Electrical Tutorial

Inserting Components

Version 2014

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SESSION 4

Inserting Components

Objective

By the end of this session, you will be able to:

- Inset components from the Smart 3D catalog in a model.

Prerequisite Sessions

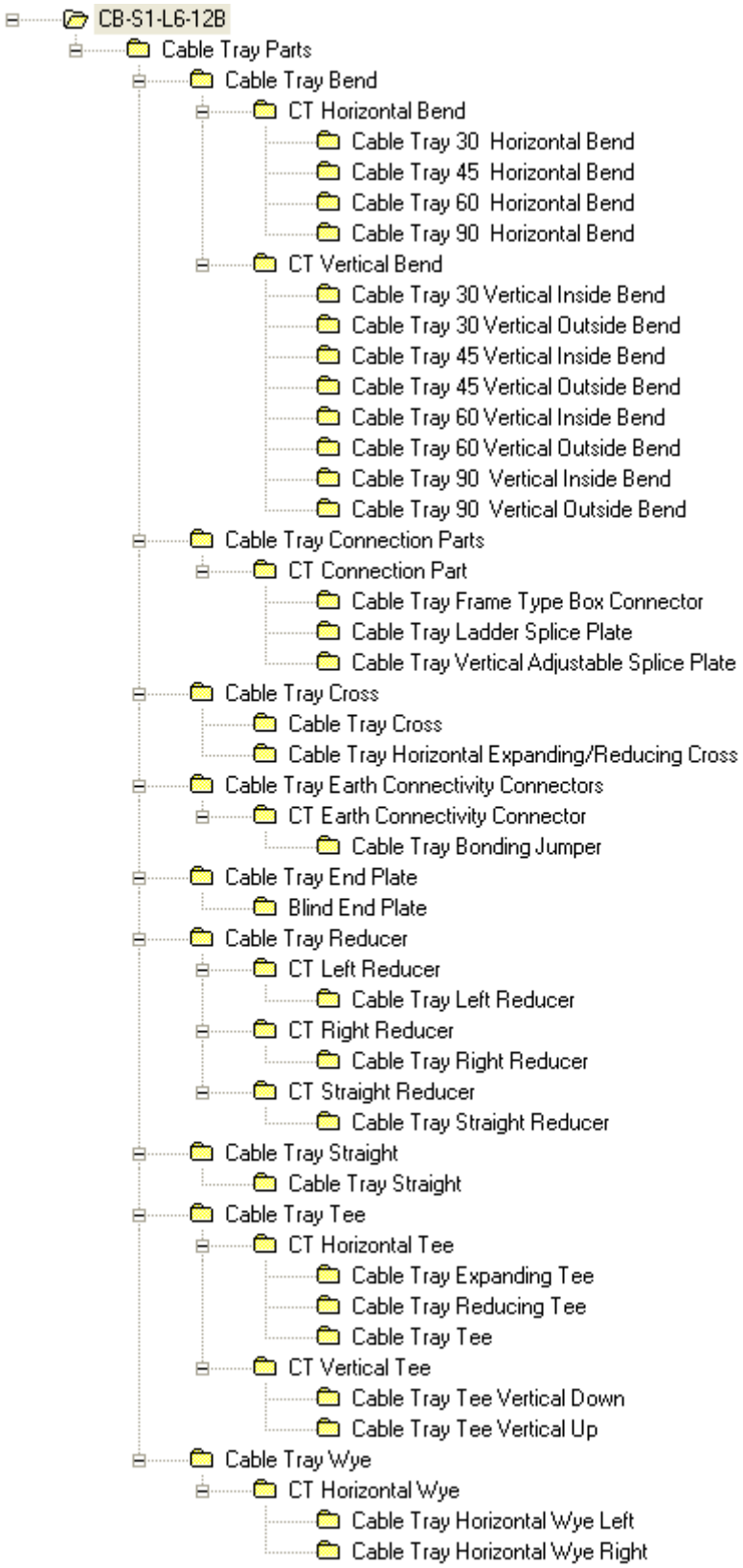
- Smart 3D Overview
- Smart 3D Common Sessions
- Electrical Overview
- Routing a Cableway

Overview

Parts can be inserted into an existing cable tray/conduit routing or added to the ends of existing cable tray paths. A typical way to do this is to use the **Insert Component** command. When you use the **Insert Component** command the software will generate a new part or component and a parent feature for that component. These components can include anything from branches, end components, reducers to turns for cable tray, couplings, and tees for conduits, and so forth. The principle concept here is that the part that results from the **Insert Component** command is a catalog item that can be purchased and general is reported on a **Material Takeoff** report for purchasing. Additionally, the software will allow you to add components during initial routing. For example, you could be routing a cableway or conduit by using the **Route Cableway** or **Route Conduit** command. While in the route command, activate the **Insert Component** command and place the component at the current dynamic route location, then reactive the route cable tray/conduit command and continue your standard routing.

Smart 3D uses the specification and the insertion point to filter the components available for placement. In addition, it also generates any mating and connection parts required to connect the inserted part to adjacent objects. In case of cable tray routing, if the solution mating part does not exist, then a cableways transition will be placed to allow the component to exist in the route.

NOTE Currently reference data will return all parts that satisfy the specification and the insertion point as opposed to limiting the list to component sizes. Users must familiarize with the naming convention of the parts and the cable tray part hierarchy. The cable tray part hierarchy can be standardized based on the project specification set.


