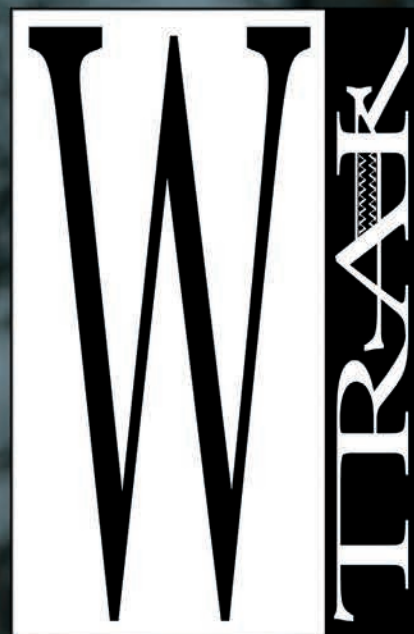


2013
UPDATE
5th Anniversary Edition



Modular Wooden Railways
a Standard for Narrow Wood Railway Tables and Shelves

Der Eisenbahntisch ist eine gängige Lösung zum Aufbau großer Modelleisenbahnanlagen. Leider sind Eisenbahntische oft zu groß um einfach transportiert zu werden. Auch ist es oft schwer die gegenüberliegende Seite eines Tisches zu erreichen. Zwar könnte man kleinere Tische zu einem großen Tisch kombinieren, jedoch müssen alle Schienen am Rand dann zusammenpassen. Da nur wenige Häuser und Wohnungen ausreichend Platz für eine große Eisenbahnanlage bieten, wären schmale Tische eine günstige Alternative.

Modelleisenbahnclubs habe eine Reihe von Lösungen für modulare Tischsysteme entwickelt. Diese Systeme sind dafür geeignet, sehr große Anlagen zu transportieren. Auch können Anlagen so rekonfiguriert werden – sogar eine Kombination mit Tischen anderer Familien ist in einigen Fällen möglich.

Ich möchte hier eine Alternativlösung vorschlagen, welche auf schmalen Tischplatten basiert. Diese Lösung ist besonders gut für kleinere Räume geeignet. Die gesamte Eisenbahnanlage kann von nur einer Tischseite erreicht werden. Dies ist besonders dann günstig, wenn die Tische entlang einer Wand, und nicht im Zentrum des Zimmers aufgebaut werden.

Draft standard formalized December 22, 2008

Published by wTrak.org

Copyright © 2013 by Tom D. Stephenson
All rights reserved

All commercial rights to this standard and ideas presented herein are reserved. No part of this magazine may be reproduced, used for promotional purposes, or redistributed in any form or by any means without prior permission in writing from the publisher or copyright owner.

A printed standard is available at www.blurb.com

Additional content online at wTrak.org

Written and Designed by Tom D. Stephenson

Translations provided by Tomiko Ikegami and Dirk Weiss

Inside

2012 at a Glance	3
Engaging the Next Generation	4
The Standard.....	5
Modular Railway Project	6
Durable Trees	9
Hardy Structures	10
Orphans: a photo essay	12
Painting and Stamping	14
Graphics and Textures.....	17
Basic Tool Kit	19
Red Wooden Special: a short story	20
Snapshots.....	22
Turntable	
City & Subway	
Midyard Siding	
Rerouting Endyard	
Mountain Village	
Odds & Ends	
Airport & Town	
Shared Experience.....	29
wTrak in the Library	31
Missing Links	33
Write to Us.....	34
Previously in the News	37
Recently in the News	39
Down the Tracks.....	40



2012 at a Glance

Emphasis through 2011 was construction of enough modular railway segments to accommodate as many as twenty young engineers at a time at train shows. Early last year, focus shifted to incorporating buildings, trees, and other terrain. Custom train cars were introduced, along with a prototype engine. These new features and cars survived intense play over a three day weekend at the Pacific Science Center and further abuse for two days in a rugged outbuilding in Monroe where the Evergreen State Fair is held. Following is a summary of key changes made in 2012.

Fields, crops, and dry grassland were expressed using coir and carpet. These were strategically set into spaces between tracks to complement adjacent buildings and evoke regional character.

Natural stone was incorporated as an authentic representation of weathered crags and hills. Using hand-selected stone cut flat on one side, rock was bolted or epoxied to the table between tracks. This feature can be drilled to attach trees – or ground flat locally to support a small building. Stone also provides formidable protection for adjacent structures that might otherwise be susceptible to impact damage.

Durable trees were first introduced as part of the Mountain Village module. Having resisted pulling and twisting during several train shows, fifty new trees were added this year. Many are deciduous trees with a rounded canopy in autumn colors. Several new conifers were placed on, or near, the stony outcroppings on the corner

module. In combination with the rock, they help to protect the building supports of the 'Mukilteo Mine' on the corner module. Latitude, elevation, season, and climate are suggested using a broad range of fabric textures, colors, and patterns. The finished size hints at the old-growth, second-growth, or ornamental nature of the tree. They also calm the pace of train movement through the layout – a definite plus.

Detailed buildings – including a skyscraper group, aging factory, rural farm, and trackside mine – were added. The tallest city building features a helipad with a white strobe light and blinking red lights on two corners as a navigational aid. The factory was adapted from photos of an aging building photographed over a fence while perched on my car roof in an industrial area of Tacoma. The mine straddles two tracks in a crossing junction surrounded by rugged features. The farm includes a barn and grain storage building surrounded by fields.

Original boxcars and tankcars were made by customizing unpainted cars. Tankcars were finished with milk paint, stamped with ink, and weathered with charcoal. Boxcars had custom images applied and sealed. A few gondola cars were made from 'old' rolling stock bases. And a custom engine was prototyped using a section of broom handle, a block of hickory, and a recycled engine base. Additional engines will be constructed for use at future train shows.

A preview of goals and priorities for 2013 can be found inside the back cover. Thanks for you interest in wTrak. ■

Engaging the Next Generation

Connecting with a new generation of model railroaders could be as simple as providing a transition from wooden trains as a toy to a hobby. Leveraging standards allows reconfiguration and collaboration between railroad clubs or families with compatible segments. Great for kids, modular wooden railway tables with scale buildings, custom rolling stock, and rugged features allow young engineers to immerse themselves in a tangible way and at their level.

Track is readily available, whether new or used. Buildings, bridges, landscaping, and even rolling stock can be made or customized easily. Ideas and resources could be shared online – graphical images of structures and rolling stock ready to print, tables in kit form, unpainted rolling stock including boxcars, reefers, gondolas, flatcars, tankcars, engines, hoppers, passenger cars, and more. Perhaps even a source for ABS wheels and barbed axles.

All of these are opportunities to introduce model railroading to children at an age long before they are ready to tackle finely-detailed electric railways. The results are hands-on for children of all ages – brothers, sisters, classmates, friends. Projects can be safe and they allow for unlimited creativity. Most importantly, the process captures the essence of model railroading as a hobby in a forgiving, age-appropriate way.

