The Illinois Terminal Double End PCC, series 450-457, HO scale model from Imperial Hobby Productions!

by George L. Huckaby Jr.
and editorial assistance from Jonathan Werner

In 1949, Saint Louis Car Company delivered eight double end all-electric PCC cars to the Illinois Terminal Railroad. These Westinghouse electrically-equipped cars were purchased to upgrade local service from Granite City, Illinois to Saint Louis, Missouri. They were capable of multiple unit (MU) service and were equipped with Westinghouse K-1-D automatic couplers. They were delivered in a new light green and cream paint scheme, which eventually spread to the 101-104, 404-415 and 470-473 series cars still in service. In 1994, San Francisco replicated the Illinois Terminal 450-457 paint scheme on its car 1015 for service on the F-Market line. Car 1015 (shown in Fig. 1) is at the Ferry Building in September 2008.

Fig. 1 - San Francisco MUNI car 1015 in the Illinois Terminal green & cream livery.

These eight PCC cars only remained in service for nine years, completing their last runs in June 1958. Shortly thereafter, Merritt Taylor of the Philadelphia Suburban Transportation Co. considered purchasing the cars but concluded, as the Pacific Electric had years earlier, that PCC trucks were unsuitable for their lines. In 1960, all eight cars were sold to Bierman Iron & Metal Company (BIMCO) where they literally rusted away before being finally scrapped in 1964. Fortunately, car 450 was acquired by the Ohio Railway Museum and car 451 was sold to the Connecticut Electric Railway (Warehouse Point). These eight cars are the only PCC cars ever built in North America with only one door on each side and are sometimes referred to as the only PCC "Nearsides".

Both cars 450 and 451 have the distinction of being rescued temporarily from their museum homes for service on the Shaker Heights Rapid Transit between 1976 and 1979. Both were then returned to their respective museums where they can be seen today. Car 451 is shown in Fig 2 at the Warehouse Point Museum in Connecticut while car 450 is shown in Fig 3 at the Ohio Railway Museum.

Fig. 2 - Illinois Terminal Car 451 at Warehouse Point.

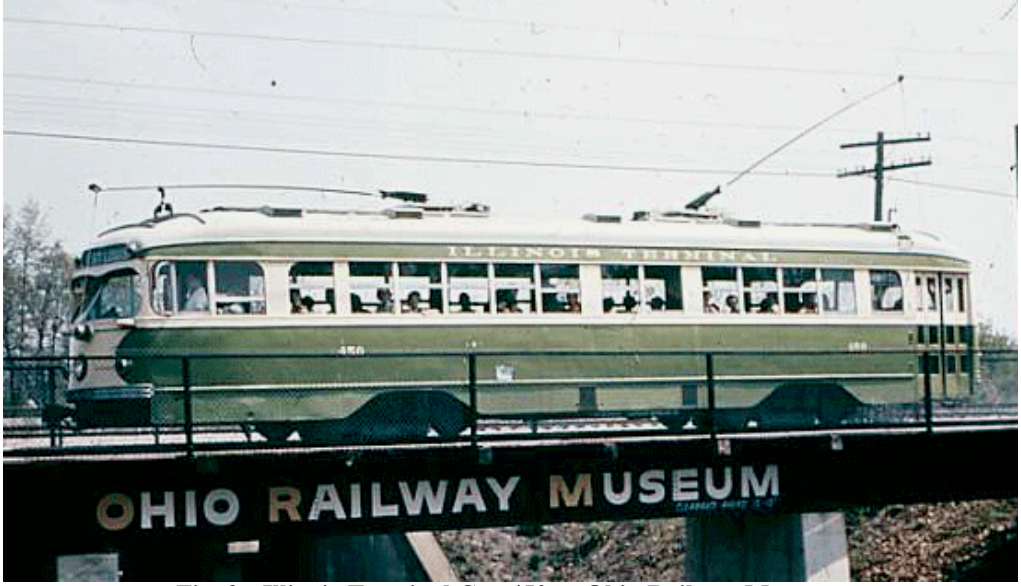


Fig. 3 - Illinois Terminal Car 450 at Ohio Railway Museum

The Kit: Assembly & Operation

Imperial Hobby Productions (IHP) has introduced an HO scale kit model of these cars. According to IHP's web site (updated 25 May 2009), these kits are listed under catalog number 87169 at $65.00 per kit. Jonathan Werner acquired two of these kits at the East Penn Meet in Philadelphia in May 2009. He provided one of these kits to George Huckaby and the Southern California Traction Club (SCTC) in order to collaborate on the assembly and testing as was done with IHP's Shaker Heights Pullman PCC kit (see the July 2009 issue of Trolleyville Times for that review).

The Illinois Terminal PCC kit contains a body shell, a resin floor, eight super resilient wheel covers, two dummy couplers and a one-page instruction sheet. This shell included in the kit features great detail. IHP did an excellent job in replicating these cars. We liked it immediately, even though the shell that we had was missing one of the trolley retrievers. These PCC cars were unique in that they were not delivered with the streamlined trolley catchers normally adorning PCC cars. They were equipped with the Illinois Terminal standard Knutson #5 retrievers (shown in Fig. 4).

Fig. 4 - Illinois Terminal's Knutson #5 trolley retriever shown on PCC 457 and two 470 series cars.

Upon initial inspection, we began to suspect that many of the same issues detailed by Jonathan Werner in his review of the Shaker Heights Pullman PCC were also present in this kit. In order to accurately catalog these issues and maintain consistency on the fixes for these issues, we referred to Jonathan's review and his notes from the Shaker Heights kit. Our suspicions were confirmed. The issues shared between the Shaker Heights kit and the Illinois Terminal kits included, but were not limited to the following:

- Flash present in all the windows and floor openings,
- Difficulty installing a drive mechanism, and
- The overall weight of the car

First, there is the flash issue. While the flash is easy to remove, it is time-consuming and unless extreme care is used, the shell can be damaged (especially around the windows) during this process. More importantly, IHP represents this shell in a manner leading the consumer to believe the kit is ready to finish when in fact it is not. The photo shown as Fig. 5 is taken from IHP's web site. Note that the window and floor openings are shown completely clear of material.

Fig. 5 - IT PCC kit as depicted on IHP web site.

