

Revised: 1/06/15

# THE C. & S. / R.G.S. TYPE III STOCK CARS



Representing Class Numbers 7451 - 7474, 7097 - 7134



Another 3/16's Scale Finescale Model from P-B-L

## TOOLS WE RECOMMEND FOR ASSEMBLING THIS MODEL KIT

- Sharp Flush Cutters Like PBL-802 / PBL-804. Drills: #60, #71, #75, #77, #79.
- Sharp 6" or 8" Mill Smooth File (Reserved for your Plastic Models Only).
- Small Gripping Pliers. Sharp Tweezers. Pin Drill Vise, or equivalent.
- Small Flat Bladed Screwdriver. Xacto type Knife w/#11 Type Blades. A "Good Eyeball"...
- Architects Scale Rule or Dial Caliper. Small (00 or 000) Brush. MEK or Liquid Plastic Cement.
- PBL-802 "Despruing Nippers for Plastic Models. ACC Type Cement. Prick Punch or Needle.

## SPECIAL TOOLS WE ALSO RECOMMEND

- PBL #810 Weathering Brush Outfit. PBL-804 "Super Nipps", extra thin nosed flush cutters.
- Airbrush for Painting. Sharp (Used for your Plastic Models Only) 12" or 14" Mill Smooth File.
- Super Sharp Flush Cutting Pliers. Carbide Tipped Scriber (for scribing board lines on weight!)

## C. & S. / R.G.S. STOCK CARS

### A SHORT HISTORY

By John Hugh Coker

The old South Park narrow gauge system and its corporate descendent, the Denver, Leadville & Gunnison, was reorganized into the C&S System in 1898. At the time it was under the ownership of the Union Pacific. Like the D&RG Narrow Gauge, the C&S was faced with re-capitalizing its physical plant, and which same included the construction of new cars to replace the first-generation cars of the 1880's.

These new cars were ordered from the St. Charles Car Works, an outfit near St. Louis, Missouri, which later became a part of the American Car and Foundry Company. In spite of a change of ownership in 1907, when the CB&Q took over the helm, this rebuilding continued, with the C&S constructing many of the cars themselves from ordered parts.

Three general types of cars were delivered over a twelve year period: Type I: (1898-1900) which featured Truss Rods and Arch Bar Trucks; Type II: (1900-1901) Much like the above but with Cast Steel Bettendorf "T" Section Trucks; and the Type III which had the cast steel Bettendorf trucks, plus very modern all-steel underframes. In fact, these Type III cars were comparable to the best built standard gauge cars of the day. The latter is what is replicated by this model.

However, the C&S narrow gauge system began losing money early on. It was always an expensive railroad to run, what with its numerous helper districts, small power, competition from the D&RG, and a declining customer base. In fact,

there was an attempt to abandon most of the system in 1912, but the federal government was not to allow it for another quarter of a century.

When abandonment proceedings were initiated in 1935, resistance came from an unlikely source: the receiver of another railroad! Victor Miller, a Denver attorney who had successfully turned around the fortunes of another Southern Colorado Railroad; the Rio Grande Southern. He proposed that the old Denver - Leadville line could be successfully run using rail buses (like the Galloping Geese of his R.G.S.), with freight being handled on an "on-call" basis. But suddenly Mr. Miller's challenge was dropped. Then, a year after abandonment of the old South Park was granted, Mr. Miller's R.G.S. received 48 of their cars at a bargain price. Of these 48 cars, 34 were of the "Type III", steel underframe style. There has been much speculation over the years that some sort of "back-door deal" was cooked up between the C&S and Miller. Whatever the circumstances however, unlike the C&S, the R.G.S. turned the cars into revenue producers.

Most of the box cars were sold to an equipment dealer in 1942 and ended up rolling their last miles on the White Pass and Yukon. But the majority of the Stock Cars stayed on the R.G.S. up until its abandonment in 1951. ( They probably don't run many cattle in Alaska. . . )

Surprisingly, old D&RGW railroaders recall seeing the Type III cars passing through Chama and Alamosa in the 1940's so it's unfortunate that none are known to exist today. In fact, of all the Stock Cars the R.G.S. once owned, only a single "Type I" Stock remains, on display at the Colorado



Railroad Museum in Golden, Colorado.

This year, 2002, P-B-L is proud to offer you a chance to own a string of these very unique steel framed narrow gauge cars in miniature so your railroad won't be left without revenue producers!

John Hugh Coker

## PRELIMINARY INSTRUCTIONS: THE C&S / RGS STOCK CARS

This is not a difficult kit. In fact, it's been designed to be assembled by modelers of average skill. However, the kit contains many parts, and we suggest you follow the suggested assembly sequences closely if you want to produce a really stand up model. So best you read the instructions thoroughly before starting assembly. And as you read through the various steps, we suggest you examine each part, comparing it to the drawings and "silhouettes" supplied, identifying *what* each part is, and *where* it fits! (This has an added benefit as you'll be able to spot any missing or damaged parts too.) You will be rewarded for the time you spend now when you commence constructing the car later, since this will help you to understand what must be done to assemble the model and why certain steps must be completed in the sequences noted in the instructions.

You'll note that although the General Overall Plans / Drawings are separate from the text, we've inserted sketches describing certain assembly steps to aid in referral to them while reading the descriptions of that particular step. It may be helpful to check off finished steps as you progress through the assembly, in order to avoid missing a step. We suggest using a hi-lighter pen for this purpose.

### WASHING PARTS:

Washing parts? Are we looney, or what? Well sir, this is a step that is often overlooked. But it's a good thing to remember when building ANY plastic model kit. Reason? Many times the molder must use some sort of "mold release" in order to get his parts to come out of their cavities properly. This mold release may or may not be "paintable"... (For the record, we do use paintable mold releases.) Either way, they can sometimes come across as oily or greasy. So if you first immerse all the plastic and wire parts in this kit in hot soapy water, (like dishwashing detergent water.), your parts will be all nice and squeaky clean! And paintable! So get with it already!

### DESPRUING PARTS:

Before you jump in and clip each part off it's casting sprue and end up with a great heap of parts you can no longer identify, we suggest you first try to envision how each part meshes with it's counterpart, removing any parting lines you can without actually despruing the part itself, leaving the fi-

nal parting line removal until such time as that particular part is ready to be joined to its mate. ( Scraping with the BACK side of your #11 blade works quite well for this purpose. )

Some parts in this kit, (Trucks, Brake Rigging...) are molded in an engineering plastic called CELCON.. This stuff is super-tough.. But it defies cementing together, or painting, so special techniques will be required to make these parts stay put... These will be outlined in the assembly manual also.

We recommend you use **MEK** (Methyl Ethyl Ketone), for assembling all styrene plastic parts to each other. In case you have trouble finding the stuff, we also sell it. MEK is a powerful solvent whose strong

odor lets **you** know you've "had enough" before you've actually had enough! We even created a "spill proof" stand designed specifically to fit our MEK bottle! This stand even has a couple of holes located in it to hold your brushes! Price of both MEK and stand is a mere \$7.50 as of this writing. (**Part #PBL-720.**) Your counter will definitely appreciate the stand!

### A NOTE ABOUT "EJECTOR PINS" ..

Ejector Pins physically force a part from its mold as the mold is opened. They are usually round, mainly because it doesn't take any special equipment to drill round holes. But they must be quite precise in nature, or else, during the "shooting cycle", the molten plastic would be forced down between them and their bores, making the parts stick to them too.

Unfortunately, Ejector Pins by nature leave visible marks wherever they must be used. Hence, they cannot be used on any "finished" surfaces that can't be sanded, carved on, etc. So, if you look at the Top Stringer Section on this car, you can find evidence of upwards of 16 ejectors being used on its backside to push the part from the mold. You'll want to check for these before assembling, and remove 'em if we call out in the instructions to do so.

Too, you'll notice that we've located HOLES in the proper places where the Grabirons, Brake Rigging, Stirrup Steps and other detail parts will be fitted. Most of these holes are made using "core pins" (Standing pins in the mold.), and have only been "started" for you. You'll have to finish drilling them through with the proper sized drill when the time comes. We'll tell you what drill size to use, and when to use it, as we proceed. (A current technology Xacto #11 knife handle, ((or clone of same; one with the "X" type collet..)), works perfectly for holding miniature drills!)

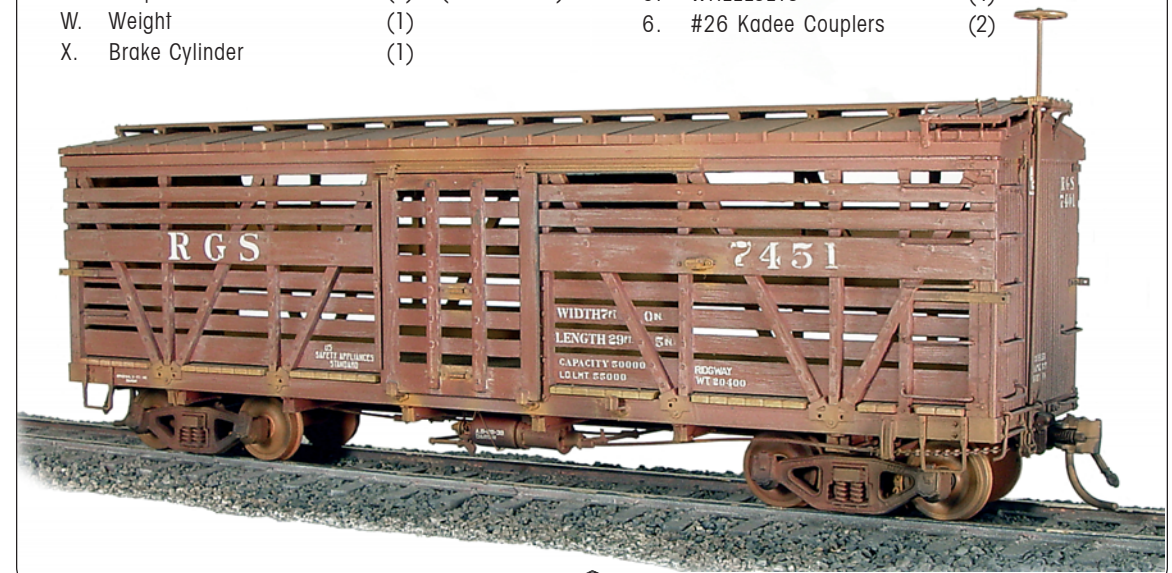
### SUB-ASSEMBLIES RECOMMENDED!

There are any number of ways to build a model.. And this one is no exception. But, after building several of these "Steel



## BILL OF MATERIALS

A. "A" End	( 1 )	Y. Brake Rigging	(1)
B. "B" End	( 1 )	Z. Eyelets	(6)
C1. Crossover Pipe w/Tee	( 1 )	aa. Brake Lever Hangers	(.012" Wire..)
C2. Extension Pipe	( 1 )	dd. Carrier Irons	(2)
D. "Hat" Section	( 1 )	ee. Chain Roller Guide	(1)
E. "I" Beam Center Section	( 1 )	ff. Roller for above	(1)
F. Floor	( 1 )	gg. Coupler Cover	(2)
G1. 17" Grab-Irons	(14)	hh. Upper Staff Bracket	(1)
G2. 20" Grab-Irons	(10)	ii. Lower Staff Bracket	(1)
G3. 17" "Safety" Grab-Irons	( 2 )	jj. Brake Staff = .020" Wire	(1)
G4. 20" "Safety" Grab-Irons	( 2 )	kk. Brake Wheel	(1)
H. Bottom Corner Irons	( 4 )	nn. Air Hoses w/ Gladhands	(2)
I. Intermediate Corner Irons	( 2 )	oo. Stirrups	(4)
J. Top Corner Irons	( 4 )	pp. Bleeder Valve Control Rod	(1) (.008" Wire)
K. Top Stringer Section	( 1 )	q.q. "U Bolts" = .008" Wire	(2)
L. Buffer Beams	( 2 )	rr. Roof	(1)
M. Side Doors	( 2 )	ss. Roofwalk	(1)
N. Side Door Guides	( 6 )	tt. Roof Grabirons	(2) (.012" Wire)
O. Side Door Stops	( 2 )	uu. Roofwalk End Supports	(2)
P. End Door	( 1 )	vv. Roof End Platforms	(2)
Q. End Door Guides	( 2 )		
R. End Door Stop	( 1 )	1. BOLSTERS	(2)
S. Sides	( 2 )	2. SIDEFAMES	(4)
T. Trainline	( 1 ) (.020" Wire)	3. JOURNAL LIDS / COVERS	(8)
U. Coupler Lift Bar: "A" End	( 1 ) (.015" Wire)	4. SPRING PLANK / BRAKE RIGGING	(4)
V. Coupler Lift Bar: "B" End	(1) (.015" Wire)	5. WHEELSETS	(4)
W. Weight	(1)	6. #26 Kadee Couplers	(2)
X. Brake Cylinder	(1)		



Other C&S / R.G.S. Models from P-B-L to add to your roster...

