The Magazine for LEGO® Enthusiasts of All Ages!

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Brick Journal

Issue 24 • June 2013

people • building • community

All Aboard the LEGO® Trains!

Train Layouts by Cale Leiphart and PennLUG

Building a Train Station

Features

Instructions

AND MORE!

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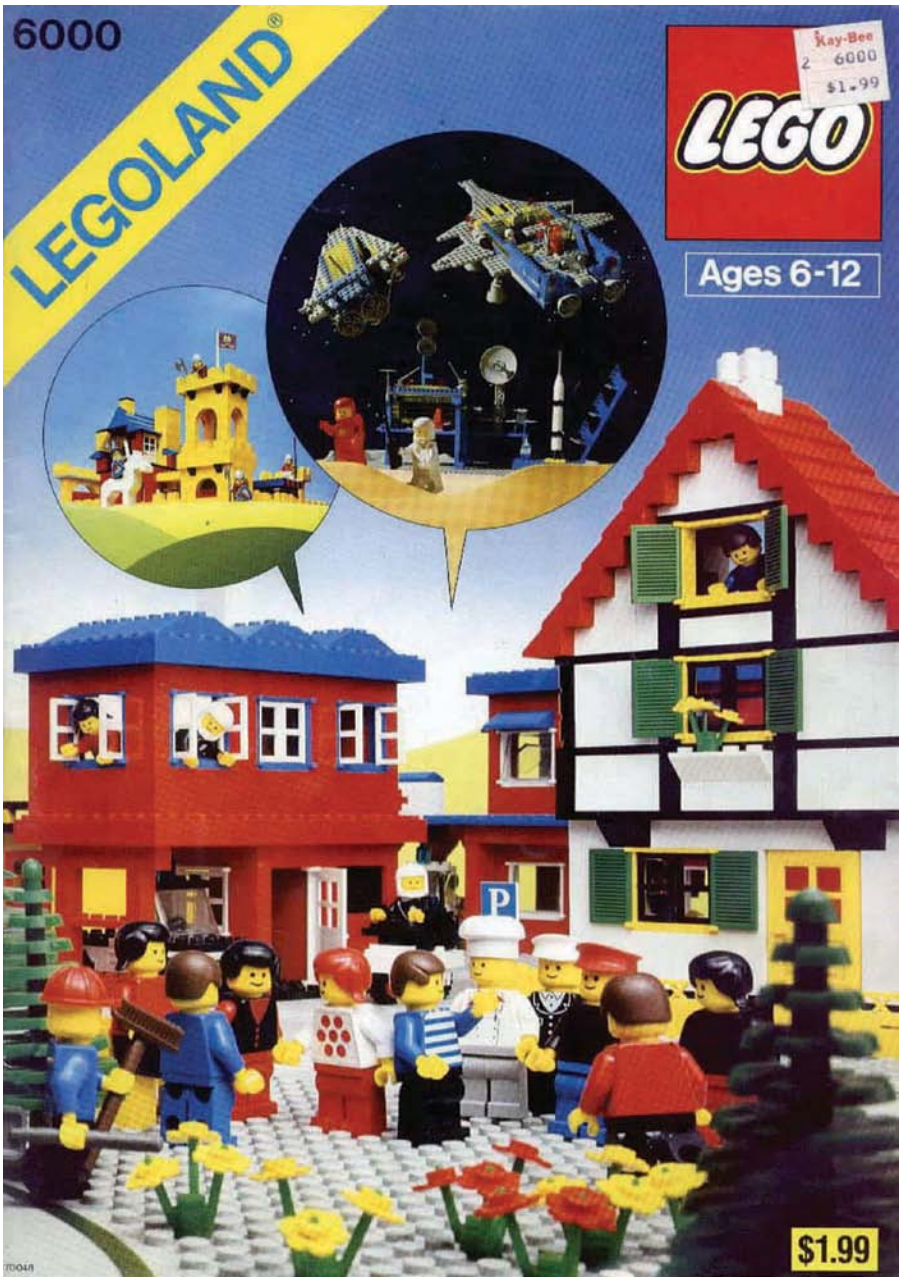
The Idea Book 6000 Experience: Building a Childhood Dream

Article and Photography by Brian and Sue Ann Carpignano
sabc0306-idea6000@yahoo.com

Additional Photos from Idea Book 6000



Brian Carpignano's initial building effort of the Idea Book's movie theater.

When I was a child in the '80s, I turned the pages of the *LEGOLAND Idea Book (#6000)* over and over again looking at all the great models and building ideas. I got to follow the photostory of two minifigures, Mary and Bill, which were pictured in the *Idea Book*. As I followed along with their adventures, the *Idea Book* provided building ideas of town, space and castle scenes. Mary, in her polka-dot shirt, and Bill, in his blue and white striped shirt, would be in all the scenes as their story unfolded in the pages of the *Idea Book*. The models of a snack shop, a hair salon, a grocery store, a circus, cool spaceships, and castles were enticing me to build. As a child, I attempted to create some of these models from the *Idea Book*. However, I had difficulty recreating many of them, especially the town models. My childhood collection of extra pieces did not allow the buildings to turn out quite right, as I did not have all the required elements, such as slope bricks and certain brick colors. When I decided to build the movie theatre pictured in the *Idea Book*, I used 2x4 red bricks for the roof and so I ended up with jagged edges. Also, since I did not have sufficient minifigure-scale windows and doors, I substituted them with older style windows and doors. Having lost the stickers to the theatre, I ended up cutting out the images of the stickers from the *Idea Book* and used scotch tape to stick them on the model.

As time progressed, the evolution of LEGO pieces made it even more difficult to recreate many of the models shown in this *Idea Book*. Many of the older pieces were either no longer manufactured by LEGO or rare in the newer sets. However, starting a few years ago, with the internet and a marriage to someone who was as enthusiastic about LEGO bricks as I was, a dream was to become a reality. Mary and Bill's story could be told again.

My building spree restarted about 3 or 4 years ago. My dream was launched with the building of Mary and Bill's first house pictured in the *Idea Book*. Its success convinced my wife and me to continue building more of the town from the *Idea Book*. Since my wife and I were planning to attend Bricks by the Bay 2010, a LEGO fan convention in Fremont, California, we thought this house along with an entire scene could be a fun adventure to put together. We brought one of the town scenes to the event and received positive responses from the attendees as they reminisced on their younger years of LEGO building. Encouraged by our initial success, we began to build more of the town scenes. We continued making the town buildings and many of the vehicles, incorporating them in several shows that our local LEGO club participated in. We did not have a display ready for Bricks by the Bay 2011, this time in Santa Clara, California, but decided we could aim to have a full-fledged layout completed in time for the Bricks by the Bay 2012. We started planning a layout for the "Large Displays" category. One of the criteria for a large display was that it tell a story. We decided to only focus on the town scenes – our goal was to create a layout that would encompass all of the major town scenes so that the viewing public could walk around the layout in a sequential storyline, just like turning the pages of the *Idea Book*. We focused on building eleven main scenes from the book.

To help with the storytelling, we copied pictures from the actual *Idea Book* and created what we thought Mary may have written in her diaries while venturing through town. We got this storyline by viewing the smaller vignettes in the *Idea Book*. The pictures from the eleven main scenes were laminated and placed on stands created out of LEGO bricks. This made it possible for the convention attendees and the public to read Mary's "handwritten" diaries from the 1980s as they walked around the display.

In the next few pages, follow our story as we build the models of the *Idea Book* and you might discover some new building techniques and some Lego history too. Also, if you are like us and want to reproduce these *Idea Book* models as closely as possible, we will show some of the details as we saw it. E-mail us at sabc0306-idea6000@yahoo.com to tell us what you have discovered.

Driving through the hills of the layout. After building several of the scenes including this one, we discovered the Idea Book *used only curve, straight, and T-intersection base plates. There was no usage of the crossroad base plates even though they were introduced as set number 6304 in 1980 when the* Idea Book *was published. My guess was that the* Idea Book *was probably designed in parallel with new sets and new pieces, and the book was not updated in time to include building ideas using these newly released crossroad base plates/pieces.*

Picture from our layout (left), showing our LEGO card stand with 2x2 bricks in the order of the 1964 LEGO logo (above).

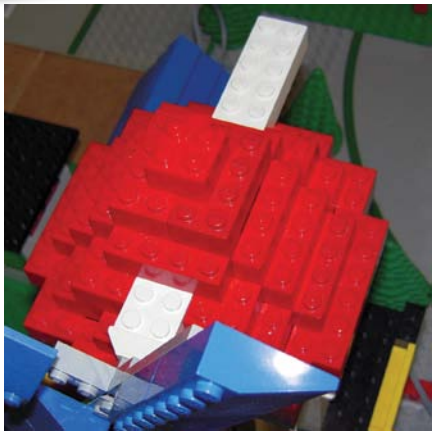
Friday Evening, May 30, 1980

After this long full day, Bill treated me to a peaceful Bed and Breakfast. Our room is so cozy!

In the 1980s, LEGO created 2x2 bricks that could light up, which were powered by 4.5V batteries. The small building with the blue roof is actually a battery box to illuminate the taxi transparent building sign and the inside of the taxi building. Also, lights were placed inside the windmill hotel.

Idea Book Photo

This scene also showed a colorful set of international flags lining the street. The flags are white flag pole pieces with stickers for each country. The stickers did not come with the Idea Book *and came with an old accessory set 940. You can find scans of the flag stickers at Bricklink by searching for set 940.*

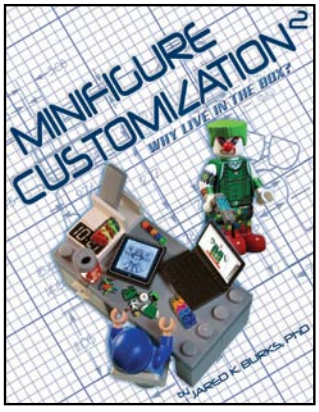


Building the windmill hotel was extremely fun. The hardest part of the building was the roof since the photographs in the *Idea Book* did not show you a top-down view. The roof is dome-shaped and built with staggering red bricks.