CB-S1-L6-12B
Cable Tray Parts
Cable Tray Bend
CT Horizontal Bend
Cable Tray 30 Horizontal Bend
Cable Tray 45 Horizontal Bend
Cable Tray 60 Horizontal Bend
Cable Tray 90 Horizontal Bend
CT Vertical Bend
Cable Tray 30 Vertical Inside Bend
Cable Tray 30 Vertical Outside Bend
Cable Tray 45 Vertical Inside Bend
Cable Tray 45 Vertical Outside Bend
Cable Tray 60 Vertical Inside Bend
Cable Tray 60 Vertical Outside Bend
Cable Tray 90 Vertical Inside Bend
Cable Tray 90 Vertical Outside Bend
Cable Tray Connection Parts
CT Connection Part
Cable Tray Frame Type Box Connector
Cable Tray Ladder Splice Plate
Cable Tray Vertical Adjustable Splice Plate
Cable Tray Cross
Cable Tray Cross
Cable Tray Horizontal Expanding/Reducing Cross
Cable Tray Earth Connectivity Connectors
CT Earth Connectivity Connector
Cable Tray Bonding Jumper
Cable Tray End Plate
Blind End Plate
Cable Tray Reducer
CT Left Reducer
Cable Tray Left Reducer
CT Right Reducer
Cable Tray Right Reducer
CT Straight Reducer
Cable Tray Straight Reducer
Cable Tray Straight
Cable Tray Straight
Cable Tray Tee
CT Horizontal Tee
Cable Tray Expanding Tee
Cable Tray Reducing Tee
Cable Tray Tee
CT Vertical Tee
Cable Tray Tee Vertical Down
Cable Tray Tee Vertical Up
Cable Tray Wye
CT Horizontal Wye
Cable Tray Horizontal Wye Left
Cable Tray Horizontal Wye Right

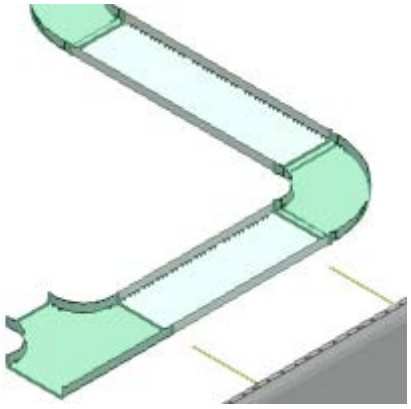
As with other routing environments, precision tools are available to aid you in controlling the route path. When inserting components, you can use PinPoint or Point Along commands to position the components precisely in the model. Use the Point Along command to select an element along which to place the object, either along a certain E-, N-, or EL-coordinate or along existing cableway/conduit route. Select a starting point along the element from which the software measures the distance. You can use the Point Along command to insert a component in between the two cableways.

Inserting Components from the Catalog

The following example shows a typical workflow to insert components in a cableway. You first insert a horizontal tee at the end of a cableway. Second, insert a vertical outside and inside bend at the end of this horizontal tee and finally insert another horizontal tee with **Point Along** by using **Insert Component** command.

Inserting the First Horizontal Tee

Insert a horizontal tee of part number 4P-24-18HT48 from specification CB-S1-L6-12B at the end of the cableway by using the Insert Component command in Unit U04. After inserting the horizontal tee, the workspace should look like this.

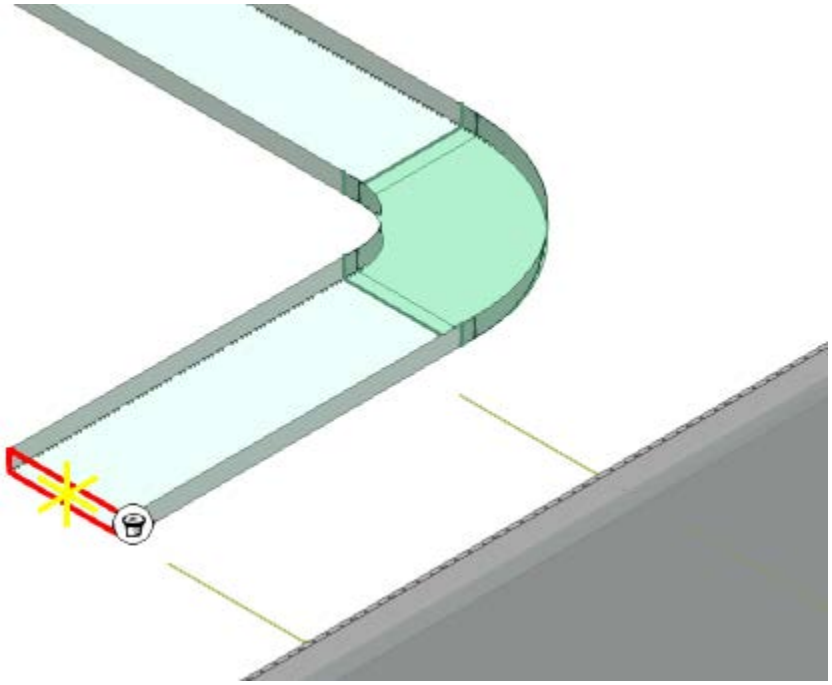


Before Starting this Procedure

- Define your workspace to display Unit **U04** and coordinate system **U04 CS**. In your training plant, select **U04** from **Plant Filters > Training Filters** in the **Select Filter** dialog box.
- Make sure that you are in **Electrical** task and the **Active Permission Group** is set to **Electrical**.
- Familiarize with the fitting part number naming convention so that the selection becomes very easy. For example, each section of the part number **4P-24-18HT12** has a different meaning. **4P** specifies the series to which the component belongs. The number **24** specifies the main size and **18** specifies the reducing size. **HT** is the Horizontal Tee and the number **12** specifies the turning radius.

