Modeling street life and streetcars

2 The newlyweds emerge from the chapel to cheers from family and friends. Around them, city life continues, including a Bachmann PCC streetcar bringing commuters from the suburbs.

This HO scale traction layout re-creates the feel of visiting the big city as a child

By David Arrell • Photos by the author

The Philadelphia experience was exciting to me as a child. Our infrequent trips to Center City, as the downtown area is known, were filled with memorable sights, sounds, and smells. It seemed to me that people were everywhere. You needed an extra set of eyes and quick feet to cross the street due to the number of cars, trucks, buses, and streetcars. The streetcar rides were, by far, the best parts of the excursion.

Although I avoided the project for decades, it was inevitable that I would build a realistic-looking streetcar layout. I grew up just outside Philadelphia adjacent to the 69th Street Terminal of the Market-Frankford "El" (elevated) line, where a "Gateway Transfer" could take you from one of the collector lines in the

3 David's compact layout is in display mode with skirting. David enjoys sharing the layout with others at train shows and meets. The layout is on wheels for ease of use. The track height is 48" for easy viewing.

suburbs to downtown or across the city. Later we moved farther into the suburbs, but found a house right on the Sharon Hill line (Route 102) of the Philadelphia Suburban Transportation Co. I rode a streetcar, the El, and the subway every day for a year as a student at Temple University in North Philadelphia. As you can see, traction modeling was inescapable. This layout is my homage to Philadelphia and my hometown.

I have created 10 layouts over the years, including a few collaborative efforts, one notably located in my college dorm room. Due to career circumstances, our family has moved several times over the years. My goal in this project was to design a layout that could move with me.

Benchwork construction

To be budget conscious, I designed my layout to use one sheet of plywood, including the tabletop, support structures, and legs. I chose ¾" cabinet-grade plywood for this project for its strength and stability. I had the lumberyard cut the main top length to 6 feet so it would be easier to handle in my workshop.

The first cut at home created the 2 x 6-foot tabletop. I cut the parts for the open-grid framework in 3" strips, which are installed around the perimeter and every 2 feet under the tabletop. The legs were made by ripping the 3" material in half lengthwise. The pieces were edge-glued and screwed to make 1½" x 2¼" L-shaped legs, which are bolted to the open-grid framework.

This extra effort proved invaluable in moving the layout to train shows and other venues. The final project incorporated a few additional pieces of wood when I added wheels to the legs.

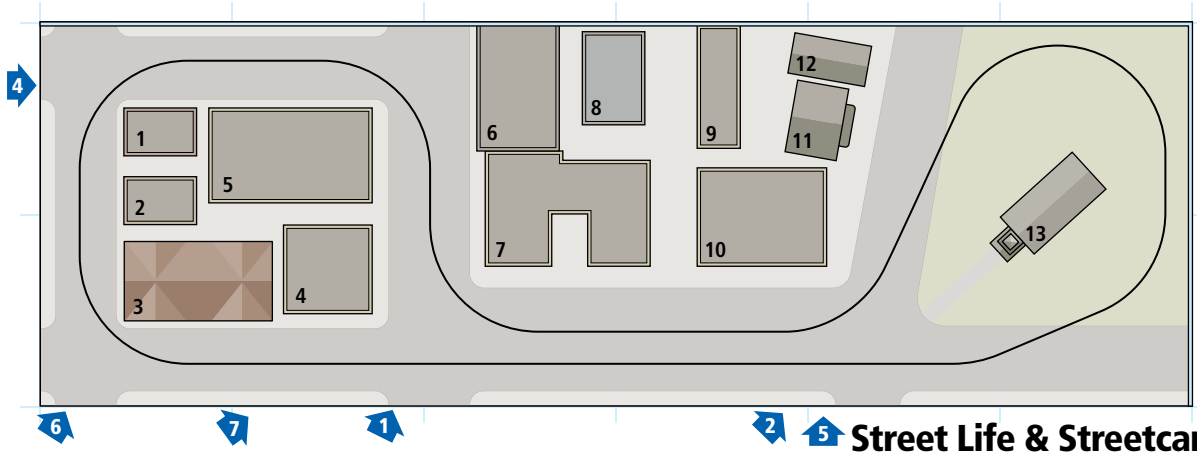
Track design

Even in a small space, I wanted to create a sense of movement. I created a dogbone track plan weaving through three distinct areas of the layout. The right side of the layout depicts the suburbs. The middle section of the layout represents Center City Philadelphia. The left side portrays life in a city neighborhood, away from the din of downtown. The specified radius for most HO gauge streetcars is 15", which is much too gracious and impractical for scale modeling. Through experimentation and a slight modification, I concluded that the Bachmann Spectrum Peter Witt streetcar could handle 6" curves. I used Atlas code 100 rail with a 6¼" radius to avoid any track issues. I employed this radius for most of the track. To signify a transition in neighborhoods on the right side of the layout, I chose a more generous radius as the streetcar leaves the city streets for the suburbs.