Minifig Customization 101:

Customizing Your "Friends"

by Jared K. Burks



Want more of Jared K. Burk's amazing minifigure customization ideas? Don't miss Minifigure Customization: Populate Your World! *(available now at www.twomorrows.com) and its just-announced sequel (shipping in November 2013).*

Hello all, as some of you might know I have a 4-year-old daughter, Branwen. She is always following me into my LEGO space and has started to "build" her own custom figures. Her interest in my hobby is quite endearing; as she builds her figures she even gives them a detailed backstory. Because she has been helping me make custom figures, I decided to make a special figure for her. Therefore, for this issue I'll demonstrate how I made her custom figure of choice. Branwen asked for Tinker Bell from the Disney Fairy films.

When I started thinking about this project and how I was going to capture Tink, I immediately went to the LEGO series 8 Collectible Minifigure Fairy. In this figure LEGO has given me wings, similar hair, and a skirt (which leaves me to wonder about the inspiration for this figure, but I digress). So I asked myself how the figure I was going to create would be significantly different from the LEGO S8 Fairy. I wanted some time to think about the creation I wanted to make for my daughter, so I watched a Tinker Bell film with her. The longer I watched, the more I came to the realization that the LEGO *Friends* figures would be perfect to capture Tinker Bell. The proportions are nearly identical (large head, small body, thin arms, etc.) to the Tinker Bell Disney Fairy (as portrayed in the film) character, with the only variance from the shape and style between the two being the feet. In the film, Tink's feet are extremely tiny, whereas *Friends* figures have huge feet to accept a LEGO stud. This is a fixed structure that I can't alter, so I will have to work with the feet LEGO has given the figure. There are four major regions that need to be worked on to convert a *Friends* figure into Tinker Bell: 1. Custom or modified hair, 2. Adding fairy ears, 3. Custom paint or decal for clothes, and 4. Wings.

Hairpiece reworked for Tinker Bell's hair.

Hair

The first thing to create is Tinker Bell's signature hair style. As I noted above, LEGO has given me the foundation for a Tinker Bell hairstyle in the Series 8 Fairy. I could have also used the Top Knot Bun as a foundation (found in several of the collectible Minifigures including the Sumo Wrestler and the Kimono Girl). However these have minimal details, so I started with the Fairy Hair (Top Knot Bun and Forelock). Using a rotary tool, I sanded off the forelock (bangs) from the front of the hair piece. I then added clay to the front to make the hair piece look more like Tinker Bell's hair. I sculpted in several flowing bangs to make it look a bit windswept; she does fly around all the time, after all.

Ear Transplant

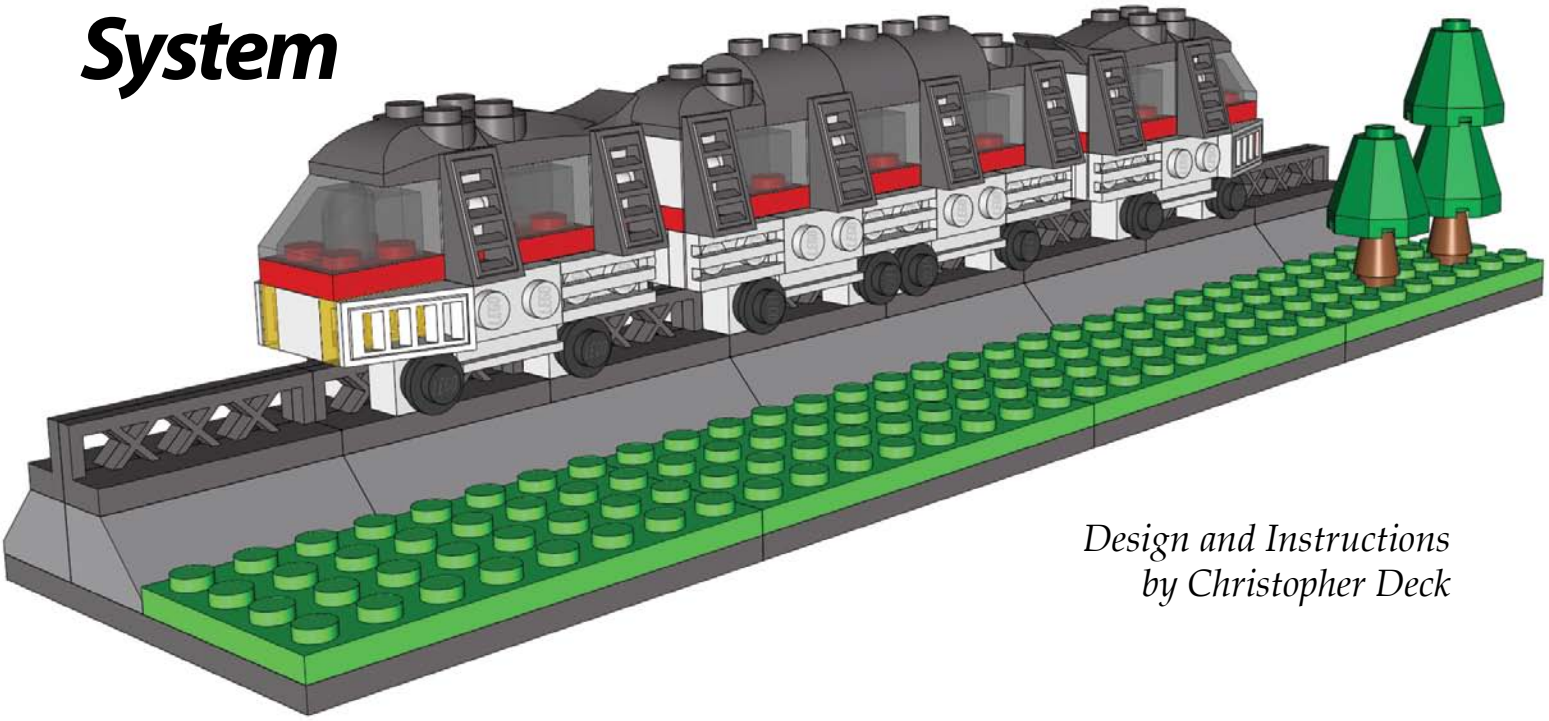
After I got the front of the hair correct, I started closely looking at pictures of Tinker Bell. She is a fairy with pointy ears, which could be created by sculpting them. I really wanted my figure's hairpiece to blend in with other LEGO hairpieces, so I started examining the mythological figures LEGO has been creating in the *Lord of the Rings* and Collectible Minifigure Themes. Orc and Cyclops ears were either too large or the wrong shape. Elf/werewolf ears were perfect, but how would I get the ear off one of the elf/werewolf hair pieces and on to the one I created? Well, this is a simple trick: I just need an ear mold. I demonstrated this technique before with one of my articles on sculpting hair. Simply take some clay, mash it into the part you want to mimic, gently remove it from the part, and cure in the oven. Once cured and the heat has dissipated, simply take some clay and mash it into this tiny mold, remove the excess, and then ever so gently remove the uncured clay from the mold. This perfectly replicates the elf/werewolf ear, which can then be gently added to the Tink hair I have created. Adding the ear with this technique will cause it to stick out a bit in relation to the hair, so it will have to be sanded down after cured. After the part is completed, I give it a light spray with a high-gloss paint to fill any imperfections so that the cast part is shiny. This new part with the bangs and ears added can now be molded and cast. As there is very little clay in the ears it is very likely that they will be destroyed in the molding process, which is exactly what happened when I did it and why the ear is broken in the photo. Spend the time to design the mold appropriately so you don't destroy all your hard work. If the mold is wrong, you will have to recreate the ear all over again. For more information on molding and casting, see the earlier article in *BrickJournal* on the subject.

Top: Clay applied over hairpiece and prototype ear. Right: Mold made of ear and hairpiece. Bottom: Ear sculpt from clay.

