

# SL-and-N construction blog

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**PRR Modeler** Senior Member

Join Date: May 2022 Posts: 214

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09-17-2024, 03:05 PM #1456

Really nice modeling so far Dave.

Curt Webb  
Freelanced PRR Bellevue Sub

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**deemery** Senior Member

Join Date: Sep 2007 Posts: 11493

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09-17-2024, 03:56 PM #1457

I spent some serious time on the truss bridge. If I kept to NMRA standards, the base of the trestle bents will stick out a lot more than will fit. So I put my longest car (60' passenger car) and then measured actual clearances on the bridge. They're about scale 2' over the bridge tie lengths. So if I fudge a bit, I should be able to make the bridge fit on the bents and preserve the 'batter' (angle of the sloped posts in the bent.) The bridge itself will be pretty easy to build, I did a more complex Howe truss last year.

I think I have a computer drawing of the bents, I'll see if I can use that to mock up the bent.

dave

Modeling 1890s (because the voices in my head told me to)

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**George\_D** Moderator

Join Date: Dec 2003 Posts: 19018

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09-17-2024, 07:26 PM #1458

You could use an underslung truss bridge, if you have the space under the track.

George

Before each flight, make sure that your bladder is empty and your fuel tanks are full.

1 comment

**deemery** commented 09-18-2024, 07:03 AM #1458.1

No space under the track, about 24" from the road to the track. And a pony truss would look good...

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**jbvb** Senior Member

Join Date: Dec 2007 Posts: 8212

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09-19-2024, 08:52 PM #1459

Can you give the name/number NMRA standard you're troubled by, or a link to it? Trucks were generally fairly close to cars' ends in your era, and equipment was short, so usually the largest overhang was towards the inside of the curve. But not necessarily with steam locos.

James

1 comment

**deemery** commented 09-18-2024, 07:04 AM #1459.1

I've been looking at this: [https://www.nmra.org/sites/default/files/july\\_2017.pdf](https://www.nmra.org/sites/default/files/july_2017.pdf) (And a comment on the NMRA standards, fractional inches here is a lot less useful to me than decimal. I keep on popping up the calculator to convert 1/52 to 1.156)

Last edited by deemery; 09-18-2024, 07:23 AM.

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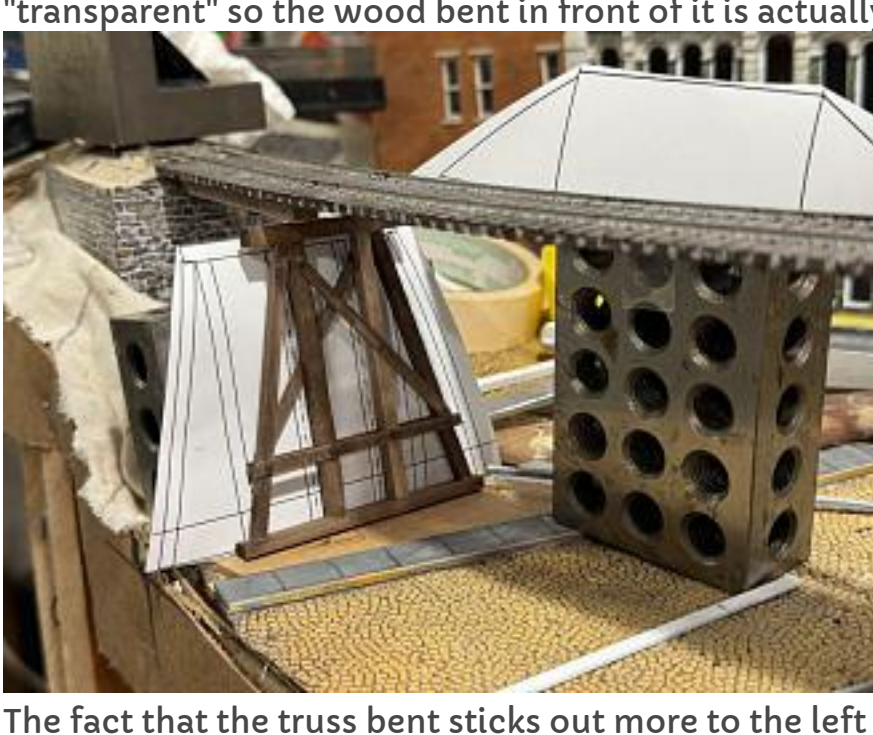
**deemery** Senior Member

Join Date: Sep 2007 Posts: 11493

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09-19-2024, 01:41 PM #1460

The drawing is the widest bent I can fit in my space, and preserve the shape ('batter', the slope of the side posts) of the bents. Imagine the drawing is 'transparent' so the wood bent in front of it is actually behind the wide truss bent.