**- R.G.S. Type III Box Car -**  
Represents Class Numbers 8701 - 8729



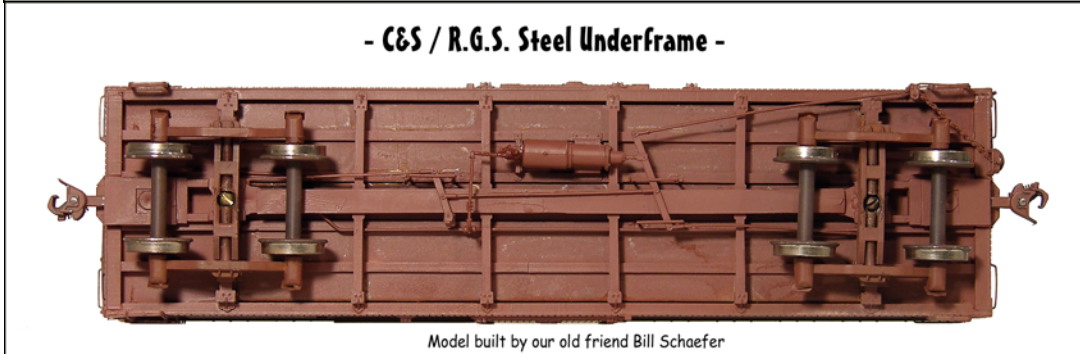
Model built by our old friend Bill Schaefer



**- R.G.S. Steel Underframe Reefer -**



**- C&S / R.G.S. Steel Underframe -**



Model built by our old friend Bill Schaefer



**P SUB-ASSEMBLIES TO PAINT SEPARATELY P**

(PRIOR TO FINAL ASSEMBLY)

( All Exterior Parts - STAR BRAND STR-01 Freight Car Red )

( All Interior Parts = STAR BRAND STR-12 Natural Wood )

1. Car Sides, Ends ( Built-up. )
2. Floor (Natural Wood)
3. Underframe Assembly ( Built Up. )
4. Roof Assembly ( Built Up. )

Underframe" type cars, we found we liked the idea of *building up sub-assemblies and painting all these before we finally cemented the model together.*

You, of course, can strike out on your own, or you can subscribe to the guidelines that follow. We just determined that a little extra work (building up and painting the subassemblies) paid great dividends in the end because, once our model was finally assembled, it was pretty much DONE!

If you elect to follow the subassembly / paint before assembling sequences, you'll find a P (star) when that step comes up in the instructions...

General preparation of parts consists of cutting parts off of their sprues and filing parting lines and gate marks. You will find that one of our **PBL-802** or **PBL-804** despruing nippers will be your favorite tool for nipping parts off their sprues. But whenever possible, leave sprues on small parts to act as handles when cleaning those parts. You can trim off the sprue just before assembly.

**CONSTRUCTION BEGINS**

**STEP #1: FITTING CARBODY PARTS**

Parts Required: 2 - Sides [S]; 2 - Ends [A], [B]; 1 - Floor [F]

Study Top, Bottom, Side and End Views to familiarize yourself with this project. Note that the "A" END has a DOOR OPENING; And the "B" already has the "Retainer Valve" and Piping Molded onto it!

**IMPORTANT NOTE: BE CAREFUL!** *The "Facia Boards" on the car sides must be left extending beyond the ends if you want the mating edges on the ends to end up fitting properly later!* (Facia Board: The "trim" or "moulding" board at the top of the carbody that lies just beneath the roof edge.)

A. PREPARING SIDES [S]: Begin by clipping off the main sprue from the bottom edges of the cars sides. We have a dandy flush cutter we've numbered **#PBL-840** that's

super heavy duty that we use for this purpose. (Cutting large sprues, and even code 70 rail is a breeze for these babys!)

Remove any traces of "flashed" plastic from between the slats and doorway. But stay away from all the side slats and "facia" board until later.

1. We like to drag our ostensibly "straight-edged" parts across the length of our 14" Mill Smooth File to remove all traces of "parting line", the area where the two mold halves met during the molding process. Reason? Simple! Real lumber doesn't have parting lines. This will take you less than a minute to do the bottoms of both sides. So why not get 'em right?

B. PREPARING FLOOR [F]: Now you need to test fit the floor to those sides. Refer to the photo below. What you'll see



here is that the floor fits too snug at the point identified on the photo. On both sides. You will need to remove about .020" (0.5mm) of the floor here. Your P-B-L Sprue Nippers will make short, accurate work of this, but test the floor to the car side a couple times as you go. This needs to fit well before you can move on.

C. PREPARING ENDS [A,B]: Once the floor fits properly, you can proceed to the ends. Repeat the same despruing and squaring up here, and **test them in place** on the sides, removing any remaining flash that could cause interference from the mating surfaces of the sides and ends... Then **test fit the entire carbody together**. The facia boards of the sides and ends should line up with each other. Got it? Wow! It's already beginning to look like something, eh? DON'T CEMENT TOGETHER YET...



**STEP #2: DRILLING HOLES**

This is in keeping with the "Sub-Assemblies" routine. The plan here is to build up each side and each end as far as possible, then to paint them before assembling them together.

Also, a pair of Flush Cutting Pliers. ( Like our #840 or #841 - See 'em on our web site..) is mandatory if you are going



the "sub-assembly" route. And a good, sharp 6" or 8" Mill Smooth File. (A Diamond file would work here too.)

**A. GRAB IRON HOLES:** Using a #79 or #80 drill bit, drill through each of the pre-cored "Grab Iron" holes of both the sides and the ends. I shoved my drill bit through a short piece of rubber from an old sprue to protect the "bolt heads" on my model as I drilled... (We tossed one in with this model kit. It's the little "black" loose part. See photo below of how I made mine.) There are 28 Grab-Irons on the car body - 56 holes. Note also how, in those photos just how much of my drill bit is NOT left sticking out? The shorter the better here 'cause it acts to prevent the bit from wobbling thus helping to avoid breakage. Good idea?

**B. COUPLER LIFT BAR BRACKET HOLES:** Using the same drill bit, bore through each of the "Coupler Lift Bar Bracket" holes. (4 of 'em if yer countin'...)

**A. ROOF-WALK GRAB IRON HOLES:** There are 3 Grab-Iron holes in each of the roofs' "End Roofwalk Platforms." Use the same drill bit to bore through these too.

**1. CHAMFER HOLES** We chamfered

slightly the back side of each hole using a larger bit. The taper of the chamfer gives the ACC a head start towards filling in around those grabs when you get around to installing 'em later!

**STEP #3: FORMING GRAB-IRONS**

Many guys dread this operation and frankly, we can't understand why. If you have the proper tools it's a real straight forward operation. (And if you don't, why not? Our motto has always been: If it makes the job go easier, or look better, we need to own it! If tools are used as intended and aren't abused, they're value remains pretty constant. And if you don't believe that one, when's the last time you went to a yard sale or flea market and found quality used tools at giveaway prices?

We had our main supplier of pliers make us up some truly comfortable, specially serrated long-nosed pliers that are so precise they'll pick up a .012" [0.3mm] brass wire grab iron right off our smooth floor on the first try, and never let it go or send it off into la-la land in the process! A claim absolutely NONE of the tweezers or other pliers we have ever tried could come close to matching! We call 'em our "**SUPER-GRIPS**" and they are part **#PBL-821** in case you haven't yet gotten yours yet.

Anyhow, so much for the commercial, and on with the show...  
**A. FORMING GRAB-IRONS [G1, G2]:** Notice that there are **FOUR DIFFERENT LENGTH GRAB IRONS** laid out on the bending jig supplied... **Refer to Plate #1**. For starters, you'll be needing 14 -17" Grabs [G1] and 10-20" Grabs [G2] to complete this model. Form up all of these "Regular" Grabirons at this time using the following outline:

**1. Grip a piece of 012" wire** with pliers about 3/16" in from the end. (More than that is just a waste anyway. And besides, it could cause you to run short on wire.)

**2. BEND a right angle in the wire;** INSERT the bent end into the desired hole in the jig, orienting wire in trough, and BEND DOWN at end of jig. After making the bend, remove the grab and adjust the bend as necessary so that it ends up at a full 90 degrees.

**B. FORMING SAFETY GRABS:** All grabs are self explanatory except for these. ( See

Rubber "Bumper"!  
Saves those moulded-on Bolt-Heads!



happy if you'd contribute a bit towards it's replacement, plus some ching towards postage on this end. The "SHOTS" are never free; the TOOLING alone cost us THOUSANDS; Our office help likes to eat, and we'd personally like to think you like what we're doing well enough to cause you to want to contribute towards our survival!

**ERRORS IN THESE INSTRUCTIONS?**

'Hard as we try, it seems that "Murphy's Law" just has a way of sneaking up on us. Darn.. Wouldn't it be GREAT to be PERFECT? So if, as you peruse this great labor of love, you find some glaring error, or you maybe come up with a better idea of how to deal with a certain step, do us a favor: Jot it down and share it with us! It just may be we'll incorporate it into the next iteration so's the guys that follow won't have to deal with such things! That way we all win!

**WE RECOMMEND:**

**WE HIGHLY RECOMMEND:** The R. ROBB BOOK: "NARROW GAUGE PICTORIAL #8" as a source book for prototype photos and detailing shots of the C&S cars!

**WE ALSO RECOMMEND:** The book: "Memories of the Narrow Gauge Circle" published by Carstens. It's an inexpensive (around \$16.95 at this 9/02 writing.) way to get introduced to, and be able to afford to take a trip to the "Narrow Gauge Circle", including the R.G.S., without actually

making the sojourn there.

**BUT MOST OF ALL WE RECOMMEND:**

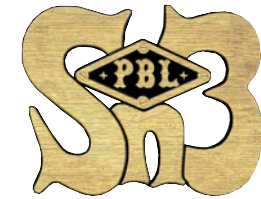
That you place a trip to **CHAMA NEW MEXICO** high on your priority list, because **the REAL THING'S STILL ALIVE and WELL right there in them thar mountains!**

And 'truth is, that's what Narrow Gauge Modeling is all about, isn't it? **THE REAL THING STILL EXISTS!** Go! TASTE the High Country! Soon! This is the stuff dreams are made of!

**FINALLY...**

YOU are our Best Advertisement! When you're pleased with our performance, we hope you'll tell others! When you're NOT, we hope you'll tell US! Good Sn3 Modelin' to you!

Bill Peter for PBL.



Model built by Ol' Bill... Painted and weathered by your friend and mine, Jimmy Booth...

P-B-L ♦ P. O. Box 769, Ukiah, CA 95482 ♦ 707-462-7680 ♦ www.p-b-l.com



### STEP #19 LETTERING

Included with our undecorated kits are decals from F00T-HILLS MODEL WORKS. We think you'll like 'em because they're not only been painstakingly researched, their printing is of the very best quality too.