1. Click **Insert Component** on the vertical toolbar.

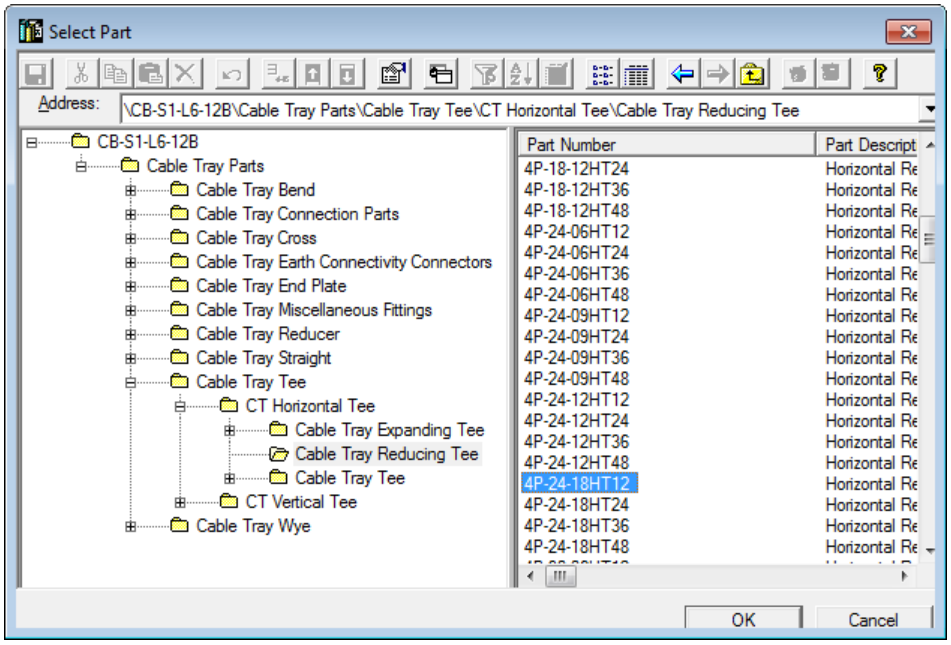
2. Select the **Cableway End Feature** of a cableway as shown.



3. Select **More…** option in the **Part** drop-down on the **Insert Component** ribbon to select the component part from the catalog that you want to insert.

The Select Part dialog box appears.

4. Expand the node **CB-S1-L6-12B\Cable Tray Parts\Cable Tray Tee\CT Horizontal Tee\Cable Tray Reducing Tee** in the left pane of the **Select Part** dialog box. Select the **Part Number 4P-24-18HT12** from the right pane.