You Can Build It

MINI Model

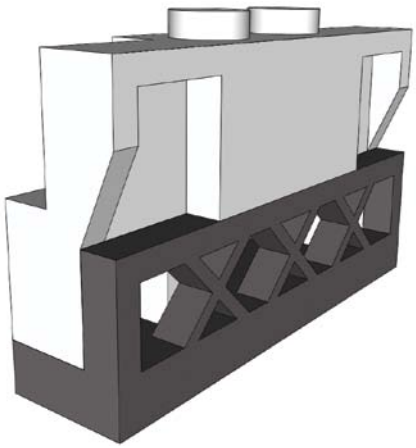
Micro Monorail System



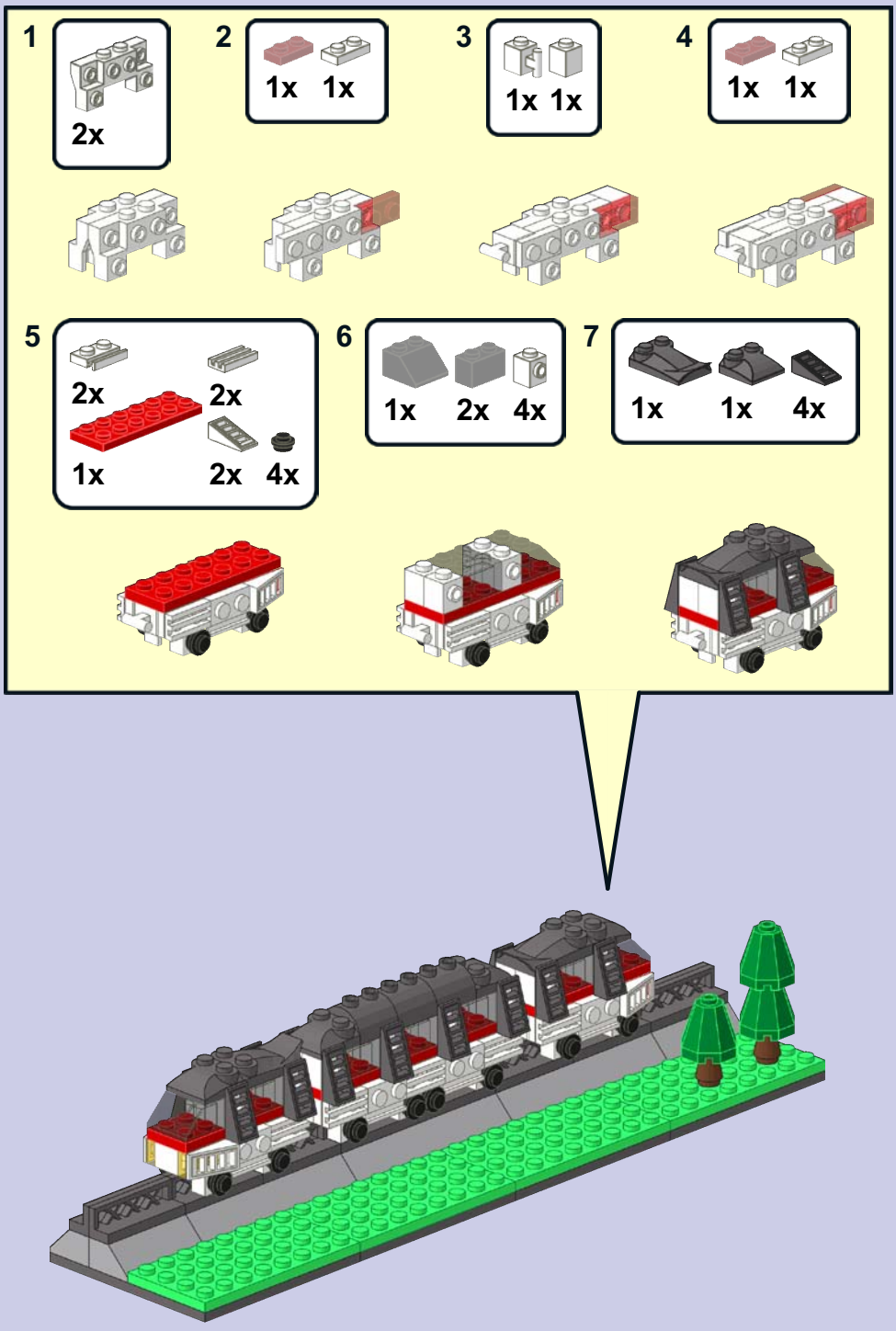
Design and Instructions by Christopher Deck

Hello everybody! I am glad to join you again for the new issue of *BrickJournal*! To join with the issue's main theme – trains – it is my pleasure to present a micromonorail system to you. The working principle of this system is the interaction between the modified brick 2x4/1x4 with 2 recessed studs and side arches (BrickLink parts number 52038) and the 1x4x1 garden fence (BrickLink parts number 3633). The latter part exactly slides in the gap of the modified brick. Using this technique we can build an unlimited number of train designs. The instructions for one of these possible example designs are presented below. One drawback of the system shown is that it is difficult to build curves with it. But this does not make it less valuable for transportation systems in any microcity layout, present and future ones. I hope you will enjoy this technique and will build your own micromonorail for your micro scene setups. Take care an see you next time!

Yours, Christopher Deck



A closer look at how the train rests on the lattice panel.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7
1x 1x 4x

The LEGO ® The Lone Ranger™ Constitution Train Chase:

Building a Steam Train the LEGO Way!

Article by Joe Meno

Photography provided by the LEGO Group

A new set that is almost an ideal starter set for a LEGO® train enthusiast is the 79111 Constitution Train Chase. At 699 pieces and a price point of 99.99 USD, this set has a complete train (a steam train, no less), off-track items and track for a full loop. However, what it doesn't have is a motor. *BrickJournal* talked to Marcos Bessa (set designer and previously a LEGO fan) to find out a little more of the design decisions that had to be made on the set.

***BrickJournal:* What were the original objectives of the *Lone Ranger* train set?**
Marcos Bessa: Rather than with just the train itself, with the whole line we tried to deliver the best play experience in a true and exciting western environment. Disney, our IP (intellectual property) partner for this project, were extremely open to our ideas on how to tweak the models to make them the greatest toys we could, while incorporating and building in exciting scenarios from the Lone Ranger and Tonto's adventures. The train wasn't an exception. A western movie always has a steam train. The Lone Ranger has a couple, each with its own design, but I decided to go for the one with the most iconic western feel to it in my opinion, staying quite true to the overall look of the locomotive and the coal wagon. Everything else in the set though was added out of our imagination, combining several elements of the plot and taking inspiration from different scenes in order to get the coolest train action scene possible in one single shot!

Were there plans for motorizing the set?
Definitely. I must say that most of the time invested in developing this product was actually used investigating all possibilities of motorizing this set. The problem is that the same way that building as a fan allows me to use elements in ways that an official product will never see when it comes to motorizing a

Getting on Track with the Constitution Train: LEGO® Model Sketches!

toy, or a train in specific. The LEGO company has very strict quality control. Solutions that work perfectly in the AFOL scenario simply don't fulfill the quality criteria and building restrictions that the company has established (i.e. "illegal techniques"). I worked extremely hard to come up with several different options of what could be incorporated into the train and this set – looking into track solutions, magnets, action features, motorization, and of course incorporating all the exciting key characters from the movie itself. We simply couldn't include all of these design aspects into the one model, and had to prioritize which were the most important in this case. As we are basing this particular train on a movie, which of course is packed with great characters, stunts and action effects, that was where we chose to focus with this item and treat it more as a play-set. This was a conscious choice for the kids, knowing that the more avid adult LEGO fans would definitely be able to find their own solutions capable of fulfilling their specific needs and wishes.

What are you most happiest with in the set?
The locomotive! Definitely my favorite part of it! I had never built a LEGO train before. I have never even paid much attention to LEGO trains or model train kits before. I guess I can say I'm just not a train person – though I take it quite often to travel. But like most of the sets I get the luck to work on, I challenged myself on something new and that is always really exciting.

An early sketch model of the locomotive. At this point, the body is defined by 4x4 round bricks and plates. Also the forward truck (wheel segment) appears to be roughly the same size of the Power Functions train motor, which would have made a conversion an easy modification.

Powering the LEGO® The Lone Ranger™ Train

Design and Instructions by Joe Meno

As mentioned in the previous article, the *Lone Ranger Constitution Train Chase* is almost a perfect starter set for those wanting a train, except that it has no motor. As a result, the set is a very nice display, but cannot move on its own – it's a push train.

It is possible to power the train, with some extra parts and some planning. Here is one way to make a working train without too many additional parts. The current LEGO® train system uses the following Power Function components and can be found on LEGO.com:

- A Power Functions IR Speed Remote Control (part# 8879, $12.99 USD)
- A Power Functions IR Receiver (part# 8884, $14.99 USD)
- A Power Functions AAA Battery Box (part# 88000, $12.99 USD)
- A Power Functions Train motor (part# 88002, $12.99 USD)

What is optional for this model is:

- Power Functions Extension Wire (part# 8871, $3.99 USD)
- A Power Functions Rechargeable Battery Box (part# 8878, $49.99 USD)
- A Power Functions Transformer/Charger 10VDC (part# 8887, $24.99 USD)

The rechargeable battery is a good option to consider, as the battery is lighter than a box of AAA batteries and can be recharged.

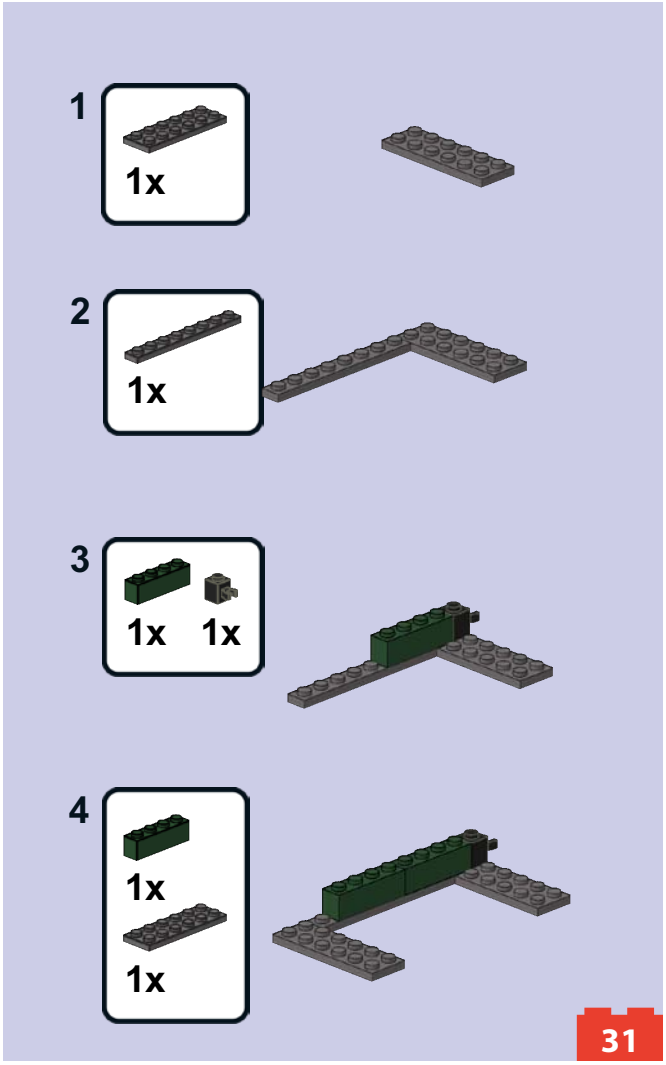
Finally, you will need some extra parts, as you will be replacing much of the coal car bottom with the PF train motor and extending the car 2 studs. This expansion is not that hard to do and takes a minimum of parts.

