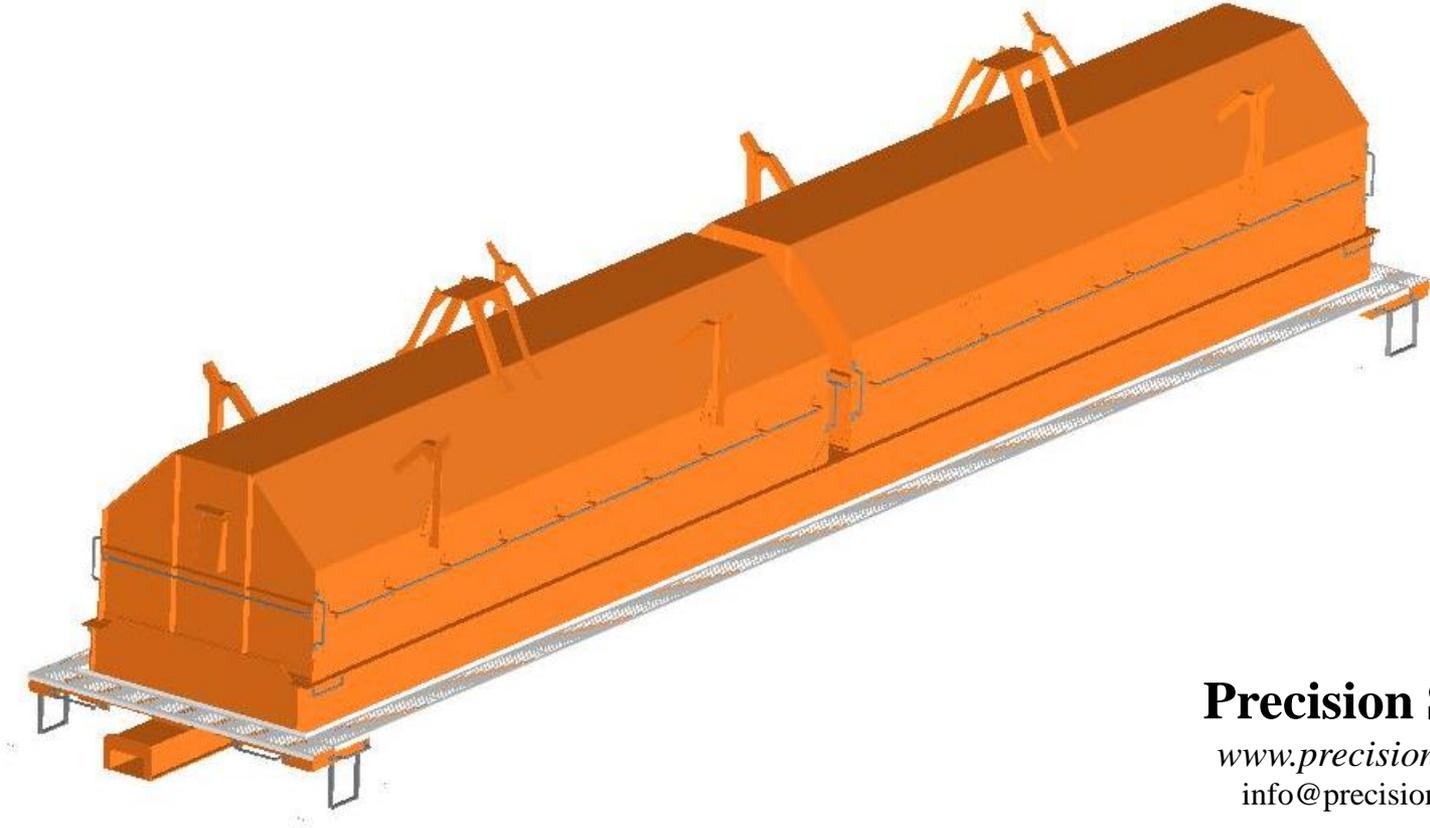


Precision Steel Car's 100 T Steel Coil Car



Precision Steel Car

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Paul Vernon: (513) 571-5739

Revised 4/30/2009

Contents of Kit

Main Tube Side Frame	2	Left Stack Support A	4	Walkway Corner Support B	2
Small Frame Cross Member	5	Left Stack Support B	4	End Frame	2
Bolster Frame	4	Grab Iron Bracket	8	Side Guide Plate	4
Bottom Frame Sheet	1	Coil Hood Bottom Angle	4	End Guide Plate	4
Large Frame Cross Member	4	Coil Hood Vent	4	Top Frame	1
Large Frame Cross Member Web	4	Coil Hood Vent Roof	4	Belly Pan	2
Coil Cover	2	Coil Cover Corner Reinforcement	8	Coupler Pocket	2
Coil Cover End Plate	4	Walkway Brace	18	Handrail Rod	4
Coil Hood Vertical Rib	8	Side Bearing Plates	4	Stirrup Step B	4
Coil Hood Horizontal Rib	4	Handrail Stanchion	40	Walkway	24
Crane Pick Bracket	2	Side Frame Strip	2	Grab Iron C Style 2 3/4"	4
Crane Pick Support A	4	Side Frame	2	Grab Iron C Style 2 1/2"	12
Crane Pick Support B	4	Coupler Mounting Plate	2	Grab Iron D Style 10 1/2"	4
Hood Stack Support Gusset	8	Coupler Pocket End Plate	2	Grab Iron A Style 2"	4
Right Stack Right Support A	4	End Walkway Support	2	Modern Brake Housing Kit	1
Right Stack Support B	4	Walkway Corner Support A	2	Modern Brake Wheel	1

249 Total Parts

Recommended Assembly Techniques

- Follow the Instructions!
- Go make a photocopy of the instructions so that when they catch fire from the welding sparks you will have a back up copy. You can also see the instructions on our website at *www.precisionsteelcar.com*
- Dry fit all the parts together first to get an overall understanding of how the kit goes together.
- Tack weld to start, it's easier to undo a tack than a full weld.
- Plan your welds, 95% of the welds can be hidden.
- Skip weld, continuous welding will cause extreme warping and twisting.
- Keep the assembly square when welding.
- Be sure to clamp parts together firmly before welding. C-clamps, several styles of vise grips and a couple of furniture clamps will greatly help in holding parts in place during welding.
- Add any extras, such as provisions for safety chains, truck mounts, and couplers as early as possible. It's easier to modify a piece before it is welded to the assembly.
- Enjoy building this kit, it will produce a car of which you can be proud.
- If you have any questions, contact PSC, we have made most of the mistakes already.

Items to be Supplied by Buyer

Tools Needed

- Welder
- Welding Clamps, Vise Grips, C-Clamps
- #4-40 Taps
- #43 Drill Bit
- Cordless Drill (suggested)
- 1/16" Allen Key

Fasteners Needed

- 4-40 x 1/8" Button Head Cap Screws
Qty. 288 (1/16" Allen Key)
- 4-40 x 3/16" Button Head Cap Screws
Qty. 16 (1/16" Allen Key)

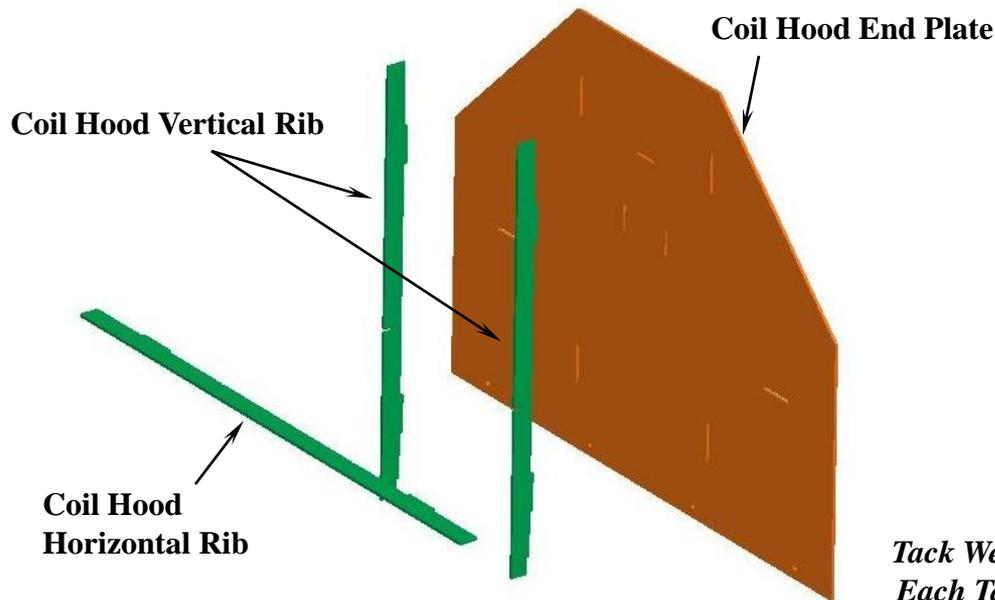
Other screws with different head styles may be substituted at the customer's preference. Rivets may also be used but tight assembly clearances may make it difficult to squeeze the rivets.

Couplers and Trucks are not included with this kit.

Mounting of the trucks is to be determined by the buyer. This includes making adapter plates for mounting the trucks. The buyer is responsible for creating any additional parts needed to mount trucks or couplers. When creating these parts the buyer must calculate and modify the adapters, trucks, or kit for side bearing heights and coupler heights.

Precision Steel Car is not responsible for defects resulting from poor assembly or careless handling. Replacement parts may be available for purchase.

Step 1

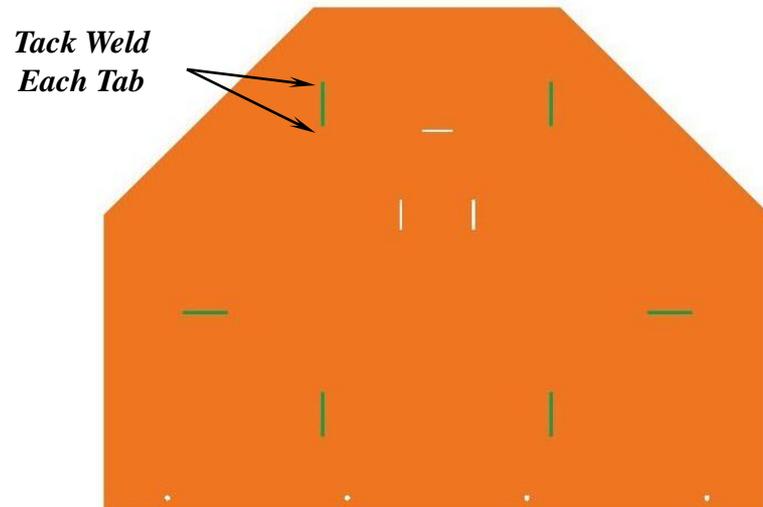


Slide **Coil Hood Horizontal Rib** and **Coil Hood Vertical Rib (2)** into the slots on the Coil Hood End Plate.

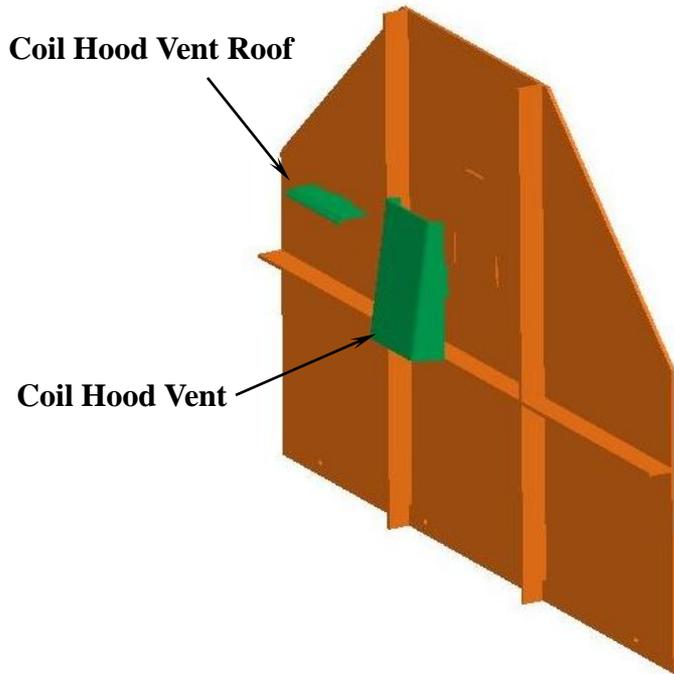
Clamp the parts together firmly and place a small tack weld on the back side at both ends of each tab. Do Not weld all the way over the tab as this will cause the parts to warp.

