2013 NMRA Convention – Atlanta, GA.
July 14 – 20, 2013
Steel Loads – Part 1B – Small I Beams

By Gene and Benita Jameson

A little history about this project:

Part 1B of Steel Loads covers small I-beam loads on a 60 foot bulkhead flat car. You can choose just about any size I-beams you want to use for this load. Just remember the bigger the I-beam the fewer of them you can get on the car. The load limit for a 60 foot bulkhead flat car is 60,000 pounds.

Materials

Plastruct 3/16 “I” Beam #90515	Several
Plastruct 1/4 “I” Beam # 90516	Several
Plastruct 5/16 “I” Beam #90517	Several
Plastruct 3/8 “I” Beam #90518	Several
Plastruct 7/16 “I” Beam #90519	Several
Plastruct 1/2 “I” Beam #90520	Several

Materials continued

Plastruct 9/16 “I” Beam #90521	Several
Plastrcut 5/8 “I” Beam #90522	Several
Northeastern Scale Lumber #3030, HO 4 X 4	1 Package
RustAll	Optional
Model Master Gunship Grey #1923 (spray)	
Model Master Gunship Grey #1723 (brush on)	
Model Master Dark Slate Grey #2056 (brush on)	
Model Master #2015 Flat Clear Finish (brush on)	
Model master #1705 Insignia Red	
Model Master Camouflage Grey #FS36622 (brush on)	
Testors Brown #1240 (spray)	
Testors Dull Coat #1160 (spray)	
Testors Rust #1185 (brush on)	
Testors Grey #1163 (brush on)	
Testors Silver #1146 (brush on)	
Testors Wood, #1141 (brush on)	
Testors Rubber #1183 (brush on)	
Testors Red, #1103 (brush on)	
Polly Scale TTX Yellow #F404067 (brush on)	
A-Line #29000 Style “A” Stirrup Steps	
Detail Associates #2202 17” Drop Grab Irons	
Detail Associates #2225 14” Straight Grab Irons	
Detail Associates #6210 17” Straight Grab Irons	
Micro Scale #70211 N Scale Graffiti	Optional
Weathering chalks	
Athearn 60’ bulkhead flatcar #ATH88111 or ATH88112	
Kadee #5 couplers	Optional
Walthers Goo	
Tenax-7R	
Pactra Trim Tape, Black	
.015 Piano wire	
Super Glue	

Tools

X-Acto knife blades, #11 and #17	Several
Pin vise	
#76, #80 drill bits	Several
NSW Chopper	
Exxact Socket tool	
NMRA HO scale gauge	
Postal scales	
Kadee coupler height gauge	
Steel HO Scale ruler	

Tools Continued

X-Acto Miter box and Razor saw
Touch-N-Flow glue applicator

Let's Get Started!!

Read this handout through completely before you start the project. That way you have an understanding of the complete project and it may just save you making a mistake.

I included all of the Plastruct "I" Beam part numbers in the "Required Materials." The Plastruct part numbers for the I-beams are "Dealer Bulk" packages. It is cheaper to purchase "Dealer Bulk" than individual I-beams. You can select the ones that you like the looks of for your load. Use more than one size beam in your load; it will make it look better. When cutting the beams, make each size beam a different length to add to the over all look.

On one load, I used the 5/8 inch and 1/2 inch "I" Beams. To build this load, cut four of the 5/8 inch beam to scale 50 feet long. Cut four of the 1/2 inch beam to scale 45 feet long. File the cut ends of the beams smooth.

With the ends of the beam smooth use the Tenax-7R, in the Touch-N-Flow glue applicator, to glue the beams together side by side. When gluing the beams together, stagger the ends a bit. Repeat the above step for each size beam.

Use Model Master #1923, Gunship Grey to paint the I-beams. Set aside to completely dry.

After the paint is completely dry, use Micro Scale #70211 N scale Graffiti to put some chalk marks on the beams. This can be just about anything that you want to put there. It could be the size of the beam to just your initials. After you have set the decals, use Testors #1160 Dull Coat to cover the decals.

I built a second load using four different size I-beams, 3/16, 3/8, 1/4, and 5/16 inch. I cut six of the 5/16 beams, a scale 50 feet long. I cut three of the 1/4 beams, a scale 50 feet long. I cut nine of the 3/8 beams, a scale 45 feet long. I cut twelve of the 3/16 beams, a scale 40 feet long. Assemble and paint the bundles of I-beams as described above. If you don't use decals on the I-beams, dull coat the beams and set aside to dry.