The fact that the truss bent sticks out more to the left (the outside of the curve) looks funny now, but it'll look less funny when the actual truss pieces are sitting on it, and the reason for that offset is clearer. Another thing to note in passing the angle of the truss bent will not be strictly perpendicular to the track line at that bent (i.e. match the bent behind it). It'll be off by maybe 10 degrees, because that needs to be perpendicular to the track AT THE CENTER OF THE CURVE.

What I need to do now is the detailed design and construction of the two trusses. I figure after I get the trusses built, I can mock up their supports, double check clearances again, and if necessary make the top sill of the bent a bit longer/overhang the posts (even if that's not quite structurally correct).

dave

Modeling 1890s (because the voices in my head told me to)

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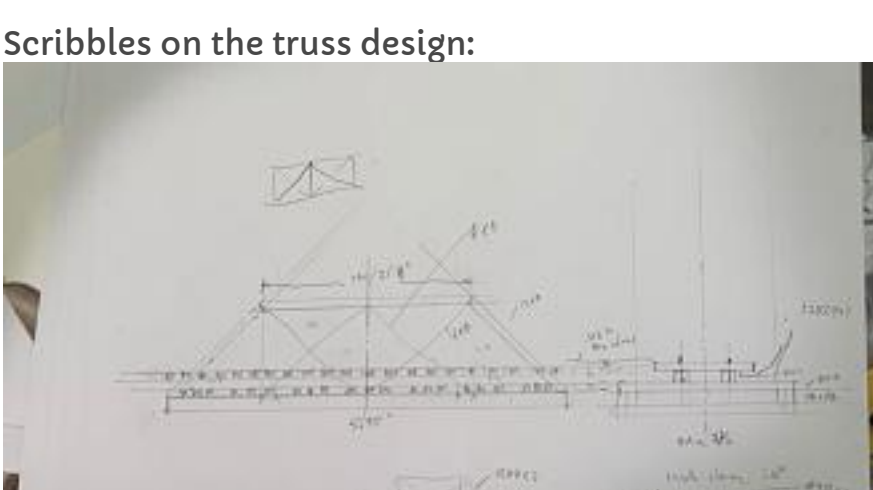
**deemery** Senior Member

Join Date: Sep 2007 Posts: 11493

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09-19-2024, 03:49 PM #1461

Scribbles on the truss design:



My original thought was just Queenpost. But I'm thinking if I add the central tension rod and the diagonals, I can do a 2 panel Howe truss. The wood component size right now is based on what I have in stock, I might re-think some of the components. I don't have a lot of really heavy timber sizes in stock, and I went through a lot of what I had on previous projects.

dave

Modeling 1890s (because the voices in my head told me to)

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**Michael\_Hohn** Senior Member

Join Date: Sep 2012 Posts: 12238

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09-19-2024, 11:55 PM #1462

Goog design whichever route you take.

I was so much older then, I'm younger than that now *Bob Dylan*

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**friscomike** Senior Member

Join Date: Sep 2007 Posts: 3959

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09-20-2024, 07:42 AM #1463

Howdy Dave, the bents look great. Perhaps laminating smaller wood strips to achieve the heavy timber would work. The prototype bridges of the era did that. Have fun, mike

Buffalo Canyon Mining Company structures and Layout are my primary projects. The current build is Nowlin's Gas and Service Station.

1 comment

**deemery** commented 09-20-2024, 08:11 AM #1463.1

Yeah, that's what I'll do for some of the heavy components. 12x8 doubled gets me a 12x16 timber, a good size for a bridge. But of course I'm kinda limited in the long direction, for example I've run out of 14" x 16" pieces. I do have some fractional inch pieces (e.g. 3/16")

Last edited by deemery; 09-20-2024, 09:22 AM.