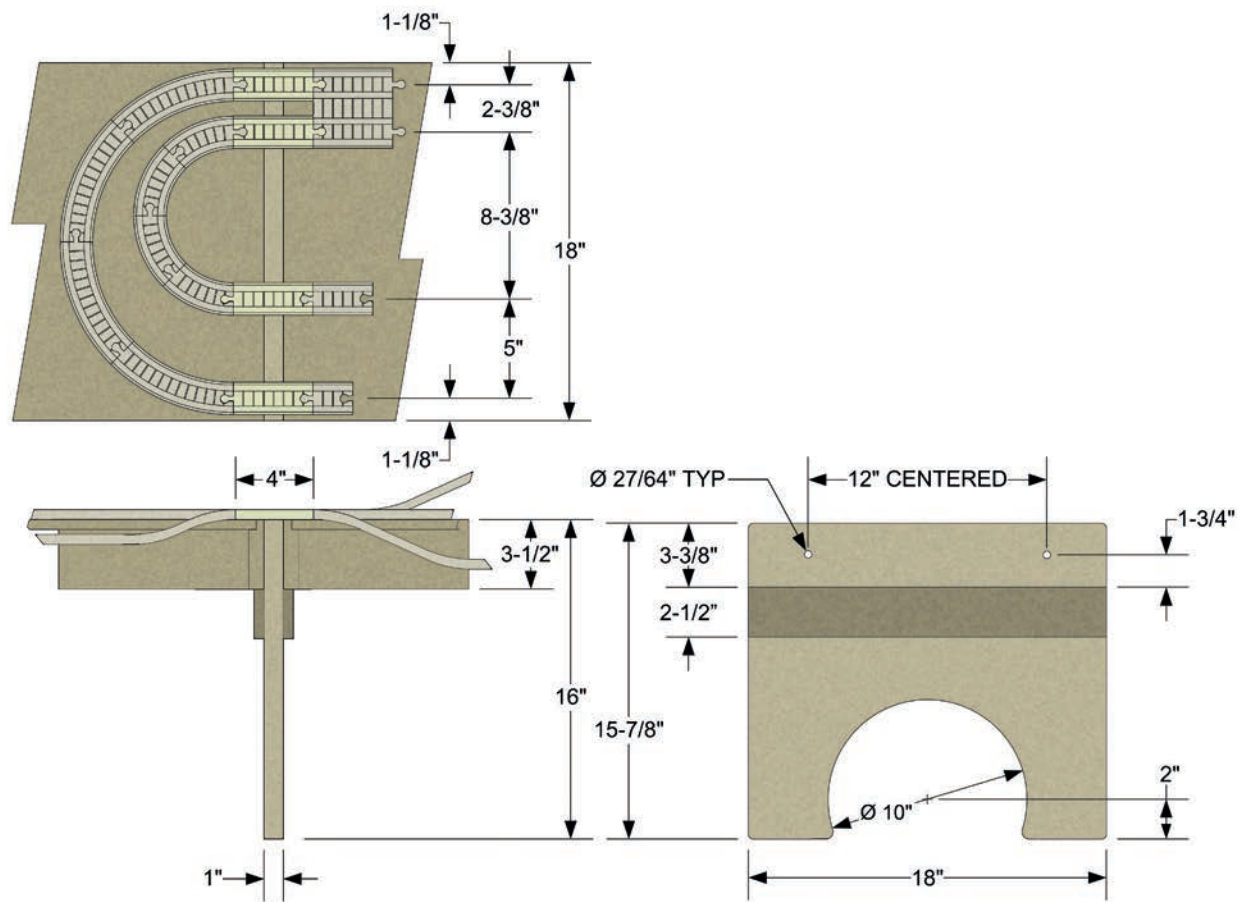
In recent years, we've been asked to participate in more train shows than we can support. There are two weekend events we make a priority – Monroe made space for our first hands-on railway exhibit in 2010

and annually thereafter, while the Pacific Science Center has a strong family focus consistent with our vision. We are usually able to support a few other local events during the year too.

We remain committed to sharing ideas and experience with families and organizations. Train shows are just one way to do this. Let us know if we can help your group in some way to develop your own modular wooden railway. Much of the information is already online at wTrak.org, but there are probably details that we have failed to address.

Each year our concepts have matured and new details added or revised. We would be delighted to include your project photos and ideas on our website to share with others too. ■





The Standard

Modular railway tables are based on a standard 18"x48" box raised 16" above the floor. Modules can be easily stacked and stored. Adjacent sections can be clamped together or bolted through simple supporting legs to prevent stress on track used to join segments. Sections can also be incorporated into a shelf railroad along a wall – important for households unable to devote space for the large play tables commonly offered.

This size simplifies construction using standard 4'x8' cabinet-grade plywood sheets, allows sections to be easily carried

in a trunk or backseat, and accommodates full radii using 6½" curved track. More importantly, the entire width of the table is usable from both sides. This facilitates interaction and engagement and expands the complexity of the layouts possible.

Using standard modules, segments can be reconfigured into a wide range of layouts. Exciting and dynamic layouts can be quickly and easily set up. Moving sections around can take a few minutes. One way to make this more convenient is to print out a copy of each segment and work with these until you have a final configuration to act on... ■

Modular Railway Project

Ideas and Applications

There are many applications for a modular standard. The framework in which the tables are developed and constructed can be just as varied, whether an individual or shared effort. It is a mixed media project that stretches the imagination, bringing together woodworking, graphics, photography, art, steel, fabric, carpet and more. Expertise accelerates the process, but this is a project for learning, experimenting, and developing new skills too.

The concept and ideas are intended as a bridge between trains as toy and hobby – accessible, tangible, and age-appropriate. The medium lends itself to projects where parents and children can work together, using familiar materials and tools. Projects are a springboard to develop new skills and explore ideas. And it is forgiving – dents, dings, damage, and stray marks are all part of the railroad landscape.

This goal is also intended to remove the barriers of scale and foster collaboration between clubs. Z, HO, N, S, O, and Garden Railway clubs could create and combine modular wooden railway segments at shows. With different clubs attending different events, layouts would change dynamically. Families could participate too. And wooden train sets have always been forgiving when it comes to scale. 'Close' is 'Good enough' for most things and there is unlimited room for creativity. A wooden railway module is a perfect place for young engineers to get their start. Following are a number of project layout ideas to consider...



The Bellingham Railway Museum's modular wooden railway incorporates key elements of the wTrak standard and were introduced at the 21st UNW Train Show in Monroe, Washington. On the second day, these modules were successfully integrated with the wTrak.org railway layout. The railway museum's layout is currently one of the hands-on exhibits for kids to interact with in downtown Bellingham.

Bellingham Railway Museum
1320 Commercial St
Bellingham WA 98225
360.393.7540

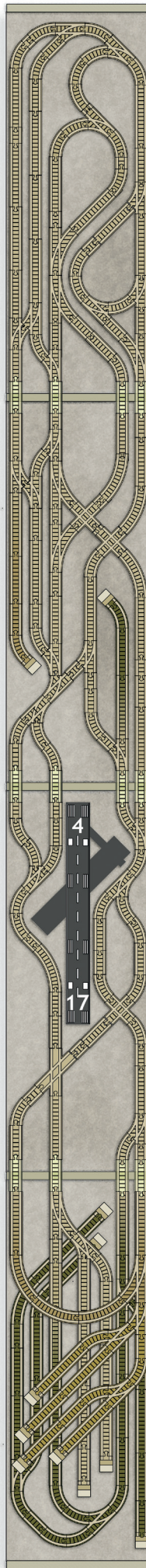
Community Organization

Parents and Friends of a school or community center can work together to create a modular railway, similar to a school or community playground project. Cooperative play is reinforced and there are great opportunities to integrate the railway into stories and pictures. Students could even create their own buildings or decorate train cars in a personal way. The railway could travel to share with others on special occasions.

Children's Hospital/Museum

Modules could be constructed by one or more local schools as a collaborative project, with several classes or clubs partnering in developing a well-integrated and varied railway. A teacher or parent – perhaps a local organization – would be needed to provide coordination and oversight. Learning opportunities include:

- Photography (*building and train car images*)
- Woodshop (*modular tables, track, buildings*)
- Drafting (*layout plans, dimensions, parts list*)
 - Math (*scaling images, optimizing material usage, estimating cost*)
- Art (*manipulating textures and photos, affixing images, defining theme, designing brochures*)
 - English (*railway stories, grant writing, sponsorship requests and follow-up*)
 - Industrial Arts (*fabric trees, metal bridges*)
- Business (*fundraising, sponsorship, promotion*)



Railroad Club Layout

This is an opportunity for different clubs and scales to collaborate in a new way. Each club could construct a few tables to combine with other clubs at shows. Constructing rugged buildings and structures may be a new experience for all... Certainly there could be some creative competition, but new relationships may emerge.

Modular wooden railway tables can be overseen by even the youngest members of the club and present an opportunity to introduce model railroading to a new generation. They are a bridge from toy to hobby and allow creative license too.

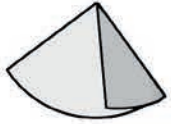
Finally, they could be an opening to share model railroading with school and community groups. Modules could be loaned or displayed locally. And they are a great activity to engage young children at local railroad meets.

