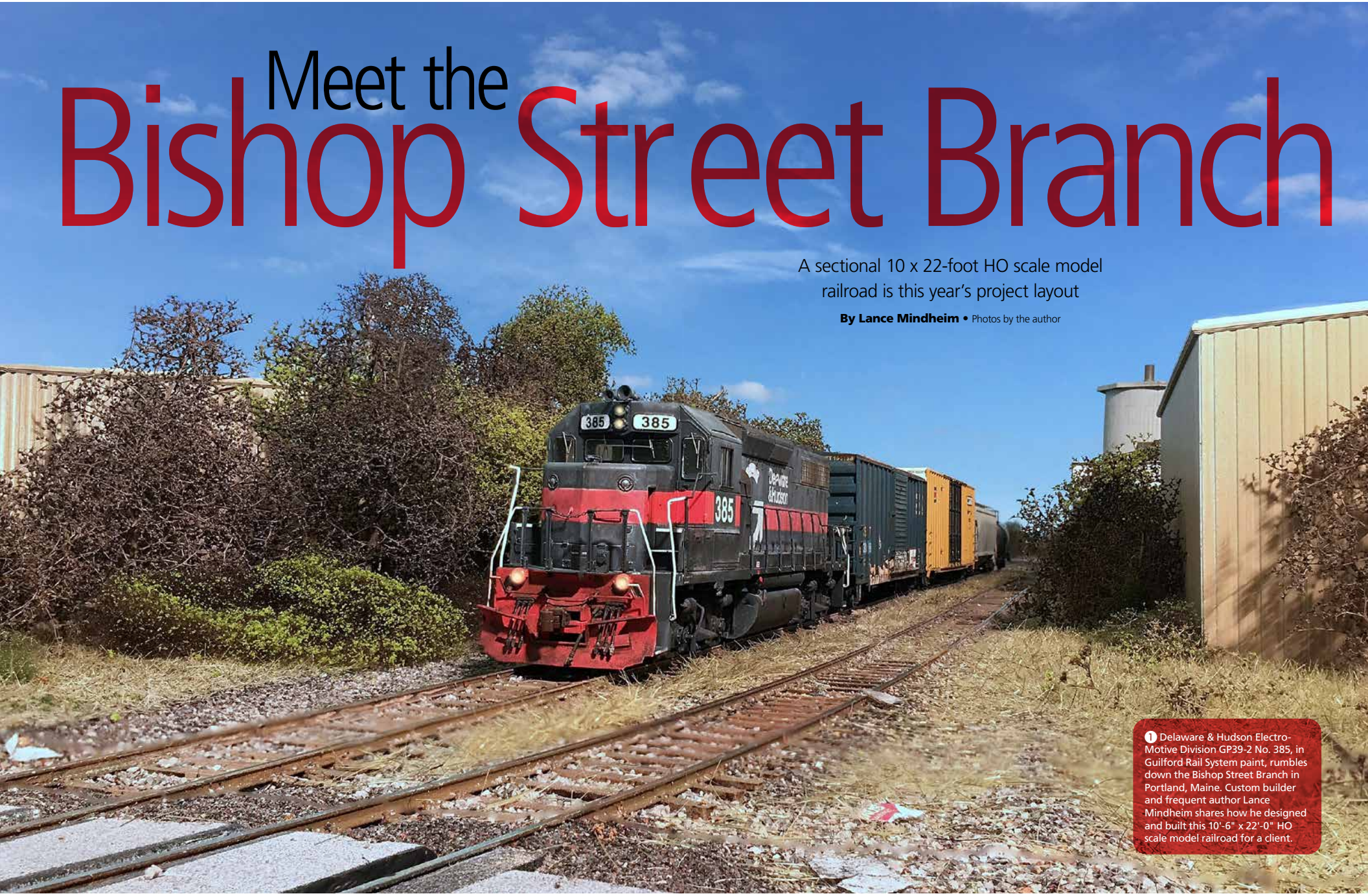
Meet the Bishop Street Branch

A sectional 10 x 22-foot HO scale model railroad is this year's project layout

By Lance Mindheim • Photos by the author



1 Delaware & Hudson Electro-Motive Division GP39-2 No. 385, in Guilford Rail System paint, rumbles down the Bishop Street Branch in Portland, Maine. Custom builder and frequent author Lance Mindheim shares how he designed and built this 10'-6" x 22'-0" HO scale model railroad for a client.