- 1. USE YOUR WEATHERING BRUSH:** (Fiberglass Eraser) to eliminate any rough spots on the carbody that you can't live with, and re-coat as necessary.
- 2. Cut around lettering closely** at it's top and bottom, leaving but a small "string" of decal film connecting only the centers of the letters for best final appearance. "Straight lines" attract the eye. Curved edges don't.
- 3. Use a sharp #11 Blade** to "slit" the film at board lines to get decals to snuggle down in between boards.
- 4. Use a good grade of Decal Solvent** to make 'em lay down nicely. (We use MICRO-SOL from Krasel Industries.)
- 5. When lettering is completed,** overspray model with a "Clear Coat", such as our TESTORS DULLCOAT or the equivalent.

#### USING WEATHERING BRUSH TECHNIQUE:

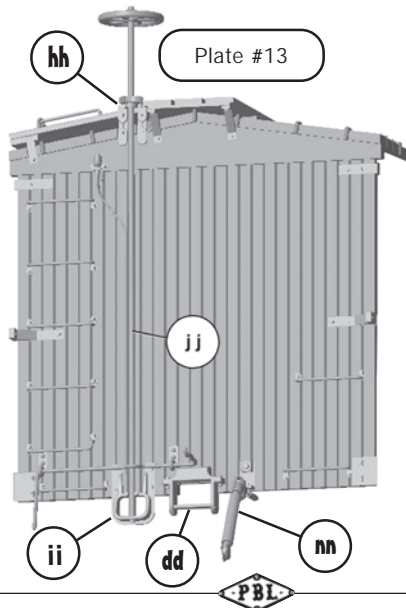
This idea is based on an article that appeared in the 7/82 issue of *Bob Brown's GAZETTE* which we've modified slightly for use with our "STAR BRAND" Paints.

The technique involves "Weathering" your model using a small Fiberglass eraser. (We sell a dandy "Weathering Brush Outfit", our PBL-810 for only \$18.95.)

After your paint has cured long enough that it no longer gives off any paint odor, you simply hold your "Weathering Brush" at right angles to the carbody and rub lightly with the grain. You'll soon see minute amounts of paint come off just like dust! The brush acts much the same as sandpaper, but allows you to work around bolts, nuts, and even into crevices for an appearance that will astound you!

Plus, if you get too far into the paint layers, simply overspray the area with a light coat of the appropriate color and repeat the process!

You can even use this process over lettering for a really weathered appearance!



### SNAP IN WHEELSETS NOW!

Another snap! Just insert the wheelsets by poking one end into a journal hole and spreading the opposite sideframe enough to get the other axle end into the opposite journal hole!

- 1. TRUCKS SHOULD SELF-ADJUST** (equalize) to any surface pretty much automatically. For certain they will with the weight of the car on them. They should also roll down an almost imperceptible grade with little to no coaxing. Just make certain the bolster is setting level and the brake shoes aren't touching the wheels.
- For superior tracking, run one bolster screw down tight, then back it off only enough to allow the truck to be rotated easily, side-to-side.

Repeat for the second bolster screw, but loosen this one about half a turn so that it can also rock side to side.

You have now effectively created a "3 point mounting" for your model!

#### END OF THE LINE! WE HOPE YOU ENJOYED BUILDING THIS KIT!

We hope your model was as enjoyable for you to build as it was for us to produce! The prototype was quite different from the "norm", narrow-gauge-wise, and our model represents them quite accurately.

#### LOST OR BROKEN PARTS

We'll pay for OUR mistakes, if YOU'LL pay for yours. OK?

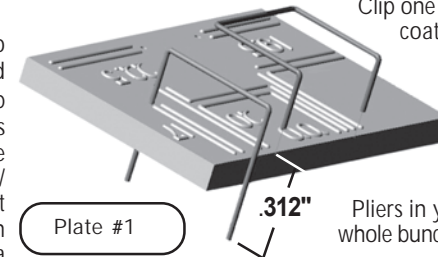
It's to everyone's advantage that all of the parts in each model kit are serviceable, and we make an honest effort to try to see to it that no bummers are included. But, every now and again, Murphy's Law prevails around here, and we end up with a screwup or two. (What a thing to have to admit, eh?)

If it so happens that YOU are the unfortunate recipient of a deformed part, drop us a note with an accurate description of the part and will mail you a replacement poste haste. (Of course we'd appreciate a little help on the postage if you're so inclined.)

If however, YOU mess up a part, 'fess up! Nobody's perfect! We'll still send you that replacement part, and we'd be really

drawing.)

- 1. 17" Safety Grabs [G3]:** Bend up two grabs as above using the slot marked "19.5" on your bending jig. Now grasp one of these grabs on its RH End (RH as it would appear when installed on the car-body) about 2 scale inches (.032" / 0.8mm) in from the end. Bend it straight up so that the grab matches the one on the end view. This grab just became a 17" Safety Grab [G3], the #2 Grab up from the bottom on your car models ends.



Clip one match off squarely and give it a coat of that ACC before you use it and it'll stay nice and stiff with no raggedy edges!

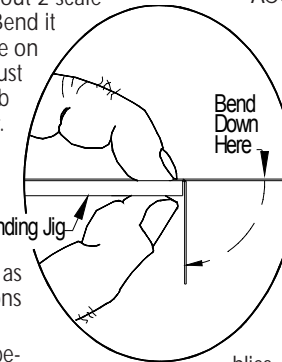
- A. INSTALL GRAB IRONS [G1, G2, G3, G4]:** If you've a pair of our PBL-821 "Super Grip"

Pliers in your bag of tricks, this will be a whole bunch easier to do!

Begin inserting the Grab-Irons into the holes in one section of the car. Don't forget the location of the "Safety Grabs".

- 2. 20" Safety Grabs [G4]:** Repeat the above procedure but using the slot marked "22.5" on your bending jig. This time grasp one of these grabs on its LH End (LH as it would appear when installed on the car side) about 2 scale inches (.032" / 0.8mm) in from the end. Bend it straight up so that the grab matches the one on the RH end of the car side view. This grab just became a 20" Safety Grab [G4], the #2 Grab up from the bottom on your car model's sides.

Place your match between the grabs and the car body to space them off of the boards and bracing properly. Be certain that they are parallel to the carbody. (Level.) Then ACC them in place from *inside* the carbody. Use a Gap Filling ACC to avoid its spoiling the model's exterior finish! (See "Modeler's Tip" sidebar. Gap Filling ACC is less likely to leak through the holes in the car sides!) Repeat for remainder of the sides / ends. Then cruise on to the next step.



#### STEP #4: INSTALLING THOSE GRAB-IRONS

You will soon figure out where to fit these in place as you study the photos, drawings and the locations of the pre-started holes in the car's sides.

Actual Grabiron installation is a snap! Spacing between the grabs and carbody should be 2 1/2 scale inches which is right at .040". A common Paper Match will work well for this operation.

- NOTE:** Not all paper matches are created equal. They used to be right at .040" (1mm) thick. But now some of them measure only .030" thick. Try to find some of the older, thicker matches if you can. If not, you'll have to make up some sort of spacer that's the proper thickness before you proceed. Your spacer should be at least an inch or so in length, [26.0 mm] and no wider than 1/4". [6.4 mm].

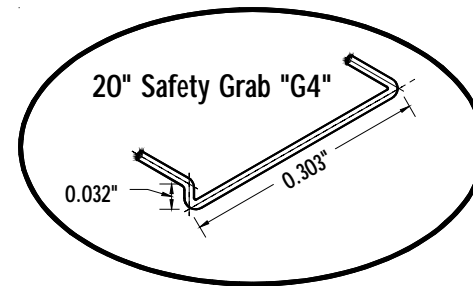
#### STEP #5: CAR BODY DETAILING: PART ONE.

Since you are building up sub-assemblies, the logical thing to do here is to add as many of its details as you can now, before you paint.

The following parts are tiny. After despruing ours using our #804 De-spruing Nippers, we used a pair of pointed tweezers to pick 'em up and position 'em. Be careful and don't pick them too tight lest they fly off into the hinterland, never to be seen again!

- A. SIDE DOOR GUIDES [N]:** Three to a side. Your model has holes cored in its side-sills to locate these. But just in case, we "chamfered" ours slightly using the point of a #11 blade to enlarge the opening so's to encourage the pins to slide in easily. Cement 'em in place using MEK.
- B. SIDE DOOR STOP [O]:** One to a side. Also has a hole cored for it. Test it first. MEK in place.
- C. CHAIN ROLLER GUIDE [ee]:**

See side view drawings, then **measure in from the RH end of "B" side / end only .420"** (10.7mm) and **scribe a mark**. Desprue, then, butt the RH side of your Chain Roller Guide up against this mark, then MEK it in place.



**D. END DOOR [P]:** RR'd rules frowned on the running of cars with their end doors opened. But the models look cool this way. And heck, they weren't always "on the road" anyway, were they? So position this door where it suits you and fix it in place with MEK.

**E. END DOOR GUIDES [Q]:** Two of these. Funny looking ras-cals, aren't they? MEK 'em in place too.

**F. END DOOR STOP [R]:** Cored hole here also. Cement in place using MEK.

**G. BUFFER BEAMS [L]:** Study this part carefully. It would be easy to install this part incorrectly except for the fact that there's a small "flange" or "lip" moulded onto the BACK SIDE of these to facilitate centering the part in the draft gear pocket. Cement in place so the flange fits tight up against the pocket. Refer to **Plate #1**.

**H. LOWER STAFF BRACKET [ii]:** The i side LH leg of this part is fitted u close to the molded on "retainer pi" "B" end drawing. Carefully MEK ir

**I. COUPLER LIFT BARS:** Two types required: "A" and "B". Use .015" (0.4mm) brass wire to form up the lift bars. . . See **Plate 14** as a guide as to how they should look. Then use drawings located on centerfold page for actual dimensions. A pair of those super-fine Round Nose Pliers we sell will come in real handy here!

**1.** Just remember, the real thing was formed out of a piece of 1" solid steel rod.. It had NO sharp corners.

**2.** Add a slight "ski jump" to the end that hangs out over the coupler so you can hang a piece of chain on it later, if you like.

**3.** Although "Standard Railroad Practice" was to bend a "return" on the LH end of a lift bar's, handle (To keep a brakemans hand from slipping off the thing.), none of the photos we have in our possession would indicate that this particular car had any such thing. Your call here.

**J. EYELETS [Z]:** We've supplied you with 6 eyelets formed from .012" wire. (0.3mm) Don't lose 'em!

**1.** Slip a couple eyelets onto a lift bar, plug 'em into the pre-drilled holes, and ACC 'em in place from the back side, the "B" End Lift Bar goes on the car end OPPOSITE the one with the door.

Set these assemblies aside now so that ACC has a chance to cure properly. Ideally, they should sit a couple hours y'know... So while they're curing, lets begin building up

the Main Underframe assembly.

## STEP #6: MAIN UNDERFRAME ASSEMBLY PART ONE.

The "steel" type frame on this kit is constructed by sandwiching together three distinct parts. See **Plate #2**. We'll call this the **Main Underframe Assembly**.

**A. TOP STRINGER SECTION [K]** (This is "frame outline part" that is mostly FLAT..) Clean any flash from the slots for the "brake lever hangers" as denoted by arrows in the stringer section drawing in Plate #3.

**1.** Remove (clip, carve or file off) any "nubbins" (Remnants of ejector pins.) from top side of [K] as these will interfere with proper installation of the weight later... Your **P-B-L #802 Despruing Nippers** will

make short work of this project.

**B. "I" BEAM CENTER SECTION: [E]:** Remove this part from its sprue and carefully remove any sprue marks or flash from this too that might be present. Make a special effort to be careful around the ENDS of the "Cross Members", as these will be visible from track level..

