

Modeling NYC "Bracket Post" Signals in HO-Scale

Article by Steve Lasher

Photos by Russ Weis except as noted

Coercion (Reason For The Article)

Sometimes it doesn't pay to stick your head up out of the foxhole. Awhile back, while searching for some information to model NYC's bracket mast (bracket mast seems to be NYC's terminology) signals I asked your editor, Noel, for some assistance with information. It was at this point, when he had learned that I was actually going to attempt to make some of these signals that the arm-twisting began. So, friends, I gave in and here is the result. But first I need to share some qualifying information.

Why You Probably Can't Follow Me

I say this, friends, because these first two signals (and all subsequent ones will be) were assembled from brass tubing, shapes, and phosphor bronze wire that was soldered together using a resistance soldering outfit. My unit came from PBL in 1978 and, although I'm just now wearing out the second pair of tweezers, the unit is still going strong. It was an expensive addition back in 1978 but it has opened up whole world of modeling that would be closed to me otherwise. Solder is the slickest instant adhesive going, friends. Clean it, flux it, tin it, zap it, clean up the joint with a wire wheel and move on. Not in the right place? Heat it and move it - nothing to it.

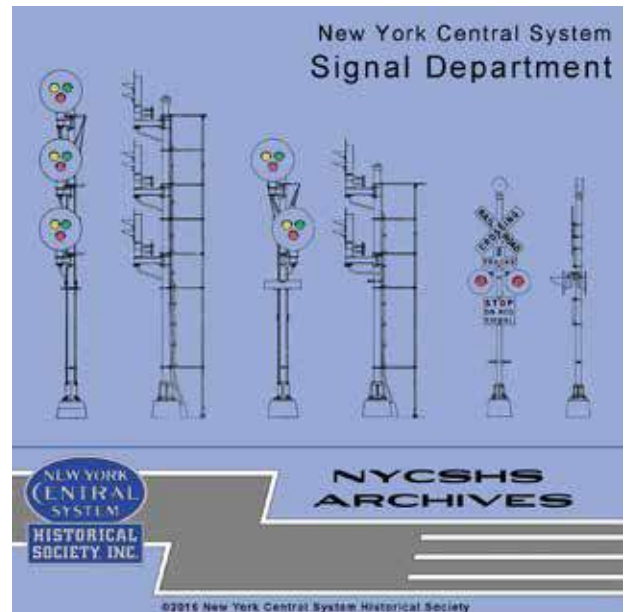
I've found a 2% silver bearing solder that's very strong but melts at only 354 degrees that is the finest, easiest solder I've ever used (a Kester product, KTR-83-7145-0415 from DX Engineering). Its low melting temperature allows joints to be made so fast with so little heat that nearby joints don't fall apart. Given the delicate nature of the

finished signals, I think soldering them together is the only practical way to go. Now, hopefully, this article might inspire someone to go out and build one out of styrene and prove me wrong, but it better be located somewhere out of harm's way.

Eureka! An epiphany! I haven't tried it but it might be possible to build one out of styrene. To improve the strength, I'd try to telescope some brass tubing up a piece of styrene tubing for the main mast to make it strong enough to survive handling and placement on a layout. This should be ok for dummy signals - I don't know if this would leave enough room to bring LED leads down the mast on a working signal. Yours to play with if you wish.

Practical Considerations

What has proved to be indispensable for this project is the "Signal Department" reference CD available from the NYCHS.



The Signals DVD (Above) or flash drive (Next page) are available in the Collinwood Shop.

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Signals flash drive contains the same information but in a more current storage media.

It's most everything you could want to know about NYC signals and, while it doesn't have elevations for a complete bracket mast type signal, it does have the details for the platform and how the signal masts should look mounted on it.

On Russ's layout there are two types of signal location. The first, of course, are the locations where we'll want lighted, working signals. These I will make out of slightly larger (5/32") main mast tubing to make it easier to pass the wire leads down through it without so much crowding. In addition, I'll use Oregon Railway Supply (Russ has a stash of these) heads. No one will ever accuse the ORS heads of being over detailed because they are, in fact, crude. BUT...they are easy to light with 3mm LED's and the lack of detail isn't all that noticeable on the layout.