2 This overall photo shows the Bishop Street Branch set up in Lance's workshop. The model railroad was designed to be dismantled for shipment to the client's house.

Project layouts have been a longstanding tradition in *Model Railroader*. Names like the Pine Tree Central, Clinchfield, and Beer Line will resonate with longtime readers of the magazine. This year's layout, the HO scale Bishop Street Branch, will continue the tradition, but with a twist.

Unlike previous project layouts, the editors at MR asked me to write this year's series from the perspective of a custom builder – somebody who builds layouts for a living. As we progress to the how-to articles, I'm going to take a slightly different approach from the traditional step-by-step style. Instead, I'm going to focus on what I call "difference makers." The construction methods for some steps are more crucial than others, and I'll be calling those out as we go.

Meet the Bishop Street Branch

The 10'-6" x 22'-0" HO scale model railroad is based on Guilford Rail System's compact, but modelgenic, half-mile-long Bishop Street Branch. The layout is set in Portland, Maine, during the 1980s and 1990s.

Portland is a beautiful waterfront city steeped in railroad history. Even by railroad standards, the lines of this region have gone through numerous name changes, consolidations, and abandonments. Reading the history of the area and looking at the track charts, you certainly need a strong cup of coffee, a pen and notepad, and a highlighter to keep track of it all.

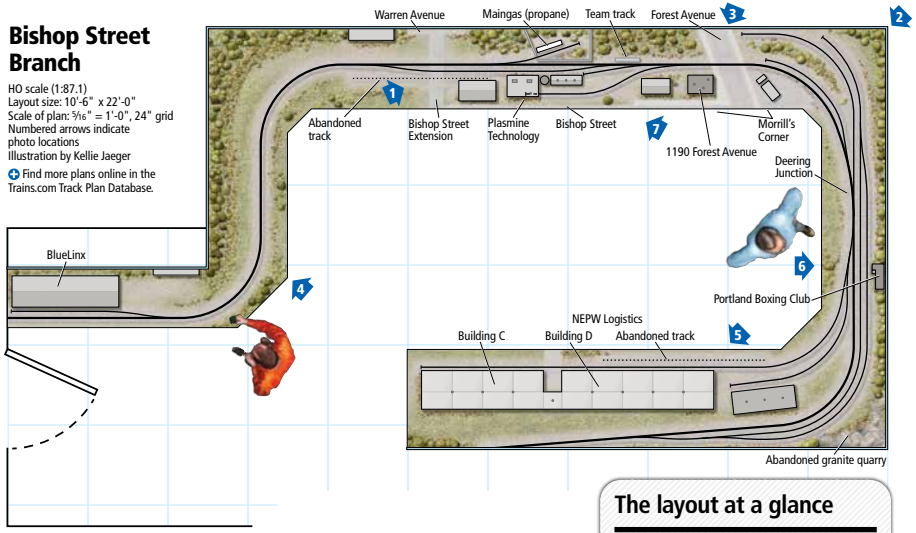
The Bishop Street Branch line splits off the Boston-to-Bangor main line at Deering Junction. In earlier years, Deering is where the Boston & Maine's Worcester, Nashua & Portland (WN&P) line came south from Rochester, N.H., and met the Maine Central's line to Bangor. As time marched on, and the nation's interstate system was built, the B&M segment was truncated and the remaining vestiges became the Bishop Street Branch. With consolidation came Guilford Rail Systems which, in a corporate branding move, changed its name to Pan Am in 1998. Pan Am was purchased by CSX in June 2022.

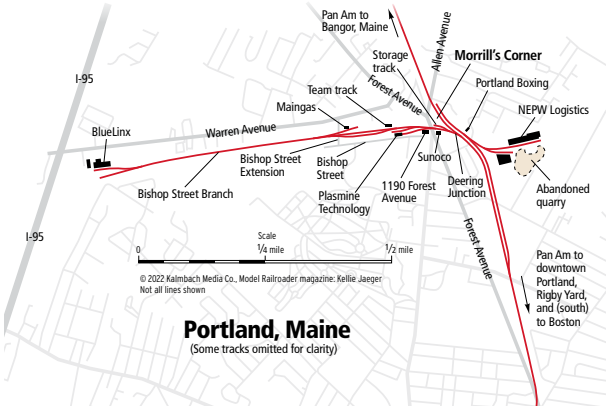
The branch itself only has a handful of industries now. Moving east to west, first up is Plasmine Technology, a paper products industry that produces surface treatment additives for the paper and paperboard industries. It receives tank cars and hoppers.

