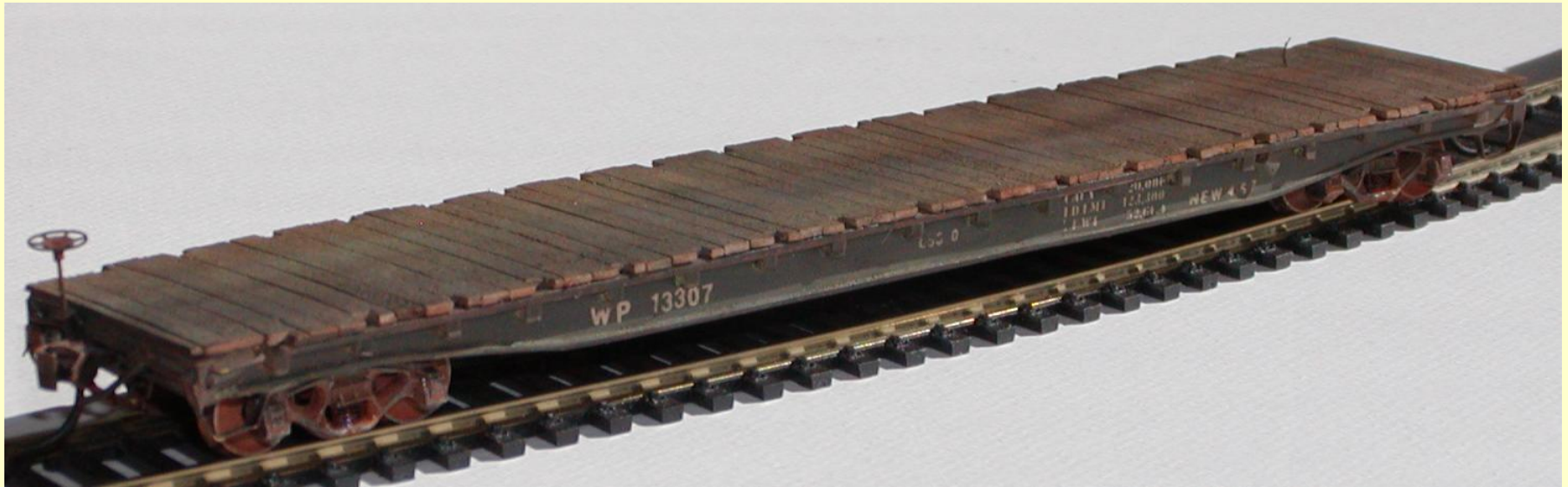


Scratch Built Flatcar

Session 2



Scratch Built Flatcar

First thing we'll do is pre-glue the stake pockets and using channel material

Depending on your scale you will need:

Z - .060 Channel (Evergreen 261)

N - .060 Channel (Evergreen 261)

HO - .080 Channel (Evergreen 262)

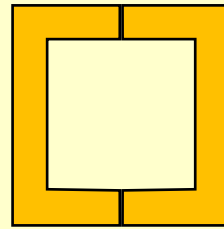
S - .100 Channel (Evergreen 263)

O - .156 Channel (Evergreen 265)

G - .312 Channel (Evergreen 268)

Scratch Built Flatcar

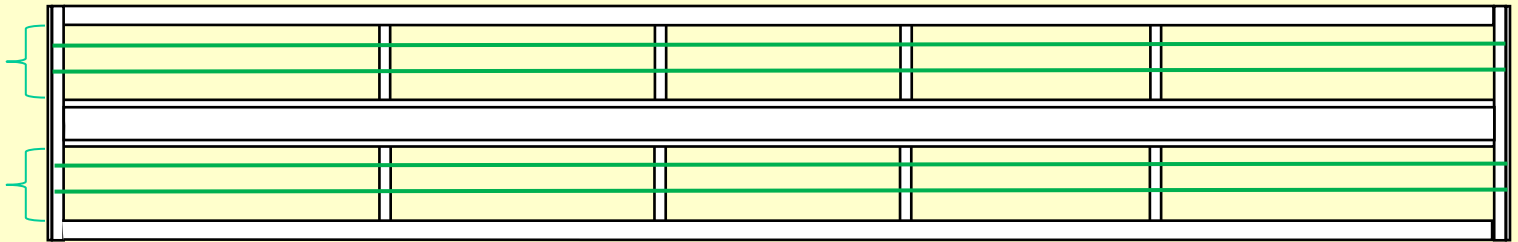
Glue 2 lengths of the channel material together to form a rectangular box



For S scale and smaller you may be able to cut 1 length in half and then glue the 2 halves together. We need to have enough of this to provide a 9" long section for each stake

Scratch Built Flatcar

While that's drying we'll add the additional longitudinal braces.
Turn the frame right side up and measure the distances
between the center beam and the outside beams



Divide the distance in thirds and using a straight edge
mark lines the length of the car

Repeat for the other side of the car

Scratch Built Flatcar

Next we'll add the longitudinal beams on using the lines you drew on the frame

Depending on your scale you will need:

Z -1/32" Angle (P-90500)

N -1/32" Angle (P-90500)

HO -3/64" Angle (P-90501)

S - 1/16" Angle (P-90502)

O -3/32" Angle (P-90503)

G - 3/16" Angle (P-90505)

Cut 4 pieces the length of the car

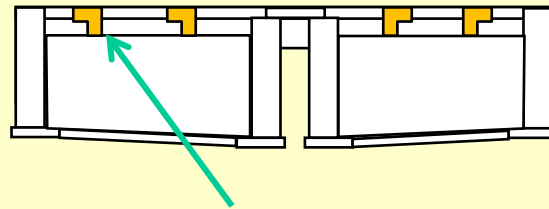
Scratch Built Flatcar

Test fit one of the Longitudinal braces. The top needs to be flush with the top of the side and center beams.

Top View



End View



You may need to notch the Angle beam or the Bridge beam so the top of the Angle is flush with the end sills

Repeat for the other 3 Angle beams

Scratch Built Flatcar

Next we'll add the secondary cross beams

Depending on your scale you will need:

Z - .060 Channel (Evergreen 261)

N - .060 Channel (Evergreen 261)

HO - .100 Channel (Evergreen 263)

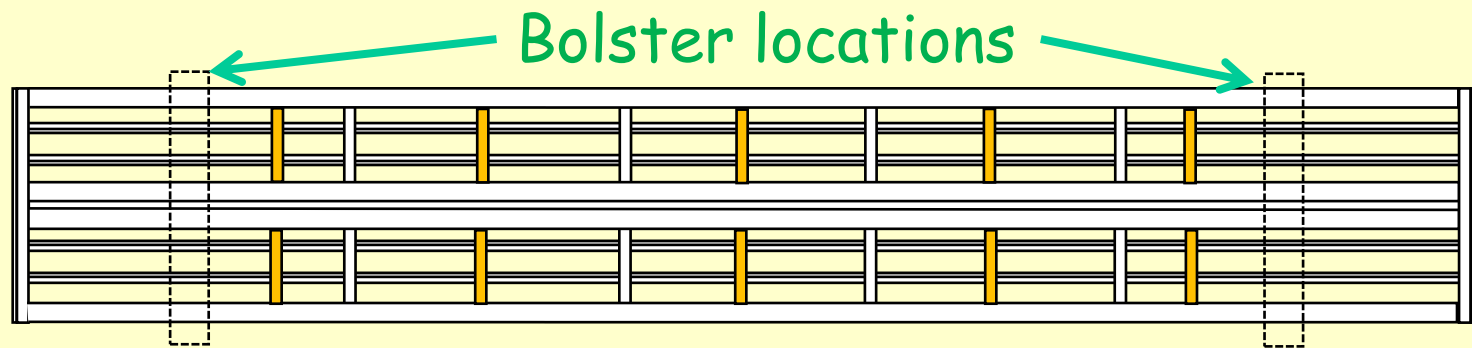
S - .125 Channel (Evergreen 264)

O - .188 Channel (Evergreen 266)

G - .312 Channel (Evergreen 268)

Scratch Built Flatcar

We do this by measuring, marking and cutting the secondary cross beams out of the Channel material



When placing these face them towards the nearest end and centered between the Bridge beams and glued to the longitudinal braces. The very end cross beams are centered between the end Bridge beam and the first bend in the side frame (bolster location).