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**deemery** Senior Member

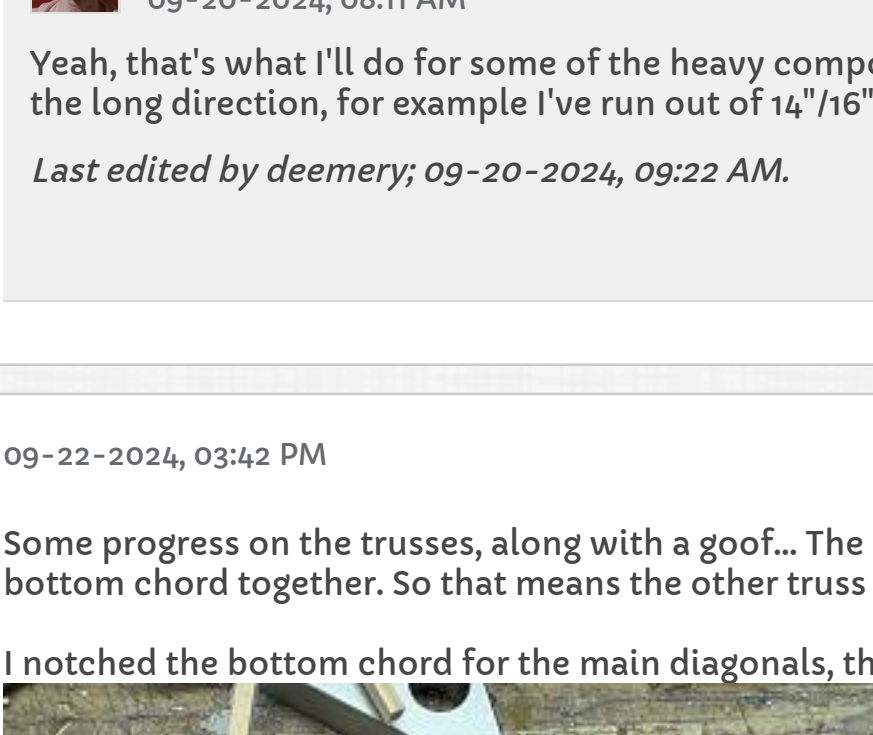
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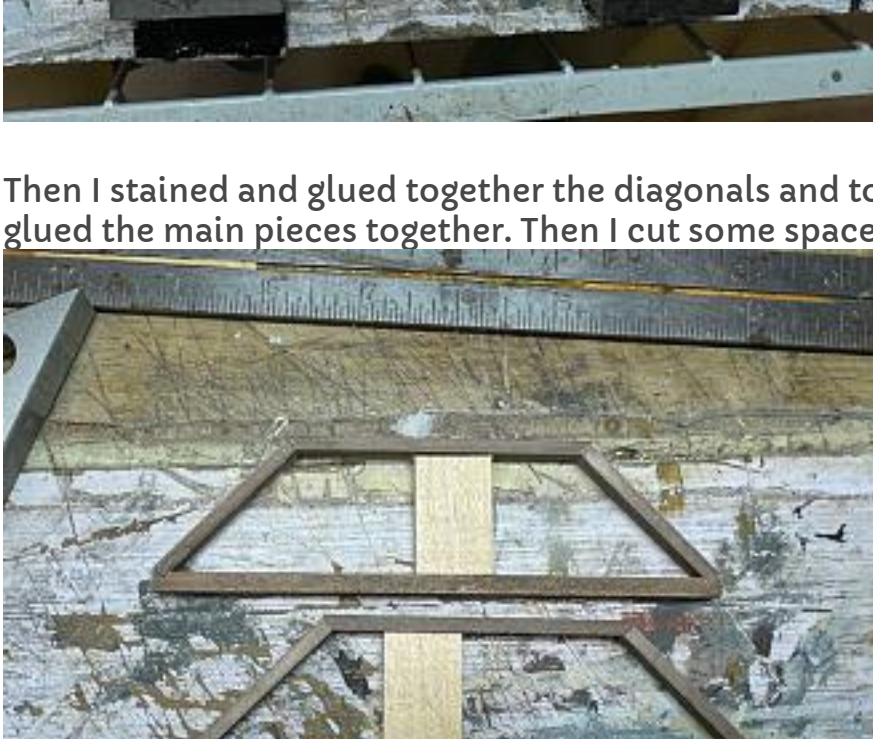
09-22-2024, 03:42 PM #1464

Some progress on the trusses, along with a goof... The goof is that I originally wanted to put a space between the truss members, but I forgot and glued the bottom chord together. So that means the other truss pieces are also glued together.