The second situation is one where, due to the physical placement of the signal on the layout, one would never be able to see the front of the signal so it need not be actually lighted. Now, since they are strictly scenery and you can't see the front, the rear detail of the signal heads can be appreciated. In these locations we're using components from Showcase Miniatures. Walter and Debbie at Showcase have been very helpful and will gladly sell individual components such as the mast bases separately. The two main items from them are the "searchlight signal heads" and the beautiful stainless-steel etchings "Signal Ladders and Accessories". Although the heads are

designed to accommodate LED's and be functional, I'm not nimble fingered enough anymore to want to try it. Although in real life these heads and masts are pretty substantial cast iron, steel, and glass, in HO, they're pretty tiny and fidgety. If you've read my article on "Bringing Up Baby" previously you know about killing mice. These signals can be big time mouse killers in their own right, but they are *beautiful* when finished.

Here We Go!

Unfortunately, at the moment, I'm not set up to be able to photograph projects as I go, so, I apologize for the lack of step-by-step photos and instructions. I'll have to give you just the general ideas instead. This is to build a scale sized dummy signal to be used in a location where their lack of lighting cannot be seen.



Most of the raw materials to make one bracket mast signal.

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It all starts with a piece of brass tubing. On the scale size signals I use 1/8" tubing which should be about 10 scale inches in diameter and looks about right for the main mast. The prototype may have telescoped two sizes for additional strength but since I have neither a: one to look at nor, b: drawings, I will say that just the single size looks plenty good to me.



The assembled signal masts with the mast base can be seen here. Since Steve and Russ did not take photos during construction, this photo gives some idea of the components as Steve discusses construction.

As to length, I think that about 24 scale feet from the base to the tops of the C channels looks good. I understand that the height of the signals could be varied in the field according to sighting distance needs and you can do this too if you want but, just for general purposes, the 24-ft looks fine. You'll need to allow some extra length for layout mounting purposes to suit your needs.

At the top I file some flats on each side of the mast to improve the soldering area for greater strength and then solder two, ten-

foot-long C channels to each side of the mast. Care should be taken to ensure that each of these is at right angles to the mast and, that they're parallel to each other and centered on the mast.

Next, after marking the locations for the masts on the front channel taking the distances from the drawings, I cut a piece of 3/32" (the 1/16" mast should just slide comfortably in) inch tubing to match the width of the channels and solder it to the back of the front channel. This will be the "socket" for the signal masts to fit into. You will note on the drawing that the signal masts are offset over the channels and not centered between them. Thus, soldering the tubing to the front channel simulates this nicely. A piece of 0.015 X 0.250 brass strip is drilled 3/32" for the mast and cut to fit on top of the channels as the base plates for the signals to sit on and soldered in place.

I cut a small ring (5/32") of telescoping tubing and slide it up the mast to 5ft below the channels. The placement of this ring determines where the braces will go on the mast. At this time, I also cut a piece of this tubing 2 scale feet in length and place it so that the bottom edge is at the bottom of the distance I want the signal to be as this is going to represent the base casting of the mast. Before placement I round the top edge to help represent the base casting.

The braces from the bottoms of the channels to the mast are added next. These are bent from 0.032 phosphor bronze wire. I bend them around any convenient round object at hand of about the right size - I think in this case I used the top of a Microscale decal setting solution bottle. After bending they are soldered to the bottom ends of the channel and the side of the mast. This is finished with pieces of

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strip going from the braces up to the top of the mast inside the channel. All of these pieces need not be trimmed to size before soldering as they can be trimmed to size afterward and are easier to handle (giving you something to hang onto) if trimmed to size last.