Repeat this step 4 times to make assemblies for both ends of the two angled hoods.

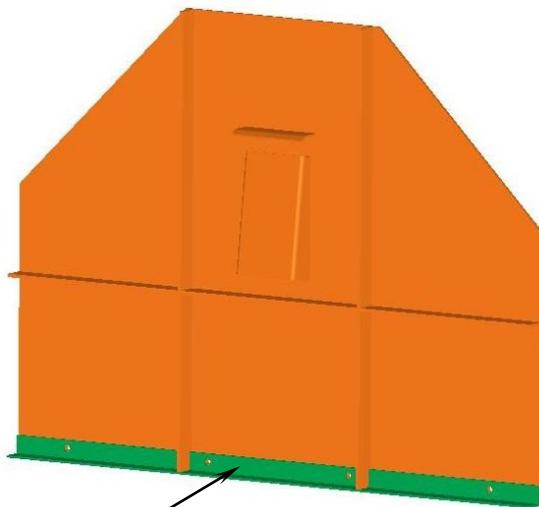
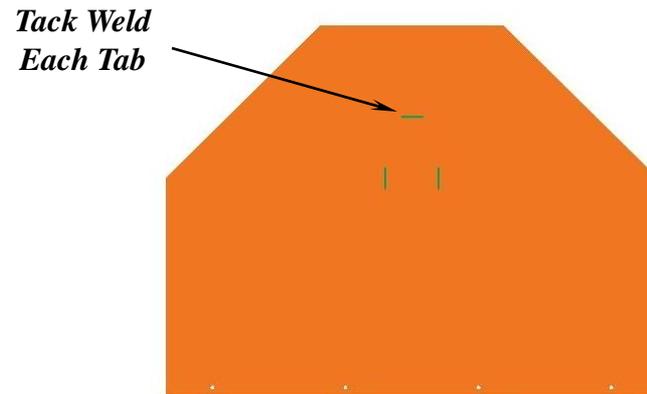
No welds should be visible on the outside



Step 2



Slide **Coil Hood Vent** and **Coil Hood Vent Roof** into their respective slots on the Coil Hood End Plate. Clamp the pieces together firmly and place a small tack weld on the back side at both ends of each tab. Do Not weld all the way over the tab as this will cause the parts to warp.

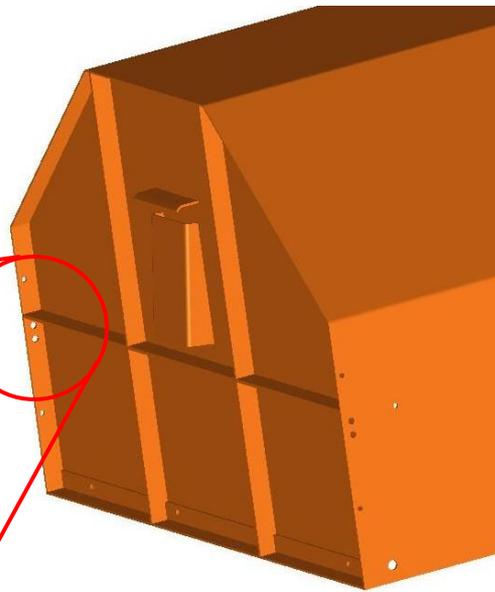


Coil Hood Bottom Angle

Tap the four holes along the bottom of the Coil Hood End Plate with a #4-40 tap. Slide the **Coil Hood Bottom Angle** into place and fasten with #4-40 x 1/8" long screws. If the screws protrude through the back then they will need to be ground down to avoid interference later.

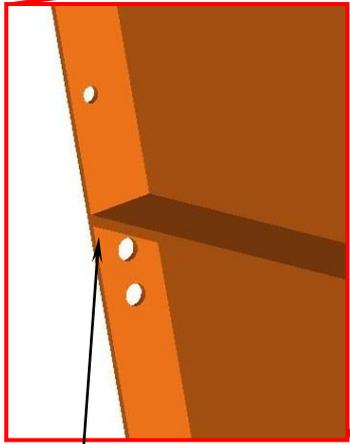
Repeat this step on each of the end plate assemblies.

Step 3



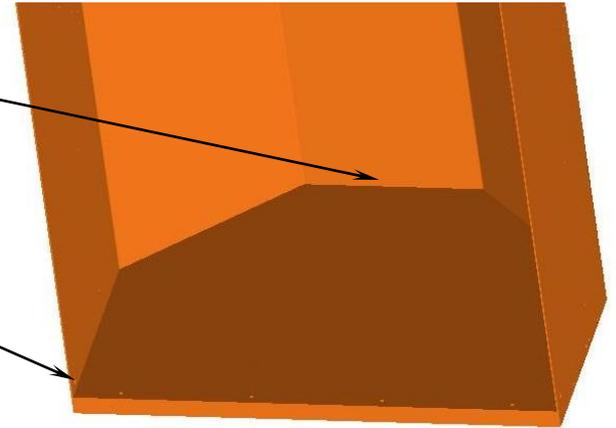
Align the **End Plate Assemblies** with the end of the **Coil Cover** so that all the rib sections and bottom angle are flush with the end of the coil cover . Weld along the inside of the cover using a couple of skip welds per flat section. Be sure to clamp the parts together tightly. Begin at the top section and then work down each side.

Do not weld within 1" of the bottom corners as the hood will not fit on the alignment guides on the car frame.



Align Edges

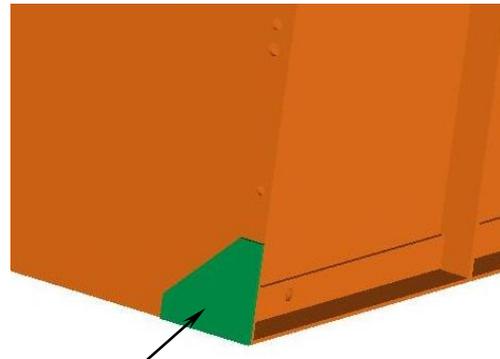
Begin Welding Here



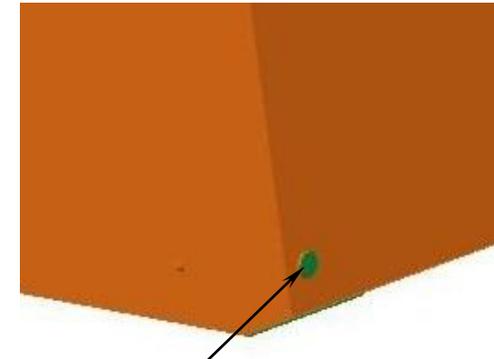
*Do Not weld in this corner
1" from the bottom*

Align the **Coil Cover Corner Reinforcement** flush with both edges and plug weld through the hole in the backside. Grind weld smooth afterward to avoid interference with the alignment guides on the main car frame.

Repeat this step on each corner of both hoods.

