

## Tips for Building an N Scale Engine Servicing Facility Diorama

Engine service facilities are some of the most popular features of any layout. Icons of their era, they say “railroad” in a way few other buildings can match. And since most of us have more engines than any other model, we often build terminals to store and display our collections.

In the real world though, they served a more important purpose: taking care of the many mechanical needs of the iron horse. And just as engines evolved over time, so did the facilities that served them.

Our Engine Servicing Facility series is designed to simplify building the kinds of structures that served the large locomotives used late in the age of steam, as well as their diesel replacements.

As part of this project, we wanted to share some of what we learned about the prototypes—and overcome the notion that you need a lot of space to do it right.

## Getting Started

Our original Engine Servicing Facility scene and structures were built in HO Scale. The photos shown here are from the original HO diorama we constructed, but since the structures are simply scaled down from the HO versions, we’ve reworked this article from the HO Reference Book to offer modelers information relevant to creating a servicing scene in N Scale.

Armed with dimensions and drawings of each building, we set to work creating a track plan. We built our base from a 2” thick sheet of foam insulation. As our New Product team completed each model, it was test-fit

to determine its exact location and what if any modifications had to be made to the base. Some earlier Walthers buildings helped fill in the over-all scene, including our Car Shop and Steel Water Tower, both of which are available in N Scale. To prevent damaging buildings, the turntable was permanently mounted on the base.

We used a wide selection of readily available products to finish our scene. In N Scale, Atlas, Micro Engineering and Peco make appropriate Code 55 track. Woodland Scenics® and Highball scenery materials, as well as Floquil paints, Preiser figures and more can be used to round out the scene. The finished HO scene includes facilities you’d find in a prototype terminal and measures just over 4 x 8’; an N Scale scene could fit in about 2 x 4’.

For photography, we left plenty of room between buildings on the HO diorama, but you could place them closer together on your layout. As you plan your own terminal, remember that real railroads faced the same space problems modelers do. Every prototype terminal was custom-built to fit the available land, resulting in a great variety of sizes and shapes. And each road had its own ideas about how engines should be serviced, so you can arrange the various buildings as needed. These factors allow you to easily add a terminal to existing scenery, or build a small extension for one. And, since these facilities were beehives of activity, a terminal scene and some staging tracks would make a great theme for a layout in a limited space.

## A Trip Down the Service Tracks

Keeping steam locos ready for the road was a big job. After each trip, they had to be refueled, cleaned, oiled and inspected. This work (called “turning,” even if the engine wasn’t spun on the turntable) was done at engine terminals.

Early on, terminals were about 100 miles apart, but newer, larger engines with bigger tenders could travel further. Since these locos were often too big for older facilities, railroads built new ones, or remodeled what they had. As a result, no two were quite the same. Each was designed to fit local conditions, leading to some creative arrangement of the facilities. Despite this, each terminal was equipped to do the same jobs.



All of these factors make model engine terminals an ideal addition to any layout. Like the prototype, they can be built to fit available space, and you can arrange buildings to best serve your locos. While each railroad had its own ideas about the “correct” way to do it, most followed a step-by-step sequence.

## Coming Clean

The first stop was usually the ash pit to “clean the fire.” On coal-fired engines, ash and cinders fell through grates at the bottom of the firebox into an ashpan. To keep air flowing through the grates in the loco’s firebox, the ashpan was emptied into a pit between the rails each day. With tons of ash and cinder dropped each day, the pits had to be emptied regularly—a problem that got worse as engines got bigger. But cinders made ideal ballast and fill so they were recovered from the pit.

At many terminals, a railroad crane equipped with a clamshell bucket cleaned out the pit and placed the cooled cinders and ash in a gondola. At other terminals, ash hoists made quick work of the job.

## Fill ’er Up

Big engines had big appetites, and big tenders to serve them. Many roads found older coaling towers couldn’t keep up and contracted with outside firms to design and build new ones. By the 1920s, concrete was the material of choice as it was easier to work with,

cheaper, weatherproof and fireproof. Railroads also began building large towers on the mainline to refuel engines on the road and prevent bottlenecks at busier terminals.