- Local Clubs (*Z, N, HO, S, O, and G scale*)
- Railway Museum
- Local hobbyists and parents

House or Apartment

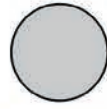
Any room could accommodate a floor, table, or shelf railway of modest size. Modules are easily stored under a bed or in a closet for set-up in the hall. A shelf railway could be set into brackets on a bedroom or playroom wall. The railroad might even be expanded with a second level using a climbing loop at the end to access both tiers. Layouts can be reconfigured and transported.

This could be a project involving parent, child, and grandparent through concept, design, and execution. Sewing, sawing, photography, sanding, bolting, gluing, painting, stamping, shopping, testing... There is something for everyone!



Conical Tree - Holes centered, conical top

- 0.5
- 1.5
- 2.75
- 3.875
- 5.
- 6.5
- 8.
- 9.625
- 11.25
- 13.25
- 15.25
- 17.375
- 19.5
- 22.
- 24.5
- 27.
- 29.875
- 32.75
- 35.75
- 39.
- 42.
- 45.5
- 48.
- 49.75
- 51.



Round Tree - Holes staggered, button top

- 0.5
- 2.25
- 4.
- 6.5
- 9.
- 11.5
- 14.
- 16.75
- 19.5
- 22.5
- 25.75
- 29.
- 32.
- 35.25
- 38.5
- 41.5
- 45.
- 48.25
- 50.5
- 52.5
- 53.5



Durable Trees

Trees are a fundamental part of a layout. They complement the scale and relationship between trains and buildings and bring a sense of realism. Making a safe and durable tree presents a challenge though.

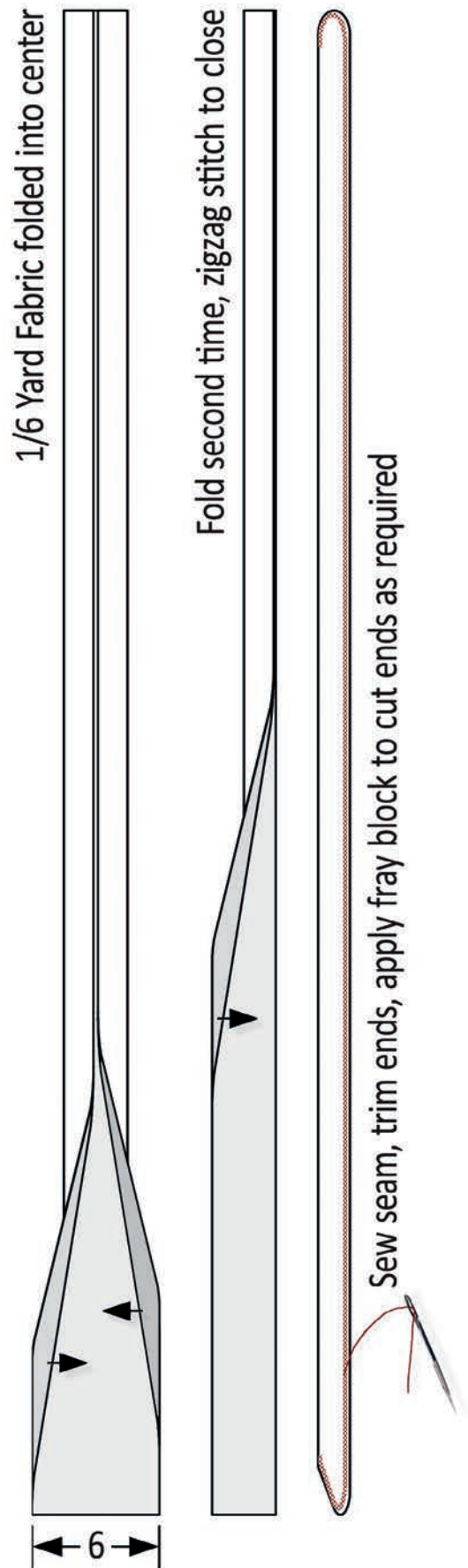
Upholstery fabric gathered on a carriage bolt is one solution. Look through fabric store remnants for greens, yellows and reds. A yard of cloth will make as many as six trees, depending on the weight of the fabric.

A sewing machine with a sturdy needle and a strong fabric punch are essential. Also needed are a carriage bolt, washer, nut, 6" remnant of heavy fabric, double-strength thread, gorilla glue, fray block, scissors, straight pins, masking tape, string, and measuring tape.

Fold, fold, pin, and sew a fabric 'belt' as shown to the right. If your fabric is unusually thick, fold it into just three layers instead of four. If the cloth is lightweight, use five or six plies. Apply fray block to cut ends as required, then mark and punch holes.

Cover the bolt threads with tape to prevent glue adhesion. Lightly sand the bolt head, apply a thin film of glue, center a fabric disc or cone, gather edges, clamp with string until dry, remove string, trim excess, apply fray block to cut ends, and remove tape.

Thread 'belt' onto bolt – gathering and twisting to achieve desired shape. Clamp fabric using a washer and nut, then tighten. Drill a 1/4" hole in the module and bolt the tree to the table with a backing washer and nut. Plant a group of trees for best effect. ■

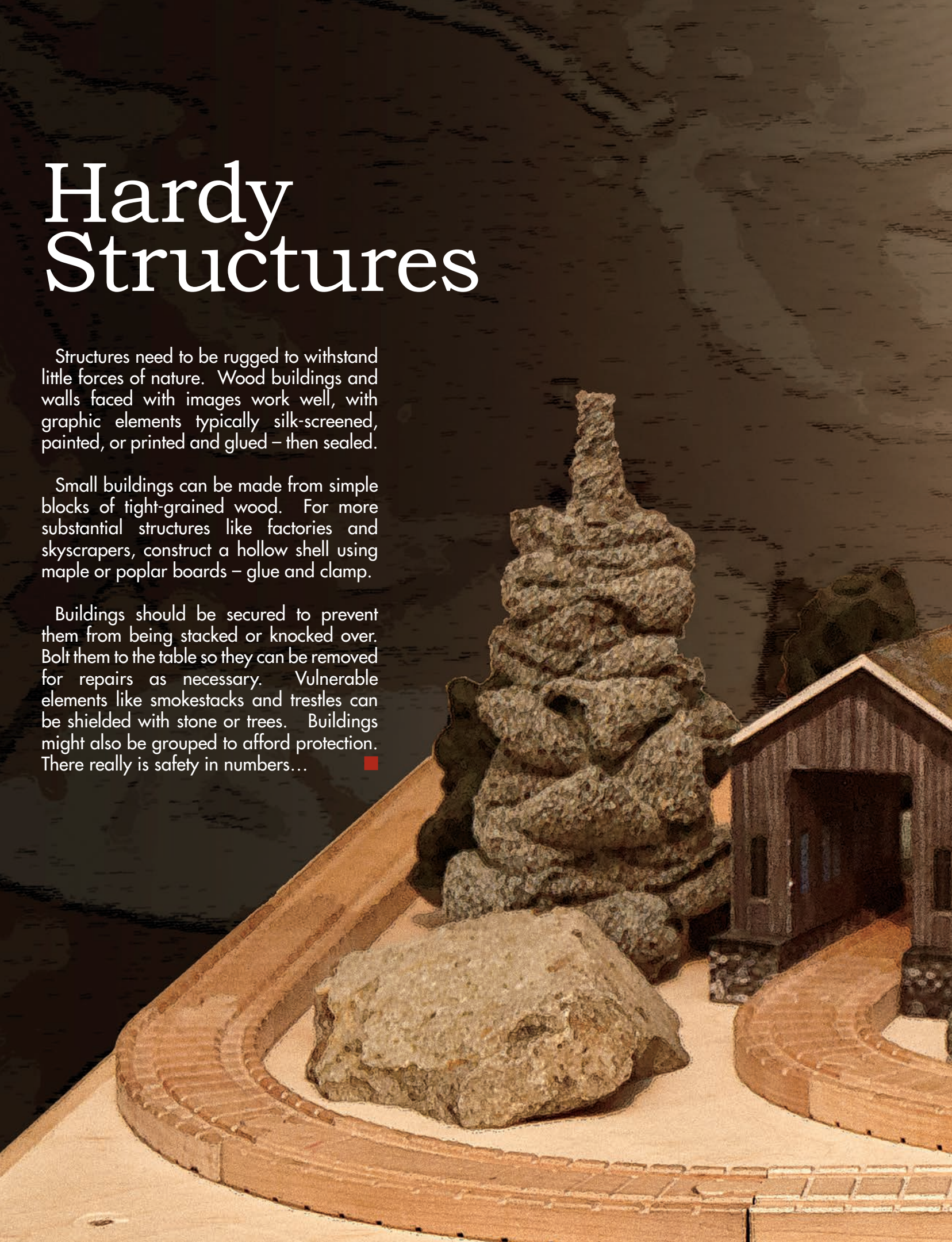


Hardy Structures

Structures need to be rugged to withstand little forces of nature. Wood buildings and walls faced with images work well, with graphic elements typically silk-screened, painted, or printed and glued – then sealed.