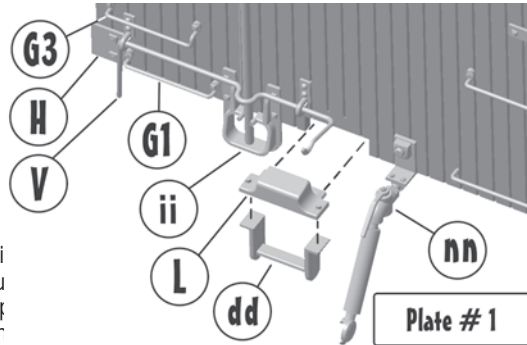
**1. Turn the I-Beam Center Section casting over** and note the *notches* molded into its crossmembers. These notches are where the Trainline [T] will later be fitted and will face toward the *floor* of the car and the bolster detailing will be seen from the underside. See Plate #3.

**2.** Test fit in place atop the center of the stringer frame.

**a.** Trim these two pieces as necessary so that *the ends of each one of their crossmembers are flush*. This assembly will fit into the carbody, as viewed from its underside.

**3. Drill a #65 (.035") hole** diagonally through the I-beam for the Train Line [T] to pass through as shown in Plate #2. Also see photos next page.

**4. ONE LAST HOLE...** Spot and drill #71 hole directly centered in "mounting bracket" for "Live Lever".. (This is the little "ear" that's molded onto the **"I" Beam Center Section [E]**. Refer to **Plate #5**.



## F. AIR HOSES WITH GLADHANDS [nn.]:

**1.** Remove any flash from these, then paint 'em. Color is Freight Car Red, but the "hose" portion could be black, your option.. (Wanna get REALLY carried away, a felt tipped marker will let you put the "washers" on the open side of the gladhands, if you dare!)

**2.** Test fit 'em in place. The "pipe" will need trimmed so's it can be butt glued (with ACC) to the train line. Trim each to fit.

**3.** Install as shown in Plate #13, drawings.

**G. STIRRUPS [oo]:** One for each corner. . .

**1.** Ream holes as required. Drill size is a #76.

**2.** Scrape away any flash as required.

**3.** Chamfer ends of mounting pins slightly.

**4.** Press stirrups into place and voila! End of story! Almost...

## STEP #18 PAINTING YOUR MODEL

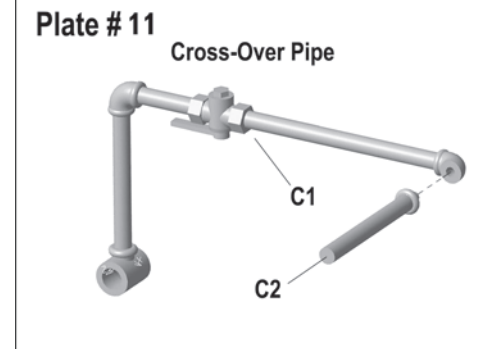
We use and recommend **STAR BRAND PAINTS**. They respond well to fast wet coats, although light misting works also! One coat will usually cover just fine. They dry very quickly, yet, by adding an appropriate amount of retarder, will flow out nicely before drying, resulting in a smooth, professional finish..

**EXPERIMENT!** You almost can't use too much retarder. Just remember: the more you use, the longer the paint will take before it's dry, and the more the paint will "flow out". (This also affects the degree of "sheen" of the paint itself. The "drier" it's applied, the flatter the finish will appear to the eye.) Experiment on scrap material until you're comfortable with the technique you've developed!

If you intend to "scratch brush weather" your model, you might want to apply light coats of the following before applying a light coat of your finish color:

- STR-10 : Weathered Gray Wood
- STR-11 : Seasoned Brown Wood
- STR-12 : "Natural" Wood

However, many times these cars appeared to be in relatively decent shape, with only slight surface weathering visible. And so, our first inclination would be to leave the bare (gray) plastic as it is. Just spray the finish color over it, letter it, apply your sealer, then any scratch brushing you might do thereafter would result in the appearance of weathered boards because of the gray plastic showing through. You can try that, or you can try the "Weathering Brush Technique" to follow.



the rod with a bit of ACC, then press it into place..

**NOTE P :** Invert the brakewheel on a flat, hard surface, then press the rod in place.. Try this holding the brakewheel with your finger and you'll end up sticking yourself with the rod! Not fun!

**4. Pre-Paint** this assembly..

**B. UPPER STAFF BRACKET [hh]:** If you carved notches in the roof end to fit this part, the rest is a slam-dunk.

**1. Slide brake staff** assembly through upper staff bracket from topside. Then down through lower staff bracket as a test.. Fit OK? Carefully MEK upper staff bracket in place onto end facia and roof.

**2. Remove brake staff** after cement has thoroughly set.

**3.** Now, thread it down through the upper bracket once again, but this time make sure it goes through the ring at the end of the chain. ACC the staff in place on the lower staff bracket. You will end up with a slight bend in the chain between the roller and the staff to represent slack. This "slack" should "hang" down so position it accordingly.

**4.** Clip off the bottom of the brake staff to suit.

**C. CARRIER IRONS [dd]: (See Plates #13, #14.)** 'Bet you've been wonderin' where this funny little part went, eh? Well sir, strangely enough, on this particular breed of car, with all of it's amazingly complex post support castings and the like, the builders realy fell down when they designed the draft gear housings. All they amounted to (visably anyway. . .) were the "buffer plates" which you installed early on, and these weird looking sort-of "U" shaped devices which bolted up underneath 'em.

**1.** Anyhoo, as you can see, these cement up beneath the already installed buffer beams. Be careful handling them 'cause they'll be delicate until they're attached.

heavy brake rigging when the model's sitting on the rails.

8. A tiny drop of ACC at each hanger / lever will suffice to hold this stuff in place nicely!

**C. BUILD UP CROSSOVER PIPE [C1, C2]:** As you can see from the drawing in **Plate #11**, there are two parts to this assembly.

Although "extension pipe" [C2] is tiny, if you study the drawing closely you'll see we've made it so's you can line up and plug [C2] into elbow [C1].

Then all you need to do is MEK this assembly together as SQUARE as possible, per the illustration.

Allow adequate time for welds to cure, then fit loose end of [C2] into the hole you drilled in that dirt collectors' union in **Step #8-B-5**.

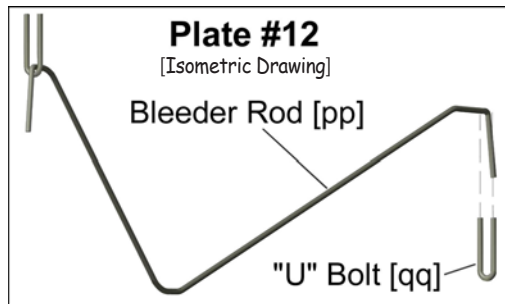
If all goes as planned, your crossover pipe will be lined up perfectly, both as viewed across the underframe, and vertically as it rises up from the Trainline Tee. Yes? If so, MEK that pipe into the Union. Pretty cool, eh?

**D. BLEEDER VALVE CONTROL ROD [pp, qq.]** Your trainmen have to be able to bleed the condensation out of that air reservoir once in awhile, or it'll freeze up in the wintertime! Study bottom elevation and **Plate #12** to determine the appearance of this part and where and how it gets attached. (Hint: It lies crosswise across the model's underframe. . .)

**NOTE P :** If yer striving for a sanitary underframe with semi-clean / seasoned wood floorboards you might just want to paint these parts before installing them..

1. Get some .008" wire now and form bleeder control rod [pp] as shown in template on drawings page. This stuff is pretty soft, so will likely work easily using no more than your sharp tweezers to hang onto it. . . Also, this part is only two dimensional so it should lie flat atop your work surface when formed correctly.

2. Lay it squarely across the "hubbin" on the bottom of the air reservoir. (The nubbin represents the tank's bleeder valve. Although "S" Scale is 1.359% larger than HO scale, some



things are still too small to tool up for. Bummer, eh?)

3. Using a prick punch, pin, or other sharp pointed device, punch two marks on either side of the thing, atop the outer sills, about the width of the wire.

4. Drill these using your #80 drill. They only need to be .100" [2.5mm] deep or so..

5. Form two "U" Bolts [qq] from the same .008" wire to look like those shown in **Plate #12**.

6. With Bleeder Rod still lying in position, clamp down one end using one of your newly made up "U" Bolts. Carefully ACC the U-Bolt in place.. Then repeat for opposite end of Bleeder Rod.

7. A dab of ACC atop that air reservoir "hubbin" and this step's done!

**D. CHAIN ROLLER GUIDE [ee] and ROLLER [ff]:** Hopefully, you have already located and cemented Chain Roller Guide [ee] in place so all that will now be necessary is for you to fix the bent portion of the moulded plastic "chain" into it.

1. Fit the loose end of that chain through **Lower Staff Bracket [ii]**, then into the "C" shaped slot in **Chain Roller Guide [ff]**.

2. Once it's fitted find and cement the **Chain Roller [ff]** in place also. (On the prototype, this thing prevents the chain from falling out of the guide..) One side of our roller has a "pin" on it. The pin faces "up", towards the underframe.

**E. RETAINER PIPE [mm]:** Once again, this step's for the underbody "freak" ( Like yr ffl svt. . . ). If you cross-drilled the brake cylinder as shown in Plate #6, you're all set to install this baby. (If not, the term "Good Luck" comes to mind..)

1. I formed a right angle in a piece of .008" wire, cut it to length so it would point up to where the weight is and ACC'd it in place on my model.

**STEP # 17: FINAL CARBODY DETAILING!**

Yee-Ha! ( I heard somebody say. . . ) The time has arrived to finish this puppy, so let's get on with it, shall we?

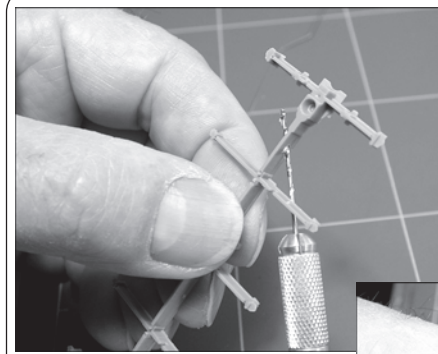
**A. BRAKE STAFF & BRAKE WHEEL [jj, kk]:**

1. Ream hole in brakewheel before despruing.. Use #72 drill.

2. Carefully clean any flash from brakewheel, then desprue it..

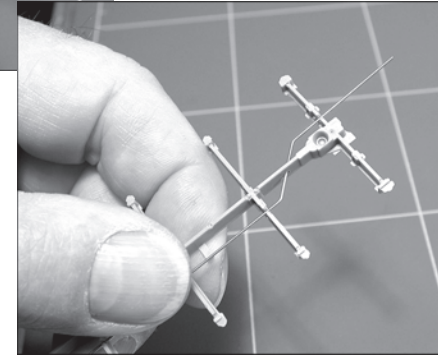
3. De-burr end of .020" wire. Wipe it down with MEK or steel wool too, then test fit it into the brakewheel. If it seems to fit too tightly you need to ream the hole with the next larger drill, elsewise you might just crack the brakewheel.

Once you're happy with the fit you might want to first wet



**C. TRAINLINE [T], CROSSOVER PIPE**

[C]: This part has always been a problem. We've wrestled with ways to simplify this process, but short of a one piece Lost Wax Casting, it just seemed like there was no easy way to do it.



But with this kit you'll find our latest tooling attempt enclosed, done on our CNC mill, which we think goes together pretty darned well. . .

Several reasons why we say this, but aside from being from brand new tooling created specifically to fit our C&S Type 3 model kits and "lookin' good", the primary reason it works well is that it circumvents the problem of a mis-located brake cylinder. Here's how we went about assembling ours. . .

**D. TRAINLINE [T]:** Using the length of .025" brass wire supplied, form your trainline to match **Plate #4**. (The drawing *should* come out to be actual size, but double check it against the Underframe drawing just to be sure...The paper may have shrunk. Murphy's law again...)

1. Thread Trainline [T] through the hole you drilled in the I-beam.

2. While the crossover pipe is still connected to its sprue, ream the hole in its "tee" with a #72 (.025" / 0.65mm) drill. Then remove it carefully from its sprue, and slide it onto the loose (long) end of Trainline.

