Masters-2002

Build a 2-6-6T / 0-6-6T Mason Bogie

An Adventure in 1:20.3

By David Fletcher

Dedication.

I dedicate Masterclass 2002 to my dearest Mummy. She raised me, and encouraged my model making efforts throughout my life. Even at the destruction of her own kitchen benches and floors with my knives and paints, did she encourage my passions. She was a professional musician, scholar and mother. She was the finest person I ever knew, and I'm glad to have told her my feelings for her before she died. She was diagnosed with secondary liver cancer in December 2001, and the year that followed was traumatic, but all the while she continued her music and finished writing her PHD - a thesis on the life of the 1700s Italian painter 'Tiepolo'. Over 30 years we traveled to many parts of the globe together, riding trains on one day and looking at the paintings of Tiepolo the next. She enjoyed my journal articles, the Master Classes and thought the class members were a 'riot'! and I enjoyed reading her many articles about Italian Artists. She also actively helped in the construction of our garden RR. We were never far from each other and I was with her when she passed on.

Rest in peace my dear Mummy.

Joy Gwyneth Fletcher,

27-01-1940 to 17-12-2002.

Chapter 4 - Of Mice and Cabs.

Background – Construction

Welcome back to the Mason show...and onward we march. This month we get to building the cab. This can take several forms. You can purchase our exclusive FH&PB Mason cab kits and build them per the FH&PB instructions. You can totally scratch build your cab with fully sliding and swinging doors and windows. Or you can scratch build your cab with doors and windows fixed into place, making life simpler, and creating a stronger cab while you are at it.

For info about the FH&PB Masterclass 2002 mason cab kits, refer to this web site:

http://www.nmia.com/~vrbass/fhpb/

Background - This month George Sebastian Coleman is back to tell us something about the Masons of the South Park and the complexities of the Mason, South Park cabs. Big thanks to George for this chapter and assisting our understanding of this complex Mason cab.

Construction - On to the cab construction. Those who have the FH&PB cabs can forward through most of this chapter, stopping only for some of the super-detailing tips appropriate for both kit built and scratch built cabs. We meet up at the end to talk about how the cab will be fixed to the deck.

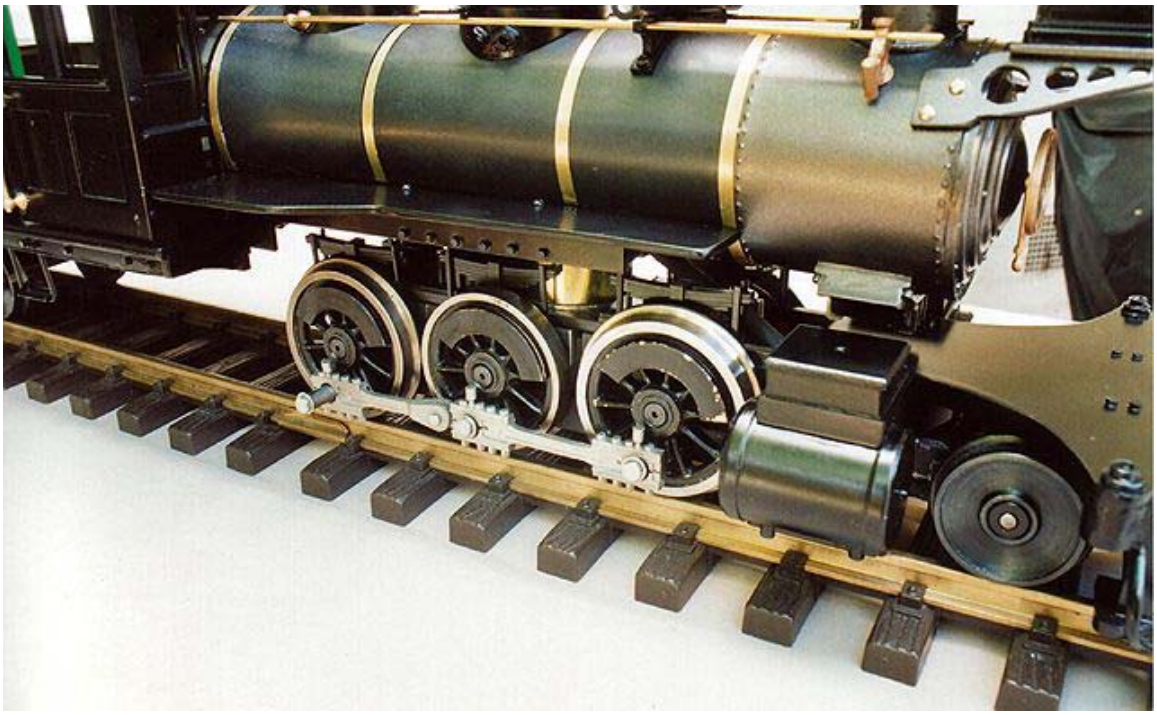
MC2002 Product Development

Fall River Productions

Keep an eye on the development of the headlights at Fall River Productions. These are outstanding in detail, accuracy and are appropriate to our model. John Clark will keep this page updated to keep us in the loop. **http://www.fallriverproductions.com/**

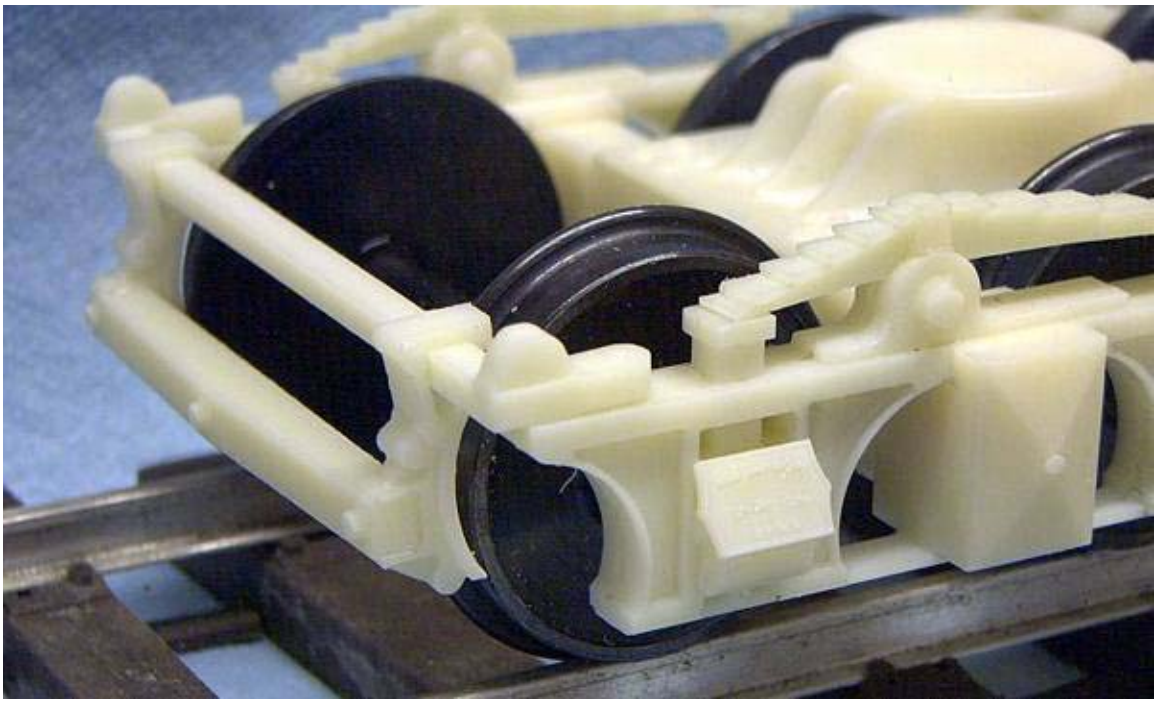
BBT & CSC Innovations

Chuck Meckem at CSC Innovations has been doing some downright unbelievable work for all of us. Of note are the fully cast, highly detailed metal side rods that will be fitted to your BBT Mason chassis as standard, Chuck developed the masters for these side rods, under Barry Olsen's instruction. Casting is in Magnesium Bronze. We have a great team here- Barry for drawings, tech help and project mangement. Chuck Meckem for masters patterns and Dennis Mashburn for outstanding casting work.



The BBT/CSC innovations cast side rods...oooh ahh...NICE!

Chuck and Barry have also finished the Mason 6 wheel tender truck masters for our BBT chassis. Now, these trucks are incredible. Fully detailed to the last bolt! These will also be cast in Magnesium Bronze and will contain electrical pickups and option for rear coupling mount.

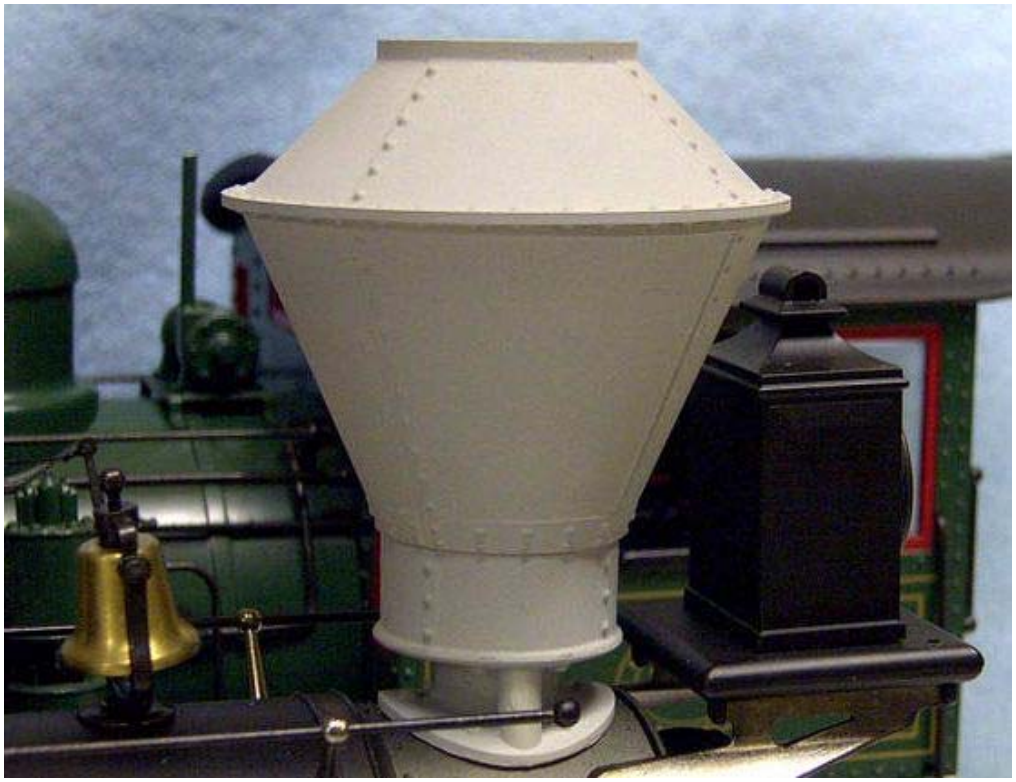


A close up of the Mason Tender truck master, developed by CSC Innovations and BBT.

Barry and chuck have put many long hours into both new products.

The NPC Smoke Stack.

Finally Chuck at CSC has been developing new products for his own line of locomotive detail parts, and the latest is a real corker! Behold the new SPC/NPC stack developed for Bachmann's 4-4-0, South Pacific Coast #3. This stack is prototypical for many Californian roads, including the NPC, owner of the Bully Boy and San Rafael Mason Bogies.



The new CSC Innovations SPC/NPC stack..Good for use on Bully Boy!

This new stack is absolutely perfect for use with the 'one the road' version of Bully Boy, option 6. The stack base curvature will also match our Mason smokebox diameter from chapter 3. The Price is very reasonable for such a highly detailed part. Please check the CSC web site for prices and availability.

http://www.cscinnovations.com/

The Mason Bogie Archive.

Keep reviewing the Mason Bogie Archive.

http://www.ironhorse129.com/

The site is constantly being updated as more photos of Masons come in. Keep searching your books, old photos and magazines, and send us any Mason Bogie photos you might find that don't appear to be in the current Archive. Also send us pictures if your images are clearer than the many we have in the current Archive. E-mail the images as a jpg scan; 300 bit-per-inch images preferred.

The Masterclass Forum.

Please direct your discoveries, discussions and questions to our Masterclass and Articles forum at Mylargescale.com.

http://www.mylargescale.com/forum/forum.asp?FORUM_ID=46

The Ghosts of Mason Bogies Past, Present & Future.

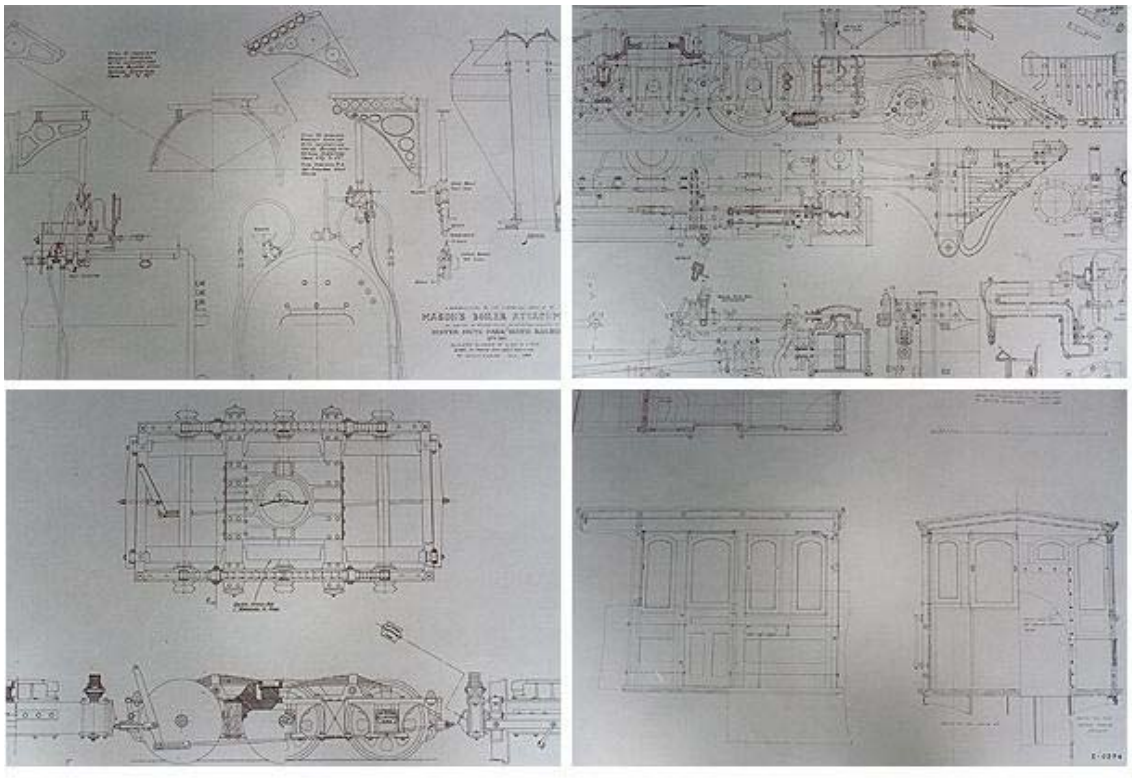
The Art Wallace Legacy.

You've all heard his name. His is synonymous with the name 'Mason Bogie' because I don't believe there is a living soul who has done more, gone farther, or looked harder than Art Wallace, in his quest to unravel the mysteries surrounding the Mason Bogie. Everything we know about the Mason today has been influenced in some way by Art's research. Nearly every published drawing ever done of a Mason is likely to have Art's name on it, and even some that do not have his name have been copied from Art's drawings! His drawing of the 'light' 2-6-6T published in the Sept 1960 Model Railroader is a classic. It has been reprinted, copied, traced, and plagiarized for many years!

Art's quest spans 40 years and today we build our 1:20.3 models from his very drawings. He has published drawings of every type of Mason used on the South Park as well as various 0-4-4Ts. His first drawings date to sometime in the 1950s, his most recent are from the mid 1980s. With every drawing done, more is clarified and as such a comparison of early to more recent drawings will reveal inconsistencies. That is the nature of research and is also a very clear indicator that we should, wherever possible, follow the latest research and drawings.

The most recent set of drawings are the most complete ever done of a Mason Bogie. These are 'reconstructed' engineering drawings of the South Park 2-6-6T, both light and heavy types. There are 7 large drawings to the set. Each drawing illustrates one of the major sub assemblies of the Mason in amazing clarity and detail, at a scale of 1:8. Details you could never extract from photos. This is the set of drawings from which we are creating our Cad drawings for use in the Masterclass. The drawings are not only incredibly informative about the world of the Mason Bogie, but are a visual delight as well. Here is just a glimpse of Art's drawings which are being used in the construction of our masterclass Masons.

The real proof of the accuracy and workability of these drawings can be seen in the number of Live Steam models that have been built from the set. The locomotives all function exactly to the details in the drawings and they work! Lets take a look at some -



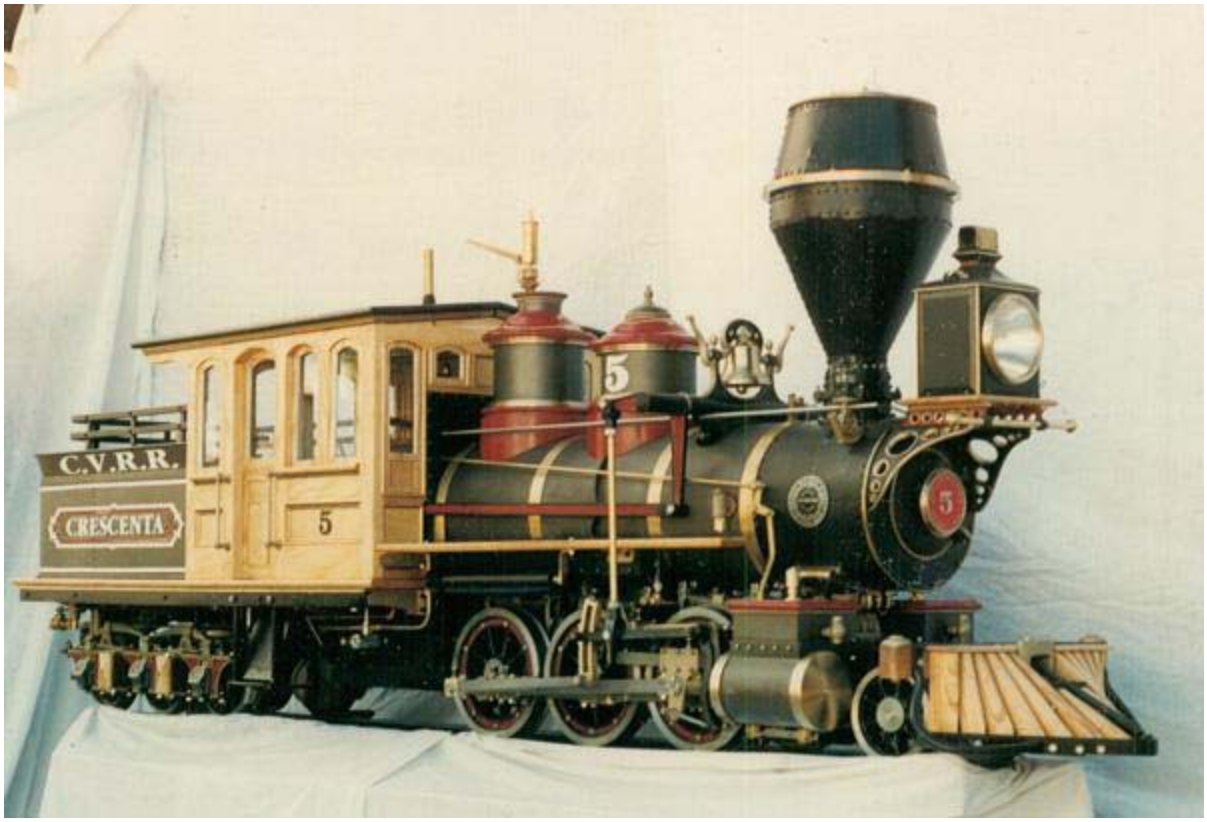
This first 2 1/2" scale locomotive was brought to us by Steve Stockham, and as he explains:

Hey guys! I received an e-mail from Don Hazen, a gentleman who noticed that I was in the Mason Masterclass as well and wanted to give me a "heads up" on a really beautiful 2 1/2" scale live steam Mason Bogie that is on display in the Fine Arts Bldg. at the Kansas State Fair in Huchinson. Since I was working in Hutch that next day I grabbed my camera and went to see it. I'll let the pictures speak for themselves, but it is a beauty!!! 4500 man hours and ten years to construct! It truly is an inspiration. I haven't learned everything about it yet but the gentleman that created this locomotive has a track out at his place to run it on.

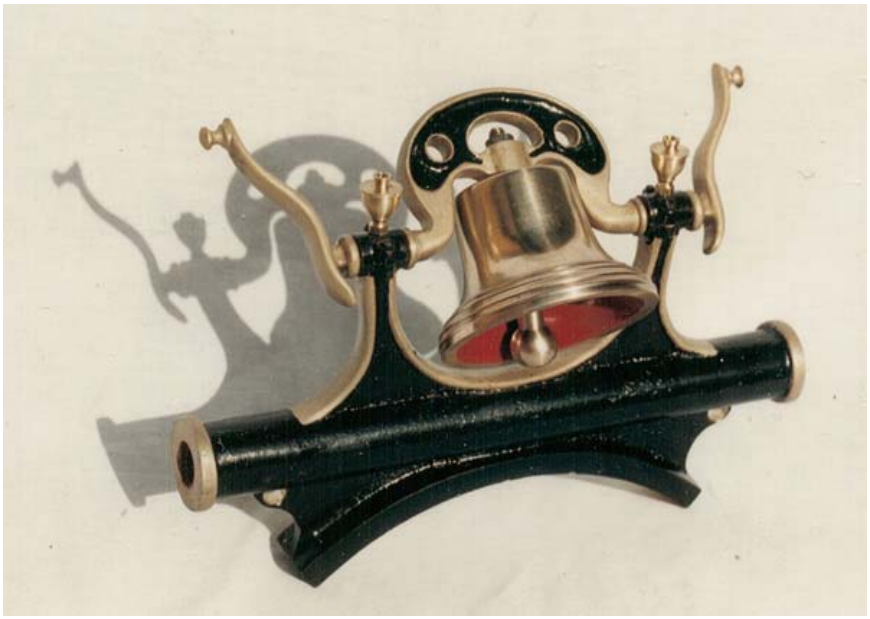
This locomotive was built from Art's reconstructed engineering set and represents the South Park 'Heavy' 2-6-6T type. Photos by Steve Stockham.

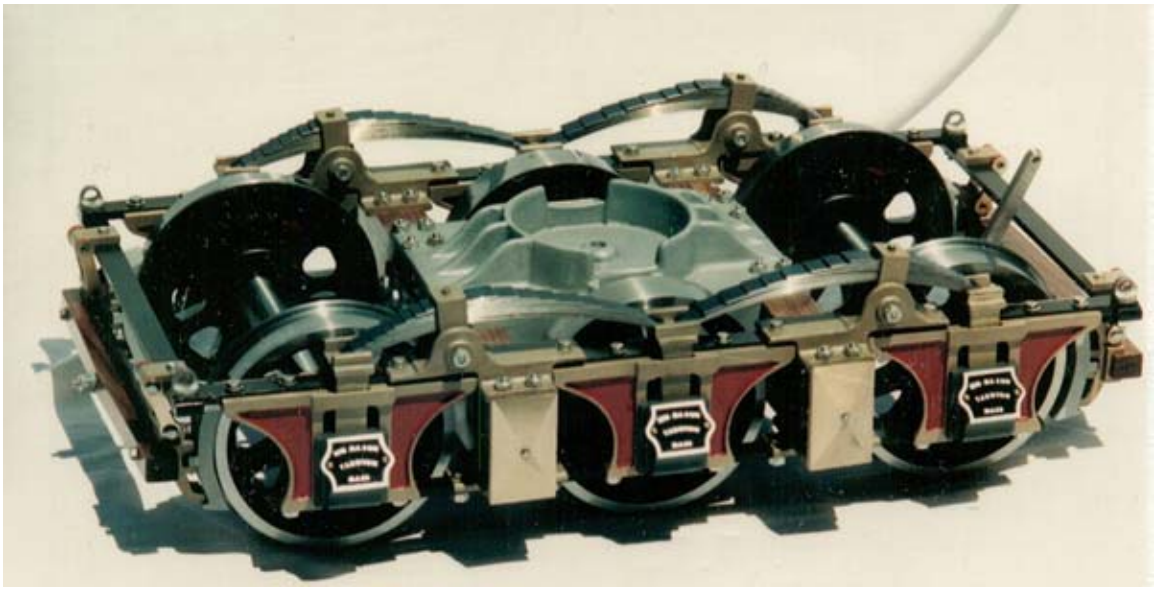
The Ulin Locomotives

This next locomotive is another 2 1/2" scale locomotive and is equally impressive, again built from the same set of drawings. This 'heavy' South Park 2-6-6T was built by Richard Ulin as a commercial venture. These outstanding photos were directed to us by Tom Farin:



Ulin's Mason bell rig...if only we could have that on our models!!! Faithfully reproduced from Art's drawings.



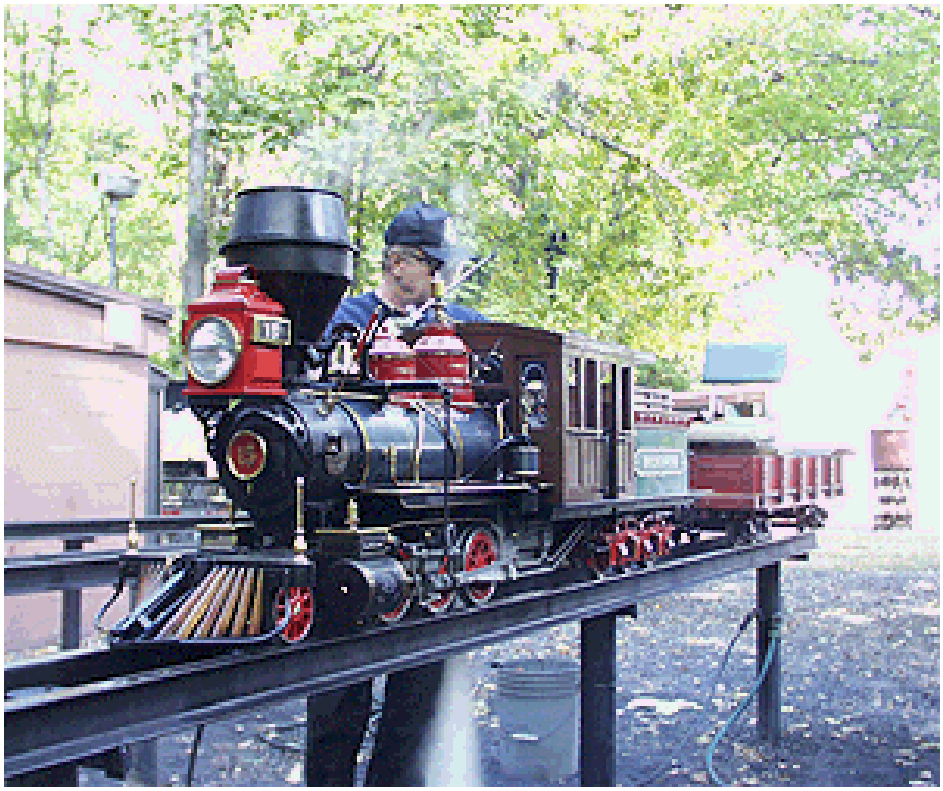


The tender truck.

Richard Ulin's web site covers some info about the locomotive, more photos, and options for purchase! His web site is as follows: **http://www.et-wnc.com/ulinx.html**

The Kurtz Locomotive

Another heavy 2-6-6T built from Art's drawings, again 2 1/2" scale. This one was built by Paul Kurtz.



You will find more photos of the loco in operation at this web site:
http://www.steamingpriest.com/gallery/njls.2001/njls.2001.07.html

...and another 2 1/2" scale Mason, another fine model. Anyone know something about this one?

Rishon Locomotive Works

Finally lets take a look at one more model based on the drawing set by Art Wallace. This loco is a current offering by Rishon Locomotive works of Australia. This is a live steam 1:20.3 scale mode of Breckenridge...also a 'heavy' South Park 2-6-6T.

For more information on the Rishon Locomotives, refer your questions to:

Sulphur Springs Steam Models Ltd.
PO Box 178
St. Peters, MO 63376-3401
Phone/fax: 636-272-3401
e-mail: SSSMODELS@aol.com
or
Rishon Locomotives
8 Ewandale Cl.
Clunes NSW
Australia 2480
Tel. 61266291115
email: rishon@dingoblue.net.au

Background

Mason Evolution on the Denver South Park & Pacific RR.

By George Sebastian-Coleman

In my first article I discussed the general engineering strides and practices of the Mason Machine Works and the development of the bogie design. In this article, I'll address as-built variations within the South Park bogie classes and then cover the general evolution of the bogies on the South Park, highlighting some significant variations along the way. At the end there is a general summation of the "phases" in South Park bogie appearance.

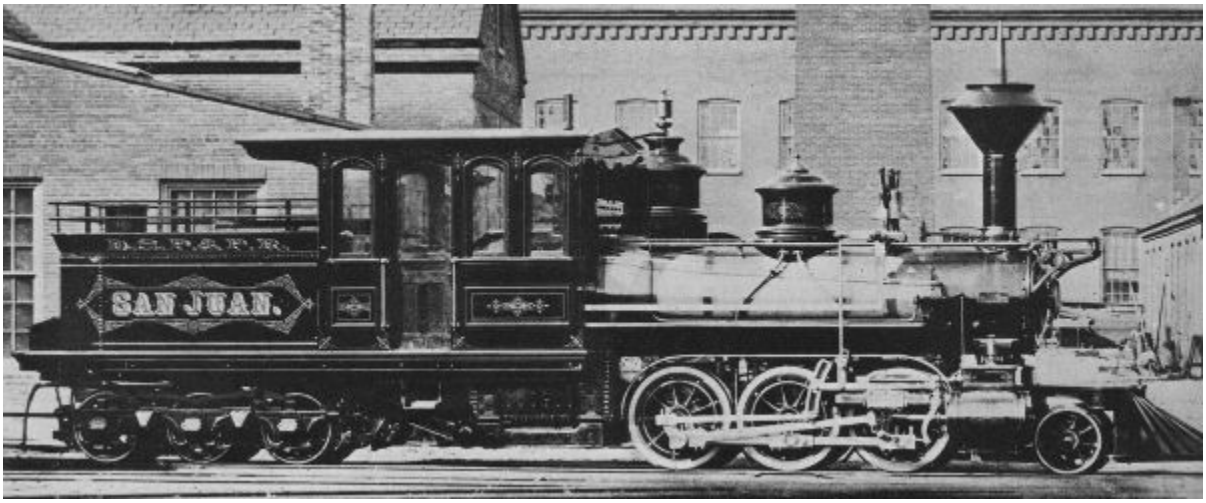
As-Built

The Union Pacific renumbering and reclassification of 1885 placed the South Park bogies into two classes of 2-6-6Ts and one for the 2-8-6Ts. In addition, it placed the former Kansas Central 2-6-6T (DSP&P no. 5) in its "oddball" class (which included one-off engines from all the different roads). Although a reasonably accurate division, the Union Pacific's division of the 2-6-6Ts by weight masks some subtle variations between the engines in each class.

Stacks

The *Oro City*, DSP&P No. 3, may not have been shipped on May 20, 1878, with a small diamond stack of the type shown in the builder's photos of no. 4, the *San Juan* and no. 15, *Breckenridge*. The Mason records for No. 3 indicate the stack type as "coal burner, Fontaine." If it was shipped with this small diamond stack, it was the only Mason ever to arrive on the South Park so equipped.

The *San Juan* file sheet indicates "none sent." for the stack. Beginning with No. 6, the *Ten Mile*, the records show all engines as having Nesmith stacks; this includes the Breckenridge whose tiny diamond stack in the builder's photo has so often been reproduced in model form. The record for no. 5 (built as Kansas Central's no. 5, the *L.T. Smith*) indicates various alterations to make it a South Park engine but is silent on the stack; my presumption is it was shipped with no stack since it follows the delivery of *San Juan* (none sent) by 3 months and precedes the *Ten Mile* (first Nesmith) by 2.



The beautiful 'San Juan', photographed at the Mason plant with a small diamond stack called a 'Fontaine Stack'.The spec sheets show this loco actually delivered to the South Park with no stack actually fitted. Mason would never let possible ugliness get in the way of a good photo if his locos!

However, even if No. 3 shipped with the Fontaine stack, it seems unlikely it was ever mounted on it in Colorado. All early in-service photos show the no. 3 with a Nesmith stack, and it seems likely it received the Nesmith when the shop crews first set-up the engine. What's most interesting about this is that William Mason obviously didn't care for the aesthetics of the Nesmith stack, so despite the fact that by the time he shoots the builder's photo of the Breckenridge he had already built and equipped 9 South Park bogies with Nesmith stacks, he took that perhaps too famous builder's photo with a stack more to his taste, thus

unknowingly condemning modelers to swapping out the stacks on their brass imports for production run after production run.

The 'Breckenridge' posing for a photo at the Mason plant, again the loco has been equipped with a 'Fontaine stack' for the purpose of the photo. The loco was actually delivered to the South Park with a 'Nesmith Stack'.

Draft gear

An interesting experiment was tried on the San Juan and Ten Mile. While the other engines had a conventional drawbar pocket bolted to the frame at the rear of the tender, numbers 4 and 6 carry the notation “Draws from the centre of Tender truck 22” above rail.” In other words, a truck mounted couple as often found on model equipment. Presumably the goal was better operation on tight curves and, no doubt this was true as long as you were moving forward. However, the railroad found, as have so many modelers, that this arrangement is prone to derailment the minute you try to go backwards. Given that number 6 was delivered on April 8, and the Gunnison on the 23rd was delivered with conventional drawbar, either, there was little confidence in the experiment to start with, or the ill effects so obvious that a change was ordered almost immediately. In any case, presumably both engines were converted to conventional drawbars almost immediately.