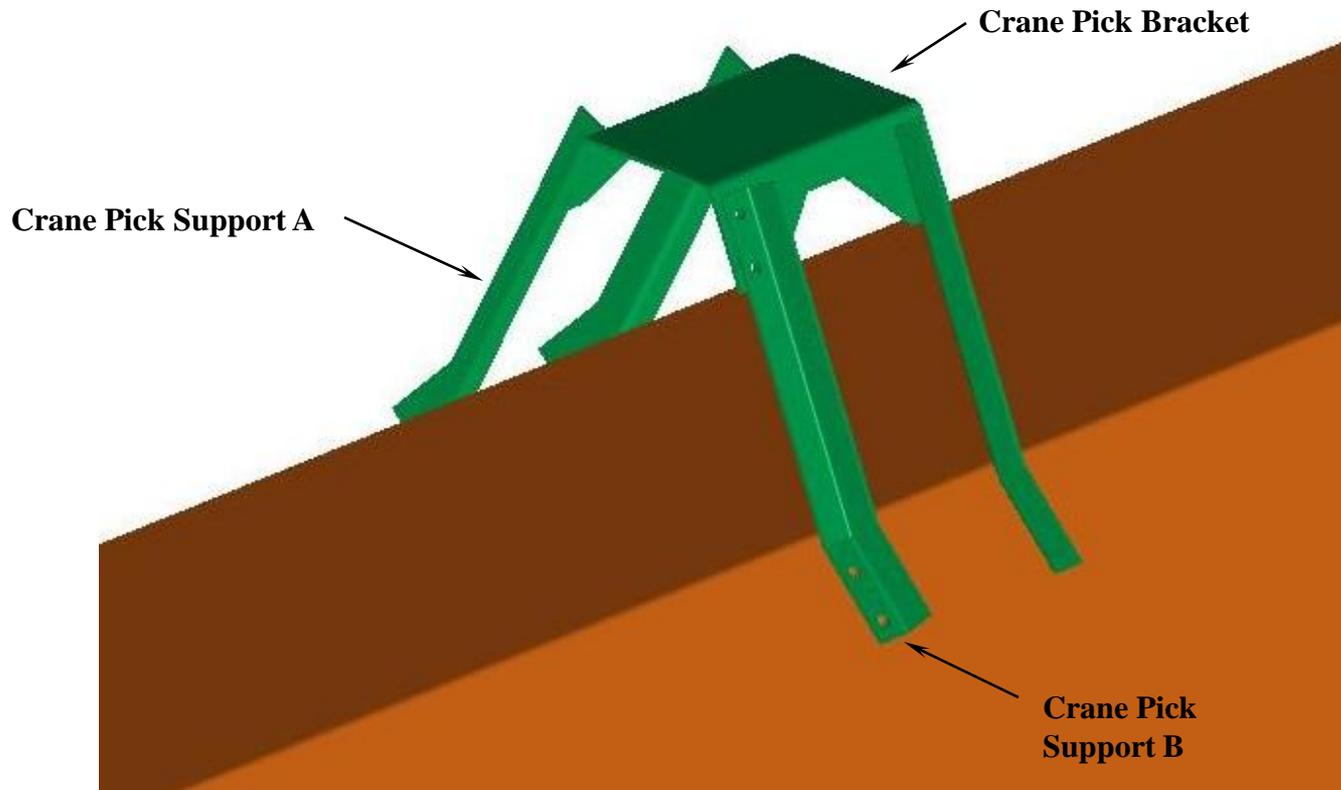


Coil Cover Corner Reinforcement



Plug Weld

Step 4



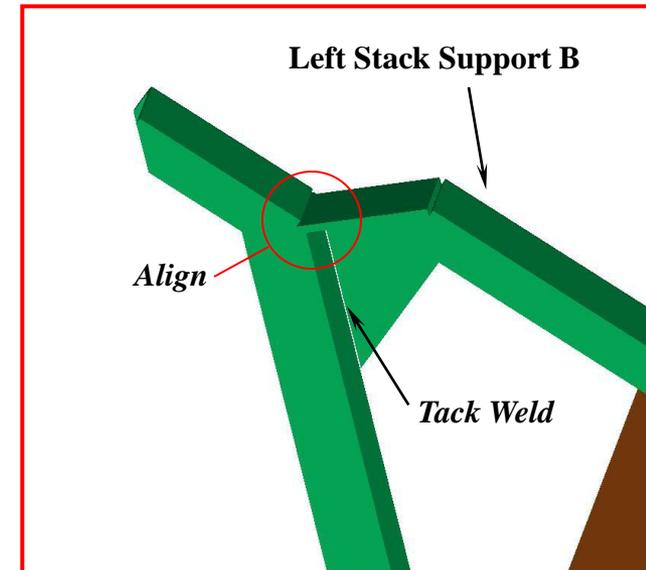
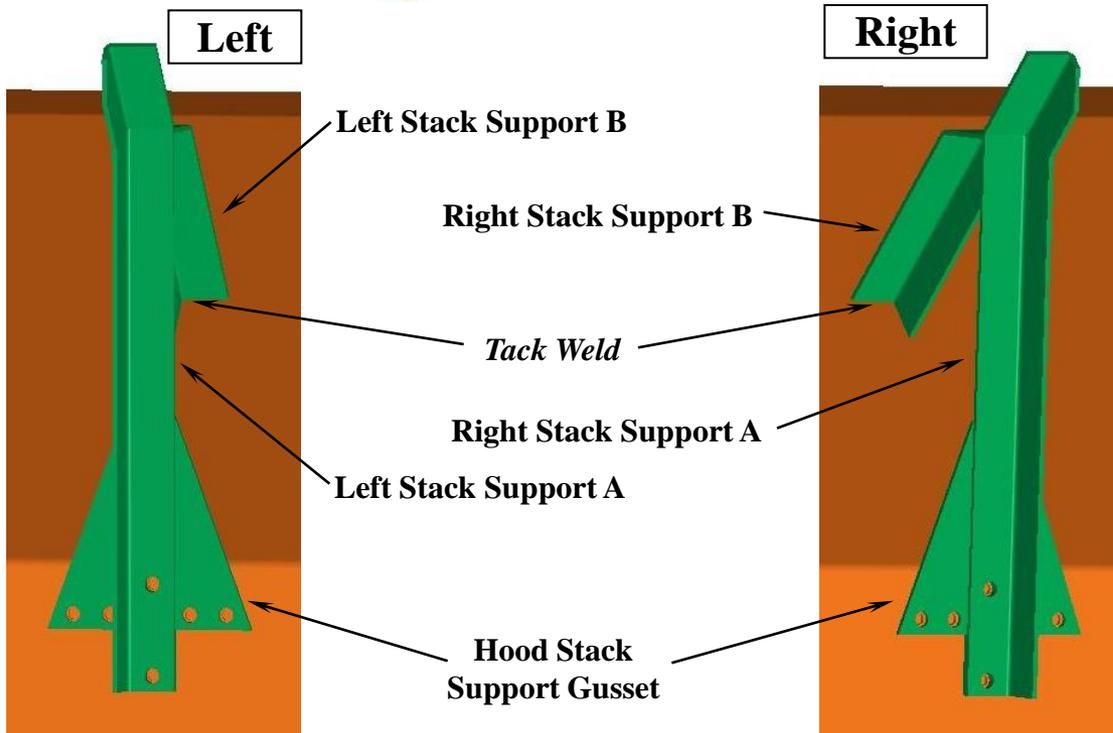
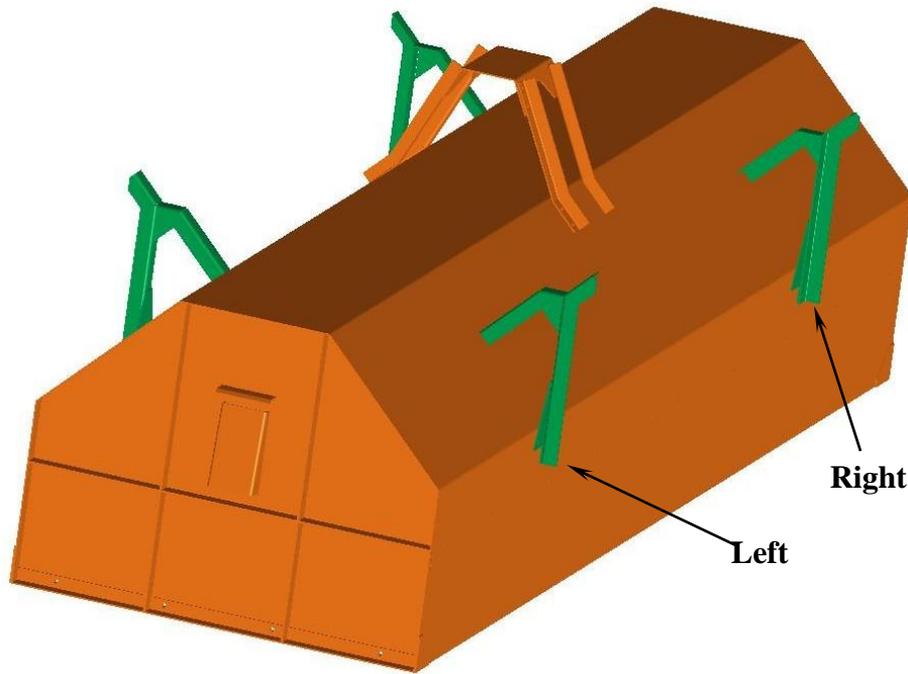
This step will create the crane pick frame. Tap all the holes in **Crane Pick Bracket** and the 8 holes in the Coil Cover. Assemble the **Crane Pick Support A** (2), **Crane Pick Bracket** (1), and **Crane Pick Support B** (2) as shown using #4-40 x 1/8" long screws or 3/32" rivets.

Repeat this step on the other coil hood.

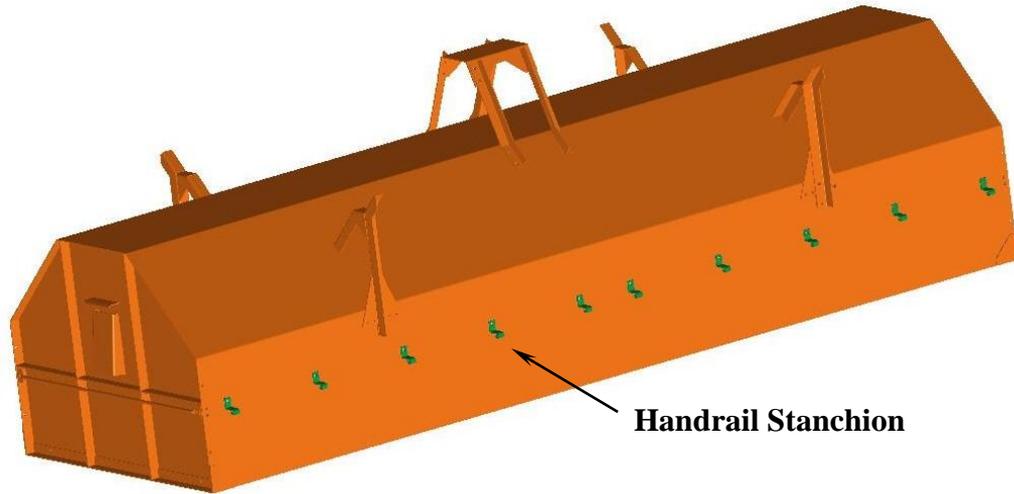
Step 5

This step will create the left and right stacking support frames. These are made in pairs and are mirror images. The flat side always faces toward the end of the coil hood.

Tap the coil cover holes with a #4-40. Bolt on **Hood Stack Support Gusset** and **Left Stack Support A** using (4) #4-40 x 1/8" screws and (2) #4-40 x 3/16 screws. Note that the Stack Support Gusset is not symmetrical. Align the **Left Stack Support B** as shown below, making sure the backside is flush. Tack weld in place at both ends. This part is hard to clamp but using a flat plate across the back helps and acts as a heat sink. Repeat these steps for the right support.



Step 6



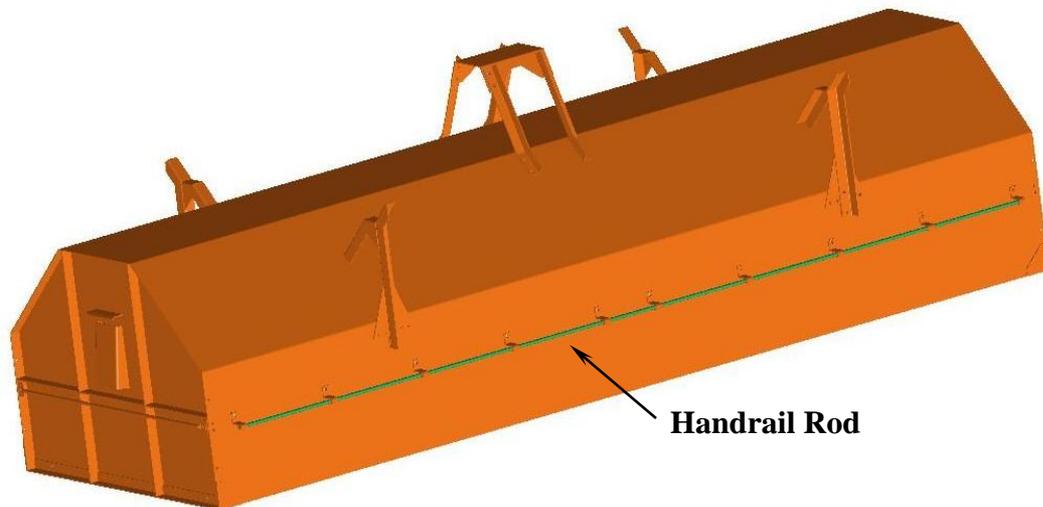
Handrail Stanchion

Now to install the hand rails along the side of the coil hood. Tap all 10 holes along the side with a #4-40 tap. Attach the **Handrail Stanchions** using #4-40 x 1/8" screws but do not tighten.

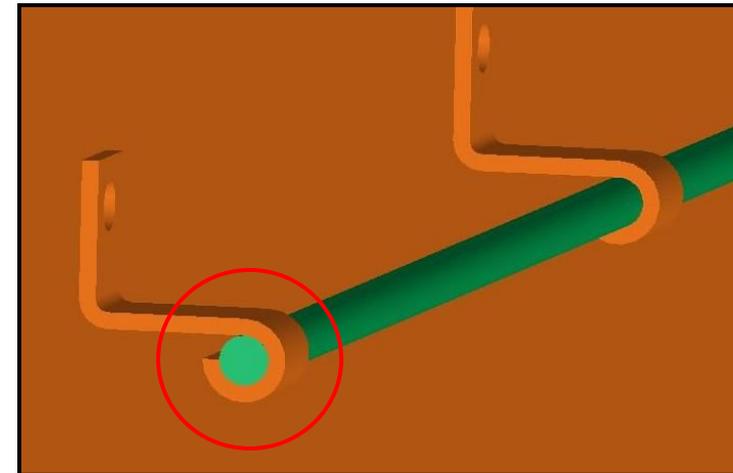
Slide the **Handrail Rod** into place. Then take a pair of pliers and squeeze the tab on each stanchion around the Handrail Rod to lock it in place.

Cut off the extra material with a pair of side cutters and file end flush with last support.

Repeat this step on each coil hood side.



Handrail Rod



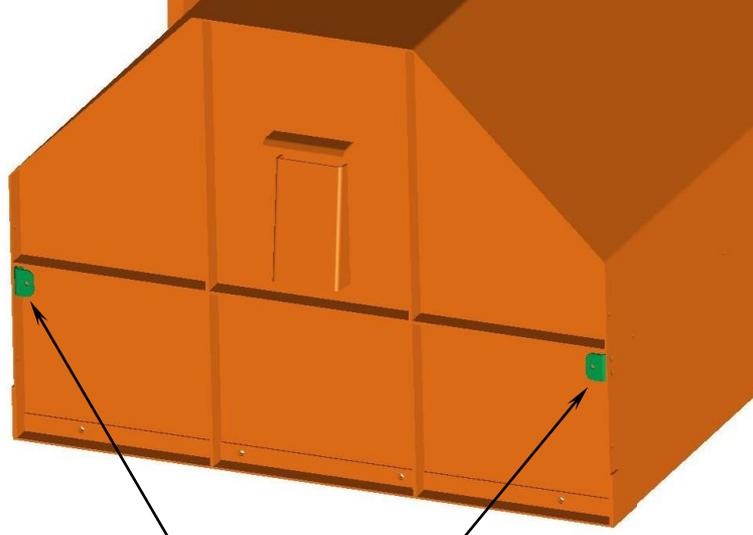
Step 7

Tap all three holes in **Grab Iron Bracket** for a #4-40 and then fasten to the hood assembly using #4-40x1/8" screws.

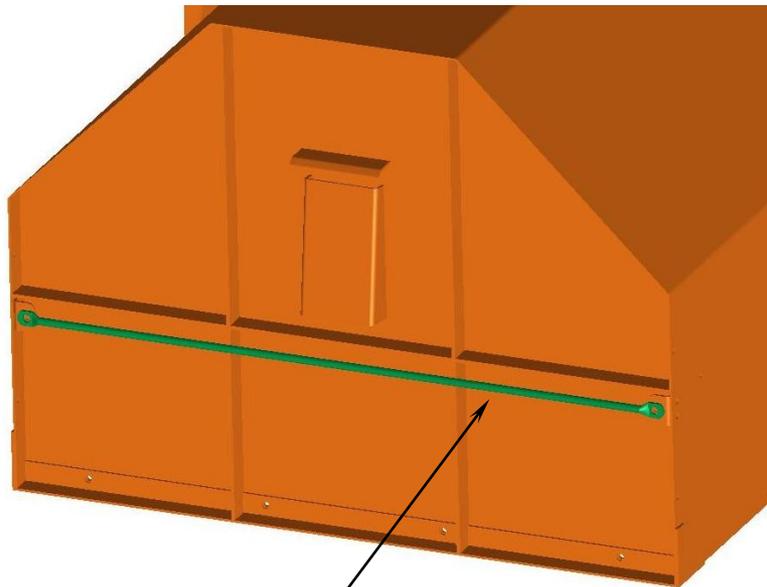
Attach **Grab Iron D Style** using #4-40x1/8 screws.