Scratch Built Flatcar

While that's drying we'll measure and cut a sub-deck to the frame

This will add strength to the car and provide a template for adding the decking boards

Depending on your scale you will need:

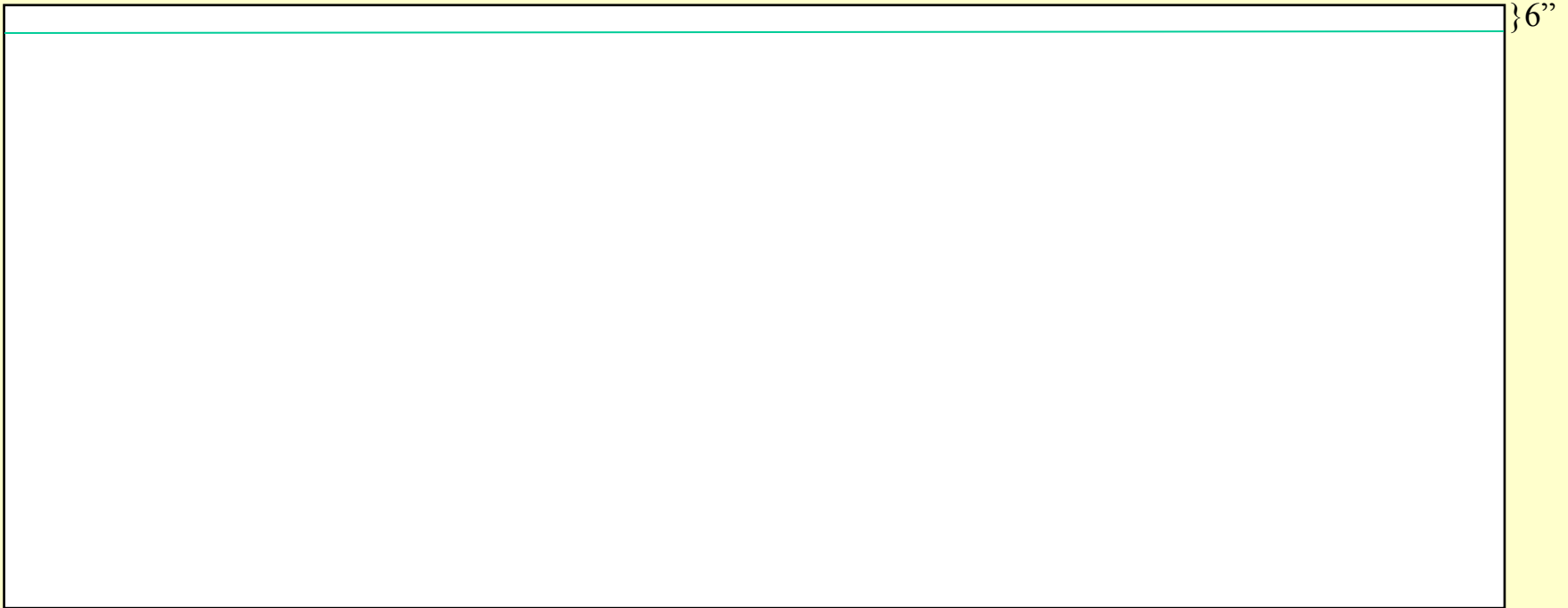
Z & N - .010 Sheet styrene (E-9210)

HO & S - .020 Sheet styrene (E-9220)

O & G - .040 Sheet styrene (E-9240)