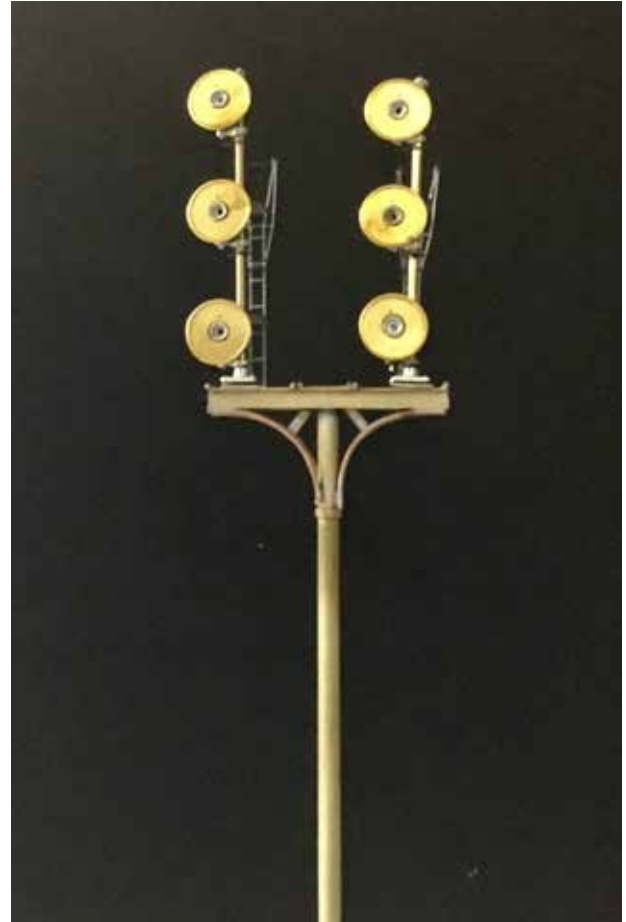
It is at this point I will point out that I made myself a drawing to scale on a piece of thick, stiff card, of the platform. As best I could, I made this to scale using the NYC drawings. Apparently, the prototype used 2" angle iron for almost everything. Although slightly oversize I find the 0.032 wire looks OK and adds strength - believe me, these are plenty delicate as is. This drawing is a big help in sizing and laying out the various parts of the platforms, especially since I'm going to be making several of these (you hear me, Walter, at Showcase Miniatures?) for Russ's (lucky boy) layout.

The signal mast bases are fashioned from common steel washers and modeling clay. The washer is ACC'ed to the mast base first then, I roll out a piece of modeling clay and place it on top of the washer next to the mast. Using a wet finger and/or a wet paintbrush handle I shape this to represent the filet of the signal base. To complete, I cover the modeling clay with ACC and spray on a little kicker to set it and we're now done with the base.

Two Years Before the Mast

Now is a good time for a little different fun. It's time to assemble the signal heads on the masts. For the dummy signals I use 1/16" brass tubing for these masts. The length depends on whether you're modeling a 2 head ABS signal or a 3 head absolute (interlocking) signal. Overall, it's the length

of the mast from the base to the cap plus about 1/4" to go down through the mounting tube on the channels. I suggest you layout both masts at the same time so that the heads will come out identically spaced using the 5ft distance between the heads specified on the drawings.



Preliminary fitting of signal masts on the bracket mast. The reason Steve says to lay out both masts at the same time is evident here. This photo should help to visualize this part of the assembly.

Because the handrails will need to go *over* the bottom heads, the signal base (available separately from Showcase Miniatures) will need to be trimmed to a lower height. I did this by attaching the base to the mast with ACC, then chucking the mast with the base

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attached in my portable (rechargeable hand drill) lathe and using a jeweler's saw to trim the base to about one-half of its original height.

Neither of the two sizes of mounting arms supplied with the Showcase Miniatures Searchlight signal heads is exactly right for the NYC signals. The drawings show mounting arms with an offset to lower the head. I settled for using the short brackets supplied by SM. I modify these before mounting on the mast in two ways. First, the holes for the mast must be reamed *slightly* (a tight fit on the mast is easier to work with) and, second, I drill up through the mount for the head to take a short piece of 0.025 wire that's trimmed to size after the ACC sets. This should leave a short post (3/32" or so) to mount the signal head on that's sturdier than simply ACC'ing the head to the bracket.

After drilling the heads to accommodate these posts and attaching the backs, it's easiest to hold the signal head lens face up (I use some forceps, gently). The etched brass "H" used to represent the brackets that actually hold the signal targets are *delicate*. They can be placed on the head and ACC'd in place. The arms bend forward on the prototype and are what the targets actually attach to. If you can make that happen on these HO-scale models you're a better man than I Gunga Din. I just settle for having them there.

After attaching the targets (oh, Walter, could you think about making us some small - post 1960 or so - NYC style, targets?), I ACC the heads to the brackets. Before that however, you'll need to attach the brackets and associated platforms, etc., in the proper order on the mast. Be aware here that you'll have to cut the beautiful

stainless-steel etchings for the platforms, railings and ladders from their frets and stack them in the *proper order along with the head brackets* on the masts. Get them in their positions and ACC them in place and attach the ladder last. Now you can ACC the heads to the brackets but leave off the sunshades until final assembly just because they're also *delicate* and your nerves are probably shot now, anyway.

