Curved Tall Steel Viaducts
Information Sheet

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I. Curved TSV trim instructions

Use table 1 to determine the **trim amount** for the track **radius** and **joint length** at each joint. Then use table 2 to determine whether to trim by the full **trim amount** or half the **trim amount** and which girder(s) to trim based on the **joint type** at each joint.

1. Choose a **radius** for the curve.
2. At each joint (where two spans meet), use table 1 to look up the **trim amount** for the **radius** and **joint lengths**. Table 1 lists the full **trim amount** for various radii curves and also lists the span angle and tie overhang amount for reference.
3. At each joint, determine its **joint type**; **tower joint**, **bent joint** or **abutment joint**.
4. At each joint, use table 2 to look up how much to trim and which girder(s) to trim based on the **joint type**.

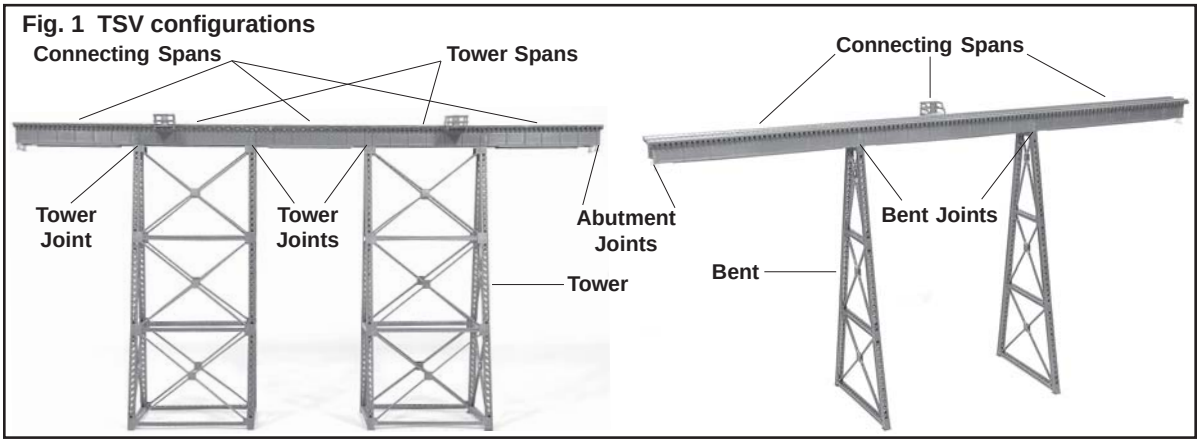
Table 1 Girder trim amounts for curved TSV bridges

Curved Track Radius	Joint Lengths								
	50 ft to 50 ft Spans			50 ft to 30 ft Spans			30 ft to 30 ft Spans		
	Trim Amt.	Span Angle	Tie Over-hang	Trim Amt.	Span Angle	Tie Over-hang	Trim Amt.	Span Angle	Tie Over-hang
Str Trk	0	0	.120"	0	0	.120"	0	0	.135"
18" R	—	—	—	—	—	—	.220"	12.9°	.075"
21" R	—	—	—	—	—	—	.189"	11.0°	.084"
24" R	.272"	16.1°	.021"	—	—	—	.166"	9.7°	.090"
27" R	.242"	14.4°	.035"	—	—	—	.148"	8.6°	.095"
30" R	.218"	13.0°	.046"	.178"	10.4°	.021"	.134"	7.8°	.099"
36" R	.182"	10.8°	.062"	.149"	8.7°	.037"	.112"	6.5°	.105"
42" R	.156"	9.3°	.074"	.128"	7.4°	.049"	.096"	5.6°	.109"
48" R	.136"	8.2°	.083"	.112"	6.5°	.058"	.084"	4.9°	.113"

II. Construction

To build a Micro Engineering curved Tall Steel Viaduct the spans are assembled at an angle to one another. To do this, some or all of the girders on the inside of the curve will need to be shortened before assembling the spans. Only the inside girders are trimmed, the girders on the outside of the curve are not trimmed. Which inside girders to trim and how much to trim are determined by the **radius** of the curve, by the **joint lengths** at each joint (where two spans meet) and by the **joint type**. See Fig. 1.

Fig. 1 TSV configurations



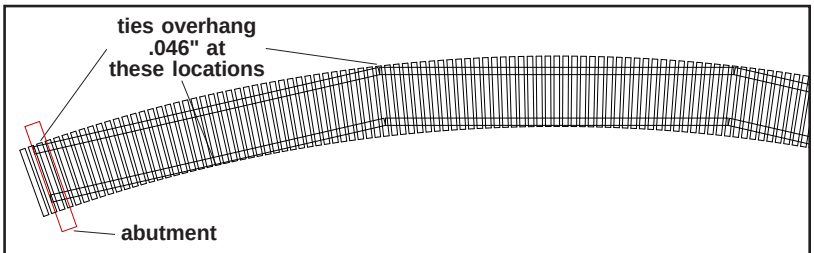


Fig. 2 Tie overhang with three 50 ft. girders and a 30" radius curve

III. Configurations

Tall Steel Viaduct bridges can be built in several different configurations utilizing various components. See Fig. 1.

Span types: spans on top of towers are **tower spans**, spans between towers or bents are **connecting spans**.

Joint lengths: can be a 50 ft. span joining a 50 ft. span, a 50 ft. to 30 ft. or a 30 ft. to 30 ft.

Joint types: joints supported by towers are **tower joints**, by bents are **bent joints**, by abutments (at the ends of the bridge) are **abutment joints**.

IV. Radius determination

The **radius** used for a curved TSV is usually a matter of layout design or choice by the modeler. However, there is a minimum radius that should be used on TSV bridges as determined by the tie overhang of the girder edge, as shown in table 1. The curve causes the ties to be displaced from their straight track positions with less overhang at the center and ends of the span. See fig. 2. The sharper the curve, the less the bridge ties overhang the girders. If the curve is too sharp, the ties will not overhang the edge of the girders enough for prototypical appearance. The tie overhang amount is based on Micro Engineering HO Code 83 Bridge Flex-Trak which has 1.37" (10 ft.) long ties. Note also, that the **radius** of the curve determines the angle at the joints which is the same at each joint for a given radius.

Table 2 Amount to trim and girders to trim

How much to trim, full or half, & which girder ends to trim are determined by the joint type.

Joint type	Amount to trim	Girder(s) to trim
Tower joints	Full trim amount	Connecting span girder only. The tower span girder is not trimmed, it must remain full length to fit the towers properly.
Bent joints	Half trim amount	Both connecting span girders.
Abutment joints	Half trim amount	Connecting span girder, at the abutment end.