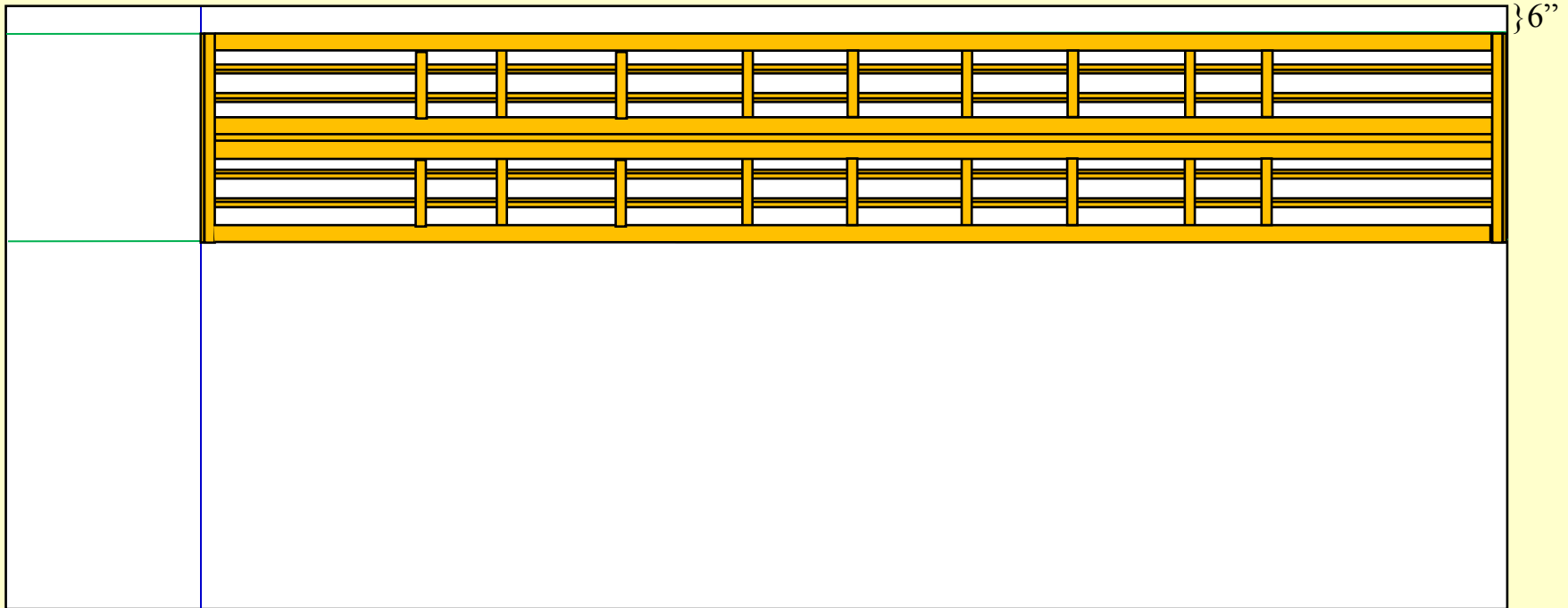
Scratch Built Flatcar

Lay the sheet styrene flat on your work surface
Measure down 6" and draw a line



Scratch Built Flatcar

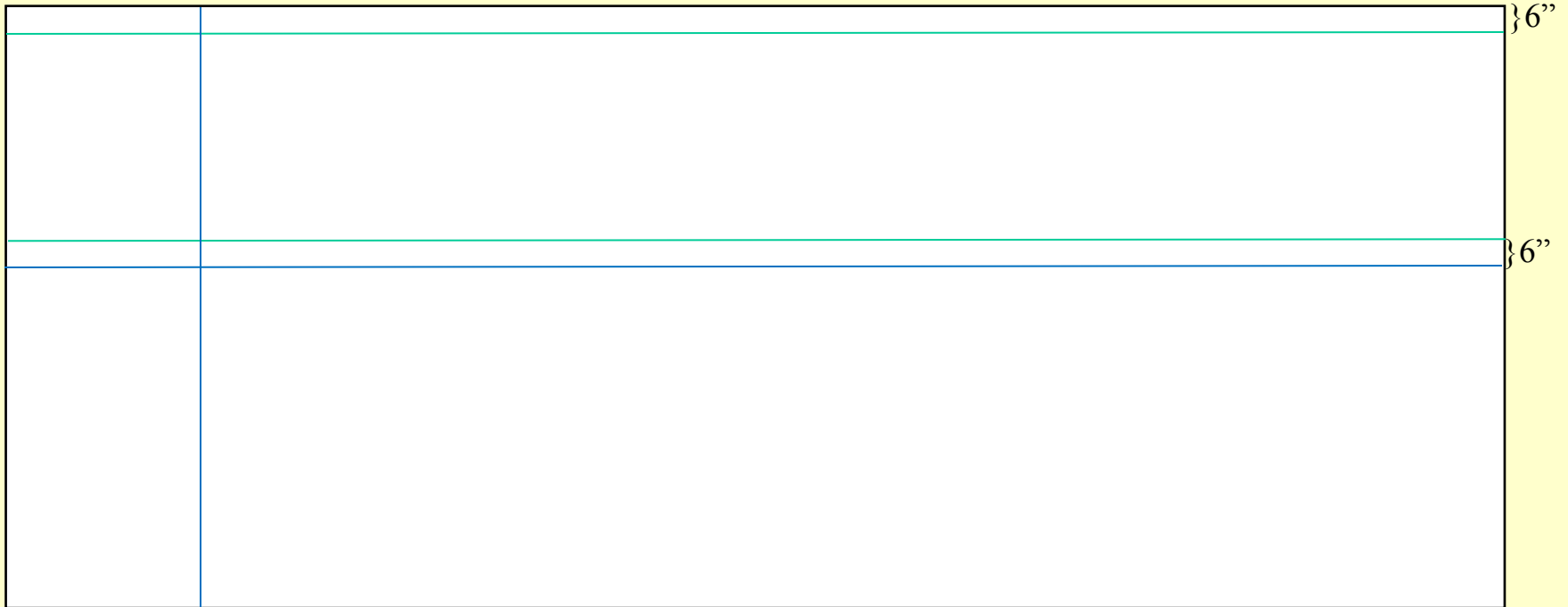
Set your framework upside down on the line and the right edge of the styrene



Draw a line along the side of the frame
Then draw another line along the edge of the frame

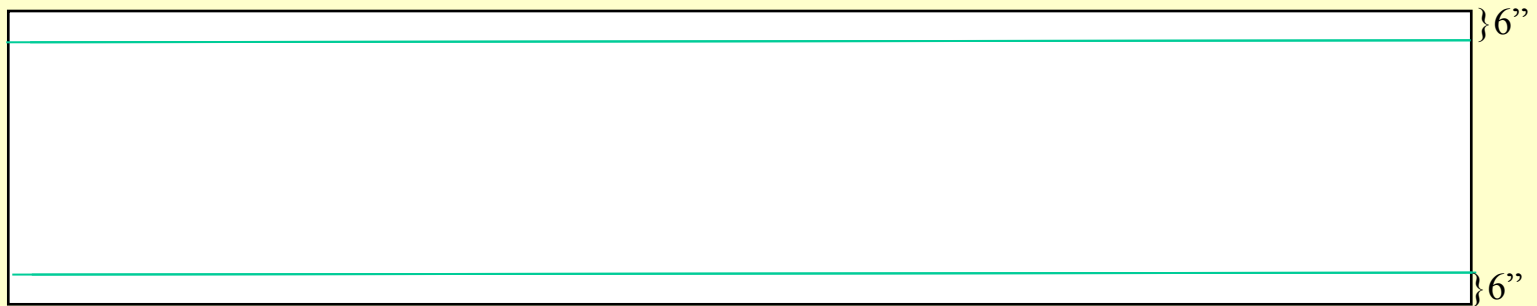
Scratch Built Flatcar

Now remove the frame and draw another line 6" below the frame line



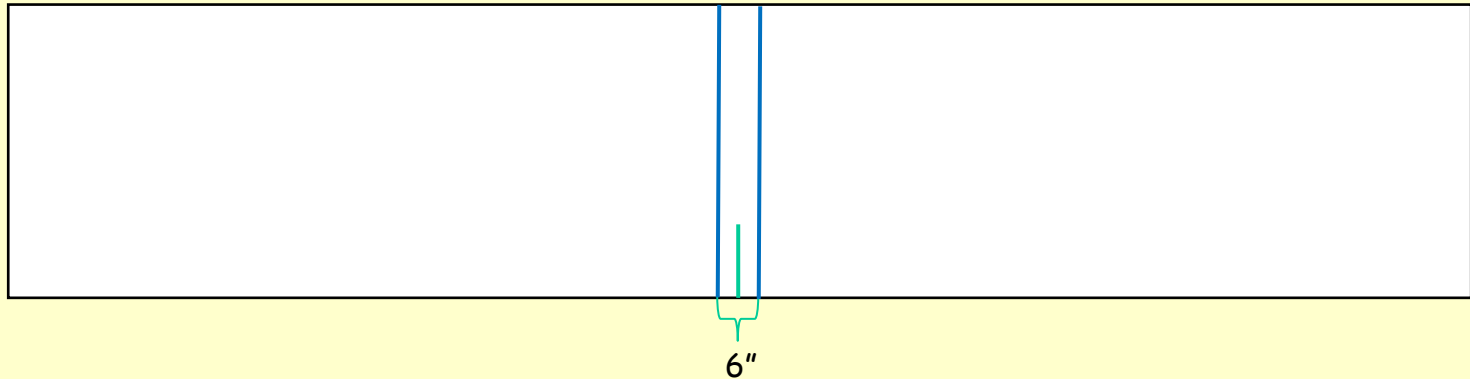
Scratch Built Flatcar

Now cut the sheet styrene so it is as long as the car and a total of 1' wider



Scratch Built Flatcar

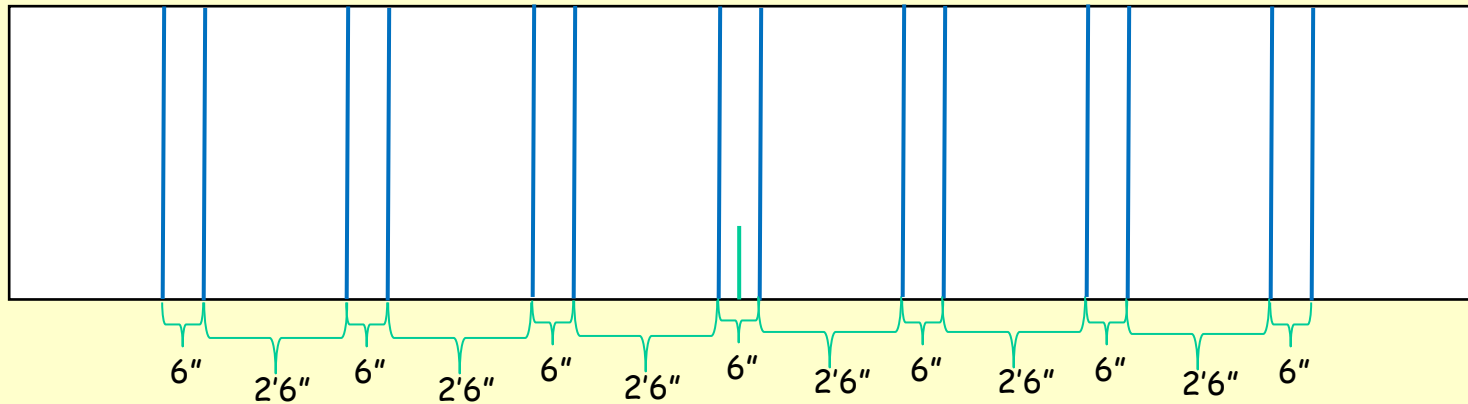
While the decking material is flat let's measure and mark it for the stake pockets



Find the center and then mark two lines 6" apart and centered on the that mark

Scratch Built Flatcar

Now measure off 2'6" and make another line followed by one 6" from that

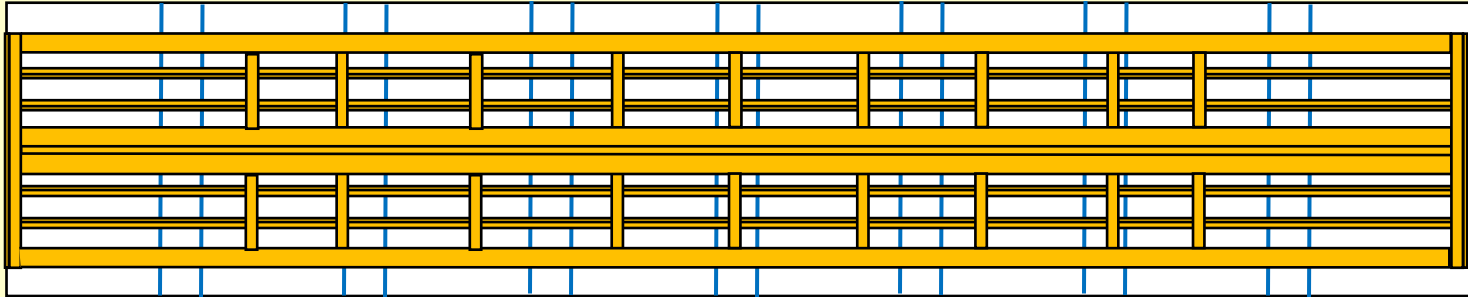


Repeat this process until you are within 4' of the end

Then do the other half
(there will be a lot more then shown in this diagram)

