

AASHTOWare BrR 6.8

Truss Tutorial

T6 – Truss Cross Sections and Graphics

T6 - Truss Cross Section and Graphics

This example describes how to define a Channelbox truss cross section with stacking plates on either side of channel webs and how to view the graphics of the truss cross sections. This example assumes you have access to TrussTrainingExample (BID19) in the teaching database from the installation.

Topics Covered

- Define Channelbox truss cross section with stacking plates on either side of channel webs
- View truss member cross section graphics from Truss GUI and report

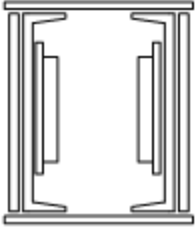
In TrussTrainingExample, open truss window of “Truss 1”, replace commands for Section2 with the lines on the next page to define a Channelbox cross section with stacking plates on either side of channel webs.

The screenshot shows the Bridge Workspace interface with the Truss GUI open. The GUI displays the following commands for defining a truss cross section:

```
DefaultEndConnection  
Riveted  
MaterialType  
Steel = "1905 to 1936 Steel"  
MemberCrossSection  
ChannelBox = Section1  
TopFlangePlate  
22.0 0.5  
Channels "C 15x33.9" Outward 13.125  
Connection Riveted 0.0  
Lacing Bottom  
ChannelBox = Section2  
Channels "C 15x33.9" Outward 13.125  
Connection Riveted 0.0  
ChannelBox = Section3  
LeftWebPlate  
12.0 0.375
```

The 'ChannelBox = Section2' command is highlighted in blue. The GUI also includes a 'View Member Cross Section' button and a 'Verify' button. The background shows the project tree with 'Truss 1' selected under 'TRUSSES'.