The Spectrum Peter Witt streetcar and a Bachmann PCC streetcar each have a Digital Command Control (DCC) decoder. My other streetcars are direct-curent (DC) units. Since my layout is merely one loop, I mainly use DC and save DCC for special occasions. I can switch between the two systems fairly quickly. The power to operate the streetcar comes from the overhead wire. By changing the power routing under the tabletop I can switch to a two-rail system.

Scenery

I wanted to re-create a time when more people relied on mass transit for their travel. I chose to focus on the late '50s when cities, made up of distinct



Street Life & Streetcars

1. Pete's Meat – Model Power
2. Walker Building – Design Preservation Models
3. Addams Ave. Part IV – Downtown Deco
4. The Bon Ton – Lunde Studios
5. Bailey Savings and Loan – Wm. K. Walthers Cornerstone
6. Addams Ave. Part I – Downtown Deco
7. Ambassador Hotel – Bachmann Spectrum
8. Front Street Building – Design Preservation Models
9. M.T. Arms Hotel – Design Preservation Models
10. Department Store – Bachmann Spectrum
11. Star Diner – Bar Mills
12. Wooden Shed – scratchbuilt
13. Community Church – Campbell Scale Models

HO scale (1:87.1)
Layout size: 2'-0" x 6'-0"
Scale of plan: 1" = 1'-0", 12" grid
Numbered arrows indicate photo locations
Illustration by Kellie Jaeger

Find more plans online in the Trains.com Track Plan Database.

4 There's action away from the big avenues, as well. David has created scenes such as the ever-present road work just as the streetcar swings around the curve, a pickup basketball game mid-block, and a hopeful dog next to a customer of Pete's Meat, a Model Power kit.

The layout at a glance

Name: Street Life & Streetcars
Scale: HO
Size: 2 x 6 feet
Prototype: Homage to streetcar service in and around Philadelphia
Locale: Philadelphia and suburbs
Era: Late 1950s
Style: island
Mainline run: approximately 16 feet
Minimum radius: 6¼"
Minimum turnout: none
Maximum grade: none
Benchwork: open grid
Height: 48"
Roadbed: Homabed/cork
Track: Atlas code 100 flextrack
Scenery: water putty on plywood, patching plaster on foam
Backdrop: photo backdrops from Realistic Backgrounds mounted on tempered hardboard
Control: direct current with powered overhead wire

neighborhoods, were filled with people beginning to explore the freedom that came with the automobile. At the time, most streets with tracks were either cobblestone or brick.

I chose Durham's Water Putty for the roads and sidewalks. The cobblestones were hand-carved with a motor tool. After repeated failed attempts to carve brickwork between the rails, I substituted plastic brick sheets. The sidewalks are also hand-carved water putty. Learn how I built my streets in "Making cobblestone streets" on the next page.

The church landscape is 1" foam covered by patching plaster. The trees are from Woodland Scenics, JTT, and a private supplier. The background images are from Realistic Backgrounds (realisticbackgrounds.com) mounted on tempered hardboard.

More than 200 figures populate the layout. Most of the figures fill the busy street scenes. Some were placed in vehicles, while others are used as mannequins in the department stores. The figures come from Woodland Scenics and bulk suppliers.

There are 48 cars and trucks on the layout, including models from Woodland Scenics AutoScenes and Oxford Diecast Ltd. The vehicles set the stage for the late-'50s. There are six dogs on the layout and various birds, including pigeons. After all, how can you model a city scene without pigeons?

Overhead wire

My original goal was to model, but not rely on, the overhead wire that powers the streetcars. Even that limited goal proved elusive at first. To be frugal, I attempted to build my hangars and stretchers using 26AWG telephone wire. This material proved inadequate.

My next attempt included a different type of wire and commercially available

Making cobblestone streets

My goal was to create an old cobblestone look for the streets. On previous layouts I primarily used styrene sheets for the roads and sidewalks. They always came out clean and crisp, not the look I wanted this time. As I pondered my options, I was reminded of a product that I had used, Durham's Rock Hard Water Putty, in various forms for other projects, both in and out of the hobby.