Scratch Built Flatcar

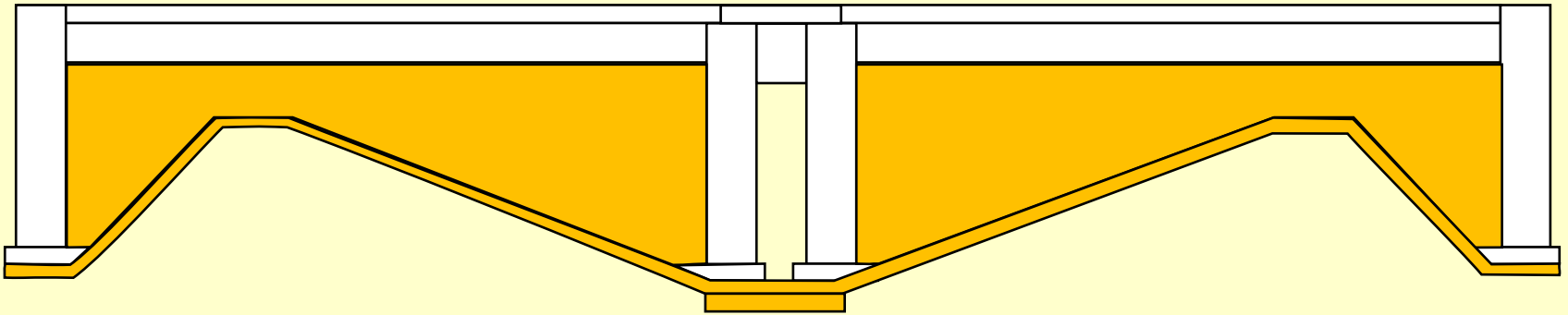
Now we'll glue the top of the frame to the sub-decking with the pocket lines on the bottom



Set this aside and put some weight on it while the glue dries

Scratch Built Flatcar

While that's drying we'll make the bolsters



Depending on your scale you will need:

Z -.030x.040 (E-132)

N -.040x.060 (E-143)

HO -3*(.030x.125) (E-136)

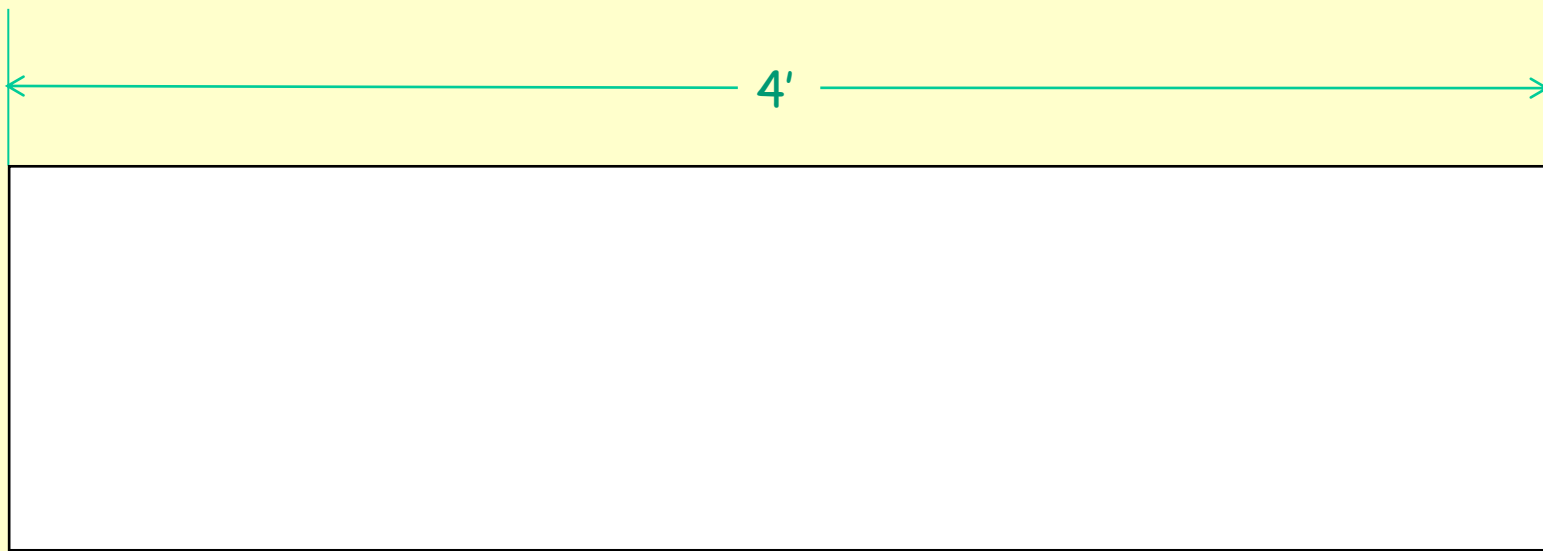
S -3*(.040x.188) (E-148)

O -2*(.060x.250) + .040x.250 (E-159 +E-149)

G - 3*(.080x.500) + 2*(.030x.250) (E-373 + E-139)

Scratch Built Flatcar

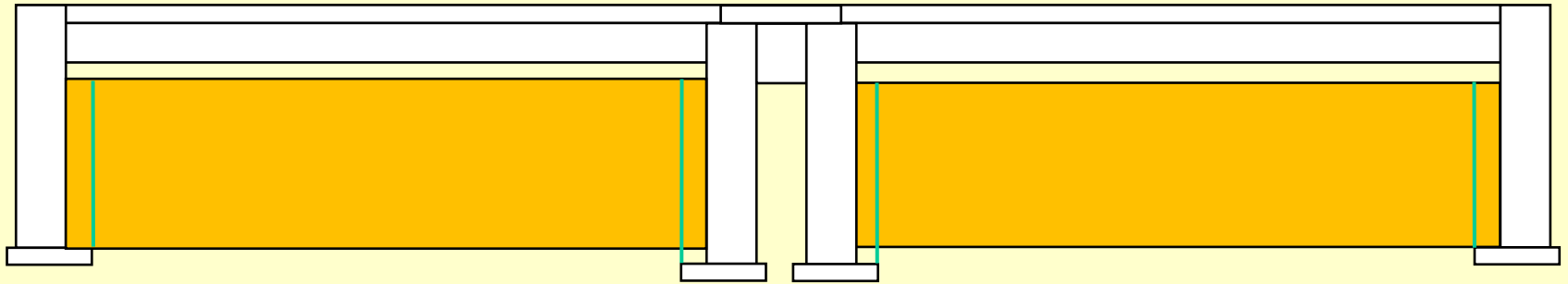
Start by cutting pieces 4' long (total of 12)



These are a little long and will be trimmed to fit as they are installed

Scratch Built Flatcar

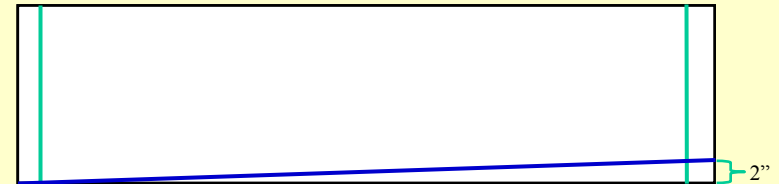
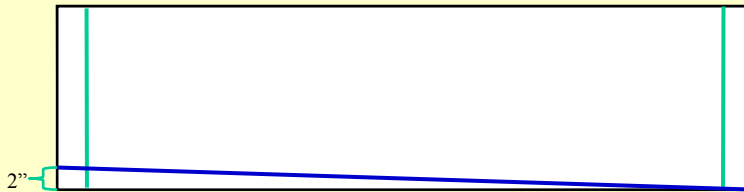
Test fit and trim 1 piece for each of the 4 locations (2 at each end)