Next up is a concrete team track platform. I'm not completely clear on when service to the team track stopped.

Moving west, Maingas is a small liquefied petroleum gas (LPG) supplier that receives only a car or two.

At the end of the line is BlueLinx, a building products distributor (plywood, roofing, flooring, etc.) that gets boxcars and center-beam flatcars. It is now the only active customer on the line.





The layout at a glance

Name: Bishop Street Branch
Scale: HO (1:87.1)
Size: 10'-6" x 22'-0"
Prototype: Guilford/Pan Am Railways
Era: Late 1980s through the 1990s
Locale: Portland, Maine
Style: walk-in
Mainline run: none
Minimum radius: 24"
Minimum turnout: no. 6
Maximum grade: none
Benchwork: open grid
Height: 51"
Roadbed: 1/2" birch plywood with N scale cork
Track: Micro Engineering code 70 on the branch, code 83 on the main
Backdrop: painted walls
Control: NCE Power Pro-R wireless Digital Command Control

3 Delaware & Hudson No. 385 stops short of Forest Avenue at Morrill's Corner. Working around vehicular traffic at this busy intersection gets dicey for train crews in a hurry.

4 After crossing the Bishop Street Extension, the line goes through a heavily wooded area. This train, on its way to building products distributor BlueLinx, is led by locomotives painted for Guilford and Pan Am Railways.

Not on the branch specifically, but on the east side of the main and a few hundred yards to the southeast of Deering Junction, is NEPW. The massive logistics warehouse campus is still served and receives boxcars.

Scenically, there's a distinctive abandoned granite quarry next to NEPW. Since the quarry is such a signature element stating "this is New England" I felt it was important to represent the former industry on the layout.

Custom building

In most ways a custom-built layout is the same as what you'd build for yourself. There are some differences, though. The model railroad needs to be built so that, when completed, it can be broken down into sections, loaded into a truck or container, transported to the site, and reassembled. This needs to be done so the sectional approach isn't apparent after reassembly.

Second, the model railroad must be built fairly quickly while at the same time maintaining high standards of appearance and reliability. A traditional hobbyist has the luxury of seeing their dream come together over decades. No customer will wait that long. Systems need to be in place so projects can be finished, on average, in six to 12 months.

Finally, custom-built layouts need to be constructed to higher standards of mechanical reliability than a typical home railroad. While return visits to a site for minor repairs are occasionally necessary, doing so is extremely expensive. Custom model railroads are built to be fairly bulletproof, largely eliminating such trips.

Is custom building for you?

Who are my customers? Primarily business owners, professionals, executives, and retirees. About half have no building experience. Surprisingly, the other half are accomplished modelers who, for whatever reason, want me to build their specific project. This was the case with the Bishop Street Branch.

Dan Mills, the customer, already built his own version of the line. To my eye, the layout was well done. The custom-built project he wanted me to do was to replace what he had built. Dan is interested in slow speed, prototype switching operations. He wanted a platform to accomplish that and to do so against the background of the charm of historic Portland, Maine.

Although Dan had room for a larger model railroad, his work and family life involve a large time commitment. For lifestyle reasons he wanted to keep the layout size and scope manageable and on the smaller, simpler side.

The custom building process

In many ways, the process of having a custom layout built is similar to that of building a custom home or putting a large addition on an existing house. The first step is preparing a layout design. Every project I've ever built was something I designed as well.

Once the design is done, a cost proposal is prepared. If that's accepted, a contract is signed, and work starts. Before cutting the first board I always fly out to the customer's location to look at the site, meet them, and verify all of the room measurements.

With the Bishop Street Branch, there was the added bonus that the prototype is located close to Dan's house. That gave us the opportunity to walk the Bishop Street Branch together, which was particularly enjoyable.