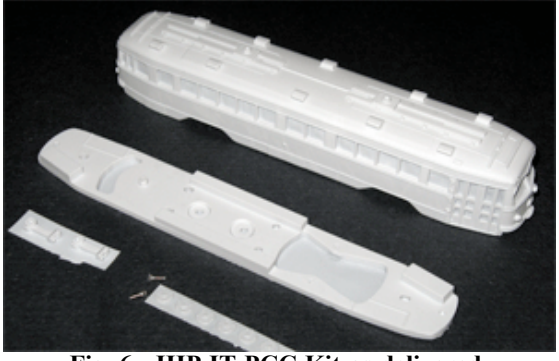


Fig. 6 - IHP IT PCC Kit as delivered.

Now, note the difference in the kit as purchased by Jonathan Werner, shown in Fig. 6 above. This kit had thin flash covering all front, side and rear windows. At this point, George Huckaby, John McWhirter, and Jonathan Werner all agreed that while this is a minor problem, it continues to show up in IHP kits; giving one cause to question their quality control practices. It was also agreed that it would be a better business practice to show the kits as delivered. The current situation is definitely deceptive, leading the buyer to believe that the kit comes ready-to-finish.

As far as mounting a drive is concerned, although the resin floor fits into the shell perfectly, we found the same problems in installing the Bowser mechanism as reported in Jonathan's review. The holes for attaching the power truck, although the locations were clearly indicated, had to be drilled with a #50 drill and tapped for a 2-56 screw *(see Arrow C in Fig. 7)*.

Being aware of the problems found in assembling the IHP Pullman Shaker Heights PCC, George and John added two 2-56 washers between the screw and the floor *(see Arrow B in Fig. 7)*. This eliminated the problem of the screws hitting the motor. Also, in the event the same problem was encountered with the rear boss as experienced with the Shaker Heights Pullman PCC, a #50 drill was used to drill a hole through the rear truck mount through the entire floor and tapped the hole for a 2-56 screw *(see Arrow A Fig. 7)*. The original boss was not removed at this time.

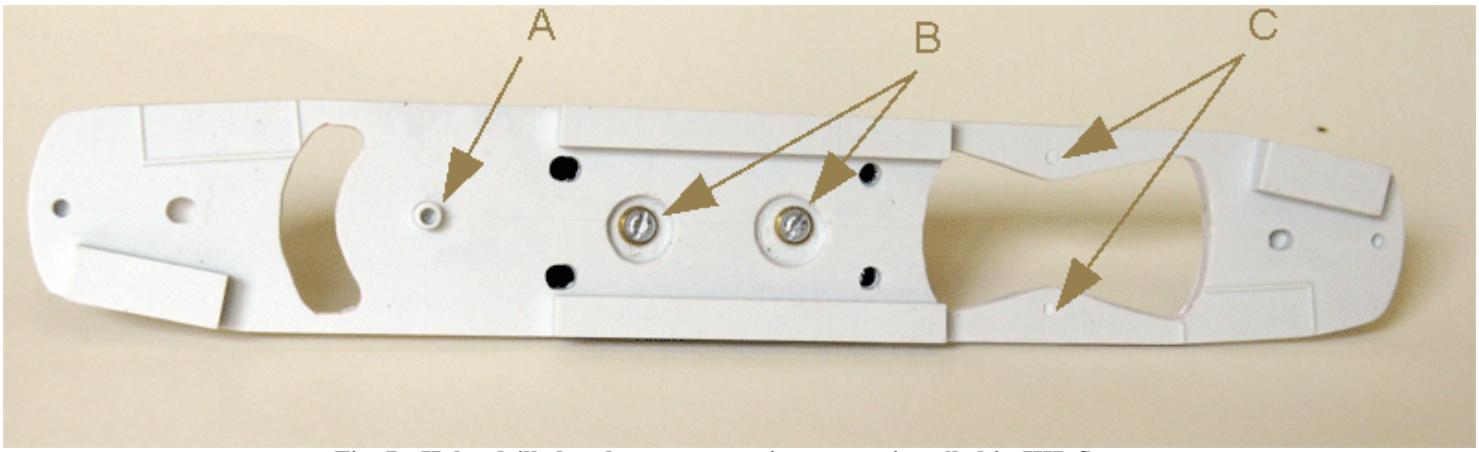


Fig. 7 - Holes drilled and motor mounting screws installed in IHP floor.

With the installation completed, the wheels appeared to be in the proper locations. The A-line 20040 Trolley Flywheel kit was added. We were fortunate that our recently acquired Bowser 125100 mechanism had the new blackened nickel-silver wheels that will be standard on Bowser's new F-line PCC. These wheels have been found to be execllent in all respects.

Now, it was time to begin the assembly. The Bowser power and trailing trucks were added, and modifications to the front motor mount were made allowing for the installation of the A-line 20040 Bowser Flywheel Kit (see Fig. 8).

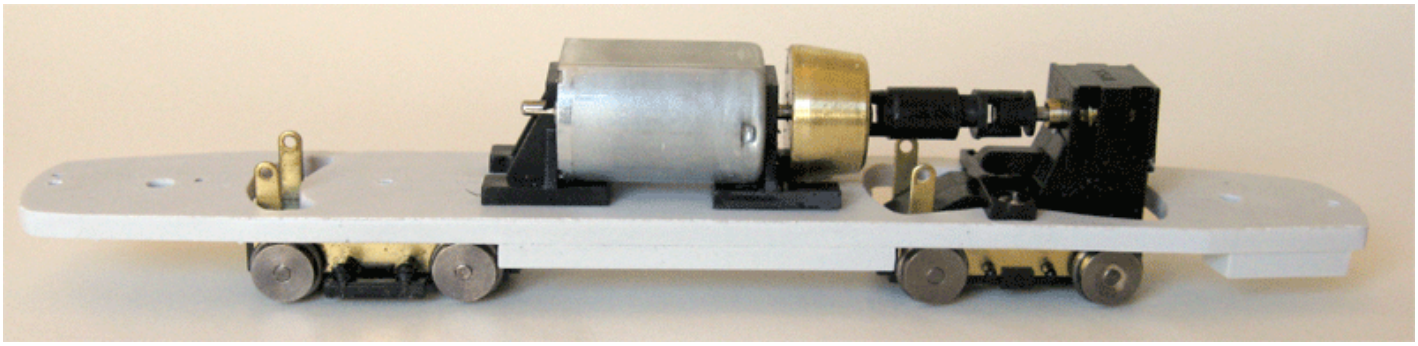
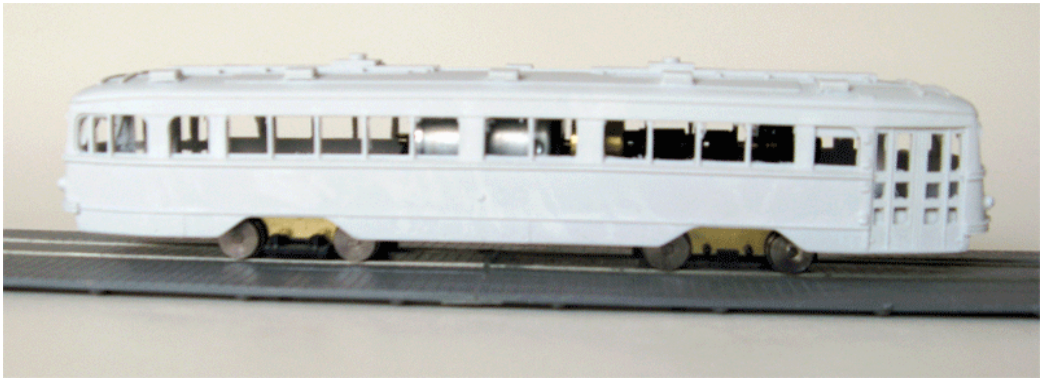