The last step is to attach **Grab Iron C Style 2 1/2"** to each corner of the Coil Hoods. Tap using a #4-40 tap and attach with #4-40 x 1/8" screws.

This completes the assembly of the coil hoods!!! The hoods should stack nicely on top of each other by resting on the hood stack supports.



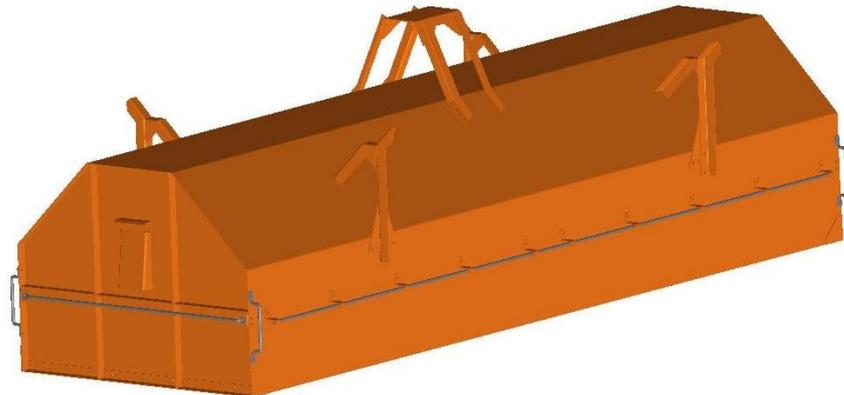
Grab Iron Bracket



Grab Iron D Style 10 1/2"



Grab Iron C Style 2 1/2"

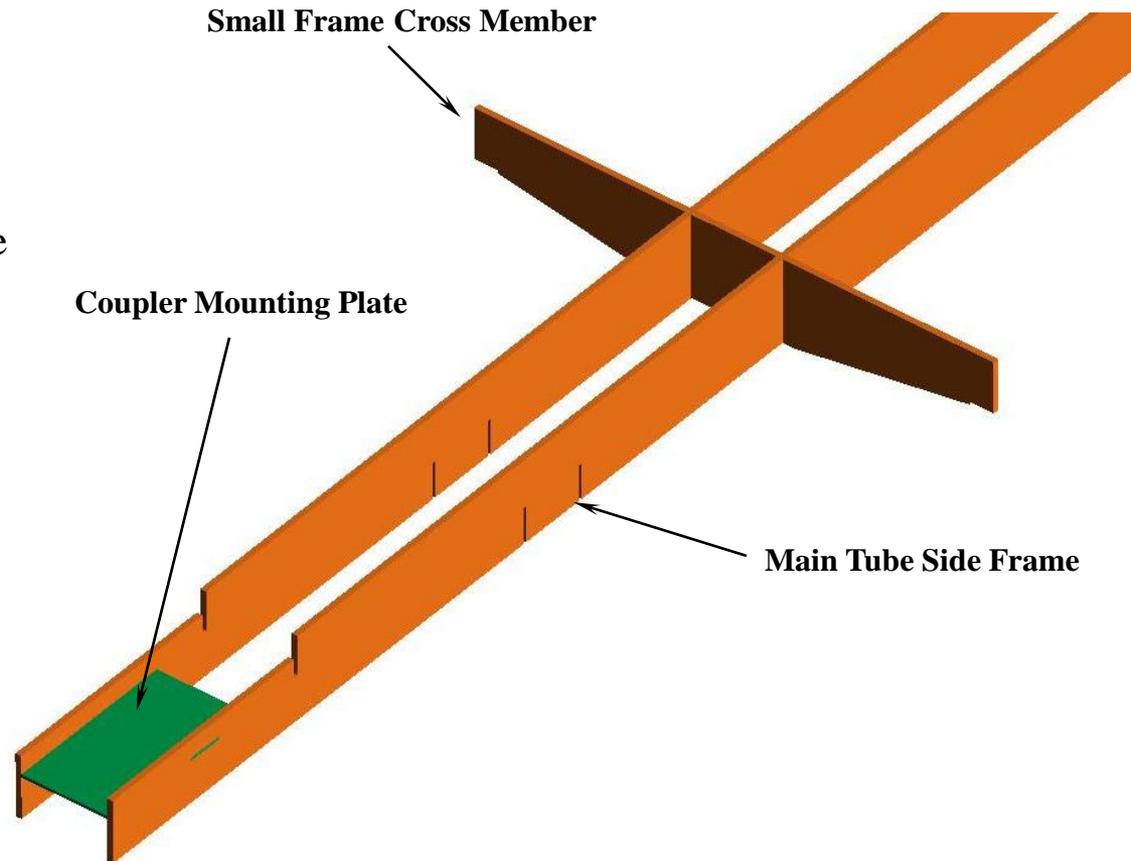


Step 8

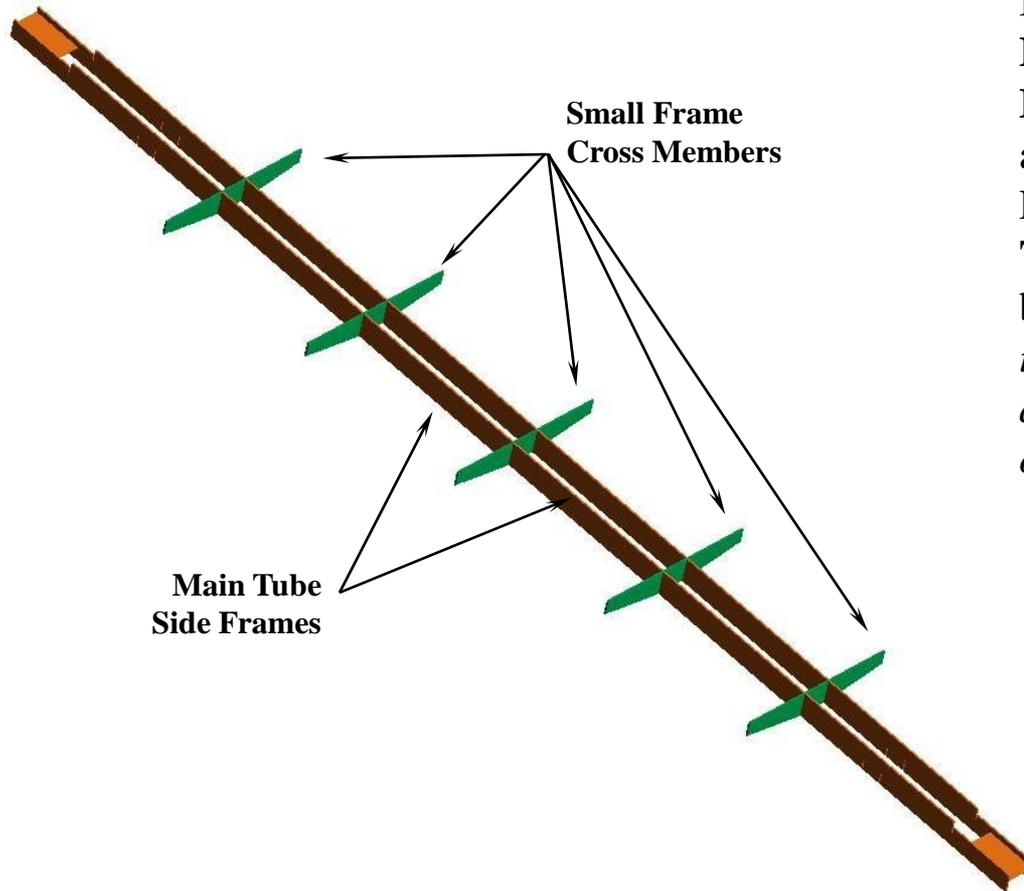
Now we will start constructing the main car frame. Slide the tabs on the **Coupler Mounting Plate** into the slot in the **Main Tube Side Frames** and weld in place. Be sure to keep Main Tube Side Frames parallel and square. Use several of the **Small Frame Cross Members** to keep the side frames parallel.

This will form the top half of the coupler mounting pocket.

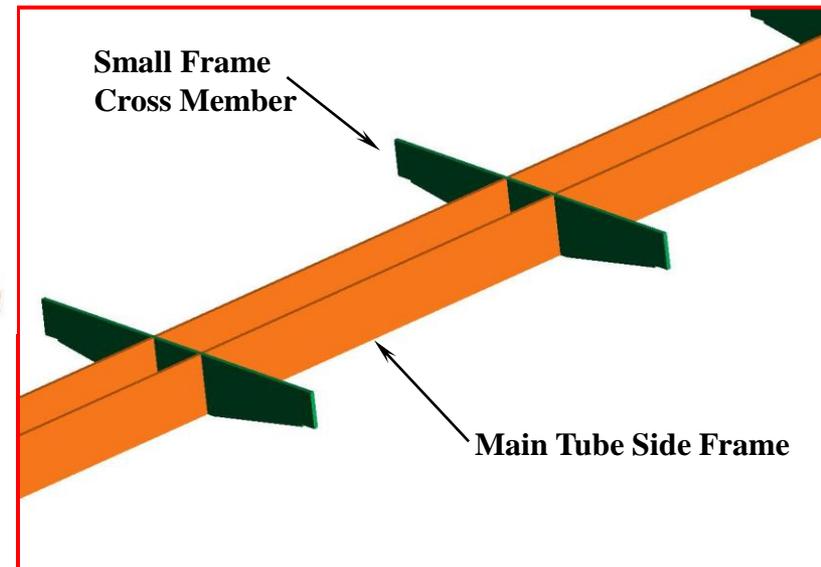
Repeat this step at the other end.



Step 9



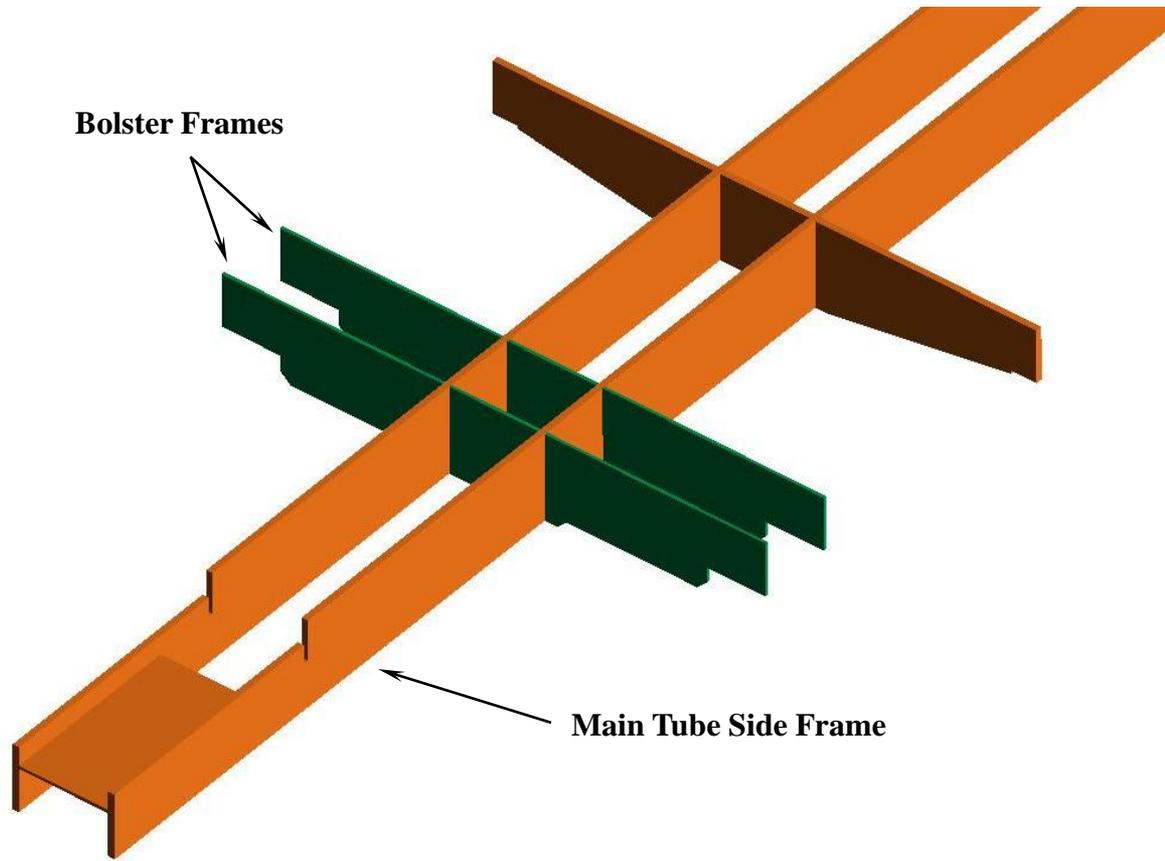
Begin by sliding the (5) **Small Frame Cross Members** into the center 5 slots in both **Main Tube Side Frames**. Place the assembly with the flat side of the Small Frame Cross Members on a flat surface and **TACK** weld in place. All the tack welds can be placed inside the main tube. *It is critical that the top surfaces of the cross members and main tube be flat. Be sure to straighten out any twisting.*