I notched the bottom chord for the main diagonals, that went OK, not great. Here's a mock-up with the diagonals and the top chord.




Then I stained and glued together the diagonals and top chord pieces. I used the Ultimatum sander to get the 45 degree angles on the top chord, and then glued the main pieces together. Then I cut some spacers to fit in the middle, to help hold things together when I'm working on the trusses.



Next step is to add the diagonals and counters, when those are glued in place, that should hold the truss together. This will be 'straining truss' with the tension rods on the outside rather than through the middle of the truss.

And a mock-up of the diagonals and tension rods:



dave

Last edited by deemery; 09-22-2024, 04:23 PM.

Modeling 1890s (because the voices in my head told me to)

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**Michael\_Hohn** Senior Member

Join Date: Sep 2012 Posts: 12238

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09-22-2024, 04:54 PM #1465

Your truss bridge is going to be an engineering thing of beauty.

Mike

I was so much older then, I'm younger than that now *Bob Dylan*

1 comment

**deemery** commented 09-22-2024, 05:42 PM #1465.1

It won't be quite as detailed as the HO30 truss, but that's OK. It will be in a much more visible location, though.

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**deemery** Senior Member

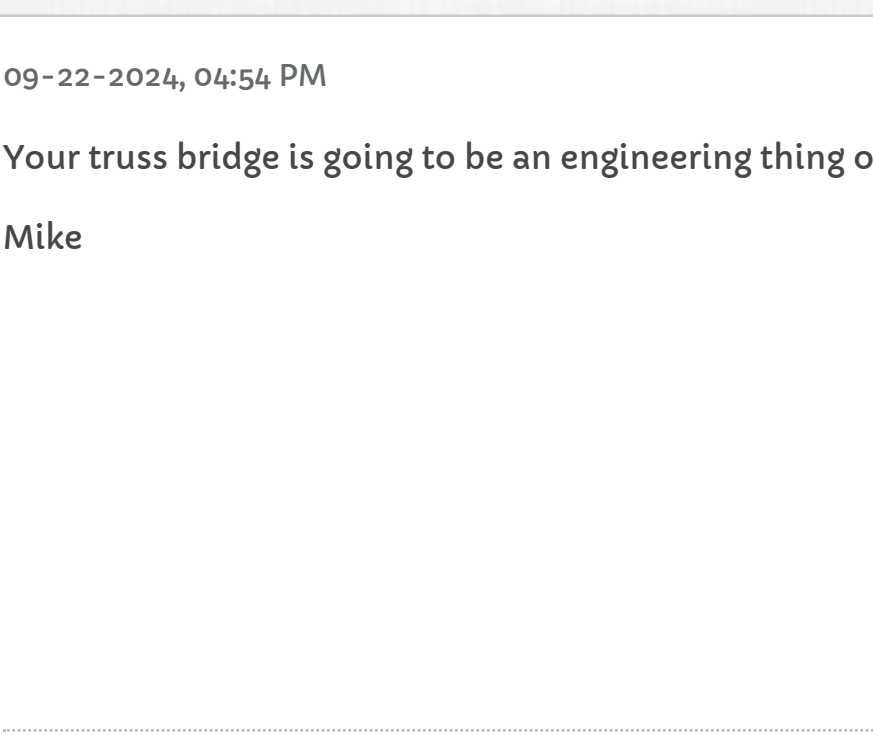
Join Date: Sep 2007 Posts: 11493

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09-23-2024, 12:56 PM #1466

The challenge today (other than being hungry, I'm on liquid diet for the rest of the day...) is figuring out the truss bridge bent width. I have the wood parts of the truss glued together. Now I have to determine how wide to space the trusses on either side of the curved track, allowing the spread for a 60' car overhang.

This shows the bent for my measured min clearance of .85 plus an extra .1 and truss width of .25" on the actual bridge curve with a 60' car. The constraint is the size of the mud sill, I can fit max 3.70 in the available space.



dave

Last edited by deemery; 09-23-2024, 01:07 PM.