Mark where each piece intersects the side and center beam bottom plates

Scratch Built Flatcar

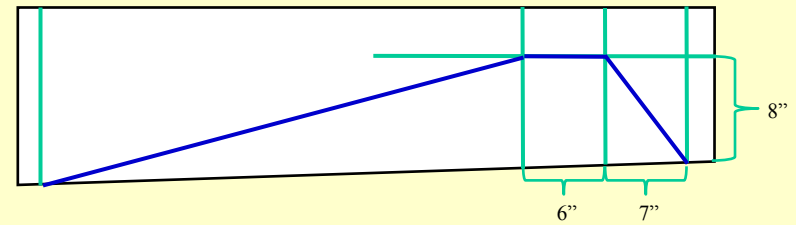
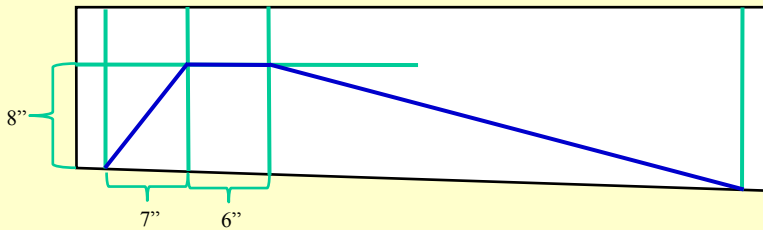
Remove each piece and measure up from the bottom 2" on 1 side of each and draw a line



Then trim the bottom the same way we did the Bridge beams in session 1

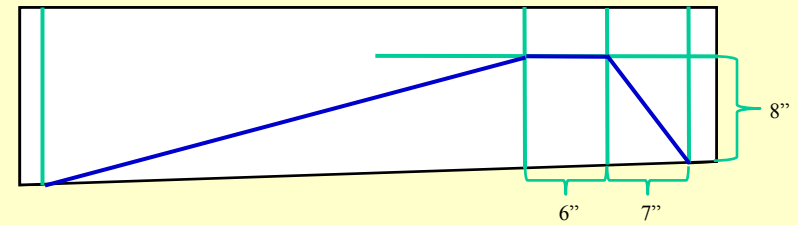
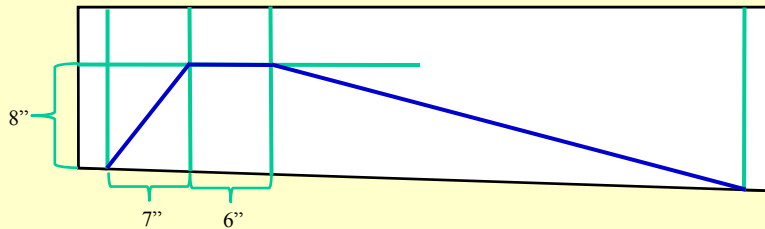
Scratch Built Flatcar

Now we'll mark the pieces to form the bolster shape



Scratch Built Flatcar

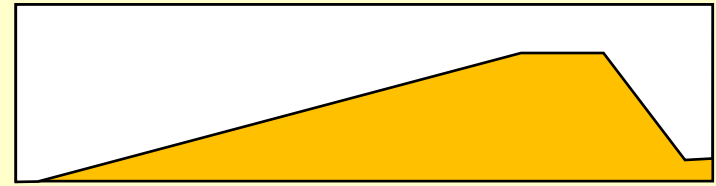
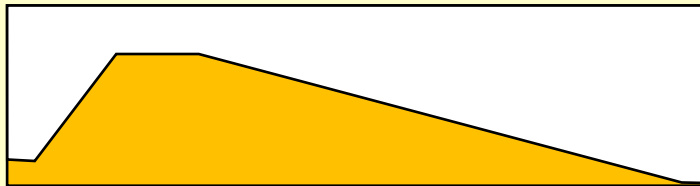
Then carefully cut along the BLUE lines



Remember to use a straight edge and make several light pressure strokes instead of trying to cut all the way through with one stroke.

Scratch Built Flatcar

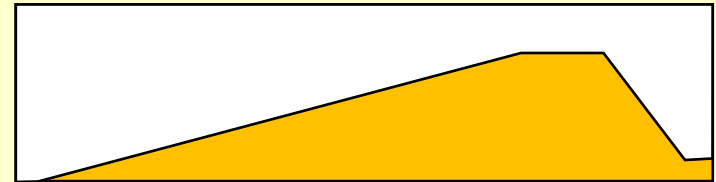
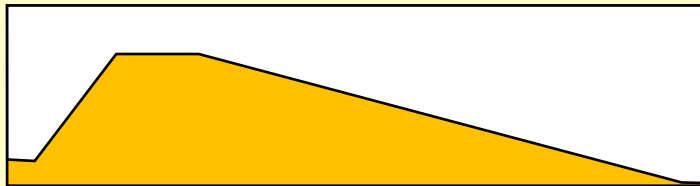
Now glue each piece to an un-cut piece



When this is good and dry, cut the bottom piece to match the top piece profile. You now have a double thick piece.

Scratch Built Flatcar

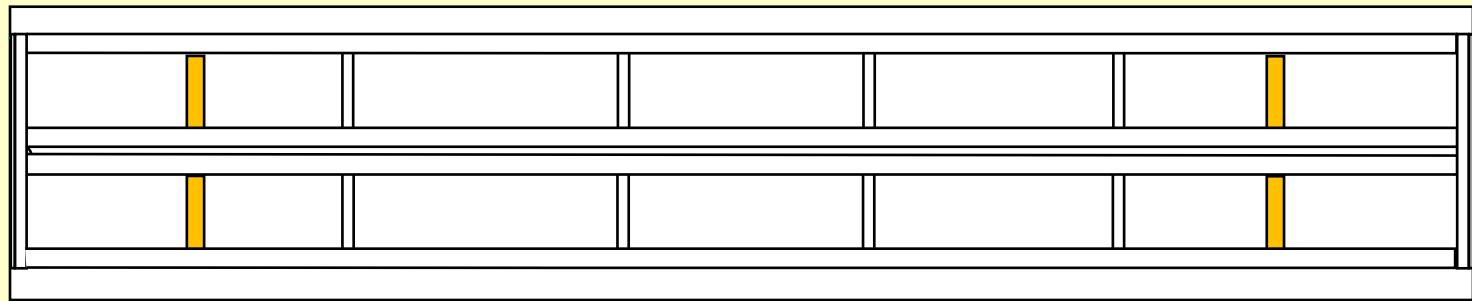
Now glue each piece to an un-cut piece



Now repeat this process until the thickness is around 8 to 9 scale inches thick. File the cut edge as necessary to even out the all the pieces

Scratch Built Flatcar

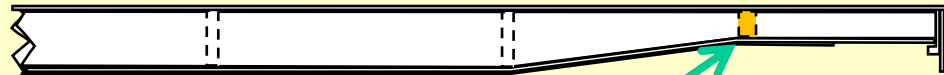
Now glue these bolster pieces into your frame just to the outside of the first bend in the frame and resting on the side & center beam lower ledges