Step 10

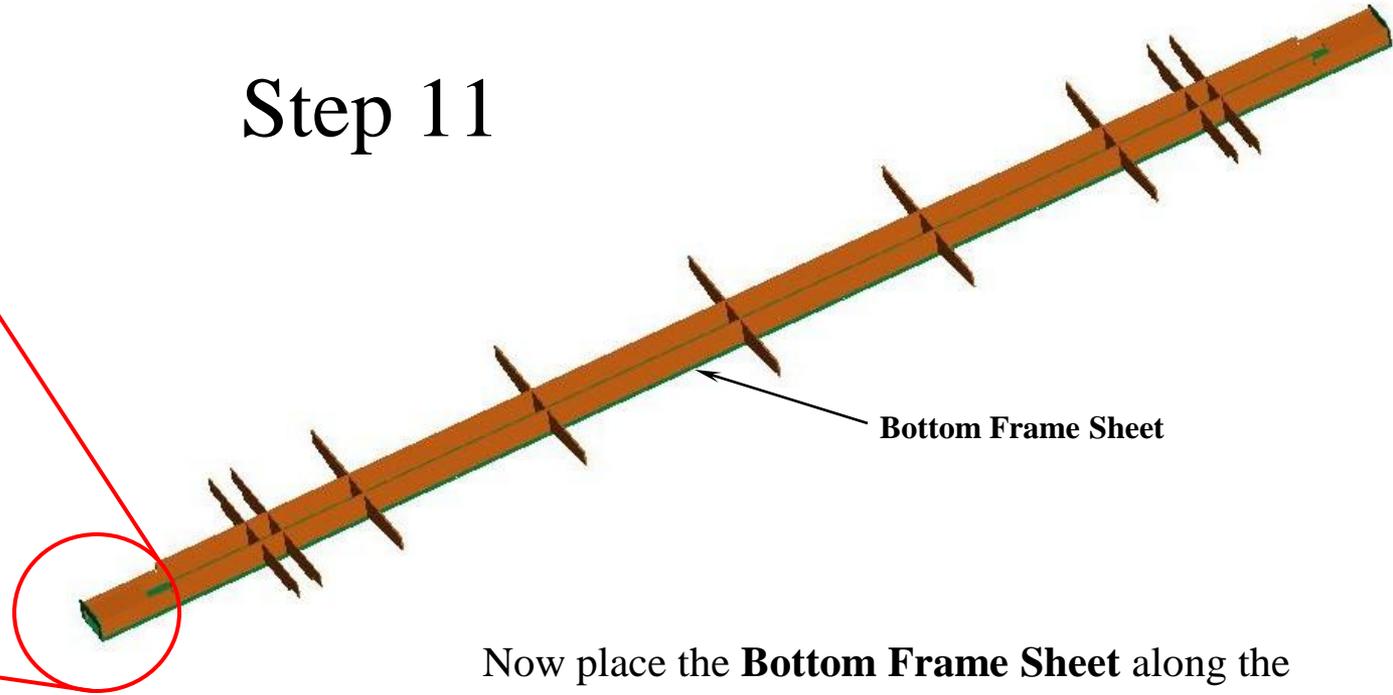
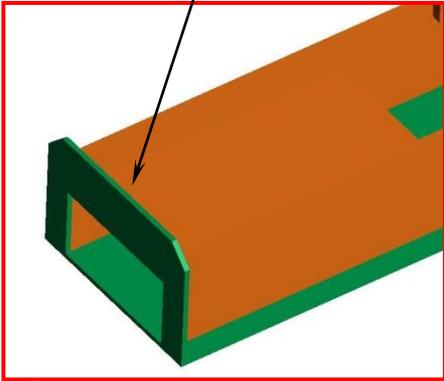
Slide the slots in the (4) **Bolster Frames** into the slots in the **Main Tube Side Frames** as shown. Again place the assembly flat side down on a flat surface and **TACK** weld the Bolster Frames in place. The top edge of the Bolster Frames and Small Frame Cross Members must be even.

Repeat this step at the other end.



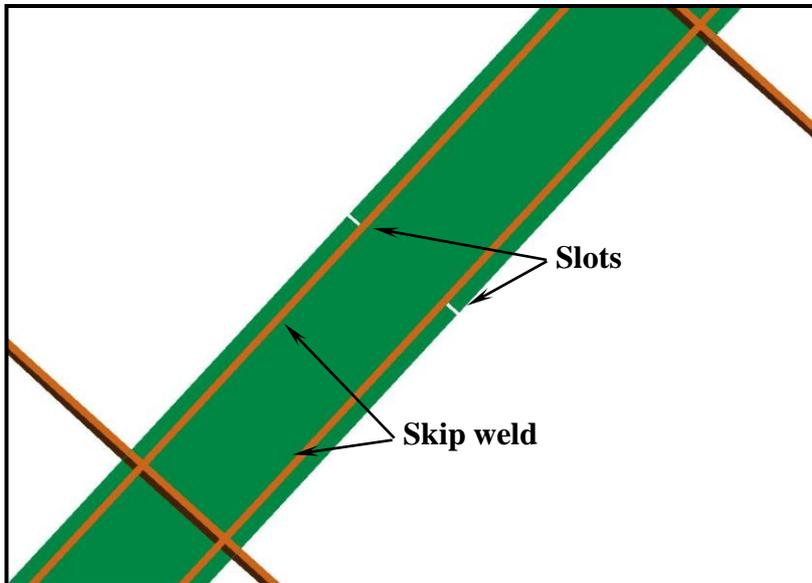
Step 11

Coupler Pocket
End Plate



Bottom Frame Sheet

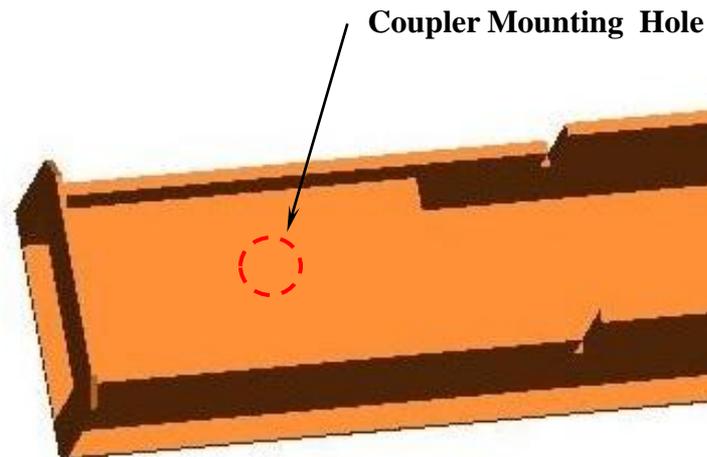
Now place the **Bottom Frame Sheet** along the under side of the frame. Align it side to side by the bottom of the 4 sets of small slots as shown. The Bottom Frame Sheet should protrude 1/16" of an inch on each end for the **Coupler Pocket End Plate** to sit on. For additional alignment help use the **Large Cross Members** as seen in Step 15 but do not weld them. Weld on the Bottom Frame Sheet with skip welds along the inside of the frame. This way there will be no visible welds. Weld the Coupler Pocket End Plate at the top between the frame members and down in the corner on both sides.



Slots

Skip weld

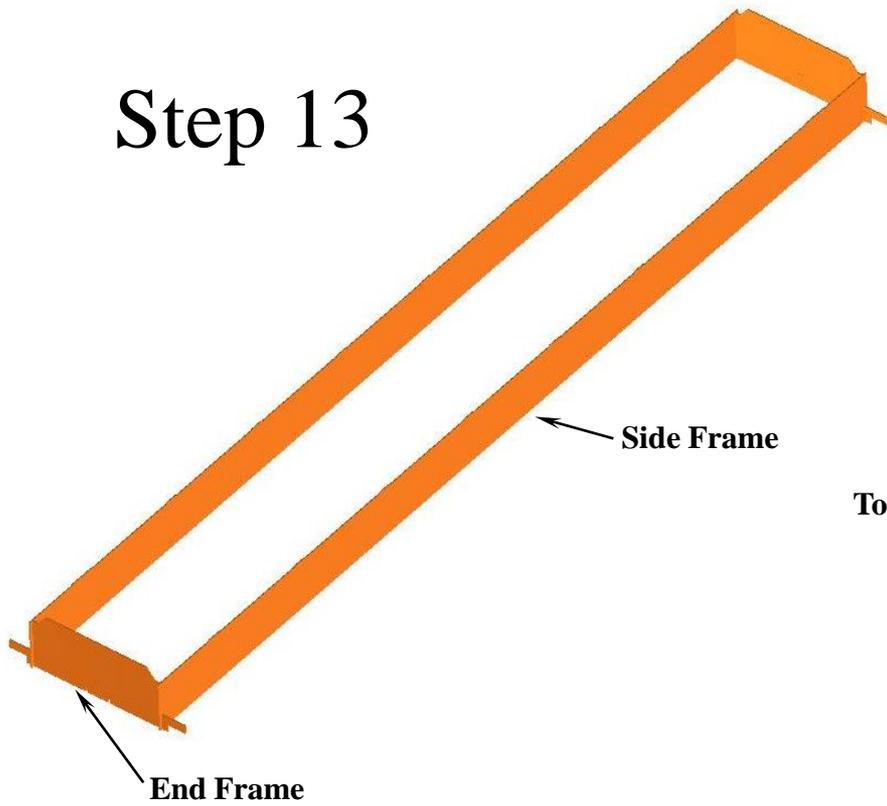
Step 12



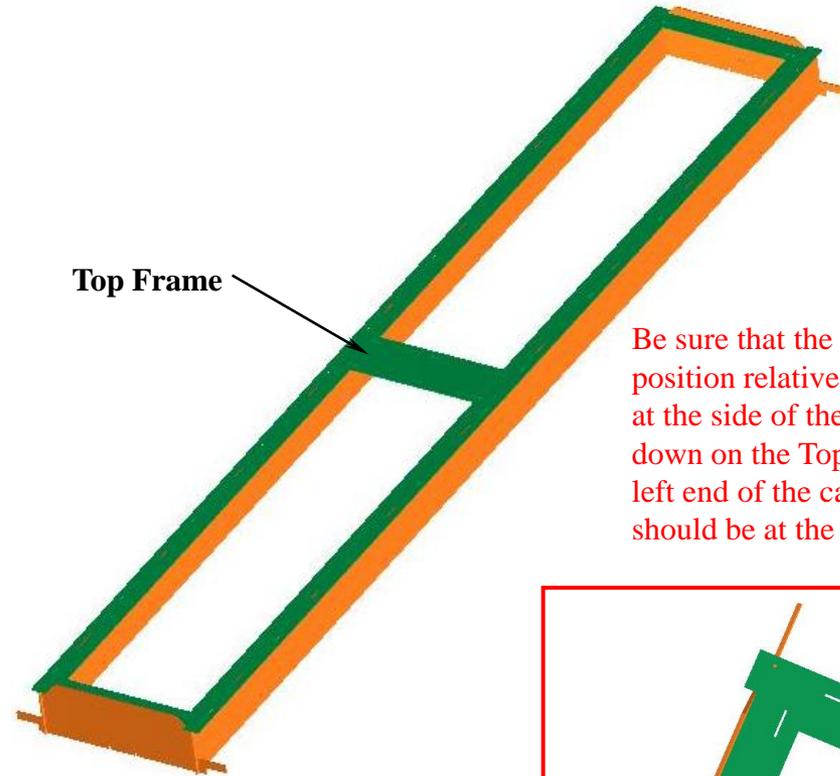
At this time you should make provisions for mounting your couplers. We recommend that people measure in from the end of the car to provide maximum swing for their particular brand of coupler and drill a thru hole for a bolt. Then weld a nut on the top of the coupler plate so that a bolt can be threaded in from the bottom. Note that the area above the coupler will be covered by other parts and will not be accessible. If you plan to use a different mounting method, please examine the remaining steps so that problems do not arise later.