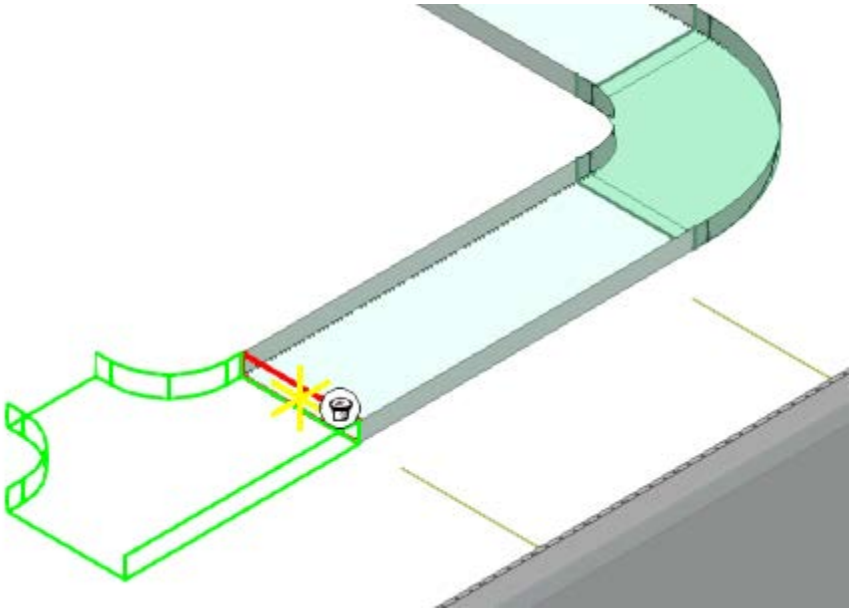


NOTES

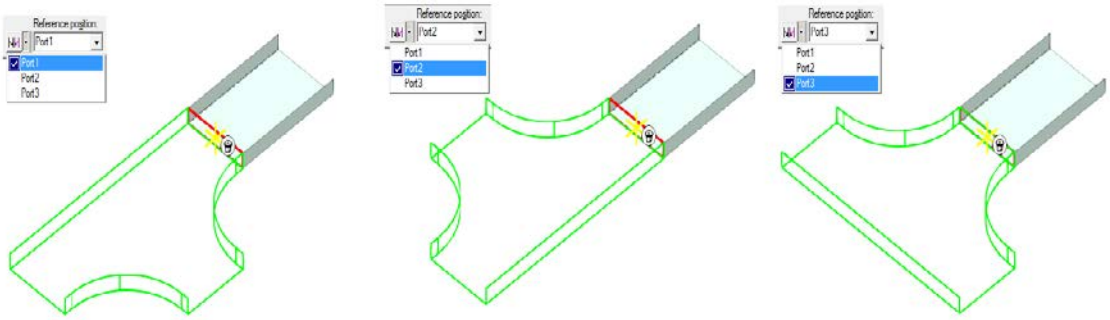
- The **Select Part** dialog box displays all the cable tray parts available in the part catalog for the current cable tray specification. However, it will not let you select a part if the geometry does not belong to the correct feature type during fitting placement.
- The part number in the right pane of the **Select Part** dialog box represents the dimensions of the component that you want to place. After you have understood how parts are numbered, selection becomes very easy. For example, each section of the part number 4P-24-18HT12 specifies something different. 4P specifies the series to which the component belongs. The number 24 specifies the main size and 18 specifies the reducing size. HT is the Horizontal Tee and 12 specifies the turning radius.

5. After selecting the Part Number in the **Select Part** dialog box, click **OK**.

The horizontal tee displays in the graphic view.

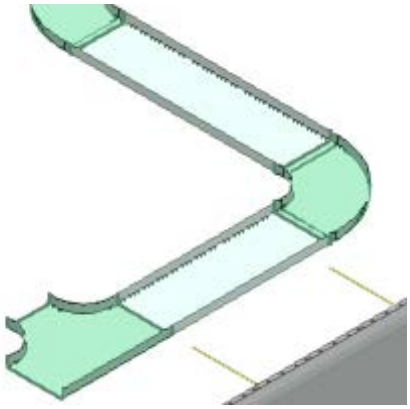


NOTE During insertion of any component, the **Flip** command toggles through the ports available for the component being inserted. As each port is toggled, the component is oriented such that the selected port is aligned along the axis of the run on which it is being inserted. The **Component Reference Position** control allows the user to specify insertion of the component by a particular port, by its origin, or by the port of a solver-generated mating part.



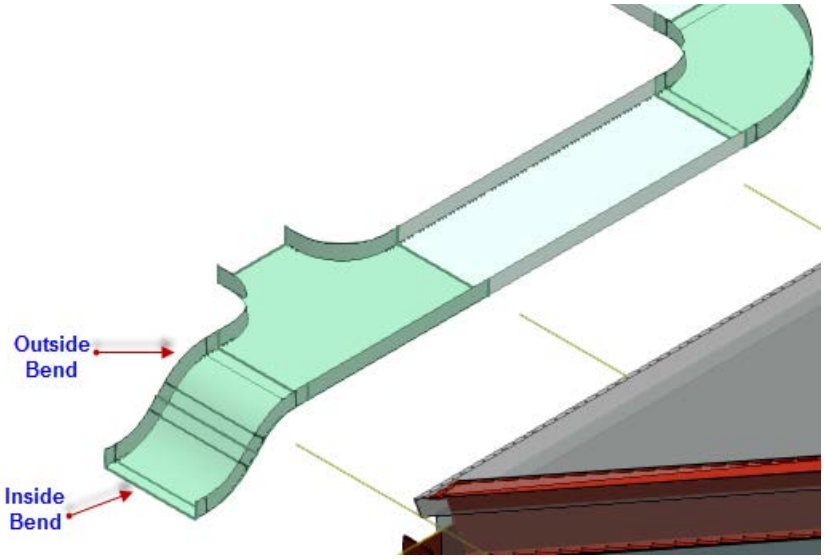
6. Click **Finish** to accept the placement of the component.

7. Right-click in the graphic view to terminate the **Insert Component** command.



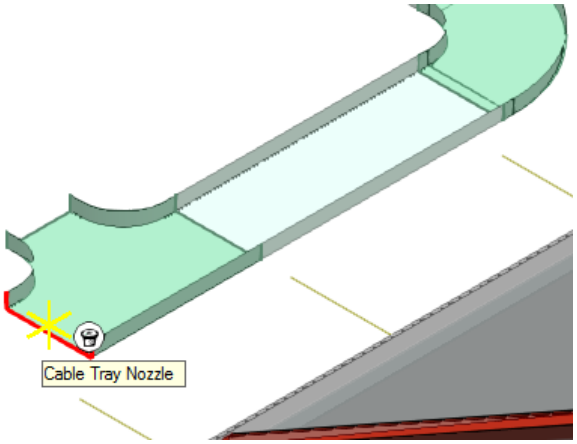
Inserting a Vertical Bend

Insert an outside vertical bend of part number 4P-24-45VO12 at the end of the horizontal tray that you inserted above and then place an inside vertical bend of part number 4P-24-45VI12 at the end of Outside vertical bend. After inserting the vertical bends, the workspace should resemble this.