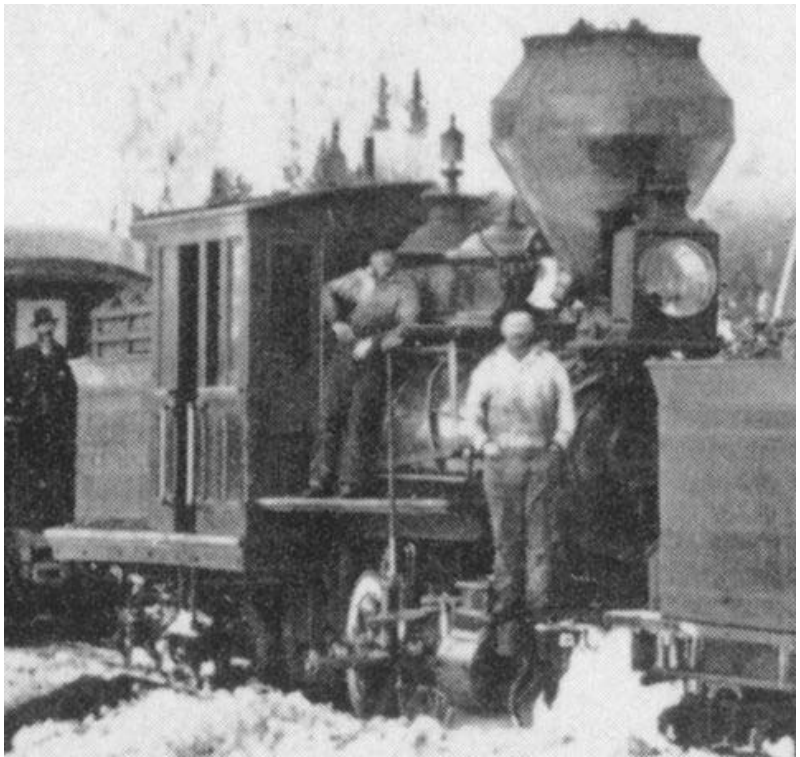
Tenders

One of the most visible changes obscured by the 1885 classifications is tender length. Of the “light” bogies, class DH1, engines 3, 4, 5, and 6 were built with tenders 10’-6” long, 6’-7” wide and 38” tall for a capacity of 1,250 gallons, while 7 through 13 and DI1 9 and 14-22 (the “heavy” bogies) had 11’-6” tenders with a capacity of 1,400 gallons. While numbers 23 and 24, the last two of the DI1s, had 40”tall tenders, raising their capacity to 1450. Given the miniscule change in capacity produced by the change in height and that the 2-8-6Ts also had this dimension, I suspect this change resulted from a shift in the stock size of sheet metal rather than an engineering choice.

The tender frames on all the bogies were the same length, which meant that 3-6 had a small shelf behind the tender that was used for a toolbox.

Boilers

The “light” bogies were built with a nominal 38” boiler—first and second courses are 38” diameter (without jackets) with a crown over the firebox raised 6”. Most of the “heavy” bogies have a 42” boiler, raised 2” at the crown over the firebox. Thus the firebox area of all these engines was identical, the raised crown producing a pronounced “wagon top” on the “light” bogies and a very subtle one on the heavies However, numbers 23 and 24Number 9, the Kenosha, was built with 44” diameter boilers, eliminating the wagon top altogether. Thus despite the break into just two classes, a break into three would have more accurately represented the 2-6-6T bogies, as the 23 and 24 had both larger boilers and tenders than any of the others.



As you may have caught in the paragraph on tenders, the shift to the heavier design didn’t happen perfectly sequentially. For some reason number 9 was built in May of 1879 with the new, larger boiler. Yet it would be followed by four more small-boilered engines delivered in August and September. Number 14, the next 42” boilered engine was delivered in October only a couple weeks after the last light engine.

I surmise the 9 was a “sample” produced by Mason to see if the railroad liked the new design. However, this would seem more likely to me had the no. 9 been followed

immediately by the other light engines and then the two-month gap preceded the next heavy engine, However, it may just be that Mason proceeded to build four more boilers over the summer of the smaller design before finally receiving confirmation to proceed with the larger design.

The DSP&P #9 'Kenosha' - first of the larger boilered Masons..

Evolution

Number 9 provides the perfect transition from as-built variations to evolutionary changes. The *Kenosha* is one of the few Masons for which we have an in-service picture that clearly shows the original paint scheme. The picture is taken at Hancock and is remarkable for several points. It is the only picture that shows a Mason double-headed with the Mason as the road engine not the helper. Serving as the helper is Baldwin no. 56, also in pristine original paint. The year is surely 1882 as we are at Hancock but we do not yet have air brakes. But the most remarkable aspect of this is that the *Kenosha* has a “modern” square-windowed cab.

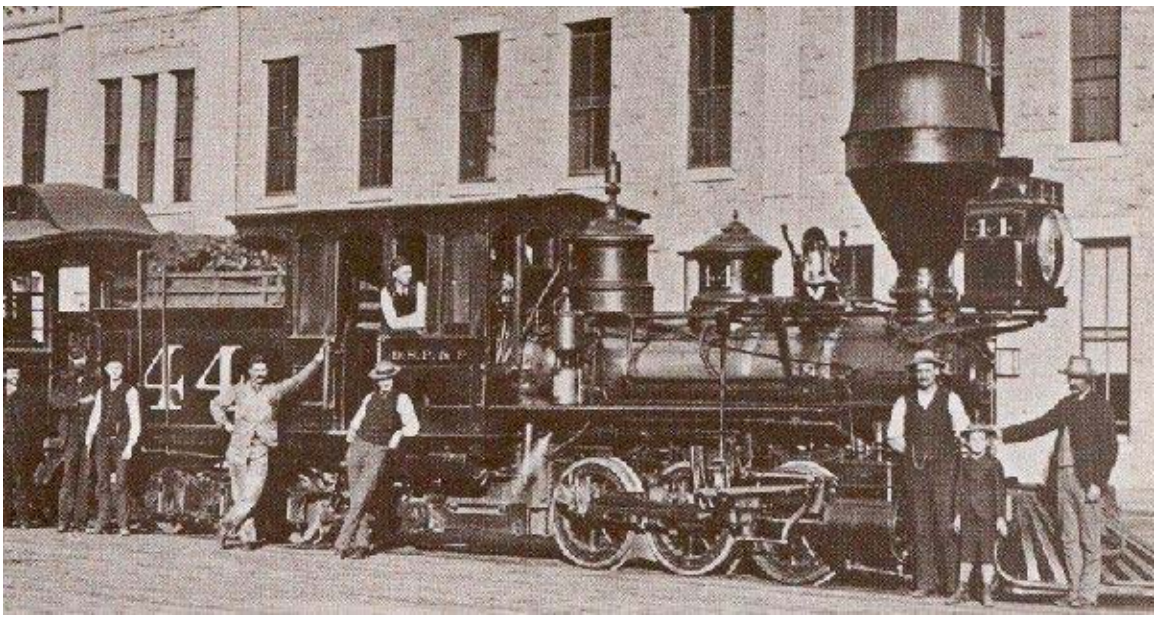
The DSP&P #9 'Kenosha' double heading with a DSP&P 2-8-0, Baldwin #56.

Brakes

All the bogies were equipped with the Eames vacuum brake at delivery. In the winter of 1883 into the spring of 1884 the South Park converted to Westinghouse automatic air brakes (not straight air). The Cooke Consolidations delivered at the end of 1883 were the first engines delivered with air brakes installed, followed by the Cooke Moguls in February of 1884. During this same period a large group of bogies was transferred to the Utah & Northern. In Poor’s DSP&P, South Park engineer William Wendell provides a rather long list of these Masons: 3-7, 10-16, and 20-22. If all the engines listed here went to the U&N, photographs show that several came back quite quickly. My own thinking is that all these engines went to Denver, where they were converted to air brakes. Some, maybe all or most, were then shipped to the U&N, while the others returned to duty. (An interesting sidelight to this is that the preponderance of bogies that reappear on the South Park were the “light” bogies. Whether this was because the U&N needed the heavier power, or South Park crews actually preferred the lighter engines and pushed the

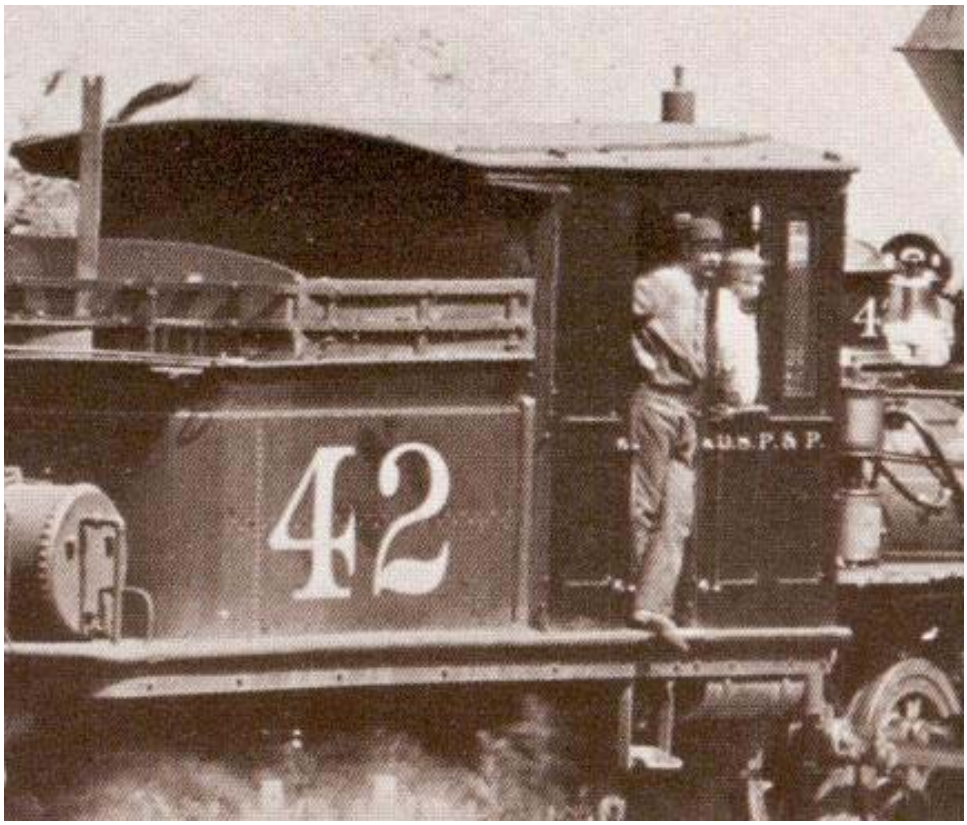
heavier engines off will probably never be known.)

The change to air brakes meant significant modifications to the bogies in the form of extensions to the tender frames to accommodate the main air reservoir. I suspect that the first Mason to be converted, perhaps the first engine to be converted, was no. 8, *Lake City*, A photograph of the engine as no. 44 taken in front of the Denver depot shows the air tank mounted above the coal bunker on the tender--a position must have made coaling up a challenge. Most of the Mason's received about a two-foot extension providing a rear deck to support the reservoir.



The DSP&P #44 with the air tank mounted above the coal bunker. This loco is modelled as 'Option 3' in Masterclass 2002.

Presumably, numbers 3-6, which had the short tenders, received only a one-foot extension. However it's possible that rather than develop a second set of replacement parts these engines received a two-foot extension as well. Then the question we must ask is whether they also got extended tenders or perhaps simply held onto their rear toolboxes. The only engine of this group with pictures is no. 42—no doubt the most photographed bogie because it W. H. Jackson's photo train in the late 80s. Even with all those photos, I can't tell for sure which way it went.



A rear view of the #42 (formerly DSP&P #6 - 'Tenmile'). The Air tank shown in them more typical location on an extended rear deck, behind the tender.

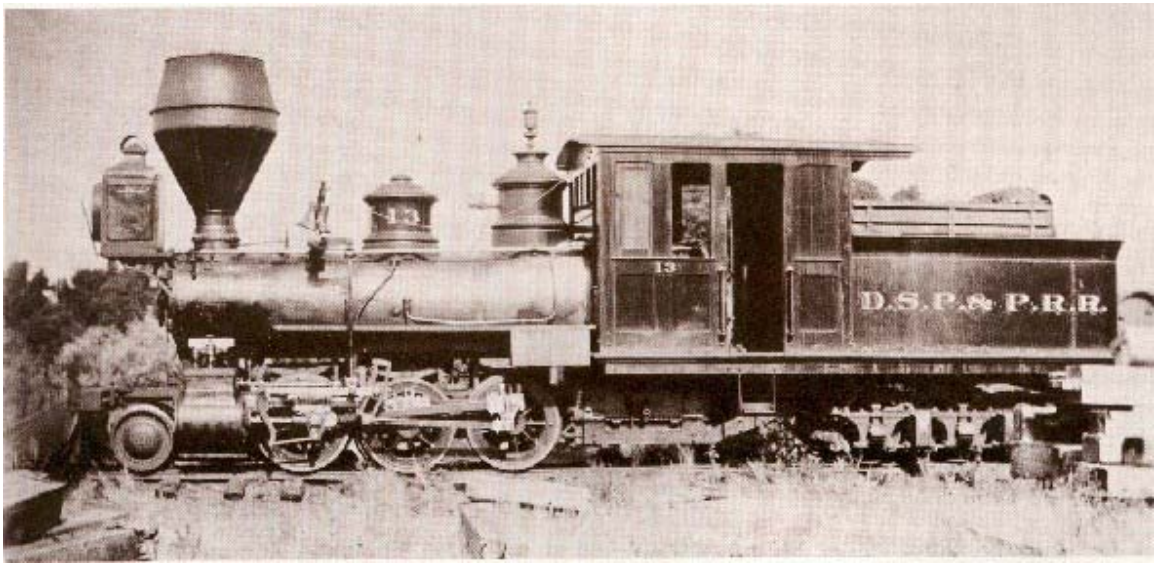
Cabs

The arch-windowed, peak-roofed cab that appears in the builder's photos and most early in-service shots obviously comes right from the builder. The assumption is that the square-windowed, arched-roof design was built in the South Park shops as a replacement for the original cabs as they were damaged or simply wore out with age. However, the shift to a square-window design is not unique to the South Park; it appears on virtually every Mason eventually, and may have been original equipment on some. It's possible therefore that the cabs were produced by Mason, or at least designed by them.

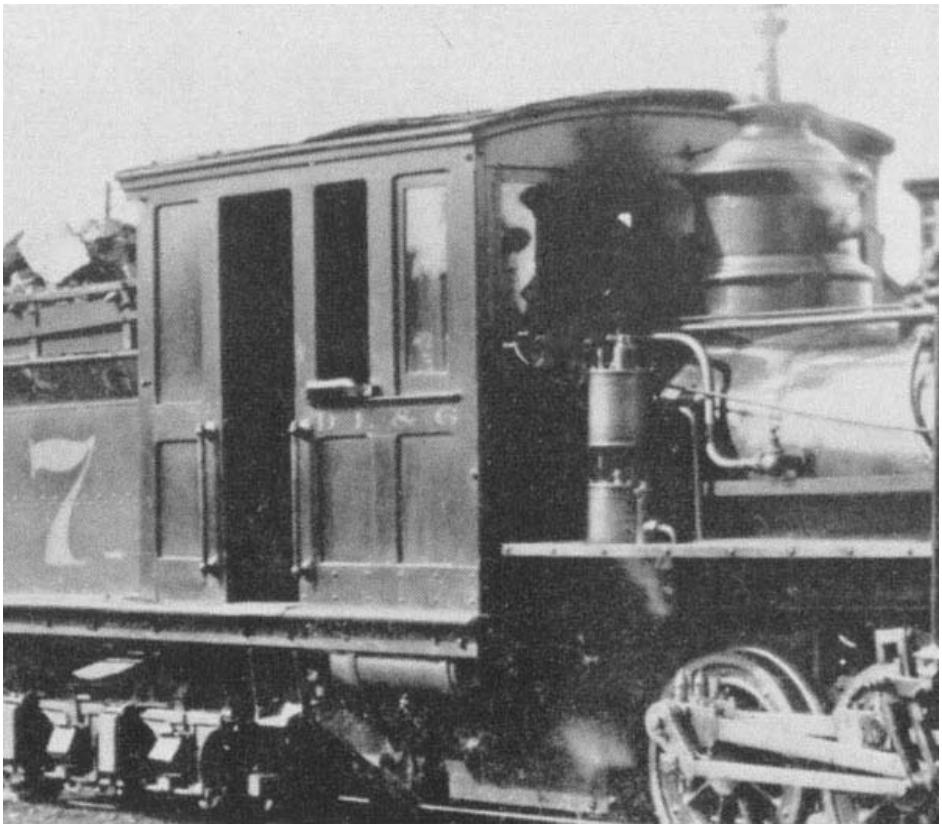
Moreover, I think it possible that the 9 (Kenosha) was delivered with the modern cab as a sample, just as it also was the first with the larger boiler. That all the subsequent bogies were delivered with the arch-windowed cab may simply reflect that while management liked the extra tractive effort of the bigger boiler, it still liked the looks of the arched-window cab. If it was so delivered, however, it obviously provided the perfect pattern for the replacement cabs, whether home built or bought from Mason.

Those replacement cabs appear to happen very quickly, but the scanty photographic evidence may be misleading. What is true is that with one exception, all photographs of Masons with air brakes show square-windowed cabs. The only known photo of an engine with an arch-windowed cab and air brakes is no. 44 in front of the Denver depot in the late 80s, long after air brakes and long after any other photos of engines with arched-window cabs.

While we have many early photos of Masons at work as the line is built, the number of clearly identified photos circa 1884-1885 are quite rare--the photo of number 13 with a Congdon stack, square-windowed cab, and air brakes being one of the few. Photographic evidence picks up again in the post-1885 renumbering, but even then shots of bogies are pretty rare, so it's possible that other engines received air brakes and retained their arch-windowed cabs for a few more years.



The last change to bogie cabs was the chopping off the roof overhang on no. 57 sometime after 1885. Whether this was done to any other engine is impossible to say. Certainly it must have made coaling up (whether with a chute or shovel easier, but I still suspect this was simply a result of damage (perhaps dropping a coal chute onto the cab roof) and not a purposeful modification.



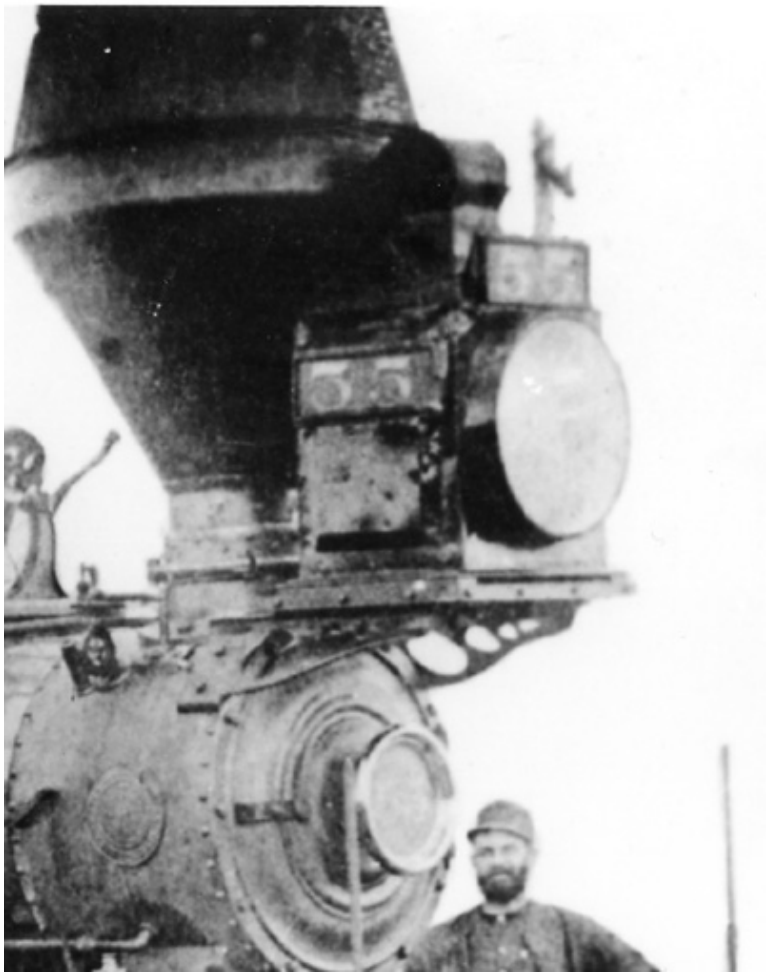
The rear roof of the DSP&P #57 cut off.

Headlight brackets

Bogies were shipped with two styles of headlight brackets and the builder's photos show both variations. The Mason bracket is interesting because it is bolted to the front of the smokebox and not to the sides as we are used to seeing on most other engines.

The ornate bracket used on the Breckenridge, 1879.

Beginning round 1885, in-service photos show a third style that looks almost as if the large bracket as used on the *Breckenridge* had had the portion of the bracket below the large hole simply sawn away. Indeed, it's possible they did just that, but it's more likely a new pattern was made and brackets cast. In any case this change is brought about by the addition of the Union Pacific classification- and marker-light holders applied to the smokebox front and rear corners of the tender. These cage-like devices held a standard brakeman's lantern. Some bogies eventually received the more common style of bracket bolted to the sides of the smokebox, most likely these were late replacements for broken parts.

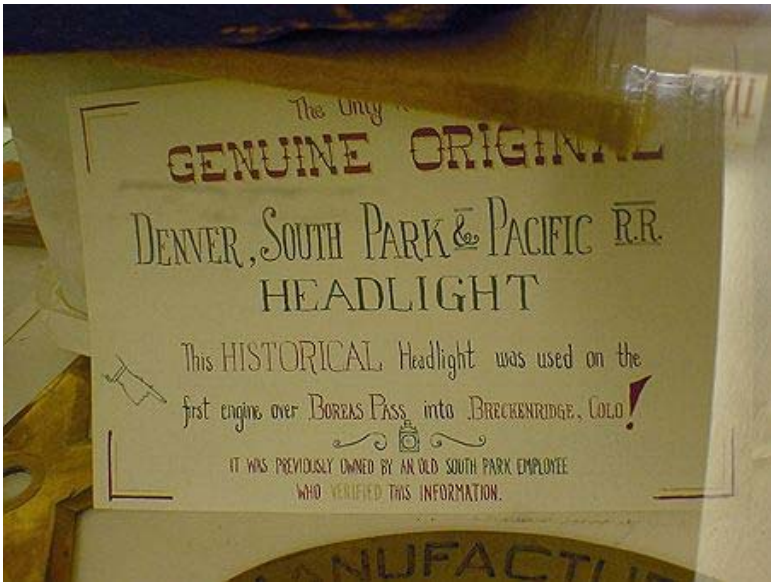


The most common headlight bracket used on the DSP&P after the UP ownership.

Headlights

Bogies originally were equipped with a rather small oil headlight. There is a headlight at the Colorado Railroad Museum that is ostensibly from the first engine over Boreas pass. As the note on the headlight declares, that engine is not identified, but I think this may be an original Mason headlight. It is only about 12" deep, whereas most of the castings out there for oil headlights are almost two-feet deep (front to back). The shallow headlight was a necessity due to the dimensions of Nesmith and Congdon stacks whose huge cones impinge quickly on headlight space, as modelers who have tried to put stock headlight castings on models quickly discover.

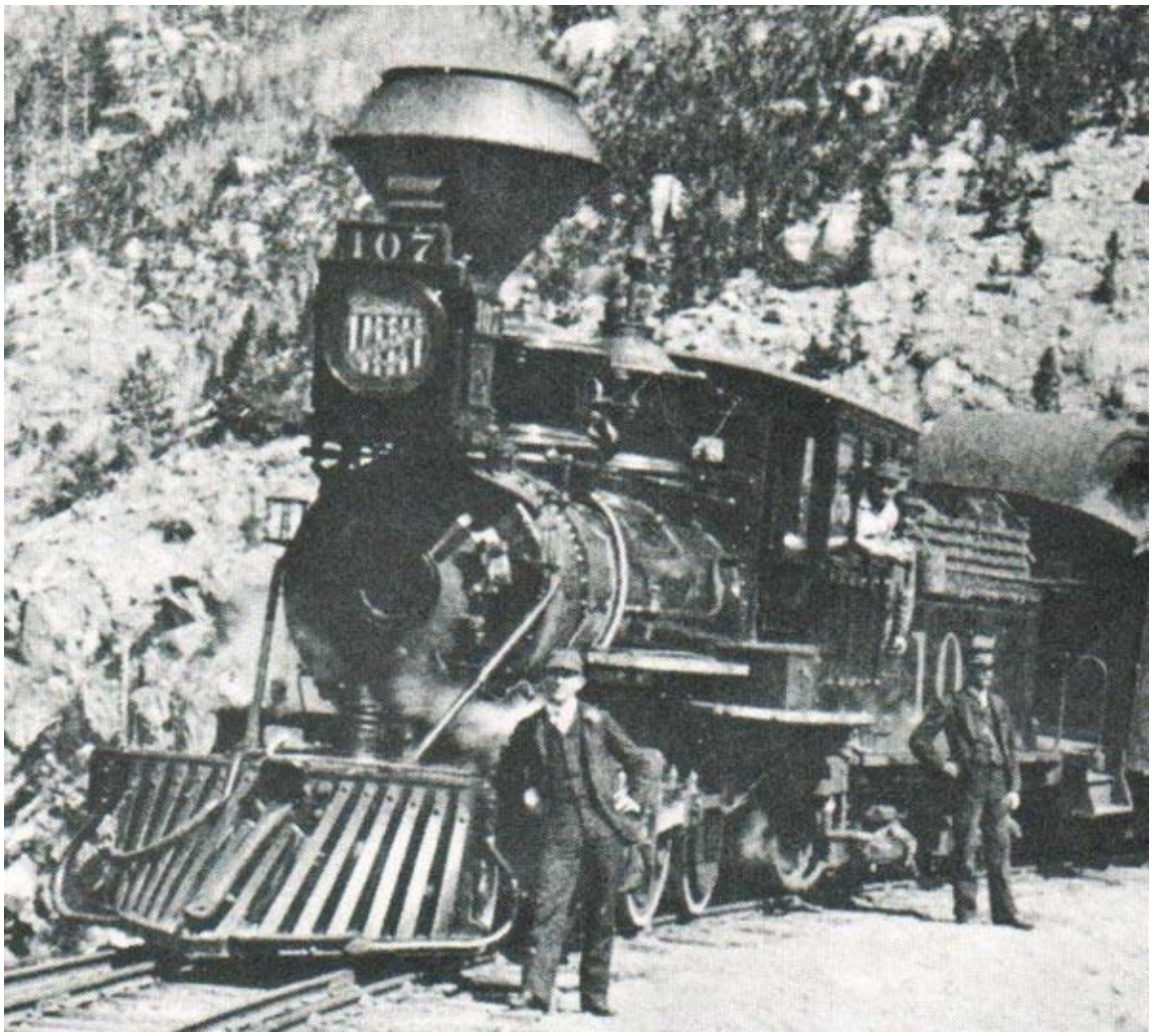
The first headlight to ride a loco over Boreas Bass, now preserved at the Colorado State RR Museum. It is possible the loco this lamp was fitted to was a Mason Bogie. Photo courtesy of Dennis Kliesen



The note that today stands with this early DSP&P headlight. Photo courtesy of Dennis Kliesen.

Photos show that in order to install larger headlights the South Park made many modifications to headlight brackets, such as eliminating stanchions supporting the platform the light sat on, so as to lower the headlight, to apparently mounting the headlight directly to the supporting arms of the bracket eliminating the platform altogether. The desire for larger headlights was probably mainly a fuel issue. The original small lights probably too often ran out of lamp oil out on the line, requiring the fireman to have to refuel and relight the light either while underway or forcing the train to stop—neither option being particularly welcome.

At least one photo shows a Mason with a headlight with a scene painted on its side. This was most likely the work of the engine crew and not a Mason design element. Until 1885 the lights, large and small, were quite plain. But at the same time they received the marker-light holders the headlights were either replaced or modified to include lit number boards on each side and above the main headlight lens. In addition, some or all of the headlight lenses on UP lines had the UP shield etched into the headlight lens (perhaps painted).



The UP herald seen printed on the lens of the box headlight of this UP owned Cooke 2-6-0.

This loco was originally owned by the Colorado Central, which later fell into the UP organisation of Colorado roads, including the DSP&P. Both lines ultimately become the Colorado & Southern in 1899.

Stacks

The short and sweet:

Nesmith: 1878-1884

Congdon: 1883-1890

Diamond: 1886-1900

The McClellan stack sometimes referred to as a “sunflower” or “pancake” 1890-1905. There are no known photos of a bogie with a McClellan stack, but I include it here because it was in use during the bogie era.

Nesmith: 1878-1884 (some overlap in dates with other stacks).

Condon: 1883-1890.

Diamond: 1886 - 1900.

McClellan: 1890-1905 (UP and C&S eras - not photographed on any Bogie locos.)

The end dates for all stack designs are approximate. I've never seen a Nesmith that I could absolutely date to 1884, but I wouldn't bet against it. However, it would seem that engines received the new Congdon stack when they were converted to air brakes. Thus sometime in 1884 would have seen the last of them. Similarly, there are many photos of engines with Congdon stacks that can only be dated as "post 1885"

because they've been renumbered but are otherwise indeterminate. I have however never seen an engine lettered Denver, Leadville and Gunnison with a Congdon stack, so 1890 seems the likely end of that design. The diamond stack never seems to have been adopted as a standard design, but it appears on bogies (and other engines) sometime after 1885 and probably was the last stack ever used on them. The sunflower or pancake stack first appears around 1890 (the earliest I can confirm is 1890 on one of the Rhode Island 2-8-0s brought down from the U&N).

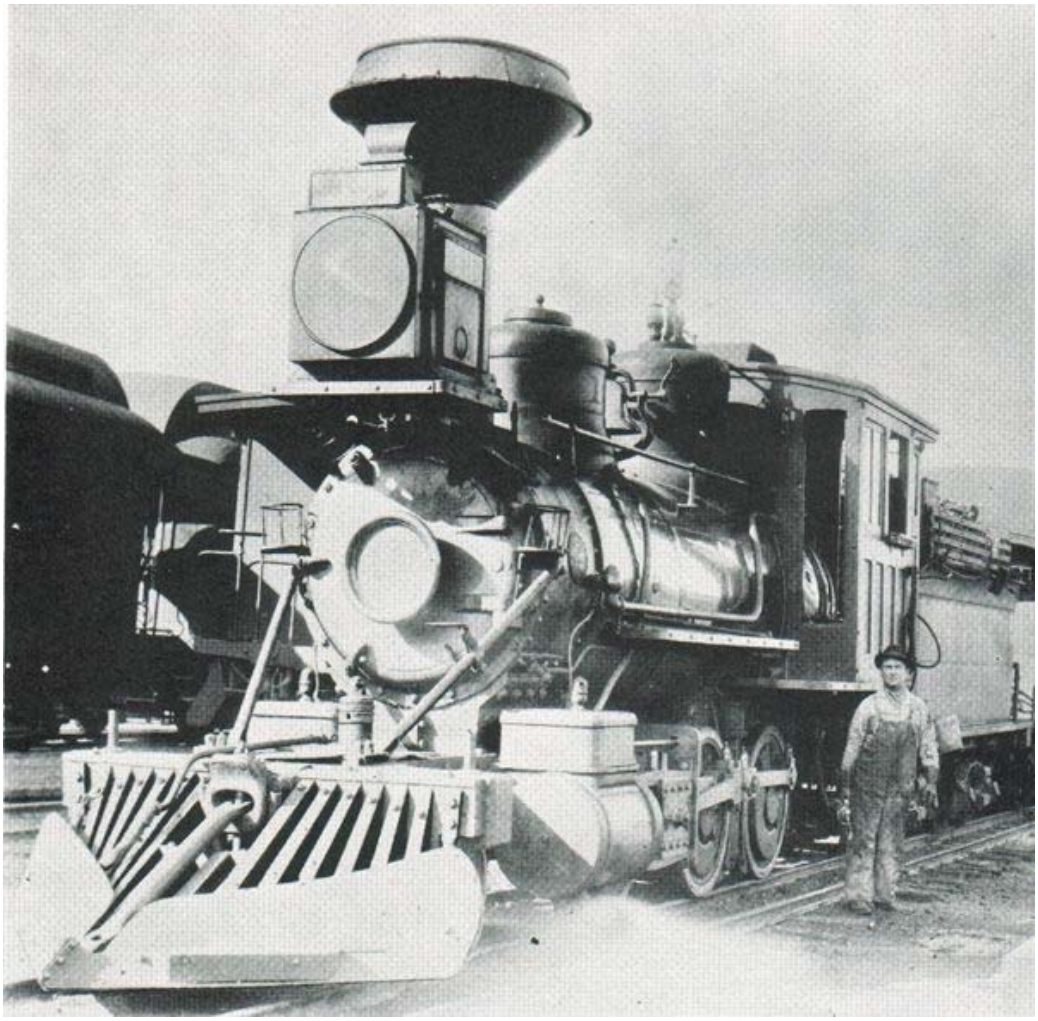
Number 42 sometime in the late eighties received a new smokebox front with a door that projects out about 4"from the face of the smokebox. Presumably the smokebox was damaged an accident and a new door was either fabricated or, given the design, acquired from some other engine.

Wheels

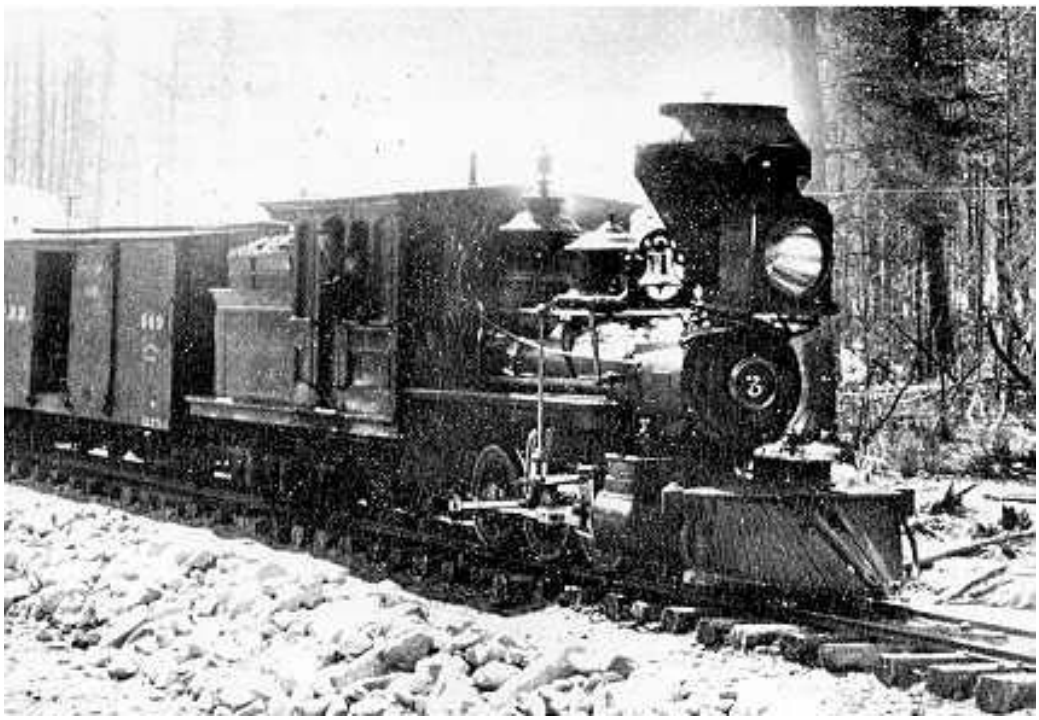
All bogies were delivered with spoked pilot and tender wheels. These seem to be universally replaced by the 1885 renumbering. In all likelihood the changeover happens at the same time as the rebuildings that accompany the application of air brakes.