End View

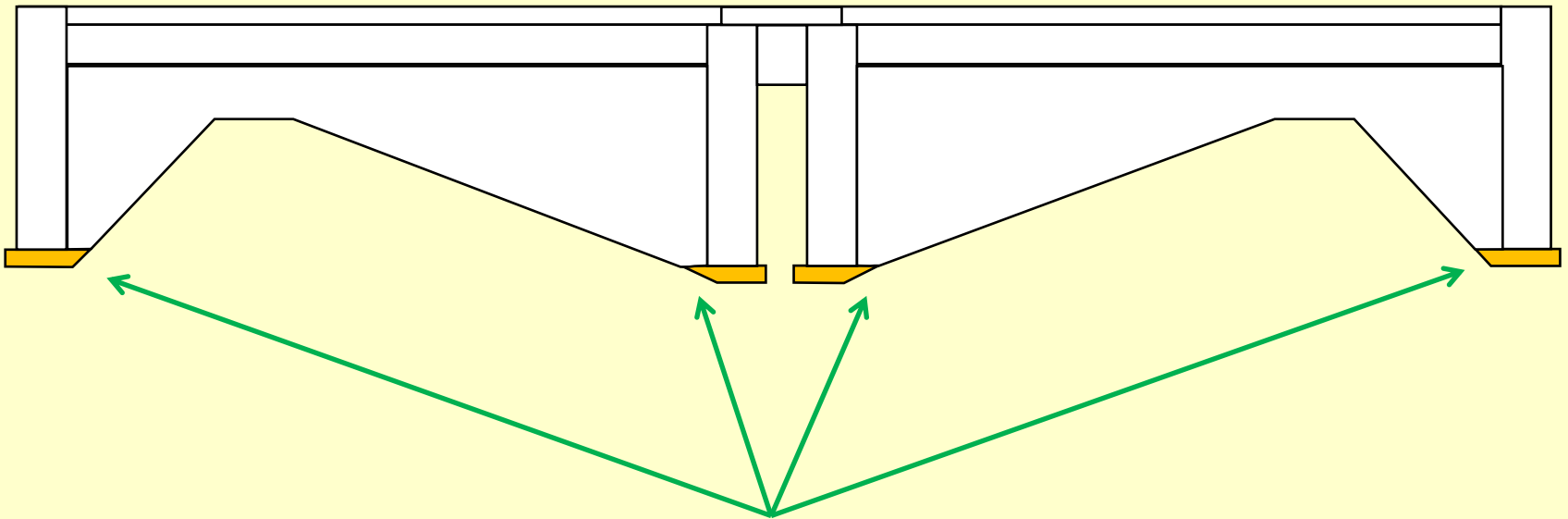


Side View



First bend

Scratch Built Flatcar



Now file the lower ledges to match the bolster profile. Do this **ONLY** where the bolsters attach!

Scratch Built Flatcar

Now we'll add the cross strap that ties the bolster together

Depending on your scale you will need:

Z - .010x.040 (E-102)

N - .010x.060 (E-103)

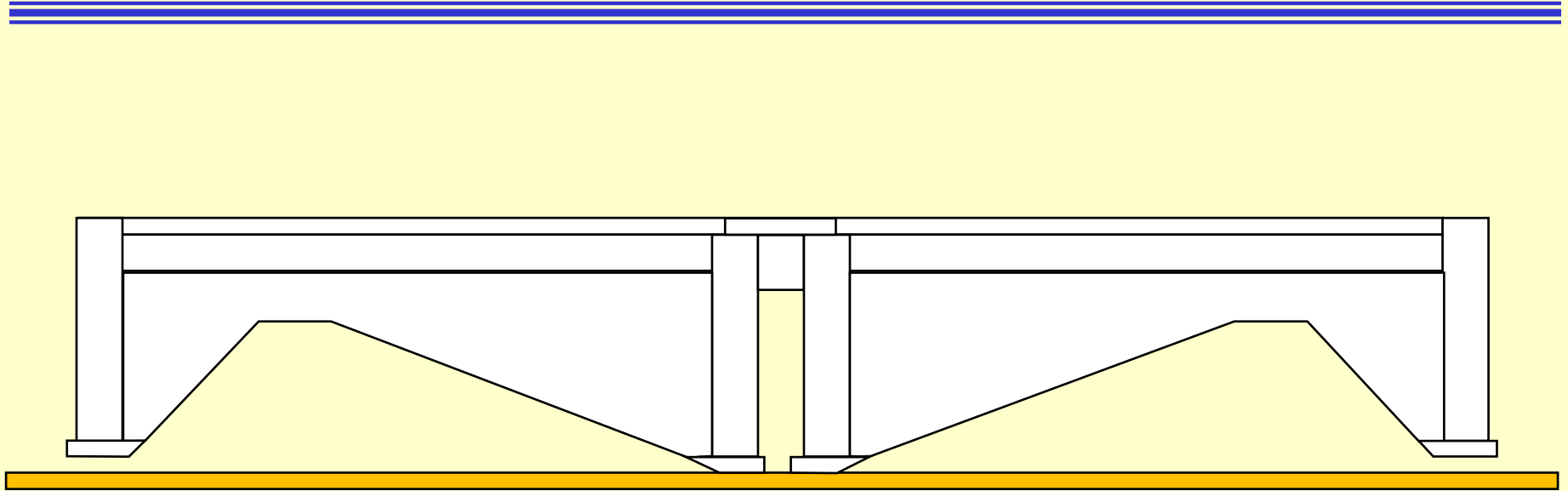
HO - .010x.125 (E-106)

S - .015x.188 (E-118)

O - .020x.250 (E-129)

G - .040x.438 (E-352)

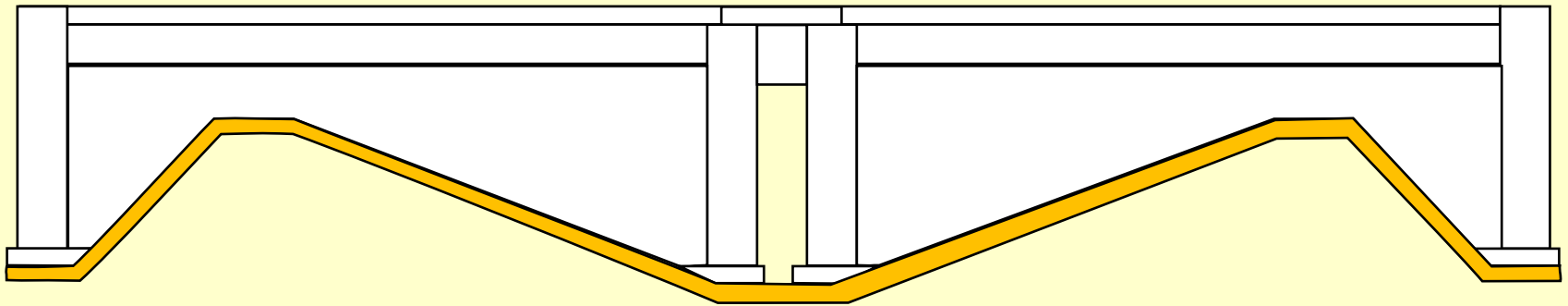
Scratch Built Flatcar



Glue this strip styrene to the 2 center beams,
centered on the newly installed bolsters

Scratch Built Flatcar

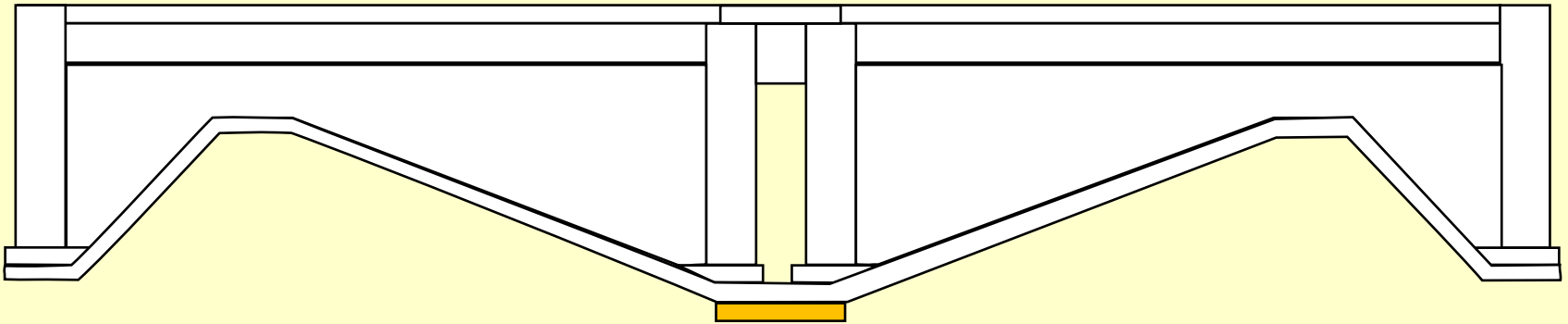
Then bend this piece and glue it to form to the bottom of the bolsters



When dry, trim the ends to match the side beam bottom caps.

