Slope — The default value is 33.33% or 3:1. This is the slope at which to continue the left hand slope when below the original ground surface at the design depth.

    Slope values can be entered as a numeric value (i.e. 33.3) or as a ratio (i.e. 3:1). If you enter "3:1" the slope will automatically be converted to its numeric value.

    Add Link in — The default value is Cut Only. Setting this value to Cut Only will cause the line segment to slope upward until it ties into the original ground surface, rather than checking the cut condition (sloping upward) and the fill condition (sloping downward) and selecting the shortest option of the two.

13. Cond CutFill Wway wTile – Link to Fill Section on Right Side

    This component of the assembly object is merely a visual representation of the link between the point at the top of the right hand slope where the cross section is evaluated to determine whether it is in cut or fill, and the subassembly object that will be used if the section is in fill at that point.

14. Cond CutFill Wway wTile – Upper Right Side Slope in Fill

    LinkSlopeToSurface subassembly object. This subassembly is placed when the right hand side slope is in fill, or above the ground surface, when it reaches the design depth.

    Controlling Parameters

    Slope — The default value is 2%. This is the slope at which to continue the right hand slope when above the original ground surface at the design depth.

    Add Link in — The default value is Fill Only. Setting this value to Fill Only will cause the line segment to slope down until it ties into the original ground surface, rather than checking the cut condition (sloping upward) and the fill condition (sloping downward) and selecting the shortest option of the two.

15. Cond CutFill Wway wTile – Link to Locate Tile Location

    LinkSlopeAndVerticalDeflection subassembly object. This subassembly object is used to locate the flowline of the support tile in relation to the centerline of the waterway channel. The subassembly itself will not be plotted.

    Controlling Parameters

    Side — Left or right depending on which side of the section the tile is located on. The default value is Right.

    Slope — The slope value is used to specify the horizontal distance between the centerline of the waterway and the flowline of the tile conduit. You can have the program automatically calculate the slope for you by entering a slope value in the form H:V, where:

    H = Total horizontal distance between the centerline of the waterway channel and the tile line. This equals the width of the half of the channel on the side where the tile line is placed plus the horizontal distance from the edge of the channel to the tile line.

    V = Total vertical distance between the flowline of the waterway at the centerline and the flowline of the tile conduit. This will be the same as the Vertical Deflection value below.

    Vertical Deflection — The vertical distance between the flowline of the waterway at the centerline and the flowline of the tile conduit. The value is positive if the flowline of the tile line is above the waterway channel elevation, or negative if the flowline of the tile line is below the waterway channel. The default value is -3 feet.

16. Cond CutFill Wway wTile – Tile Line

TrenchWithPipe subassembly object. This subassembly object is used to represent the tile line. The default values for the assembly are set to represent a pipe without a trench, but the dimensions for the conduit trench could also be provided.

Controlling Parameters

Attachment Point	The point at which the subassembly object is attached to the *Cond CutFill Wway wTile – Link to Locate Tile Location* subassembly (component 15). The default value is Bottom center.
Side	The side the subassembly is inserted towards, which is only critical for tile line subassemblies that are not symmetrical. The default value is left.
Bedding Depth	Distance between the outside wall of the pipe at the bottom and the bottom of the pipe trench. The default value is set to 0.001 feet to approximate a zero bedding depth.
Bottom Width	The bottom width of the pipe trench. The default value is set to 0.7 feet, which matches the dimensions of a pipe with an inside diameter of 0.5 feet and 0.1 foot thick walls.
Depth	The depth of the pipe trench. The default value is set to 0.7 feet, which matches the dimensions of a pipe with an inside diameter of 0.5 feet and 0.1 foot thick walls.
Pipe Diameter	The inside diameter of the tile line. The default value is set to 0.5 feet.
Pipe Thickness	The wall thickness of the tile line. The default value is set to 0.1 feet.
Top Width	The top width of the pipe trench. The default value is set to 0.7 feet, which matches the dimensions of a pipe with an inside diameter of 0.5 feet and 0.1 foot thick walls.