Fig. 8 - Complete Chassis (prior to wiring).

Before beginning the wiring process, the entire chassis was placed into the shell for a test fit. This is where a new problem was discovered. PCC cars had a specification stating the bottom step of the cars were to be 12" from the top of the railhead. The model as assembled left the bottom

step over 18" from the railhead. Even in HO scale, this was a noticeable issue (see Fig. 9).



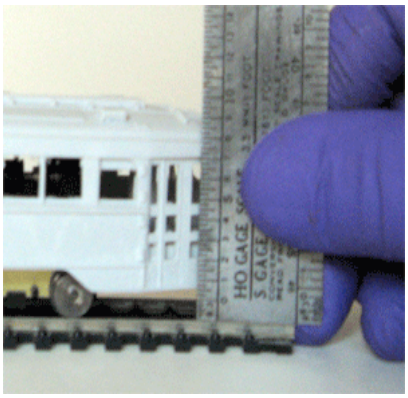


Fig. 9 - Car's height relative to the railhead.

This new discovery led to more discussion between George and John, both of whom noticed this problem was not present with the Shaker Heights Pullman PCC. Even an exhaustive review of Jonathan's review notes on the Shaker Heights kit yielded no mention of a height-above-railhead issue.

As previously mentioned, noticing the presence of the same issues in the Shaker Heights and Illinois Terminal kits prompted a discussion concerning IHP's quality control practices. This new discovery only served to further that discussion. It became the considered opinion that IHP has made so many PCC car models that it was hard to believe they were unaware of this specification, especially when one considers the level of detail present in the shell. That level of detail only comes from doing some extensive research. However, what we were observing combined with certain revent posting on the same 'hotractionmodeling' yahoo led to the assumption that test assembly of this kit apparently is not part of IHP's quality control practices.

In this condition, this car was reminiscent of the older Bowser and current Bachmann PCC models. Anybody who is familiar with these items knows this condition must be corrected to make the model credible. This meant the shell had to be lowered. Two ways of doing this were considered.

The first proposed fix would have been simple, but it yielded less than satisfactory results. The Bowser Mabuchi motor is 15mm high and tops out 17.5mm above the floor using the Bowser 1279 motor mounts. The frustum shaped A-line flywheel used with the 20040 Bowser flywheel kit is 17.5 mm in diameter. This lead to the idea the problem could be solved either by eliminating the Bowser motor mounts and ensuring that any flywheel used is either no larger than the motor, or that 1.3mm in the floor and/or the roof must be removed to clear the A-line flywheel.

The first thought was to simply remove 1.75mm from each of the main posts that attach the power chassis and floor to the shell and relocate the two side floor stops. However, further investigation led to the discovery the top of the Bowser motor would hit the bottom of the roof. Even if this simple approach yielded the desired car height, it would also mean eliminating a horizontal drive shaft between the motor and the power truck. This considered approach is only mentioned because some modelers may find the amount of noise made by the car on sharper turns caused by the lack of a horizontal drive line as acceptable. However, after careful consideration George, John and Jonathan all agreed that a better solution needed to be found.

As an experienced modeler, member of the Southern California Traction Club (SCTC), and *Trolleyville Times* reporter, John McWhirter noticed despite the fact the car sat too high, it ran very smooth and quiet. Given that observation, John then suggested that the roof needed to be milled out so the entire shell could be lowered and the power drive left intact. The only alternative to milling the roof was to undergo the shaving and/or sanding procedure suggested by IHP via the Yahoo 'hotractionmodeling' group. However, this also presented some issues, not the least of which is the hazardous nature of resin dust. Another issue with the solution proposed by IHP was the amount a material that would have to be shaved/sanded. Simply, achieving a lowering of six scale inches meant removing approximately 1.7mm of material from the roof. Considering clearance for the flywheel required another 2.5mm to be removed, and the aforementioned toxic nature of the large amount of resin dust that this would create, milling was the safest and easiest solution. Milling made just shavings and no dust at all.

We also became concerned that this solution might have to be employed again as IHP has announced plans for a San Francisco "Magic Carpet" car, series 1001-1005, and possibly a "Torpedo", series 1006-1015. Both of these cars have shells similar to the Illinois Terminal PCC, and the floor included with this kit already has markings for the rear steps for a San Francisco car. The one-page sheet supplied with the Illinois Terminal kit implies that this floor will be supplied with the San Francisco car. Without a suitable correction of this problem by the manufacturer, shells for these two cars could be made with this same inherent problem, requiring all this effort to correct.

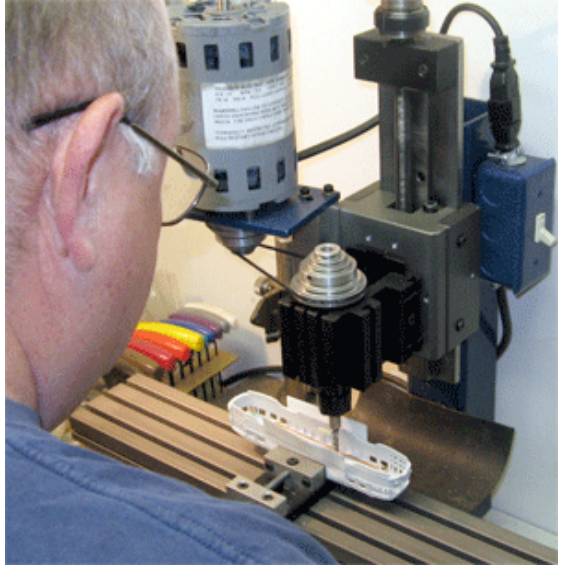


Fig. 10 - John McWhirter milling the roof of the Illinois Central PCC shell.