Small buildings can be made from simple blocks of tight-grained wood. For more substantial structures like factories and skyscrapers, construct a hollow shell using maple or poplar boards – glue and clamp.

Buildings should be secured to prevent them from being stacked or knocked over. Bolt them to the table so they can be removed for repairs as necessary. Vulnerable elements like smokestacks and trestles can be shielded with stone or trees. Buildings might also be grouped to afford protection. There really is safety in numbers... ■







Orphans

Zivotice, Czech Republic

E49 335 44 Zivotice, Czech Republic 223 m W
49.46347, 13.691319

B

Things were quiet at the train station near this village of 54. Between the station and tree, a deer stood on the rails – munching plants.





Tallinn, Estonia

Tehnika 18, 10149 Tallinn, Estonia 20 m N
59.436676, 24.728365

Walking through a quiet neighborhood of historic homes, I found an aging school with a narrow gauge steam locomotive in the courtyard. You just never know where a locomotive might be... Later, I learned the building is the Tallinn Transport School established in the 19th century to educate railway staff when commercial railway operations started in Estonia.

Manduria, Italy

Via Sant'Antonio, 42-74024 Manduria TA, Italy 42 m N
40.40405, 17.640993

The boot of the heel of southern Italy is a tangle of narrow roads winding through small towns and agricultural areas. One of the back roads between Grottaglie and Lecce passes through Manduria where traffic was diverted for construction. While crossing the tracks, I happened upon a pair of lonely wood flatcars loafing in the afternoon sun.



Painting and Stamping

An easy way to customize rolling stock is simply to paint new, unpainted cars. Weathering can be applied using white, red, and black charcoal prior to further detailing. And detailing can be applied using rubber stamps or dry transfer rub-ons.

Milk paints come in a wide range of colors and add a natural warmth and tone that isn't overly shiny or bright. Milk paint is safe and kid-friendly and comes in a broad spectrum of colors. They are made from milk casein and food grade emulsifiers and preservatives. They even smell like food, but I haven't tried tasting them...

Milk paint requires just a couple of thin coats and it wears well. As cars are dropped on the floor and played with, edges and corners start to show dents and dings which look reasonably authentic. Charcoal can be reapplied to subdue edges where too much unpainted wood is showing.

Custom product names and corporate branding can be inked onto cars once they've dried. Create your own company names with imaginative products and order custom rubber stamps – or just write directly on the cars with permanent ink. There are even stamps that can be customized using ribbed type and a special stamp handle.

A child-safe finish is just as important. Apply a matte coat to protect painted train cars and features with weathering and images applied. Choose a flat finish that is safe for children – like a varnish that is non-allergenic, non-toxic, and free from volatile organic compounds. ■

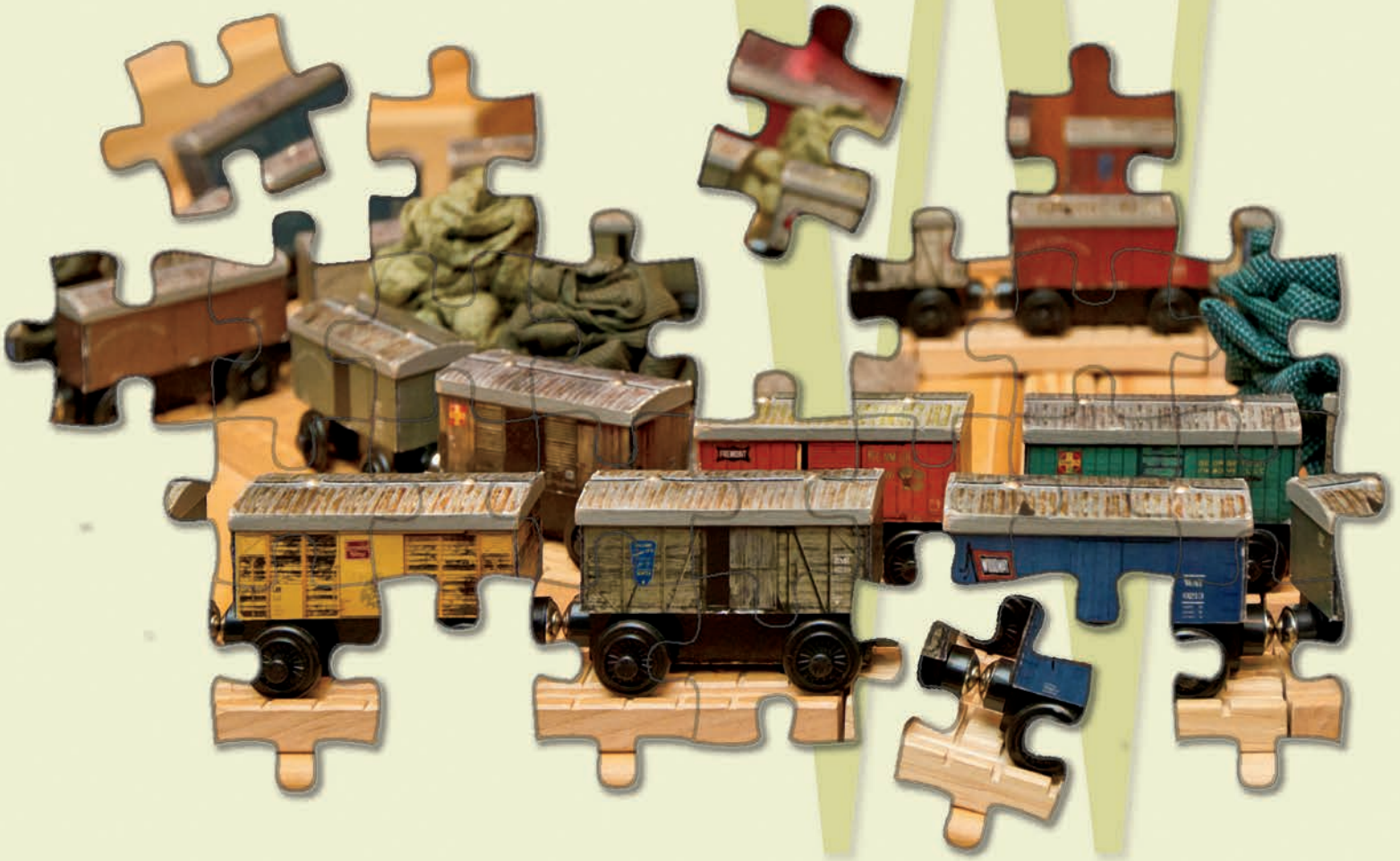


There are a wide range of products available for painting and stamping. Natural materials and organic ingredients were incorporated whenever possible. Here is a short list of products and manufacturers selected for customizing rolling stock used during train shows.

milk paint from AnnaSova.com
custom rubber stamps from RubberStamps.net
changeable Type from RibType.com
non-toxic organic matte varnish from ECOSPaints.net
compressed charcoal from GeneralPencil.com



W



Graphics and Textures

A wooden railway can incorporate reasonably realistic locomotives and rolling stock by using graphical images glued to cars. With shading, the result can be remarkably authentic.

Images can be as simple as photographs of train cars taken at a crossing or on a siding and then scaling them to fit a wooden car body. A composite image can be created using graphics software in combination with stock photos, textures, fonts, and visual elements from a variety of sources to achieve something entirely different.

A variety of fonts and logos associated with railways are available. These can be used on railroad signage and rolling stock to bring a sense of historic realism to the layout. New railways can be imagined and adapted too.