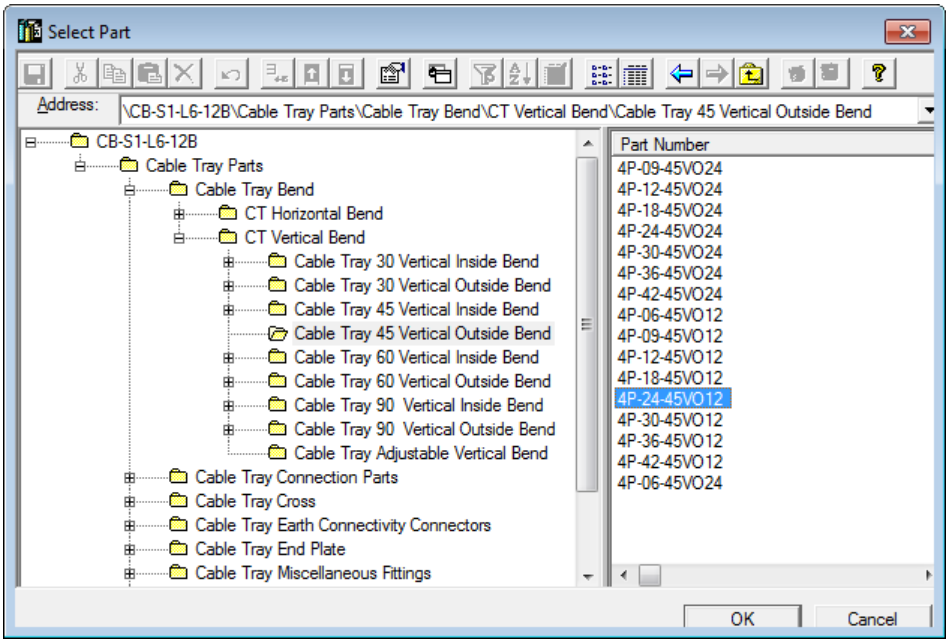
1. Click **Insert Component** the vertical toolbar.

2. Slect the end feature of the horizontal tee that you placed as shown.



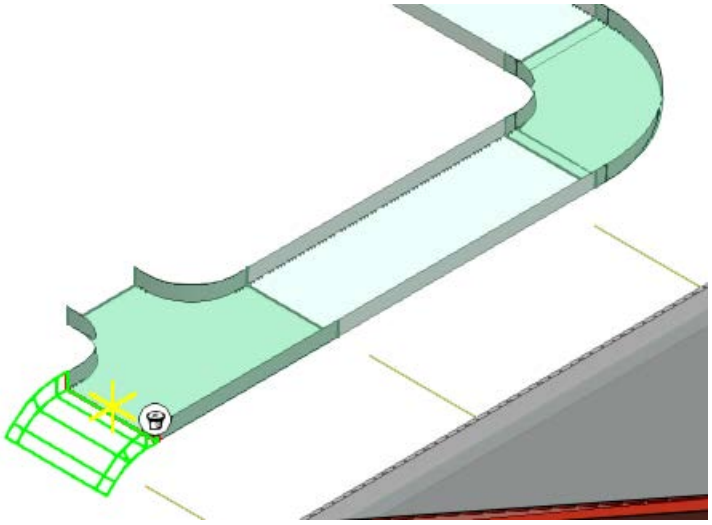
3. Select **More…** in the **Part** drop-down list on the **Insert Component** ribbon to select the component part from the catalog.

4. In the **Select Part** dialog box, expand the node **CB-S1-L6-12B\Cable Tray Parts\Cable Tray Bend\CT Vertical Bend\Cable Tray 45 Vertical Outside Bend** in the left pane, and select the **Part Number 4P-24-45VO12** from the right pane.

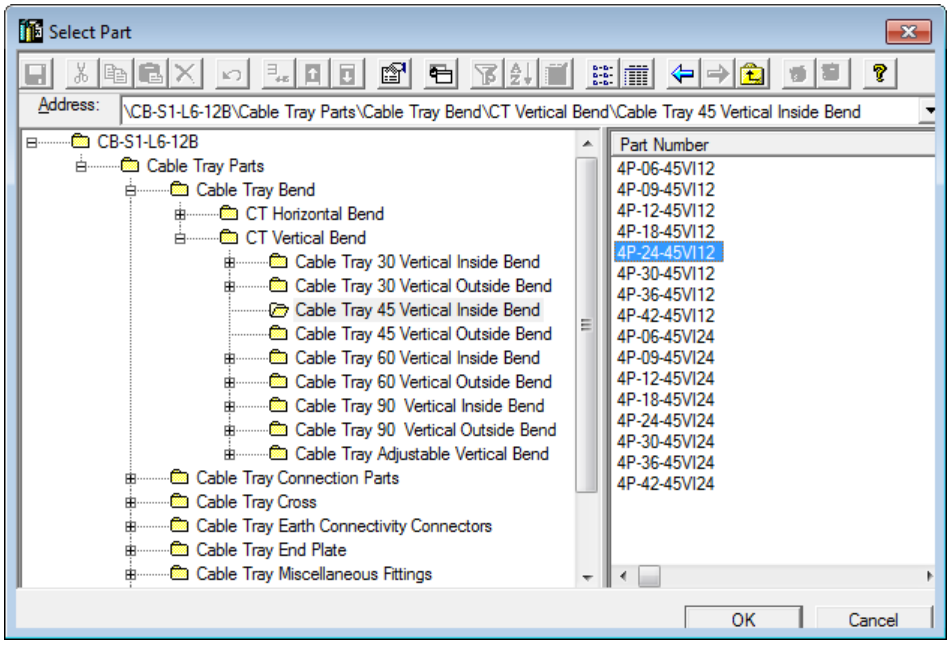


5. After selecting the **Part Number** in the **Select Part** dialog box, click **OK**.

The vertical bend in the graphic view should resemble below.