Measurements on this particular model showed the car needed to be lowered about 6 scale inches or .07". McWhirter milled out the area over the motor and flywheel .078" and the area above the flywheel another .025" as shown in Fig. 11.

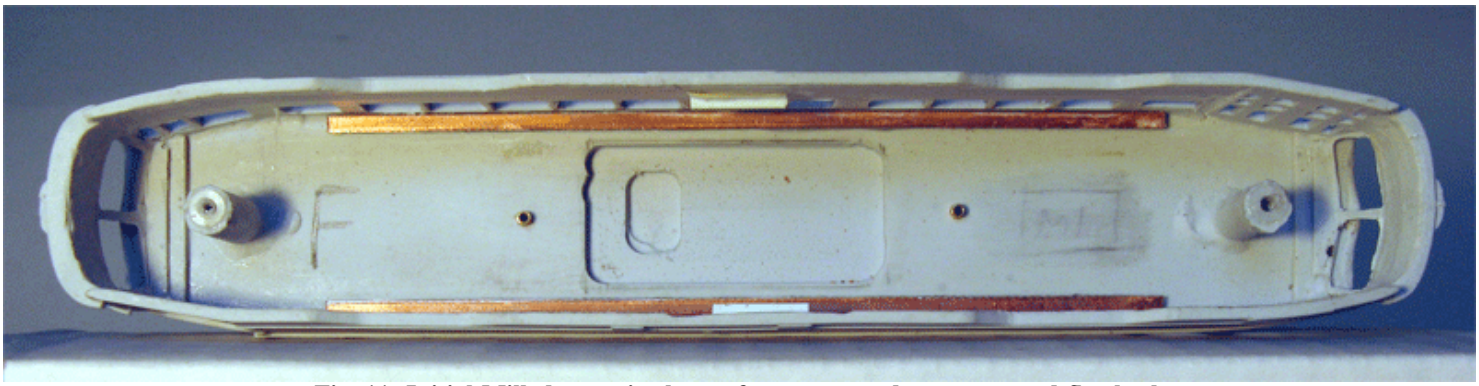


Fig. 11- Initial Milled areas in the roof to accommodate motor and flywheel.

A #49 drill was used to open the holes in the roof for the SCTC1 brass pivots that will be used for the trolley poles. We then used a #50 drill to drill out the support posts and tapped them for 2-56 screws. We used two 2-56 hex head screws to attach the chassis to the shell. We also used the same #50 drill to open the two holes in the roof for the brass pivots that will be used for the trolley poles installed on this car. Compare the difference between Fig. 9 (before the roof milling) and Fig. 12 below. Also compare Fig. 9 with the actual cars shown in Figs 1-3. At this point there was unanimous agreement that the height issue had been solved.

Fig. 12 - Assembled Illinois Terminal PCC Car after roof milling.

Now, it was time to address the last major issue shared between the Illinois Terminal and Shaker Heights cars, that being weight. The assembled Illinois Terminal car (unpainted and without windows) was found to weigh only 4.2 ounces. Prior experience with other models along with Jonathan Werner's findings on the Shaker Heights car meant adding weight to this car would be necessary. Of course, getting the car to sit at the right height also meant there was now significantly less space under the roof.

In a normal assembly, it would be SCTC practice to install their standard printed circuit strips and prepare to wire the unit for overhead wire operation, but the combination of the roof milling and the light weight of the assembled car meant consideration needed to be given as to where weight could be added prior to installing the strips and the DCC decoder. Concomitantly, the power truck was completely wired including the male portion of the Miniatronics Three-Pin Micro Mini connector, allowing concern to shift to getting sufficient weight in the car to ensure reliable overhead wire operation and adequate tracking on curves.

The same CL-6 QuikTab adhesive weights that were used on the Shaker Heights Car were used on the Illinois Terminal car. Normally, weights would be placed in the space under the floor between the trucks, but the space between the floor stiffeners on the Illinois Terminal car was not as large as that on the Shaker Heights Car, meaning two QuickStik adhesive weights had to be modified to fit. Once in place, the total weight of the car was up to 5.6 ounces, which was already known to be too light. The search began for other locations where weight could be added; this meant looking inside the body and under the front platforms. It was decided to concentrate on the power truck end of the car for these locations, but all signs pointed to this being another difficult task.

After a lot more consideration, it became clear the best way to deal with this problem was to return to John McWhirter's milling machine. This meant removing even more of the unneeded material in the roof to clear space for more weight and the DCC decoder. Two more areas at each end of the car were milled .08". At the power truck end (shown by the letter F on the roof) more weight was added. There was such a premium on space for the added weight that even the part number was sanded from the top of the power truck. The DCC decoder was installed in the milled area over the trailing truck.

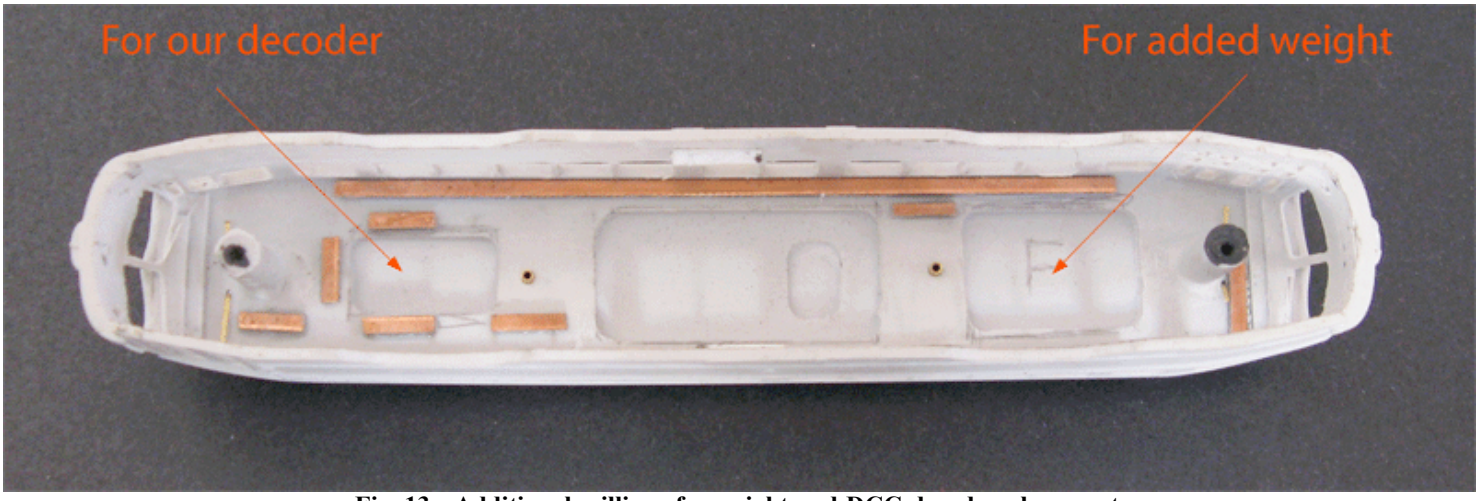


Fig. 13 - Additional millings for weight and DCC decoder placement.