Spray adhesive works well for affixing custom images to wooden buildings and train cars. Coat both surfaces for a really strong bond. For crisp, clean edges, use a black or warm gray permanent flowpen on the edge of the photo to darken the exposed white paper edge. Attach a roof image to finish the car. Touch up any remaining white spots with a pen and then apply several coats of a child-safe matte varnish to protect the car to and remove the photographic sheen.

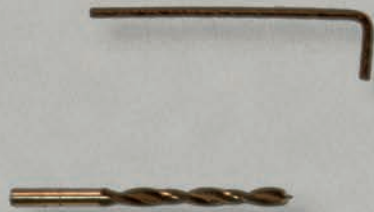
Over time, minor repairs to frayed edges can be accomplished with a toothpick and glue. Edge damage and scratches can be weathered a bit to restore the graphical impact. Reapply finish coats as needed. ■



These are imagined railroads leveraging historic railway logo designs. But with some research, a long list of interesting local railways names and logos can be rediscovered and incorporated into locomotives and rolling stock. Doug Oldenburg sent me a list that included intriguing lines like:

- Camas Prairie Railroad
- Cherry Valley Railroad
- Okanogan Electric Railway Company
- Port Townsend Southern Railroad
- Seattle Lake Shore and Eastern Railway
- Wenatchee Valley Railroad
- Walla Walla Traction Co
- Yakima Valley Railway

Now I'll need to work these into my collection of rolling stock and do some reading to learn a bit about their history.



Basic Tool Kit

Modules and legs can be constructed using basic tools such as a jigsaw, orbital sander, wood glue, measuring tape, and clamps. Trees and buildings can be attached with just a drill, screw driver, and crescent wrench.

A mitre saw, file, and dremel make cutting track simple. An arch punch for holes through carpet and a rotary punch for upholstery trees are handy. If I could pick one more indispensable tool, it would be a band saw. Don't forget a mask and safety glasses... ■





Red Wooden Special

a list with lots of ideas hoping he wouldn't end up with clothes again this year.

Philipp is pretty sure he's not going to get the smart phone. The lizard is probably a long-shot too, no matter how many times he asks. But it's worth a try...

The Order

1

In a small village near Mexico City, Raul is just arriving to work. He looks at his orders for the morning. One order that arrived last week is for a red wagon that must be finished today. His friend, Pedro, is arriving soon with the painted wooden slats needed to complete it. This is a special wagon – made by hand, deep red with cream-colored wheels, and a long wooden handle with a steel grip. Raul places the wagon base on his counter and sets to work... Near dusk, he presses the last wheel onto the axle and carefully covers the wagon with thick, brown paper. Wrapping slowly and deliberately, Raul tapes it neatly and places it in a box for pick-up the next morning.

A List

2

That same night, in Fort Worth, Philipp is wondering what his parents are going to do for his birthday present. He had written out

The Pickup

3

Before dawn the next morning, an alarm clock rings in Mexico. Carlos wakes up and gets ready for work. He drives a delivery truck for the local express service. Today Carlos has several packages due at the freight yard by 10:00. It is a small package delivery company, and Carlos needs to plan his route carefully to use as little fuel as possible. He needs to complete some paperwork before he starts his pick-ups too. As he prepares to head out, Carlos makes himself a cup of drinking chocolate and walks to his truck to start collecting packages.

The Yard

4

Early in the afternoon, with the bright sun high overhead, the box that Raul packed and

Carlos delivered is trundled aboard a creaky freight car bound for Dallas. A velvety black cow a few cars away moos softly, hoping for a handful of hay or a scratch behind her ear. Marisa, the yard cat, slinks silently in the shadows while hunting for a careless mouse or cricket. With a rattle and clank, the train shudders forward – headed north towards the border.

Delivery

5

The following day, Ben arrives at the freight terminal to pick up orders that just arrived. Ben is a young associate at the department store where the order for Philipp was placed. One of the packages at the terminal is a box covered with colorful stamps marking the many inspections and transfers between Mexico City and Dallas.

With several boxes in hand, Ben returns to the store to open each package. He carefully inspects each shipment for damage or missing parts before putting them on the back counter. Ben's manager, John, asks, "How do the orders look?" Then John calls Philipp's Dad at work to let him know his package has arrived. "We'll be open 'til 6:00 tonight," John says. "I hope that works okay with your schedule." Philipp's Dad thanks John and tries to refocus on his assignment – but he grins from time to time imagining the excited smile on Philipp's face when he opens his present!

Arrival

6

At 5:37, John steps out of the store with Philipp's present resting on his shoulder. He places it on the backseat of his car and

cinches the seat belt to hold it in place. John smiles again to himself. What fun!

At home, John rings the bell and Philipp answers the door. "Look what arrived today – I wonder what this could be?" He asks with a grin. Philipp, with a disgusted look on his face, reminds his father that it is his birthday. And, since his name is on the box, it must be for him!

"Should we wrap it then?" Asks Philipp's Dad. "That will not be necessary!" Philipp exclaims. Instead, Philipp suggests they open it right now!

New Plan

7

His Dad has another proposal – involving homework, dinner, and a cake. Parents...

Epilogue

A few years later, Philipp is in the attic putting away some Christmas decorations. While moving several boxes around, he spots the wagon with its fine layer of dust and a sliver of winter sunlight reflecting off the wheels.

Smiling to himself, Philipp pulls out his new smart phone and sends his father a quick text to say thanks again for such a great present! ■

*Excerpt from "International Railway Ledger" by Annette & Tom Stephenson © 2012 SLoW
Used by permission*

Snapshots

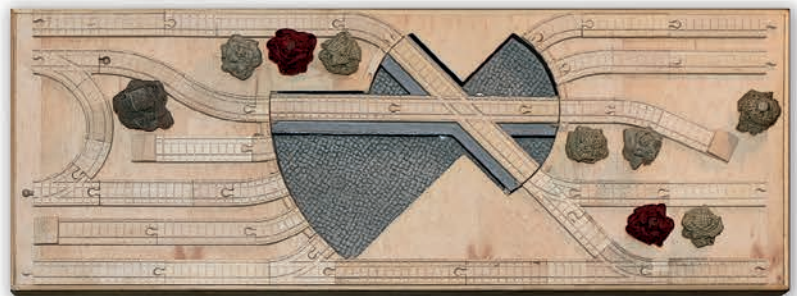
All of the modules constructed to date were designed during a few days in late 2008 while stuck at home during a lingering snow event. Turning these ideas into something tangible has taken a few years. For every new feature and refinement, several ideas were imagined and discarded. It can be a slow process, but the lessons are rewarding and the outcome better than I had envisioned.

Turntable Switchyard

This asymmetric turntable restricts long trains from rotating between track lines and encourages cooperative play as trains queue up. Short trains can be shunted to any of the three sidings while navigating through this puzzling feature.

To fashion the turntable, a steel channel was cut and brazed to create the basic 'X' shape with a bolt's smooth steel shoulder as the shaft. A flanged cartridge bearing unit was mounted to the underside of the module and the turntable shaft was then secured into the bearing unit with a set screw to establish elevation. A thin plywood platform was epoxied to the steel channel and track glued to the plywood.

Trees have been strategically placed, with small storage buildings to be added later.





Standing taller than some of the engineers, this dramatic skyline is a hub for local and express trains alike. A group of tall buildings surfaced with images of buildings and textures reach skyward. Additional commercial and residential buildings will be added on adjacent city blocks as the real estate market recovers. Several railway lines skirt the edge of town, while another ducks beneath the city.