If you have the luxury, prototype site visits add an entirely new dimension to creating a successful design. You may have noticed how different your theme looks in person as opposed to how it appears in photos or the pages of a book. That's because there's a big difference between the camera lens and the human eye. For this reason when the opportunity presents itself, I make a site visit to see as much of the line with the customer as I can and have them walk me through their vision.

As is always the case, a lot of things stood out when I saw the Bishop Street Branch in person. Deering Junction is located in a historic neighborhood called Morrill's Corner. It became apparent that Morrill's Corner was a center of action and should be the focal point of the layout.

Track on the Bishop Street Branch is pretty ragged, rated for 10 mph with ballast in a variety of colors. In person, I noticed how much this contrasted with the pristine mainline.

Not apparent in photos is the Portland Boxing Club, located in a century-old factory with a towering smokestack

5 The NEPW Logistics warehouse has 11 rail-served doors. Each car needs to be spotted at a specifically designated door, making this industry fairly involved to switch.

next to the main. They've made the shrewd advertising move of emblazoning the smokestack with Boxing on three sides. After my visit to Portland, Maine, I realized how important it was to incorporate this on the layout.

Design and operations

The key to a successful design is to know precisely what you want the layout to do for you before you jump to making sketches on a napkin. You need to be clear on whether you want casual mainline rail fanning, switching operations, or a 3-D piece of artwork that you can look at. When you're clear on that, your choices are to do a few things exceptionally well or try to do a lot of things in highly compromised form.

Although I was the one who constructed Dan's second version of the branch, I credit his strategic vision for the ultimate success of the layout. He was clear on what he wanted, and that was a model of the Bishop Street Branch. Nothing more. No mission creep. No overreaching in terms of scope.

Dan's primary interest is slow-speed switching operations. He envisioned operating sessions to be 30- or 40-minute affairs run by him and his kids. Given Dan's limited time, he didn't want to be dealing with all of the track cleaning and maintenance a large railroad would entail.

Dan designated a 10 x 20-foot section of an upstairs den for the layout. When operated according to prototype practices, it doesn't take many turnouts, industries, or track to spin off such a 30-minute session. The track on the branch has deteriorated to the point where this a 10 mph slow order throughout, so running at those speeds adds more time to an operating session.

Short stub branches lend themselves particularly well for modeling in our always-too-small spaces. Since we're modeling one location, we were able to accomplish all of the operational goals while also allowing lots of room for scenery and avoiding the overly congested model railroad look. The branch's track arrangement is simple enough that we were able to model it fairly accurately. Even so, the size and shape of the space dictated swapping a few turnouts here and there.

The original plan was to model just the branch. However, since nearby NEPW Logistics offered so much operational potential – and the benchwork footprint allowed the room – I encouraged Dan to include that as well.

In the real world locals come out of Rigby Yard in downtown Portland, make the few mile trip north to Morrill's Corner, and work either the branch, NEPW, or both. Since there's only one train, and we had limited space, we didn't include staging. An operating session is assumed to begin with a train having just arrived in the area.

The NEPW Logistics complex is massive and we've modeled some of its warehouses totaling eleven loading doors. The industry is car-spot dependent, meaning specific cars need to be put in front of designated doors, extending the length of op sessions. Operationally, NEPW's 11 loading bays are the equivalent of 11 separate industries.

BlueLinx and Maingas aren't car-spot dependent. I'm not sure about Plasmine Technology. Photos show off-spot cars on the main next to Plasmine. This happens when a train arrives but no space is available to receive incoming cars. Because of this, they're left nearby (off spot) to be spotted at a later date when space becomes available.

Time to get started

With the background information covered, we're ready to start work on the model railroad. Next month I'll delve into construction of the mechanical aspects, including benchwork, track, and wiring. See you then! MR

What's next

January: Meet the Bishop Street Branch
February: Benchwork, track, and wiring
March: Scenery
April: Structures

6 No matter where you look in Morrill's Corner, the iconic Portland Boxing Club smokestack is always on the horizon. Here we see the local blocking cars before shoving into the NEPW Logistics complex. Lance added the sky background with photo-editing software.

7 The line's namesake, Bishop Street, runs along the front edge of the layout. In the foreground is Plasmine Technology, an industry that produces surface treatment additives for paper and paperboard. Maingas and the concrete team track dock can be seen in the background.