PSC cannot be held responsible for problems arising from customized coupler mounting methods

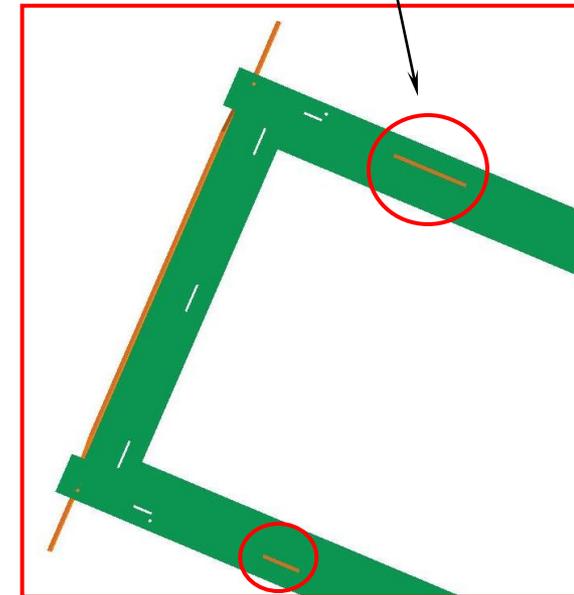
Step 13



Now that the main frame assembly is complete we will start the body subassembly that will be mated to the frame. Slide the **Side Frames** and **End Frames** together. The slots at the end are different depths.



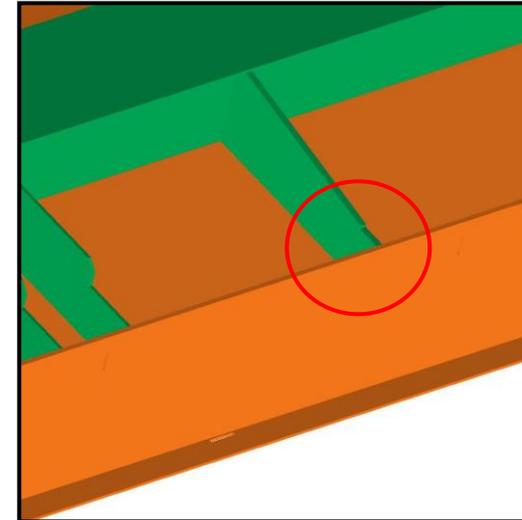
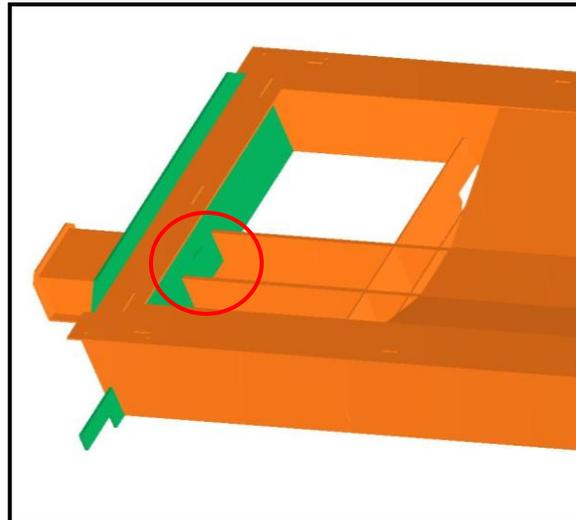
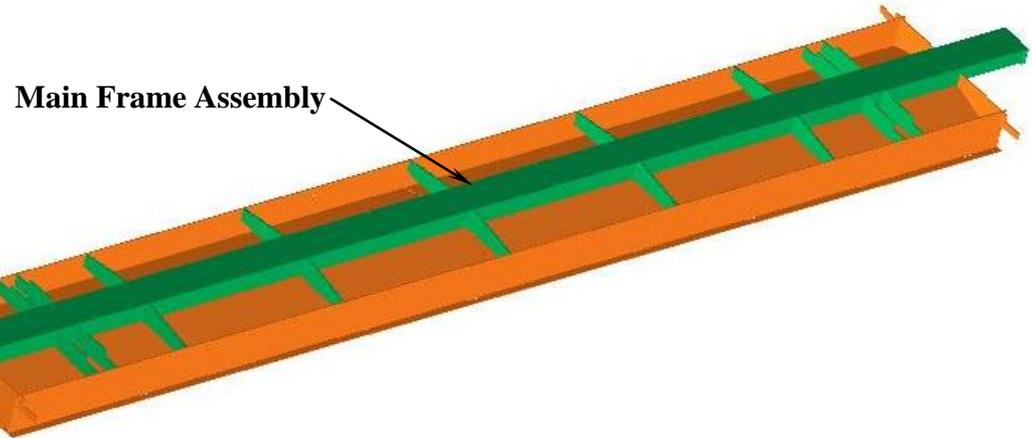
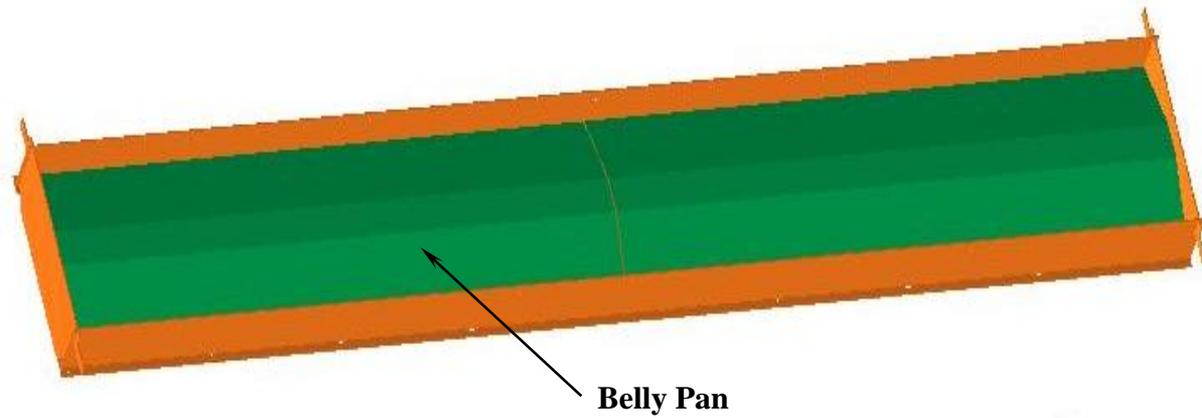
Be sure that the slots are in this position relative to the end. Stand at the side of the car and look down on the Top Frame. On the left end of the car, the larger tab should be at the top.



Place the **Top Frame** on the Side and End Frames. Note that one side is marked “**THIS SIDE UP**”. It is absolutely critical that Top Frame be assembled correctly. It is possible to reverse all the piece and put it together backwards. In which case the walkway supports will not fit correctly. Be sure that all the tabs on the side frames line up with slots in the Top Frame as shown in the picture to the right. If not, then flip the Side Frames end for end and swap the End Frames. The Top Frame insures that the whole assembly remains square. Tack weld the assembly together along the inside edges

Step 14

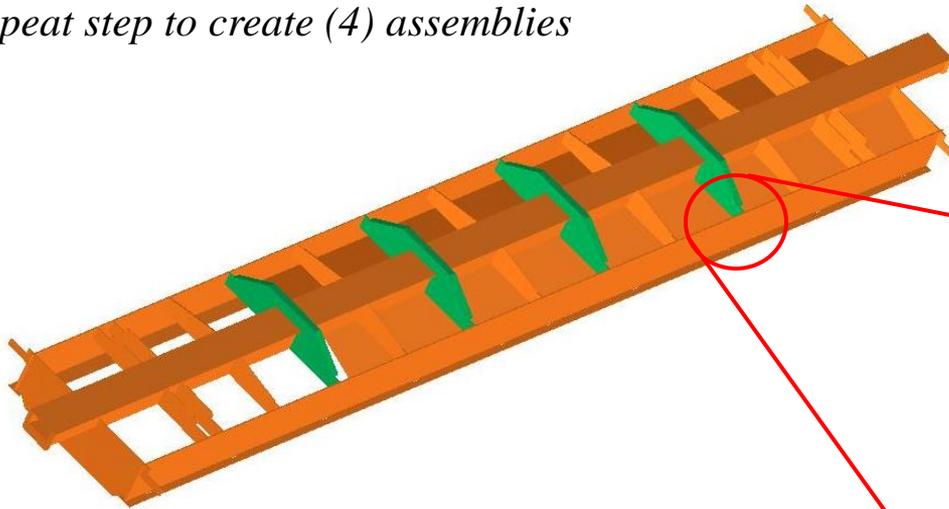
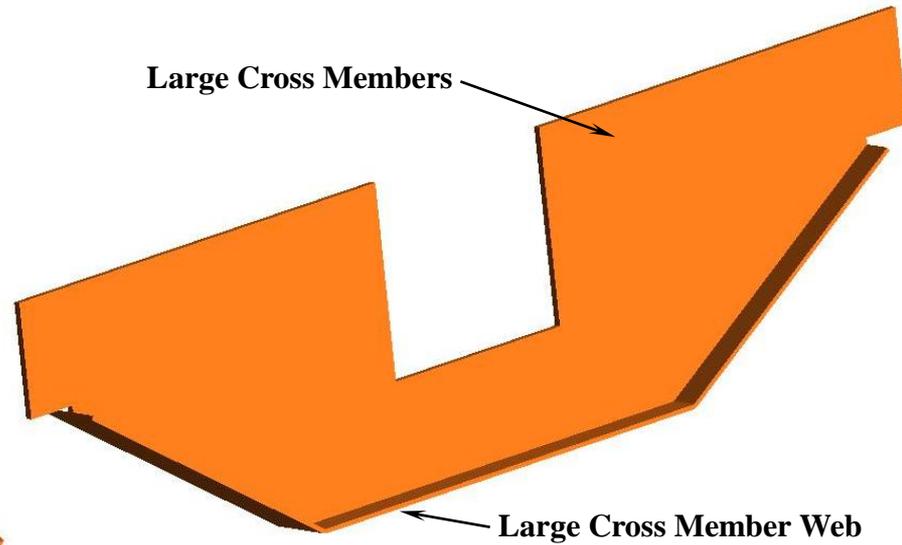
Now it is time to join the body and the frame. Turn the body assembly upside down and place the two **Belly Pans** in as shown. **DO NOT WELD** in the belly pans. Then place the frame assembly on the body. Weld the cross members to the Side Frames making sure that each one is aligned flush with the bottom edge as shown. Clamp from side to side to make sure the Side Frames are held tightly to the Cross Member. Also, weld the End Frames to the Main Frame as shown by sliding the belly pans out of the way. Now it is time to go back and do the final welding of the Top Sheet all around its perimeter on the inside. Slide the belly pans back and forth as needed.



Step 15

The next step is to create (4) **Large Cross Member** assemblies as shown to the right. Center the **Large Cross Member Web** and tack weld it on both sides at the ends and by the bend area. Be careful not to blow out the edge of the web when welding.

Repeat step to create (4) assemblies

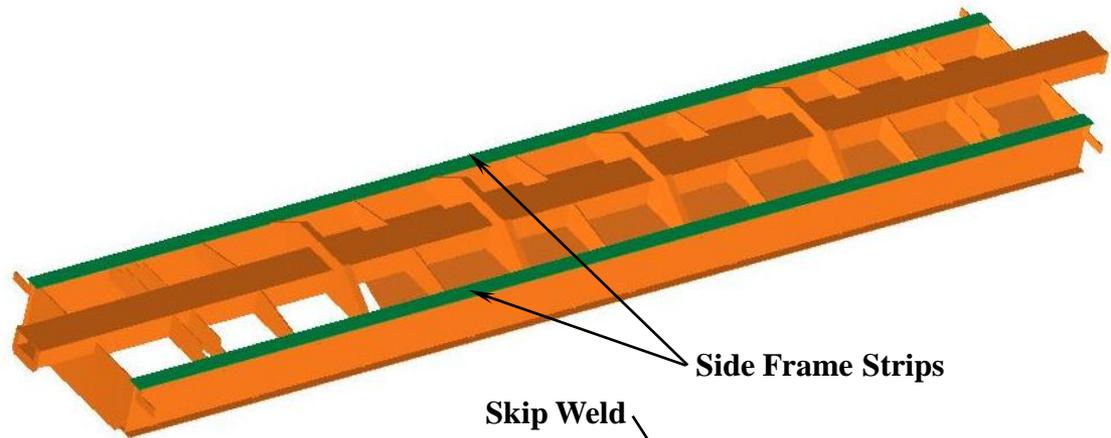


Insert the **Large Cross Member** assemblies into the 4 sets of slots on the main frame. Be sure that the edges of the Large Cross Member align flush with the bottom edge of the Side Frame as shown and weld to the Side Frame and to the Main Frame.