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**jbvb** Senior Member

Join Date: Dec 2007 Posts: 8212

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09-23-2024, 04:40 PM #1467

Check your steam locos too; IIRC steam overhang can be asymmetric (usually the pilot swings more, but not always).

James

1 comment

**deemery** commented 09-23-2024, 06:16 PM #1467.1

Well, my 4-4-0s are probably no problem. I wonder about my big 2-8-0. Or maybe it's just a bridge restriction on a branch line (B&M had those, of course :-))

Last edited by deemery; 09-23-2024, 07:13 PM.

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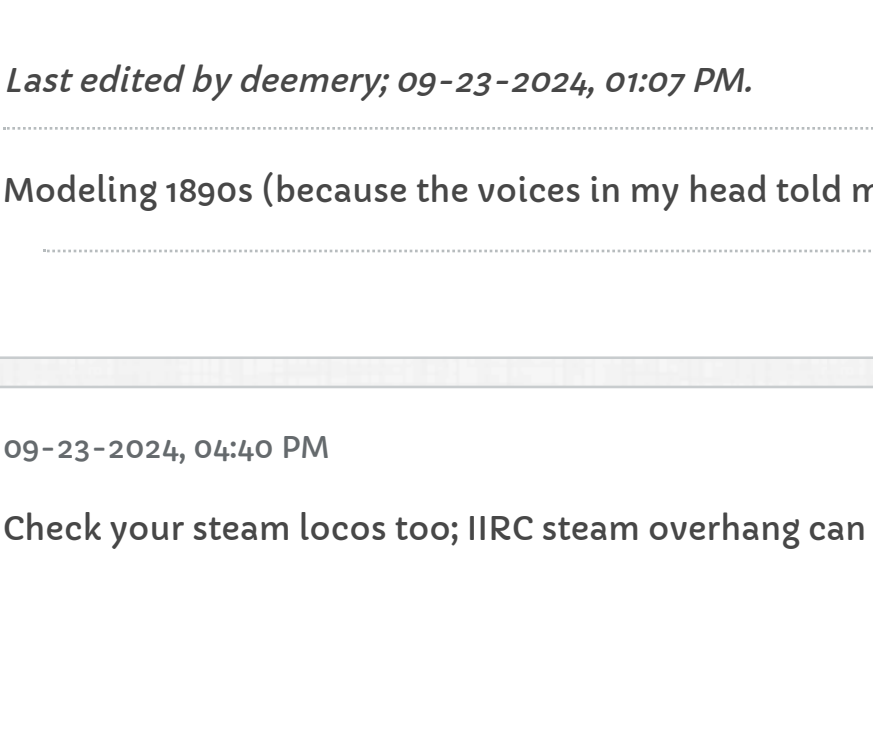
**deemery** Senior Member

Join Date: Sep 2007 Posts: 11493

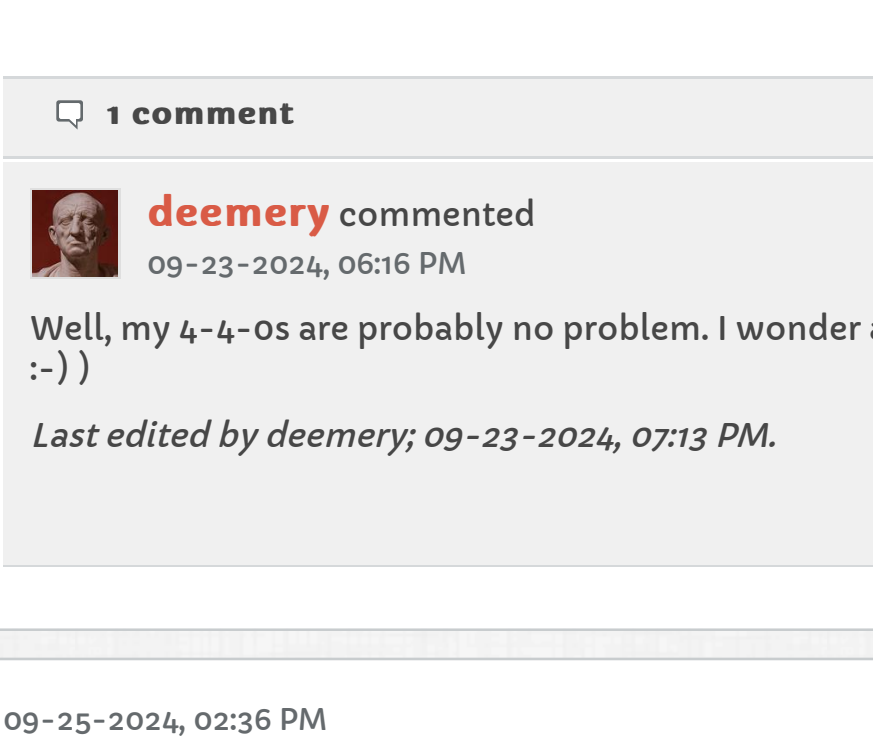
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09-25-2024, 02:36 PM #1468