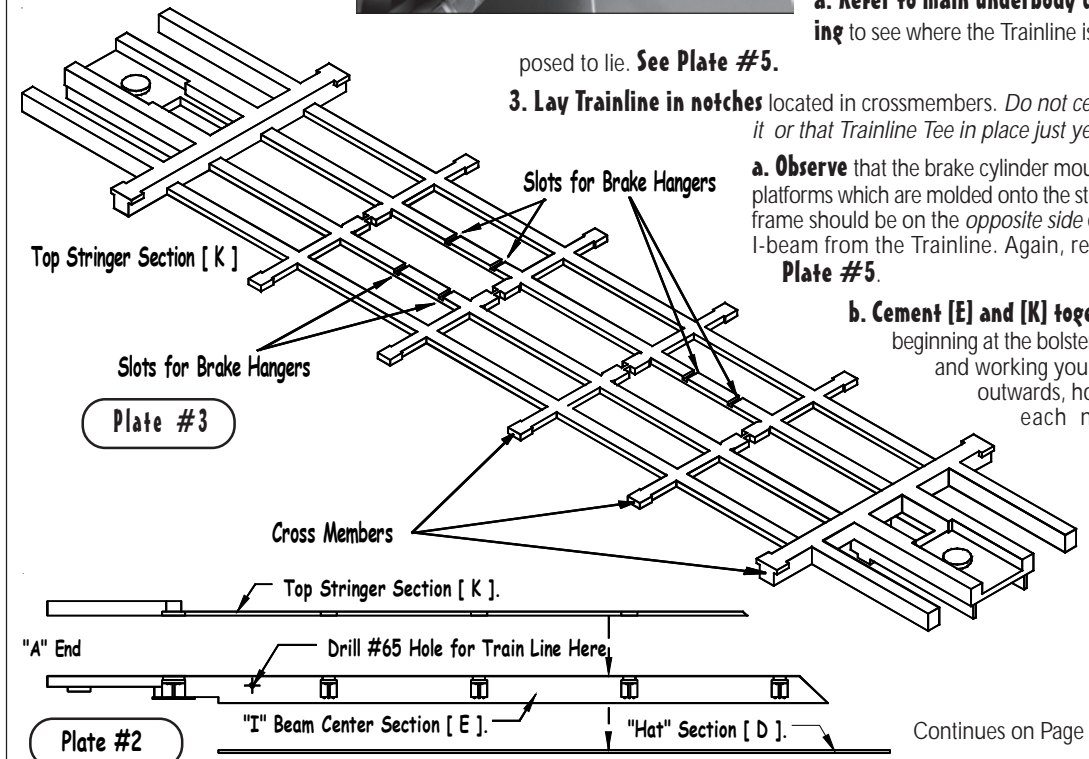
a. Refer to main underbody drawing to see where the Trainline is sup-

posed to lie. See **Plate #5**.

3. Lay Trainline in notches located in crossmembers. Do not cement it or that Trainline Tee in place just yet tho!

a. Observe that the brake cylinder mounting platforms which are molded onto the stringer frame should be on the opposite side of the I-beam from the Trainline. Again, refer to **Plate #5**.

b. Cement [E] and [K] together, beginning at the bolster area and working your way outwards, holding each newly

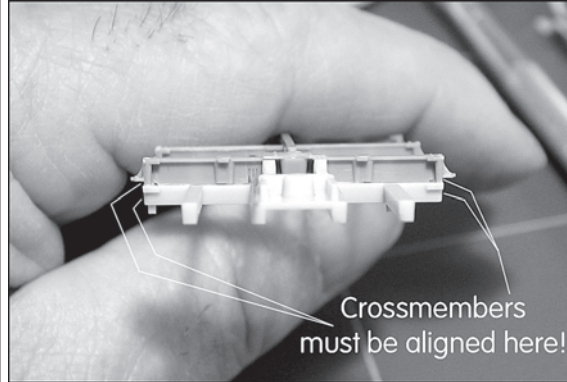


cemented section long enough for the weld to take.

Also, keep checking to be sure that the crossmembers on both parts are aligned. See photo.

**NOTE:** Be certain that, as you work, you continue to "eyeball" your new frame, end-to-end, to make sure it is both *flat and straight!* If it gets either a "bow" or a "sag" in it, IT WILL DRASTICALLY EFFECT THE COUPLER HEIGHT OF YOUR MODEL! Consider your-self forewarned!

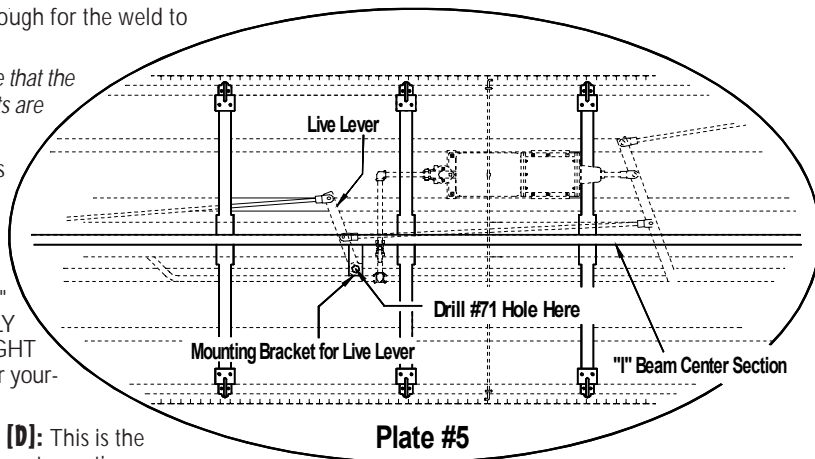
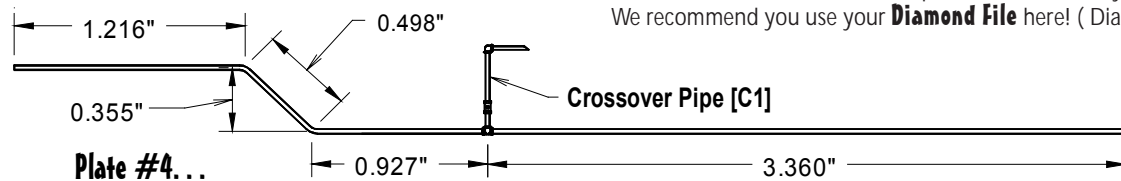
**E. CENTER SILL "HAT" SECTION [D]:** This is the "top" or "cap" for the I-Beams center section...



**NOTE:** There are "locating pins" on one side of this part. These are designed to aid you in positioning the hat section atop the I-Beams center section..

**1. Hat Section** sits atop raised rib molded onto "I" Beam Center Section. **See Plate #2.** When it's situated properly, run some MEK into the joint from the back side.

### STEP #7: BACK TO CAR BODY PARTS



Yeah, I know. These instructions seem to bounce around a bit. But we're assuming you're the kind of guy who wants to keep forging ahead without breaks. So let's forge ahead, shall we?

That ACC should be set up pretty good by now, so:

**A. CLIP OFF ALL WIRES** now protruding from the back sides of your parts if you want to end up with a contest quality model. *This means ALL of them,* Including those protruding into where the sides will overlap the ends at each corner.

If you're fortunate enough to have a pair of those cool, "one shot deal" Flush Cutters we sold a few years back, or a pair of the latest **#840 or #841 Flush Cutters** we currently offer, they'll pretty much make short work of this process. If not, use whatever you've got that'll clip the ends as close to the car body as possible.

**B. FILE NIPPED-OFF GRAB IRON ENDS NOW:** Remember: We're talkin' ALL of them! Including those located where the sides overlap the ends at each corner.

Start off using your 6" or 8" Mill Smooth file on those clipped-off ends out in the "field" on one of the sides where they're easy to get to. This'll give you some practice for what's ahead.

When you've got these done, go on to those located where the sides overlap the ends at each corner. Obviously, if you don't file these, the ends won't fit up to the sides correctly. We recommend you use your **Diamond File** here! (Dia-

than later when it's installed, believe me! **Interior Color is "Natural Wood"; Exterior Color is Freight Car Red.**

### STEP #15: INSTALLING ROOF ASSEMBLY

No rocket science here.. You've already had the roof on and off so many times you probably figured you'd wear it out, right? So it should fit just fine..

**A.** The only trick here is to get enough cement into the joint to hold the roof in place, without getting so much in it that some plastic "oozes out", making your model look like somebody else built it. . . (Right?)

**1.** Start at one corner. Squeeze the roof tightly to the carbody, and run just a dab of MEK into the joint with your 000 brush..

Hold for *longer* than you think necessary, just to be certain that the weld took. Then let the thing set for a few more minutes, just in case...

**a.** If you're *REAL CAREFUL*, you might try putting a rubber band around the entire carbody here, but there're some *REAL FRAGILE PARTS* you could screw up if you slip. Your option..

**2.** Proceed to opposite corner.. Squeeze the roof tightly to the carbody, just as you did before, and run a dab of MEK into that joint with your 000 brush..

**3.** When all four corners are stuck down tight, press the center of the roof down against the carbody, ( It's should be tight anyway..), and MEK it here too.

**4.** Complete the roof cementing process. The idea here is to get it to stay in place with no gaps at its edges. Any more than that and you're risking "blobby" joints.

### STEP #16: COMPLETING UNDERFRAME ASSEMBLY . . .

**A. BRAKE RIGGING [Y]:** Examine the brake rigging and carefully scrape away any flash while it is still attached to its sprue.

**1. Carefully remove** the rigging from its sprue. Your **PBL-804 De-Spruing Nippers** are a lifesaver here! Snick, Snick, Snick and it's done.

But lacking these, Several light cuts on each side of each "gate" using a brand new #11 Blade, (used in much the same way as you would fall a tree), will do. ("Gate": Point where sprue attaches to part..)

**a.** All parts of brake rigging shot should lie flat atop a flat surface. All "rods" should be straight too. You can

straighten out any that aren't quite flat by drawing your thumb and forefinger along the rod, in much the same way your mother used to draw a pair of scissors along a ribbon to curl it up.. Only your objective here is to UN-curl it!

**b.** When it's nice and straight and flat, roughly position the brake rigging as shown on the drawings. Slide the brake cylinder rod into the brake cylinder.

**c.** Noting that there's a pin on the underside of the "Live Lever". Fit this into the hole you drilled as noted on Plate #5 and secure in place with ACC. This and its locating in the Brake Cylinder should give you the correct alignment for the entire brake rigging assembly.

**d.** At this point the remaining brake rods, (two to the trucks, plus the long one with the chain molded onto it), will be hanging free. They should be nice and straight and parallel with the underframe.

**B. BRAKE LEVER HANGERS [aa]:** You'll be needing three of these. Form 'em up as follows:

**1.** Using your "bending jig", start with a 1 1/4" [32.00mm] length of .012" wire, grip one end about 5/16" in from the end and bend down at a 90° angle. Insert that leg into the hole shown in the illustration. Bend the other end down, finishing the 90° angle with your pliers. It's important that these "legs" end up at least 5/16" (.312" or 8mm) long. You will need three (3) of these.

**2.** Next, lay each atop the "U" shaped "trough" as shown in **Plate #10** and, holding it in place with your thumb & forefinger, bend both ends over simultaneously by wiping across the edge of your work surface, forming "feet", as it were. (This will be kinda hard on that work surface unless you have one of our self-healing "Cutting Mats". . .) Trim each of the "Feet" to measure .060" long. (Approximately 1/16" or 1.5mm)

**3.** Finish each bend using your flat nosed pliers so that each bend is as close to 90° as you can make it.

**4.** Observing where each is to be located, slide its respective feet into the slots you cleaned out in Step #2-A.

**a.** If you left any feet too long and they extend beyond the stringer, you can still remove the hanger and trim 'em to the proper length.

**5.** Carefully ACC each hanger into place in slots.

**6.** Cut a couple strips of paper to about 1/8" X 1" and lightly fold 'em in half. They want to look like a "V" when you're done.