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ChannelBox = Section2

TopFlangePlate

14.5 0.5

BottomFlangePlate

14.5 0.5

LeftWebPlate

15.0 0.75

RightWebPlate

15.0 0.75

LeftWebPlate2

9.0 0.375

7.5 1.0

RightWebPlate2

9.0 0.375

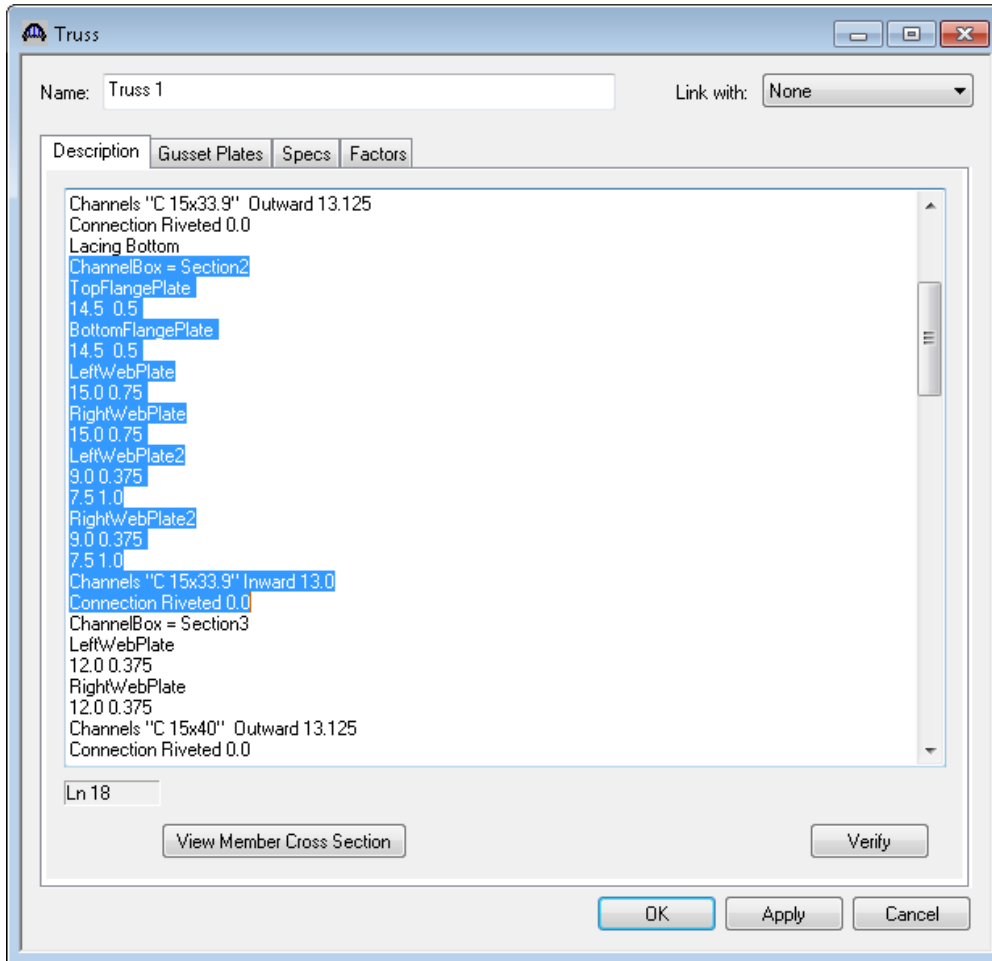
7.5 1.0

Channels "C 15x33.9" Inward 13.0

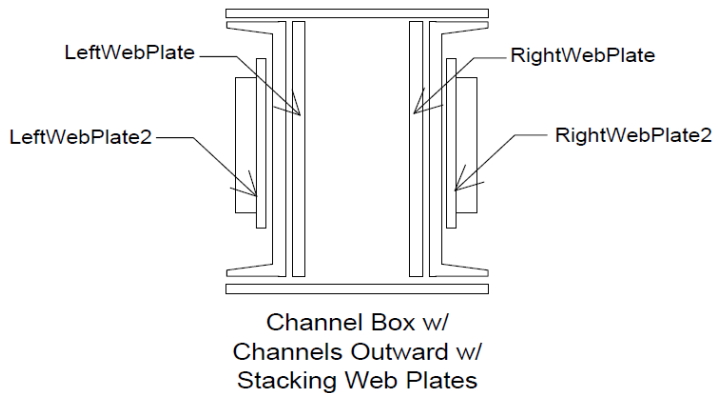
Connection Riveted 0.0

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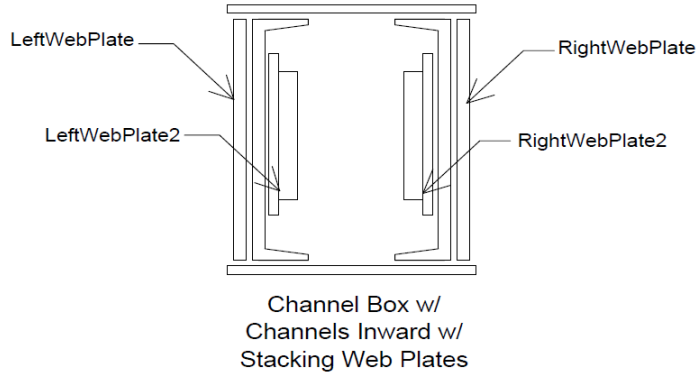
Truss window will look like the following after replacing the Section2 with the above Channelbox section.



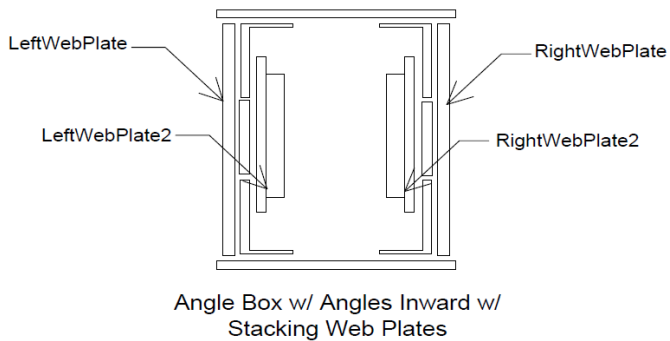
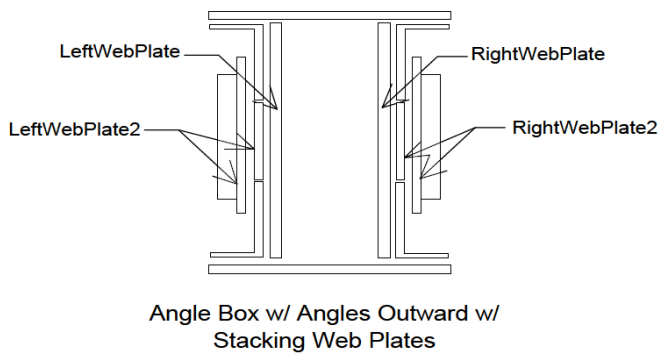
“LeftWebPlate2” and “RightWebPlate2” are new commands in BrR 6.4. These new commands allow user to define stacking web plates on either side of the channel web in channelbox truss cross sections.