Pilots

The photos of the *Oro City* in the Chalk Creek canon show a pilot with the gaps between staves filled in with more staves. This was apparently done to create a simple snowplow. The alteration appears on other engines (UPD&G 107 has a slightly fancier version with the “gaps” filled but slightly recessed to preserve the slatted appearance). The photo of Mason no. 48 at London Junction looks like maybe it’s similarly filled. Whether unique or applied to other bogies, it is in any case the only “snowplow” seen on any bogie. In the late 80s and early 90s many South Park engines received small “skiff” plows, small blades some 6 to 12 inches tall on the front edge of their pilots, and it’s possible that some bogies received these, though no photos exist of such.



One version of the Skiff plow as developed during the UP era of the South par. Note the many UP features on this Cooke 2-6-0, including the headlight, bracket and stack. This type of plow has not been photographed on a Mason.



The gaps between the pilot staves are filled in on this view of DSP&P #3, forming a form of snow plow.

I do not believe any other type of plow would ever have been fitted to the Masons because of the design of the front pivot. While I'm of the opinion that the Masons should be classed as a success on the South Park, I think the lack of any reorder can be laid to two very simple problems resulting from this pivot design: double-heading and snowplowing. I mentioned there is only one known photo of a double-header with the Mason as the road engine (coupled to the train with a helper in the front), and it is taken quite early: 1882. (A late 80s photo shows an unidentified Mason as helper in the Platte canon.) The design of the bogies' driver pivot meant that drawbar forces between the front and rear of engine took a 90-degree bend at the driver pivot went up more than a foot and then passed back through the frame to the rear drawbar. This design appears to have been perfectly satisfactory for the engines when operating alone, but it is not hard to imagine that if you placed another locomotive at the front and a train behind that you could cause the driver bogie to try and flex out of the way and probably derail. A similar effect would be had using the engine for any but light snowplowing.

PHASES

It has become common to refer to changes in locomotive appearance as "phases" and as the drawings show, you can divide the life of bogies into roughly three phases. These provide a good guide for what your family of bogies should like at any period, but some exceptions to the rule should be expected.

1878-1883

Nesmith stack, original paint (names on tenders, DSP&P below cab window, number on number plate and sand dome), Eames vacuum brake, and arched-window, peaked-roof cab. By the time the railroad reaches Chalk Creek (1880/81) larger headlights are being applied with modifications to brackets. At least the Kenosha has a square-window cab by 1882 as discussed above. Some pilots (no. 3 for sure) modified by filling in gaps between staves, presumably to make a "snowplow" of the pilot.

1883-1885

Congdon stack. Air brakes applied necessitating extension of tender deck (except no. 8). Changeover to square-window, arched roof cab (maybe simultaneous with conversion to air, though at least no. 8 is an exception). With the alterations for air brakes, the engines receive new paint: D.S.P., & P.R.R. is on the tender with drop shading, probably gold leaf and red drop shadows. The engine number now appears

below cab window as well as on sand dome and number plate as before. It is probable that the engines receive solid wheels on pilot and tender trucks as part of this general rebuilding.

1885-99

Union Pacific renumbering. Large engine numbers on tender and D.S.P. & P. under cab window (no. 55 has Union Pacific under cab windows). Application of classification/marker light holders, headlights with number boards. Congdon stacks are phased out and replaced by diamond stacks throughout the late 80s.

The changeover to DL&G lettering in 1890 is just a matter of changing the lettering under the cab windows and adding DL&G to tender flare. Engines may not even have been repainted. Photos show diamond stacks on all engines, though the possibility that some received sunflower/pancake stacks in the 90s exists.

1900

Not really a phase, but one bogie makes it onto the C&S roster and indications on the engine after it arrives in Iowa suggest that it did get relettered for the new corporation. From the Iowa information the number was at least applied to sand dome and numberplate. That's consistent with the first C&S style, which retained the DL&G lettering of large numbers on tender, with initials on the tender flare. However, while the DL&G also used initials under the cab windows the C&S spelled it out "Colorado & Southern" The engine still had a diamond stack in Iowa and I would presume that it did on the C&S as well.

DSP&P #24 'Buena Vista', later DSP&P #57 and finally Colorado & Southern #1, the only Mason to make it into the C&S roster. Seen here in Iowa after ending her career as a lumber loco. The remains of the UP style diamond stack is evident on this Mason.

....and that ladies and gentlemen is a little about the Mason Bogies of the South Park.

Construction

Cabs 'n' stuff.

Right, lets get on and build this thing!

Many of you will have ordered and even already assembled your FH&PB cab kits, delivered to us by Vance Bass. You can follow all of the FH&PB construction instructions with confidence. In fact, most of this section will not be relevant to you. This section will be dedicated to scratchbuilding a Mason cab to the same CAD profiles as used by FH&PB. We demonstrate the construction of the Mason cab from 1mm and 2mm styrene sheet. However you can follow the same basic instructions using plywood or even brass sheet stock. Those of you with the cab kits might like to read through the chapter anyway. There will be some detailing ideas you may like to apply to your cabs (not essential) and at the end we will discuss how to fix both cab types down to the Mason deck.

For info about the FH&PB Masterclass 2002 mason cab kits, refer to this web site:

http://www.nmia.com/~vrbass/fhpb/

Lets Begin!

Download all the PDF drawings now. Print them out on US letter size paper, and ensure they are scaled 1:1. Check the scale bar of each and every page to ensure you have printed them to the full 1:1 scale.

DOWNLOAD THE PDF DRAWINGS NOW!!!

PDFs for original 1870s Mason Cab with Arched windows.

For use with Options 1, 2, 3 and 5.

PDFs for 1880s rebuilt cab with Square Windows.

For use with Options 4 and 6.

There is a series of PDF pages showing the completed walls; use these as a guide through the chapter to locate window sills, hand rails and bolt head details etc.

Please take note that the rebuilt 1880s cab, with rectangular windows has a 'fake' window on the side walls, to the rear of the side entry doors. This is prototypical. On the 1880s cabs the last window was blanked off like that during construction to prevent further window breakage from the coal load.

It is also believed that the two rearward windows that faced back over the tender were also blanked off. However we have no documentation to know whether those rear-facing windows were blanked off or not. It just stands to reason those windows would be the first broken by the coal load shifting around! On some locos, such as Today's 'Torch Lake' 0-6-4T, those rear facing windows were provided, but with iron bars across the windows to help protect them. Armed with this info you can choose to leave the rear facing windows blanked off, or provide those as glazed windows with bars over.

Making the Mason Bogie Cab - Cutting the Cab Wall Layers

Step 1 - The Wall Backing Layer.

Make sure you have all the PDFs relevant to the style of cab you are intending to build, 1870s or 1880s cab.

Take your PDF sheets entitled "Cab walls - Backing layer". You will be cutting out 4 walls. Two side walls, one front wall and one rear wall. Trace the backing layer PDFs onto **2mm styrene sheet**. Either use the pin prick method, or use rubber glues to apply the PDF paper onto the styrene for tracing and easy removal. Cut out the pieces from **2mm styrene** - BE PRECISE.

Some tips. Cutting out windows from 2mm styrene is not easy. Its what I call the 'blood and guts routine'. In that there are not too many tools that can help you, other than your trusty knife.

It helps to drill the corners of each window and door to be removed. Use a 1mm or 1.5mm drill bit. Drill such that the hole sits to the inside edge of the window/door area. You do not want to drill outside the

window line. Then use your knife to cut between the holes. The holes will help produce a nice clean cut at the window corners.

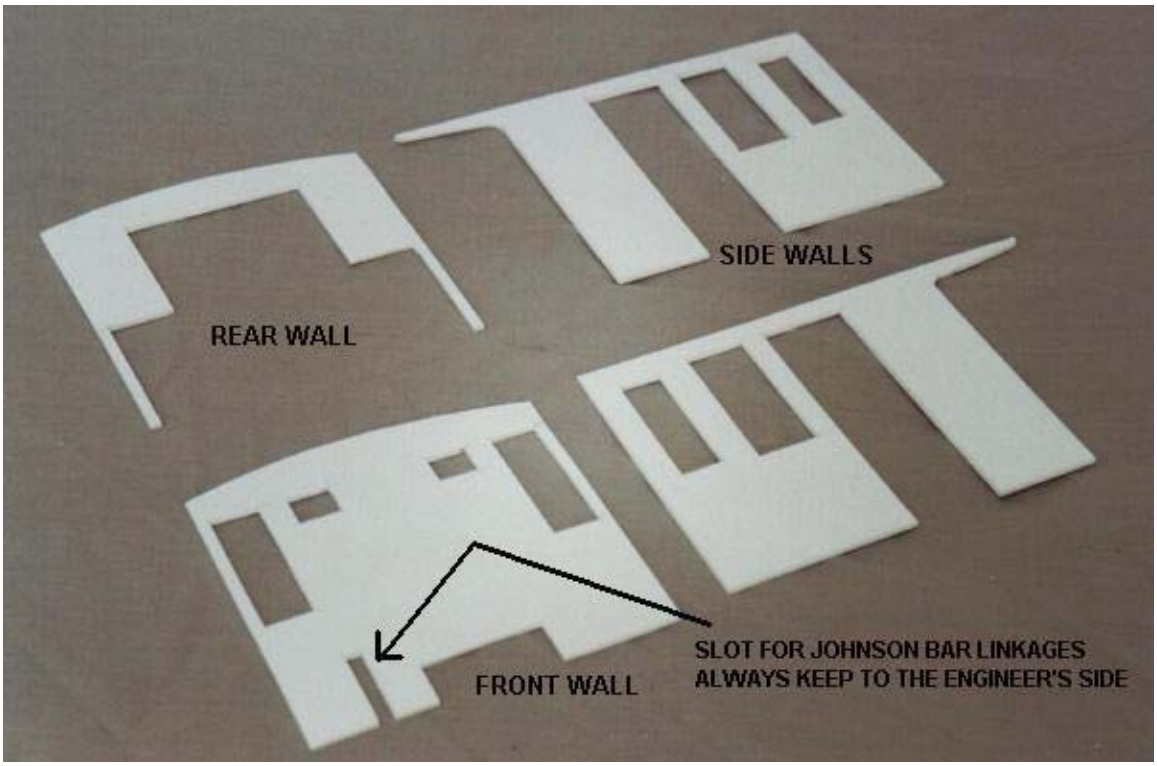
It it still possible to score and snap the windows out of the styrene without having to cut right through. It involves bending the walls, back a forth just a little. It might take you some practice, but it can be done.

You can cut half way from the front, and then finish off cutting from the rear.

The backing sheet, being of 2mm styrene, is thick and difficult to cut. But it is the backing sheet only, designed to provide strength to the cab walls. You must cut carefully, and neatly, but should you snap the wall accidentally by overcutting a window, its not the end of the world. You can butt weld (welder glue) the broken wall back together. When the outer layer is applied, it will hide the snapped area, and with good welding, the wall will not be weakened. Just don't overcut your backing walls too often, OK?

Cutting the rectangular windows is much easier than cutting the arched. When cutting the arched windows out, consider cutting the windows as rectangular, ending below the arch itself. Then using a small grinding nub on the end of your Dremel or similar hand power tool, carefully grind out the window arches to the line marked on your styrene walls. Take it slow. Do not overheat or melt the plastic while grinding. Do not over grind beyond the arch lines.

Your cab backing walls, cut from 2mm thick styrene should look like this:



The four backing walls, cut from 2mm styrene. These walls are viewed from the 'outside' Note on the front wall, the Johnson bar link hole..make sure this always remains on the engineer's side of the cab!

Step 2 - Cab Walls Outer Layer.

Now refer to your PDF pages entitled 'Cab Walls - Outer Layer' Again ensure you have the correct 1870s or 1880s style PDF.

Trace these PDF profiles onto **1mm styrene sheet** and get cutting. Cutting the 1mm styrene is much, much easier and can be cut with more precision and less trouble.

Now, the whole concept of this cab design is to lay the 1mm styrene outer sheet, over the 2mm backing sheet. What this does is give us a strong, 3mm thick cab wall, with all the window reveals and panel decoration built in. BAM, a cab wall!

Step 3

Test fit your four outer walls, over your four backing wall layers. The cab doors should align exactly. The front and rear edges of the walls will not align. In fact, the outer layer wall will extend beyond the edge of the backing layer on every wall. USE THE DOORWAY as a guide to locate the outer and inner layers together properly.

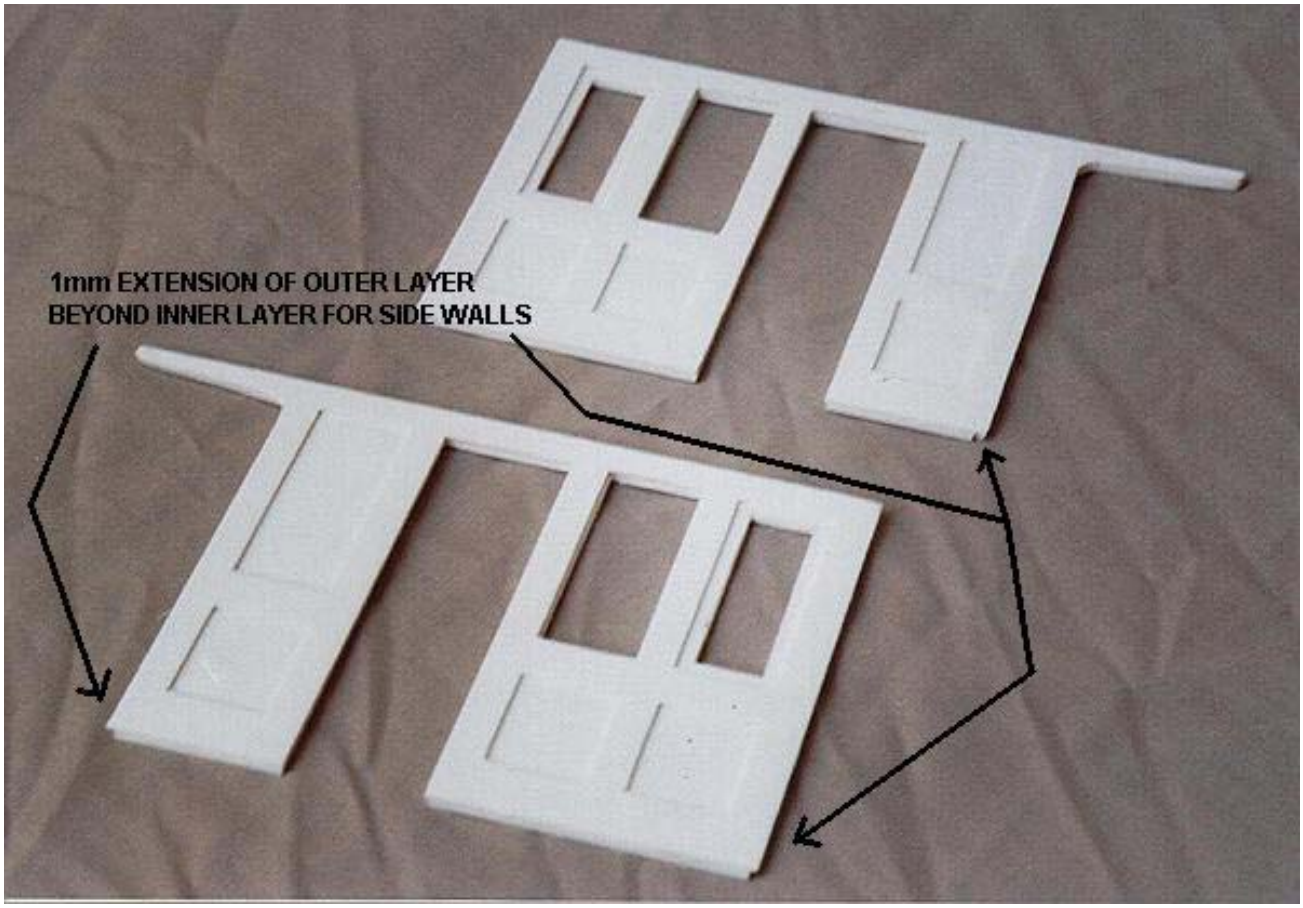
Step 4-

Now glue the outer layer onto the backing layer to finish your cab walls. You can either use your MEK or Plastruct welder cement, or grease a film of aryldite/epoxy over the back of the outer layer wall and join the walls together. Press the two wall layers together firmly and do not let them go crooked. Make sure they are flat. If any glue oozes out of the edges into your panel or window areas, clean it up immediately.

IMPORTANT SAFETY TIP: make sure you apply the front wall outer layer to the correct side of the front wall backing layer. You must have the Johnson bar slot to the left side as you look at the outside wall (engineer's side). Also ensure you do create a **left and right** side wall. You do not want to make two left side walls by applying the outer layer to the wrong side of the backing layer!!

When the cab walls are glued and solid, use a fine sand paper and sand over the outer wall face, rounding off the edges to all the panel and window reveal areas. Just a light sanding is needed.

Your cab walls will look something like this. Note how the outer layer walls extend past the inner walls on every wall (1mm extension on side walls, 2mm extension on front and rear walls). Note that you have two mirror-image walls (left and right).



The Boiler to Cab Sheet.

This step is for FH&PB cab kit builders as well.

Step 1 - Cutting the Sheet.

Refer to the PDF page entitled 'Boiler to cab sheet'. Next to the front wall profile is an odd looking patch with rivets around the perimeter. This is the boiler-to-cab sheet. In reality, wooden cabs rarely were built

hard up against the boiler side. Usually the boiler ran into the cab front wall through a large rectangular opening. Once the boiler and cab were in place, a metal sheet would be bolted into place, filling the gap between boiler and cab wall. These metal sheets are a pretty cool detail and well worth adding to your model.

Cut out the profile boiler to cab sheet on the PDF from 0.5mm styrene (or thinner, if you have it). Ideally, use a 0.25mm styrene sheet, or even shirt box material. The thicker this styrene sheet is, the more it will push your boiler away from the cab wall. Use paper-thin styrene!

If you cannot get thinner than 0.5mm styrene, then consider cutting out the boiler top curve in the cab sheet, so that your boiler will butt into the cab wall with this sheet cut around it. Thus the boiler to cab sheet will not kick your boiler forward at all. To do this step however, you will need to know the exact placement of your boiler, and you cannot be 100% certain of that until you have your BBT drive. Consider leaving this step until a later time when you have your BBT chassis in hand and can trace the boiler curvature onto the cab sheet.

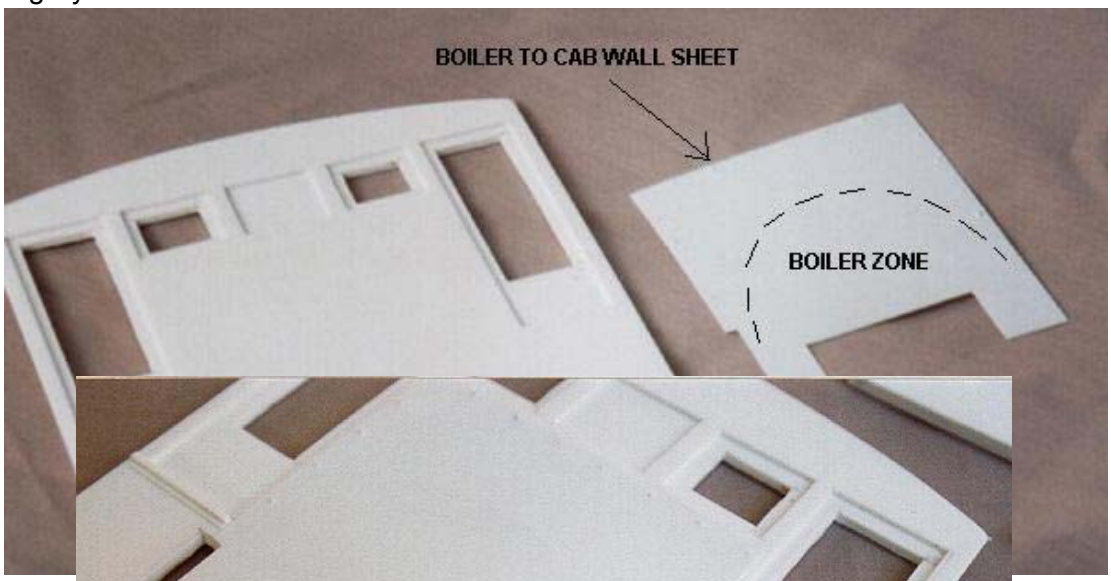
If you can obtain paper thin styrene, then make the cab sheet now and have the boiler butt into that when the BBT drive arrives.

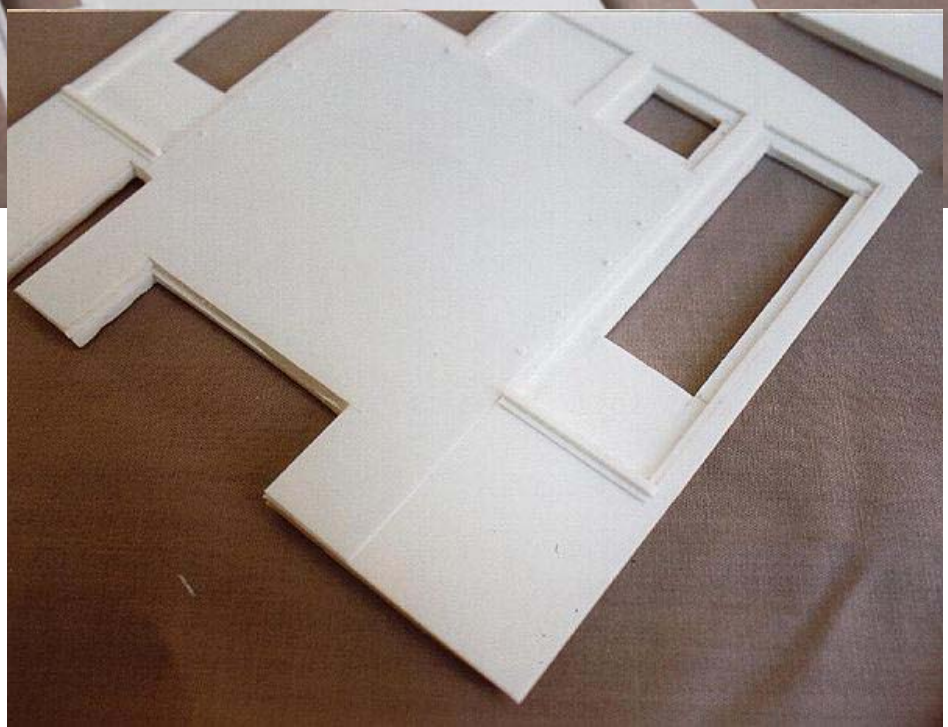
Step 2 - the Rivets on the Cab Sheet

Using a 'Spike' type implement mentioned in previous chapters, carefully punch in the line of rivet heads from the rear of the sheet. Ensure the slot for the Johnson bar matches the correct side of the cab wall, i.e., do not punch the rivets in from the wrong side!

Now using a film of aryldite or epoxy, apply the sheet to the cab front wall. It will fit approx. 1mm down from the upper cab windows, and 1mm to the side of the cab front doors. Do not use a welder glue in this application. The welder is too strong for such a thin layer of styrene, and will warp and melt it. The epoxy glues will not distort the styrene.

When you paint your cab later on, your cab may be green or lake, or blue etc, but this sheet interface will be black or dark gray and will stand out as is should.





The cab to boiler sheet will look like this, prior to application:

With the sheet now fitting into place, your front wall will look like this:

Ignore the cab door sill detail at this time, that comes in the next step!

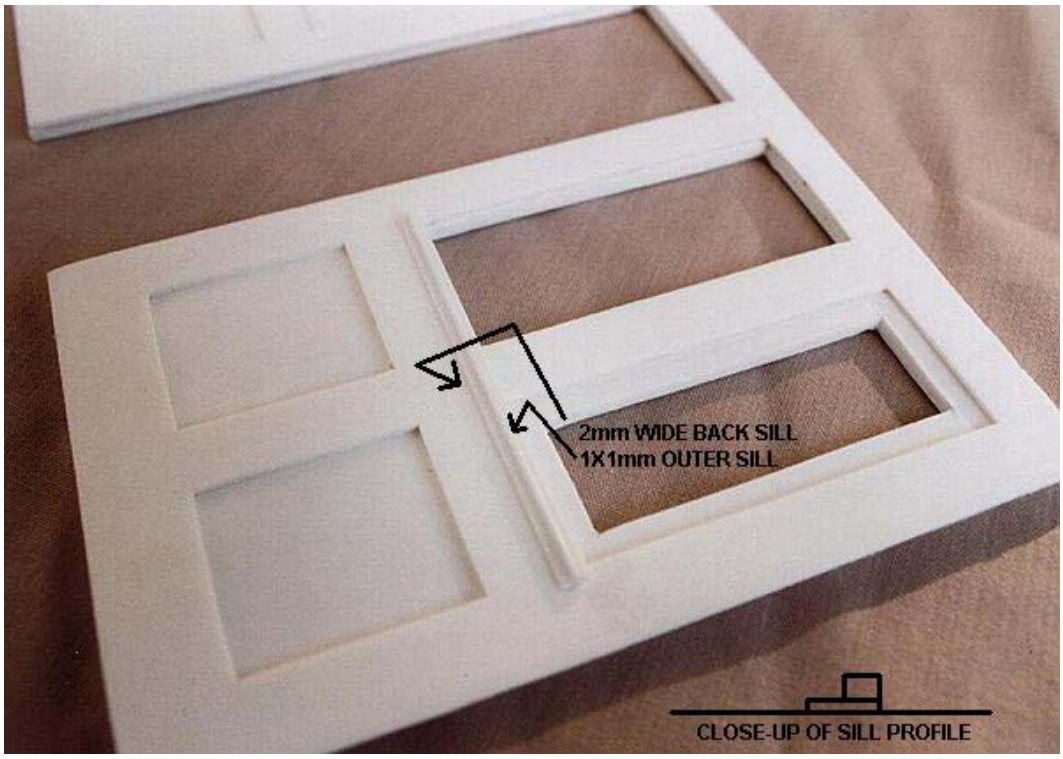
The Window Sills.

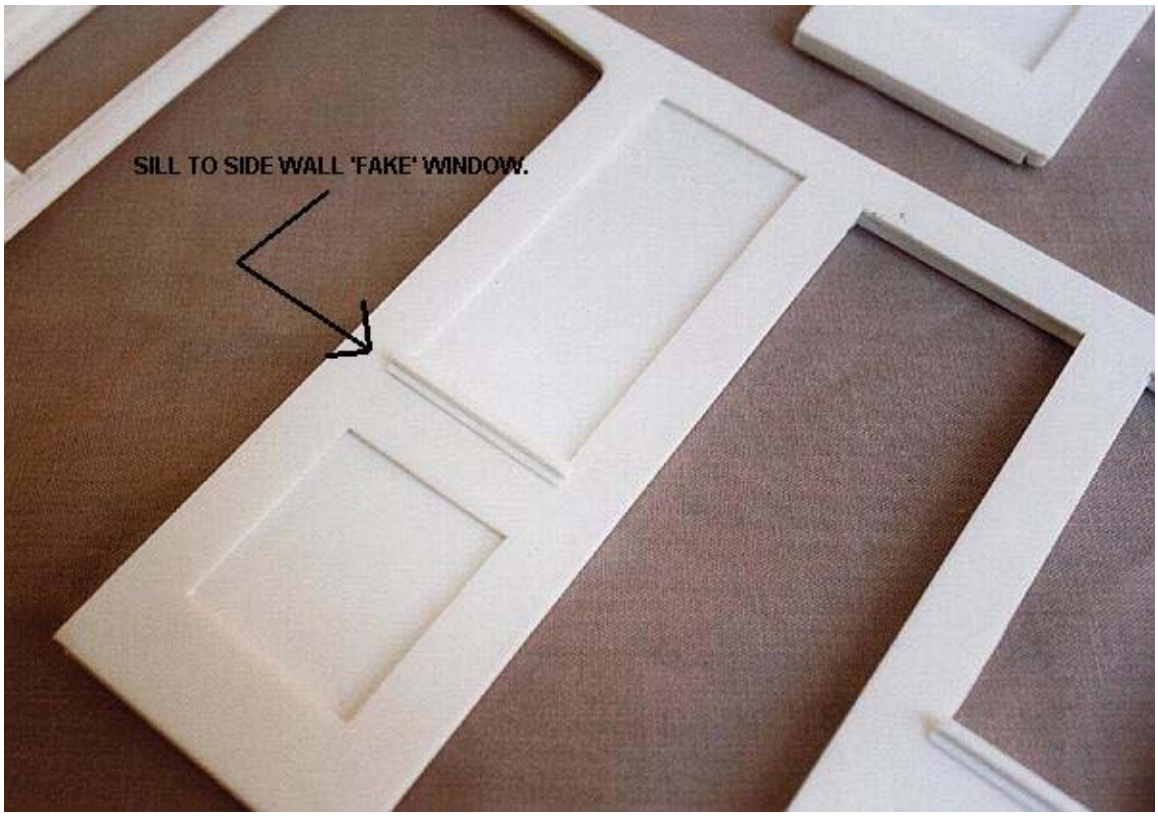
Step 1 - The sills.

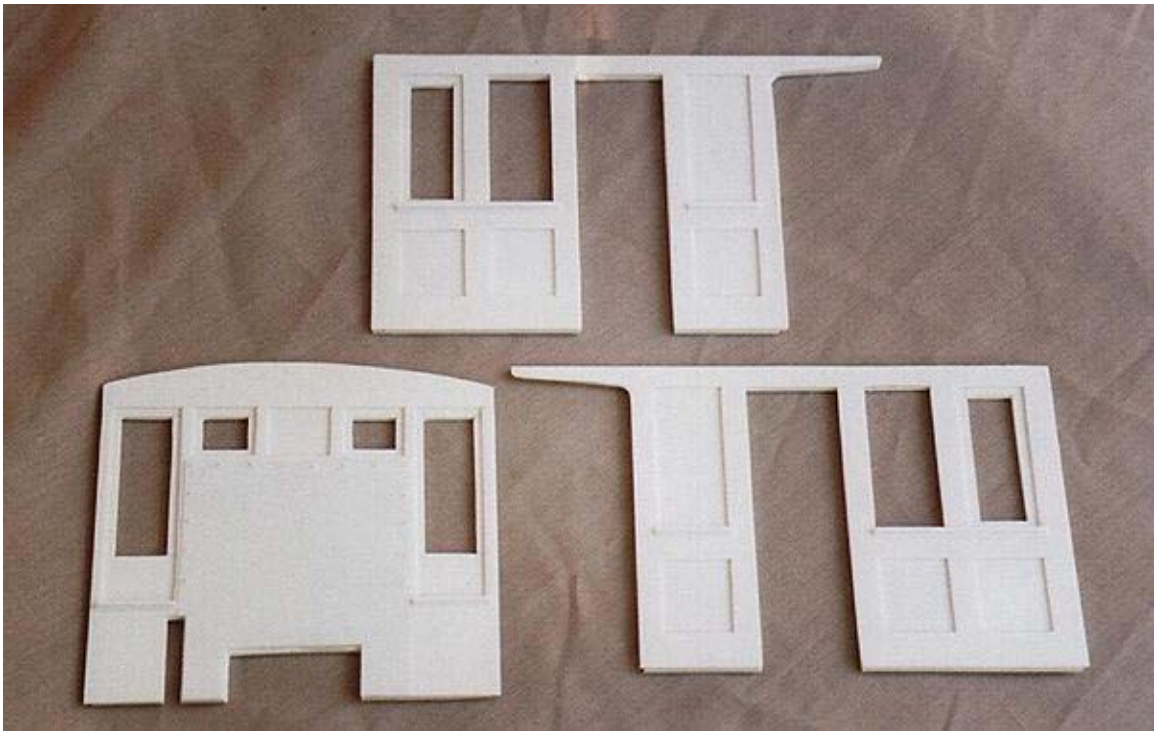
This bit is easy and is the same for both 1870s and 1880s cabs. Cut a 2mm wide strip of 0.5mm styrene sheet.

Apply this 2mm wide strip to the base of every window to the front and side cab walls (do not apply to the rear windows). Also apply this sill to the base of the front doors as shown in the picture above. This 2mm wide strip becomes the backing layer to the sill. Use the overall cab profile drawings as an indicator of the location and length of sills required.

Next cut a 1mm wide strip from your 1mm thick styrene sheet. By doing this you are making a 1mmx1mm rod. Apply this rod to the sill of every front and side window. Weld this outer sill strip over the 2mm wide backing. Apply the strip to the upper edge of the backing, leaving a 1mm wide backing strip below the outer sill. All your sills will look like this:




SILL TO SIDE WALL 'FAKE' WINDOW.



The finished walls will look like this:

Assembling the Cab.

Step 1 - The Cab Framing.

Refer to the PDF page entitled 'Cab Assembly' and 'Cab wall Overlaps detail'.

We are about to glue the walls together and form a 3D cab. For this step you will need two sizes of Plastruct Square Hollow Section (SHS). You will need the 4.6mmx4.6mm Plastruct SHS rod and you will need the smaller 3.2mmx3.2mm Plastruct SHS rod. Note the locations of both rod types on the PDF.

We use the 4.6mm rod as 'stud frame' members to strengthen the cab walls from within, and also provide a means to bolt the cab down to the deck. The 4.6mm SHS rods have a hollow 2mm diameter core. We run bolts into this core when fixing the cab down.