(A note) Due to their very narrow light beam Searchlight type signals could be aimed. In fact, the two projections on top of the head are sights for that very purpose. If placed on a curve or just at the end of one the channels on the bracket mast signal should be at right angles to the track while the signal heads themselves are angled to give the maximum sighting distance around the curve. Don't get too carried away with this as our model curves are far sharper than the prototype and if you angle the signal heads too much, they'll look strange.

Showcase sells a set of finials and caps that you can use to top off your masts. The NYC drawings show "caps" but photos suggest that pointed finials were plenty common on older signals as well - you take your pick.

Now, at this point things are beginning to look pretty interesting, right? But, tough luck, after you get done admiring your work and thinking how neat these are going to look on your layout, set these mast assemblies (carefully!) aside for now.

Back to It

Using the card template drawing I mentioned earlier I bend three pieces of 0.032 wire into two large U-shaped pieces and one small U-shaped piece. These will become the frames that the platform

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grating will set on. After bending these they're soldered to the tops of the channels. I used a sanding drum to sand the tops slightly to a flat to give more gluing surface for the grating.



A finished signal less the sunshades (delicate). Between using solder and ACC the finished signals are surprisingly sturdy. Here again the photo should help to visualize the construction steps that Steve is describing below.

It's time now to cut the Plano etched stainless steel gratings to size according to our template. I find this is most easily done using a pair of large, old, but still sharp, Fiskar scissors. This cutting will leave little

nubs that are easily removed with the sanding drum or cut-off disc in my motor tool while supporting the material tightly with pliers. Even so, it's nearly impossible to do this cutting without bending the grating material but it's easily straightened as you go. In the end, you should wind up with a nice piece of flat grating material that can now be ACC'ed to the top of your frame. I do make sure that it doesn't overhang the small frame wire in the middle of the platform since this will be the primary support for the access ladder that will be soldered here later.

Using the 0.010 X 0.030 strip stock cut short but over-length (these will be trimmed to correct length later). I tinned them on opposite sides. After carefully making small notches as needed with the cut-off disc these pieces are carefully soldered to the outsides of the frame wires. These are going to become the stanchions for the handrail. The exception to this is the two stanchions on the front between the signals and in front of the masts. These are best left until the handrail is in place and then soldered to the handrail on top and ACC'ed to the grating where they pass through.

Ah...The Home Stretch!

We're getting serious now; it's time to attach the signal masts. If we've done good work up to now, they should set pretty straight and be plumb both vertically and the distance apart. If so, they can now be ACC'ed in place. Looks pretty good now, doesn't it?

The handrail is bent from the 0.010 X 0.030 stock using the template as a guide. Note that the handrail is set back from the front edge of the platform. It should pass over the signal heads but in front of the masts.

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Once correctly formed I use a spacer to get it at the correct height and solder it to the outside of one of the stanchions. The good news is that once you get it attached to one stanchion the rest are comparatively easy to attach. They are trimmed and cleaned up after soldering.

I cut a piece of Tomar brass ladder stock to length and tined it the fourth rung down from the top. It is then soldered to the wire in the big notch in the middle of the platform frame. It should hang at a shallow angle to the mast. I cut them to extend a couple of rungs below the bottom of the base.

On my template card I've drawn a couple of U-shaped lines that represent the ladder braces. One is slightly longer than the other since the ladder hangs at an angle and is not perfectly vertical. I bent these from 0.015 X 0.032 strip stock since it is noticeably stronger than the 0.010 X 0.030 stock. I made the first two of these using the 0.010 strip and they proved to be inordinately fragile. The 0.015 stock is much sturdier and looks fine on the finished model. These are located and soldered in place to the back of the ladder and to the mast.

Finally (and boy, are we glad to hear that word!), I bend the sunshades over a 3/32" drill shank that I've clamped in my vise. After any necessary adjusting these are ACC'ed to the signal heads.

Wow! Quite a little piece of jewelry isn't it. Time to sit back and enjoy for a while.

Showcase Miniatures now includes the smaller, post late fifties, targets in their signal head kits - use if desired.

We've been priming with Rustoleum's self-etching primer then painting with Tamiya's "German Gray".



The signal painted Tamiya "German Gray" - a nice look for weathered black. They were straightened before placement.

However, in the future, we'll probably just use Rustoleum's "Dark Gray Primer". Since these are purely scenery and we want to see the detail, anything other than true black is preferable. Black is correct for Russ's era but after 1960 or so they would be "aluminum" with black targets. Suit your needs here and/or consult photos if available.

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