Based on an Ogle design used by many lines, our Modern Coaling Tower features realistic “concrete” walls, plus detailed chutes and mechanisms to serve three tracks at once. And the same sturdy construction that made

penstocks) installed between tracks to service engines on either side. Roads that used oil for fuel built storage tanks and trackside oil columns. An N Scale version of this scene would include the Cornerstone Series Built-ups Steel Water Tank (933-2601) and two water columns. An oil column is also included with the model for facilities that also service oil burners; you’ll need to find an appropriate storage tank to place in your scene.



*This view shows some of the “secrets” of construction. The roundhouse footprint is open so the building can be put in the exact spot every time. While the turntable pit is secured to the base, the Bridge is removable. For a module or portable display, being able to remove large and potentially fragile pieces greatly simplifies transporting the unit.*

these towers so appealing to railroads also made them hard to get rid of! With its metal parts removed for scrap, the tower could still stand in a contemporary scene, a reminder of how things used to be.

In addition to coal, tenders would be topped off with water. To meet demand, railroads installed large steel water tanks in modern terminals. Space was scarce, so the tank was built away from the coaling tower. Underground pipelines fed trackside water columns (also called standpipes, water cranes or

## Get a Grip!

Big engines carried tons of sand for traction on slick rails. But to work properly, it had to be dry. Wet or “green” sand arrived in gondolas, and was shoveled into a wooden storage bin. From there, workers loaded it into special stoves in the drying house. When dry, it was screened to remove debris, then lifted by compressed air into a trackside tower.

Every railroad had its own ideas about sand house construction, so most were built to meet local requirements. Since diesels also needed sand,



*For portability, we split our diorama base in two. Here, construction has just started on the “second half.” The pink foam surface has been painted a gray-black so any chips won’t show the original color below. The Backshop has been set in place temporarily so tracks can be positioned.*

these structures remained in service years after the last steamer was retired. Sand house and sanding tower models are available in N Scale from several manufacturers, and many facilities didn’t have separate sanding towers—instead, they had sanding hoses attached to the coaling towers. Check out prototype photos for modeling ideas for your pike.

## Taking Turns

Because steam locos were built to run facing forward, they often had to be turned around for their next trip. Most terminals were too small for a wye or loop, but did have space for a turntable. For many roads, the length of the turntables dictated the maximum size of new engines. And if larger locos were ever needed, older turntables had to be replaced.

Like the prototypes, our 130’ Modern Turntable is built to hold any loco from 0-4-0 to 4-8-8-4. Its universal design fits any railroad handling big power. Since many survived into the diesel age, it fits all popular eras. Best of all, it comes fully

assembled and motorized, making installation fast and easy. Programmable indexing for up to 60 positions allows almost complete flexibility in locating tracks around the turntable. A one-piece pit and a detailed bridge with etched-metal handrails are also included.

## A Room with a View

Roundhouses were some of the busiest facilities on a railroad. Here, workers inspected and serviced locos under cover. In an age when electric lights weren’t too powerful, large windows allowed plenty of sunlight to shine inside. Most of the work was done on the cylinders and valve gear up front, so it was common practice for locos to face the wall. And if the brakes should fail or the throttle slip, it was better to crash through the windows than into the turntable pit!

Size was based on the number of engines coming and going in any 24-hour period, with the busiest terminals requiring full-circle roundhouses. Though engines started growing early in the 20th century, no one foresaw the

# ENGINE SERVICING FACILITY

monsters that were in regular service by the 1940s. Roundhouses just a few years old were suddenly too small to handle these giants. Older facilities were either razed for larger replacements, or remained in use to handle smaller power, with the newer, modern roundhouse built alongside.

This was a good compromise if space or money were hard to come by. While any engine could be serviced there, the longer stalls of the newer building were normally reserved for the big 4-8-4s, 2-10-2s and articulateds.

Our authentic American model includes three stalls on 10" centers to make the most of your available space like the prototype. The stalls on this structure are deep enough to hold even the

largest N Scale motive power—even Challengers and Big Boys! For more realism, interior and exterior brick wall details, fine windows, floor inspection pits and much more are all standard. And with the Modern Roundhouse Add-On Stalls kit, you can build any size structure up to a full circle.

## Keeping 'em Moving

Steam locos were complex machines, and all it took was one bad part to sideline an engine that could be on the

road, earning cash for the company. To keep ahead of routine repairs and be ready for the unexpected, many roundhouses had a machine shop equipped with large lathes, grinders, presses and similar machine tools. The roundhouse stall next door was often fitted out to assist the shop with heavy jacks and cranes for removing and replacing parts. And many shops had a through track so a loco could be moved inside for work. While most roads had one major backshop, making repairs at outlying terminals was soon shown to be faster and more cost-effective.