**7.** Slide paper in between brake levers and Hat Section [D] and they'll wedge the brake levers up against the hangers you just made so's they appear to be holding up all that

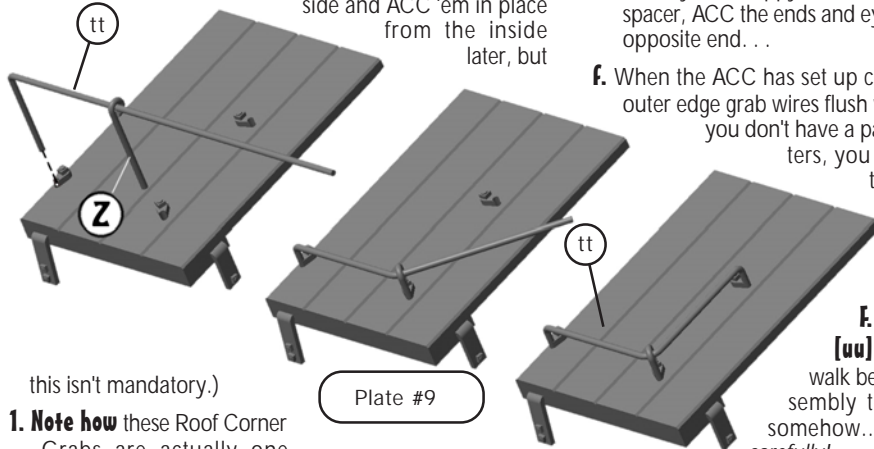




right" according to the drawings and MEK them in place too...

2. However, if you DON'T break 'em, once they're bent down, the platforms are simple to get placed correctly, and easy to MEK in place. Just follow the foregoing suggestions and you'll be OK.

**E. ROOFWALK CORNER GRABS [H], EYELETS [Z]:** ( See Plate #9 . ) Atop each end roofwalk platform you will find three holes pre-cored for you. Drill these out using your #79 or #80 drill... (I drilled mine all the way through the roof so I could bend the eyelet over on the inside and ACC 'em in place from the inside later, but



this isn't mandatory.)

**1. Note how** these Roof Corner Grabs are actually one single piece, but require a "stanchion" (in this case, an "Eyelet"), at the centerpoint? You'll find 6 "Eyelets" in a separate plastic bag. Two are for this purpose. Or you can form your own from the .012" wire supplied.. (I did the latter because with some effort I could get the hole smaller... You can also accomplish this by clipping a small amount of material from the eyelet and squeezing the eyelet together, top to bottom while it's strung on a piece of .012" wire so's to keep it from getting "squooze" too tight. But suit yourself...)

**2. FORMING UP END PLATFORM CORNER GRABS: Plate #9** on page 14 should go a long way towards getting you to your goal here. Basically though, it goes like this:

- a. Using your flat nosed pliers, grip one end of a piece of .012" wire in from the end about 1/8" and bend it so it looks like an "L".
- b. Slide an **Eyelet [Z]** onto your wire, then press bent end of wire and eyelet into holes in platform as shown in illustration - **Plate #9** again. . .

(The correct spacing off the platform is the same as for the side grab irons: .040" or 1.0mm.) If you drilled the holes all the way through the roof you can bend the ends over

on the underside to make the next step easier.)

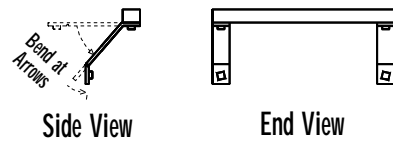
- c. If you bent the eyelet over on the underside, you can now use it as a fulcrum to bend the grab iron around towards the next (inner) hole. Bend it beyond where it needs to be so it can spring back about right.
- d. Now that your corner grab's lying in about the correct spot, guesstimate about where it's loose end needs to turn downward; grip it there with your flat nosed pliers and bend it down enough so's to mark it.
- e. Clip excess off and complete your bend and test it for fit... If you're happy with it, using that paper match as a spacer, ACC the ends and eyelet in place, repeat for the opposite end. . .
- f. When the ACC has set up completely, nip off the two outer edge grab wires flush with the roofs underside. If you don't have a pair of super-sharp flush cutters, you might even have to dress them down slightly using a file. *They mustn't be allowed to interfere with the way that roof sets atop the carbody!*

**F. ROOFWALK END SUPPORTS**

[uu]: We put these on our roofwalk before we painted this subassembly too.. 'Just seemed easier somehow.. Desprue these little guys carefully!

- 1. Using the side views as your guide, fold this parts' tiny legs down to about 45° from its main body, and again right at the ends of its feet.. (There's a "fold line" for the latter.. See sketch.)

**Roofwalk End Support**



- 2. Carefully cement these parts up underneath the roofwalk's ends. They should be flush with the outer edge of the roofwalk.

**G. RE-TEST ROOF TO CARBODY** . . . Again, it should fit like the proverbial glove. If not, did you clip the ends off those roof-edge mounted grabs?

**H. P PAINT ROOF SUBASSEMBLY NOW** . . .

It'll be a whole lot easier to do this now, with the roof OFF,



mond files have no "teeth" to snag those grab iron ends! ) But lacking a diamond file, you can "make do" with a 6" or 8" Mill Smooth, if you're real careful... The main thing not to do is allow your file to snag one of those grabs and knock it loose. That'd be a real bummer now, wouldn't it? ( Of course, since there's no paint involved yet, you can always put the "fix" on it if you have to... Instructions "bounce around" indeed! )

**STEP #8: BACK TO THE UNDERFRAME**

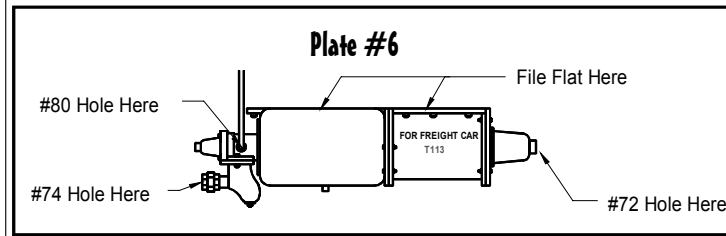
The cemented parts on what you've built up so far should be welded sufficiently by now to add more stuff to the underframe before painting.

**A. T RUCK BOLSTER SCREW HOLES.** Drill #61 (.039" - 1.0mm ) holes squarely through each bolster to accommodate the truck mounting screws. Chamfer both sides of these holes (using a larger drill, or your #11 blade), to remove any burrs that might be left over from this drilling operation.

**Note that chamfering these holes** will go a long way towards making a model that "sits right" without "rocking" down the track.

**B. BRAKE CYLINDER [X]:** Remove all traces of parting lines, as usual. The prototype's brake cylinder is really a combination "Brake Cylinder" and "Air Reservoir," the reservoir end being the larger diameter of the two.. Attached to the reservoir end is a "triple valve" and a "dirt collector" with a "pipe" extending from it, to which the crossover pipe will later be attached.. The brake cylinder, at the opposite end, has a hole into which the "brake cylinder rod" will later be fitted. . . **Refer to Plate #6. . .**

- 1. **De-sprue Brake Cylinder [X]** and, using your mill file, file the molded on "mount" situated beneath the reservoir ( fat ) end nice and flat.
- 2. Leaving mounting pin intact on cylinder end, scrape mounting pad with the backside of your #11 blade so's to try and get it as close as possible to flat too.
- 3. **Test fit** atop "U" shaped mounting brackets on frame. The object here is to *get it to set nice and level atop those brackets without removing too much material!*
- 4. **Ream hole** at brake cylinder end using your #72 (.021") drill.



5. If you intend to later add the **Retainer Piping** to your model's underbody, you need to drill a #80 hole straight through the "dirt collector" end of the cylinder as shown in **Plate #6** too.

6. **Clip off "Pipe"** from dirt collector end of cylinder, right at the molded on "Pipe Union"... Clip it off nice and square. Then, using a prick punch, a needle, or a straight pin, make a mark directly in the center of where that pipe used to be. Using a **#74 Drill**, bore a .0225" diameter hole into that molded on "union". A hole about as deep as the drill bit is in diameter will suffice.

**7. LINE UP BRAKE CYLINDER:** Position the brake cylinder atop the mounting brackets, lining it up front-to-back as shown on underframe drawings.

**Use CROSS-OVER-PIPE [C1]** to line it up - side-to- side. ( The brake cylinder **MUST LINE UP WITH THE CENTER OF THAT "PARTIAL ELBOW" ON "C1"** if you plan to get your cross-over pipe installed correctly later on.

It's not likely, but it is possible that you'll have to clip off the brake cylinder's mounting pin to get it to line up with that cross-over pipe.

When you're sure you have your Brake Cylinder aligned correctly, MEK it in place!

**C. COUPLERS & COVERS [ 6, gg ]:** After all the above, this step is easy as pie! ( Or is that PI? )

- 1. **Install Kadee #26 Couplers** per Kadee's instructions. (Springs go into the pockets first! ) #26's fit perfectly in these boxes... And yes, at this point they have considerable overhang.
- 2. Give coupler shank and spring a liberal coating of **NEO-LUBE** while you're at it. ( Makes for much freer movement later on! ) Allow it to dry a few minutes.
- 3. **File off any parting lines**, then test fit covers in place. Each has a pair of "side rails" on it that will need to be filed slightly thinner from the inside so the cover can be fitted over the couplers' centering spring easily.
  - a. The cover should fit snugly atop the coupler pocket, its "side rails" straddling the centering spring.

b. Test the coupler's operation. If it swings properly, cement the covers in place now using MEK.

**D. WEIGHT [W]:** First off, run your mill file around its perimeter so's you don't risk a nasty cut on a sharp edge. . . Then Make sure that weight is **FLAT** and **STRAIGHT**..

- 1. Test fit weight into the "cavity" on the topside of the underframe assembly..



**NOTE:** Weight must fit in between bolsters without forcing them apart or your model will end up with coupler height problems!

- We scribed "board lines" onto our weight using the board lines on the floor as our guide. . . A straight edge and a carbide tipped scribe will make short work of this. . . Not required, but what the hey, it looks cool, doesn't it?
- File off any ridges left by this process, then add some "wood grain" if you like by making a few swipes with a piece of 180 grit sandpaper... Sand WITH the board lines... ( Grit # isn't critical..)
- When you're happy with its appearance, and satisfied the weight fits properly, carefully ACC weight in place atop stringer assembly. We put a tiny drop of the stuff atop each crossmember at the center, then placed the weight into them, making certain the frame's lined up nice and straight in the process. Hold for a couple minutes or so to allow the ACC to "take".

## STEP #9: PAINTING SUB-ASSEMBLIES

**P PAINTING:** If you're like I am, you'll want the inside of your model to look like bare, "Natural Wood", while the outside is the familiar "Freight Car Red." Now's a good time to spray the parts you've detailed up so far.

### A. SPRAY INTERIOR WALLS AND FLOOR:

I used our own "Star Brand" STR-12 : "Natural Wood" for all of the inside walls and the floor. I sprayed the top, bottom and side edges of the floor.

Then I sprayed all the inside walls with the same color. No need here to paint the top and bottom edges as they'll be either covered (top) or painted (bottom) freight car red.

[ An "aside" here is that, years ago when we lived in Chama, we ran 7 different "P-B-L Freighters" in cooperation with the C&TSRR. On one occasion we used one of the "5500" Stocks for a sort of "emergency potty car", and whilst cleaning the car initially, I couldn't help but notice how great the condition was of the wood inside which hadn't been exposed to the weather! The conclusion I drew from this was that the Sun causes more weather damage than the elements! The Creator must have taken this into account when he made wood, eh? ]

### B. SPRAY EXTERIOR WALLS:

**1. I used Star Brand STR-01 : D&RGW Freight Car Red** to paint all of my models' exterior parts. Obviously, this is only a "beginning", and more exterior paintwork will be required later.