Parts List *(Parts can be ordered through Bricklink.com by searching by part number and color)*

Qty	Color	Part	Description
2	Black	3710.dat	Plate 1 x 4
2	Light-Bluish Gray	2871a.dat	Electric Train Motor RC/PF Decorative Side
2	Dark-Bluish Gray	3795.dat	Plate 2 x 6
2	Dark-Bluish Gray	3460.dat	Plate 1 x 8
4	Dark Green	3004.dat	Brick 1 x 2
2	Dark Green	3010.dat	Brick 1 x 4
2	Black	3068b.dat	Tile 2 x 2
2	Black	3070b.dat	Tile 1 x 1
1	Light-Bluish Gray	3022b.dat	Tile 2 x 2

The important part of this project is the placement of the motor. After building the set and looking at some options, the easiest way to convert the train to run would be to build the motor into the coal tender and hide the battery in the jail car. The coal tender would be 2 studs longer than the car in the set, so extra parts will be needed.

Take apart the set coal car and rebuild as seen in the following instructions:



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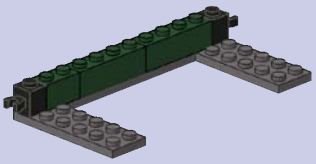

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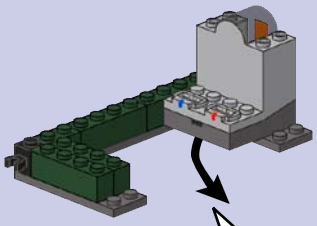

NOTE: The IR receiver's wire will wind beside the receiver and out the rear of the coal car in step 11.

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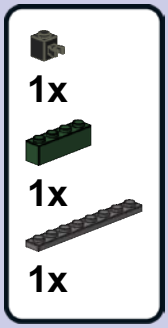

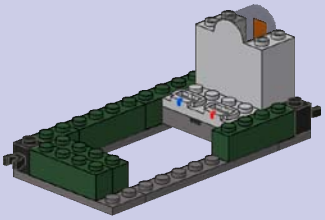

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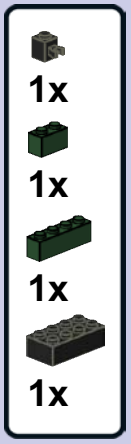

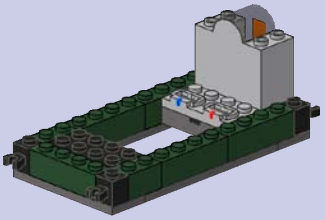

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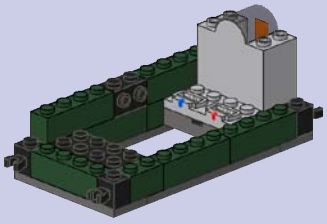

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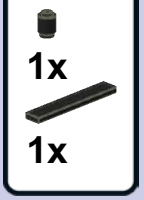

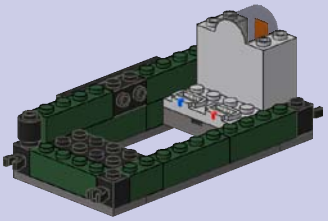

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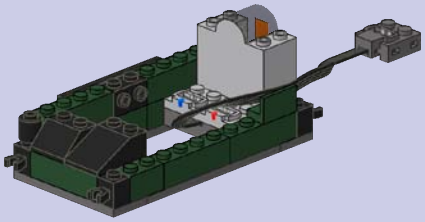

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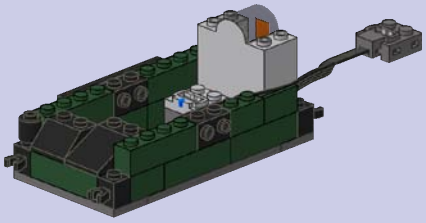


You Can Build It

Model

Train Station

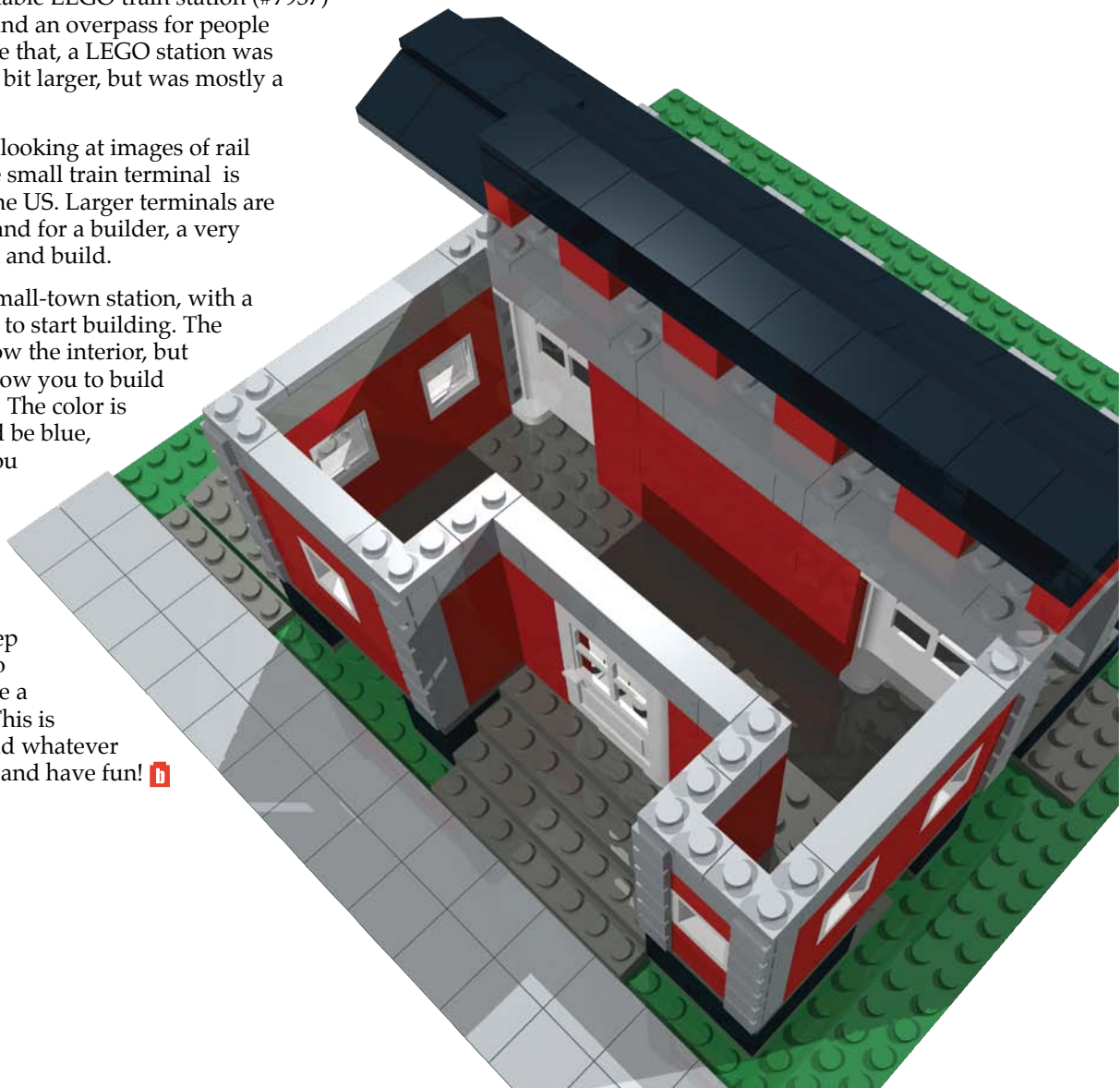
Design and Instructions by Joe Meno

Here's a model any train layout should have: a train station. The presently available LEGO train station (#7937) has a couple of platforms and an overpass for people to cross a busy track. Before that, a LEGO station was released in 2007 that was a bit larger, but was mostly a platform with a roof.

I did some research online looking at images of rail stations and found that the small train terminal is something that is seen in the US. Larger terminals are more common in Europe, and for a builder, a very daunting challenge to plan and build.

This model is based on a small-town station, with a pretty basic design for you to start building. The roof can be removed to show the interior, but the floor plan is open to allow you to build and modify it as you want. The color is also changeable, so it could be blue, tan, yellow, or whatever you have in quantity.

You might be wondering why there are no tiles on the loading pier, steps, and floor. I did this to try to keep the part count low and also leave a lot of places to place a minifigure or decoration. This is your station to build, so add whatever you want to make it yours and have fun!