The subway platform is illuminated with LED's recessed into the station's ceiling. The

City & Subway

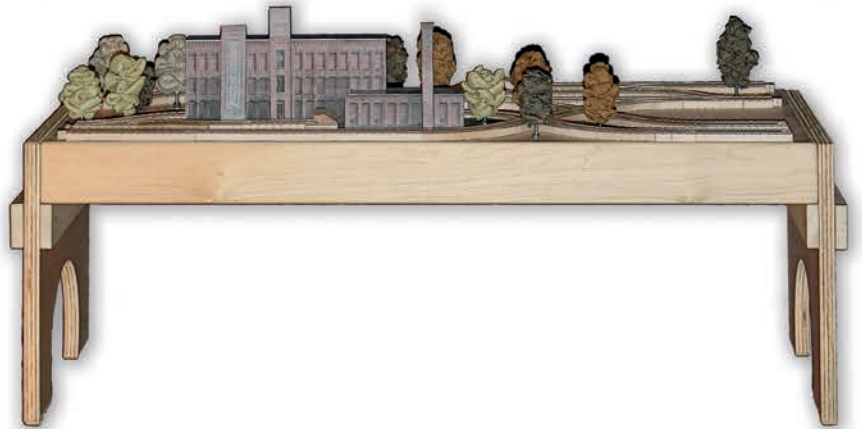
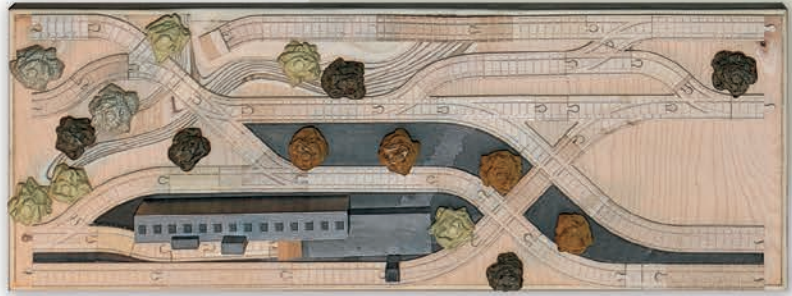
ceiling, walls, and platform are textured with images incorporating details from Japanese subway stations in Tokyo and Nagoya.

Red lights blink on the corners of the tallest building, where a heliport serves as a destination from the airport.

Midyard Sidings

Sidings allow trains to pass while goods are loaded at the factory. Cooperative play with other engineers at the table is required.

One siding leads to a factory based on a shuttered industrial building in Tacoma's industrial core and graphically manipulated to fit the space. The other branch line drops into a shallow lowland – ensuring that cars don't roll back onto the main line. The smoothly contoured terrain reveals alternating layers of the module's apple ply topography. Trees line the gravel lot and surround the basin.



Rerouting Endyard

This module was designed to allow trains to enter on any track and then exit on any track – including the track the train entered on. Most return routes are easy to decipher, but for one it is necessary to back through a loop. It is a great module to challenge older kids with routing options.

Storage tanks are set into the loops using images glued to 6" plywood cylinders. The space surrounding each tank is defined by a gravel lot (commercial carpet) matching the occasional spills as product is delivered from arriving tank cars.

A small storage building or site office is planned. Walkways, fences, and pipes may be incorporated later too. Trees provide shade and soften the otherwise harsh industrial setting.





Snapshots

Mountain Village



Tunnels are a dramatic part of many railways, especially when integrated with hills, bridges, ravines, and other features. This segment required more than 40 hours to construct and was the first to feature fabric trees and lights.

For this module, the mountain was built using stacked apple ply plywood sections. Intermediate steps were routed in some places to add smaller, more graduated transitions. To determine contour geometry, a scale model was made using clay and sectioned with a razor. The layer outlines were then scanned and printed on a large format copier. Contours were cut on a band saw, but a jigsaw or scroll saw would work well also.

For ease of transport, the top of the mountain is separate and nests on the base using wood dowel pins for alignment. The top incorporates LED lights in the roof of the tunnel, a control circuit that periodically flickers lights off and on, and a battery. A mine shaft entrance will be added later.

Dropping one track below the table level allowed the base of the mountain to drop another 3" for a much more dramatic result. Simple dowel trestles support the bridges over the ravine. And simple pine trees complete the transition from the dry valley to the sparsely forested hills. An aging western town and train stop near the base of the mountain is envisioned.



Odds & Ends

These accessory modules are essential elements in a layout. They are small, but still have tremendous creative potential.

Simple ends are just large enough for two half radius lines. But beside and between the tracks, enough space remains for trees and outcrops. Turnarounds could even incorporate dramatic topography such as ravines, marshes, or a plunging coastline.

The crossover segment isn't much larger, but fields and trees add character here too. This module allows the next module to reverse direction – expanding the range of layout configurations possible.

A corner redirects the layout and allows it to fill a larger space. Note that a corner leg should be attached for stability and safety. Here, a mine is set in the rugged foothills surrounded by rough, rocky crags. A mine straddles the crossing tracks and struggles to rise above nearby trees. The mine structure was made in five sections and doweled together for strength. It is bolted to the table and has a trestle supporting one side.

The Tee is similarly compact. A flour mill and barn are situated in the fields with a few trees dotting the countryside. One could even imagine a small dust devil and a few cows in this pastoral scene...

Everybody loves an airport (except during holidays) so this simple segment routes trains around a rural airfield and past a neighboring town. Tracks merge and branch allowing trains to shift from one line to another through this section.

The runway is an image of a road taken from a texture collection and digitally manipulated. The image was printed as a photograph and affixed to a thin plywood sheet using spray adhesive. Several layers

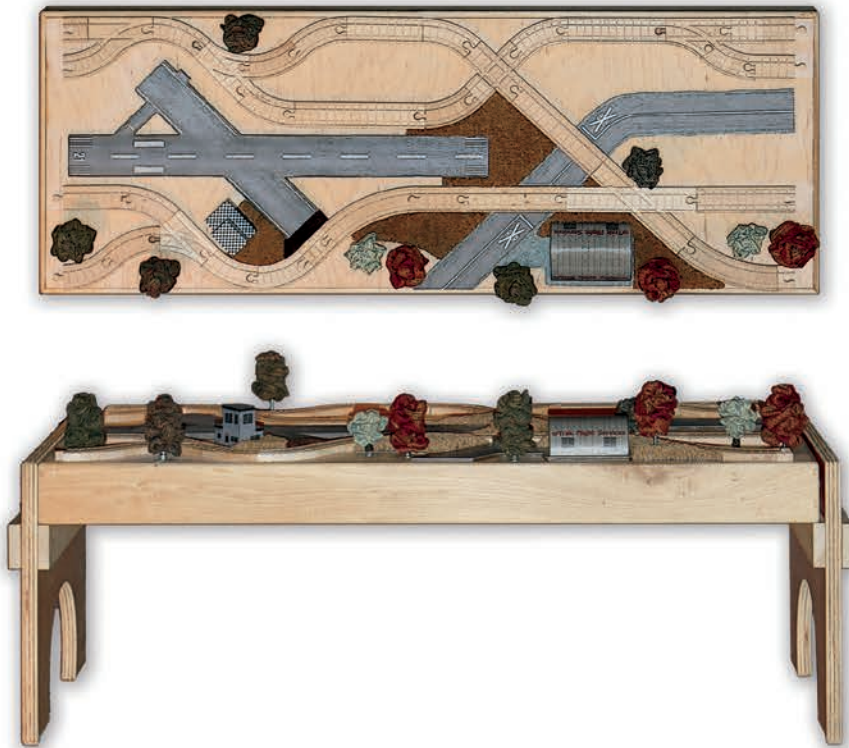
of matte finish protect the surface and remove the glossy sheen. The runway was then glued to the table. Sequentially lit runway lights will be added in the future. A country road and gravel parking area were constructed in a similar fashion, but glued to masonite rather than plywood.

A small control tower was constructed using a variety of photographs and textures. The Quonset hut repair shop was created in a similar way. Both buildings are photographic prints glued to blocks of poplar and bolted to the table from beneath to facilitate repairs if necessary. A flashing landing beacon is in the plan.

Coarse, dry grass creeps up against the runway and buildings – but not too much... The texture of coir is prickly and abrasive. It lends a rugged, industrial feel to the area. Trees are kept away from the runway for the safety of the small planes that arrive and depart occasionally.

A few weathered town buildings will line the road leading away from the airport – probably a small grocer, gas station, car repair shop, and diner. One or more may have lights. Perhaps a billboard too.

The module is flat and no track trimming is required. This is one of the easiest modules to construct and an easy first effort.



Airport & Town

Watch for pictures of new and updated railway modules online as they mature during the year. In particular, the 'Bay & Bridge' will be renovated to include a pier and wharf buildings. Water will also fill the harbor under the steel bridge. ■



HOTEL

GS
100
100

Shared Experience

Experience is a great teacher. We continue to learn and refine our understanding of what works and what doesn't. Here are some lessons that may not be intuitive...