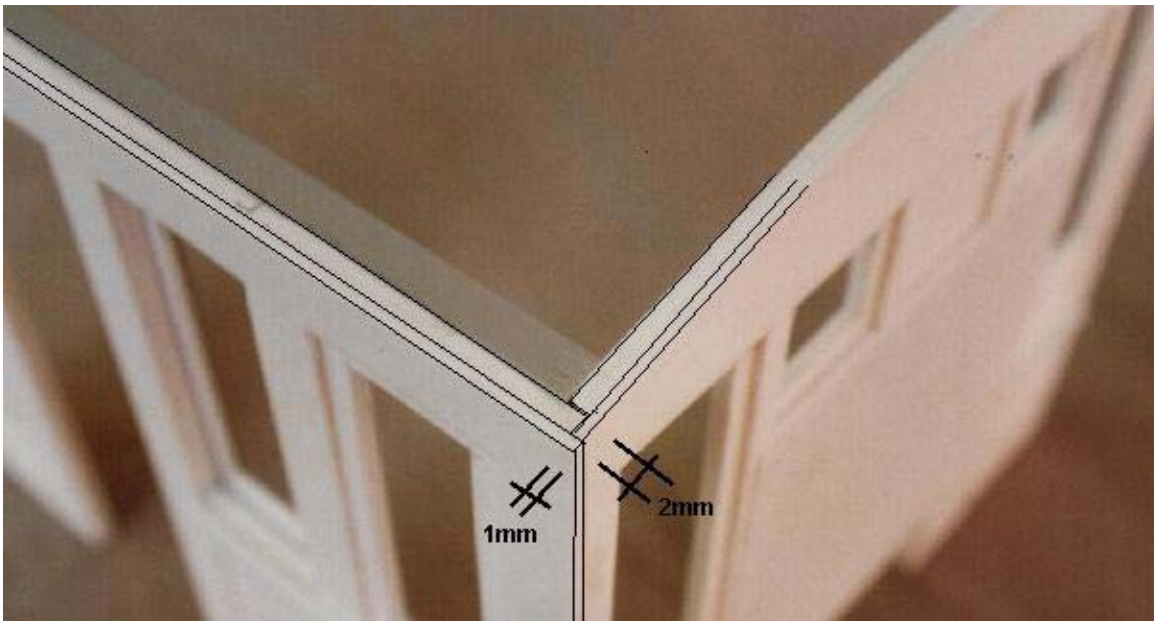
Cut and weld the 4.6mm SHS rods to the inside faces of the side walls as shown on the PDF.

Then weld the 3.2mm SHS to the front and rear cab corners as shown. We must use this smaller SHS in these areas so that we don't cover the windows with rod at the front, and at the rear we maintain the opening in the rear wall for the tender to pass through.

YOU MUST MAINTAIN the opening for the tender in the rear wall at all costs. Nothing can protrude past that 3.2mm SHS line.

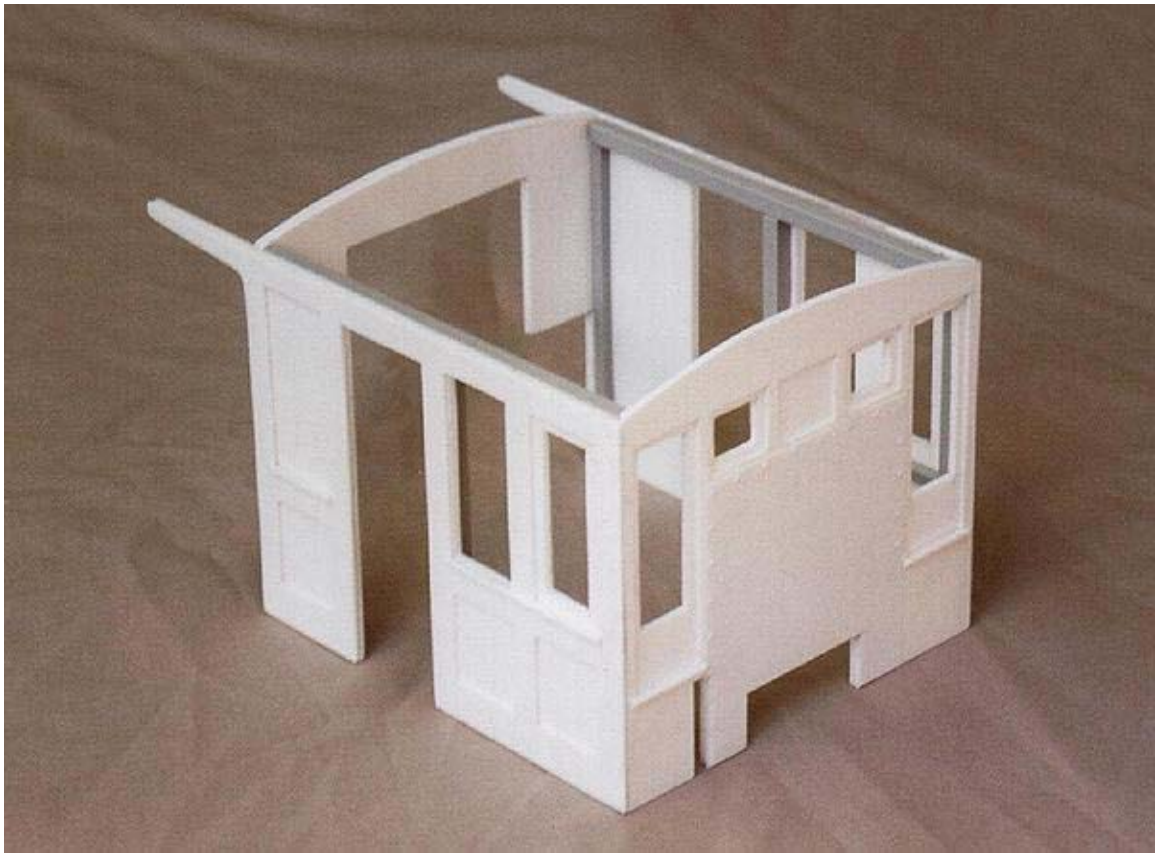
Step 2 - Welding the Walls Together.

When welding the walls together, you must take care that all the outer face overlaps are correct...please refer to the Overlap PDF and study it closely. When the walls are put together, you should only have a tiny visible vertical joint along the front and rear walls, no double joints! The joints at all 4 corners should look like this:



You must make certain your 4 walls are absolutely square relative to each other. Use a builder's 'square' or drafting triangle to ensure you are welding your walls at 90 degrees from each other.

Your cab with framing will look like this:



The Engineer's Sliding Windows.

Up to now you will have noticed that the engineer's window (directly to the forward side of the entry door) was open, with both the backing and outer layer cab walls aligning. Its now time to fill that window.

Refer to the PDF page entitled 'Cab Windows and Doors'. Refer to the Correct 1870s or 1880s era drawing for your cab.

Cut out the 'engineer's window' profile from 1mm thick styrene.

You can apply the window in one of three ways-

1-Weld the window frame to the back of the wall opening and thus weld the window in the 'closed' position.

2- Leave out the window frame completely, and thus run your model with the engineer's window fully open (you will need to do this if you want an engineer figure to sit with his arm out the window!

3-build up the window such that it can slide open and closed. Good for use with engineer figures etc.

If you run your trains and never mess with opening and closing windows or doors, then I recommend you leave the window sash out completely and run the loco as it would be seen in 'operating condition'.

If you want your loco to have opening and closing windows and doors, then follow the rest of this step.

Step 1 - Sliding Widows

There are two simple ways to implement a sliding window in the cab wall. You can apply an Evergreen 'U' shaped profile along the top and bottom of the window, providing runners for the windows. This is the simplest method. Just use a strip of 3mmx3mm 'U' channel and weld them between the door and lead wall.

The 2nd way is to use more 3.2mm SHS and runners along the bottom of the window, and apply a 4mm wide strip of 1mm styrene to the side of the SHS, forming a channel. In this second way its best to apply

the 3.2mm SHS now, and apply the 4mm wide strip after your cab interior is painted. Then you can install the sliding window after your cab is completely painted. You can also apply your glass to the window, remotely from the cab itself.

The sliding window sash itself will be made from 3 layers:

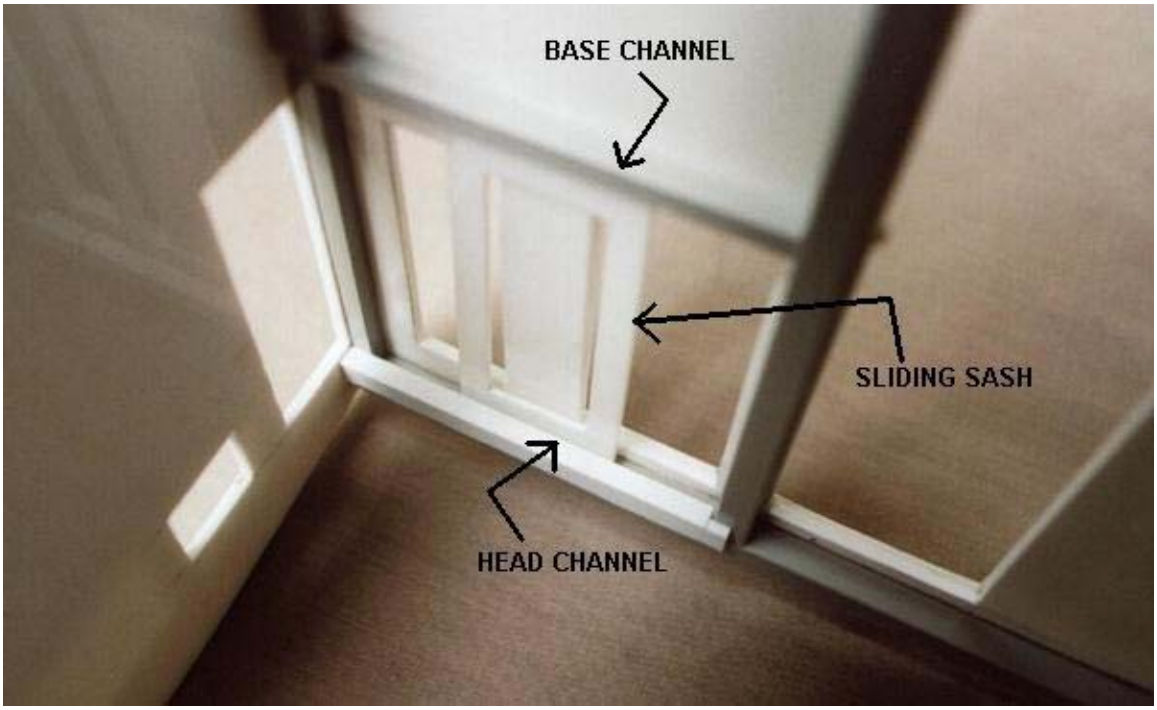
The outer layer is to be 1mm thick styrene, copied from the PDF of the sliding window profile.

The middle layer will match the outer profile of the window and be made from 0.5mm clear styrene.

The inner layer will be copy of the outer window profile, but cut from 0.5mm styrene sheet.

Paint the outer sash the colour of your cab and the inner sash the colour of your cab interior (green or polished wood colour), then weld the outer and inner sashes to either side of the clear window, forming a 3 layered window, approx. 2mm thick. This total construction forms the sash that slides.

A demo of the sliding sash is seen in this photo - this cab wall is seen upside down:



The Rear Cab Sliding Windows.

On the rear wall of the Mason cab were two sliding windows that, when open, allowed access to the tender. On the Mason engineering drawings, these windows slide to the side, but cannot clear the full arched opening to the tender. It is noted on these drawings that the sliding sashes in the open position could be removed from the track and stored against the cab side walls, behind that last side window.

In practice we don't know how these sliding windows were dealt with and indeed just how long they would have lasted. On the face of it, the rear sliding windows looks needlessly complicated, and required much care from the crew. Not to mention damage from the coal chunks in the area. We have a good rear view of the North Pacific Coast 'San Rafael' 0-4-4T Mason, that shows these sliding windows removed, and a much more practical roller blind installed in its place. (Refer to the Mason Bogie Archive for NPC 0-4-4T.)

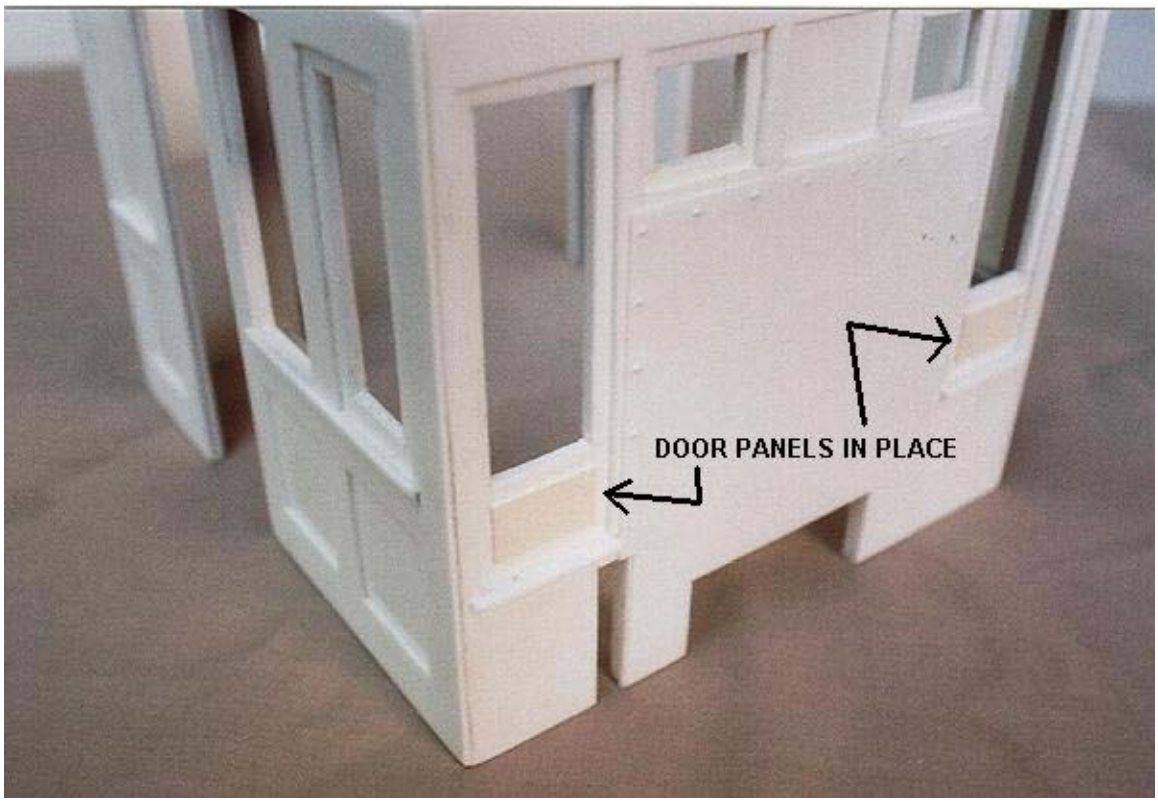
If you would like to make the cab fully to 'as built' condition, then follow the PDF cab windows drawing and cut out the two rear window sashes. Make the window again from 3 layers, 1mm outer, clear middle and 0.5mm inner. Again, they can be applied to the rear wall using the 3mm top and bottom channels per the side engineer's windows described above.

Other options are to glue the windows in the closed position, in the open position, or simply leave them off. The 'left off' option is not as silly as it sounds. It is highly likely that these sashes were in fact removed from the cab and stored in the shed prior to the loco leaving the depot. Only being replaced that night when the loco was back from its run. After some months, its probable the windows remained stored and were never put back on.

The Front Door Details.

Due to constructional constraints we have not modelled the front doors to be operable. If you should like your doors to open, then kit bash our designs to suit. Where possible, retain the 4.6mm SHS in the lower front corners of the cab for future fixing of the cab to the deck. The front doors on a Mason did not open outward onto the running boards. Nothing Mason does is normal! No, the front doors opened inward and swung against the side walls. In Full operating mode, there would have been 3 layers of glass stacked up where that first side window is...i.e., the window itself, with the engineer's window slid behind, and then the front door stacked behind that!

For those modelling like us, with no opening front doors, you have already made the door by default! All you need to do is add the front door panel to the lower door. Follow the PDF profile on the 'Outer Layer' PDF. There you will find a small rectangular patch to be applied to the doors. Cut out the profile in 0.5mm styrene sheet and weld them to the lower doors and indicated. The finished front doors will look like this:



Making the Cab Roof.

There are two roof type to make, the peaked 1870s roof (easy!) and the curved 1880s roof (not so easy). Well, I guess there has to be something easy to do for the guys making all those arched windows. The peaked roof is a relief!

Refer to the PDF pages entitled 'Cab Roof'. Make sure you have the correct era type.

Step 1 - The Roof Sheet.

Making the 1870s Peaked Roof.

Cut out the two Roof panels from **2mm styrene**, following the PDF. Carefully sand the edge of both units to a slight angle where they are to meet, so that you can get a clean pitch and no open joint seen from above. Along the inside face of the roof, apply some sticky tape to the joint between the two panels. Your roof is now one piece, with both panels movable.

Next cut four lengths of 4.6mm x4.6mm Plastruct SHS. The four lengths should match the internal open length of the cab, as measured between the front and back walls. The intention is to use these 4.6mm SHS as roof framing members that provide strength to the roof, as well as a nice tight-fitting guide that

enables the roof to fit snug into the cab walls. With this design, it is possible to keep the roof removable for all time, or, if you choose, you can glue it permanently into place at the end of this chapter.

Place your cab unit upside down on the bench. Next, place the floppy roof panels onto the roof area of the cab, with the cab above it (you are looking down onto the underside of the roof). Make sure your roof panels are squared up with the cab walls. Use some more sticky tape if you wish to hold the roof in place, fully squared up with the cab walls, and properly set in position. Allow for the correct overhang at the front and rear edges of the roof, relative to the walls. (Refer to the overall cab PDFs to see the cab walls/roof relationship).

Next, insert two lengths of the 4.6mm SHS into the roof space. Place the SHSs as hard as possible next to the cab walls' internal sides. Weld the 2 SHS to the underside of the roof, but do not let the welder run into the cab walls. Apply the other 2 SHSs against each other on either side of the joint between the panels, along the centre line of the cab. These 2 SHSs will help hold the pitch of your roof and weld the roof halfs together. When the welder has set, carefully remove the roof unit. It will now be a solid peaked roof, with 4 SHS rods running along the underside. You can now insert and remove the roof at your pleasure. It should be a reasonably tight fit, so no actual bolting of the roof is required.

If you desire to bolt the roof down, you can insert small screws into the front and rear walls, running the screws into the hollow ends of the roof SHSs.

Making the 1880s Curved Roof.

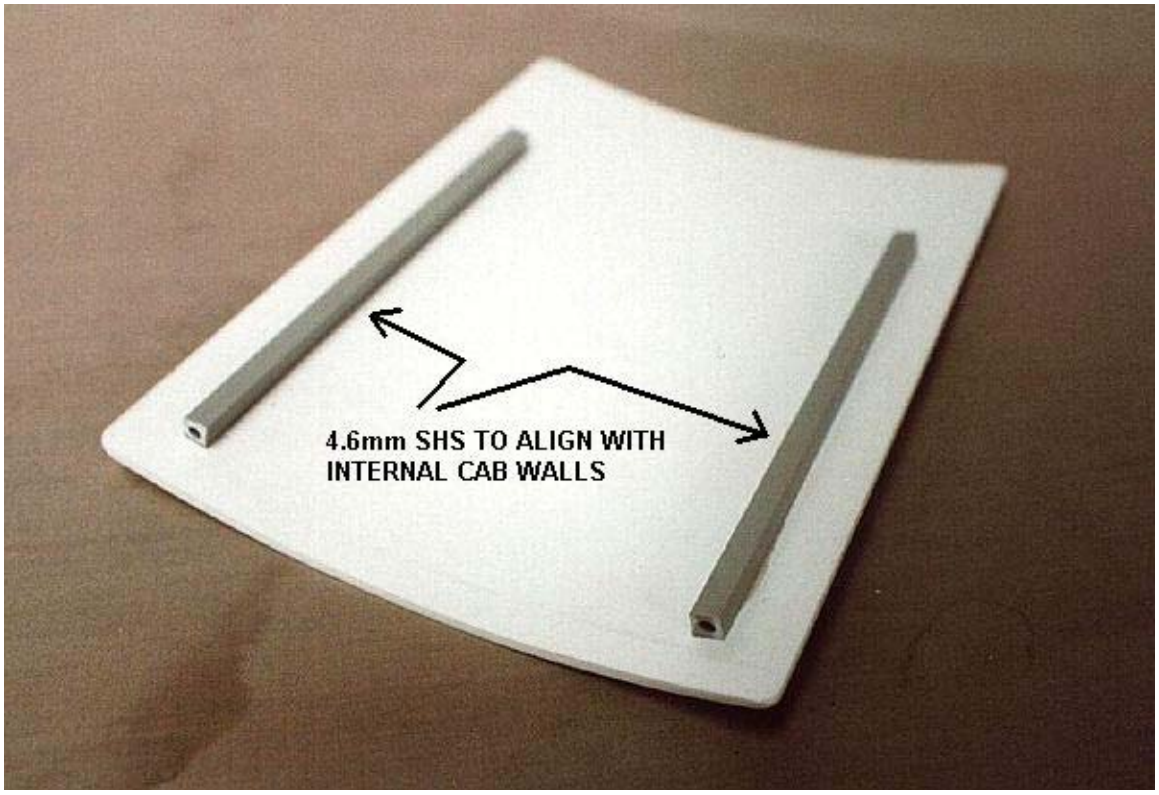
Cut out the single Roof panel from **2mm styrene**, following the 1880 PDF. Now use a hair drier, or heat from the kitchen stove (careful!). Warm up the 2mm roof sheet and slowly work the plate into a curve. Make sure the curve is consistent along the whole roof. Avoid kinks. It helps to warm the roof, and then use a 30mm or so PVC pipe as a roller and roll over the roof atop a foam backing. Keep testing the roof curvature against your cab walls. It is best to over-bend the roof slightly, as you don't want the edges of the roof visibly lifting.

Next, cut three lengths of 4.6mm x4.6mm Plastruct SHS. The three lengths should match the internal open length of the cab, as measured between the front and back walls. The intention is to use these 4.6mm SHS as roof framing members, that provide strength to the roof as well as a nice tight-fitting guide that enables the roof to fit snug into the cab walls. With this design, it is possible to keep the roof removable for all time, or if you choose, you can glue it permanently into place at the end of this chapter.

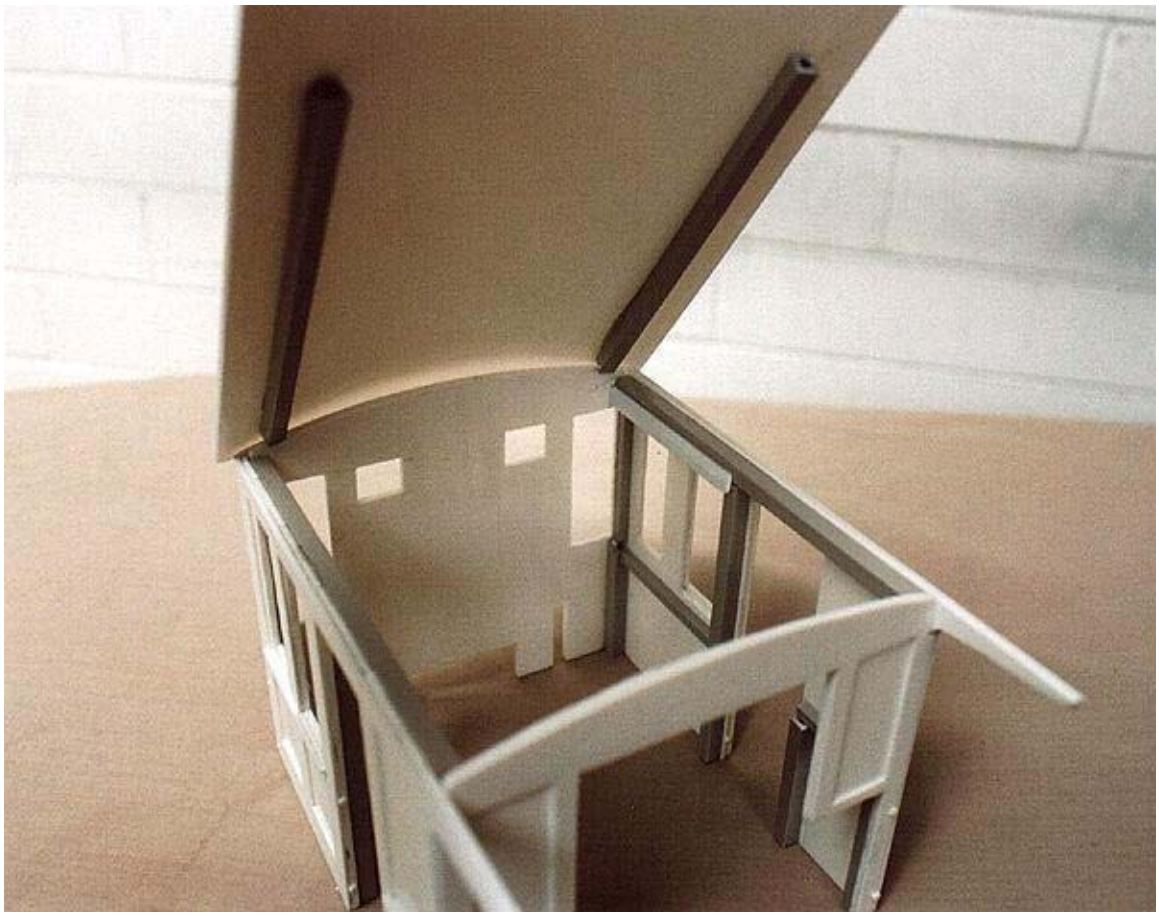
Place your cab unit upside down on the bench. Next, place the curved roof panel onto the roof area of the cab, with the cab above it (you are looking down onto the underside of the roof). Make sure your roof panel is squared up with the cab walls. Use some more sticky tape if you wish to hold the roof in place, fully squared up with the cab walls, and properly set in position. Allow for the correct overhang at the front and rear edges of the roof, relative to the walls. (Refer to the overall cab PDFs to see the cab walls/roof relationship).

Next, insert two of the 4.6mm SHSs into the roof space. Place the SHSs as hard as possible next to the cab walls' internal sides. Weld the 2 SHSs to the underside of the roof, but do not let the welder run into the cab walls. Apply the 3rd SHS on the underside of the panel, along the centre line of the cab. When the welder has set, carefully remove the roof unit. It will now be a solid curved roof, with 3 SHS rods running along the bottom. You can now insert and remove the roof at your pleasure. It should be a reasonably tight fit, so no actual bolting of the roof is required.

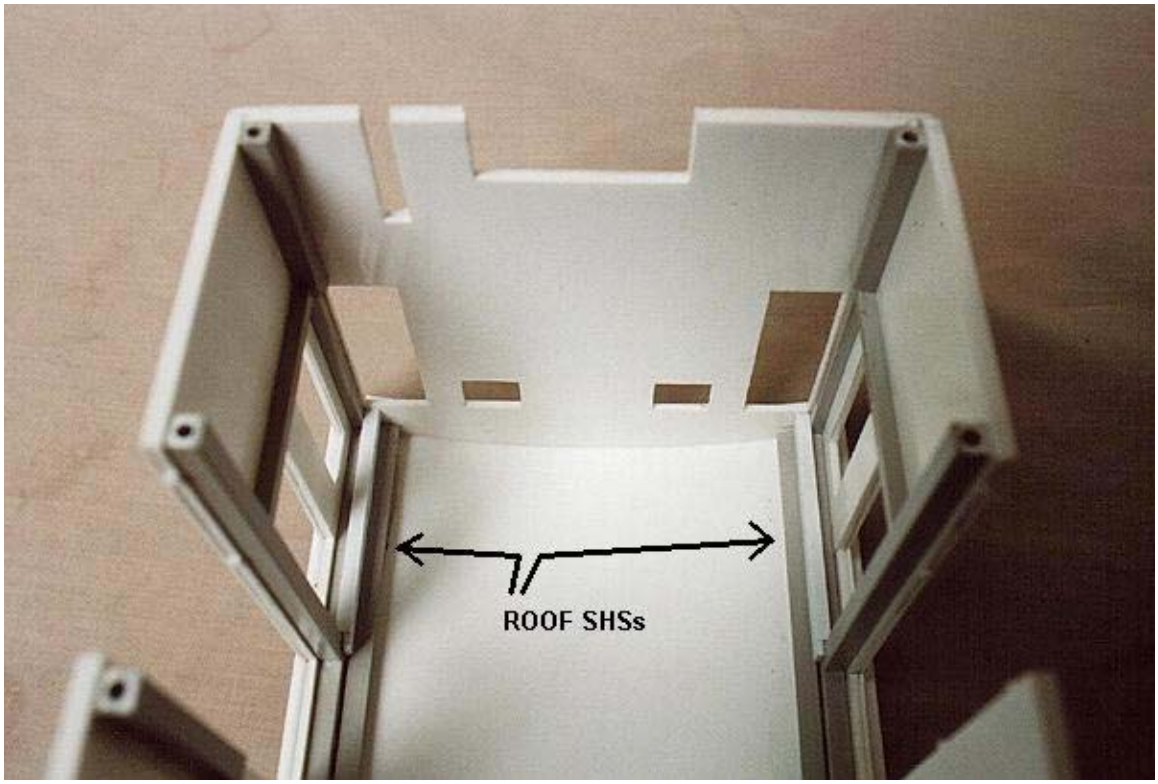
The curved roof with side SHS added will look like this:



...and a view looking into the cab with the roof being lowered into place. Note the alignment of the roof's SHSs with the outer wall framing of the cab.



..and with the cab roof now dropped into place as seen from inside the cab.



If you desire to bolt the roof down, you can insert small screws into the front and rear walls, running the screws into the hollow ends of the roof SHSs.

Step 2 - Detailing the Roof.

Lining the cab ceiling.

The lining for both 1870s and 1880s roofs is the same. These Mason cabs were built with actual roof framing purlins and structure. When one looks at the cab ceiling, you do not see the underside of the roof, but the lining applied to the underside of the roof framing.

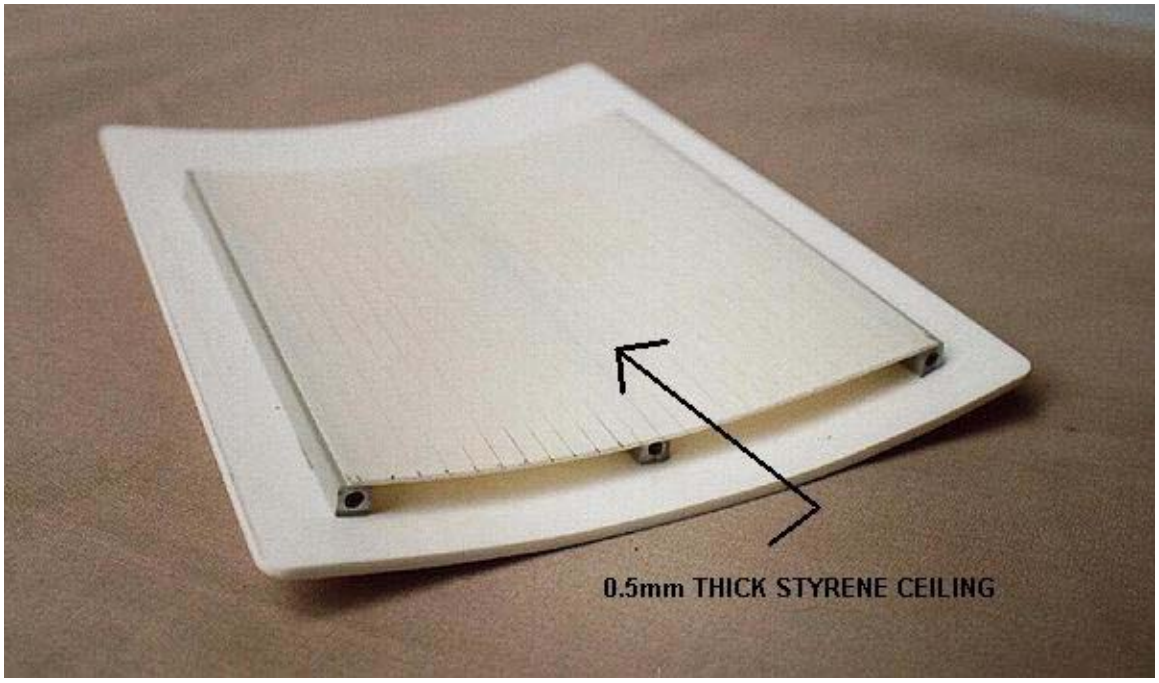
We are about to line our ceilings per prototype, however, some of you considering sound units or radio control circuit boards might like to leave out this ceiling. The space in the roof area, above the cab windows, could be a useful location to hide some of the circuit boards, while providing easy and ready access to those boards. If using the roof space for circuit boards, then do not glue your roof to the walls. Retain the roof as removable.

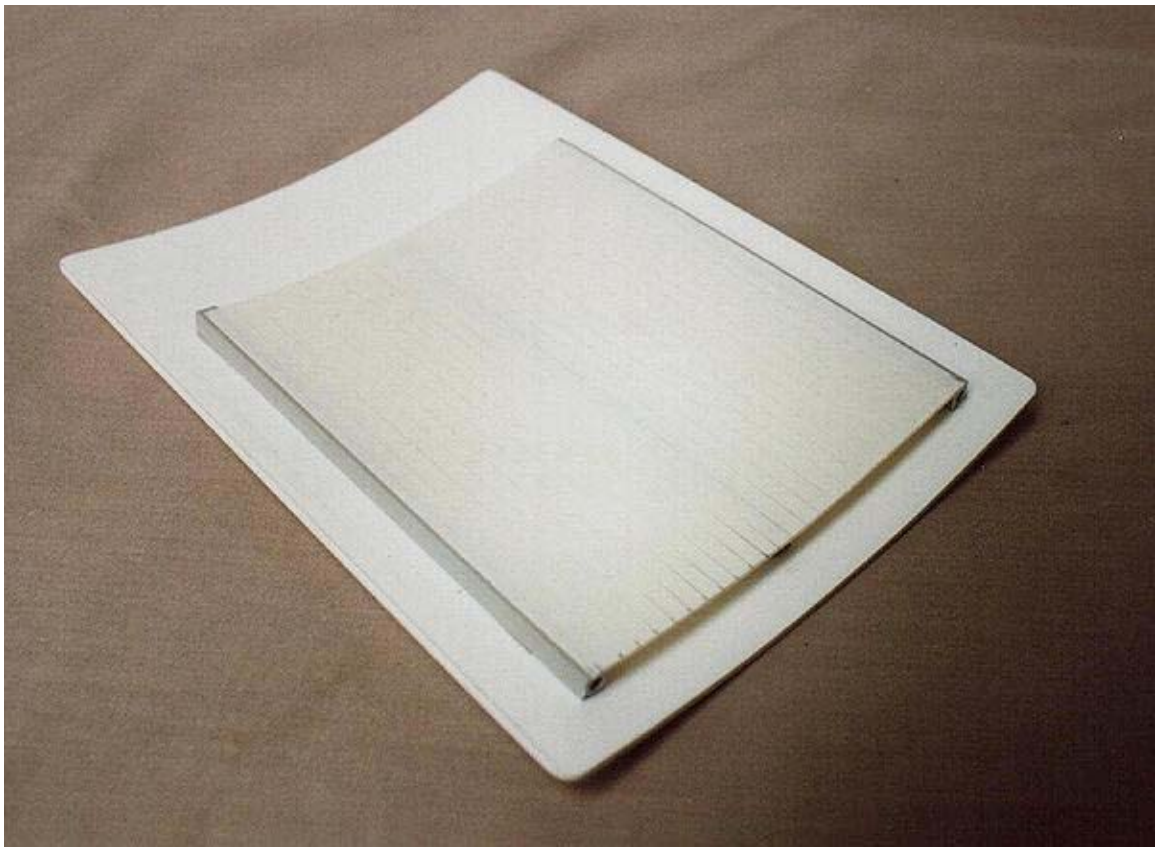
The Ceiling Liner.