Brass was used to fashion two trolley pole hooks as none was provided with this kit. These cars used a trolley pole hook that was unusual for a PCC car and they were not located on the roof boards as is normally the case. It would have been a nice touch to have had had these provided as a brass fitting by the kit manufacturer.

A Train Control Systems M1 w/BEMF decoder was installed into this car, using the recess milled for this purpose. Printed circuit strips were cut into approximately 1/2" long sections and placed them in the most appropriate places for internal wiring. Single-sided PC board was used in this example, but Clover House printed circuit ties can also be used. The printed circuit strips shown inside the car in Fig. 14 are used to assist in wiring the trolley poles, motor, decoder and the lights. Plans for this car are to have one headlight and two taillights at each end using 1.5v bulbs.

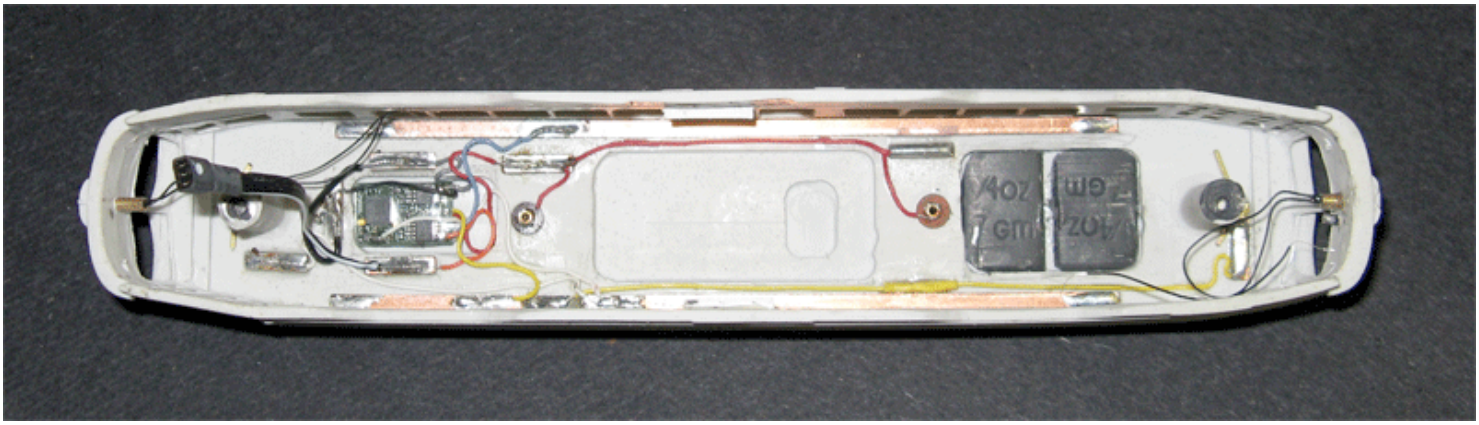


Fig. 14 - DCC Wiring.

Installation of the decoder, the male three-prong micro-mini plug, the two weights, and the headlight lamps brought the total weight of the car to 6.8 ounces.

Connecting the headlights was the next step. Miniatronics #18-001-10 1.5 volt 15mA 1.2mm diameter clear lamps were used for the headlights. 1/4" lengths of 2.0 OD / 1.5 mm ID brass tubing were installed into the headlight openings, then two of the lamps were secured into the proper place with a moveable glue, which was allowed to dry. Then using the SCTC resistor substitution box, we decided to insert one 390 ohm resistor in series with the headlights. We have found that it is best to use our resistor substitution box (shown in Fig. 15) with the actual lamp to be used in order to arrive at the best level of illumination.

Once we had both headlights installed, we tested the unit in the DC/Analog mode and found that everything worked correctly. We decided to defer the installation of the rear lights until after the shell is painted, so the next step was to place the unit on our overhead-wire-equipped programming track and hooked it up to our Digitrax PR-3. We connected the PR-3 to our Mac Book and opened up Decoder Pro as shown below. We first readdressed the decoder to 457 and then read all the CV's, printed out a record and stored it in our Master DCC book with reports on all our DCC equipped vehicles.