Buildings are essentially blocks. They get moved, stacked, and knocked down if they aren't physically attached. So buildings have to be firmly bolted to the table for safety and to protect them and fingers from being damaged.

Seating can be an invitation for parents to sit down and disengage. Sometimes for hours. Limit the number of nearby seats and they will be shared primarily by those who really need one.

Abandoned trains are problematic. When in the way, they are typically pushed to the side, dropped on the floor, or added to another train. Collect trains that are unused to streamline layout operation.

Keep available trains in a box or on a separate table. When new engineers arrive, they can make up a train and carry it to the table instead of competing for cars at the table.

Long trains choke the line. They occupy a lot of track and derail frequently. When the table is busy, an engine and four cars is the practical limit. Shorten longer trains through car counting or measuring with a tape. Parents are generally cooperative.

When managing the operation, a uniform reinforces authority. This is important so parents know you aren't just another parent.

Concrete floors are especially hard on train cars. Every strike against the ground dents corners, chips paint, and distresses the car. Most cars fall within a foot of the table edge near corners and ramps. A small rug or carpet runner in these locations could provide some relief.

Engine sheds collect cars. Tunnels too. If the stock of engines and cars gets thin, check here first.

Using 'branded' trains on the layout is troublesome and distracting. Quite a few children at train shows arrive and leave with trains in their pocket. This is not always a balanced equation, and parents may never realize that they've lost or gained or exchanged a car or engine. Competition for specific 'characters' can be a nuisance. And children who have outgrown toy trains are held back by the association of character trains with children's toys. For these and many other reasons, our remaining branded cars and engines are being culled from the layout this Spring.

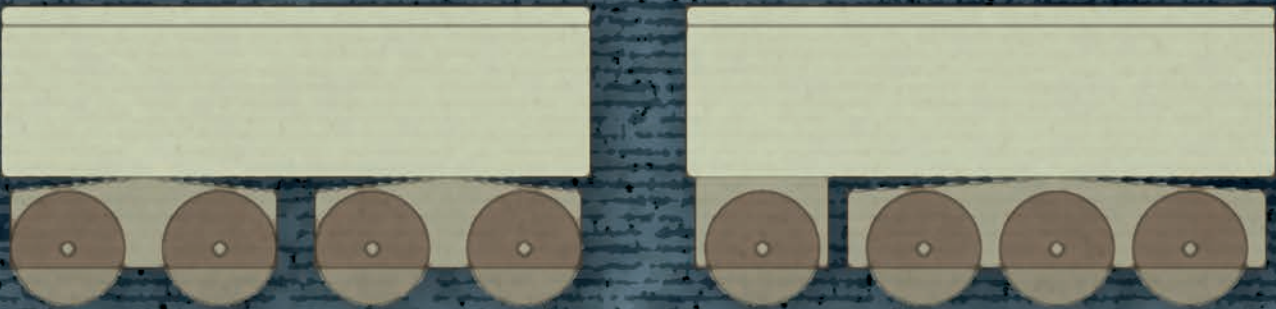
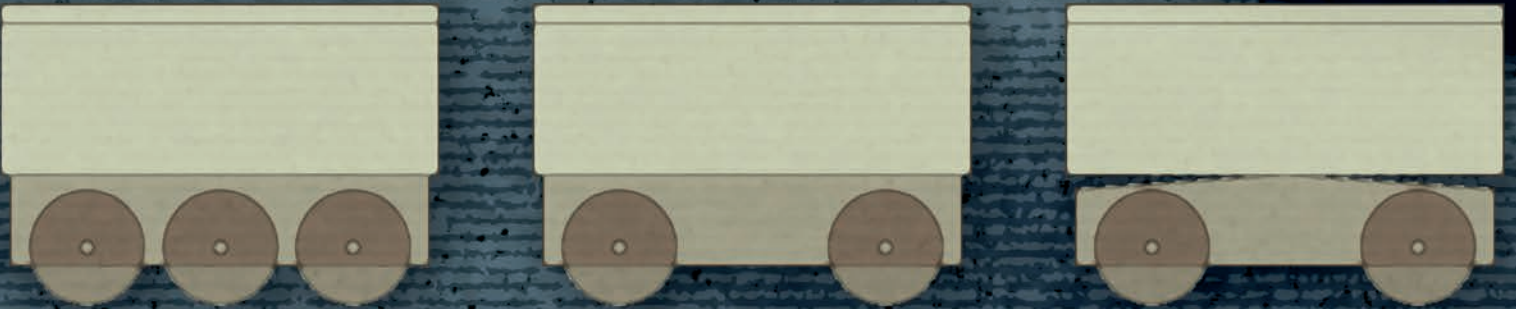
Anything that rotates can pinch. This is especially true when several children pull at the same time. The turntable in the Turntable Switchyard is a great example. The original implementation incorporated cabinet catches to gently hold the turntable in alignment. Add three hands struggling for dominance and it became a mousetrap. Gaps between tracks were filled, felt bumpers added, and the catches backed out. It works more reliably now, but with changing room humidity, it can still develop just enough resistance to bite a little. ■







wTrak in the
Library



Missing Links

A key piece needed to transition from toy to hobby is a radio-controlled engine. With the ability to control speed (start, stop, reverse) and steer through the switches, a wooden train layout becomes a running railroad. The servo for steering would reside in the engine itself. The battery and drive motor could be placed in a tethered tender if additional space is needed. Powering the wheels in both the engine and tender would improve traction on layouts with steep ramps. A steerable engine could be slowed as a switch is approached and the front wheels then turned into the desired direction of travel. Of course, the control should recenter wheels when steering is released.

A source for ABS wheels and barbed steel axles is also lacking. Tooling and set-up costs are high enough that it would take many thousands of units to be competitive relative to recycled cars – far beyond the reach of most hobbyists wanting to fashion custom engines and rolling stock. Wheels and axles could be packaged as a pre-assembled truck in 2-, 3-, and 4-wheel variants, or offered separately in small lots.

Hopefully unpainted tankcars and boxcars will continue to be available in bulk. Coal cars, flatcars, hoppers, and gondolas are of interest too. Even an unpainted steam engine and tender have potential. Alternatively, individual car and engine bodies could be offered for children to customize and glue to pre-assembled base assemblies.

Several people have expressed an interest in modules as a kit. Recognizing that tables and bookshelves are routinely shipped flat

and assembled at home, the basic modular railway table and legs could be offered in the same form – packaged flat and ready to assemble in a 48" x 18" x 2" corrugated box with printed instructions. With dovetailed sides, only a screwdriver and wood glue are required. A paper template would facilitate laying track for a couple of layouts. With a mitre box or scroll saw, more elaborate layouts could be accomplished. Kits for trees, buildings, and custom rolling stock are other ways to simplify and encapsulate projects for young engineers.

A broader selection of track – particularly spiral easement curves and switches – would enhance layout operation. Ramps with reduced slope and more gradual transition radii would allow engines to ascend without having trailing cars catch or decouple. And gentle ramps would enable powered engines to maintain traction throughout their climb. Transition pieces are needed to join switches and crossings to decrease the need for mitre cuts and streamline module construction. Small radius curves with a reverse bank would allow longer trains to be pulled around corners without derailing.

Finally, the magnets joining the cars could be improved. Rigid magnetic couplers amplify misalignment between cars on ramps and through corners. Hinging the magnet at one or both ends using a gimbal or ball joint would overcome this. A small steel ball bearing placed between fixed car magnets underscores the dramatic improvement possible – but for obvious safety reasons, loose ball bearings must be kept away from small children! ■

write to us

(or share your thoughts online...)