I made a form of stacked blue masking tape to define the edge of my roads and used the rail on the inside. I tested in a small area. The initial results were promising, so I did another section. I noticed a slight variation in color and texture due to my imprecise mixtures of water and product, which turned out to be a good thing. Every one of my outside-the-rail pours turned out great. My between-the rails pours were not as good. I thought the mix was stiff enough to prevent leakage. I was wrong. More on that subject later.

Due to poor planning, I had to cut back much of the cured product to have space for my structures. The sidewalks were cast using the same basic method by using tape barriers to raise the level.

Each of my cobblestone roads and sidewalks are hand-carved with a motor tool and bit. I destroyed a couple of bits creating this effect. It took approximately three hours to carve the roads. Right at the end of that phase of the project, I remembered that I could soften the water putty with water. So much for working smarter and not harder.

Once I was pleased with the carvings, it was time to add color. I used a thinned version of Polly Scale Aged Concrete [no longer in production – *Ed.*] for the sidewalks and portions of the roadway.

The road stones were colored using thinned dabs of black, dark red, dark gray, light gray, light brown, and dark brown. I didn't paint each cobblestone individually, but rather did small areas of color. To mute the colors and bring out detail, I applied several India ink washes using black, rust, and brown ink. I then drybrushed the cobblestones with light gray and light brown to add highlights.

To finish the project, I started to use the water putty on the space between the rails and even attempted to carve bricks. Due to a combination of my limited skill level and the product's limitations, the results were disastrous.

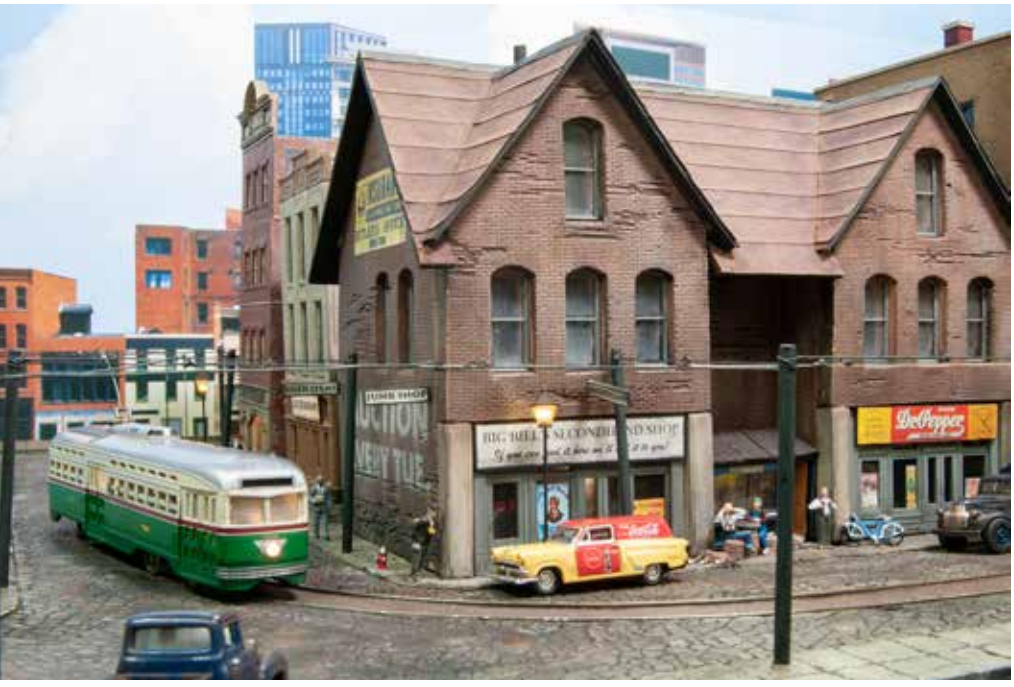
Instead, I used styrene brick sheet. After cutting the sheets to fit, I gave them a base coat of dark red spray paint. I used colored pencils (brown, black, purple, and orange) to add visual texture. I finished with India ink washes.

The overall effect is pleasing and sets the stage for the streetcars and cityscape. The water putty poured in smaller areas gave me the imperfections that I was looking for in creating my cobblestone streets. I even have some unplanned potholes to add to the realism. – *David Arrell*

hangars. These hangars worked well but appeared oversized. I was able to keep the streetcar on the wire reliably, but I was unsatisfied with the appearance.