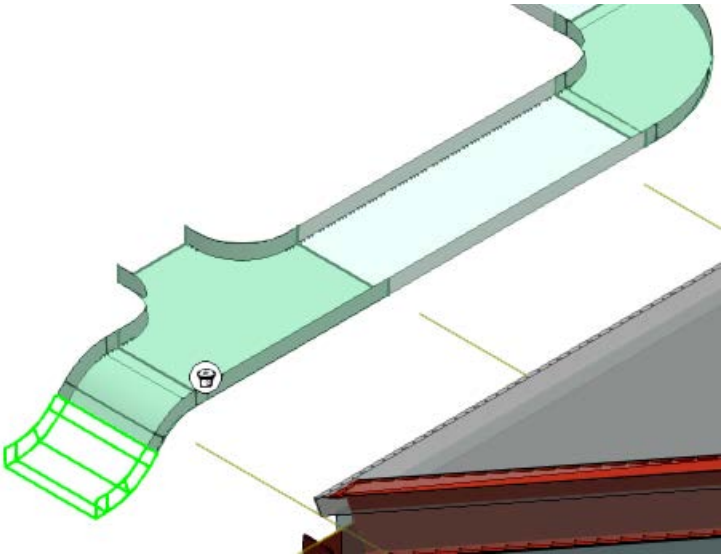


6. Click **Finish** to accept the placement of the component.
7. On the **Insert Component** ribbon, select the **More…** option in the **Part** drop-down to select the component part from the catalog.
8. In the **Select Part** dialog box, expand the node **CB-S1-L6-12B\Cable Tray Parts\Cable Tray Bend\CT Vertical Bend\Cable Tray 45 Vertical Inside Bend** in the left pane, and select the **Part Number 4P-24-45VI12** from the right pane.



9. After selecting the **Part Number** in the **Select Part** dialog box, click **OK**.

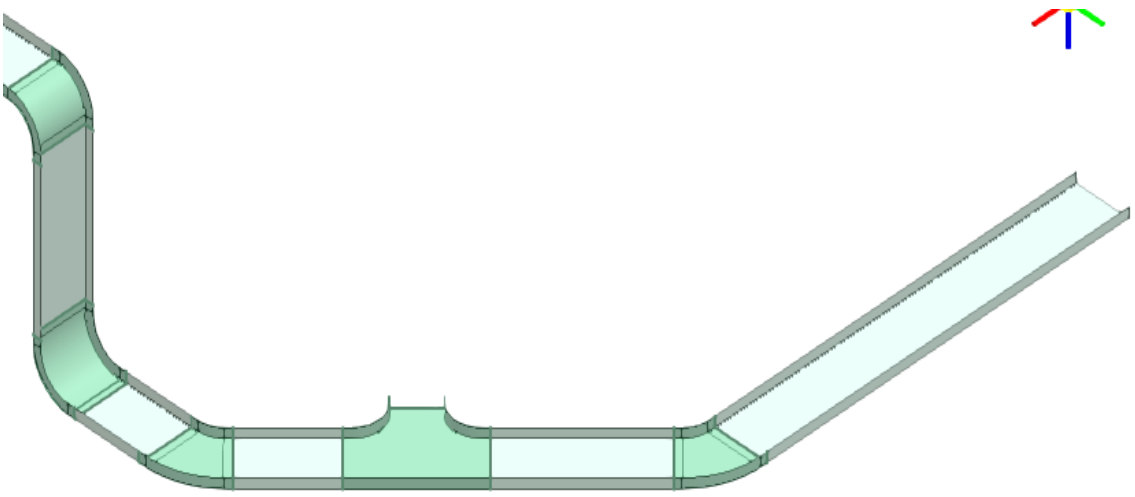
   The vertical bend in the graphic view should resemble below.



10. Click **Finish** to accept the placement of the component.
11. Right-click in the graphic view to terminate the **Insert Component** command.

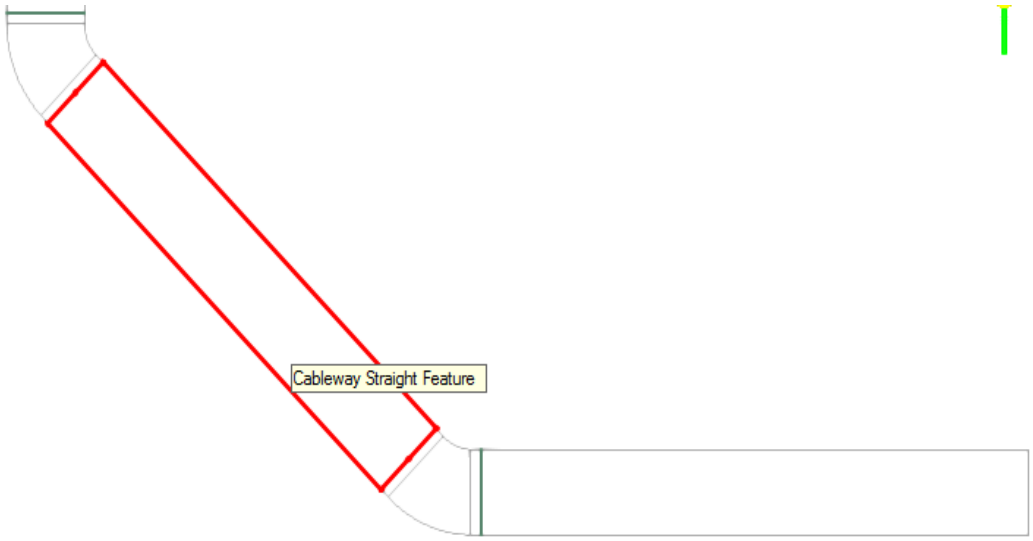
Inserting Horizontal Tee using Point Along

Insert another horizontal tee of part number **4P-24-12HT48** with **Point Along** at the other end of the cableway by using **Insert Component** command in Unit **U04**. After inserting the horizontal tee, the workspace should resemble this.