We make the lining by cutting out a rectangle of **0.5mm thick styrene** of size to match the ceiling area within the cab walls (dictated by the extent of the roof SHS framing). Using your knife and metal ruler, score a series of plank lines along the ceiling sheet to simulate the ceiling lining boards. The boards run the length of the cab ceiling.

Next, weld the ceiling liner onto the roof SHS members. You now have the roof, prototypical roof framing thickness and lining boards all attached to your removable roof unit.

The roof, with ceiling attached will look something like this:





Step 3 - Gutters and Bolts.

Now we detail the outside face of the roof.

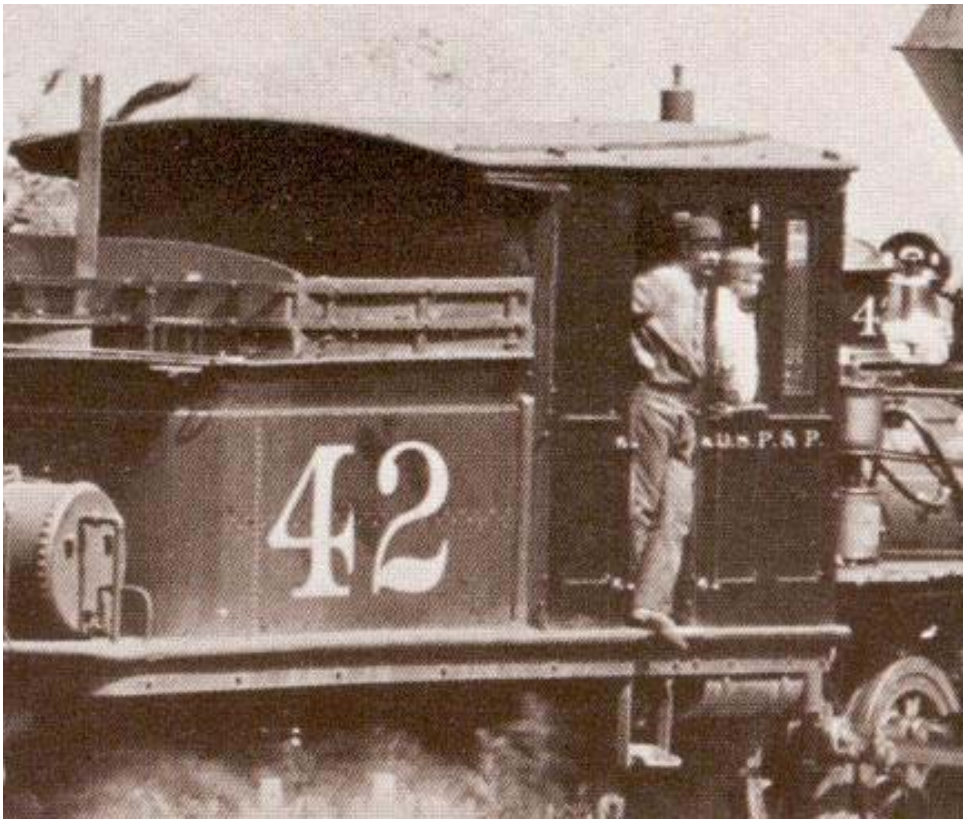
On the 1870s peaked roof, there is only one detail to add. Following the roof PDF, apply the two runs of gutter. These are 1mmx1mm strips of the styrene welded to the outer edge of the roof. Apply the edge trim to the roof along the front and rear edges in a similar way to the side gutters. You will have created a rectangular formation of 1mm strips around the roof perimeter.

On the 1880s cab roof, the gutters are a little more complex. Again use 1mmx1mm styrene strip welded to the roof. The profile for the gutter run on the PDF page is based on the roof details of DSP&P locomotive #42. This gutter runs near the bottom edge of the roof along a diagonal line. When the gutter reaches the area above the engineer's window, there is a slight bend in the gutter strip as it heads further inboard. This detail is by no means consistent for all DSP&P locos. In fact, many of the cabs as I see them have the gutters run on a continuous diagonal with no bend at all. Others appear to have a more severe bend as detailed by Art Wallace on his 1960 drawing of the light 2-6-6T.

Either copy the profile I have provided on the PDF, or look through many of the cabs in the MC2002 Mason archive for ideas on how to run the gutters.

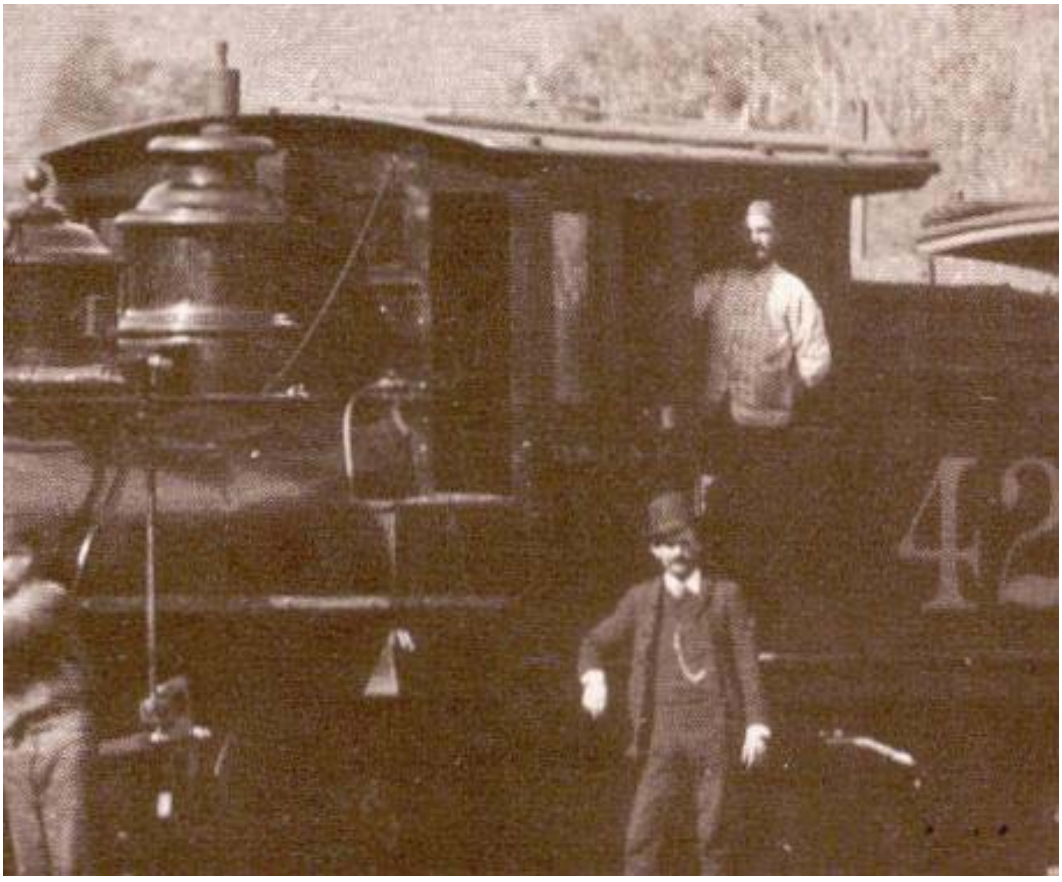
The Bolts - 1880s roof only.

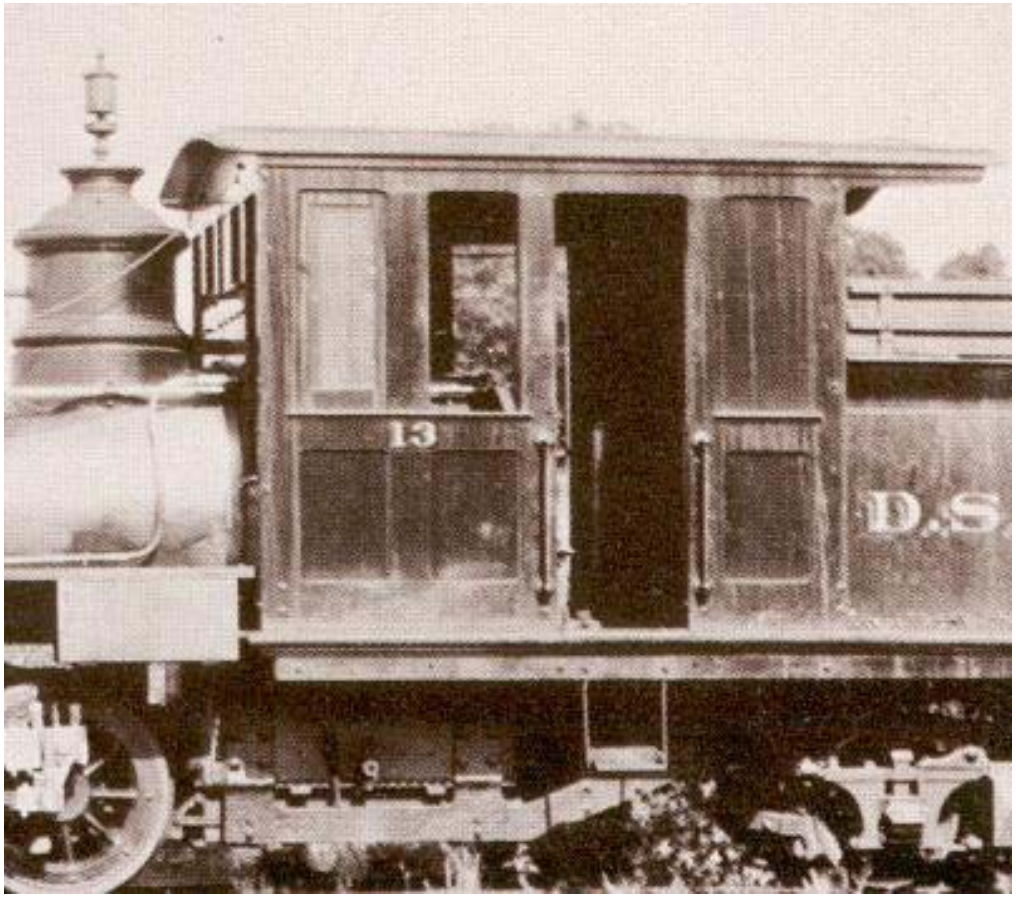
The 1880s roof was bolted to the cab walls via some long tie rods that ran down the walls within the wall thickness. The tops of the rods were exposed through the roof top. The roof was then clamped into place via a large nut and washer. You will note that each of the nuts was perfectly aligned with the main frame members of the cab walls. That is, on either side of the doorway, at the corners of the cab and above the engineer's window mullion. Also, take note that not all the rods and nuts were the same size. They appear to be classified into two groups, primary (larger) fixings and secondary (smaller) fixings. I have indicated both sizes on the PDF drawings for the 1880s cab roof. Like the 1880s cab roof gutters, the arrangement of larger and smaller nuts seemed to vary from loco to loco. Check the pictures in the archive for some idea of the range. The style chosen for the PDF is based on the clearest roof shots we have, that of DSP&P #42, post 1885.



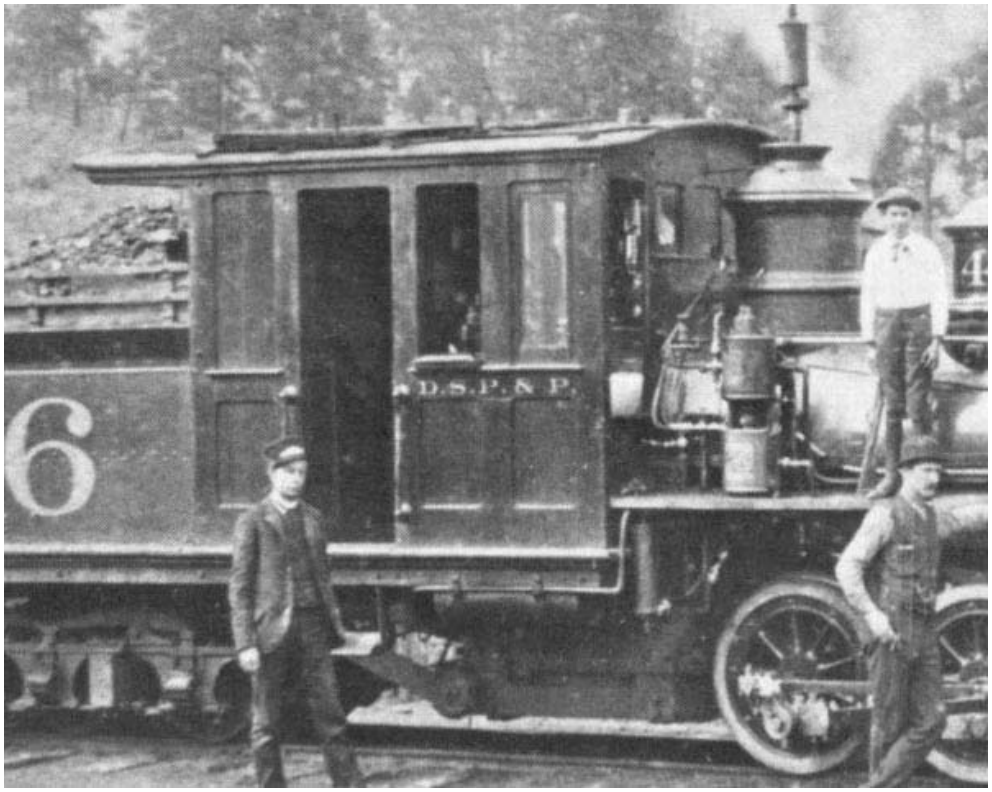
Here are some examples of various roof details, note the differences in roof gutters and exposed roof nuts:

These two photos of #42 indicate the clearest arrangement of gutters and roof nuts, the PDFs were based on this loco. Note the locations of smaller and larger nuts.





The gutters of DSP&P #13, pre-1885, appear to be absolutely straight, applied with just a slight angle along the roof. The roof nuts also appear to be quite discrete.

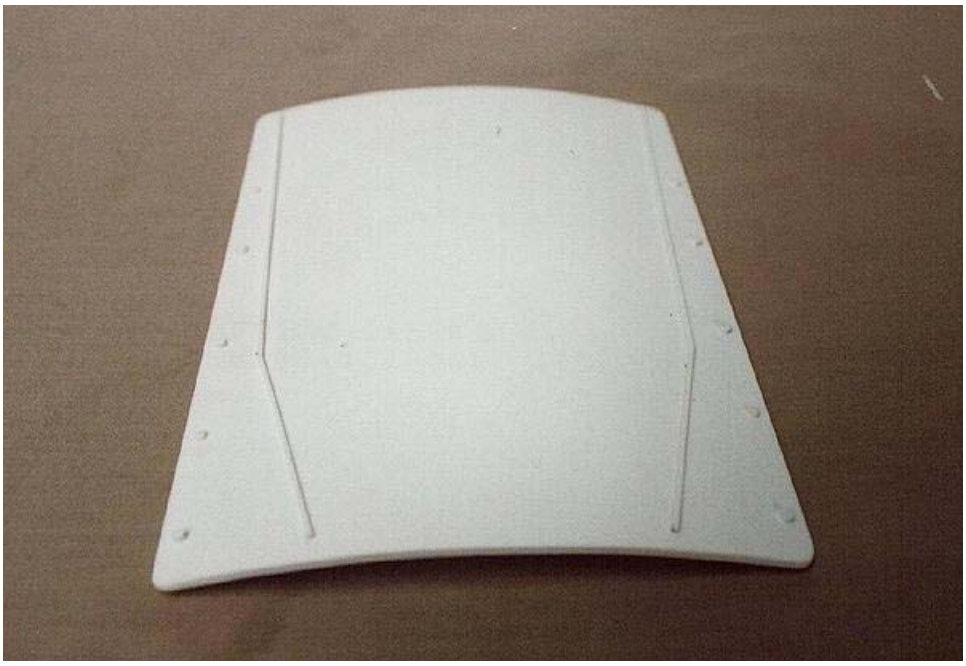


The roof gutters of DSP&P #46 represent the style adopted by Art Wallace in his 1960 Mason Bogie drawing, and is the style adopted in the FH&PB cab kits. The gutters run long and straight up to the front window area, then kick in sharply toward the roof centre. Also note the very large roof bolts in this example.

We make the nuts using chunks of 2mm thick styrene sheet. You can also make the nuts using real metal nuts. Close over the hole with epoxy or styrene. The styrene nuts are cut into hex shapes to simulate nuts and are welded into place.

We will paint the roof, gutters and nuts all in one go at the end.

The 1880s roof with gutters and nuts attached will look like this:



and with the roof set in place:

Step 4 - The Roof Cornice.

Both 1870s and 1880s cabs require a stepped Cornice at the interface between external wall and roof.

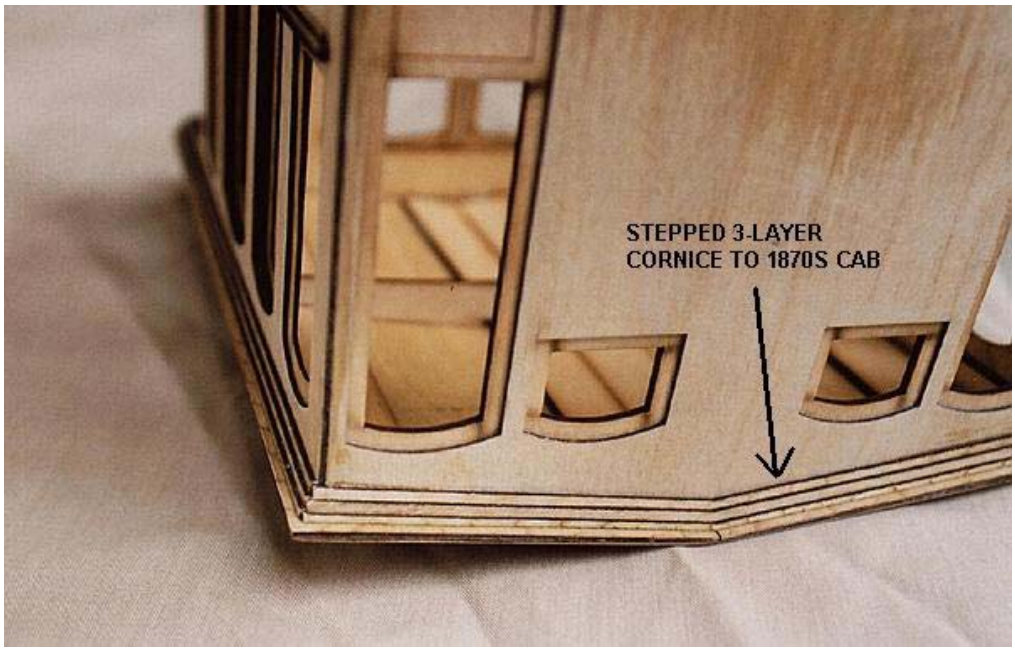
The 1870s Cab.

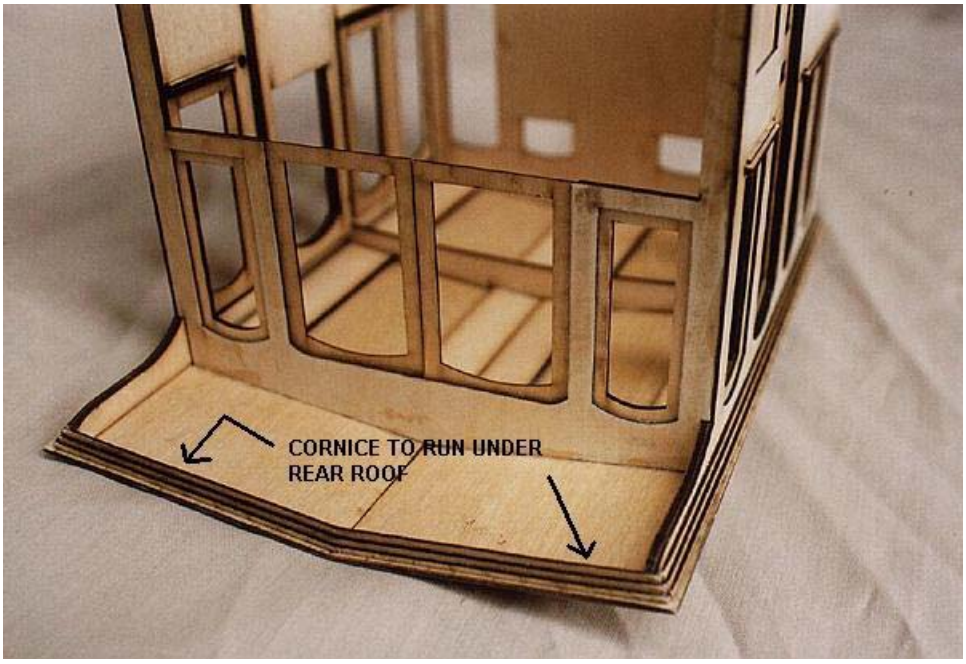
Follow the PDF for the 1870s Cornice. You will be cutting several strips of 0.5mm thick styrene. With the roof unit firmly fitted to the cab walls, apply the bottom-most, widest strip to the cab walls. Butt the upper edge of the Cornice hard up against the roof sheet. This will help hide any gaps etc between roof and wall. Next stack up the 2nd and 3rd layers of the arch stripping. Each strip is narrower than the last, forming a nice stepped Cornice.

Take care at the corners to allow the side strips to run past the edges of the strips on the front wall.

The rear wall has no Cornice, but we are required to run the 3 layer molding detail around the rear end of the roof.

The 1880s cab Cornice details will look like this: (taken form the FH&PB cab kit).

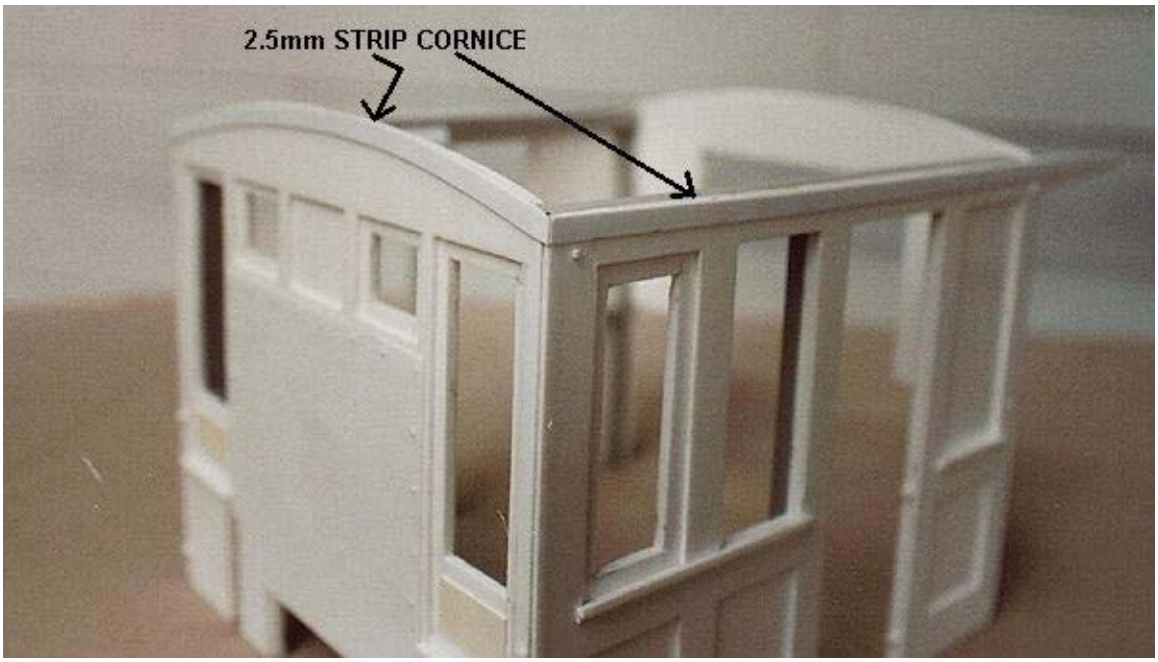




The 1880s Cab.

The 1880s cab Cornice is very simple. This is just a 2.5mm wide strip of 0.5mm styrene. Apply the strip to the front and side walls of the cab only. With the cab roof firmly in place, weld the Cornice strips into place, with the edge placed hard up against the roof sheet. This will hide any gaps between roof and walls. On the 1880s cab there is only the one Cornice strip. No fancy stepped version is used. Along the front wall, carefully bend your 2.5mm wide strip to follow the roof profile. You will be able to bend this strip in your fingers.

The 1880s cab with Cornice attached will look like this:



Step 5 - The Wall Details.

All Mason Cab versions have large metal tie rods that run inside the wall thickness. These tie rods are terminated at the wall ends with nuts and washers. The system literally clamps the cab walls together, and allows them to flex and resist the vibration of normal operation.

Refer to the PDF pages entitled 'Cab Wall Details'. Here you will see the tie rods shown dotted as they run through the walls. You will also see the nuts that terminate the rods.

Additionally there are some exposed bolts that hold the walls together at the corners.

Please note that the 1870s and 1880s cabs both have the tie rod nuts and smaller bolts, but their locations are slightly different. Please refer to the PDF wall detail pages for your correct era.

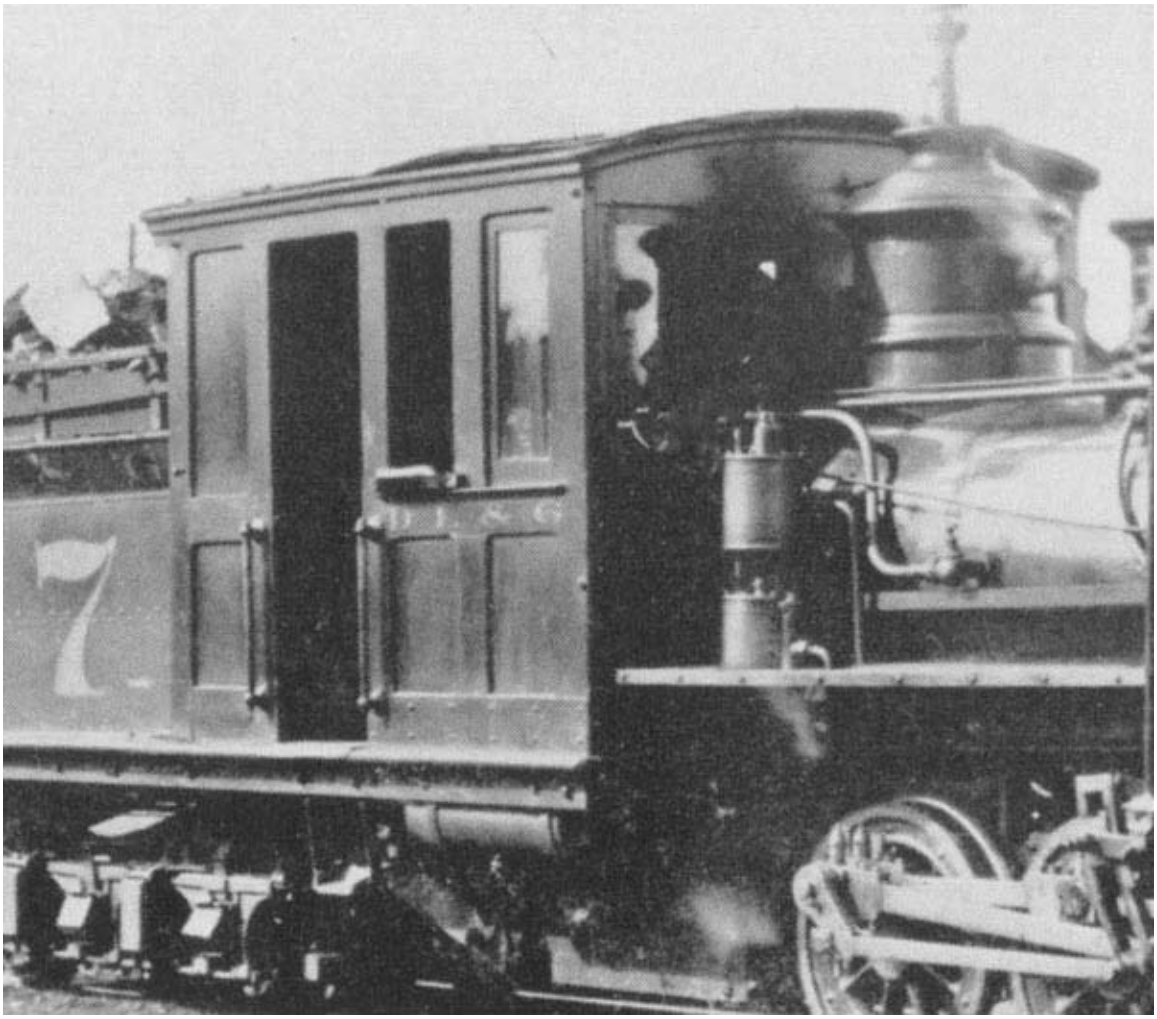
We make the exposed tie rod nuts using 1mm thick styrene, cut into 1.5mm diameter hex nuts.

You will weld two nuts at the leading edge and rear edge of the walls below the window level and two nuts at either side of the side door reveals. The same is repeated to both sides of the cab. This takes care of the longitudinal fixings. Weld the nuts into place, within the 3mm thickness of your model walls.

We now apply the secondary bolt fixings to locations shown in the PDF drawings. These secondary fixings are made from our trusty 'rivet rod', Evergreen 0.020x0.030" styrene strips, diced into cubes and welded into place.

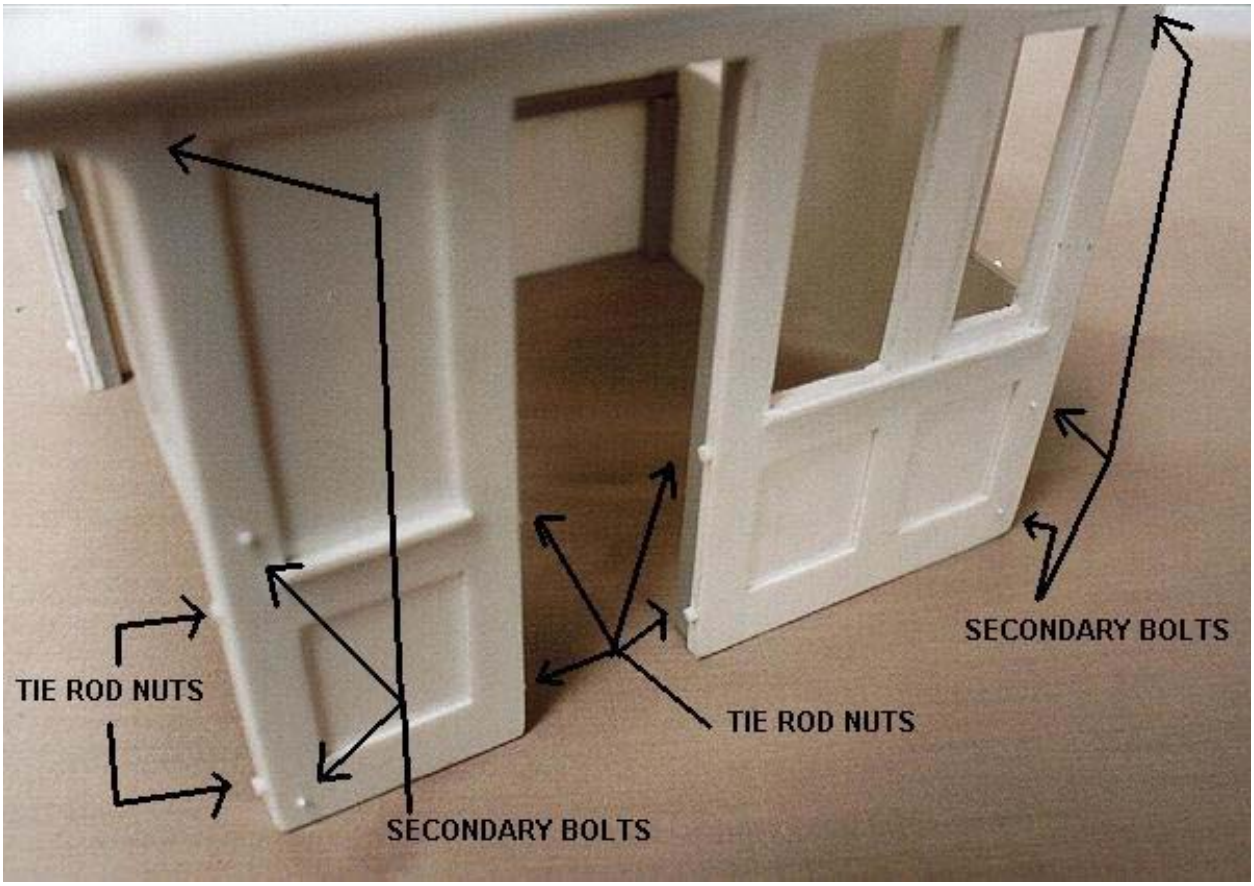
Note that for the 1880s cab, there are two versions for secondary bolt placement. The Mk1 version has simple fixings similar to the 1870s cab. The Mk2 version has considerable more bolts added. These Mk2 cabs seem to be used in from the mid to late 1880s. The difference between the two 1880s versions is specifically the two rows of bolts above the deck toward the front of the cab, and the added bolts along the front wall below the front doors.