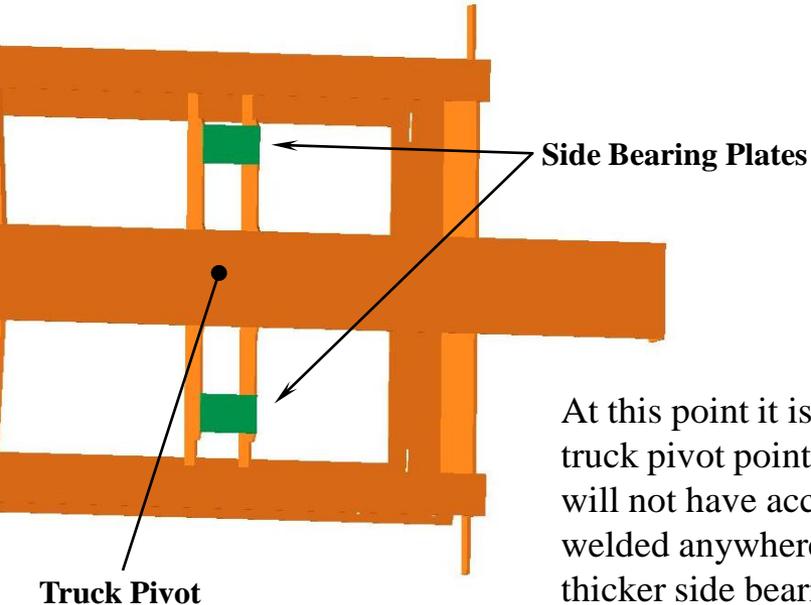


Step 16

Align the **Side Frame Strips** along the lower edge of the Side Frame making sure that the ends are flush. The Side Frame Strip should fit nicely into the small notches in all the Cross Members. Weld the strips on using skip welds along the inside of the car as shown by sliding the belly pans back and forth as needed.

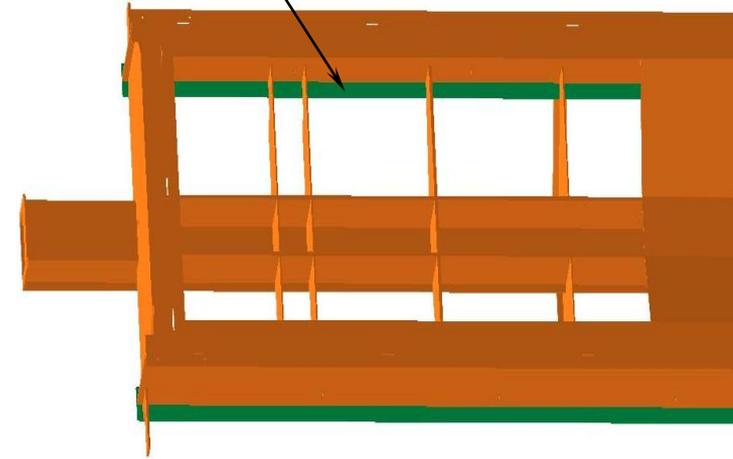


Side Frame Strips
Skip Weld



Side Bearing Plates

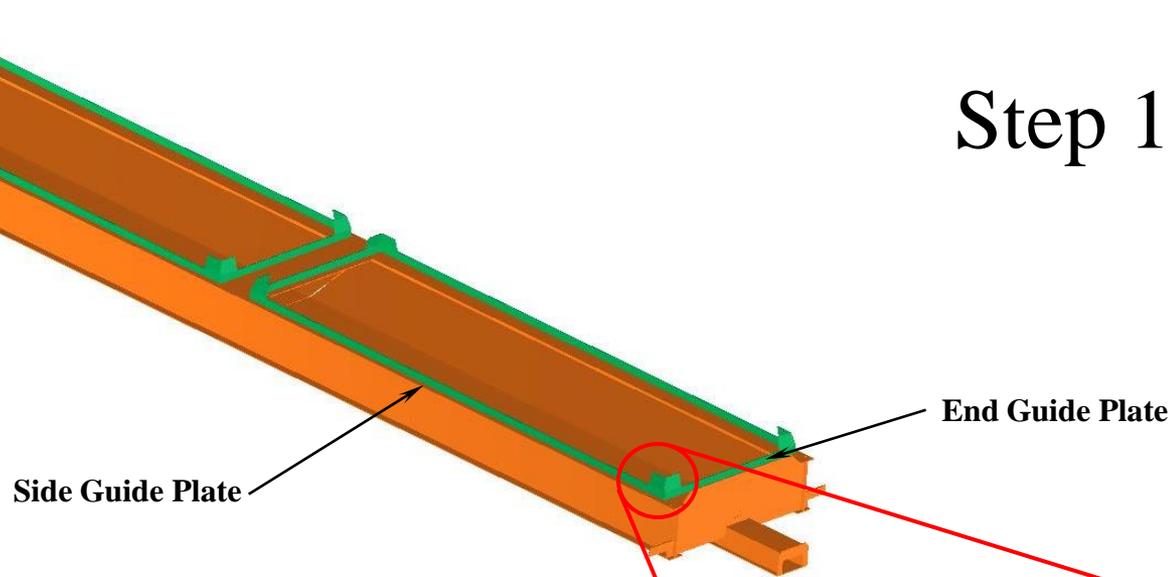
Truck Pivot



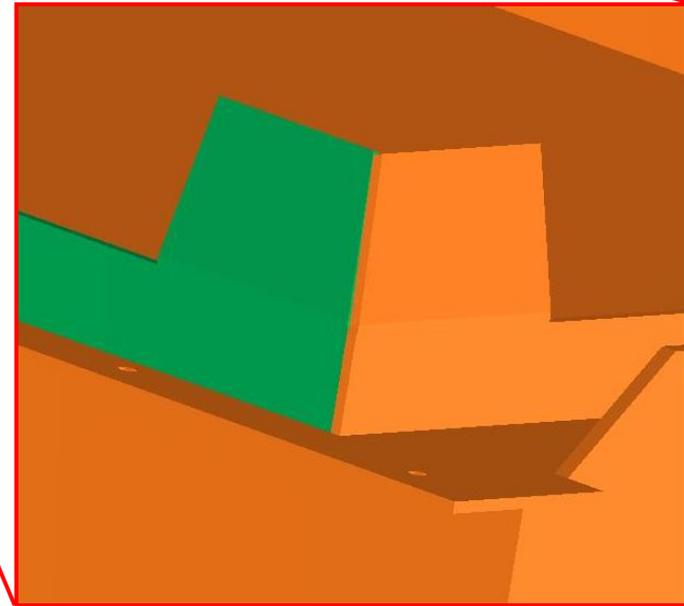
At this point it is time to make provisions to mount your particular brand of trucks. The truck pivot point is centered between the bolster frames as shown. After this step you will not have access to the inside of the frame tube. The Side Bearing Plates can be welded anywhere along the bolster frame. Blocks may have to be added to the trucks or thicker side bearing plates to set the right amount of side play. Tom Bee trucks can be mounted by welding a 2"x8"x3/8" bar as the bolster frame with a hole tapped for a king pin. Other brands will require different spacing to achieve the 4-7/16 coupler height.

Lastly, weld the Belly Pans in position. Be careful when welding to the Side Frame to avoid excessive heat distortion.

Step 17



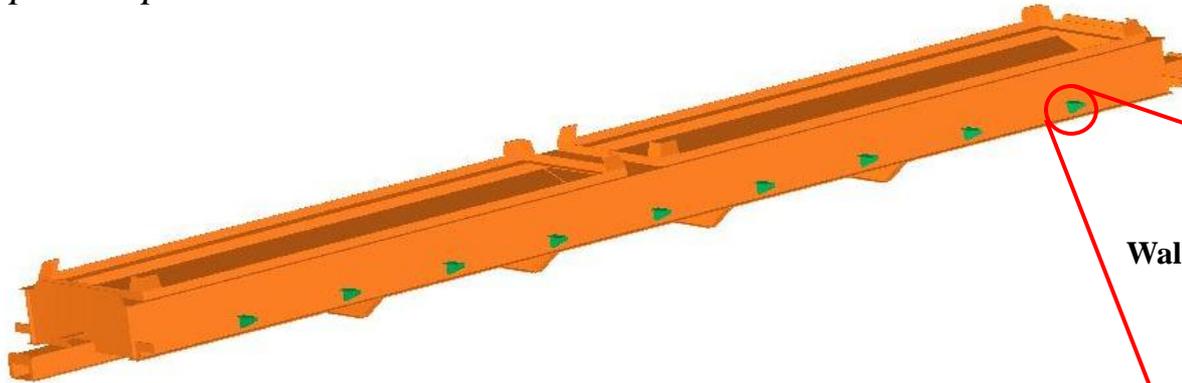
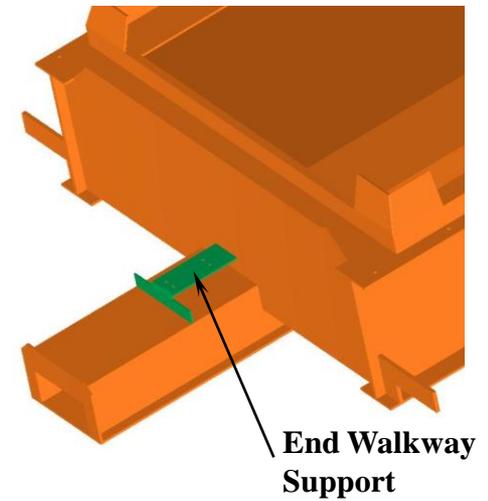
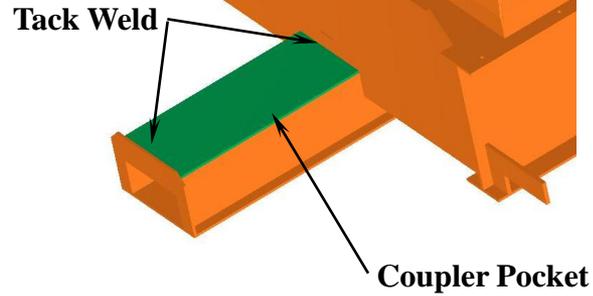
Insert the **Side Guide Plates** and the **End Guide Plates** into the slots on the Top Frame. Be sure to overlap the corners as shown. Skip weld along the inside edge of the Guide Plates making sure that they stay square and straight. It may be helpful to clamp a long bar or piece of angle iron along the Side Guide Plates to keep them straight.



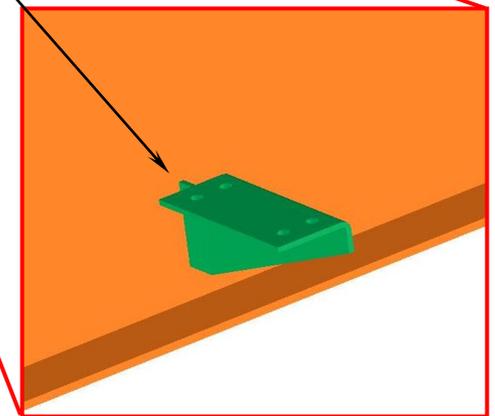
Step 18

Tack weld the **Coupler Pocket** at both ends while keeping it clamped down tightly. Then insert the tab on the **End Walkway Support** into the end frame. Tack weld it to the Coupler Pocket on the inside towards the car to hide the weld. Tap the four holes for a #4-40.

Repeat step at other end.