Meet Lance Mindheim

Lance Mindheim owns The Shelf Layouts Co. (shelflayouts.com), a custom layout building and design firm. He models urban industrial switching railroads and presently has three layouts. In addition, Lance writes frequently for the hobby press. He lives in Silver Spring, Md., and has one grown son, Zachary, who often accompanies him to model railroading events.

Bishop Street Branch finale

Part 4: Structures and details wrap up our 10 x 22-foot HO scale project layout

By Lance Mindheim • Photos by the author

Welcome to the final installment of the Bishop Street Branch project layout series. This month, we'll cover two topics popular with modelers, structures and details. As a custom builder, I know these areas involve careful thought and planning at the pricing and cost proposal stage.

The bulk of the cost of having a layout custom built is tied to time (which drives labor and overhead costs), not materials, as you might think. Since the amount of time a project takes to build drives the cost, staying on schedule is important from a business standpoint.

The methods for keeping things moving, while maintaining quality, may give an idea or two to the average modeler. At the pricing stage, I create a spreadsheet showing the number and type of structures on the job. I also note whether off-the-shelf kits can be used or if kitbashing and scratchbuilding will be necessary. Then, based on two decades of experience, I list the number of days it will take to build each structure.

A typical Walthers Cornerstone kit will generally take two days. Large kitbashes and scratchbuilds can extend up to a week. When the spreadsheet is complete, I add up the days and multiply that by overhead and wage rates.

What to use

Kits are used on projects that are primarily freelanced affairs. Prototype-based layouts entail more kitbashing and scratchbuilding. Since contracts are fixed price, if I fall drastically behind schedule, that money comes out of my pocket. Over the decades I've found that by having construction systems in place and staying organized, falling behind isn't something that happens.

As part of the overall project management process, it's crucial to know where the visual impact of structure comes from. It's not details, as many might think. Rather it's color treatment and neatness of assembly. If a detail doesn't add anything visually, I leave it off. I don't detail, or even paint, sides of structures that won't be seen. All of this is discussed ahead of time with the customer.

Overall scene composition, as far as groupings of structures, is also vital. Including mundane, non-rail-served structures heightens realism and serves as a framework to showcase the key buildings. Early on, client Dan Mills emphasized that he wanted a large percentage of plain steel warehouse structures that parallel the Bishop Street Branch.

From a systems standpoint, kit orders come in and are laid neatly on a nearby table. Tools are placed on racks overhead. I then scan the directions, remove parts from the sprues, clean them up, and begin assembly. Though I use an airbrush on occasion, in most cases spray cans are adequate for structures.

Scratchbuilding with a twist

Followers of the blog on my layouts (lancemindheim.com) know that I scratchbuild most of my structures. Instead of painting them, I use a photo-laminate technique. Images of the actual structure are modified on the computer

Delaware & Hudson Electro-Motive Division GP39-2 No. 385 rumbles across the Forest Avenue crossing in Portland, Maine. Lance Mindheim wraps up our Bishop Street Branch project layout by discussing the structures and details he added to the HO scale model railroad.

Bishop Street Branch series

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with photo-editing software, printed to size, and laminated to a styrene core. Doing this in multiple layers, often with thin styrene sheets sandwiched in between, prevents an overly flat look.

Photos won't work for subjects with rough surfaces, such as corrugated steel and board-and-batten siding. However, they're extremely effective for flat surfaces with complex color patterns, such as brick and masonry. In many cases it would be impossible to capture the color patterns on their surfaces with traditional weathering techniques.

For many years I avoided using photo-laminate structures on commercial jobs because I didn't know if they would stand the test of time without fading and curling. I now have enough experience, and have modified my techniques for greater durability, to the extent that I know that will last.

What's good enough?

As part of the construction management strategy, decisions are made as to when a reasonable representation is fine. If a viewer looks at a steel structure on the layout and immediately thinks, "That's the green NEPW warehouse," then the model has served its purpose. Nothing is gained from fussing over the number of panels on a door for something nobody would even notice.

Maingas, a liquefied petroleum gas supplier, isn't a major player on the branch. Further, it's partially hidden behind bushes. Here I used the Walthers Central Gas kit and some scraps from my parts box to represent the industry.

When I walked the Bishop Street Branch, one thing that stood out was the concrete team track platform. I fell in love with the color and textures and was determined to model it. See "West of Forest Avenue" for more information.