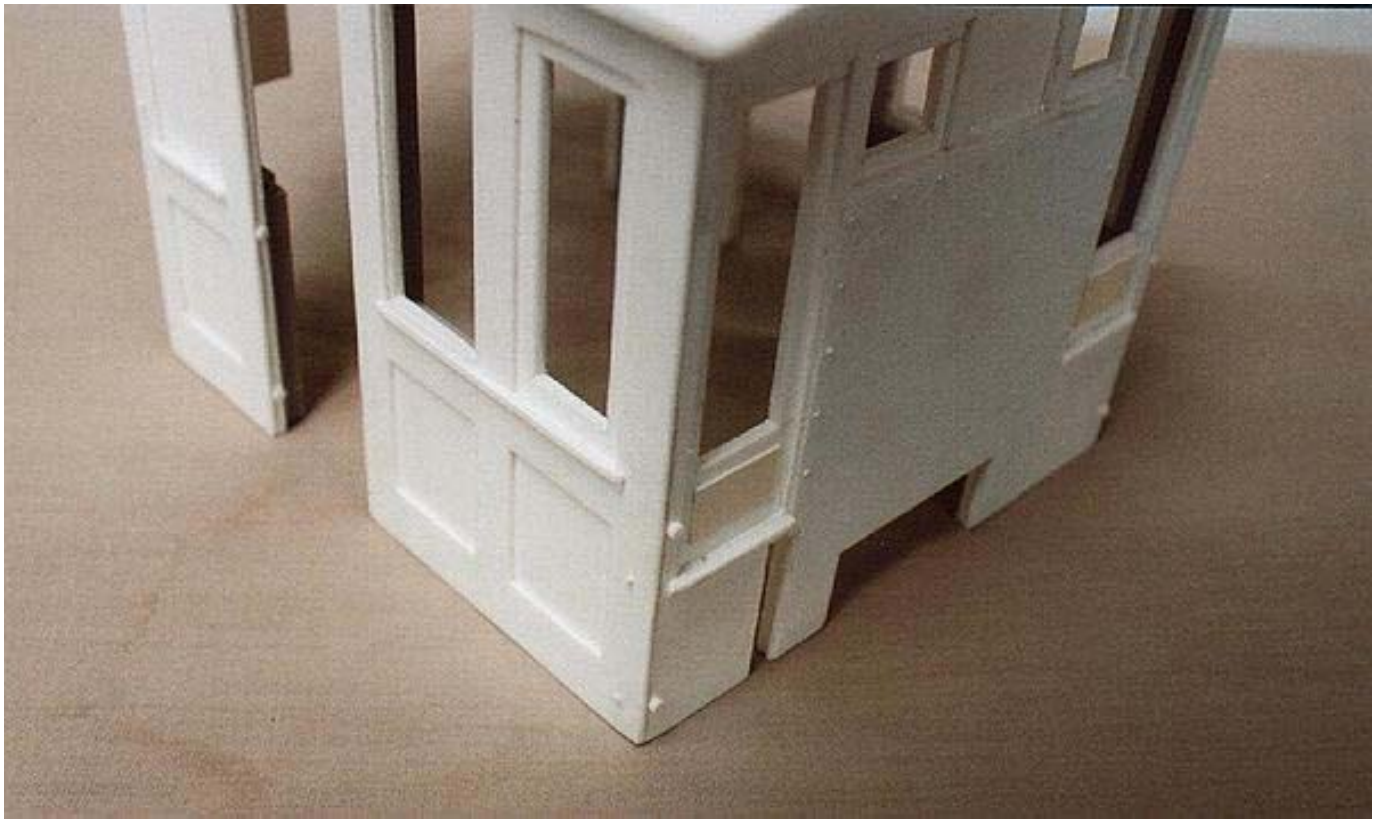
Above is a typical MK2 cab bolt detail, note the rows of bolts along the lower cab wall. This detail is also seen in photos of DSP&P #43. It's likely to be an on-the-road DSP&P repair of some sort. Neatly done, it can be a nice bit of added detail.

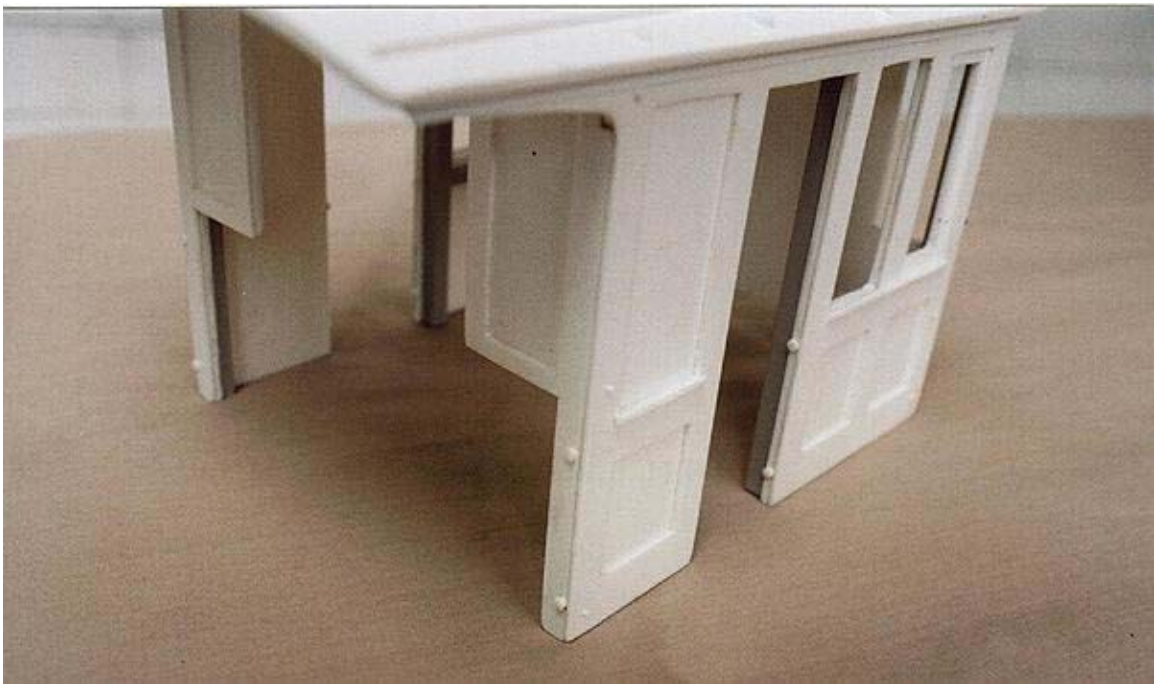


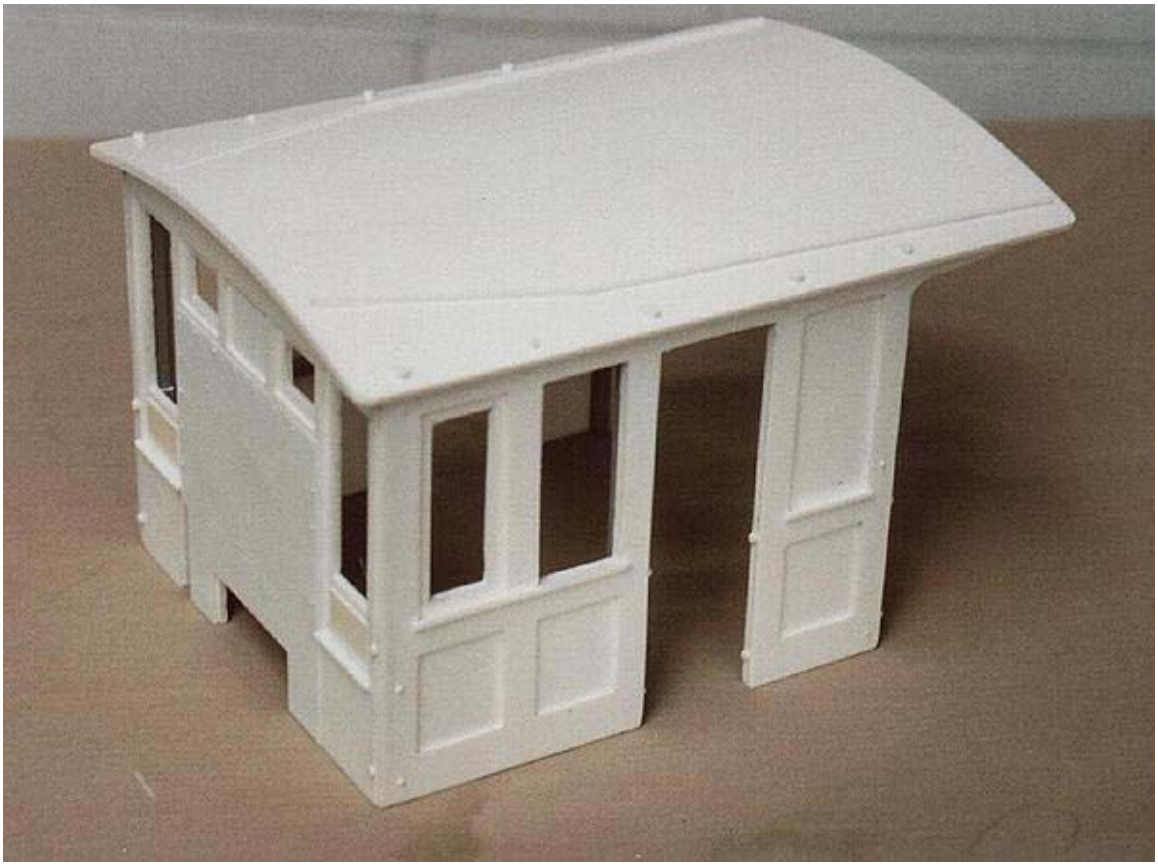
You may choose which 1880s version you would like to model.

The typical 1870s and 1880s Mk1 version of fixings will result in a model like this:



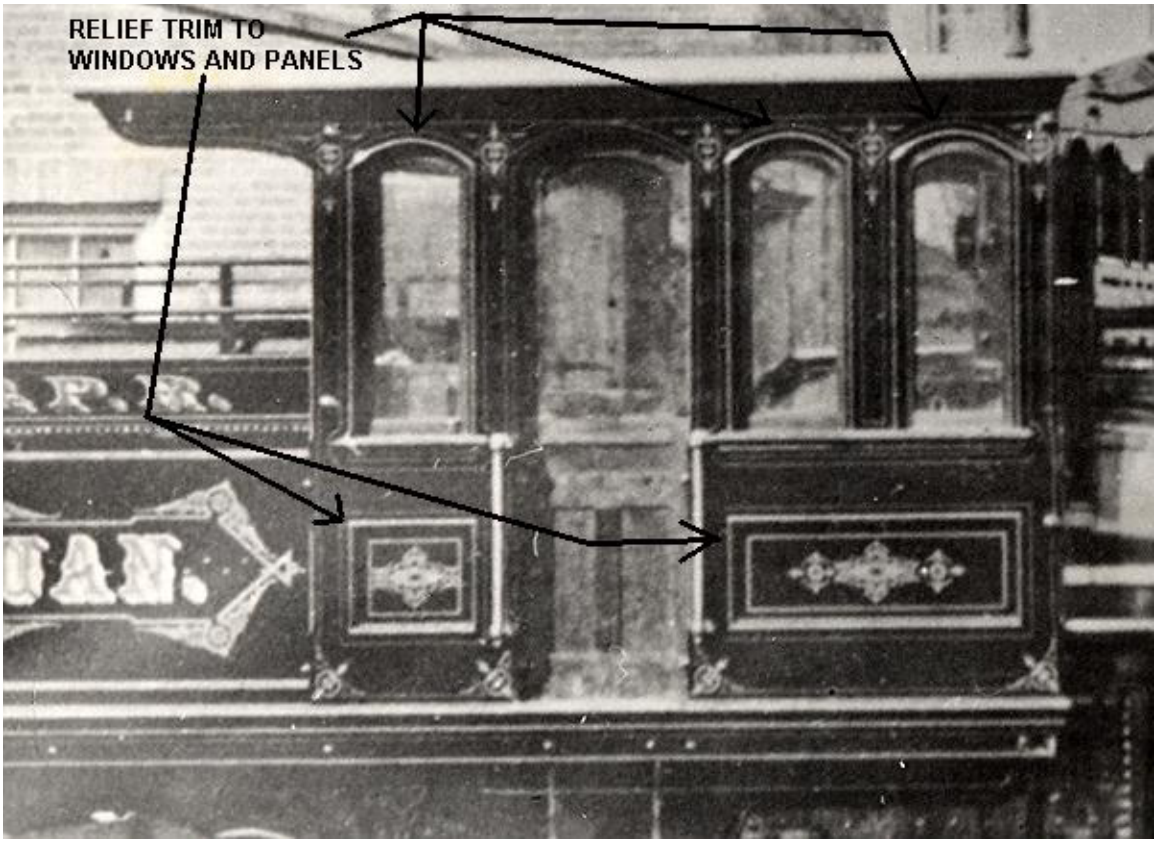






Step 6 - The 1870s Cab window Trim - for styrene and FH&PB 1870s Cabs.

The 1870s cabs are unique and different from later era cabs on a number of fronts, obviously the arched windows and special. The glass also had beveled edges similar to the finest Manor house windows. The Arched windows also had external trim that really lifted the arched off the wall plane. Looking at most of the Mason builder's photos, you can see the light glinting off this external relief detail.



The relief detail surrounded all the side and front arched windows, and also surrounded the panels below the windows as seen in the above photo.

Refer to the PDF page entitled "1870s cab external Relief details".

This detail is only to be applied to 1870s cabs with arched windows. It is not appropriate with the rebuilt 1880s cabs.

This is a purely optional detail. If you feel you will spoil your cab attempting to add this trim, then leave it off. This detail is prototypical, but also just icing on the cake!

The dotted lines around the windows and panels on the PDF indicate the extent of the relief required.

For scratch made styrene cabs, use our 0.020x0.030" styrene 'rivet rod' strip to make the relief. Approx 1/2mm away from the edges of the windows and panel areas, weld the rivet rod into place. Cut the corners accurately. When every window and panel has been surrounded by this relief, lightly sand over with fine sand paper to round off the detail. When painted in with the rest of the cab, the relief will really stand out as a cab wall molding.

For FH&PB wood cab kits, use 0.50mm brass wire. Carefully bend the wire into the arch shapes, and rectangles around the cab wall panels. Make the corners as tight as possible, using long nose pliers. Do each relief area in one length of wire, bent to shape. Using epoxy, superglue or PVA, glue the wire relief units into place around the windows and panels. Do some tests, but you might like to grease some epoxy over the relief trim after they are installed, in order to better integrate them as a molding in the cab wall. When painted over, the relief will become one with the cab wall and be most stylish.

The Classic Mason side entry doors - Masterclass 2002 nightmare #2.

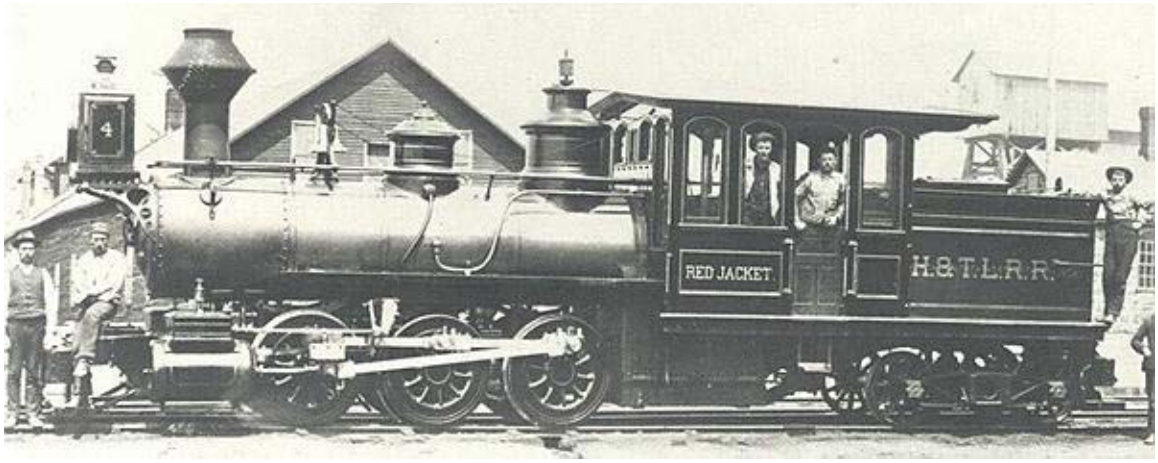
Ok, so you didn't like making the Mason bell in CH3 too much. Well this Mason doorway is a corker as well, but a cool detail when achieved. You never know what you might achieve till you try it!

Mason just doesn't do things by the book. The doors to our DSP&P 2-6-6Ts were unusual. The Mason door, to both 1870s and 1880s cabs was as follows:

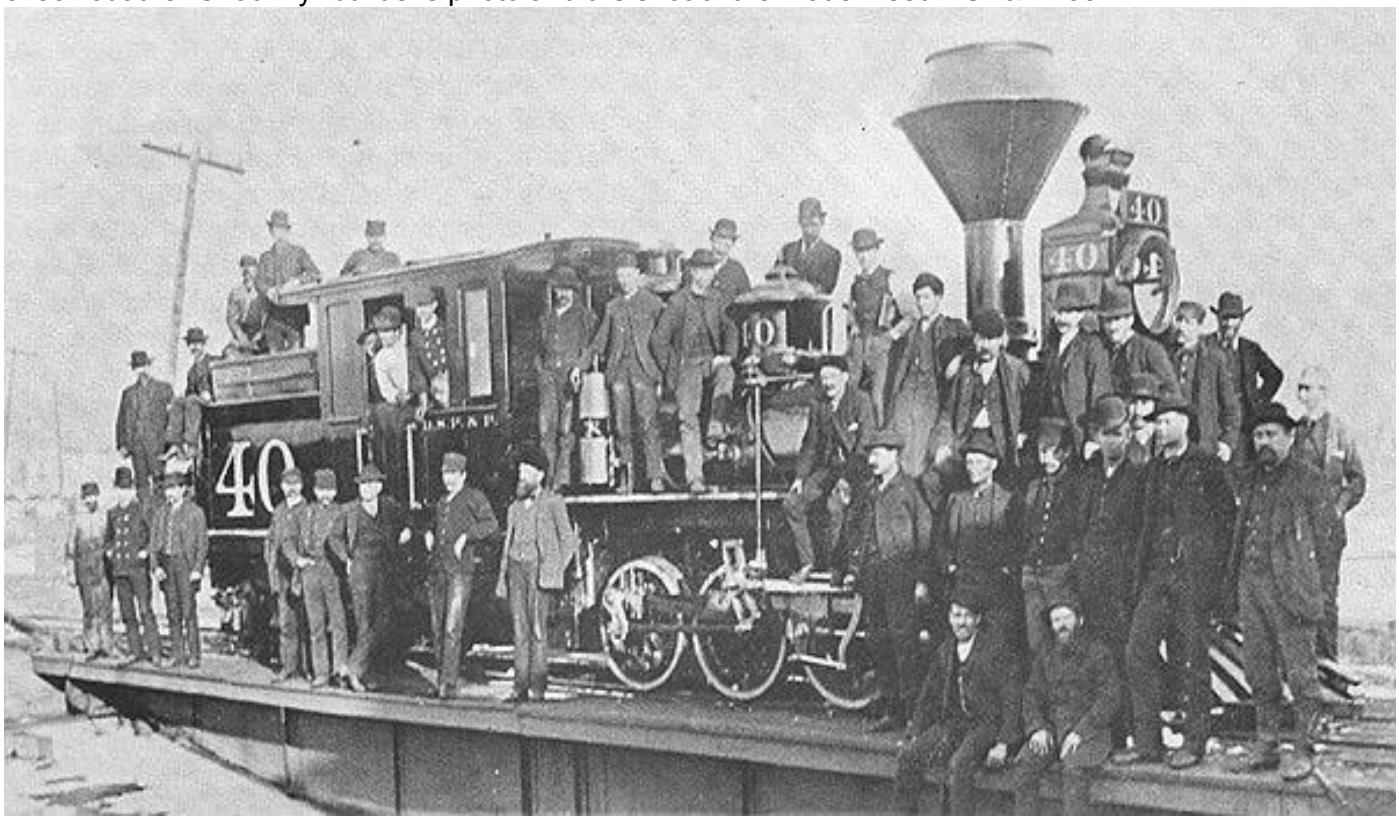
The door was a two-part affair, made like a 'Dutch Door' or 'Barn Door'. It was possible for the loco to be run with the lower half of the door closed, and the upper half open. Many photos show Mason locomotives operated in this fashion. The details we are about to describe are not standard for all Masons, indeed some early Mason cabs seemed to have single swinging doors, in one piece. But certainly from the South Park era, the doors were a Dutch type.

But the story does not end there. The lower half of the door was a hinged door that swung back, laying flat against the tender legs inside the cab. The upper half of the door was a sliding window sash. This window slid back above the tender shell into the rear portion of the cab. It did not swing, mostly because it would have been in the way of the working crew, and worse, the crew might have been clobbered by the door when breaking suddenly. So the door was slid back and hooked in a stowed position.

Here is a darn clear photo of one of the Hecla & Torch lake Mason Bogies, "Red Jacket" from 1880, with the original cab. You can see in this operational view how the lower door is closed, and the upper sash slid back into the rear most cab section:



And in this post 1885 photo of DSP&P #40 'Oro City' on a turn table, you can again see on this modernised, post-1880 rebuilt cab, how the lower door is in the closed position, and the upper slid out of view. Please refer to the Mason Bogie archive for larger more detailed views of the same images. Also check out the "Shoo Fly" builder's photo and the shot of the modernised DSP&P #55.



When it comes to modelling this door, we have two options:

Build the door to prototypical practice, with swinging and sliding door components, grit and bear it.

The Wimp's Way method: glue the whole door shut in one piece, or glue the door fully open in its two parts, or leave the door off completely.

There are no medals for making the door work. You have to ask yourself what it is that you want from the model. If you are intent on showing the model off, winning the local model trophies etc., then build the door with all the moving parts. If you are intent on running the model and have no interest in playing dolls houses with the cab, playing with the doors and windows, and the figures within, then I would recommend you glue the doors in a fixed position, probably with the lower half closed, and the upper half glued in the stowed position, or glued with the doors fully open.

For the purposes of demonstration, I will show you how this Mason door worked, via building it in 1:20 scale. If I were making this for myself, I would not have bothered. I like to build and run my trains!

Step 1 - Making the Door components.

Cut out the door profiles from the Doors and Windows PDF page. You will note that the door is slightly wider than the door opening in the cab wall. The door will close up against the inside of the opening, and will not fill the opening. Cut out both layers of doors:

For the lower door, both the rear and front layers will be cut from 1mm styrene sheet.

For the Upper door (sash) the outer layer is to be 1mm styrene, the inner layer to be 0.5mm styrene.

The lower part of the door can be welded together, much like the cab walls. The glazed sash part will be made in the same way as the engineer's windows, using 3 layers of the styrene -- the 1mm front sash layer, middle clear layer, and rear 0.5mm sash layer. Apply the glass and rear layers after the model is painted. At this time you only need hang the outer sash, and paint it along with the rest of the cab.

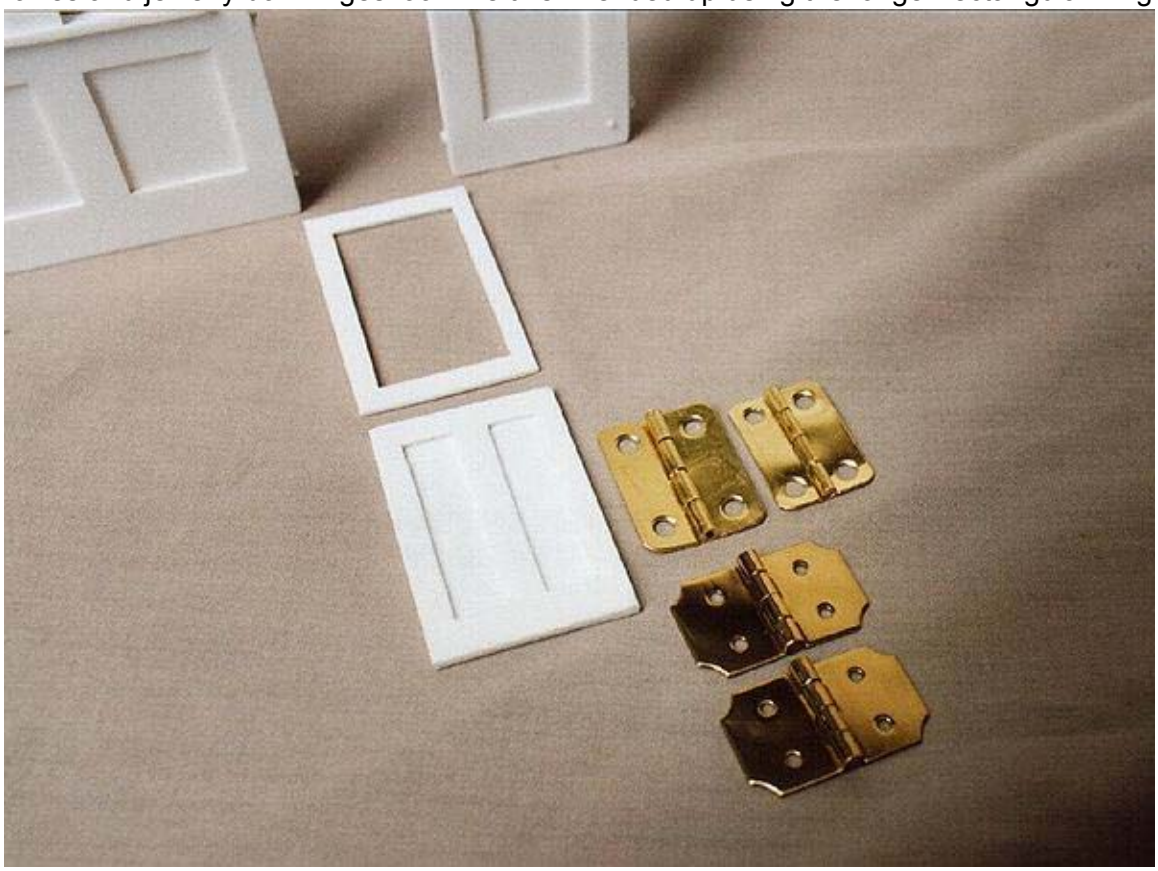
Step 2 - Hinging the Lower Door.

We can hinge the lower door in many ways. The easiest is to fit the door into place, and use a fabric type tape to hold it into place. This tape will flex and allow the door to swing. It will generally swing into the closed position.

You can hinge the door by using two tiny brass hinges used in the making of 1:12 doll houses. This will give you by far the most prototypical look, but will definitely not be for playing with. They are not robust, from experience using them on toolboxes etc. for other models.

The third way is to use stronger, jewelry box brass hinges. Twice the size of the doll house hinges, these hinges are much stronger and can be obtained in most craft stores and larger hardware stores.

The door profiles and jewelry box hinges look like this: I ended up using the longer rectangular hinge:



Step 3 - The Internal Framing.

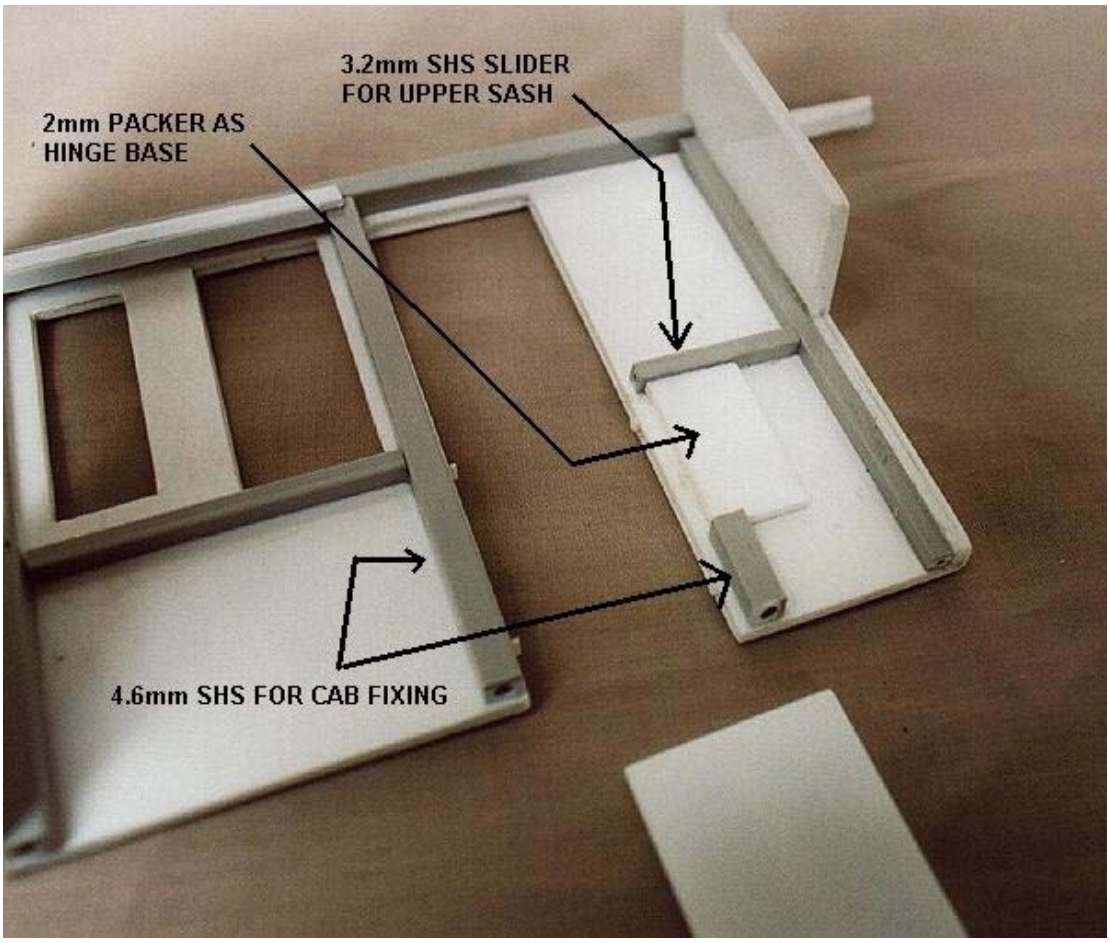
We will require a fixing point to the rear side of the entry doors. This will form the rear most fixing point to hold the cab down.

If you are not making any sliding or swinging doors, you will run a 4.6mm SHS member all the way up the rear edge of the door opening, to match the same SHS used to the lead edge of the door.

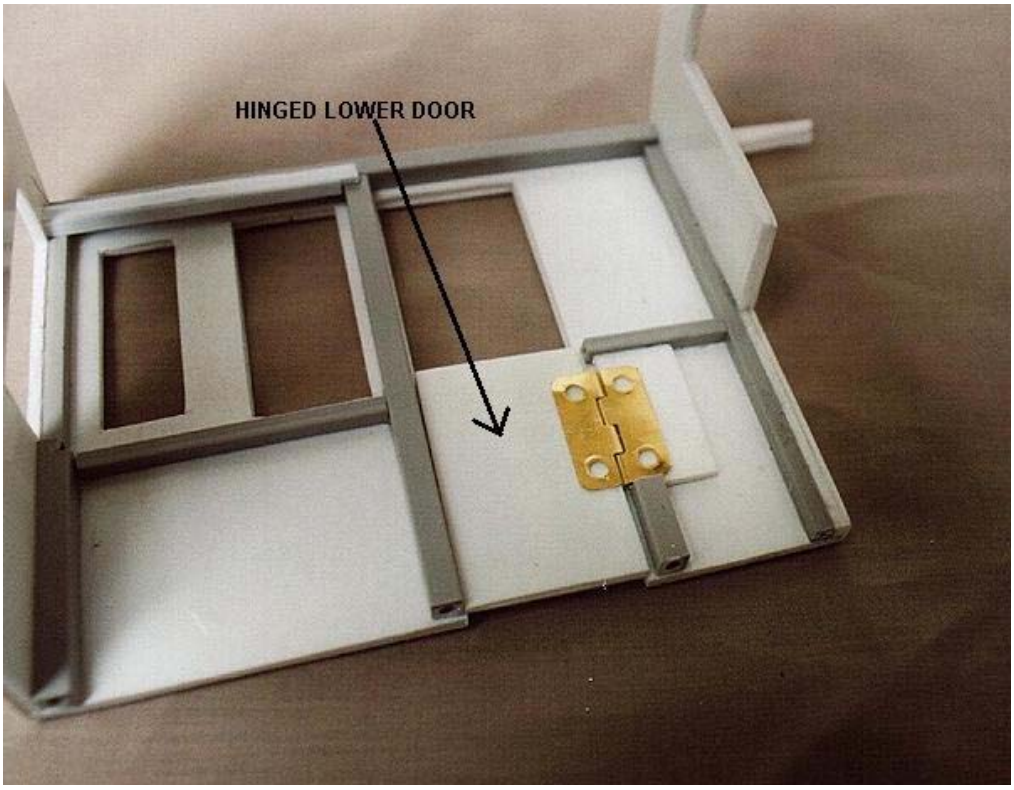
If you are going to be making a working door, then run the 4.6mm SHS unit up from the floor to some 15mm above the floor level. Everything above this SHS will be clear for hinging and sliding the doors.

Since the lower hinged door is 2mm thick, we will need to pack the cab wall by 2mm as well, such that the hinge will be applied to flat surfaces. Everything to the rear of the 4.6mm SHS will ultimately be hidden behind the tender shell, so neatness is not so critical. What is critical is that your 2mm packer and hinge above do not exceed the 3.2mm space allowance between cab wall and tender shell.

We shall also run a 3.2mm SHS along the middle of the cab wall as a slider base for the sliding sash part of the door. The wall framing for swinging and sliding doors will look like this:



And with the lower door and hinge shown in place, the cab wall will look like this:



Finally we carefully glue the hinge to the door and cab wall using aryldite or 5 minute epoxy. Roughen the styrene surface for a good bond. The epoxy will run through the hinge holes, locking the hinge to the styrene.

Step 4 - The sliding Sash.