Tom D. Stephenson
8028 NE 147th Ln
Kenmore, WA 98028

info@wTrak.org

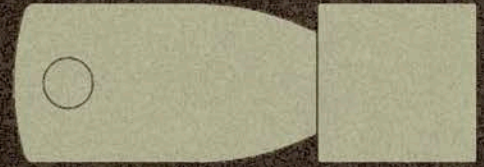
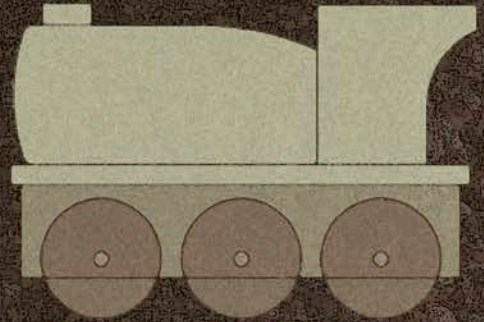
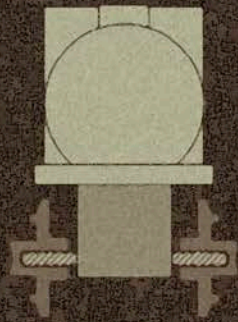


August 15, 2012

Tom,

I enjoyed your modular train track website.
I work at a science museum and I was thinking
of putting some modular train tables in an
room we have.

I've been building wooden train track in
various shapes, as per Dave Barber's website.
I'd be able to see them on my facebook
page pretty sure I have those pictures
on my phone.



Previously in the News

Excerpt from "wTrak: An emerging standard?" posted Feb 16, 2012 at <http://portlandcar.wordpress.com>

I spent the weekend of 4 – 5 February in Monroe WA, at the 2012 UNW/4H Model Train Show and Swap Meet. ... Certainly the most popular display, especially among the younger set, was a proposed new standard based on Brio and similar style wooden track [u]sing the same proven concepts that have been developed for HO and N gauge modular systems...

In all fairness, I must confess a personal penchant for wooden track trains. I like the 'hands on' aspect. My favorite part of modeling trains is making up the layouts, and wooden track certainly makes that quick and easy. And, from experience, I can tell you that it is possible to 'specialize' your wooden track layout. Mine is 'logging'. It will never be photo realistic, but in my mind, it is beautiful. I can let kids and grand kids play with it, too!

Which is going to be the most difficult part of wTrak to standardize. The adults involved are going to have to understand that they are playing by 'kid rules'. After two days of observing this layout in operation in public, the following points are apparent:

- 1) Not all engines require a train.
- 2) Not all trains require an engine.
- 3) Tracks are a 'suggestion', not a requirement.
- 4) Switches and crossings are interchangeable, and mostly a suggestion.
- 5) Ramps, turntables, and anything else that moves are choke points.
- 6) Operational density is a function of module length, and how many kids can squeeze in.

7) Passing tracks are not required. In case of an impending cornfield meet, trains can fly!

Mr. Stephenson adds one more, which I did not witness.

8) Anything that can be picked up, will be thrown. Good to know!

This standard will never be a threat to the HO or N communities. But I believe that it can be a great adjunct to any train show. It is great to see the excitement in children about getting to go to a train show. But how disappointing to hear nothing but 'Don't touch!'. Here is a layout meant to be touched. My observations suggest that, given enough rolling stock and no adult demands that the trains be operated 'realistically', it is not the nightmare that might first pop into mind. Noisy and, to adult eyes, chaotic, but not really a problem. Supervision is, of course, required. And someone to return abandoned rolling stock to the 'toy box'.

So, check out the website. Chat up Mr. Stephenson (tom@wTrak.org), you'll find him knowledgeable, pleasant, and open to a good discussion. And start thinking about how you can add a wooden track railway to your next public appearance. They are really a lot of fun! ■

TSF

Portland Car & Foundry

NOTICE: This material is furnished under the terms of the GNU GPL (General Public License). It may be used, copied and redistributed under the terms of that license so long as this notice, and the Portland Car and Foundry byline are included, and no fee or other compensation is received. Other wise, this material is copyright February 2012 and all rights reserved by Portland Car and Foundry.



Recently in the News

Excerpt from "wTrak: the Coolest Train Tables Ever" posted February 1, 2013 at <http://play-trains.com>
Used by permission

There's nothing quite as exciting as seeing something you know will thrill someone you love before your loved one sees it. That moment of anticipation, where you hold your tongue and wait for the joy to spark on its own, seems to magnify the moment and give it the significance it deserves.

That's exactly what I felt as we came around the corner at the Pacific Science Center's model railroad show last year and saw the wTrak train table. At the time, I would have called it the coolest train table ever, but when we went back this year, they had made it even cooler. I'll show you the new stuff, but first I'll try to put words to just exactly how cool these train tables are.

wTrak isn't a brand, it's a modular standard for wood track tables. What that means is that you can't buy a table, but there are designs to build a number of modules, small train tables with tracks that come right up to the edges at standard points, so that the little tables can be put together in seemingly endless configurations to make bigger tables. End pieces like the one below cap things off and send the trains around and back down the table. I didn't get any good pictures this year that show how big and impressive the table is as a whole, but there are photos of the layouts from several train shows on their website.

While it could certainly be used to create an awesome in-home train table, the system

is designed with larger setups in mind, where many children will be playing at once. The modular nature of the tables allows several different families in a neighborhood or members of a model train club to build their own small set of tables and combine them at bigger events. (There are many thoughts on different applications of this standard, from railroad clubs to community and school groups to private homes, on their website.)

My husband and I have spent a lot of time watching the Little Engineer play on these tables, and so we've had a good amount of time to talk to Tom Stephenson, the designer of the system, and his wife. Between talking to them and watching my son play, I have a deep appreciation not only for the beauty and fun of these designs, but the amount of thought that went into making them practical, safe, and interesting. For me, they epitomize what is so wonderful about the combination of classic wooden trains and growing brains.

Moreover, they model creativity and the maker spirit to the children who play with them. When we first encountered the wTrak table, I was sad that I couldn't just buy one of my own (never mind the fact that I probably couldn't have afforded it if they were for sale). But now I really like the fact that you can't buy one, because if we ever do build one (I have my heart set on the mountain tunnel module, even if it's as a coffee table in my living room decades from now), the Little Engineer will get to watch us do it, and maybe even help a little... ■

Read the full article with pictures and links online at <http://play-trains.com/wtrak-modular-train-tables/>

Down the Tracks



Ideas come easily – but they often take far more time than is available to implement. Considerable planning and experimentation may be necessary. Some require components that are commercially unavailable or tools that are cost-prohibitive. New skills may have to be learned and mastered. Following are enhancements planned for this year...at least a few of which should be realized.

Custom locomotives, flatcars, coal cars, and hoppers are on the project list. Lacking a source of ABS wheels and barbed axles, they will be built from recycled wheel bases. If time allows, a radio-controlled engine might also be prototyped.

New buildings will be added, including rural storefronts, factories, warehouses, and a few of the taller city buildings. The bridge and piers for the Bay & Bridge module will be completed so the module can return to shows in 2014. The bay will also fill as sea levels rise.

One or two new modules are planned as well. Candidates include a mountainous section requiring a series of switchbacks to traverse, a reversible segment with multiple sidings, and the 'Staging Switchyard'.

Expanded participation in local train shows will be considered. But the primary goal is to share experience and improve engagement with local groups to help foster new opportunities for young engineers who are the future of model railroading.

Finally, a video of a train in motion on the tables is in work. Until next year... ■



2014 Exhibit Sponsor - 2014 Model Train Show
Tom D. Stephenson
Stephenson M. Train

22nd
ANNUAL
UNW

大きな鉄道模型テーブルの欠点の一つの解決法として提案します。残念ながらほとんどの鉄道模型テーブルは規格が大きいため運びにくく、またテーブルを挟んで作業しにくいという欠点があります。いくつかの型はテーブル同士をつなげることでさらに大きくできますが、テーブルに縁が張り巡らされているので、テーブルの真ん中に壁ができてしまいます。でもこの細長テーブルは縁がないので、テーブルを好きなようにつなぎ合わせることができます。さらに小さな家やアパートで、大きな鉄道模型が部屋の大部分を占領してしまう不便さも解決しました。

鉄道模型クラブではモジュールのセグメントを含む木製鉄道の改良にあたってきました。このテーブルは大型模型テーブルの搬送を容易にするとともに組み立ても簡単にしました。また同じ規格のテーブルを持っている他の家族とつなぎ合わせたりすることも容易にできます。また限られたスペースでも片側から作業できるので、壁に沿って置くことができますし、部屋の真ん中におく必要もありません。

今までどこにも細長い型の木製鉄道テーブルを見つけないことができなかったため、この新しい規格を発案しました。一携帯用としても棚用としても便利です。