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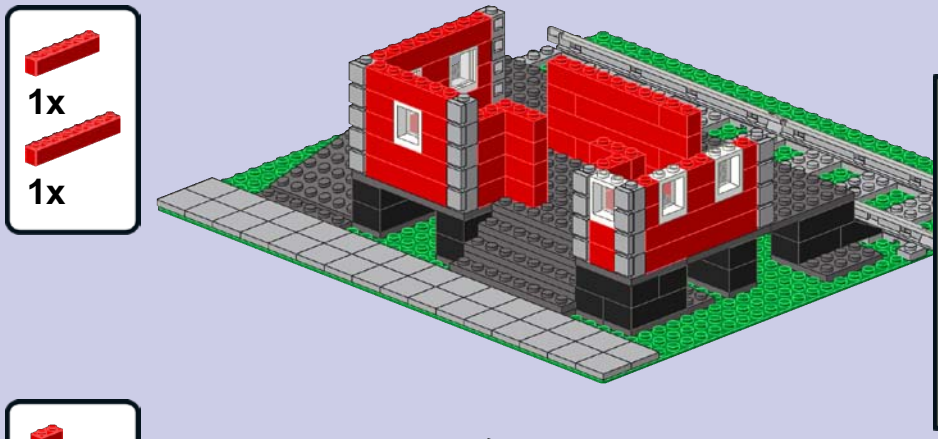

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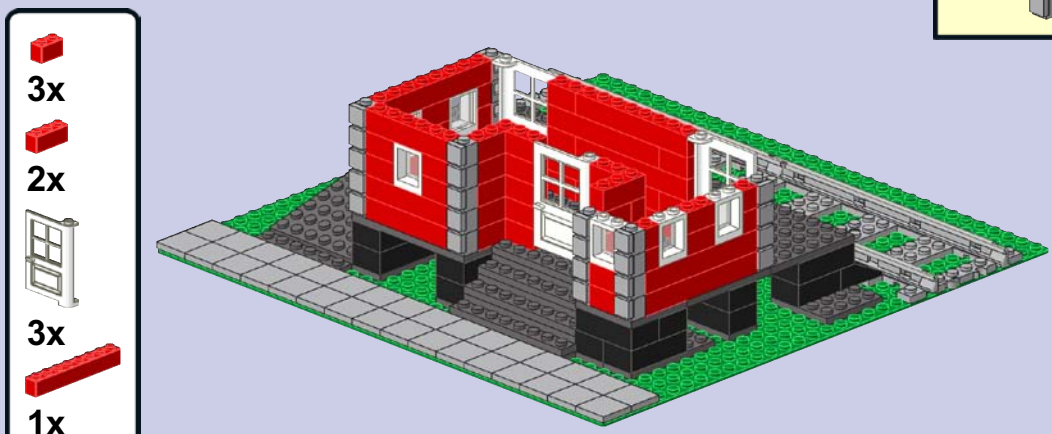

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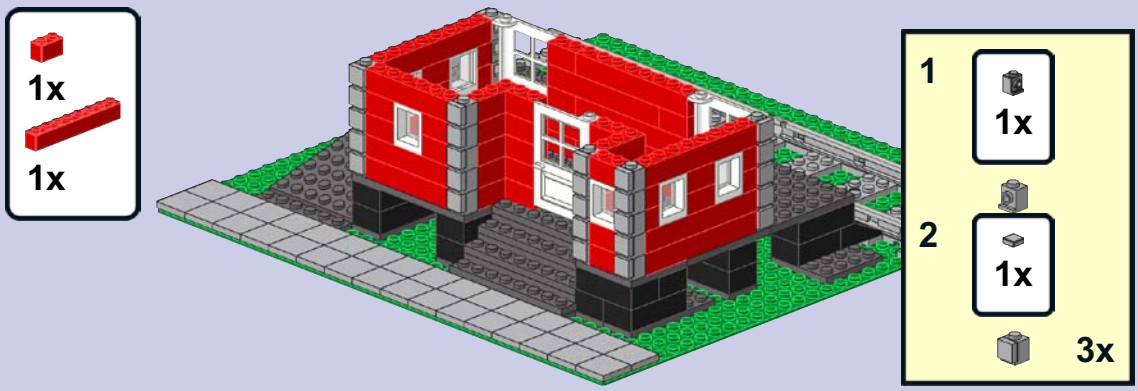

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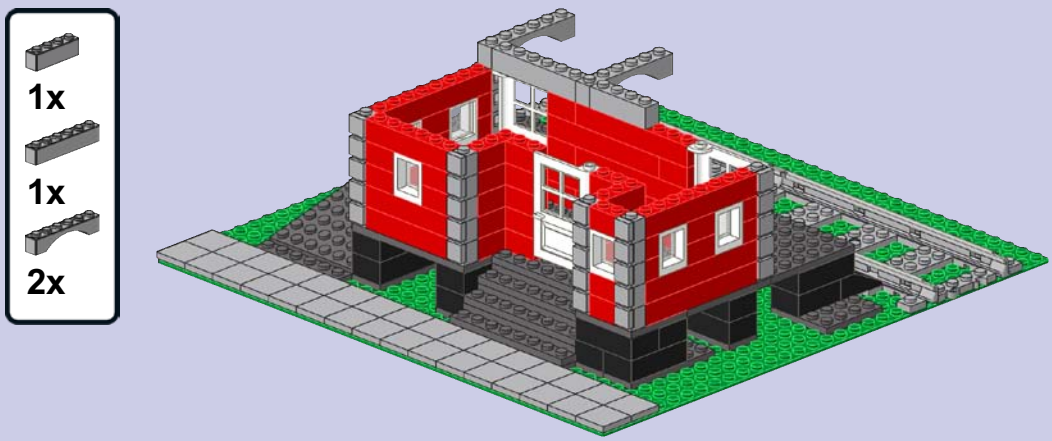


Peter Norman: Building and Styling LEGO Trains

Article by Peter Norman
Photography provided by Peter Norman
Art by Joe Meno

Peter Norman, known on Flickr as Swoofty, is one of the foremost LEGO train builders in the US. His builds are noted for their colorful livery. BrickJournal was able to talk to him about how he got into the hobby, and spotlight some of his best work.

If you were an engineer for the Louisville & Nashville Railroad, traveling on the main line between Montgomery and Mobile, Alabama, just outside the town of Fort Deposit, you could look out over the bog and see my childhood bedroom window. Freight trains where a part of my life from the beginning. They provided a backdrop and a soundtrack to every day. I was also an avid LEGO fan as a child, but since I didn't live in Europe, there were no LEGO train sets realistically available to me. I was firmly a Classic Space kid for my LEGO fix and an HO scale modeler for my train fix. I eventually moved on to Castle sets and then Technic sets. The sets were always mostly just a parts source as I would build my own designs almost immediately after building the official sets.

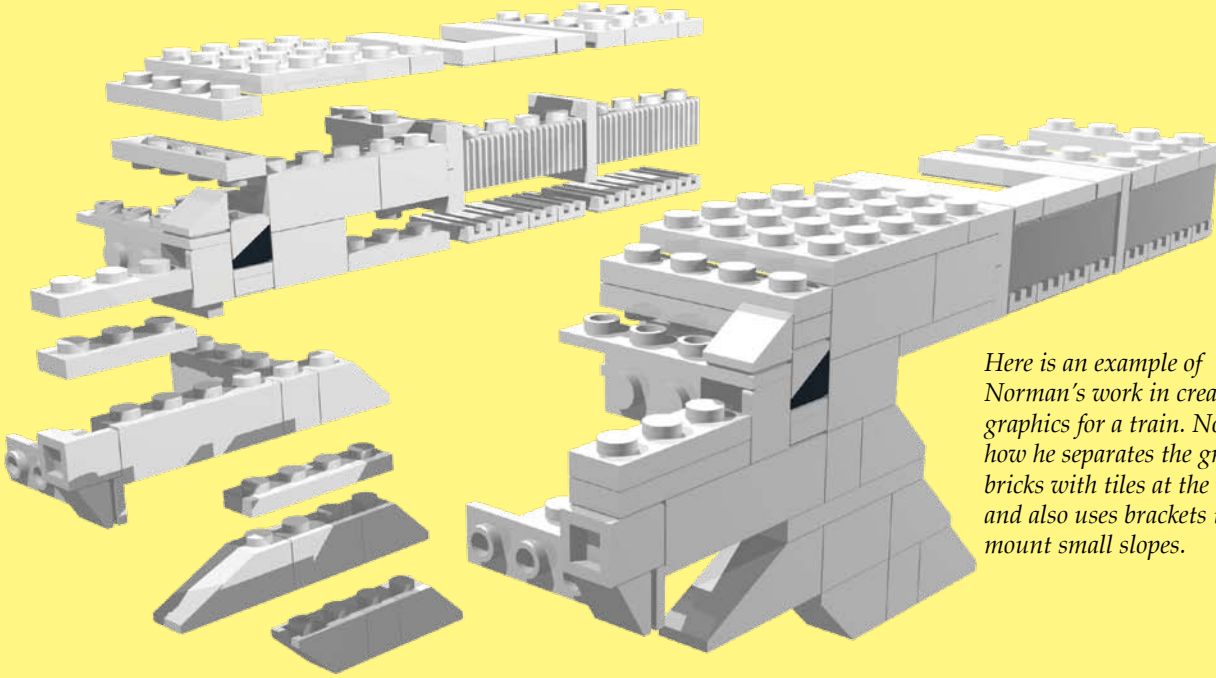
I had an uncle who was an avid R/C pilot and I slowly got into R/C helicopters and then flight simulators and then computer games. In 1991, I went off to boarding school, sans LEGO, and then off to college, also no LEGO. During the college years I built houses, boats, musical instruments, and even grandfather clocks, but all from wood. After college I moved to Venice, CA and soon after, got married and moved onto a 35' sailboat. In about 2000 or so, a simple, innocent internet search for LEGO trains led me to Ben Beneke's famous German steam engines (his BR50 specifically). Upon seeing his trains, I thought to myself, if that can be done in LEGO, then that's what I want to do. So at that moment, sitting in a small sailboat bobbing in the Pacific Ocean with a laptop in my lap, I decided to get back into LEGO, and this time it would be trains.

A few more internet searches lead me to Brickshelf (although I'm all Flickr now) and then Bricklink and then eventually LDraw. I got back into building by trying to replicate Ben's engines and I bought the Super Chief and BNSF LEGO sets to acquaint myself with the new pieces that had been introduced since my exit back in 1991. My goal at the time was to someday have an L&N LEGO layout so my early MOCs were L&N engines. I believe my first really independent build (not a copy or mod) was an L&N Alco RS3. The build was pretty simple and very robust so it turned out to be a great engine to run under any condition of track. That RS3 had a pretty long life, although it has recently met the brick separator. A much more accurate L&N RS3 has taken its place on my roster now.