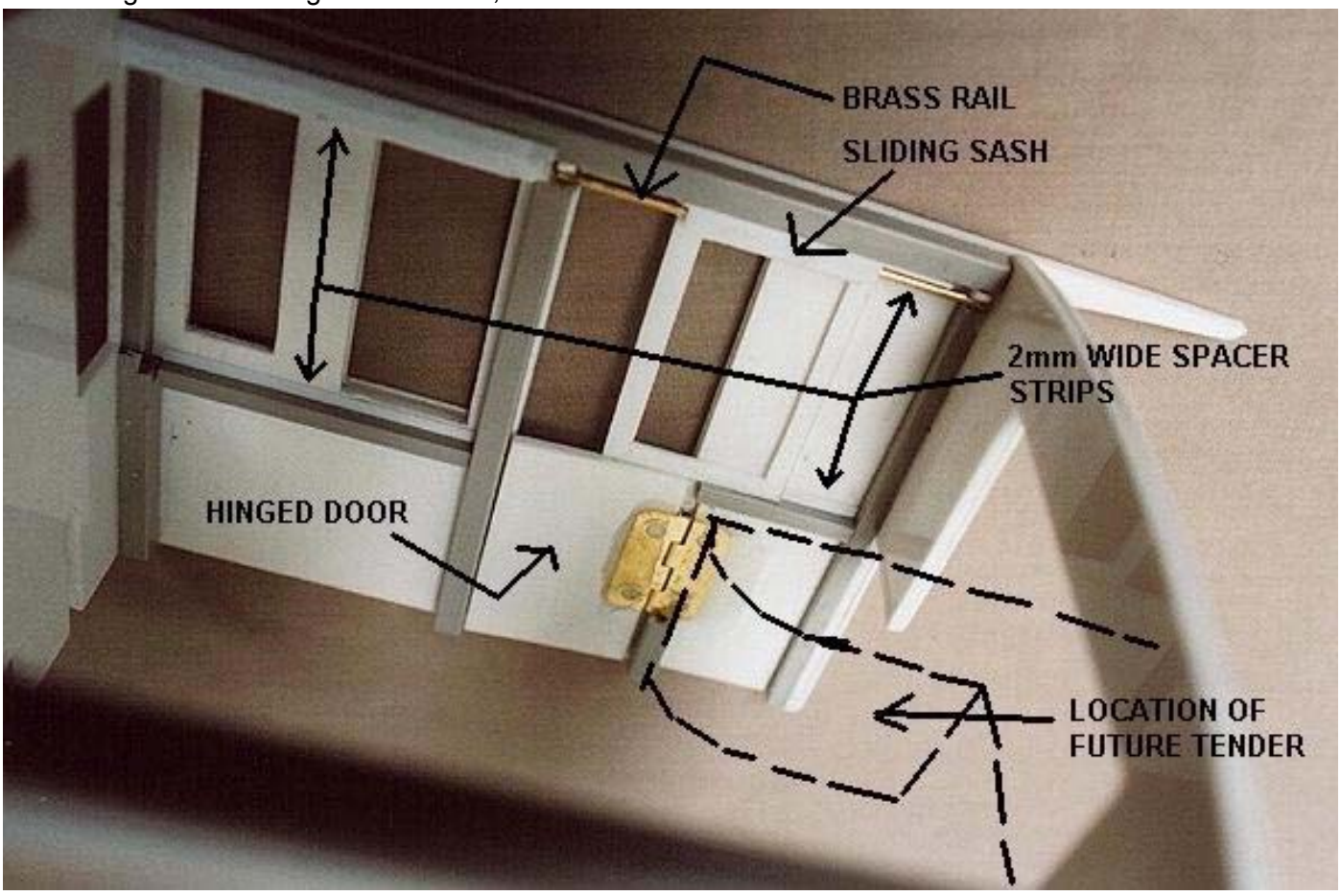
This is tricky, as we cannot use channels like we did the engineer's window. This sash has to be top hung (per prototype) and when slid closed, will sit nicely atop the lower door. Also since we're top hanging it, the sash can flop inward like a pendulum! So we need to top hang and support the sash in a vertical position, while allowing it to slide.

The answer is in the use of a small SHS, with a brass rail running through the hollow inside of the SHS. The SHS is held up against the cab wall SHS framing, and this flat on flat will keep the window vertical while it slides.

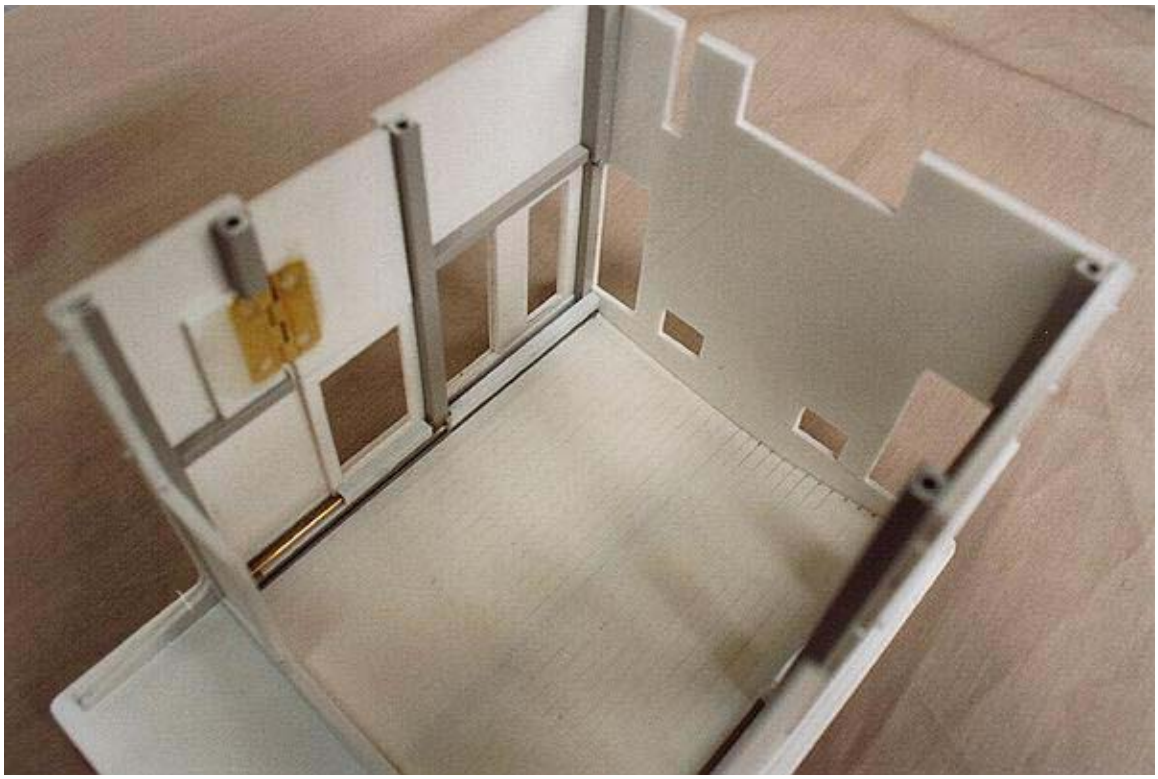
I used as short length of evergreen SHS, about 4x4mm, with a hollow inside. I welded this SHS to the top of the sliding window sash (the outer 1mm sash only - the inner sash and glazing will be added after painting).

I then cut two slots in the upper wall framing to support the ends of a 1.5mm diameter brass rod. The rod became the sliding rail. I ran the brass rod into the window SHS, and then inserted the brass rod and window to the wall framing. The brass rail is held in place by epoxy over the ends of the rail. This was later covered over by a styrene strip, welded to the cab framing. It pays to apply two slivers of 0.25mm thick strips, 2mm wide or so, as spacers along the travel path of the sash. These strips will help lift the sash away from the wall to prevent it binding with the wall. We apply one strip along the very top of the cab wall, across the whole run of the sash, and a second strip along the bottom, next to the 3.2mm SHS guide rail to the rear of the cab

The sliding sash and hinged lower door, looks like this:

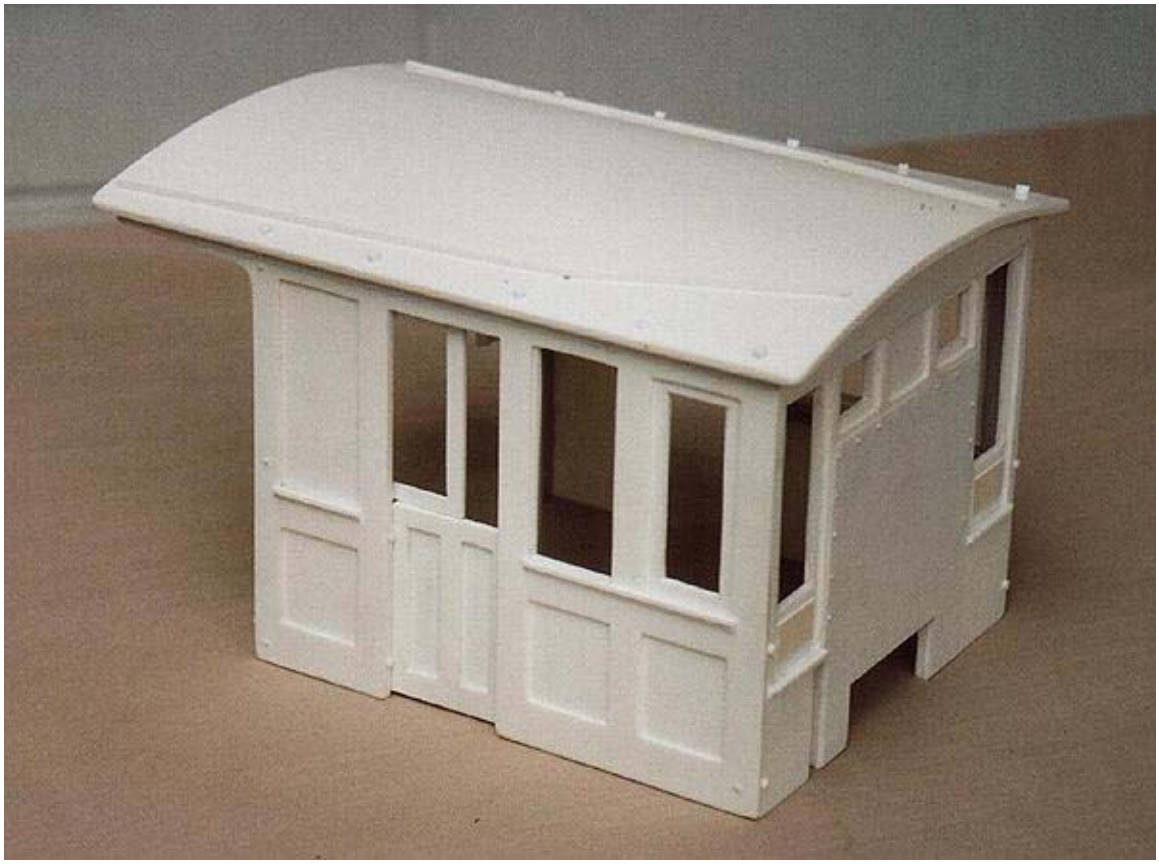


and with the doors fully closed, the funky Mason door looks like this: Note the scribed ceiling in place..coool!

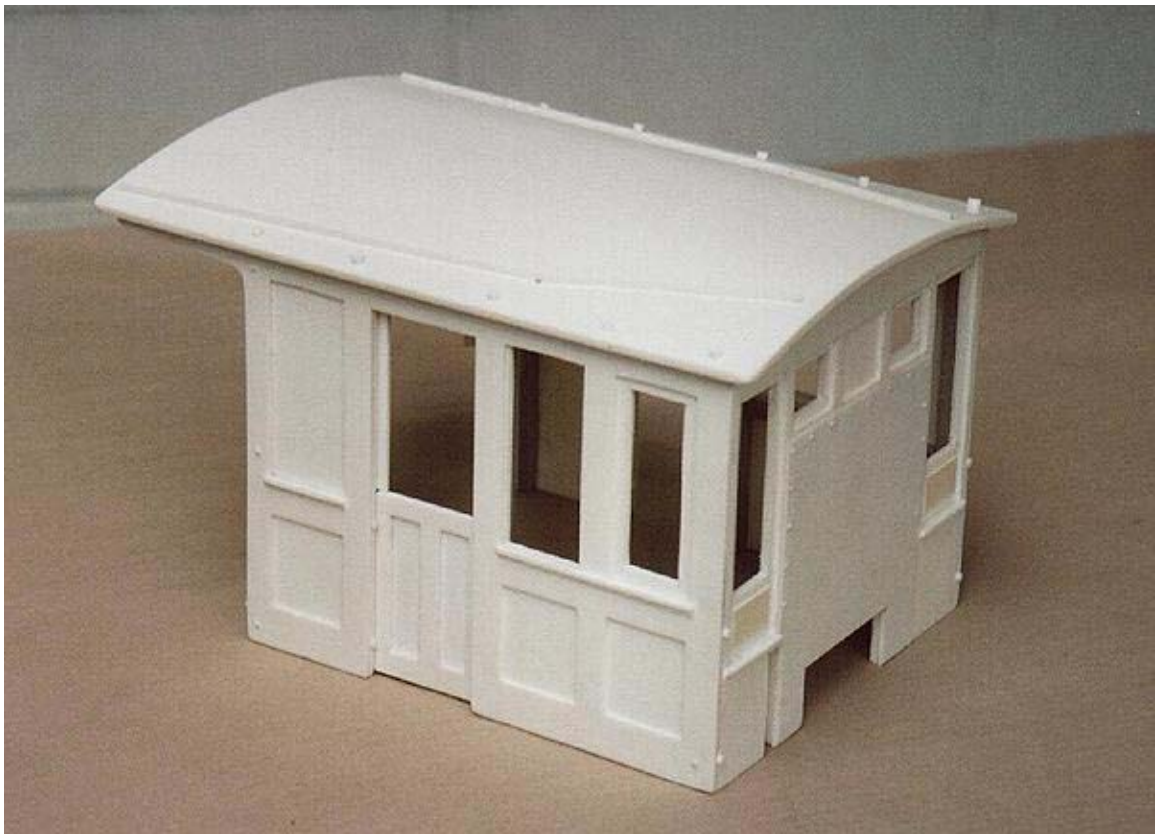


Poetry in Motion....

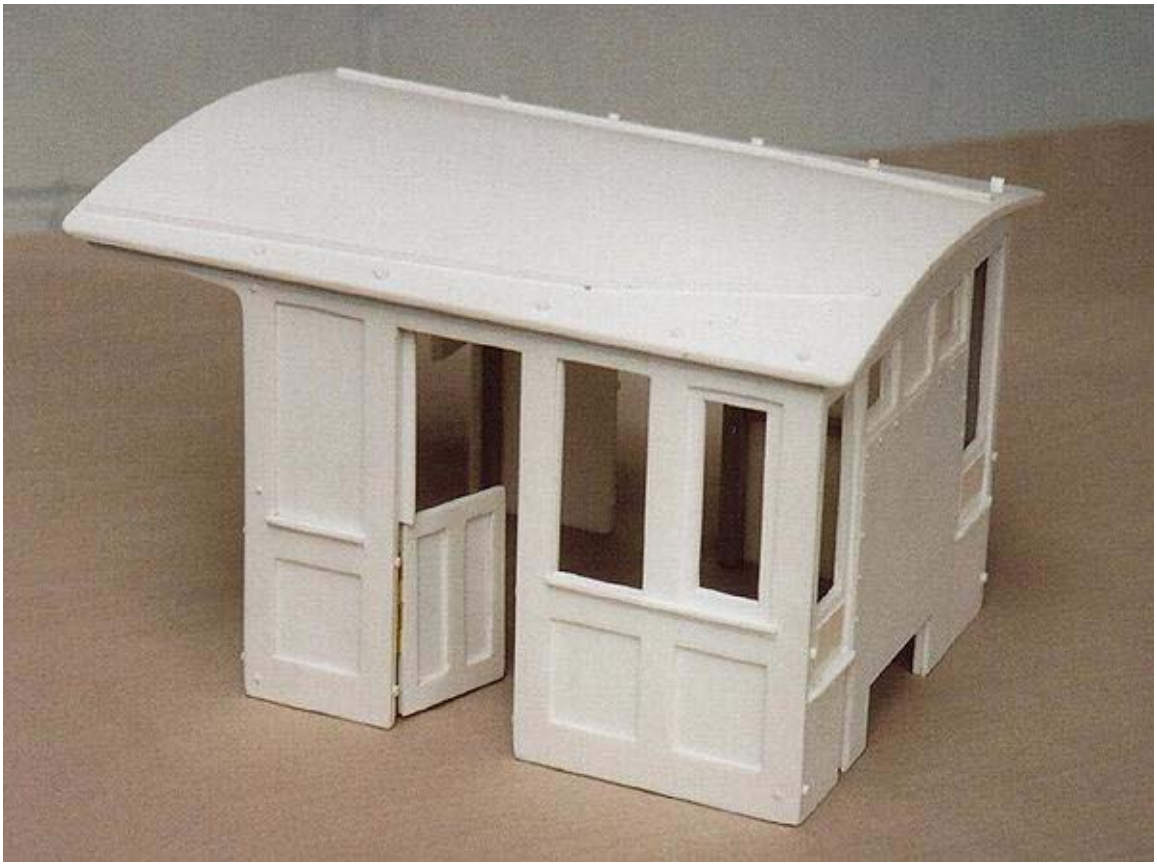
Here the top sash is being slid into the stowed position. The bottom door is still closed.



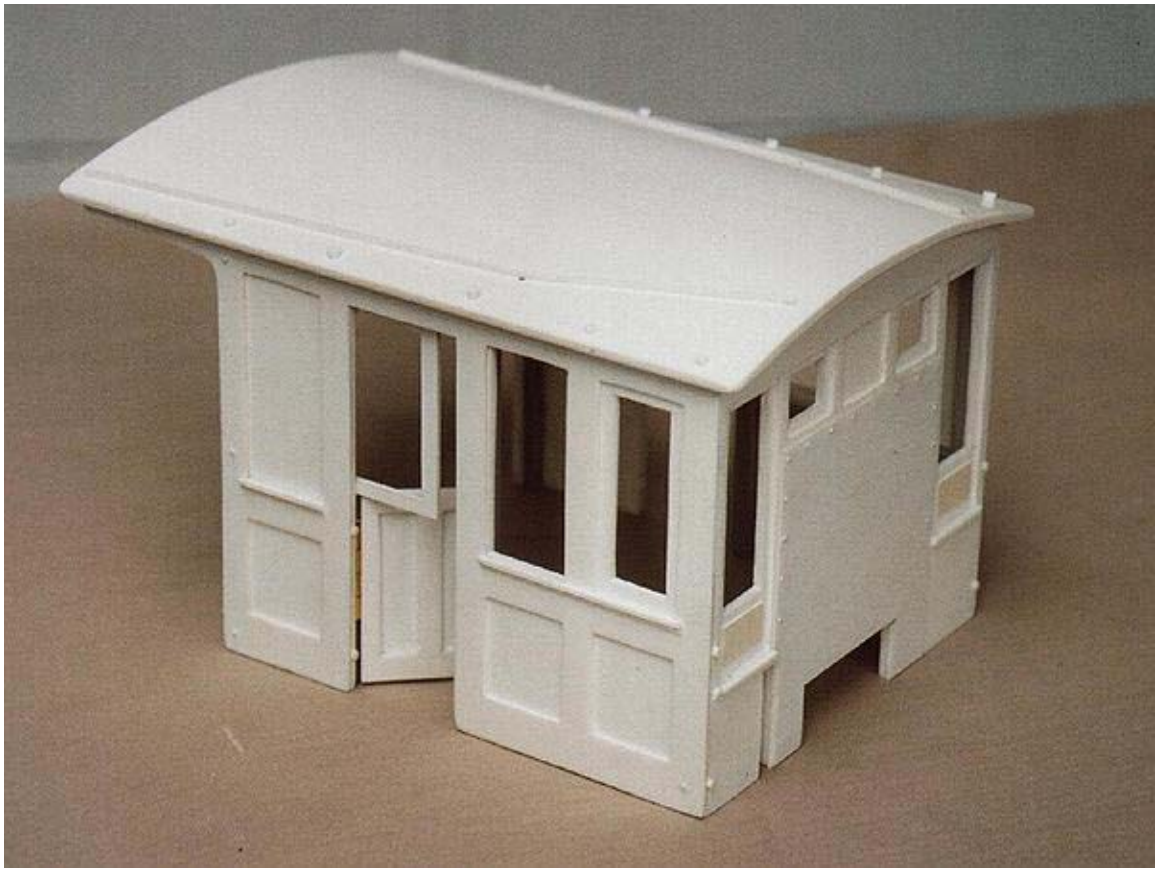
Now the upper sash is fully slid into the stowed position.



The bottom door is now swing inward.



and finally we see the upper sash being slid back into the closed position.



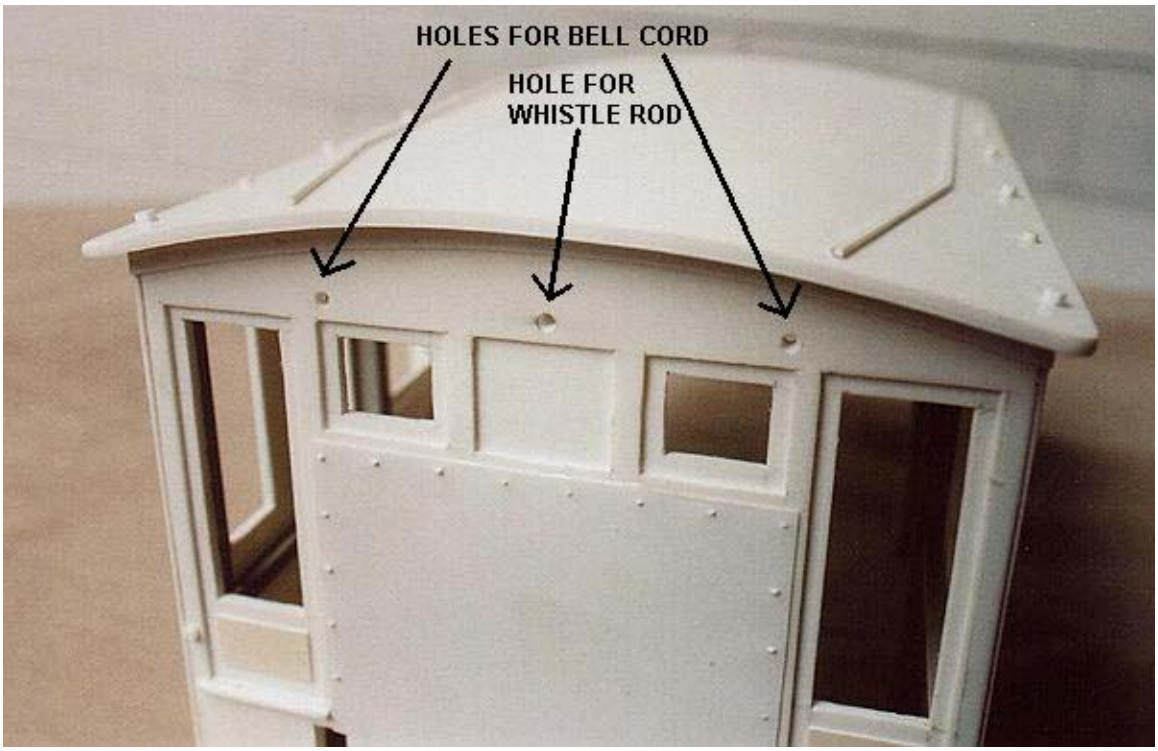
Drilling the Holes.

OK time to get your drill out, we have to drill a number of holes!

Step 1 - The Whistle and Bell Cord Holes.

There are three 1.5mm holes to be drilled in the front wall. You can see them there on the overall PDF drawings of the cab. The middle hole is for the whistle rod, and the outer two holes for the two bell cords.

Here are the holes drilled in place:



Step 2 - Hand Rail Stanchions

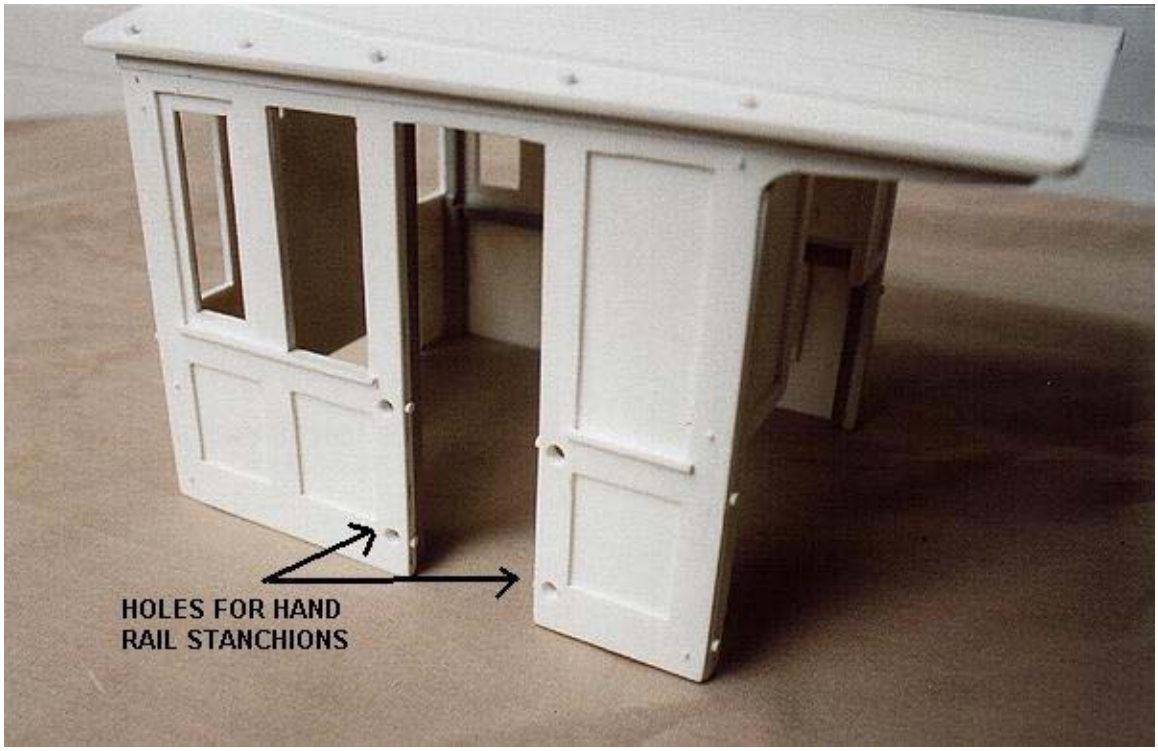
There are 8 hand tail stanchions to be inserted into the 1870s and 1880s cab walls, to both sides of the main doors. Please note the era differences between the two cab stanchion locations:

The 1870s cab has the stanchions and hand rails higher up, with the upper stanchions level with the window sills.

The 1880s cab has the stanchions lower, centered about the wall panels.

Check your overall cab style PDF drawings for the correct locations of the hand rail stanchions.

Using AristoCraft brass C-16 stanchions, or H-L-W stubby stanchions, or Ozark Miniatures stanchions of around 6mm tall, find a drill bit that matches the size of the stanchion base. Mark the stanchion locations on your cab, and then drill out the holes for them. Take great care, as one of these holes will be right in front of the brass hinge of the hinged door. Do not over drill. Where the hinge is located you have 5mm of styrene thickness to get through, ample for fixing stanchions. The holes drilled for the stanchions will look like this:



Painting your Cab.

Well, it's time to paint your cab.

Generally, the cab should be painted your chosen Mason colour. For 'as built' versions, options 1, 2, and 5, this should be one of the Mason colours, such as green, or blue, with polished wood coloured interior. If later era, it could be 'lake' or if post 1885, then it'll be black, with green interior. Lets cross to some great info provided to us by our colour advisor, Jim Wilke:

Cab exteriors

Painted. The use of ash for Mason's cab construction conversely indicates painted exteriors. On Baldwin engines, cabs were either painted ash or varnished walnut, and painted ash was a commercial standard. Lithographs and photos of Mason engines when new always show painted exteriors as well - it seems to be a Mason "thing." The exteriors should be painted, and not varnished

As you know I don't accept reddish brown color for the cabs, any more than bright red domes. The source for this also specs reddish brown cabs on Baldwin engines and we know for a fact this was not true. Mason, like Baldwin, painted cabs to match the rest of the engine in the 1870s.

Cab Interiors:

Varnished, definitely. In fact the "piano varnish" finish, with light and dark woods totally rings true to the era. Light/dark wood combinations were a stylish detail in the 1870s, used on a 1874 Monterey & Salinas Valley combine (interior woodwork) in CSRM, in architectural paneling, etc. Cab interiors looked like "the offices of professional gentlemen," as Sinclair wrote in the 1860s.

Green interiors were only used after the mid 1880s. I've seen no documentation for green before, but plenty beginning in 1886 and afterwards, usually specific requests in locomotive builder's specs.

Some cab interiors were painted earlier, like a yellow one on the Boston & Maine in 1865, but this was a RR shop practice. Since Bogies were all from the same builder, and one we know had varnished cab interiors - even using nice woods to do so - and since he varnished the cab doors in addition to sashes, go with varnish.

Note that the green interior of the V&T Genoa is there because the engine is restored to its 1902 appearance, after green became common.

So, if you're building a Mason fresh engine, varnish it. If you're building a UP/DS&P era bogie, post 1885 or the "Jack Rabbit" in 1902, paint it green.

Cab roofs:

Sheet tin, lead and other materials protected the cab from burning up and were most likely unpainted, as a coat of flammable varnish would be a bad idea. Several sheets are needed for the roof of even a small engine. I've always painted the roofs of my engines a medium to dark grey as a result. Recently I've started using Testor's Metallizer, but without buffing or using a sealer coat. This is the same stuff I use for Russia iron boiler jackets, and the metal content gives a great finish, esp. as it tarnishes and ages.

Canvas, protected as noted in this thread with white lead, sometimes with sand sprinkled in, was also used, depending on the prejudices of a given RR shop. Linseed oil scares me - the old "cab roof on fire" thing. A rebuilt cab, or one that came in for general servicing, might get a painted finish on the original metal roof (as it rusted) or be replaced entirely with either metal, tarpaper or canvas as the engine was used in service. Given the limited budgets of most narrow gauges, or even some larger RRs, cheaper substitutes were attractive to the master mechanic. But out of the factory, sheet metal it is. Red roofs don't appear generally until about 1900. A dull mineral red is good.

So in total:

Factory fresh, up to three years after: varnished interior, exterior painted to match rest of engine, greyish sheet metal roof

Used, years later (or at least after 1885): painted or varnished interior, exterior painted to match rest of engine, roof of sheet metal, painted & treated canvas.

I have deeply buried somewhere Union Pacific painting specs from 1898, as well as paint specs from 1885 or '86. These were drawn up to govern the repainting and numbering of all locomotives within the UP system (owner of the DSP&P from 1885), during the general renumbering of 1885. Because so many engines had to get renumbered at once, and all would be repainted as a result, the UP chose a solid plain black, giant numbers and plain green paint for cab interiors. It was the most efficient plan for a big project - no fancy gold leaf, striping, red wheels or varnish - just the cheapest most durable paint you could get.

This affects the M-B mostly as many of your favorite engines were painted in this style - the Congdonization if it were. The D&SP, Kansas Central, etc. all were numbered into the system, so the UP specs are appropriate.

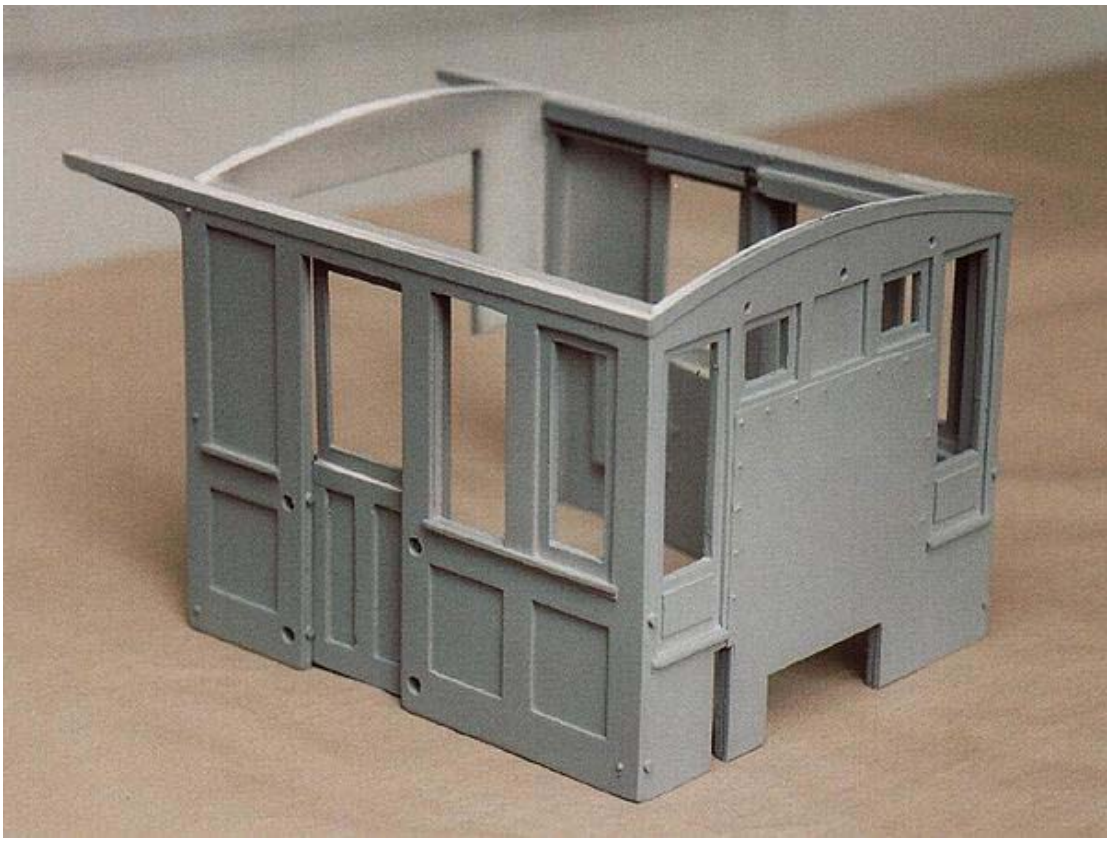
"Drop Black" was standard, a deep black with blue mixed in to make it the richest, darkest black you could get. Like Brunswick green, but with blue. Other blacks were ivory black, London smoke black, raven black and so on. Some were greenish, greyish or brownish. Drop Black was bluish, also used by the mighty PRR.

Jim Wilke.

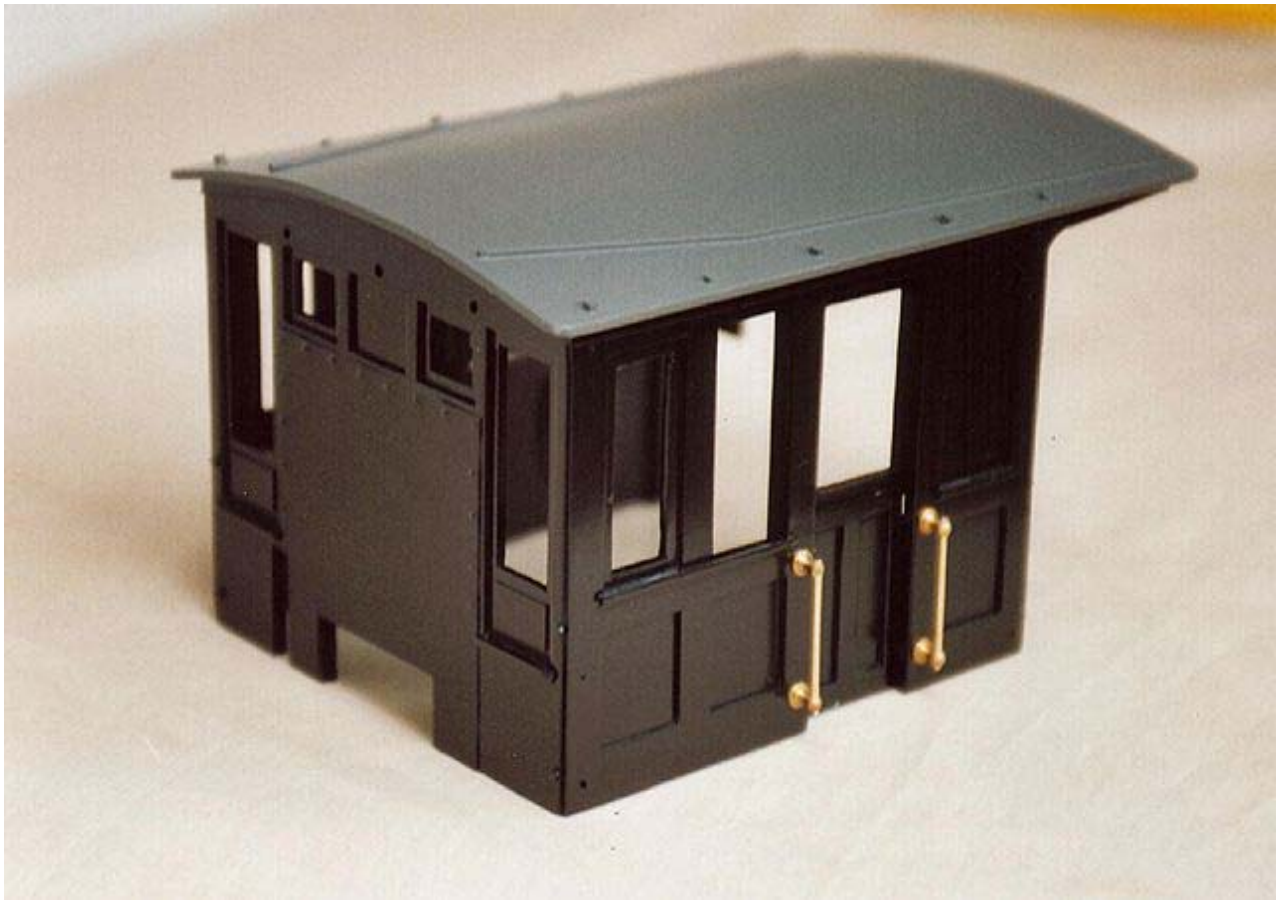
Thanks Jim, wow oh wow, we have some painting to do!