I taped together the two trusses and drilled through the bottom chord for the lateral tension rods (underneath the track). Then I glued a couple of the joists that held the gills that the ties rest on.



Here you can see the tension rods a bit better, but not the joists.



The 1-2-3 blocks hold the trusses into position. There's a steel bar (from a combination square) across the joists with the right-angle blocks on either end to hold those into place. Once these first couple joists are set, I'll go back and glue the remaining joists, and then add the weights back. This should keep the trusses true (level and plumb.) I also ordered some of the San Juan Details (nee Grandt Line) 5/16 open core Nut and Washer castings. These have a .020 hole, which will fit right over the .020 tension tension rods you can see poking out in the 2nd photo. Hopefully those will arrive Saturday.

dave

Modeling 1890s (because the voices in my head told me to)

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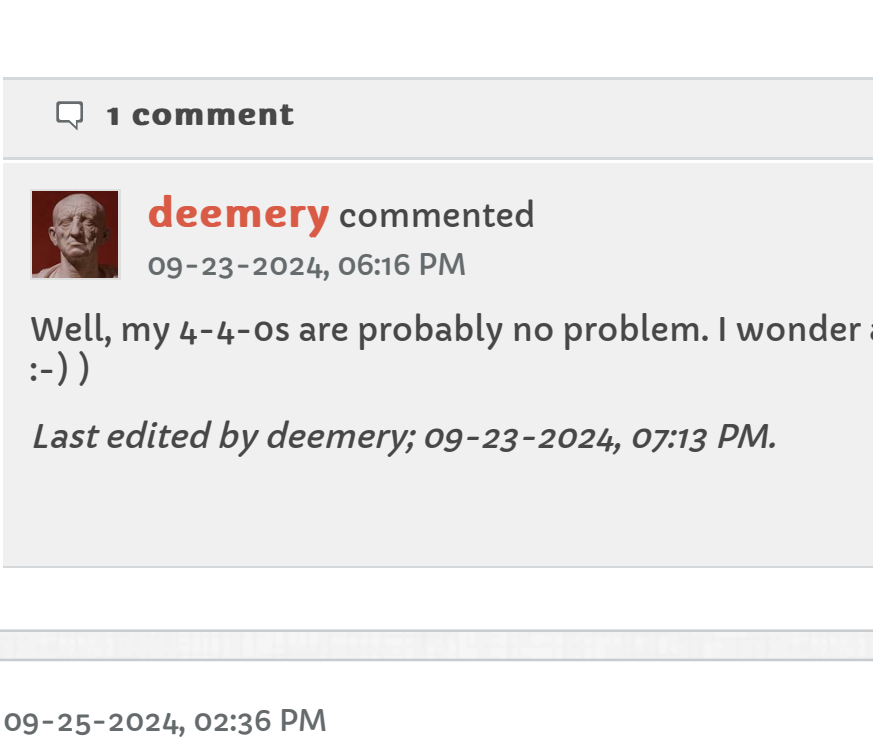
**deemery** Senior Member

Join Date: Sep 2007 Posts: 11493

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09-26-2024, 11:45 AM #1469

The truss bridge is basically taped to the bottom of the track to see how it looks:



I have to start on the bents that will hold up the bridge. On the left side next to the road, there are two pieces of white styrene. The longer one is the marker for the truss bent. Same thing on the other side, although that piece got bumped when I was doing this mock-up.

dave

Last edited by deemery; 09-26-2024, 02:06 PM.

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**PRR Modeler** Senior Member

Join Date: May 2022 Posts: 214

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09-26-2024, 02:05 PM #1470

Very nice bridge Dave.

Curt Webb  
Freelanced PRR Bellevue Sub

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