The Machine Shop kit matches the design of the Roundhouse, and can be built as an extension to the roundhouse, or as a freestanding building. It also includes a boiler

house, which would supply steam, electricity and compressed air to the entire facility. Large roll-up doors can be built open or closed, and the baseplate has slots that accept popular rail sizes.

## Building Your Own Facility

In N Scale, Walther's offers the structures you need to start building your own engine service facility. Perfect for upgrading existing layouts, they're great for new areas of your railroad too. And, they can be the focal point of operations if space is limited.



Modern Coaling Tower 933-3262



*Like the prototype, we had to make some modifications to our base. Here, Gregg Volke of Walther's Publications Department trims a section of rail overhanging the gravity ramp of the coaling tower dump house (visible in the center of the scene). This elevated track was made from Woodland Scenics Risers, then painted and ballasted to match.*



*The first half of our scene holds the Modern Roundhouse and Modern 130' Turntable. In this view, the Machine Shop is also in position. Long engines required long outside storage tracks, which provide a lot of possibilities for detailing and mini-scenes. At this stage, cinder ballast has been laid—notice how it comes right to the edge of the buildings as it would in the real world.*

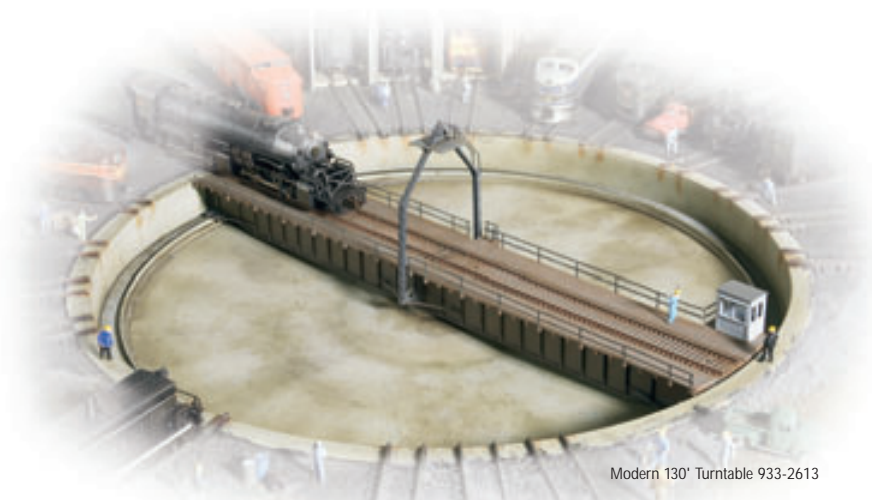
# ENGINE SERVICING FACILITY



*This view shows only a fraction of what you can do in an area measuring just 4 x 8'. The Rivarossi Challenger waiting on the storage tracks provides a nice sense of scale to the scene. We left a lot of room between buildings for photography, but you could easily compress this to fit a layout without sacrificing any of the detail.*



*Even in a scene as large as this, little things make the difference. Notice the tire tracks added in the dirt service road by the roundhouse. Plenty of oil and grease stains can be seen along the track leaving the Machine Shop—and in the steam-era, these were on the outside of the rails where an engine's moving parts were exposed. To speed painting and weathering small details, they're held in place with double-sided tape on a scrap of cardboard.*



Modern 130' Turntable 933-2613



*For background detail, we added the Backshop, but in N scale the Car Shop, 933-3228, can be used in its place. If space is available, a larger roundhouse and shop complex would be mighty impressive! Modern steam locos required plenty of water, so we added a Steel Water Tank and a pair of water columns. In space-starved terminals, the tanks were located some distance away, but columns were built between parallel tracks to service more locos. If you model oil-fired engines, an oil column, pump house and distant storage tank would add a lot to the scene too.*



*Getting a proper fit is essential for realistic scenes, as each structure should appear to be surrounded by earth and ballast. This also gives us a nice view of some of the tools used in construction. The large bars are lead weights, used to hold track in place while the glue dries.*



Modern Roundhouse 933-3260