In 2007, I was allowed to join the Southern California LEGO Train Club and I finally had ever-changing layouts to run my trains on. My mostly L&N and CSX engine roster looked a bit out of place on our Southern California layouts so I slowly began building more of the local favorites, UP, BNSF, SP and SF. I had also gotten into rail photography, mostly as a form of research, and this introduced me to the latest and greatest in US rail technologies. Now I mostly build modern locomotives and equipment, but there's plenty of '40s to '70s equipment on my roster as well. I browse RailPictures.net daily to find inspiration as well, and more than a few times I've been captivated by a picture that eventually turns into a build.

The GTW GP38AC

Every year I try to build a different Bicentennial unit for the US Independence Day, July 4th. For the third year of this tradition I chose Grand Trunk Western's GP38AC #1776. The real life one is a great looking locomotive with its 'screaming eagle' paint scheme. Also, GTW is technically Canadian owned so that irony was not lost on me. My bicentennial units are usually popular at shows so it's nice if they are powered units, and that added points to the GP38AC as it could be easily powered by a 9v LEGO train motor. I try not to rely on stickers, preferring brick built designs as much as possible; this too made the GTW a good choice for building.



Here is an example of Norman's work in creating graphics for a train. Note how he separates the grilled bricks with tiles at the rear, and also uses brackets to mount small slopes.

PennLUG members Cale Leiphart, Michael MacLeod, Rob Bender, and Brian Brister at BrickMagic 2012.

PennLUG: Taking Layouts to New Levels

Article by Cale Leiphart
Photography provided by the LEGO Group

So who are these PennLUG guys and what is their deal with trains? The Pennsylvania LEGO Users Group was formed in 2005 by Mike Gibney and myself so that we would have a club in southeastern PA to call our own. In the 8 years since our first clandestine meeting, we've grown to be one of the most accomplished clubs in the eastern US, filled with a great group of very talented members who love sharing the LEGO hobby with each other. And I'm happy to say we do some pretty sweet train layouts. Now trains aren't the only thing we do. We have amazing builders in numerous themes. But our train layouts may be one of our most recognized facets and over the years we have developed our own style and have worked to push the train hobby forward.

Trains at a PennLUG roundhouse.

I was asked how we make such outstanding layouts, so I thought about it and came up with these rules of thumb:

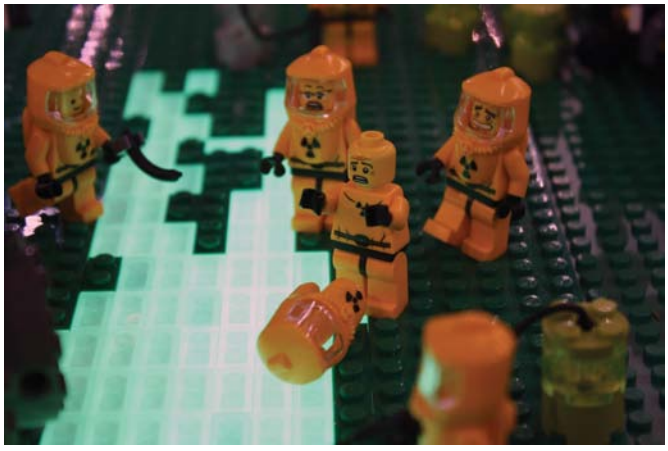
Work Together

To us our train layout is one large collaborative MOC. I'm sure you've seen club train layouts that look as if everyone is just doing their own thing—as you walk around, you will go from town to Space Police to Atlantis. You may also think to yourself, "Wait a minute: why is there a 1960s diesel train underwater?" These may all be great areas with gorgeous detail, but they end up feeling like a bunch of random dioramas loosely connected with some train track. They become an out of context mashup.

We don't want our layouts to look disjointed and random. All the MOCs that we put in our train layouts play off each other and contribute to the feeling that this little world we are trying to create makes sense. Sure, we can be a bit anachronistic with steam trains running through a modern downtown, and we're not above the odd B-movie Sci-Fi alien attack. But we work to blend everything together into something cohesive. We're not a bunch of builders with our own little fiefdoms. We're a club building one large collaborative MOC.

Cut the Clutter

Say no to the visual clutter or; quality over quantity. PennLUG layouts may look a little less populated and cleaner than some others you seen. There is always a tendency to just put out every minifig, fire truck, and train you have to show it all off. The problem is that you try to pack so much into a space that everything just starts looking chaotic and a mess. All the little cool stuff and details get



Spill!

One of the steam trains that usually are seen at a PennLUG layout.

The Monorail Transport System train.

Designing the LEGO® Monorail

Article and art by Joe Meno

One of the sets from the '80s that continues to strike a chord with LEGO fans is the LEGO® Monorail. Introduced in 1987, there were only three sets released: the Monorail Transport System, the Airport Shuttle (1990), and the Monorail Transport Base (1994). Two track sets were released in 1988 and 1991 to supplement the sets, but for such a limited range, the monorail has garnered a considerable number of fans.

One of the designers of the initial set spoke to *BrickJournal* about how the monorail was designed.

***BrickJournal:* How did you figure out the motor and gearing the track? That one idea makes the LEGO monorail genius, as it can go up a pretty good slope. This also makes the power needed to move the monorail considerably, as the wheels on the track bear the weight of the unit.**

Bjarne Tveskov: As I recall, the monorail system was already prototyped when I started working at the LEGO company in 1985. My boss Jens Nygaard Knudsen and the head of the LEGO City line Erling Didriksen were the driving forces behind the system as far as I know, working together with engineers to develop the monorail. The gearing mechanism together with the strong motor sourced from German company Bühler makes the train very strong, it fact it can go almost straight upwards if needed. As you mention, it's a very effective system, and quite economical in terms of battery usage.

What did you think about while deciding the overall look of the monorail set and cars? Did you design it as an alternate train idea, or a completely different transportation idea?

For the Space line, we really wanted it to feel 'futuristic'. We did a large number of different designs for trains, buildings and vehicles for the 6990 set. I really wish there were some images of all those prototypes, but sadly I don't think they exist any more. The final designs were a combination of some models built by Carsten Michaelsen and myself. We collaborated closely on fusing our designs, the train especially was a combo of two of our prototypes. The modular container system brought a lot of play value and as a added bonus made it easy to exchange the batteries. At the time it was a bit unusual to have two designers working together on the model design, but the set was rather special in itself; lots of new elements, new colors and part of the first wave of the 'Futuron' design style. When the set was tested with kids, the first thing they noticed was the new helmets with the transparent visors. This was a litte surprising (and funny!) since there were so many other new and innovative elements in the set, but I guess the kids already knew the 'old' Space minifigures very well from their own collection at home.

With the stantions, the monorail appears to have been designed to be an above ground level mobile system. Am I right?

Very much so, that's what really sets a monorail apart from a ordinary train is that it can go 'up in the air'. But for stability reasons and to optimize the play value, some of the set is at ground level. We did other designs where all or almost all of the track was suspended, but they turned out to be impractical. I also did a design where the train was hanging underneath the tracks; it was cool but very hard to build and almost impossible to play with!

Three monorail builders (Nathaniel Brill, Masao Hidaka, and Joe Meno) show off their models at Brickfair VA 2012

Building a Different LEGO Monorail

Articles and Photography by Joe Meno, Steven Walker, Masao Hidaka, and Nathaniel Brill

Art by Joe Meno

Since the LEGO Monorail was discontinued, there have been fans wanting its return. Monorail sets are now collector's items, and consequently, prices for those sets and monorail parts have skyrocketed.

Not surprisingly, many fans have appealed to the LEGO Group to bring back the old sets as they were. However, the company has been resistant to this idea, as this would require recreating molds and parts, which is an expensive process.

A small group of fans have gone another direction. Inspired by real-world monorails, they have begun to build custom monorails using currently available LEGO parts and motors. The implication is clear: A LEGO monorail can be made, using off-the-shelf parts, that has the potential to be more flexible than the previous sets. *BrickJournal* takes a look at current monorail efforts.

At BrickCon 2011, two different monorails were displayed.

Steven Walker: Disney-Inspired Building

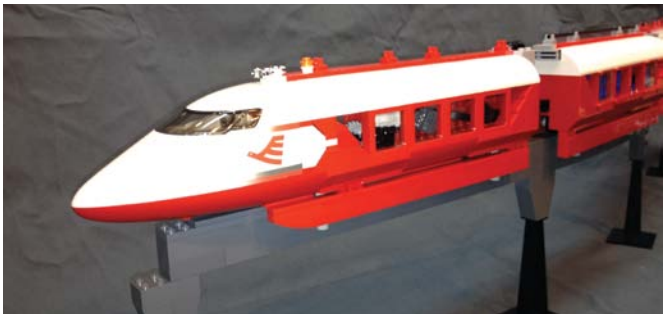
A monorail that has been seen at Seattle LEGO train layouts has been built by Steven Walker. Here, he talks about the beginnings of his train system.

As part of an overall build to include much of Disneyland, the Disney Monorail was a natural fit for both the display and to have at the various Puget Sound Lego Train Club displays. Having been a fan of Disney monorails for years, I started to build my variations in 2009.

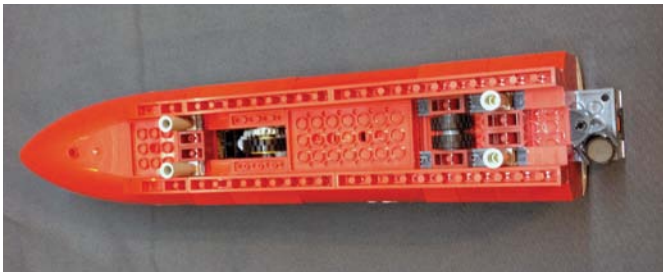
Knowing I was going to use the 8-wide airplane nose as the front and back, I started out looking at track and truck designs. Being slightly old-school in how I build, the only research I did was on prototypical designs for monorail. First was the track. I started with single-stud wide, thinking I could use the old 4.5 volt train rail for the top for traction and brick it to be 2 bricks tall. For the large 8-wide design, though, this was not strong enough. After a little bit of experimentation, I settled for a 2-wide beam at about 3 bricks in height. This proved strong enough for 40-stud spans and for the side torque through a corner.