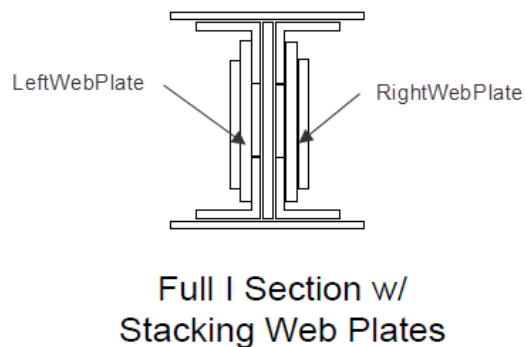
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Similarly the same commands are available in Anglebox truss cross sections to define stacking web plates on either side of the angle legs.

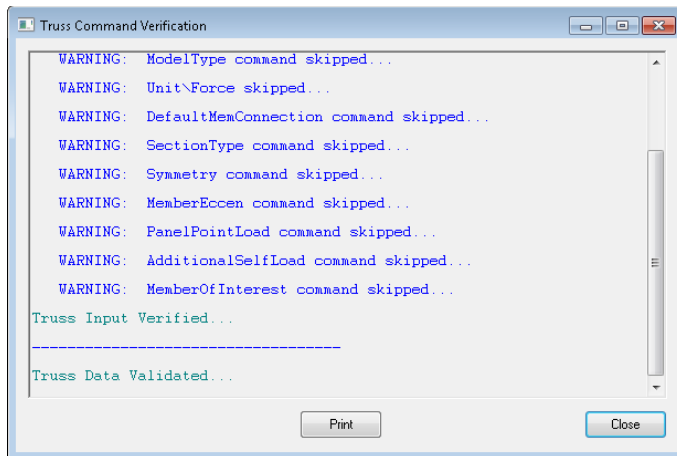


For builtup sections, “LeftWebPlate” and “RightWebPlate” commands are available to define stacking web plates on either side of main web plates.



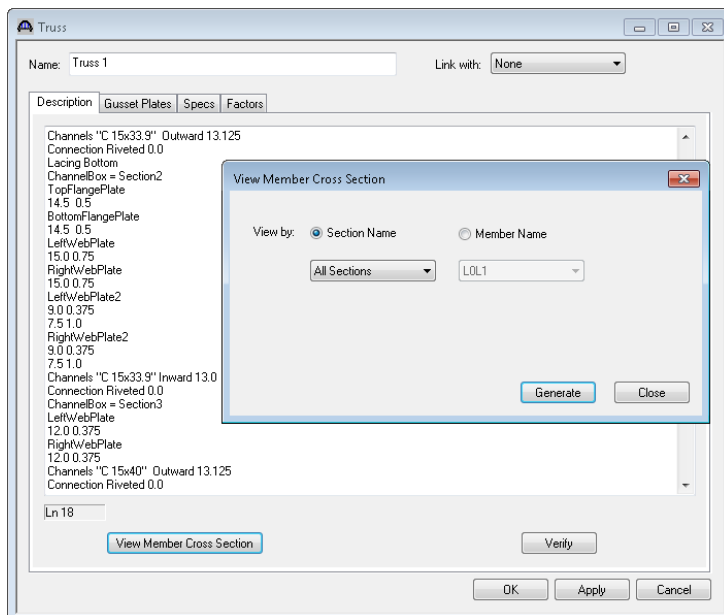
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Click “Verify” button to verify the truss input commands.