Modifications to the flatcar

Remove the trucks from the car. Remove the wheel sets from the trucks and paint the trucks with the Testors #1240 Brown paint and set aside to dry. Paint the outside wheel web with the Testors #1185 Rust paint. Be careful not to get the paint on the wheel tread or the axle point. Keep the paint off the lip of the wheel; this will leave a shiny rim that makes the wheel look like it has been through the retarders in the hump yard many times. After the brown paint on the truck has dried, spray the truck with Dull Coat and set aside

to dry. Use the Exxact Socket tool to ensure that the truck has the correct shaped "point" for the axle of the wheel sets. This also gets any paint overspray out of the area that the axle rides. I have found that by using this tool I have improved the rolling qualities of my rolling stock. Check the wheel sets with the NMRA gauge to make sure the wheels match the gauge. When the trucks are dry, install the wheel sets.

Paint the couples with Testors #1185 Rust. Be careful not to get too much paint on the hinge area of the coupler.

Use the X-Acto #17 chisel blade with the bevel towards the car to cut off all cast on grab irons, including the vertical (17 inch long) grab iron and the angled (36 inch long) grab iron. Use the X-Acto # 5 blade to remove the stirrups for the bottom of the car.

Use the #76 drill bit to drill holes for the stirrups. You can use the areas where the paint was removed when the stirrups were cut as a drill guide. Just be very careful to center the drill bit on the bottom of the car side sill. Drill the hole deep enough to allow the "round" part of the stirrup to completely slide into the hole.

Athearn did not do us any favors with this model. The cast on grab irons are not scale length grab irons. For the end grab irons, drill a #80 hole where you cut off the cast on grab irons nearest the side of the car. Use the Detail Associates #2202 Grab Iron as a guide for the other hole. Mark the second hole and drill.

For all of the vertical grab irons on the side, drill a #80 hole where the cast on grab irons were, next to the flat side of the bulkhead. Use the Detail Associates #2202 Grab Iron as a guide for the other hole. Mark the second hole and drill.

Working on one corner, install the stirrup, end grab iron, and side bottom grab iron. Trim the end and side grab iron to clear the wheels on the truck. Glue the stirrup and grab irons with super glue.

Trim two Detail Associates #2202 Grab Irons to fit the other two grab irons location making sure that the grab irons do not protrude to the area behind the ladder. Mark the second hole and drill a #80 hole. Trim a Detail Associated #2225 straight grab iron for the top short position. Mark the second hole for each grab iron, and drill a #80 hole. Drill a #80 hole at the bottom of the vertical grab iron and the bottom of the angled grab iron. Use a Detail Associates #6210 Straight Grab Iron, and mark the second hole and drill a #80 hole. Trim one Detail Associates #6210, Straight 17" Grab Iron to fit making sure that the grab irons do not protrude to the area behind the ladder. Using a piece of .015 piano wire, bend a 36 inch grab iron. Using this grab iron, mark the second hole and drill a #80 hole. Make sure that none of the grab irons protrude into the area behind the ladder. Use a toothpick to apply super glue to all of the grab, irons using a paper towel to remove any excess super glue (see figure 1 on the next page). Prepare the other three corners for grab irons and install them.

Once all of the grab irons are installed and the glue is dry, paint the grab irons and areas where you removed the cast on grab irons with Polly Scale TTX Yellow #F404067 (brush on) paint. Be careful not to get the TTX Yellow on the white "reflector" on the

side under the bottom grab iron. It may take two coats of the TTX yellow to cover the area where you removed the grab irons.

Figure 1

Use a razor saw to distress the deck of the car. Remember, this deck is made out of wood and it really gets a lot of scratches and damage during normal use. Use a sharp #11 X-Acto blade to make a small cut on the ends of the deck boards using the lines on the deck as a guide (see Figure 2). Use the #11 X-Acto blade to score several boards cross ways on the center line of the car to make it look like several boards have been repaired. Use the #17 X-Acto blade to score a line where the deck boards and the bulkhead meet. Cut several boards on each side at an angle to make it look like the board was broken off (see Figure 2).

When wood is exposed to the weather for a long time, it first turns a dark grayish / brown color. Then the wood will start to lighten in color and take on a silvery hue. I mixed several colors to get this light Grey silver color. I used three parts Model Master #FS36622 Camouflage Grey, two parts Testors #1163 Grey, one part Testors #1185

Rust, one part Testors #1146 Silver, and about three drops of Testors #1183 Rubber. This will get you close to the proper color. At this point, you may need to add more Testors #1163 Grey or Testors #1146 Silver to get the correct grayish / brown silvery hue of aged wood. Paint the deck and set the model aside to dry.