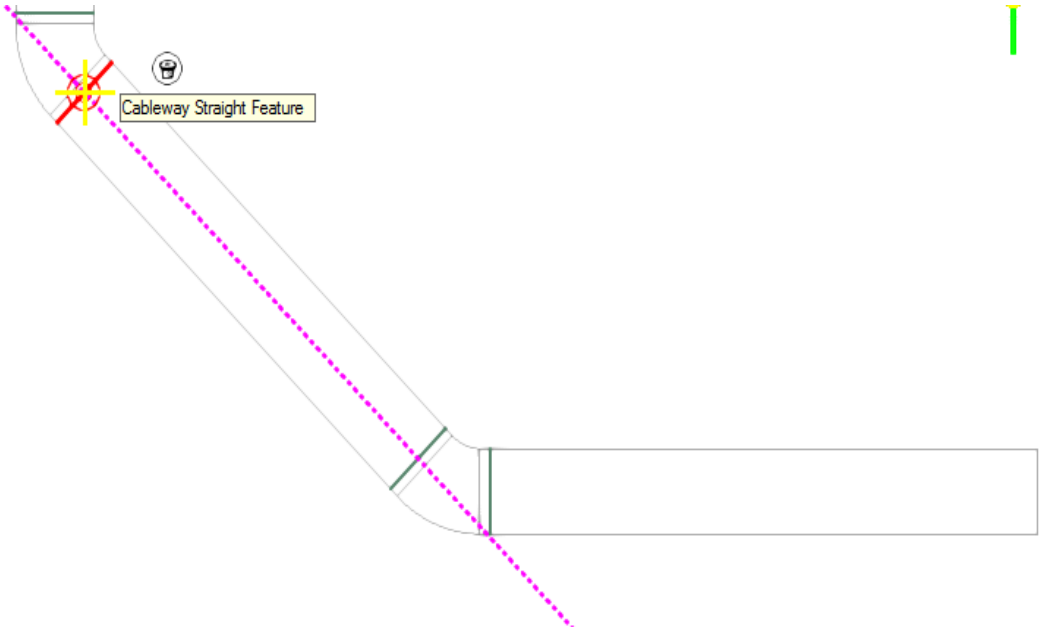


1. Click **Insert Component** on the vertical toolbar.
2. Activate **Point Along** ribbon using **Tools > Point Along** command.
3. Select **Reference** option on the **Point Along** ribbon. This option identifies the path along which to measure the placement distance.

4. Select the **Cableway Straight Feature** to specify the path along which you want to measure the placement distance of the tee, as shown.



5. Select **Reference Point** on the **Point Along** ribbon. This option is used to identify a point from which the distance is measured. The point should be located on the reference element.
6. Select End of **Cableway Straight Feature** of a cableway to specify the point from which to measure the placement distance as shown.



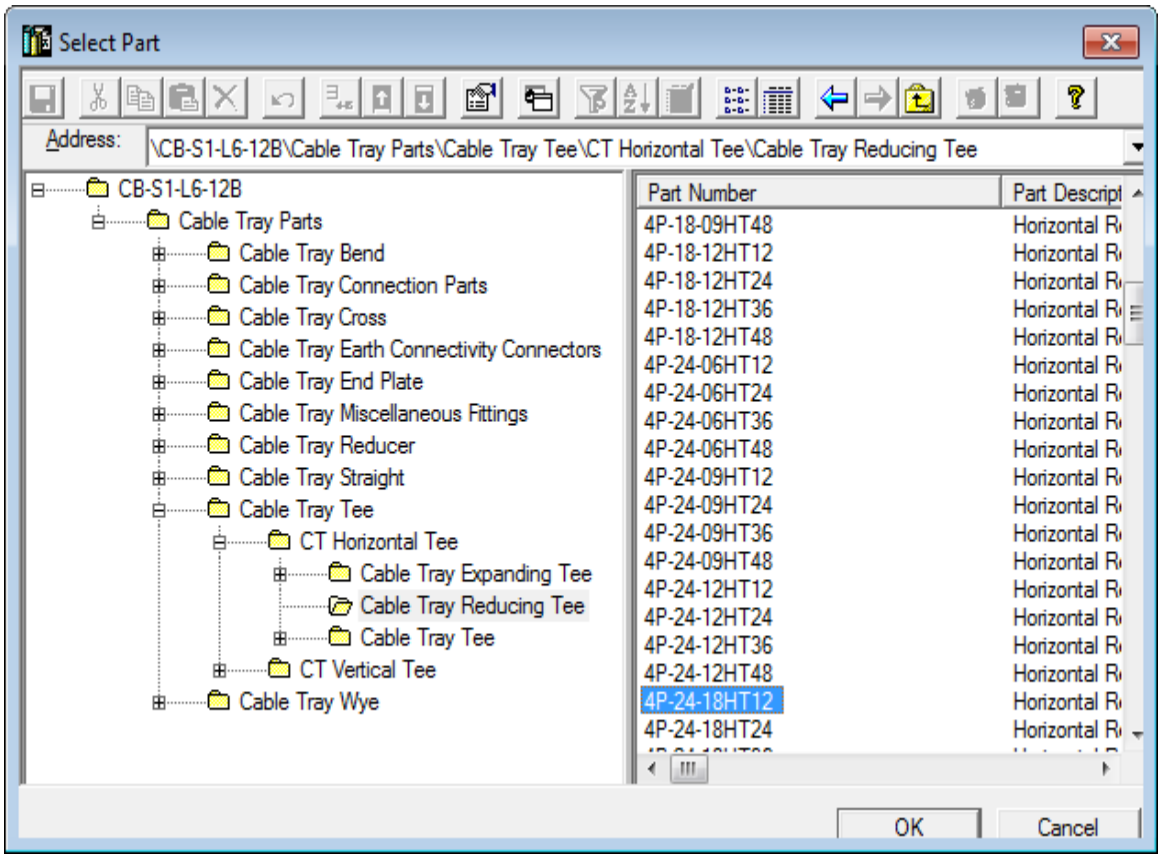
7. Select the **Cableway Straight Feature** of the cableway where you want to insert the tee.