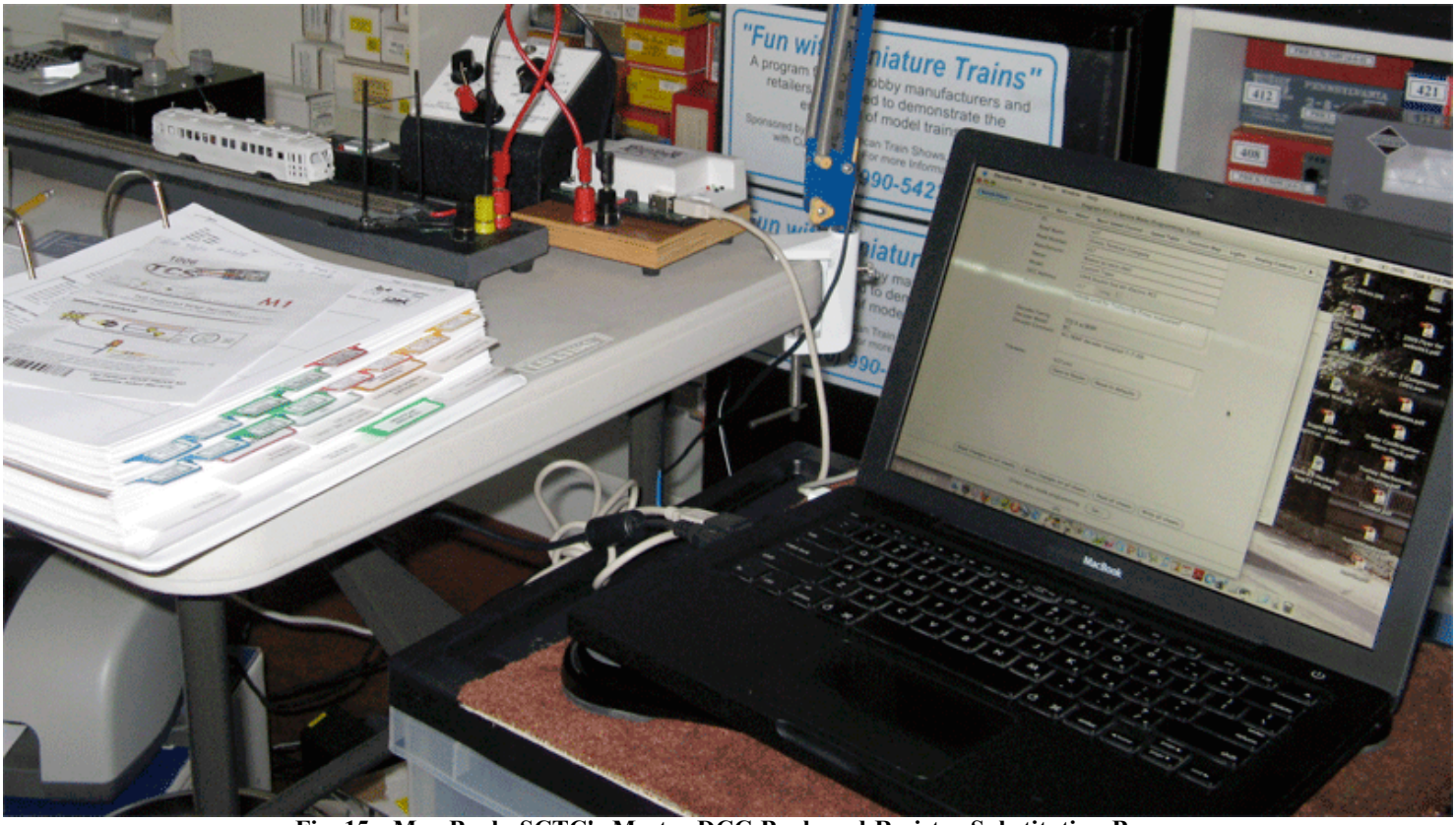


Fig. 15 - Mac Book, SCTC's Master DCC Book and Resistor Substitution Box.

We skipped application of the well-detailed wheel covers provided with the kit and opted for the super resilient wheel decals available from Custom Traxx in set CT-995. The provided wheel covers make a bad situation worse. These covers add to the already wider-than-prototype wheels currently used on models and could impair the ability of the car to take small radius city type curves. The 125100 Bowser unit that we used for this car had the new nickel silver wheels so we applied a thin coat of Floquil Weathered Black on the face of each wheel. After this was allowed to thoroughly dry, we brushed Testors' Glosscote on each wheel. Then the decals were applied. The shell was prepared for interior painting. All electronics were covered with masking tape to preserve the wire colors, the exterior window openings were masked and the interior airbrushed with Floquil Weathered black. The process would be reversed and the interior of the windows and doors masked and the entire exterior painted Floquil 100085 Antique White.

Then we approached the painting of the exterior and had to find a suitable mix for the green. We eventually arrived at two parts of Floquil Depot Olive, 110044, to one part of Floquil Reading Green, 110183 for the green and Floquil Southern Pacific Light Gray, 110130, for the roof. There is a thin black strip all around the car at the belt rail and two curved lines on both dashers. We use a Microscale decal set for this stripe as well as the larger black stripe along the edge of the roof at the letterboard. A Custom Traxx CT-995 decal set provided front and side destination sign backgrounds, both front destination signs, **ST. LOUIS & GRANITE CITY,** and the super resilient wheel decals.

We had not yet completed the application of all the black striping when we the car to the SCTC test track. It was equipped with two Miniatures by Eric HT-P2 trolley poles test run under overhead wire in the DC mode using Miniatures by Eric HT-P2 trolley poles. The unit would traverse both the 9" and 6" radius curves on the test track. At 7 volts, the car ran 35.4 scale miles per hour.

Fig. 16 - Illinois Terminal car on SCTC test track along with Shaker Heights 87 and Electroliner 801-802.

The final project was to add the taillights to each end. We had already prepared the car for these so all that had to be done was to insert the two bulbs in each end, determined the correct resistance for two bulbs in parallel and wire them up. We used two Miniatronics 18-R03-10 1.5v 30mA 1.2mm diameter bulbs. Both bulbs at each end were wired in parallel but in series with a 220 ohm resistor. Testing revealed a bad bulb but once that was replaced, all was good.

It was at this point that a new, and what we considered to be a serious problem was discovered. When we first saw resin floors advertised, we were, to say the least, very skeptical. Upon initial examination of these kits, experience told us these cars would need the addition of significant amounts of weight just to get satisfactory operation. Jonathan Werner's experience with the Shaker Heights car confirmed our suspicions.

Once Jonathan completed his review of the Shaker Heights car, he forwarded the car to SCTC for extended running while we were in the middle of our evaluation of the Illinois Terminal Car. We had been testing both cars at the SCTC clubhouse in mid-July for about one week when we noticed that the Shaker Heights car appeared to be too high on the rear end. To a lesser extent, we noticed the same appearance in the Illinois Terminal car.

Needless to say, we felt this needed to be investigated, especially since both we at SCTC and Jonathan had to make so many modifications to these kits just to get them to run satisfactorily. The floors were removed from both cars and we immediately noticed the floors had warped in the area of the Bowser power truck bolster. The only thing that had been done to the floors of each car during assembly was to paint them with Floquil Engine Black or Weathered Black. No modifications had been made to either floor for purposes of altering the turning radius.

The first attempt to stiffen the floors with tubing and code 100 rail is shown in the Figs 17a and 17b. This car (the Shaker Heights PCC) had only been completed for only three weeks and had been run for only a couple of days when these photos were taken. The arrows point down to the first stiffeners and up to the warped area.

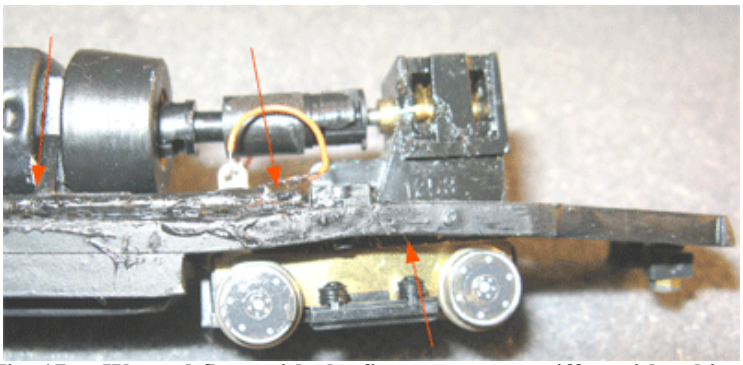


Fig. 17a - Warped floor with the first attempt to stiffen with tubing.