Scratch Built Flatcar

To finish up each bolster we need to add an attach point block for the trucks



Depending on your scale you will need:

Z - .010x.060 (E-103)

N - .015x.080 (E-114)

HO - .030x.125 (E-136)

S - .040x.188 (E-148)

O - .060x.250 (E-159)

G - .125x.438 (E-392)

Cut 2 square pieces where the length equals the width and glue them to the center beam aligned with each bolster

Scratch Built Flatcar

Thrall added corner braces to their cars
so we'll do that now

Depending on your scale you will need:

Z - 1/32" Angle (90500)

N - 1/32" Angle (90500)

HO - 3/64" Angle (90501)

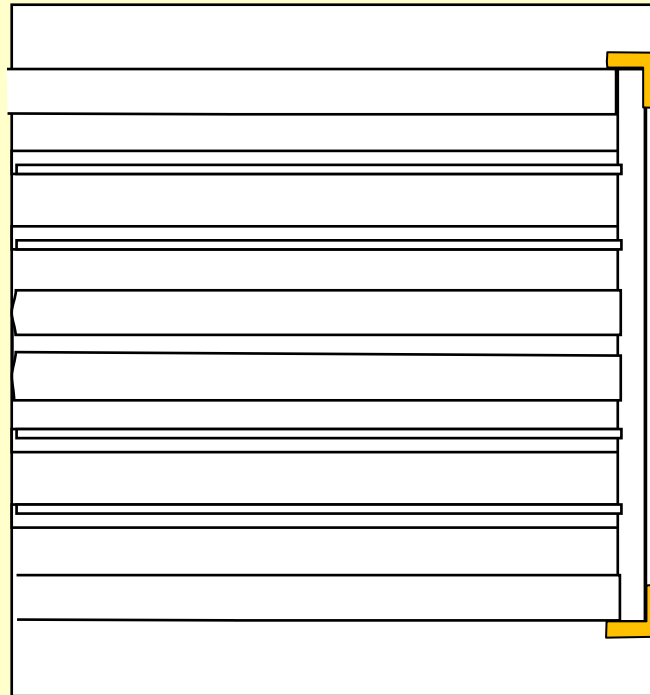
S - 1/16" Angle (90502)

O - 3/32" Angle (90503)

G - 3/16" Angle (90505)