Two types of details

How details are handled from a strategic standpoint on a custom-built layout differ from that of how hobbyist would approach them. Staying on schedule is the issue. You simply can't afford to get bogged down with things that aren't that noticeable. I break details into two categories, those that add noticeable visual snap, and those that are fun but don't really jump out.

The focus is put on those that create the most visual impact. At the top of the priority list are things that extend up vertically from the layout surface, such as smokestacks and utility poles. Moving down the priority list are conduits on the sides of structures and utility meters.

That wraps up the HO scale Bishop Street Branch project layout. I hope you can put some of the techniques covered in this four-part series to use on your own model railroad. MR

Morrill's Corner

The geographic "bullseye" of the Bishop Street Branch is a neighborhood called Morrill's Corner, where Forest Avenue intersects with the project's namesake, Bishop Street.

Unless you're a railfan, Morrill's Corner is unremarkable and mostly known for having the dubious distinction of consistently being voted the worst intersection in Portland. On the corner is 1190 Forest Avenue, a turn-of-the-century, two-story brick structure with retail on the first floor and apartments upstairs 1.

Because of the structure's fairly routine appearance, I was tempted to use a kit. However, the building was too prominent and not close enough to any available kits to allow compromise. I bit the bullet and scratchbuilt it using the photo-laminate technique.

After building the styrene core, I stacked and laminated three layers of photos. The prototype, 2 (opposite), uses fairly repetitive patterns, so I was able to compress the building by about a third without it being noticeable.

I struggled with how to handle the east side of Forest Avenue at Morrill's Corner. It's the site of a service station and car wash. To make matters worse, the buildings block the view of the more interesting storage track.

After thinking about it, I modeled the service station and omitted the car wash. The station is a Summit Customcuts kit 3. None of Summit's modern gas stations include Sunoco signage, so I had to take photos of a station near my house.

To give the scene some extra interest, I added a 20-foot intermodal container that's used for storage. I framed the Dumpster storage area with the Walthers corrugated fence kit (No. 933-3632).

West of Forest Avenue

Next, we'll take a look at the structures west of Forest Avenue. First up is the team track platform 1. Though not overly noticeable on the layout, the old team track is prominent when you walk the line.

During my site visit I took photos of the concrete platform from 90-degree angles, printed the images out, and glued them to Pikestuff's injection-molded plastic Versatile Modular Loading Dock kit (No. 541-0017).

Next up is Maingas 2. The full-size industry is no longer rail served, and the liquefied petroleum gas tanks and loading platform are long gone. I did a quick and dirty representation of the business using the Walthers Central Gas kit (No. 933-3011) as the starting point.

Until recent years, Plasmine Technology was one of the primary customers on the Bishop Street Branch 3. The company, which produces paper coating products, received inbound products in tank cars and hoppers.

The masonry block structure has a unique, oblong shape. I've never been a fan of using sheet styrene cinder block material, as the mortar lines seem too pronounced. Because Plasmine is such a key structure, I again turned to the photo-laminate technique.

Since the building isn't directly next to the street, I had Dan take photos of the full-size industry. Using prototype images let me use some artistic license and add the sign to the side with photo-editing software. I scratchbuilt the silo by wrapping styrene sheet siding around a piece of PVC pipe.

At the end of the Bishop Street Branch is BlueLinx, 4, the sole remaining customer on the line. The building products distributor receives boxcars and center-beam flatcars. The structure itself is fairly unremarkable. I used two Pikestuff kits and glued them side by side. I made the foundation from ⅝"- thick PVC wood. I used various colors of Rust-Oleum to spray-paint the building.

Nearby and noteworthy

I included two buildings on the layout that aren't on the Bishop Street Branch. Of all the structures on the model railroad, the Portland Boxing Club is my favorite 1. I love its multi-hued surface and complex textures. The iconic smokestack is visible wherever you are in that part of Portland.

Re-creating the landmark with commercial kits would be impossible. Dan waited for a day when the weather and sunlight was perfect and shot close to 50 images from all angles.

As with the other photo-laminate buildings, I built a styrene core first. Then I spent several days making the images usable with photo-editing software. After I printed the photos to size, I applied them to the core in multiple layers.