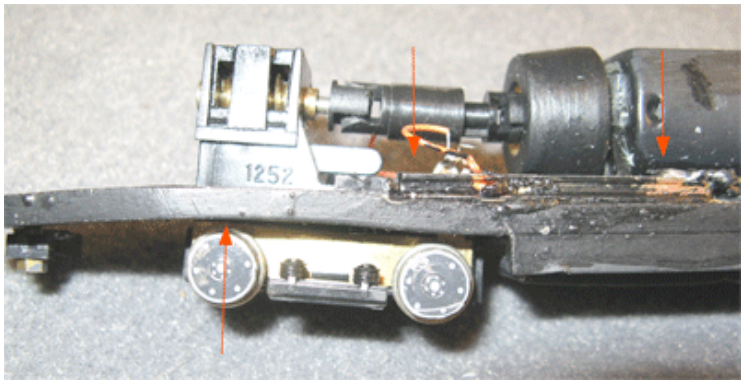
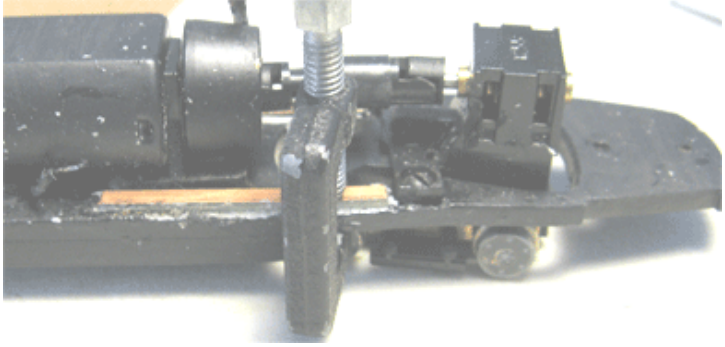


Fig 17b - Warped floor with first attempt to stiffen with rail.

This solution did not yield the desired result, so a decision was made to use printed circuit board ties as stiffeners for the floor (shown in Fig. 18a & 18b). These stiffeners were used to transmit electrical power from the power truck after these photos were taken. Additional supports for the inside the shell also needed to be added. This experience with the floor has prompted a Custom Traxx investigation into "after-market" metal floors for these two kits. We suggest that any modeler working with these kits who wishes to avoid these floor issues contact Custom Traxx.
When we finally reassembled the Shaker Heights car, we had to confront another problem reported by Jonathan in his review, namely the narrow trolley pole housing. This narrow housing, only 18" wide, prevented the free swing of some trolley poles. On some sharp curves, the pole base occasionally jammed against the side of the housing, it caused the car body to tilt somewhat and in some cases led to a derailment. We only mention this because we initially thought that the derailments were being caused by the skirts and it was not! We were still working this issue at press time!



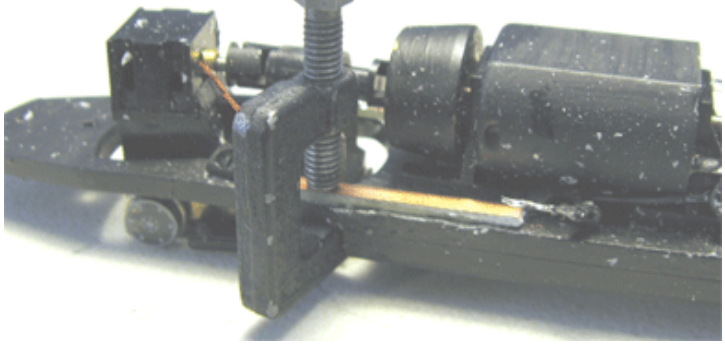


Fig 18a & b - Printed circuit board used as right and left side stiffeners and clamped to the floor and secured with ACC.

The final test was to operate this car on the city streetcar line of the Southern California Traction Club. Figs. 19 & 20 show the car in operation on SCTC's city streetcar line comprised of four modules. This streetcar line includes one ninety-degree left turn which is about 5.75" radius, which the car successfully traversed. The car still could use more weight and we will be attempting to add more where ever we can.

Fig 19 - Completed IT PCC Car inbound

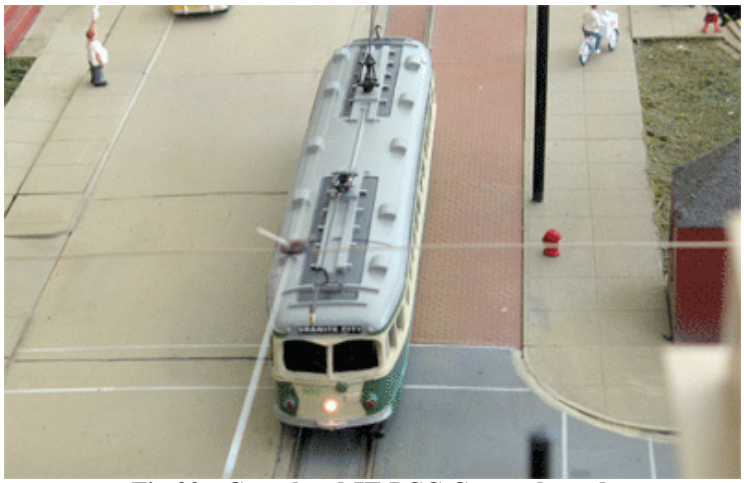


Fig 20 - Completed IT PCC Car outbound.

CONCLUSIONS:

Once again, IHP has provided seasoned trolley modelers with an excellent body shell, this time of the Illinois Terminal series 450-457 PCC cars. When properly painted and lettered it results in a beautiful model. However, because of the the major problems encountered with this kit, it takes an experienced modeler to successfully complete it.

Once again, the kit is presented as ready-to-finish, but arrives with flash in all the windows and floor openings. However, this was the least of the issues encountered while finishing this kit, but it was the first of several that caused us to question IHP's quality control practices. This conclusion was reached because all of these issues have either been noted before in IHP products or they are suggestive of a lack of sufficient engineering.