Figure 2

Use Testors #1141, Wood to paint the boards that you scored from the center to one side of the car so it looks like a part of a deck board was replaced. Paint one or more boards all the way across the car to make it look like a deck board was completely replaced. Use Model Master #2056, Dark Slate Grey to paint several deck boards to look like they were replaced in an earlier repair. Make sure that you paint the end of the board as shown in Figure 2. Paint the ends of the boards that you cut to look like they were broken with the Wood paint also. Use Testors #1185 Rust, Testors #1183 Rubber, Testors #1141, Wood, Model Master #FS36622 Camouflage Grey, Testors #1163 Grey in a dry brush fashion, to the "wood" detail on the deck. The results that you want are shown in Figure 3.

Turn the car on its side; apply a heavy coat of RustAll to the side of the car and to the center sill. Let it dry completely. Do the other side of the car and let it dry completely. Apply the RustAll to the ends of the car, doing one end at a time. Put a heavy coat of RustAll on the deck and set aside to dry.

Using dark brown and black chalks; darken the sides and ends of the car. On the ends, I added a vertical line just inside of the grab irons to simulate grime thrown up from the wheels of the adjacent car. You can use light brown, dark brown, and black chalks to add a bit of detailed weathering to the deck. Once you have the car looking like you want it, dull coat it to seal in the chalks.

Figure 3

Give the car a final coat of Testors Dull Coat #1160 and set aside over night to completely dry.

Assembling the load

Use the Pactra Trim Tape 3/64 wide to "band" the beams together. Evenly space five "bands" on the beam bundles. I started in the center of the beam, and attached the first "band" with super glue and let it set up. Pull the "band" tight around the beam and use super glue to bond the end to the beam. Next do this for the "bands" on the end of the beam bundle. The end "bands" should be about a scale two to three feet from the end of the beam. Install them just as you did with the center "band." The remaining two "bands" are centered between the end "bands" and the center "band."

At this point, you have to be very careful not the stretch the Pactra Trim Tape. If you do, you will have to remove the damaged "band" and replace it. When you get the beam load completely assembled, you will not be able to repair the stretched "band."

"Band" all beam bundles with five "bands." Use Testors Red, #1103 to paint a small red clip on each "band" to simulate the crimp clip that holds the "band" together. Set the bundles aside to completely dry.

Measure the largest width of the largest bundle of "I" beams, and set the NSW Chopper up to cut 5 pieces Northeastern Scale Limber #3030 for dunnage. Use Walthers Goo to attach the dunnage to the bottom beams. Repeat this set for each layer of I-beams.

For loads that just have two size I-beams, glue the smaller I-beams to the larger I-beams using Walthers Goo on the bottom of the dunnage on the top bundle of I-beams.. Set aside to completely dry. "Band" the two sizes of I-beams together using the Pactra Trim Tape (3/64) as done on the I-beam bundles earlier. You need five "bands" to hold the load together. **DON'T** have the final "banding" covering up any of the "banding" that was applied earlier. After the "final banding" is in place, use Testors Red, #1103 to paint on the crimp clips (see Figure 4).

Figure 4

For loads that have three or more size of I-beams, "band" each size of I-beams as in the above steps. Measure and cut 5 pieces Northeastern Scale Limber #3030 for dunnage for each layer. Attach the dunnage to the bottom of each of the layers as in the steps above. "Band" the top two layers of I-beams together as described in the steps above. Remember, at this point, you have to be very careful not the stretch the Pactra Trim Tape. If you do, you will have to remove the damaged "band." Apply Walthers Goo to the bottom of the dunnage of the second layer of I-beams. Center the top two bundled layers of I-beams on the third layer of I-beams. Set aside to completely dry (see Figure 5).