Next up was the truck. Monorail Red has the third truck design and the first where the motorized truck would fit in the airplane body. This proved to be very slow and inefficient. The friction of the wheel in its fixed position in a corner would both drain a battery in 30 minutes, and after a couple of days shredded much of the tire tread. The area around the wheels after BrickCon 2010 was covered in little bits of rubber.

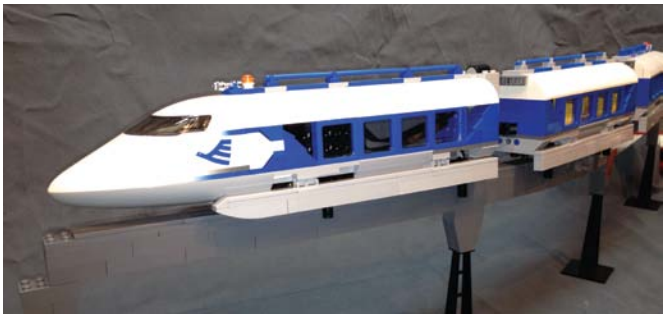
Monorail Blue is the 6th iteration of trucks, which ran during BrickCon 2011 and reverts back to previous versions of the drive wheel in a stationary location. This design has less drag than Monorail Red, but only slightly. It creeps through corners and does not provide much lateral support.



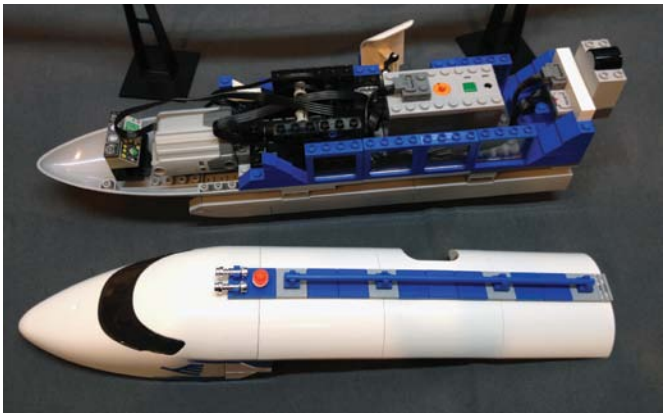
Monorail Red on display. The model has the distinctive window patterns of the Disney monorails.



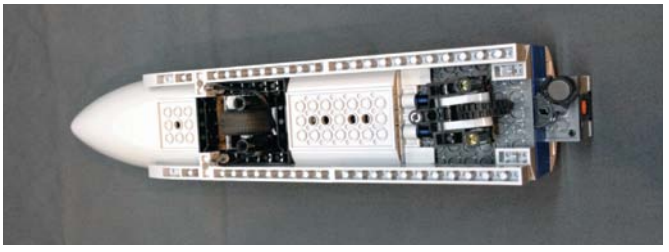
Monorail Red's bottom. The motorized truck is at the front, while the second truck keeps the train level. The axles extending outwards are rail guides.



Monorail Blue.

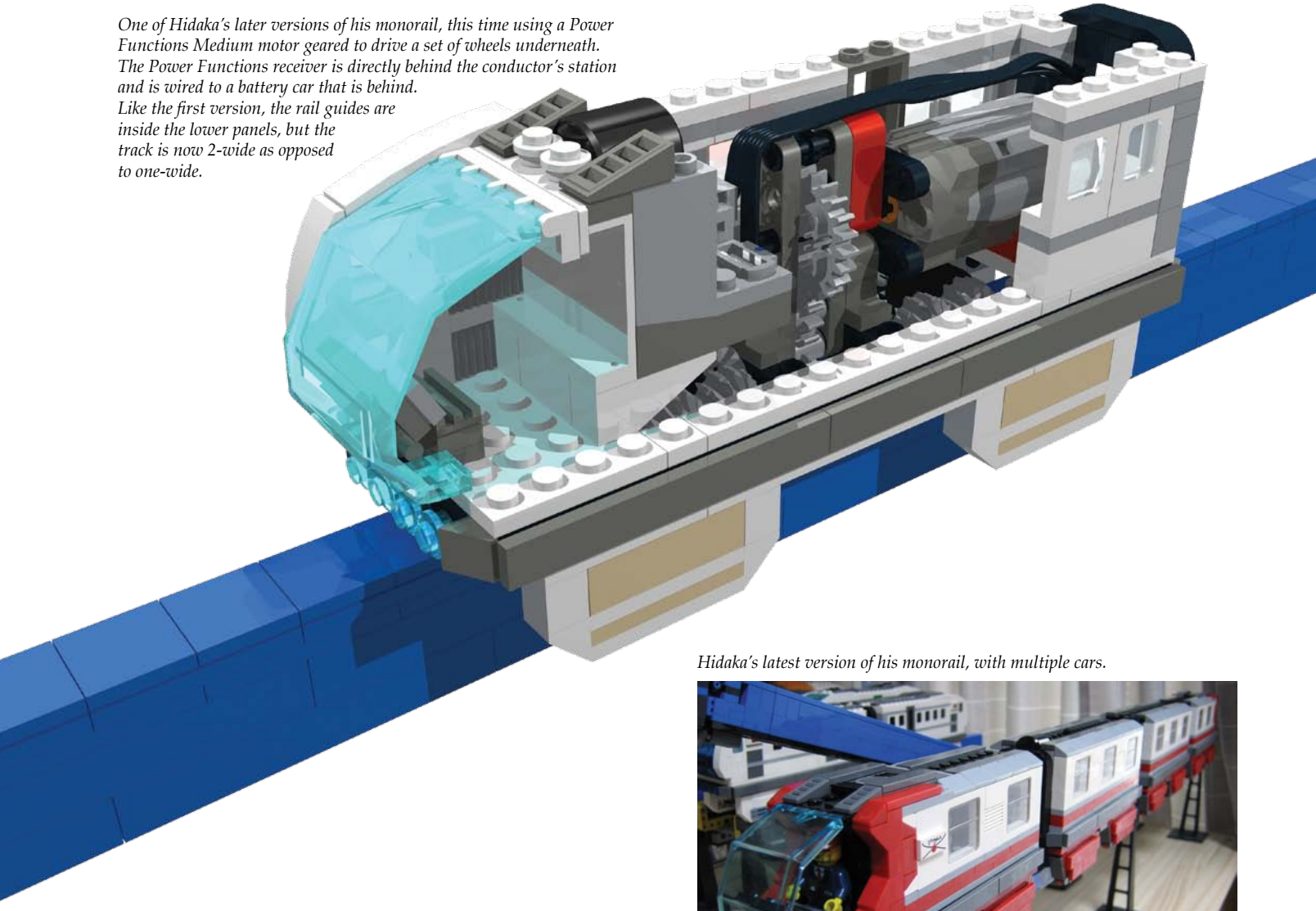


Monorail Blue's interior, showing the motor and battery within the body. The Power Functions receiver is at the rear of the model, making this a free-moving train.



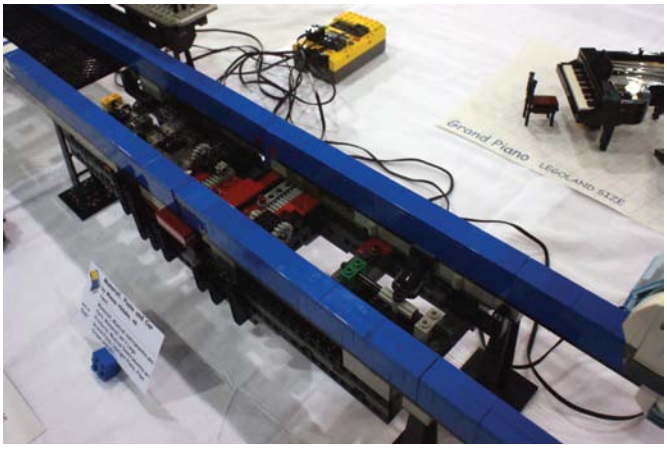
The bottom of Blue, showing the trucks, including the now movable rear truck.

One of Hidaka's later versions of his monorail, this time using a Power Functions Medium motor geared to drive a set of wheels underneath. The Power Functions receiver is directly behind the conductor's station and is wired to a battery car that is behind. Like the first version, the rail guides are inside the lower panels, but the track is now 2-wide as opposed to one-wide.



Hidaka's latest version of his monorail, with multiple cars.

As of 2012, Hidaka has developed switches using the MINDSTORMS RCX system, pneumatics pistons and also a double switch that can switch two trains to adjacent tracks. He is currently working on sloping tracks to change elevation. Other future plans include moving from RCX to MINDSTORMS NXT and using more than two motors on each train to allow more cars.



Monorail going up slope track.

Nathaniel Brill: Suspended Monorail Design

At BrickMagic 2012, there was a moonbase layout done by PennLUG. One element of the layout that got a lot of attention was a custom monorail built by Nathaniel Brill. Where other models had a train on a single rail, his was a suspended train. Here, he talks about his inspiration and building.