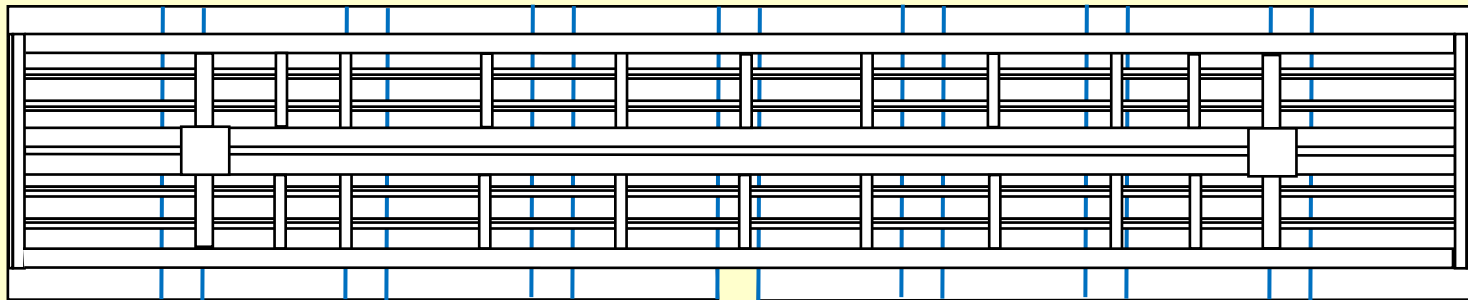
Scratch Built Flatcar

Simply glue the angle material to each corner and trim to fit



Scratch Built Flatcar

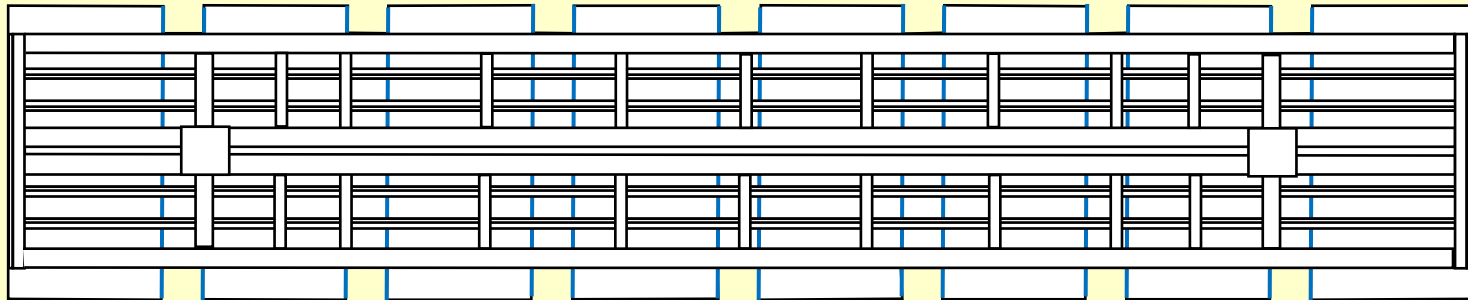
Next we'll add stake pockets



We begin by cutting notches into the sub-decking where we made the marks

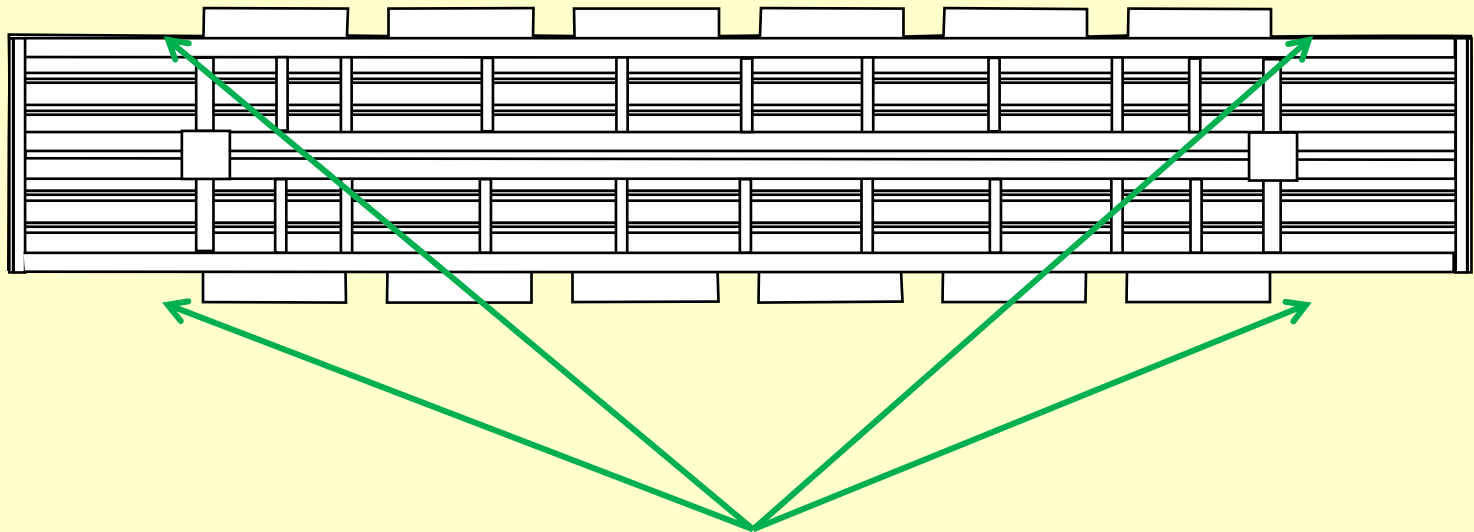
Scratch Built Flatcar

Now continue until all notches are cut out



Scratch Built Flatcar

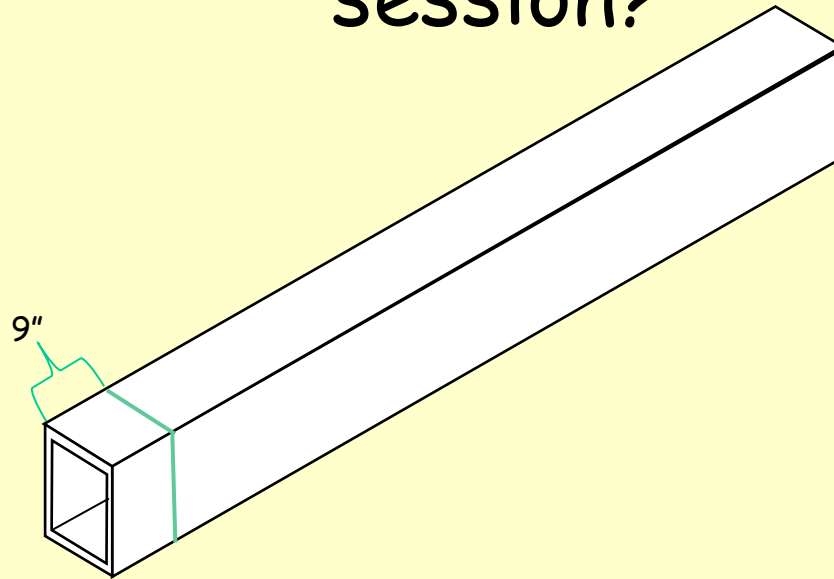
One more cut needs to be done



Remove the material from the last pocket on each corner to the corner itself

Scratch Built Flatcar

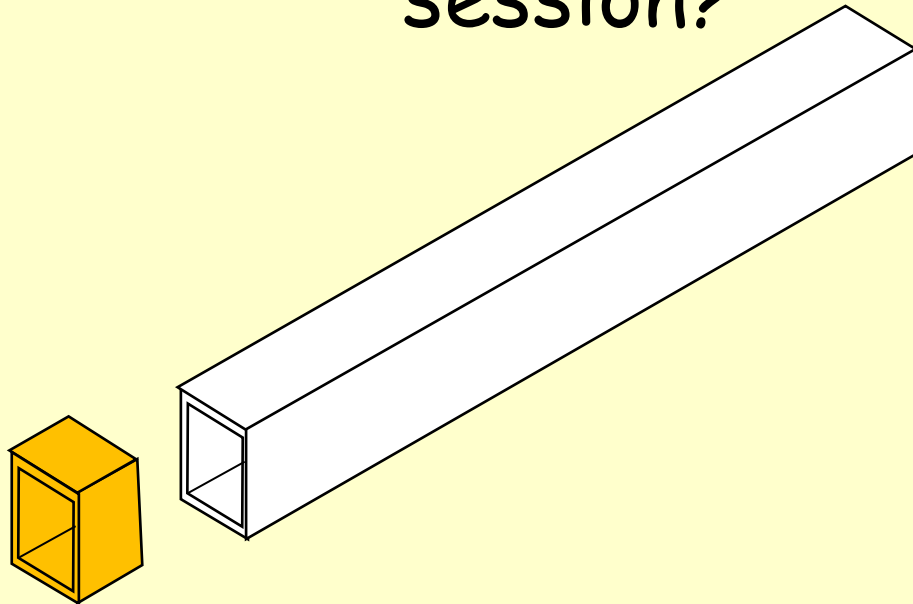
Remember those 2 pieces of channel we glued together when we started this session?



Measure and mark a scale 9" piece

Scratch Built Flatcar

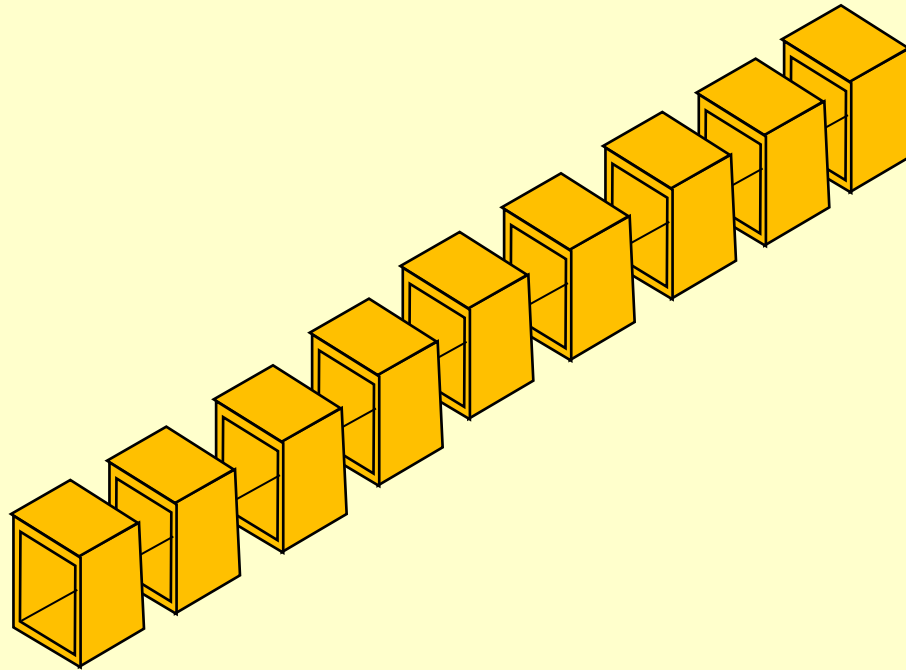
Remember those 2 pieces of channel we
glued together when we started this
session?



Then cut off this piece

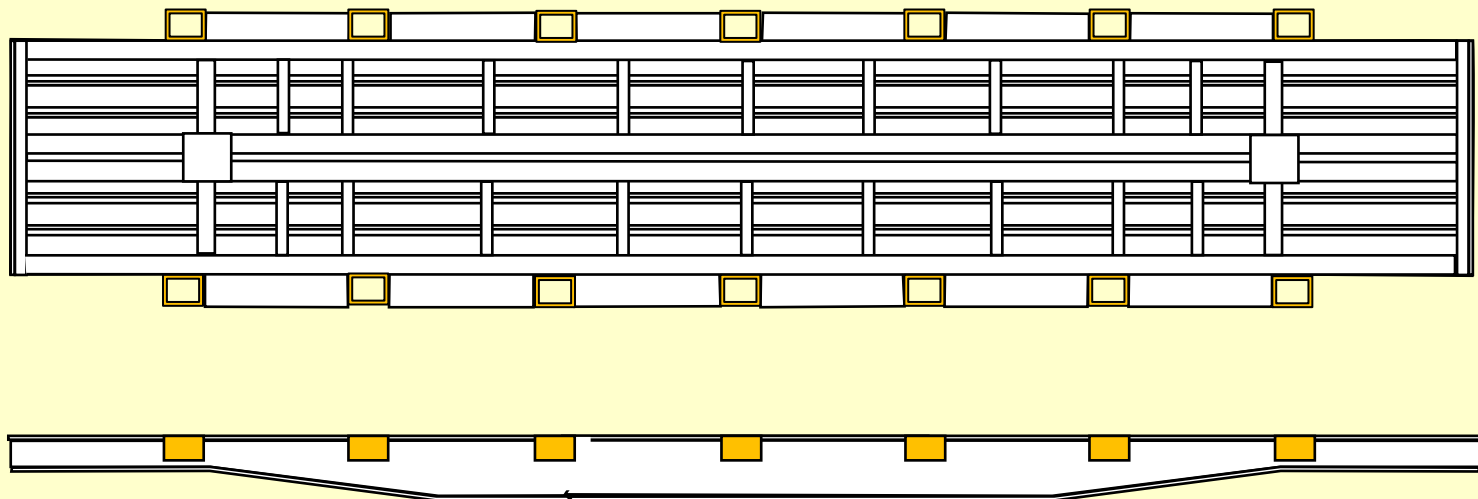
Scratch Built Flatcar

Now repeat the process to cut enough of these so that you have one for each notch in the sub-deck



Scratch Built Flatcar

Now glue a pocket to the outside of the side frames in each sub-deck notch and flush along the top



Scratch Built Flatcar