- CARRIER IRONS [ II ]:** Although you won't be applying these until almost the final step, spray 'em now while you're at it. Spray 'em right on the sprue. ( Don't de-sprue 'em. )
- SIDE DOORS, END DOOR [M, P]:** Dress these parts using your mill smooth file. I chamfered the back edges of mine in order to allow for some "shadow effect" after the model is finished. In any case, their backsides need to be smooth.
- MAIN UNDERFRAME ASSEMBLY:** About the only way to get a decent, "no holidays" paint job on this is to spray it now. Freight Car Red is the color..  
You'll note here that I didn't mess with the roof just yet.. There's a reason for this as you will soon see..

## STEP #10: TRUCK ASSEMBLY

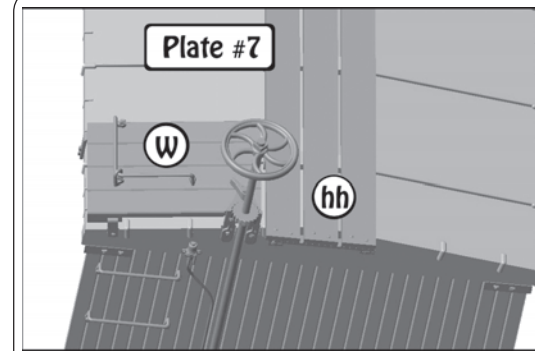
Since you need time to let that paint CURE properly, and you've got to do this anyway, as the old saying goes, "There's no time like the present..", and since these things are a slam-dunk to build, let's get on with it! 'You ready?'

The trucks on this model, of the Cast Steel "Bettendorf Type", were pretty much peculiar to the C&S Type III (or so called) freight cars. They're of our latest "snap fit" design and go together like they had eyes! Build them up carefully and they'll roll like crazy! Here's how:

( You might want to blast all the truck sideframes and spring planks as noted on the previous pages' "Modelers Tip" before you begin this step. )

- BOLSTERS [1]:** Snap (or clip) bolsters from their sprue. Remove parting line flash.
- SIDEFRAMES [2]:** Scrape any parting line flash from side frames.
  - Chamfer (ream) holes** slightly in truck sideframes where journal covers will be pressed in using a sharp #11 blade. ( I actually used an OLD #11 blade for this step; snapped its tip off about 1/16" in; and not only was it "new" again, it was about the right width to act as my "chamferer"! Fact is I keep this setup in a second knife handle specifically for operations like this. Clever, eh? )
- JOURNAL LIDS / COVERS [3]:** Find the shot containing these but don't desprue 'em quite yet.

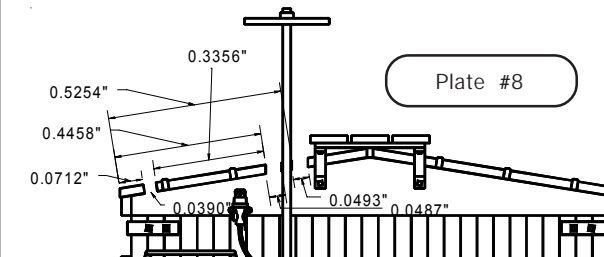
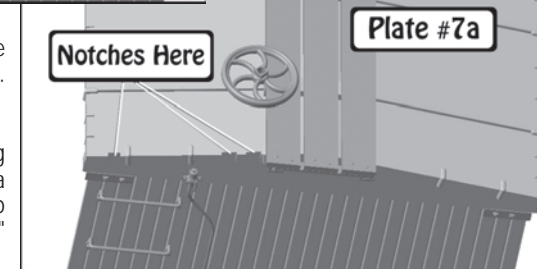
- Using their sprue as a fixture for holding them, use your thumbnail to press one cover into it's mating hole in the truck's sideframe. Make certain that it's "hinge" faces up as in the drawings.
- When it's firmly in place, nip it off the sprue using your #802 or #804 De-Spruing Nippers. ( You can accomplish this with a #11 blade too, if you're really careful.)
- Straighten the cover up with a pair of flat nose pliers, or somesuch.



of the sides match the pitch (angle of slope) of the ends. Easy does it...

### A. FORM ROOF to fit roof pitch.

- Scribe Line** down center using roofwalk locating holes as a centerline guide. Make line deep enough to allow plastic to "give" a little.



- Place Roof's inside** centerline over sharp corner of Desk or Workbench. Bend it slightly beyond where it needs to be, then bend it back works best here. Test fit often to ensure it fits tightly end-to-end..

**B. Notch "B" End of roof** to clear **Upper Staff Bracket [hh]** and **End Roofwalk Supports** (See step "D-1" on next page.)... Depending upon how fastidious you were in assembling the car body so far, the roof will probably have at least SOME overhang.. To provide the upper staff bracket and the nearby roofwalk support with a place to fit snugly against the end facia board, it will likely be necessary to remove a short section of material from the roof's edge in these areas... (This was prototypical, by the way.) Refer to Plates #7 - #8 and top view drawing...

- Lay out notches ( scribe marks ) using dimensions on **Plate #8.**

- Determine how much the roof is going to overhang the facia, then, with roof removed, and using your sharp #11 blade, carve away the material in between these marks to the depth you've decided will suffice to make this "notch" flush with the end facia board... Test roof in place often.. 'Wouldn't want to carve away TOO much, now would you?'

**C. ROOF-WALK [ss]:** Dress sides of roofwalk to remove parting line.

Note that the roofwalk has three pins under it, in addition to no less than thirteen supports besides. Test fit it atop your roof now. Fit OK?

Re-test to see that the "pitch" of your roof matches the "pitch" of the cars ends, and that it can easily be made to lie flat the entire length of the carbody before proceeding.

- Beginning at one end of the roof, while holding the roof and roofwalk tightly between your thumb and forefinger, carefully run a tiny bit of MEK into the joint formed between the roof and the endmost support.

Use that MEK sparingly! It'll be all too easy to put too much on and have it run right through that groove in the roofwalk support and out onto the car roof itself. ( And yes, we speak from experience. Oops... )

- Proceed down the length of the roof**, eyeballing from end to end to verify alignment, while holding each fresh joint long enough for its weld to "take."

**D. END ROOFWALK PLATFORMS [vv]:** One for each end of the car. On this model, we moulded them in very thin but very strong ABS plastic. You'll soon find out why... On the prototype, these things were spaced off the roof by "strap-steel" "Roofwalk Supports."

- "Roofwalk Stand-Offs"** On the real thing, these are simply pieces of steel "strap", bent down at an "almost" right angle. Since ABS Plastic doesn't tend to be brittle, you should be able to bend the straps down so as to approximate the illustration in **Plate #9** without a hitch.

**IF YOU BREAK A SUPPORT:** Don't panic. It's not a mortal sin by any means. These Roof Walk Platforms have "spacers" moulded onto their undersides to prevent them from being spaced off the roof incorrectly; So simply cement the platforms in place, then add the supports where they "look



will now be tested, but fortunately this is not as critical as it sounds. If you work fast enough, the floor will square things up nicely.

- Are you satisfied with the fit? Then **weld the ENDS together now with MEK**. Once again, allow time for these welds to cure.
- DON'T CEMENT THE FLOOR IN PLACE JUST YET.**

## STEP #12: INSTALL UNDERFRAME ASSEMBLY...

Comin' down the home stretch now... If you paid attention to the notes in **Steps 6 and 8**, it should fit like the proverbial glove. Hopefully, you didn't cement the floor in place yet... Did you?

- Making certain "A" end faces "A" End and "B" End faces "B" End, test fit underframe assembly into bottom of carbody. It's designed to fit snugly and to force the sides to be nice and straight. If it doesn't, something's amiss.. Best you figure out what it is and correct it... Adjust it to fit but don't cement in place just yet.
- TRAIN LINE [T]:** If you can find that "grab iron match", use it now to **wedge the train line towards the cars bottom**. ( Think: DOWN direction when the car is sitting on it's wheels.) **Then glue the train line into the bottom of the "slot" it's lying in**. Repeat for all six crossmembers.
- Test fit Underframe Assembly** into carbody again, "**B" End facing "B" end**... (Refer to underbody drawing..) Make any final adjustments deemed necessary now.
  - "Tack" underframe in place** lightly w/MEK at each end of two center crossmembers. This is going to take awhile if you're like us and got paint on the mating surfaces.
  - Then center up the floor, side-to-side, and run a dash of MEK between it and the outer sill at the doorway.
  - Lookin' good so far? Then complete the cementing of the underframe assembly to carbody. It should be a pretty darned rigid unit at this point!
  - Check out how Trainline butts up against the Airhose Pipe, as shown on bottom view drawing? Clip off Trainline so it ends up about .060" short of reaching the cars end. This will allow some fudge factor when you get to installing the air hoses later.
  - At this point in time, the car will want to sit "bottom side down". I screwed my trucks in place, sans wheelsets, to offset the possibility of damaging the couplers and other details.

## STEP #13: MORE CAR BODY DETAILING

- SIDE DOORS [M]:** All doors on this model are positionable. Although it's not very often that you see photos of any cars with their doors ajar, for "loading" the occasional model with an open door can add life to a scene. Like if there's an open door, there must be a workman around someplace, right?  
So position your doors as you like and cement 'em in place now with MEK.
- BOTTOM CORNER IRONS [H]:** Four of these and they're all alike. Have a look at the drawings and photos and go for it! There are "score marks" on the backs of these parts to facilitate correct bending.

- Desprue corner irons [H]:** Fold part to slightly more than a right angle, allowing it to spring back to 90°.
- Fit [H] to the RIGHT-HAND BOTTOM CORNER.** (As viewed from the cars end..) Position properly and apply a tiny bit of MEK to "tack" it in place on the end. **GO LIGHTLY ON THE MEK!** These parts are THIN (Read: they'll melt easily!), and too much MEK will cause 'em to "sink" in places... And they could mess up yer paint job besides. Not a pretty sight. . .
- Once end is cured, MEK against side too.
- Repeat for opposite side of end, then opposite end of car.
- INTERMEDIATE CORNER IRONS [I]:** There are four of these also, and they too are all alike. Note how, on the car body, there are "cross timbers" upon which the ends of these mount? And that the other part of this detail is already molded onto the cars ends?

- Line up each one, per the side view drawings, apply MEK, and you're in business!
- TOP CORNER IRONS [J]:** There are four of these also, and they too are all alike.
  - Fold each iron** as in "B" above, line each up per the side view drawings, apply MEK. Done!
- DRILL HOLES FOR STIRRUPS [oo]:** Although you'll be installing the stirrups almost dead last, we recommend you drill these through with your #71 drill bit now so you don't forget. The bottom corner irons are your "template" for the outer holes; The inner holes are partly cored so just bore 'em through.

## STEP #14: BUILDING UP ROOF...

Holding your carbody upside-down in one hand, drag it across your big mill file (or a sheet of sandpaper glued to a flat surface..). The idea here is to ensure that the top edges

## D. SIDEFAME TO BOLSTER ASSEMBLY: IMPORTANT!

- Noting which is the top of both parts, simply press one sideframe into the slot in the end of the bolster until it "clicks" into place. It will swivel slightly allowing your truck to equalize perfectly!
- Install Mounting Screw in hole before pressing second side-frame into place.
- Press opposite sideframe into place.
- DISASSEMBLY? We don't recommend it!** If you forgot to install the mounting screw, you'd be better off to carefully slice a bit from the end of each sideframe mounting lug while it's still in its bolster.

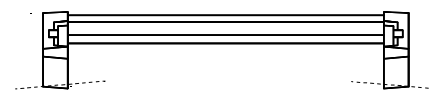
## E. SPRING PLANK / BRAKE RIGGING [4]:

- This part will snap into place atop the bolster easier if you **ream the two holes ever-so-slightly from the INSIDE ONLY!** Use your #11 blade.
 

**NOTE:** It might be necessary to carve away a bit of a brake shoe if it interferes with good rolling qualities. See sketch below for area to remove. A good freight car should have SOME friction, or it won't offer reliable coupling / uncoupling. But perhaps that "some" will be accomplished when you put a weighted car atop the truck?
- You also might want to ream the large center hole in the Spring Plank so you can get your small screwdriver through the hole to adjust / install the truck later without having to remove the spring plank?