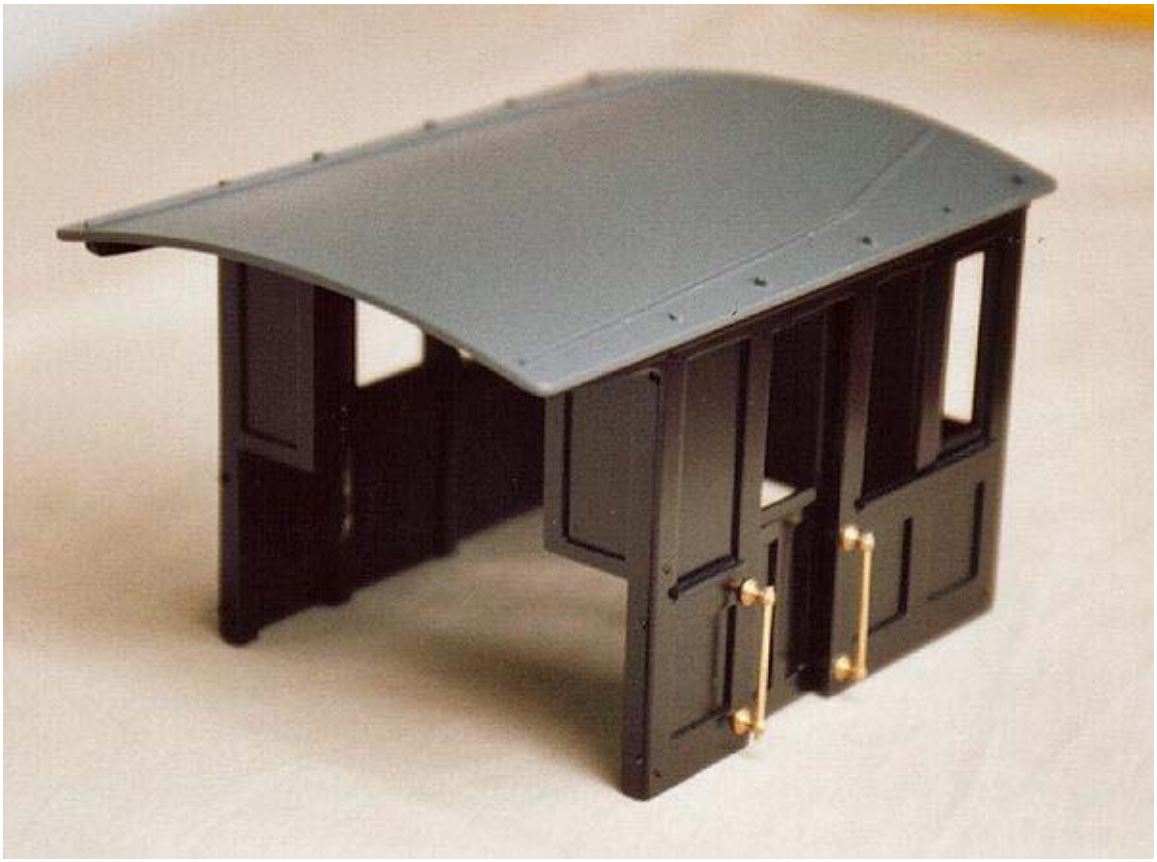
I first primed the cab using a Tamiya spray 'primer', then spray painted over the top with semi-gloss black, to represent my UP-owned, 1885 DSP&P #42. I then hand-painted the interior with Tamiya mid green. I spray painted the roof with a Tamiya dark 'Battleship gray' Which is almost a blue/gray.

Here is the cab primed, it's useful to see all the detail in place.



Then the cab is spray painted, and the brass handrails added afterward.





The interior was hand painted in green moments later.

Glazing.

There are lots of options for glazing. As mentioned, the sliding sash windows are best done in a sandwich method, using the prepainted external and internal styrene sash, glued to a central clear styrene sheet. I used evergreen 0.4mm clear styrene for all the cab windows.

For fixed windows, the most practical method is to insert the glazing in the same way the manufacturers do. That is to cut the glass panels to a size and shape, slightly larger than the window opening, and apply the glazing from inside the cab. Use a polystyrene cement or epoxy for this type of fixing. This is a very

neat way to do it, as seen from the outside, and is very strong. It however looks second-rate from the inside.

The other way is to cut the clear styrene to the exact window sizes and insert the glazing within the styrene window thickness. This is the more prototypical way, but much care must be taken to ensure the glue line around the window perimeter is not unsightly, and the bond is good and strong. It would be most disturbing if every time you picked up your loco, a stray finger accidentally popped the windows out of their frames!

Finally, as often practiced by the brass loco owners, it is possible to use real glass in your cabs. We use scientific microscope slides as a source of glass. You can buy them in boxes by the 100s. And you will need 100s! Basically you carefully score the window profile you want, then snap the unwanted glass away using pliers. It might take you 10 goes to get one good one. Then apply the glass with a film of epoxy.

HUGE CAUTION & WARNING:

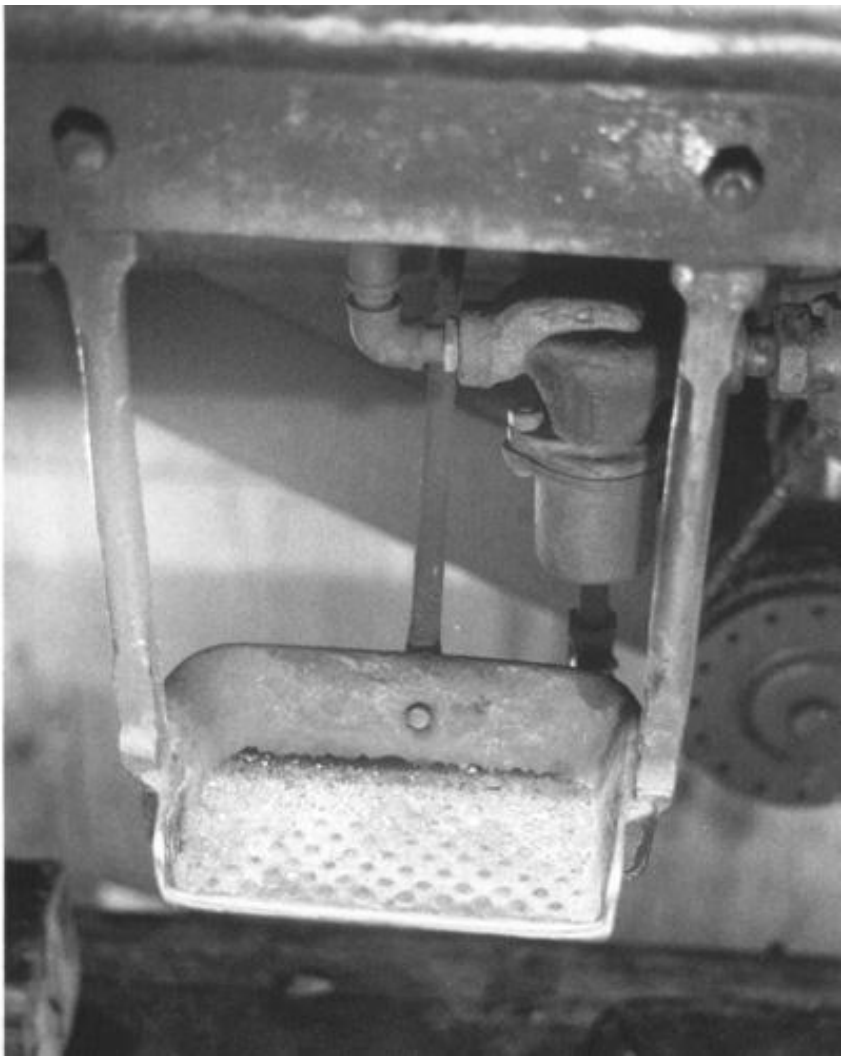
Do NOT, not now, not ever, not never, EVER use super glue or cyanoacylate to glue your windows in. IT WILL spoil your cab. The windows will all fog up and reveal the most awful fingerprints. Just don't use the stuff, OK!

The Cab Steps.

One nice li'l final task for this chapter: we are to make the cab steps and add them to the tender/cab deck from Chapter 2.

Here is a closeup of the existing cab step found today on the 0-6-4T Mason Bogie, "Torch Lake". The step is well worn, but you can see that the step had a stirrup hanger, supporting a foot plate with side sheeting. Refer the Mason Bogie archive for other views of steps (and Cab photos earlier in this chapter), seen a little less worn, but also seen further away! The late 1870s steps appear to be more 'squared up'.

This step photo is courtesy of George Sebastian-Coleman.



The middle brace on this step is also a later addition/modification, done for obvious reasons! You can add that detail if you like!

Step 1 - Making the Stirrup and Step.

Making the step is straightforward.

Start by reviewing the PDF drawing entitled 'Cab Step'.

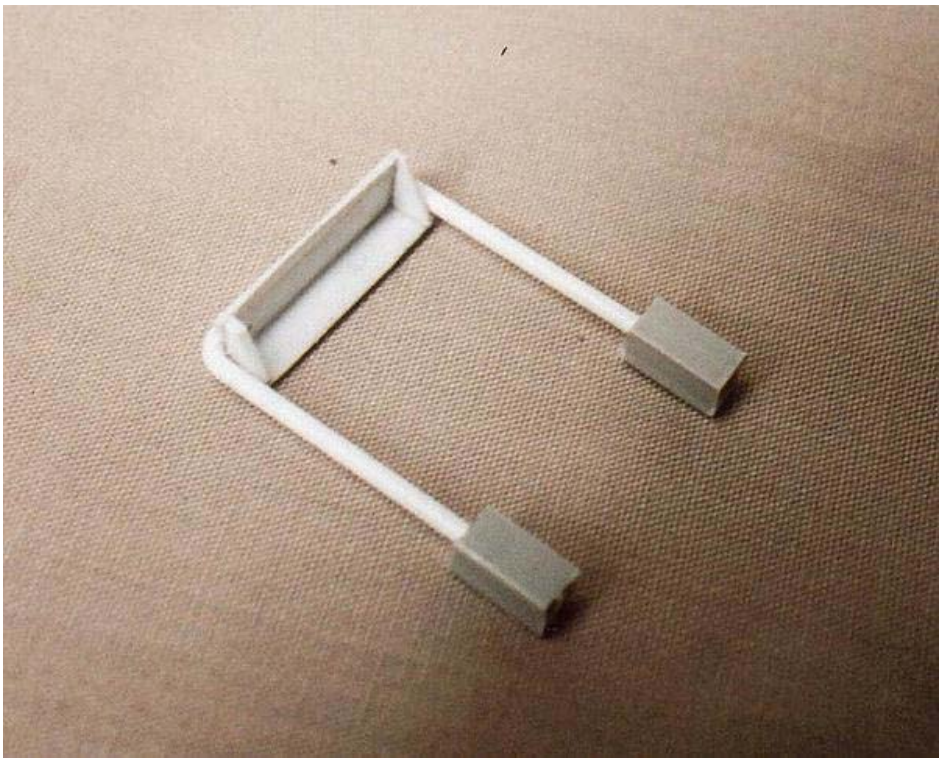
Using 1.5mm Plastruct plastic-coated rod, cut and bend the cab step stirrup as shown in the PDF. Use long nosed pliers to get nice clean 90-degree bends.

Next cut a 5mm wide strip of 0.5mm styrene, and a 3mm wide strip of 0.5mm styrene. Weld the two strips together to form a perfect 'L' shape angle.

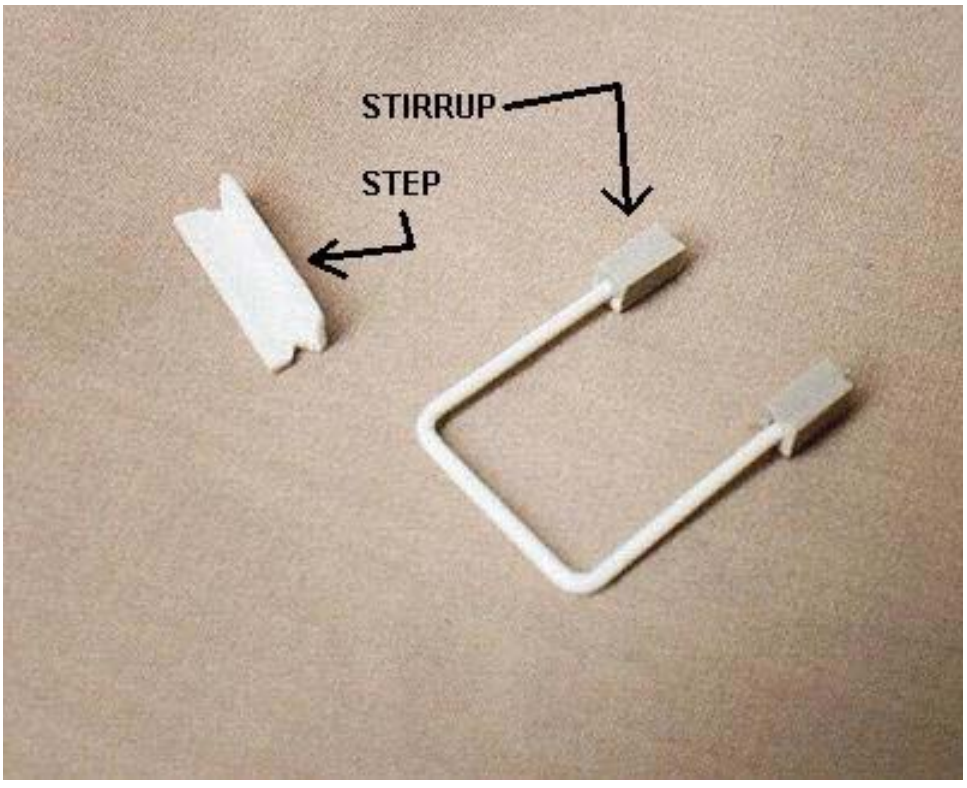
The lower 'wider' strip will become the actual step. Cut this angle section into a length to match the exact size of the step between the vertical rods of the stirrup. Cut two 'V' shaped nicks into the side of the 5mm strips, this will help bottom the step onto the stirrup properly.

Drill out a short length of 3.2x3.2mm Plastruct SHS, using a 1.5mm drill bit. Cut two 6mm lengths of this SHS per step and weld the SHSs into the ends of the stirrup.

The step and stirrup will look like this:



Now weld the step to the bottom of the stirrup. Using 0.5mm styrene sheet, make up two triangular sides to the step. weld them into place. The finished cab step will look like this:

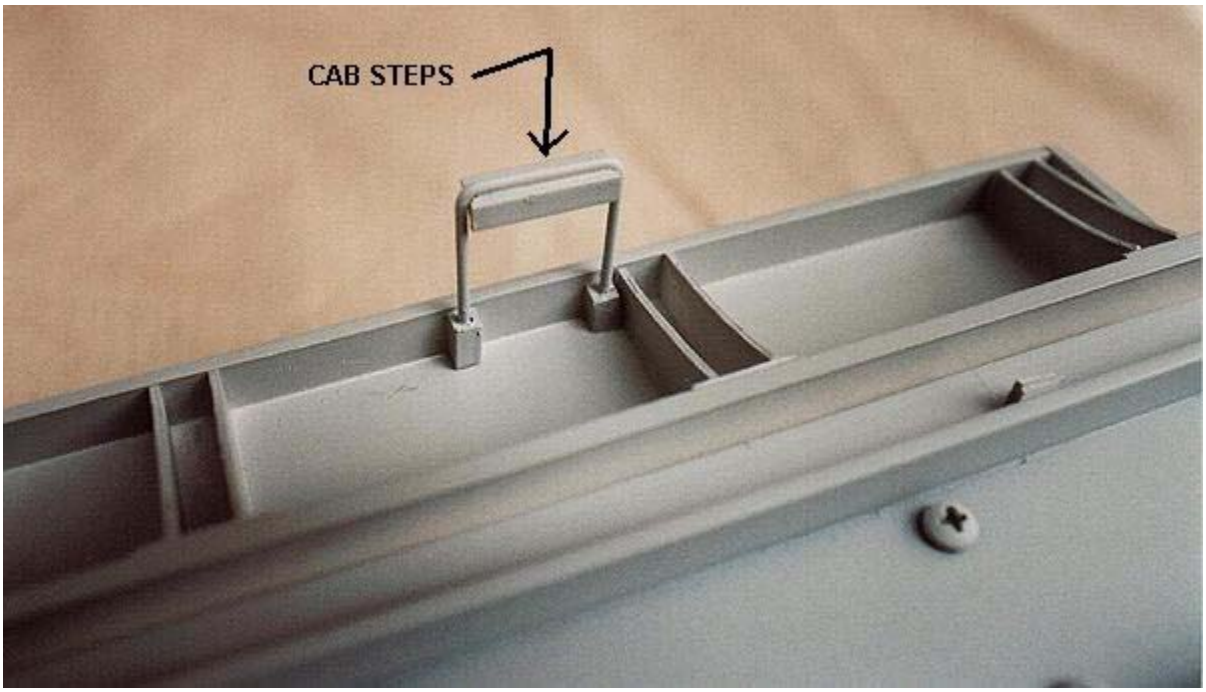


Repeat all the above, for you need two cab steps, one for each side of the loco!

Step 2 - Adding the Steps to the Loco.

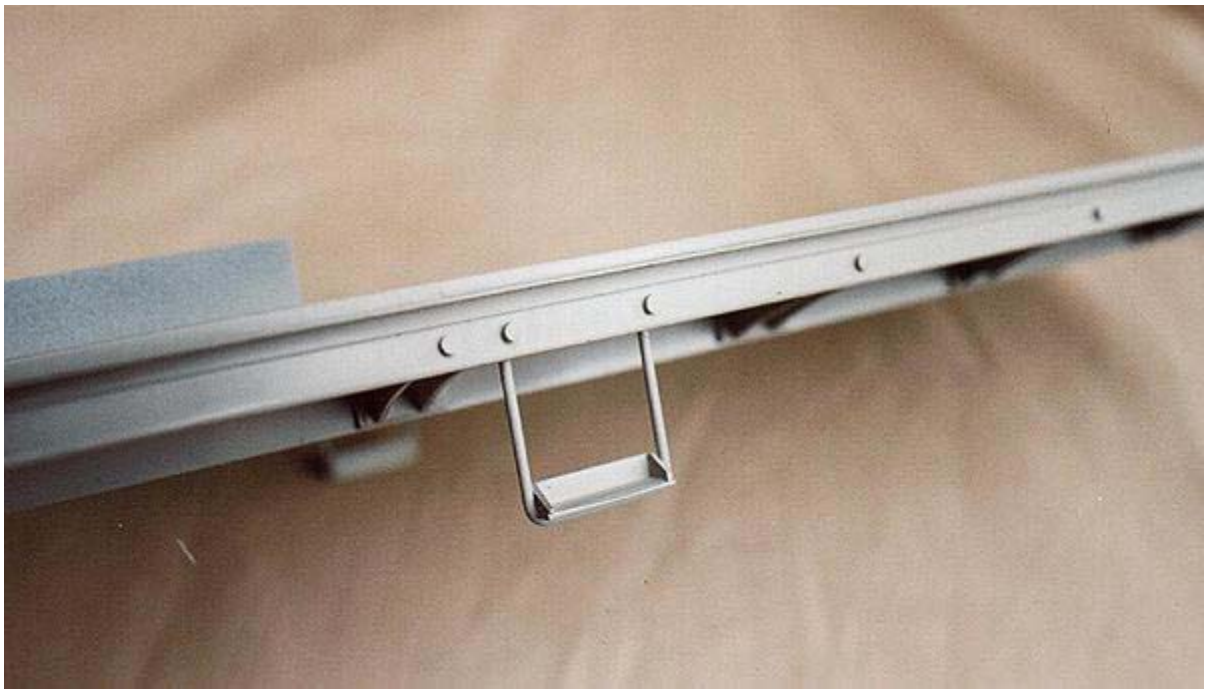
Now, it's time to weld the steps into place.

Back in chapter 2, we added a whole bunch of rivet detail along the tender deck fascia. We also added a couple of extra rivets for the cab steps. (You can see that in the cab step PDF as well). Weld the cab step units to the back of the CH2 deck fascias, with the top of the stirrups hard up against the underside of the deck. The cab steps, welded into position is as seen in these two photos, the deck and steps have now been primed in readiness for painting.



Cab step as seen from under the tender deck unit.

Cab step as seen from outside the deck. Note how the new step stirrup aligns with the two special rivets added back in Chapter 2.



Go ahead and paint your tender deck now. Review your colour choice and get painting. The deck might be green, to match the green cab, it could be blue or it might even be lake or black.

Fixing the Cab to the Tender Deck.

Please also refer to the cab fixing PDF for a future look at how the cab will be bolted down. This includes both the FH&PB kits and the scratch built cabs. Do not fix your cab to the deck yet. It would be much better to wait until you have your BBT drive in hand, then fix the boiler into place, then the cab can be added with precision. I show you these PDFs simply to advise how it will fit, and that can help your forward planning.

The Styrene Cab.

here are two ways to fix the styrene cabs down to the deck-

Option 1 (preferred option) - We use the 4.6mm SHS members either side of the side entry doors and at the lead corners to the cab as a means to bolt the cab down in 6 places. basically you run the bolts vertically up from below the deck up into the hollow cores of the cab framing SHSs in those 6 places. There are not fixings required to the rear corners of the cab. Also if your sub floor joist members under the deck prevent you from inserting any bolts in the required place to align with the 4.6mm SHSs, then you can either apply a second 15mm long 4.6mm next to each of the main SHSs, or go for cab fixing option 2!

Option 2 - Weld a Plastruct ABS 10mmx10mm equal angle to the cab side walls to the extent of wall forward of the side doors, and then insert 4 bolts from under the deck into these angles. This will not be as stronger fixing as option 1, but if you are not lifting your loco by the cab, then this option has merit.

The Wood Cab.

Like the styrene cab, there are two ways to fix the wood cabs down to the deck. This includes scratch made wood cabs and the FH&PB wood kits.

Option 1 - install 5mmx5mm hardwood square rods to the lead corners of the walls and to either side of the side entry doors. From below the cab floor, drill up into the ends of these rods using a 1.5mm drill bit. Then insert small self tapping screws up into the wood rods.

Option 2 - install an approx 8mmx8mm square rod horrizontally along the inside bottom of the wall, to the extent of wall forward of the side doors. Drill up from below the deck into these horrizontal wood rods. insert 4 self tapping screws from under the deck up into the wood rods.

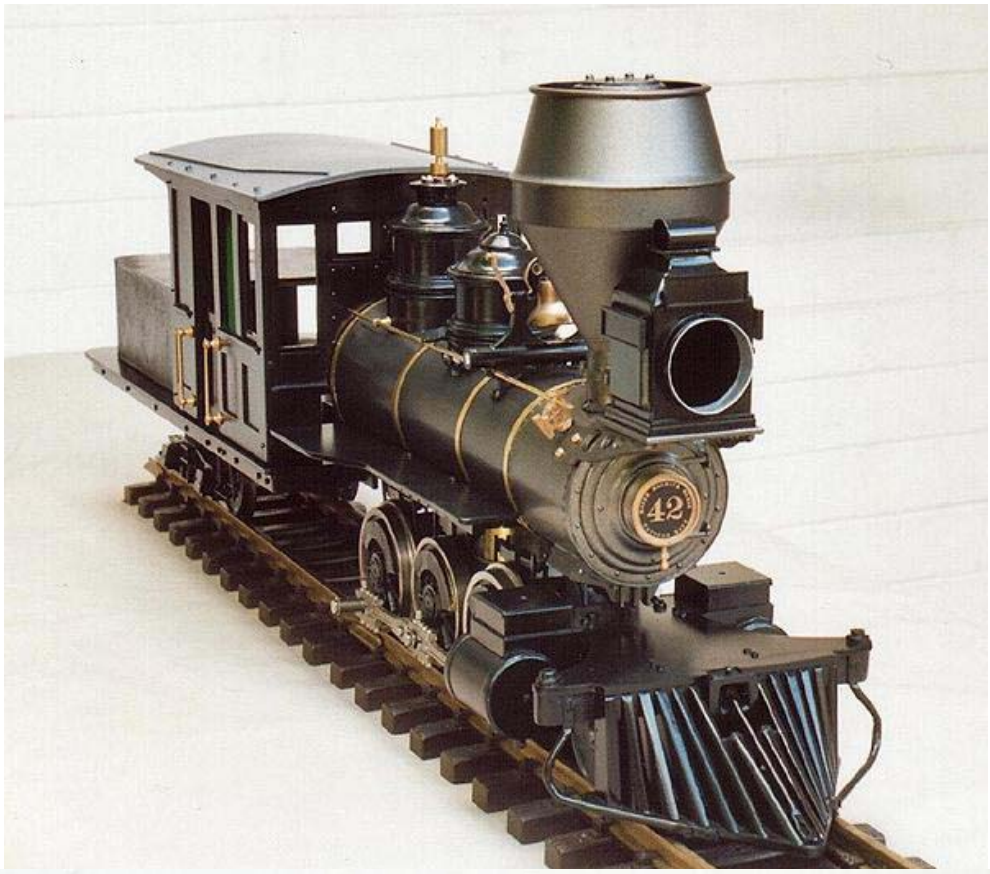
This is info only-

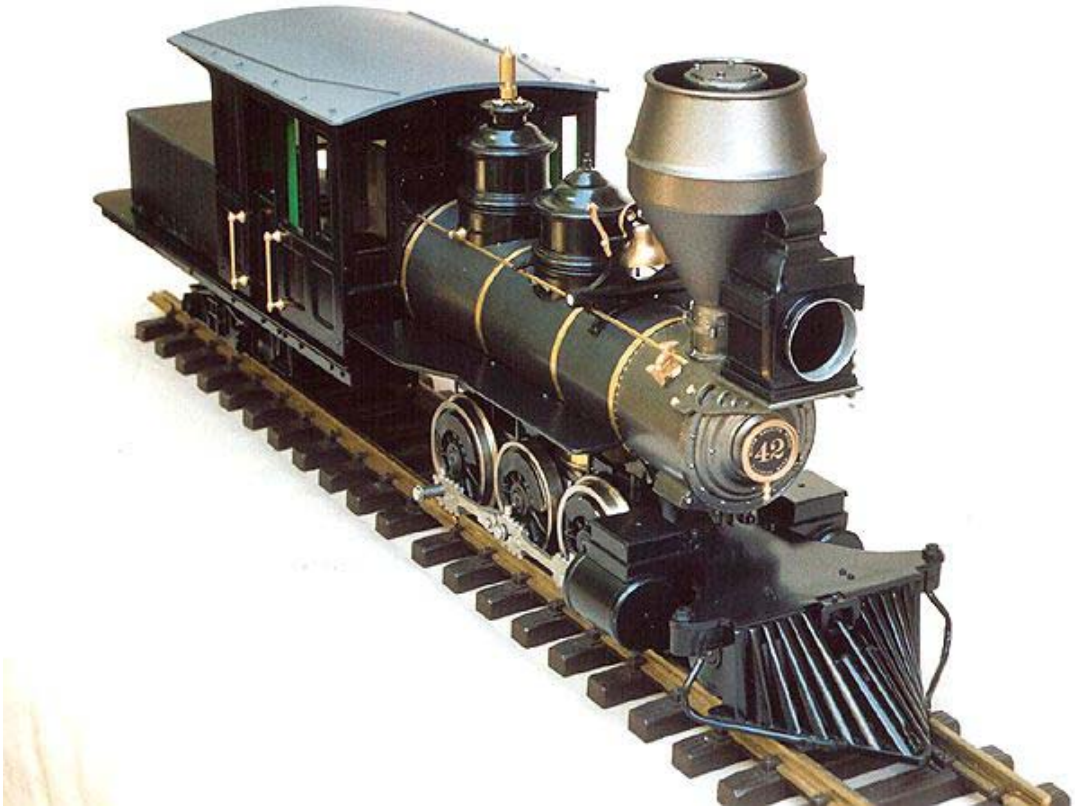
DO NOT INSTALL YOUR CAB TO THE DECK UNTIL AFTER YOU HAVE YOUR BBT CHASSIS AND HAVE SUCCESSFULLY INSTALLED THE BOILER TO THE CHASSIS.

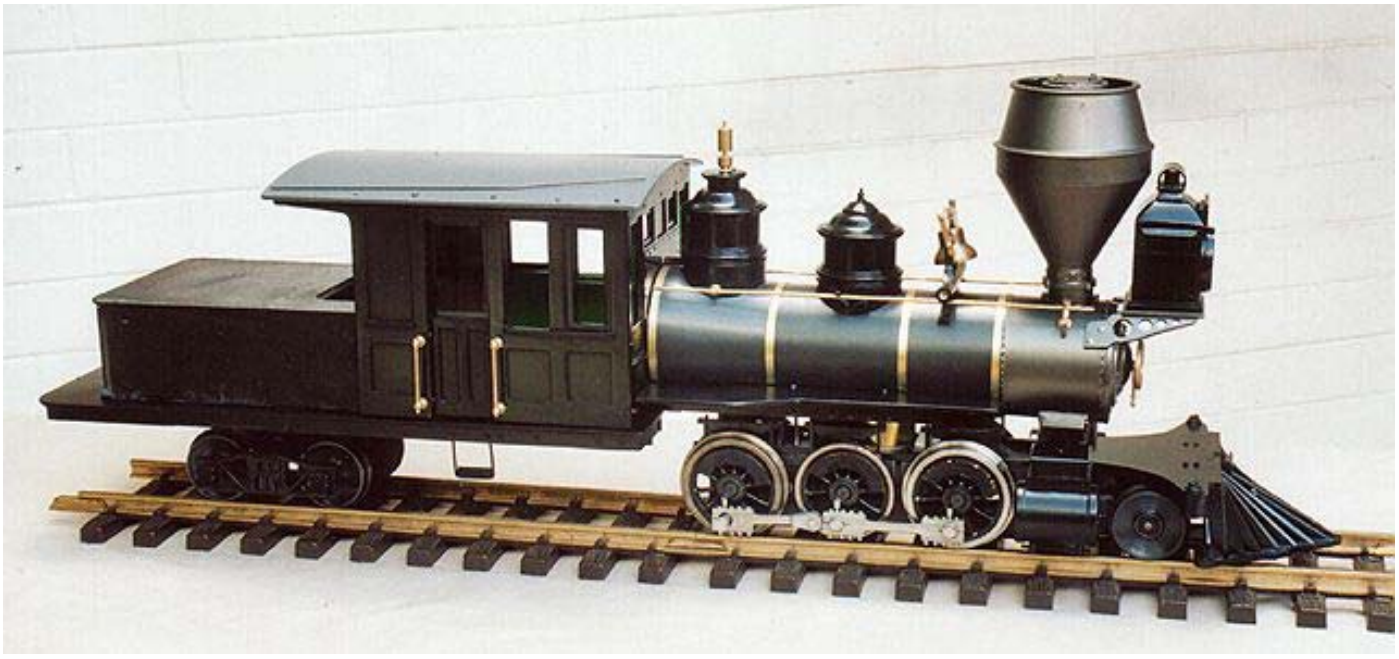
Photos

Right-oh, chaps, its time for a series of finished photos!

Please enjoy a showcase of the Masterclass 2002 Mason Bogie as seen at the end of chapter 4.




42

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Please note the black box-like tender in the above photos is a 'former' provided by FH&PB. This, along with scratch building your own tender former and cladding, is all part of the next chapter, Chapter 5- Tenders. Also look forward to Steve Conkle's Chapter 5 background, about the Bogies of the Boston Revere, Beach and Lynn RR. This railroad had the largest roster of Mason Bogies in the world, covering many styles and eras. This is a totally bitching chapter! All coming as Chapter 5!

Good Luck lads,

David Fletcher,

December 2002.

Acknowledgements:

Many thanks go to the many people who have helped pull this chapter together.

Barry Olsen, for his ongoing efforts in building your custom Mason Bogie chassies. There are now over 100 orders for the BBT chassis.

Chuck Meckem, for his efforts in developing the 6-wheel tender truck and side rods for the BBT chassis, as well as new products such as the NPC stack.

Vance Bass, for his support in providing the specialized Mason cab kits, pilot kits and tender shell kits.

We are also indebted to Vance for proofreading all my swill! There are a lot of words, and even I don't understand what I've written sometimes.

George Sebastian-Coleman gets a big thanks too for providing the excellent background into the Masons of the DSP&P in this chapter. But also a big thanks for his hidden work in helping us build a model that reflects the prototype as much as possible. George is an invaluable knowledge base and we are all benefiting from the experience.

Jim Wilke, for his on-going contributions in helping us decipher the unusual colour schemes of the 1870s

John Clark, of Fall River Productions, for stepping up to the plate and manufacturing the big 23" box headlight for our class. Thank you John.

Tom Farin for his work is building and maintaining the Mason Bogie Archive. A fabulous resource.

Scot Lawrence for building the Mason Colour schemes web site for us to use. Colour info provided by Jim Wilke, Jerry Kitts, Doug Heitkamp and Rob Sloan.

Lastly, a big thanks to **Shad Pulley**, owner of myLargescale.com for hosting this class, and the many hours spent up-loading such extraordinarily wordy scripts!