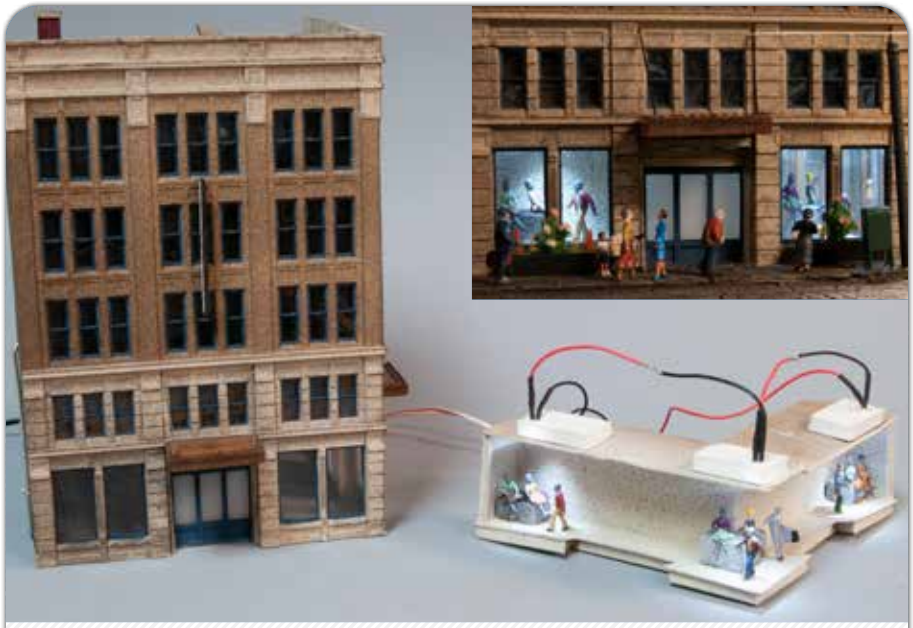
Inspired by inquirers at train shows who repeatedly asked if the overhead wire powered the unit, I accepted the challenge and looked for another solution. Proto87.com offers scale traction products to solve this problem. The wire is 28AWG nickel silver, and the hangars are photo-etched brass.

These products work well and look terrific. However, my aging eyes struggled to see and solder these small parts. In the end, the results proved that the persistence was worth it. The streetcar has worked flawlessly and continuously at multi-day train shows. Due to the fragile nature of the overhead wire, I can revert to two-rail power, if necessary, to keep operations going during public exhibitions.



5 Ice cream, ice cream, we all scream for ice cream! An ice cream truck pulled up to the curb in front of the famous John Wanamaker department store in Center City. The Bachmann Spectrum Department Store kit makes a good stand-in for this popular meeting place.

6 Turning a corner brings a streetcar into a new neighborhood, each with its own charm. This building has had multiple lives and purposes and currently gives new life to old treasures. The structure is a Downtown Deco kit.



Department store lighting

Department stores have big display windows that beg for lights and an active interior to add to the realism. I have two department stores about a block away from one another with mannequins and lighting. I added color to the flooring and walls of the displays, as well as a different color of lighting in each structure.

The easiest way to build the display window interior is by tracing the inside of the structure on a scrap piece of paper before you add the roof to the kit. As you do this, take note of the height of the bottom edge of the windows, as that will become the "floor level" of the display windows. The height of the display area is a little more flexible. You will need some extra height for your lighting, but not so much height that your wiring is visible in the windows of the floor above. You may want to black out those second-floor windows now, so they don't become an issue later.

I used styrene to build the window boxes for my displays. It's easy to cut, cheap, and assembles quickly with solvent. Remember to check your fit with the actual structure before you proceed with lighting and decorating. The fit should be close, but not tight. If you use light-emitting diodes (LEDs), you probably won't need to replace a light, but you may later want to change out a scene in the display.

Design your scene before adding lights. In both department stores, I painted the floor and walls as well as added some elements for the mannequins to use as props. I tried to highlight a new fashion line, so I painted similar and complementary colors on the mannequins. Check online images for inspiration for fashions in your modeled era.

One department store has warm LEDs that produce a softer, more yellow effect, mimicking incandescent lights. I used LEDs that came in a long strip on a reel. These lights are easily cut to length with increments marked on the tape. Once cut, they have the appropriate resistors and solder points in place. I wired them in series and added 12" feeders to connect to the accessory bus line under the layout.