Brake Hangers / Shoes

(Viewed from Top)



Slice away Draft Angle from Brake Shoes at Dotted Lines

- PAINTING WHEELSETS?** Your model is equipped with some of the finest detailed wheelsets in the industry... Ribbed backs, "Griffin Denver" on their faces... Beautiful!  
We elected to give our wheelsets a coat of **NEOLUBE**. Make's 'em look like polished steel. Brushing is the best way of applying this stuff. Just remember not to paint across the insulating bushings which could cause problems

with the operation of your Sound System later.

If you intend on PAINTING your wheelsets, you will first want to wash them in some strong solvent (like MEK) to remove any residual oils left over from the coining process... **DON'T SOAK THEM IN MEK HOWEVER** as it could affect the integrity of the plastic insulating bushings...

## MODELERS TIP:

Getting paint to "stick" to "Delrin" or "Celcon" types of "Engineering Plastics" can be a challenge. The stuff is just too slippery!

We overcome this slickness by blasting our Celcon parts with 220 grit aluminum oxide in our bead blast cabinet.

Lacking a purpose-built cabinet like ours, you can accomplish the same thing if you have one of those Paasche "Air-Erasors". Then your paint won't be tending

**G. PAINT TRUCK SIDE FRAMES** and spring planks Freight Car Red. This'll give 'em time to cure. See "Modelers Tip"...

**1. Mask Off Holes in Sideframes** where axles will later roll. Why? Because paint makes a lousy lubricant, that's why!

**2.** Because they're made of a real slippery engineering plastic to which paint doesn't much like to stick, it would be best if your paint can surround each part completely so that it sort of holds itself together.

**H. WHEELSETS [5]:** Don't snap these in place just yet. You'll see why in a bit.

## STEP #11: CAR BODY ASSEMBLY

Essentially, what you'll be doing here is assembling the two side / end assemblies together, forming a box around the floor.

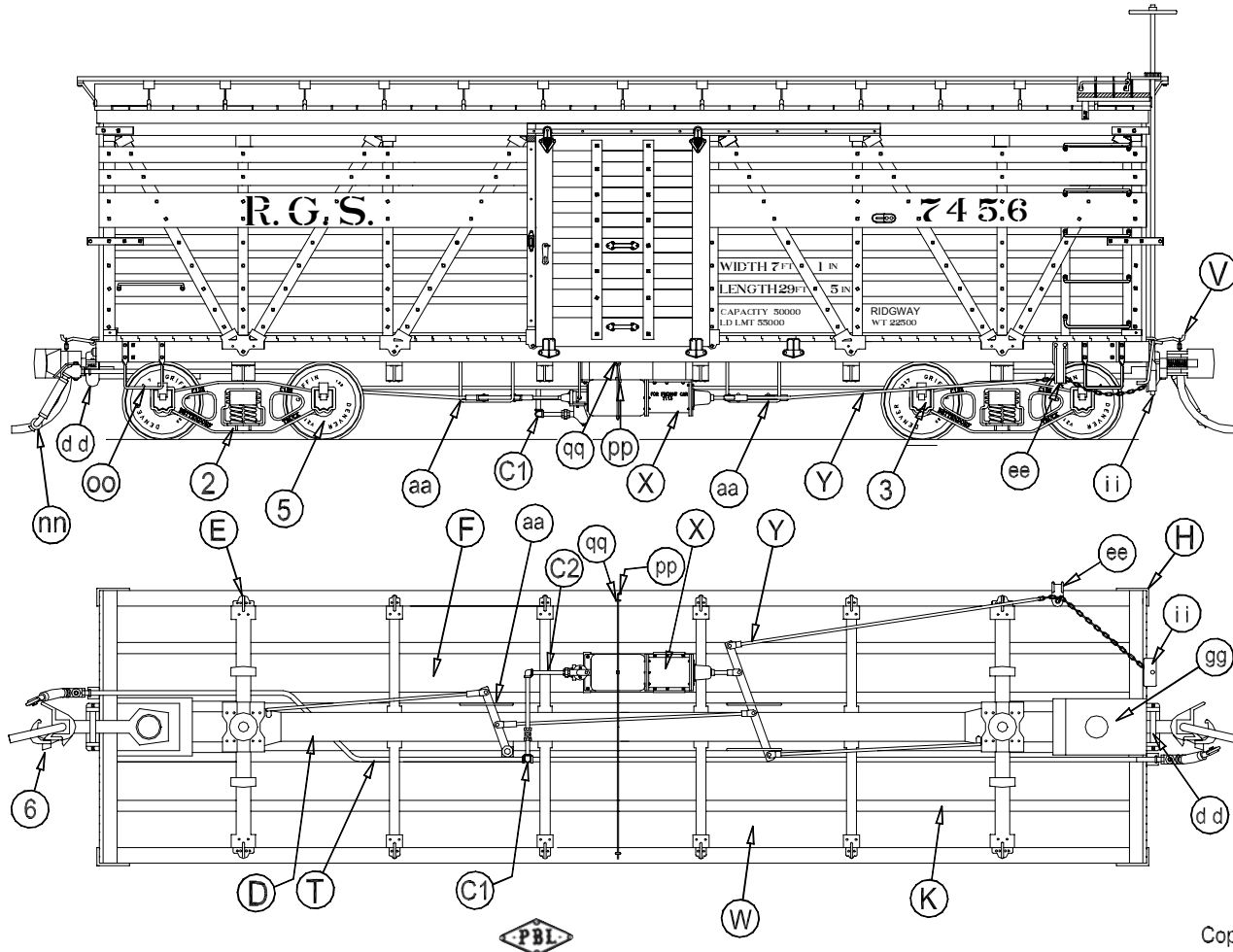
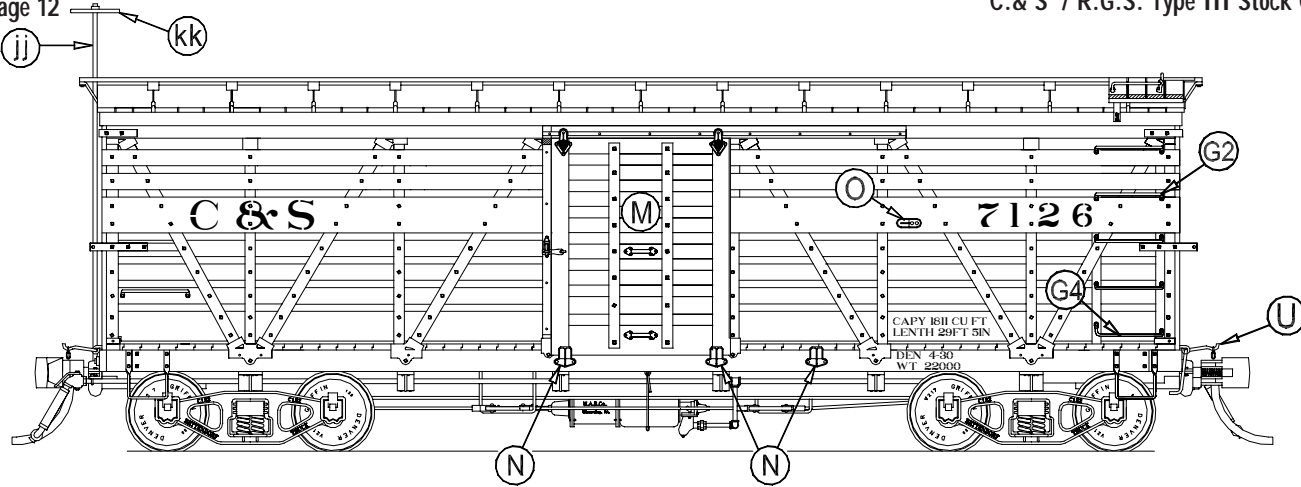
If you used STAR BRAND PAINT during Step #9, the paint will be plenty dry enough by now to allow handling. We used one of our **PBL-810 Weathering Brushes** with the Fiberglass Bristles to "Scratch Brush Weather" the floor and the lower side boards inside our model. ( See "Using Weathering Brush Technique" at the tail end of this dissertation. . . )

**A. ACTUAL CAR BODY ASSEMBLY:** A few short steps to success! Don't forget: You now have a "B" Side to match that "B" End!

**1. Begin by assembling "B" side to "B" end.** ("B" Side has **Chain Roller Guide [ee]** mounted on it. ) Try to see to it that these parts end up nice and square and flush at the bottom. ( Think: "Even". ) Don't rush this! Allow time for the MEK to work. These welds need to be strong! Repeat for second side / end.

If you're really anxious to keep crankin', why not give those wheelsets one more coat of **NEOLUBE**? That'll give the welds a little longer to cure.

**2. Once welds have "taken",** Test fit the floor in place into the first side / end assembly. Don't cement yet. Next align the second assembly. The squareness of your assembly

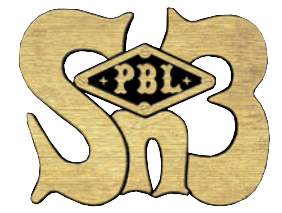


Colorado & Southern / Rio Grande Southern  
 "Type III" Steel Underframed Stock Cars

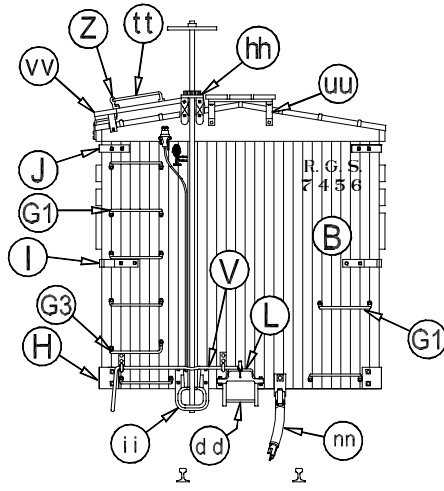
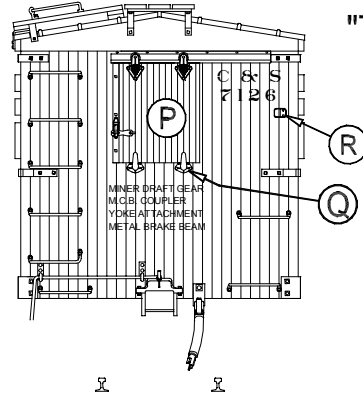
Scale = "Sn3" - 3/16" = 1'0"

For Painting and Lettering Details  
 visit P-B-L's Web Site at [www.p-b-l.com](http://www.p-b-l.com)

Then click on "Rolling Stock".



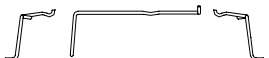
**MODELERS TIP:**  
 Take advantage of the properties of MEK and allow "capillary action" to "pull" the liquid into joints and corners. Apply sparingly using a 00 or 000 brush.  
 If you mess up somehow and end up with MEK where it's not wanted, quickly blow on it and it'll evaporate almost instantly, leaving almost no trace whatever!



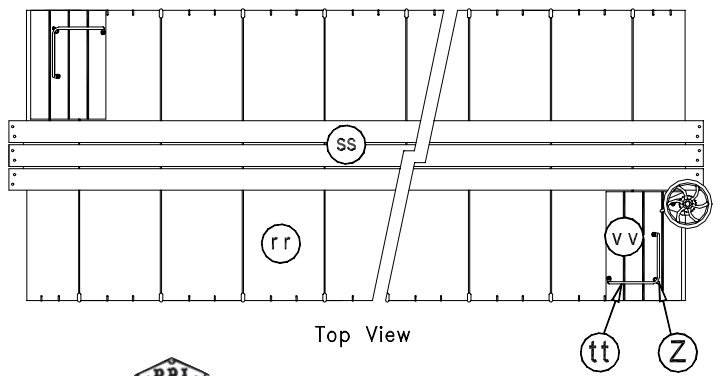
"B" End Coupler Lift Bar [V]



"A" End Coupler Lift Bar [U]



Bleeder Valve Control Rod [pp]



Top View