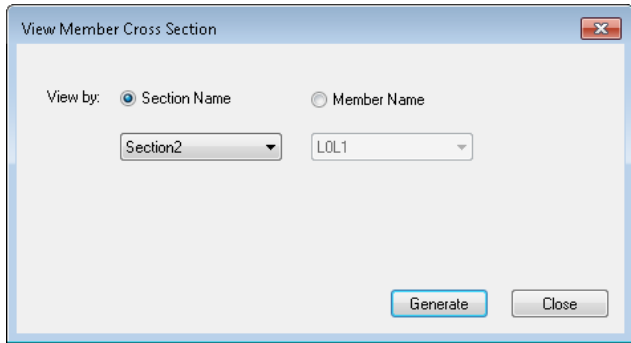
Close the Truss Command Verification window.

Click “View Member Cross Section” button to open “View Member Cross Section” dialog to generate truss cross section graphics.



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Select "Section2" in the section name drop down list.



Click "Generate" button. Windows Internet Explorer will open and display graphics of Section2.

Truss member name : Truss 1

Cross section name : Section2

Top Flange Plate 0.50 X 14.50

Right Web Plate 2

Right Web Plate 15.00 X 0.75

Left Web Plate 15.00 X 0.75

Left Web Plate 2

C 15x33.9

Bottom Flange Plate 0.50 X 14.50

Component	Dimension
Left Web plate2 1	9.00 X 0.38
Left Web plate2 2	7.50 X 1.00
Right Web plate2 1	9.00 X 0.38
Right Web plate2 2	7.50 X 1.00

Note:

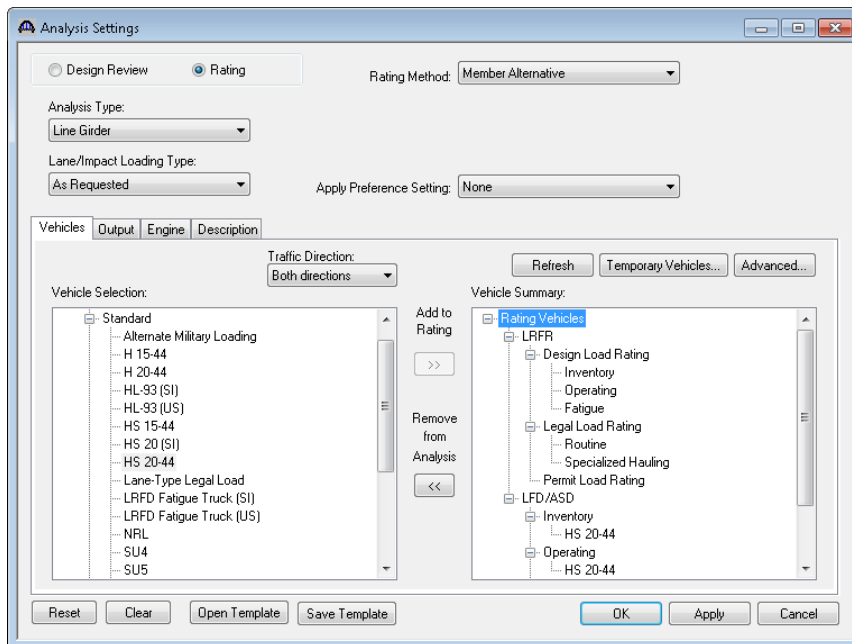
1. Left web plates 2 are listed from left to right
2. Right web plates 2 are listed from right to left