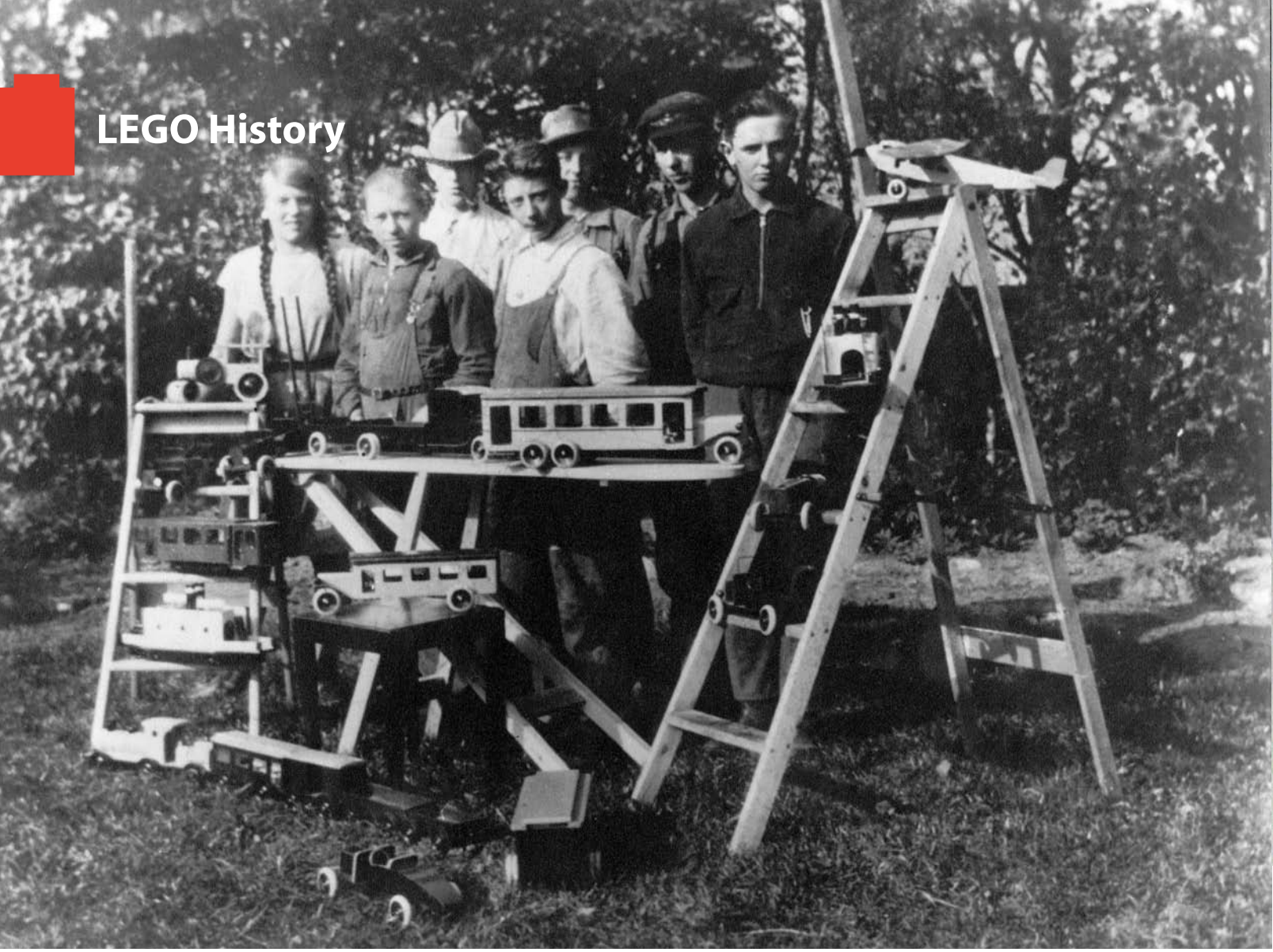
I've been interested in LEGO monorails since I got the Futuron monorail for Christmas 25 years ago. As a kid, I often built large space bases on the dining room table (when I could get away with it, at least) and I always tried to include a monorail. I've been a serious AFOL for about 5 years now, so I've had a lot of exposure to large space layouts featuring the monorail as well. I started out mostly building trains since I got back into LEGO, and when I've thought about monorail more recently, I've wanted to build something more detailed than the old airport shuttle; more in line with my steam locomotives. The stock LEGO monorail parts are not very accommodating for this, though, and the price of track has also prevented me from expanding my monorail collection from what I had as a kid, so I decided to look elsewhere.

I have some experience now working with Power Functions components, so I thought I would try to make my own monorail. I wasn't too familiar with what was out there until around 2011 when I started seriously thinking about it, but I was very impressed with others' efforts when I saw them. Still, I wanted to do something different. Actually, hearing Joe Meno talk about the issues with building a custom monorail setup got me thinking about the suspended design. A major problem with any locomotive design, in LEGO or in real life, is making sure there's enough power and weight on the driving wheels. Monorails riding on a thin rail also have to contend with balance and weight distribution issues. I figured a suspended monorail wouldn't have either of those problems because all of the weight could be put on the driving wheels, and the cars would be suspended under the track, and unable to slip off.

I finally decided on a suspended design when I saw this awesome MOC:

LEGO model by Captain Smog.

I said to myself, "That's amazing, but I bet it could be powered, and I also bet the old 4.5 volt train rails are the way to go for making track." From there, the construction was really straightforward. My first motorization idea worked well, and I haven't really changed it since then.



The very first LEGO product line from 1932. You can see a wooden train in the lower left corner.

A History of LEGO Trains

Article by Kristian Hauge of the LEGO Idea House

Photography provided by the LEGO Group

With a gap of just a few years, trains have been a permanent feature of the LEGO Group's product range right from the early 1930s up to the present day. The following is a short journey highlighting key milestones in the life of the LEGO train.

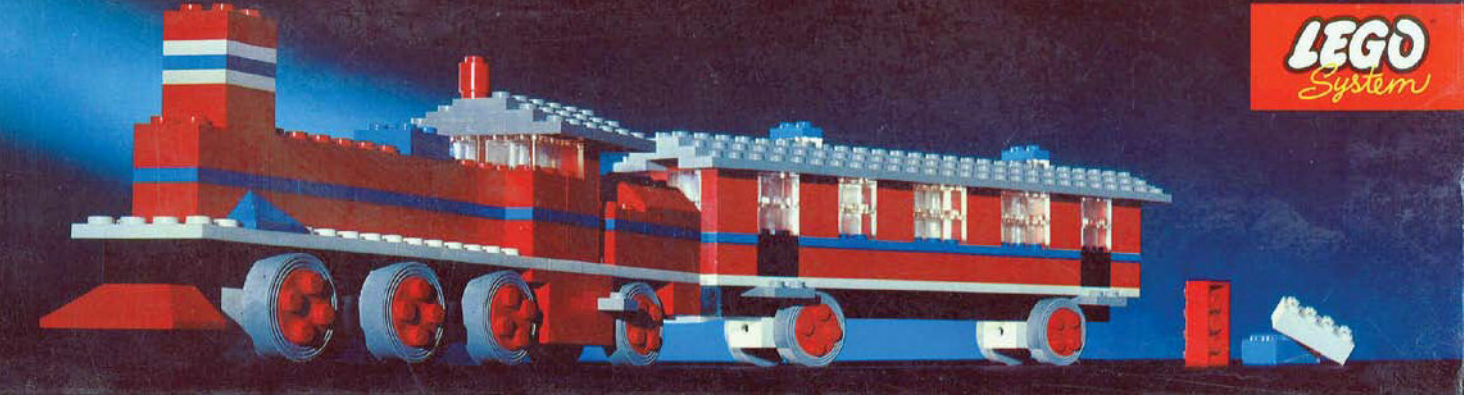
A Theme's Beginning

When Ole Kirk Kristiansen, the Billund carpenter, introduces his first selection of wooden toys in 1932, trains are among the new products. Up through the 1930s, 1940s and 1950s the LEGO Group produces everything from steam locomotives to the more modern express trains in wood.

In the late 1940s the LEGO Group begins adding plastic toys to its range of wooden toys. During the 1950s the company produces plastic cars, tractors and LEGO® bricks but – interestingly – no trains. These continue to be made only in wood.

In 1960 the LEGO Group stops making wooden toys after a fire in the woodworking factory – which also means the end of the line for production of wooden trains.

After an interval of four years, the company introduces its first plastic trains in 1964. The train is made of LEGO bricks, which – since their introduction in 1949 – have become increasingly popular up through the 1950s. The most important factor in the LEGO Group's launch of a train built of LEGO bricks is the introduction of the LEGO wheel in 1962. Introduction of this new component brings motion to the LEGO brick – and the opportunity to launch a train theme.



Set nb. 323 from 1964. This was the first plastic LEGO train made out of LEGO Bricks.

In 1969 a 12-volt motor comes on the LEGO market. Power is supplied to the train via the rails, which are connected to a transformer. A LEGO Group leaflet from 1969 describes the different versions of the train and the idea behind the various models: "**A train for every age group** – Children love to play with a LEGO train because they build it themselves. It begins with a push-along train. As the child grows, the battery motor can power the train – making it a wonderful toy for the older child. When the child wishes for an electric train, a power supply is available for ordinary LEGO rails. The battery motor can be changed to a 12-volt motor – and a transformer added. The same train follows the child up through the years, expanding its functions to suit the child's age and wishes – and nothing is thrown away."

Specializing the Range

In 1978 Kjeld Kirk Kristiansen, the present owner of the company, launched a new development model: "System within the system." The new development model splits products into product ranges and product lines, giving children the right toys for the right age and the right purpose.

The appearance of product lines also affected the train range. In 1980 a train product line comes to the market. It is launched with a bang – with 28 new LEGO sets during its first year.

Another change occurs in 1991, when the company introduces the 9-volt train – replacing the 4.5-v and 12-v models. The specialized train line remains in existence from 1980 to 2003, when trains first become part of the LEGO World City product line and then – from 2005 – the LEGO City product line. The first wireless battery train, controlled remotely, appears in 2006.

Set nb. 2700 from

A Brief History of the LEGO DUPLO® Train

The LEGO Group launched its pre-school product LEGO® DUPLO®, big bricks for small hands, in 1969. The first LEGO DUPLO train was launched in 1977 – a simple push-along model without rails. In 1983 the first LEGO DUPLO train appears on rails, and 10 years later the market sees the first electric-powered LEGO DUPLO train. This allows the youngest ones to enjoy the same train universe as older children.