Figure 5

Slide a length of the Pactra Trim Tape with the paper backing still attached through the opening between the first and second layer of I-beams. Wrap it around the second and third layers to measure the length that you are going to need for "banding." Cut five lengths of Pactra Trim tape slightly longer than what you measured. Using a short length of .015 piano wire, bend a 90 degree bend so you have about 1/4 inch long "hook." This will be used to get the "banding" between the first and second layers of I-beams. Pull off the backing paper on the Trim tape and warp the Trim Tape around the "hook" on the tool that you made so it sticks to it's self. Thread the "hook" tool with Trim Tape attached between the first and second layers of I-beams. Center the length of Trim tape over the second layer of I-beams and remove the "hook" tool from the Trim Tape. Pull the Trim Tape down on the top of the second layer of I-beams, over the third layer of I-beams, and wrap it under the third layer of I-beams. Make sure it is tight, and secure it with super glue. Repeat this for the other four "bands" for this layer. If you have very narrow bundle on the first layer, paint the "Red" clips on the "banding" that holds the second and third layers of I-beams together (see figure 6).

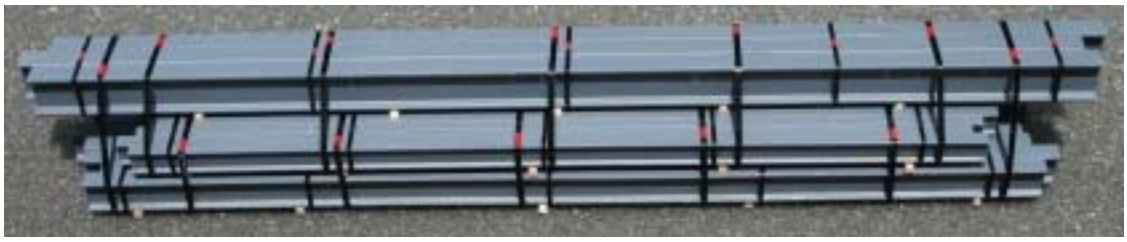

Figure 6

Apply Walthers Goo to the bottom of the dunnage on the third layer of I-beams. Center the assembly of I-beams on the fourth layer of I-beams. Set aside to completely dry before "banding" the third and fourth layers of I-beams together.

"Band" the third and fourth layers of I-beams just as you "banded" the second and third layers of I-beams together. Set the assembled I-beam load aside to completely dry (see Figure 7).

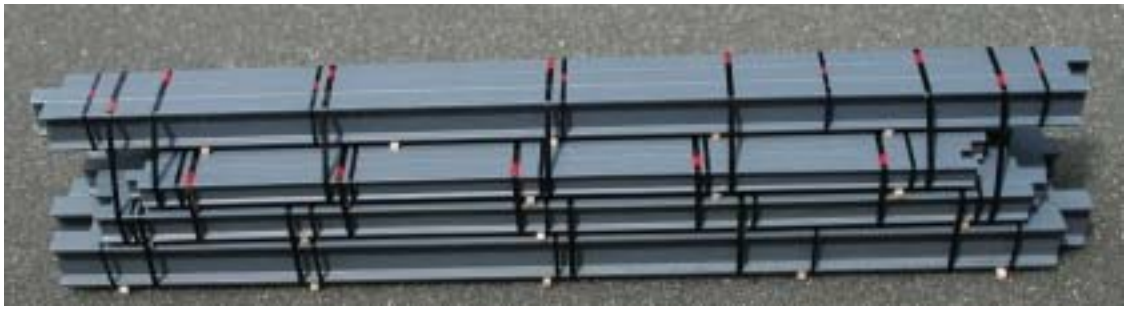

Figure 7

Attaching the load to the car

Use Walthers Goo; glue the load to the deck of the flat car. Make sure that it is centered on the car. The ends of the 50 foot "I" beam should be at the first pocket from the end of the car (see Figure 8 and 9). Let the model sit over night so the glue has time to completely dry.

Figure 8

Figure 9

Cut 10 pieces of Northeastern Scale Limber #3030 a scale 24 inches long. These are going to be used as stakes in the side pockets to help keep the load from shifting. Use a sharp #11 X-Acto blade to taper one end of the bass wood. You want it to fit tightly into the pocket. Use the Walthers Goo and install the stakes as shown in Figures 8 and 9.

The finished model weights 4.5 ounces. A car of this length should weigh 5.25 ounces. Cut several pieces of the sheet lead 7/16 inch by 7/16 inches. Glue them to the underside of the car to get the weight up to the recommended 5.25 ounces.

Check the coupler height with the Kadee Coupler gauge. Adjust the trip pin on the coupler as needed. The car is now ready to enter service on the railroad. Now you are ready to start the next car in the Steel Load series, the 89 foot flat car with an extreme I-Beam load!

If you have any questions about going these models, feel free to e-mail us at b-n-ferrco@cfl.rr.com or visit our web site at www.b-n-ferrco.com