In the other department store, I installed cool white LEDs in the display windows, imitating fluorescent lights. I used individual LEDs wired in a series. Make sure you have the proper resistors. Mine came with resistors attached. [Evan Designs, evandesigns.com, makes easy-to-use hobby LED kits. – *Ed.*]

Once the interior is installed in the structure, it's important to check for light leaks. Depending on the fit of your interior within the structure, there may be areas where light will leak. Correcting this on the workbench is much easier than on the layout. – *David Arrell*

Structures

A significant number of structures on this layout are re-purposed from earlier projects. Two City Scene kits from Bachmann Spectrum highlight the center block. The Ambassador Hotel kit roughly resembles the landmark Benjamin Franklin Hotel on Chestnut Street. The prototype is "E-shaped" while the model is a scaled-down "C-shaped" structure with identifying signage.

The department store is named for the historic John Wanamaker store, famous as a meeting place in Center City Philadelphia. The church is a Campbell Scale model that resembles an old chapel in suburban Philadelphia.

To expand the downtown look, I added a Lunde Studios resin kit, modeling The BonTon. This kit replicates the structure of that department store chain in York, Pa. I chose it because it looks like it belongs in this cityscape.

A small kit from Bar Mills, the Star Diner, is partially hidden from some views of the layout. I intentionally wanted to create engaging vantage points only viewable from certain positions. Kits from Walthers, Downtown Deco, and Design Preservation Models complete the cityscape.

I added signs and details to enhance the structures, and a few have detailed interiors on the ground floor. Both department stores have mannequins advertising the latest styles of 1958 in their display windows.

I scratchbuilt water tanks for buildings over four stories tall (owner's ordinance) using a small section of PVC pipe wrapped with scribed basswood siding to mimic the appearance of wooden water tanks.

Most of the buildings and details are heavily weathered. I use black, brown, gray, and rust-colored India ink-based isopropyl alcohol washes in multiple layers to achieve the grimy, urban effect. All structures have interior light-emitting diode (LED) lighting. This number of lights requires additional low-voltage circuits underneath the layout. See "Department store lighting" at left.

Streetcars

The Bachmann Spectrum Peter Witt streetcar runs and looks great, especially wearing the green of the Philadelphia Transit Co. But over time, the streetcar pole springs proved insufficient to keep tension on the overhead wire.

7 David has created a scene of busy city congestion outside Wanamaker's and the Benjamin Franklin Hotel, where exhausted shoppers look for a snack from the street vendor. The cars from Oxford Diecast have drivers installed.

The SCHOOLHOUSE page of the website Trolleyville.com provided valuable insight and a solution. John McWhirter wrote a detailed explanation of what products to buy and how to install them based on the experience of the Southern California Traction Club. I am indebted to them and Miniatures by Eric for solving my problem.

My traction roster has expanded to include two Bowser President's Conference Committee (PCC) cars, two Pennsylvania Scale Model Brill units, and another Bachmann PCC model equipped with DCC and sound.

On the move

After receiving some encouragement from fellow modelers in my town, I took the layout to area shows. I started small by attending a one-day regional show. To protect the layout en route, I constructed a framework out of 2 x 4s. This frame permits me to easily slide the tabletop into the back of our minivan and secure it to minimize movement.

Since then, I have taken the layout to the K-12 school where I work and to larger train shows. Initially, I took almost everything off of the layout to prevent damage. In doing so, I realized that this much handling of the structures proved detrimental. Now when I travel, I only remove the cars, trucks, and a few small details.

I place foam sheets between the buildings and metal poles supporting the overhead wires while in transit. To keep the layout dust-free in the house and car, I clip large panels of foam board to each side and cover it with a bedsheet. These protective measures have significantly reduced the amount of dusting and rail cleaning required for the best results.

I am grateful to those who shared their work and techniques with me over the years, including those in this magazine. I am very thankful for those who made suggestions and provided feedback throughout this project. I appreciate the people who I've met at train shows who chat with me about the creative process.

Invariably when I acknowledge the streetcar is powered from the overhead wire, people respond by saying that they don't have that kind of patience. I tell them that I didn't have that level of patience either at the outset, which is why I avoided the project for so many years. Now I tell them it's more about persistence than patience. MR

Meet David Arrell

David has been a model railroader for over 45 years. This is his 10th layout, including one in his college dorm room. He is the superintendent of a Christian school in Ohio. He enjoys traveling and riding bikes with his wife, Lori. They have two adult children. He is in the planning stage of his next project.