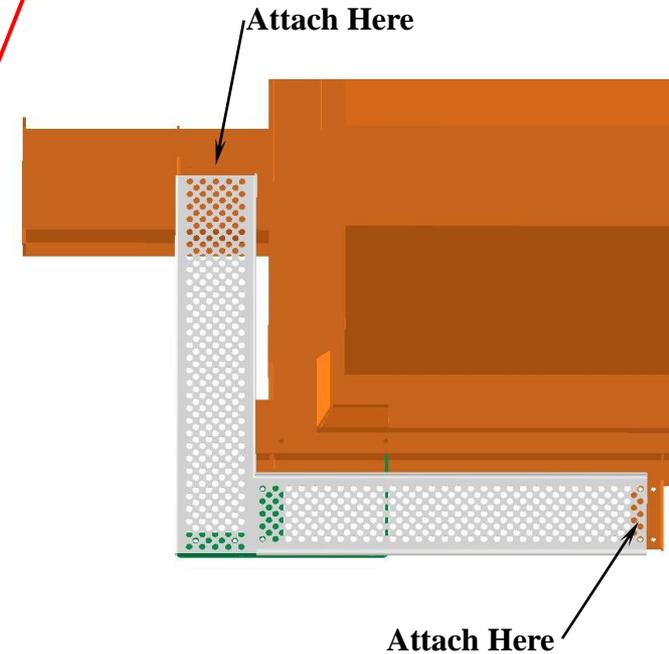
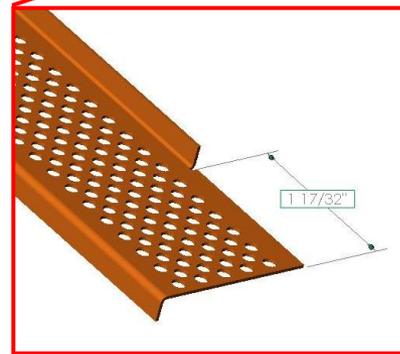
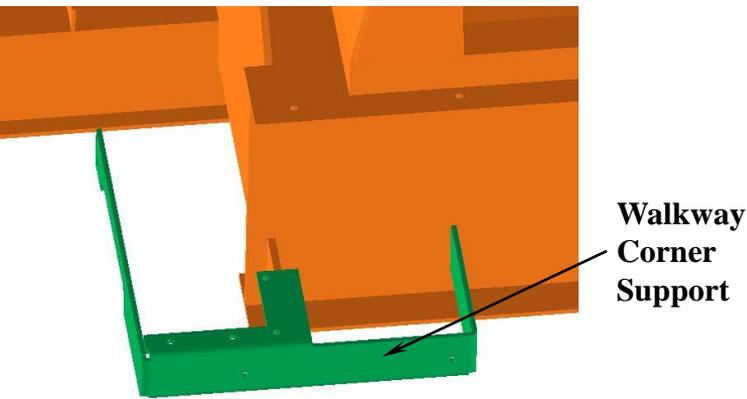
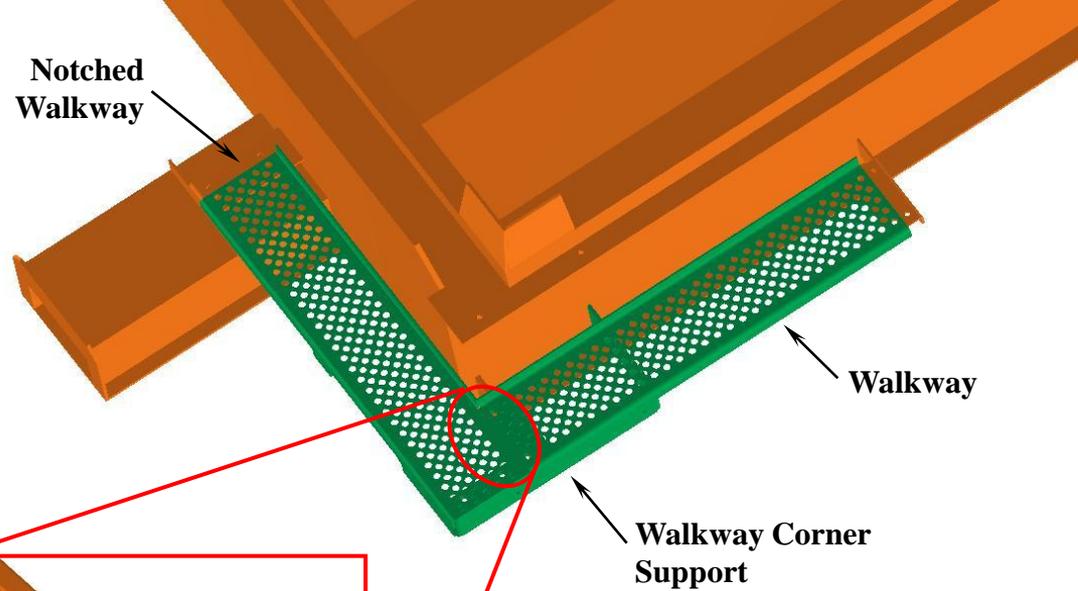
Walkway Brace



Insert the tab on the **Walkway Brace** into the slots in the Side Frame as shown. The tabs may need to be filed slightly to fit properly. Tack weld the Walkway Brace by welding over the tab from the inside of the car. There are a total of 18 identical Braces. Tap the holes for a #4-40.

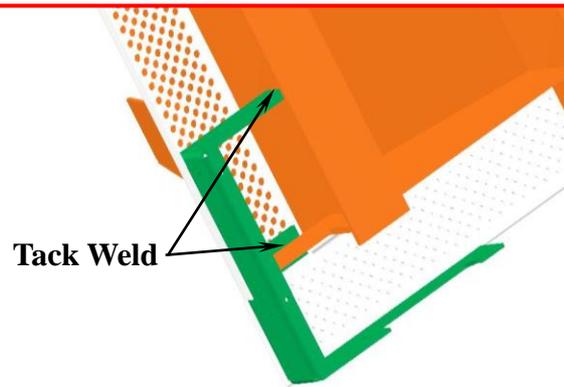
Step 19

Tap all the holes in the **Walkway Corner Support** as shown below for #4-40. Attach two **Walkway** pieces using #4-40 button head screws as shown in the picture at the right. You will need to notch out one section of the toe kick plate on the end walkway portion as shown in the detail view. Then making sure the Walkway Brace is square, attach the walkway pieces at both ends as shown in the lower right picture. This way we will use the walkways to align the Walkway Corner Support for welding.



Once the Walkway Corner Support is aligned, weld it at the places shown. Be careful not to weld into one of the walkway mounting holes as this will blow it right out.

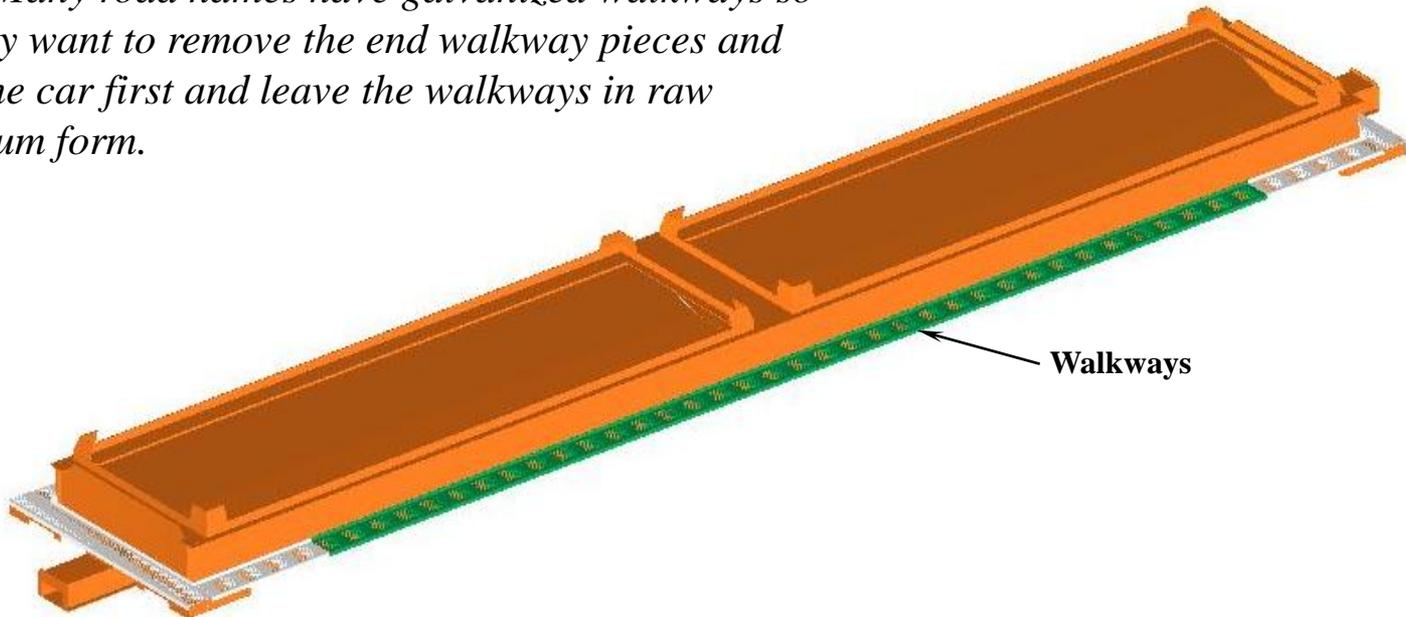
Repeat this step for each corner and note that two corners are mirror images of each other.



Step 20

Install the remaining walkway pieces along both sides. Put in only two screws per walkway to test fit all the pieces first to be sure everything fits together nicely. Then go back and put in the rest of the screws. Some pieces may have to be filed to fit perfectly.

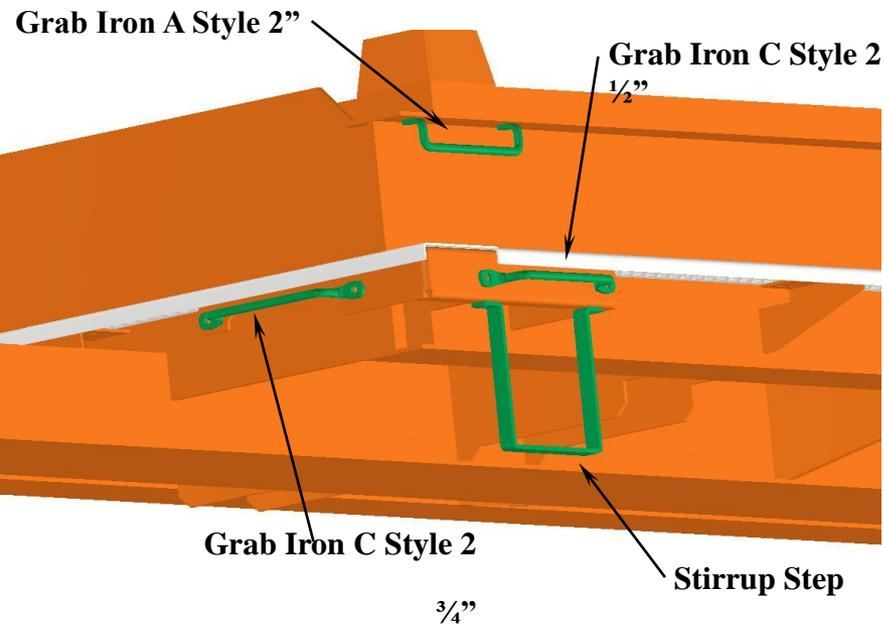
Note: Many road names have galvanized walkways so you may want to remove the end walkway pieces and paint the car first and leave the walkways in raw aluminum form.



Step 21

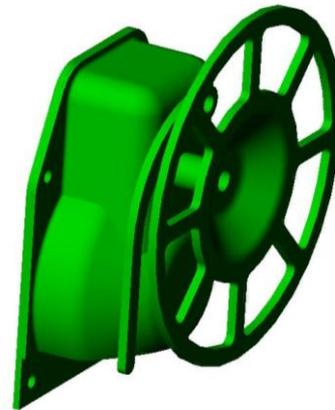
Congratulations, you have made it to the last step. The last items to install are the grab irons and stirrup steps. Attach the grab irons and stirrup steps as shown using #4-40 machine screws or rivets as shown.

Repeat this step for each corner.



You have now completed the construction!!!!

Assemble the brakewheel housing kit as shown. We recommend using loctite to prevent the screws from loosening. Be sure to put the screws through from inside the housing so that the nut end if visible. The brake chain can be secured under the head of the smaller #4 screw used to hold the release lever. Mount the assembly in the general area as shown. Drill two holes to line up with the bottom holes in the housing backer plate. Transfer the holes from the backer plate to get the proper spacing.



Mount the assembly in the general area as shown. Drill two holes using the backer plate as a template.