As previously mentioned, the presence of flash is a minor issue, but there were some major issues we encountered of which modelers will need to be aware when working with this kit. The first major problem was the lowering the shell to the proper 12" height above the railhead. We considered different approaches to this problem but found no easy solution. We did not find the sanding proposed by IHP on the 'hotractionmodeling' Yahoo group to be reasonable. It just made a lot of dust. We were also gravely concerned that sanding this extraordinary amount of resin material would make a breathing hazard for the modeler. Hazards notwithstanding, sanding did not remove enough material to allow us to use what we consider to be a mandatory flywheel accessory, the A-line 20040 Bowser Trolley Flywheel kit. Since this kit was marketed with a floor designed to use the Bowser mechanism, one would assume that it would have been properly engineered sufficient clearance in the shell to clear the Bowser Mabuchi motor, and placing the shell at the correct height.

The second major issue is obtaining sufficient weight for satisfactory operation. Providing this or any floor in resin appears to be a giant step backwards. It seems as though absolutely no thought was given to the effects of replacing a metal floor with one made of resin. There are minimum weights for successful operation under overhead wire and through tight city curves. The lack of weight in this floor plus the overly thick roof makes it difficult to achieve those ideal weights. Adding weight to this kit on the underside of the roof was extremely limited due to the thickness of the roof and the modifications to get the shell to the correct height. After initial testing of the car on the SCTC test track, it appeared that the 6.8 ounces that we achieved might be sufficient but we did not try any grades at all. In short, the car needs a heavier floor for better operation, especially if one intends to operate two of them in a train. Since we have converted over 200 cars to overhead wire operation (including cars with brass, resin, zamac, wood and injection molded plastic shells), it is obvious that heavier floors perform best, with the pewter and cast metal floors being the best.

A final major issue and one that seemed to get worse every day that we operated the car was the flexing/warping of the floor. The floor has a

tendency to warp after some operation making the car sit awkwardly on the trucks. We noted that this car appeared to be sitting high on the trailing truck end after one day of operation. After disassembly, we found it was sitting very low on the front trucks. The floor had warped in the area of the bolster mount and had a slightly arched shape. We then looked at the Shaker Heights car just provided to us by Jonathan Werner. It too had developed an even greater arch in the floor around the area of the Bowser power truck bolster, forcing us to eventually fortify this area with strips of printed circuit board.

After all we had done so far to complete this kit, this last problem was really a great disappointment. As we concluded this review, it appeared that the resin floor provided with this kit may be inadequate for continued operational use, unless more support inside the body shells is provided. While just one support on each end and the two small side supports might have been adequate for a rigid floor made of metal, they proved certainly inadequate for a flexible resin floor. We would suggest that more interior support for the floor on these shells be added. We have been told that Custom Traxx is looking into developing more suitable floors for both this car and the Shaker Heights PCC. We hope those efforts are successful. It might help kit buyers salvage something out of these excellent shells after so much work to get them finished. Such a floor would eliminate all the problems with the provided resin floor and would simplify the addition of weight that the kit sorely needs for smooth operation. Although the grade of resin used for this floor may not be the ideal material for a traction floor, there are more suitable materials (such as Alumilite Regular) that could be used.

This kit was also notable for what it didn't include. First, there were the instructions. We have some reactions to the instructions, specifically what we consider to be missing information. While experienced modelers will be able to assemble, finish and locate the necessary parts to complete this model with excellent results, we feel that the instructions provided are very incomplete. Not only are trolley poles, trolley pole hooks, working couplers, decals and Bowser drives not available from IHP, but no source for these items is either recommended or provided. For the ease and comfort of modelers, these instructions should list sources by phone number, email address, or other contact information. In short, if any kit requires items to complete it and they are not supplied by the kit manufacturer, it just makes good business sense not to only tell kit buyers what they need to complete the kit, but also tell them where to get those items without them having to go find it for themselves.

On top of this, no information is provided on the paint scheme, colors, and lettering. Not even a simple photo of the prototype is provided. So the kit purchaser is left to his own devices to discover all these facets, or it has been assumed that the kit buyer is somehow omniscient. That may seem like a minor detail, or a difference of opinion as far as business practices are concerned, but it is actually somewhat detrimental to the hobby in general.

One must not forget this kit is a model of just eight cars that ran for only nine years and ceased their operational lives in 1958. Only two of these cars survive in captivity today in museums in Ohio and Connecticut. Except for a few years being put back into service for Shaker Heights Rapid Transit between 1976 and 1979, the only place in the last 50+ years one could see these cars was in a museum. This means it is highly likely that many modelers assembling this kit have never seen the actual car; they aren't just going to "bump into" one. Even in their heyday, double-end PCC cars were a rarity with only Pacific Electric (30), Dallas (25), San Francisco (10), and these eight cars being the only ones ever made.

Rarity and the amount of time that has passed means much of this information is not easy to find, but in order to produce a kit, a manufacturer has to both know this data and know where to find it. Knowing what a struggle mining this information can be, why wouldn't a manufacturer not include these details in their kits? Perhaps IHP could take a page from some of the major model railroad suppliers and provide some prototype information along with their kits.

Take Con-Cor for example. In their recent HO scale release of the Chicago North Shore and Milwaukee's Electroliner, Con-Cor supplied a wealth of knowledge about this train. We learned many things about the Electroliner from this material. That information plus the excellent photo on the box were commendable, and were a great aid in preparing the item for operation.

Speaking of photos, it is also our opinion that it is ludicrous not to provide at least a photo (preferably in color) of the prototype in any kit, traction or otherwise. For example, the Illinois Terminal cars had a different style of trolley pole hooks and were not located on the trolley boards as would have been expected. Information such as this should be provided with the model, even if the odd trolley pole hooks themselves were not. Why not give them pertinent data on the car instead of just a crude drawing that appears to have been sketched on the back of a lunch bag? Including prototype information with the kit, such as the data given in the beginning of this report, would surely be in consonance with the current effort to attract newer modelers into the hobby.

NOTE: *For the record, trolley poles are available from Bowser, part #1250, or from Custom Traxx, part #HT-P2. The A-line Flywheels are available from A-line, part #20040. Operational couplers are also available from Custom Traxx, part #SCTC40. Decals are available from Shoreline Models and Paul Mayer graciously provided a set for us to finish this car. Photos of these cars can be found on Dave's Rail Pix. We also used the operational SCTC40 couplers available from Custom Traxx. By the way, there is a special sale being conducted by Custom Traxx for trolley poles and Bowser drives for this car and nine other IHP streetcars. This is a limited offer good only until the end of August 2009.*