The smokestack was particularly tricky because it's square on the bottom, tapered in the middle, and flared at the top. Fortunately, I had some tapered highway bridge piers leftover from a previous job. I used them as the basis for the stack, which took almost 20 hours to build. As a centerpiece of the project, it was time well spent.

On the east side of the main, a few hundred yards southeast of Deering Junction, is the NEPW Logistics Warehouse 2. The challenge in modeling it was the sheer size. Ten Walthers Lakeville Modern Warehouse (No. 933-2917) kits comprised the final model!

When working with a large kitbash, it's important to keep everything square and stable. I placed a 2 x 4-foot piece of high quality, smooth birch plywood on my Stanley Workmate table. Next, I laid wax paper over the wood to keep things from sticking to it. Then I clamped aluminum rules and angles on the edges to keep things straight 3.

Another challenge I faced was that the Walthers model has a brick foundation, not concrete as found on the prototype. I filled in the brick pattern as best I could with modeling putty to minimize the brick detail. I used Gatorboard, a lightweight foam board product, for the roof.

I couldn't find an exact match for the yellowish avocado color on the prototype building 4. I was able to get a reasonably close match by first spray-painting the entire surface with Rust-Oleum Oregano. I followed that with some light puffs of Rust-Oleum Lemongrass and a very light additional puffing of Oregano.

Beyond the buildings

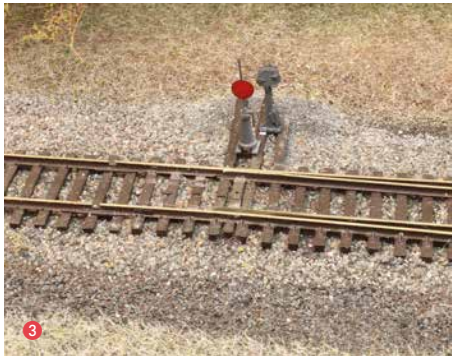
Vertical elements, such as utility poles, contribute more than any other detail to the visual snap of a project. For this reason, they're at the top of the priority list. Be sure to include poles for service drops next to buildings in addition to the typically modeled pole lines.

I made the poles shown throughout this series from ⅛"-diameter wooden cooking skewers that I found at the grocery store. The crossarms are 10 scale foot lengths of 1/16" x 1/32" stripwood (1/16" square pieces cut in half).

Color and sheen is vital with utility poles. Using a brush dipped in thinner, I first applied a wash of Model Master Light Sea Gray enamel [Model Master paints were discontinued by the Testor Corp. – *Ed.*] I immediately followed that with a wash of burnt umber artists' oil paint thinned with mineral spirits. I let that dry for a day or two.

I harvested the insulators off Atlas poles and attached them to the crossarms with cyanoacrylate adhesive (CA). The angle braces are .010" spring wire shaped to an L and attached with CA. The transformer was included in the Atlas pole kit 1, opposite.

Utility meters and conduits on the sides of structures are simple to apply. For the conduits I again used spring wire. The meters are from the Walthers Modern Electric Gear kit (No. 933-4075) 2.



The custom switch stands took time to build, and unfortunately aren't very noticeable 3. However, omitting them would make the turnouts look incomplete.

While walking the line I noticed marks painted on the web of the rail on the spur serving NEPW Logistics. They make it easier for the switch crews to accurately spot boxcars next to the dock doors. Though virtually unnoticeable on the layout, the marks were simple and fun to add 4.

Many modern industrial parks use custom crossing signage. During my visit to Portland, I photographed the signs and scaled the images. Then I made my own decals, adhered them to thin styrene sheet, and glued the signs to posts and structures 5.

Working with Pikestuff kits

Here are two techniques I used when working with Pikestuff structure kits.

First, I painted the buildings instead of relying on the plastic color. Tan, light blue, and white are common colors. The structures should have a dull finish, so use flat paint or apply Testor's Dullcote afterward.

Second, I weathered some kits with a peeling paint effect. I sprayed the building at right with flat gray primer and let it dry overnight. Then I applied Tamiya Wooden Deck Tan (No. TS-68) spray paint, let it dry 10 minutes, and then tapped the still-soft paint with duct tape to lift it off. – *Lance Mindheim*

Paint and weathering give this Pikestuff kit a realistic appearance.