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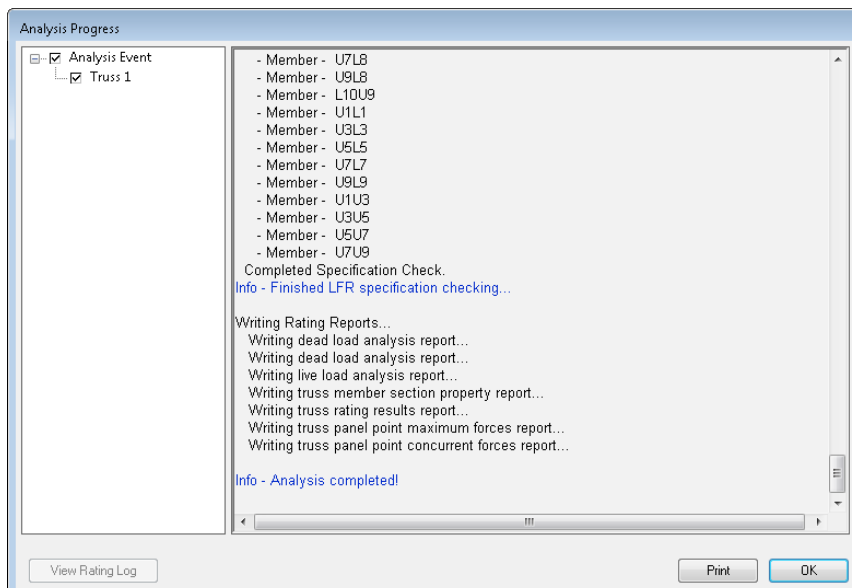
When “All Sections” in the section name drop down list is selected, graphics of all sections will be displayed in Windows Internet Explorer. Cross section graphics of a specific member can be generated by checking “Member Name” radio button, selecting the name of the member in the Member Name drop down list and clicking “Generate” button.

Close “View Member Cross Section” dialog. Click “OK” button in Truss window to save the change of the cross section 2.


Rate “Truss 1” with “HS20 Rating” template.

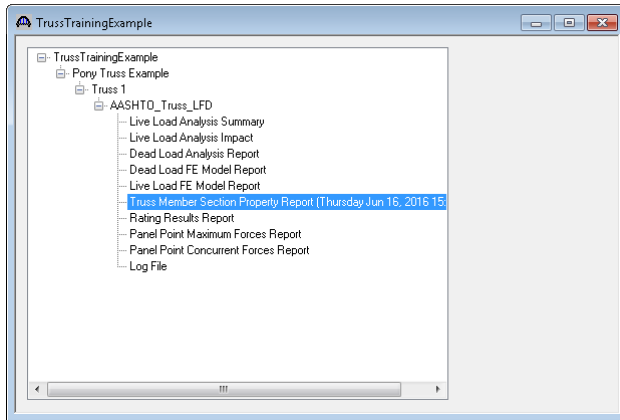


Click “OK” to close analysis progress window when analysis is complete.



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Click view analysis output button  on the tool bar, double click Member section property report in the pop up window.



Member section property report will open in Windows Internet Explore as below.

Detailed Section Property Calculations

Member: LOL1 - ChannelBox Section

Note:
 1. Axis 1-1 is assumed at lowest fiber of bottom flange plate.
 2. Y is measured from axis 1-1.
 3. For channels facing outwards, axis 2-2 is assumed at back of left channel section.
 4. For channels facing inwards, axis 2-2 is assumed at outermost fiber of leftmost web plate.
 5. Z is measured from axis 2-2.

Component	Gross Area (in ²)	Y (in)	AY (in ³)	AY ² (in ⁴)	IzzSelf (in ⁴)	Z (in)	AZ (in ³)	AZ ² (in ⁴)	IyySelf (in ⁴)
Top Plate 1	7.25	15.75	114.19	1798.45	0.15	7.25	52.56	381.08	127.03
Left Web Plate 1	11.25	8.00	90.00	720.00	210.94	0.38	4.22	1.58	0.53
Right Web Plate 1	11.25	8.00	90.00	720.00	210.94	14.13	158.91	2244.55	0.53
Left Web Plate2 1	3.38	8.00	27.00	216.00	22.78	1.34	4.51	6.04	0.04
Left Web Plate2 2	7.50	8.00	60.00	480.00	35.16	2.03	15.19	30.76	0.63
Right Web Plate2 1	3.38	8.00	27.00	216.00	22.78	13.16	44.42	584.72	0.04
Right Web Plate2 2	7.50	8.00	60.00	480.00	35.16	12.48	93.56	1167.19	0.63
Channel 1	9.96	8.00	79.68	637.44	315.00	1.54	15.31	23.53	8.13

In detailed section properties, truss cross section graphics are displayed together with section property calculations.