8. Select **More…** from the **Part** drop-down list on the **Insert Component** ribbon to select the component part from the catalog that you want to insert.

   *The **Select Part** dialog box appears.*

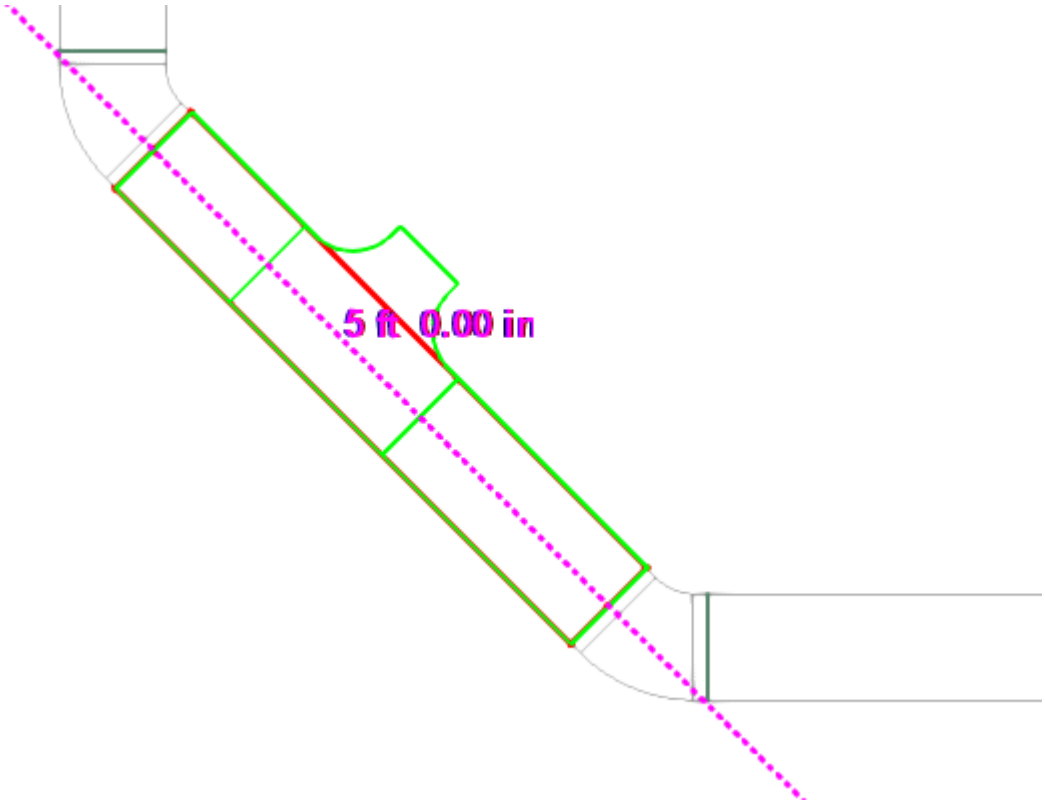
9. Expand the node **CB-S1-L6-12B\Cable Tray Parts\Cable Tray Tee\CT Horizontal Tee\Cable Tray Reducing Tee** in the left pane of the **Select Part** dialog box.

10. Select the **Part Number 4P-24-18HT12** in the right pane.



11. Click **OK** in the **Select Part** dialog box.

12. Key in 5 ft in the **Distance** box on the **Point Along** ribbon for specifying the distance of the component from the referred Cableway End Feature. The view of the horizontal tee in the graphic view should resemble this.



NOTE **Reference position** slides the component that you are inserting so that its origin or selected port is positioned at the insertion point. If the selected reference position does not lie along the axis of the leg, then the software projects the position so that it intersects the axis and the component slides so that the projected point is located at the insertion point.

13. Select the **Insert point** option in the **Insert Component** ribbon, and click in the active view to accept the data point.
14. Click **Finish** to accept the placement of the component.
15. Close **Point Along** ribbon using **Tools > Point Along** command.

For more information related to inserting components in a model, refer to Inserting Components topic in the user guide ElectricalUsersGuide.pdf.