ISSUE 14 - Winter 2014

RAILBRICKS™

BRICK RAILROADING MAGAZINE

Brick Fiesta 2013

A Look at the Texas LEGO® Fan Convention

The Challenger Challenge

PennLUG Builders Go Head to Head

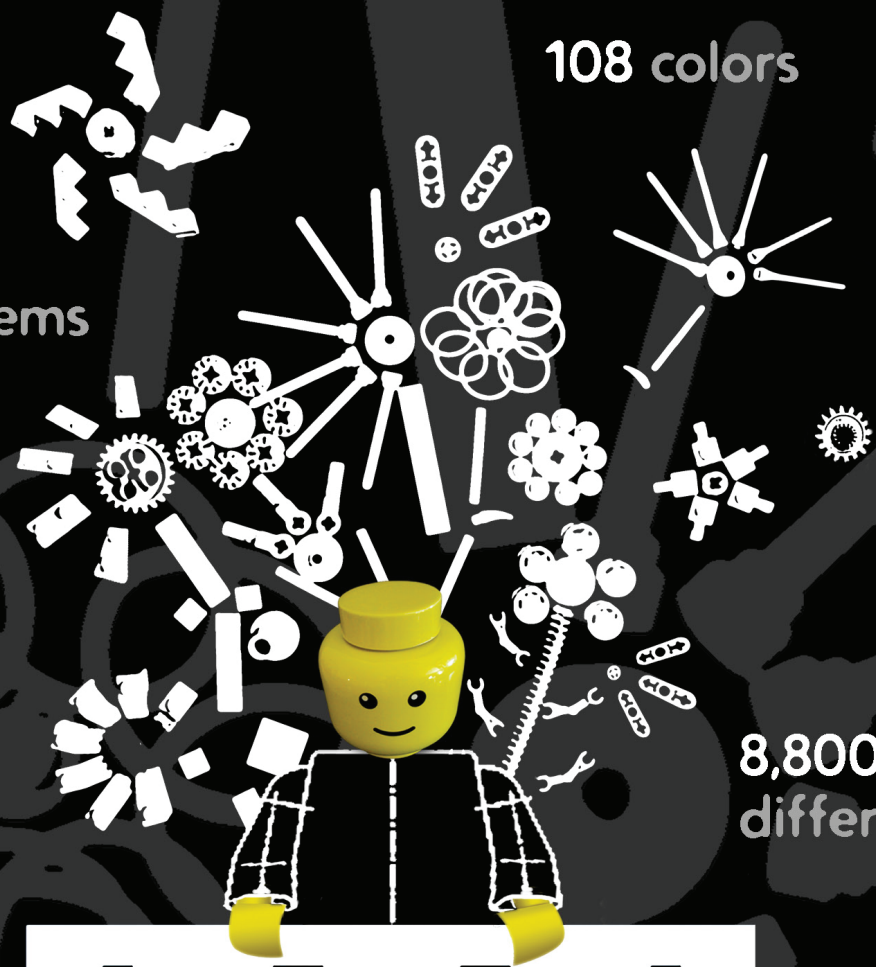
Look Inside for Tips, Tricks, Instructions and More!

BUILD

your dreams

108 colors

1,400,000 items



8,800
different parts

1001 BRICKS

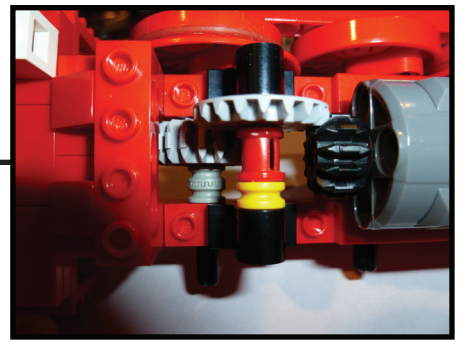
Widest choice • Cheapest airmail • No fees • Multi languages/currencies

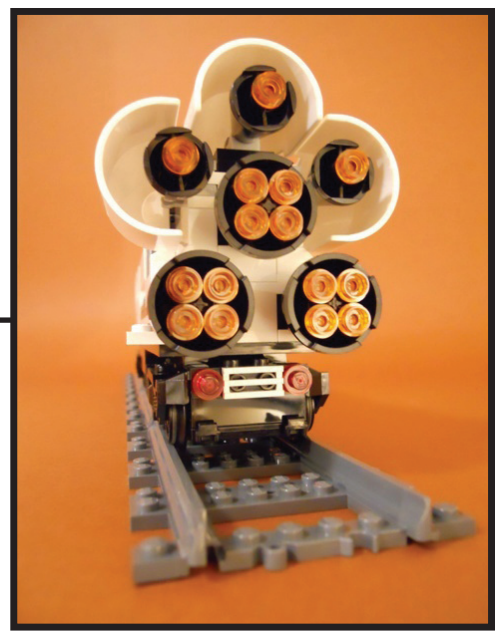
www.1001bricks.com

RAILBRICKS

ISSUE 14 - Winter 2014

In This Issue





The RAILBRICKS Team

Senior Editor:
Elroy Davis

Staff Editors and Writers:
Steve Barile
Benn Coifman
Tim David
Didier Enjary
Cale Leiphart
Larry Pieniazek
Colin Redner
Anthony Sava
Jordan Schwarz
Jeramy Spurgeon
David Stannard
Ronald Vallenduuk

Content Contributors:
Nathaniel Brill
Denis Huot
Falk Schultz
Primož Zupančič

Copy Editing/Proofing:
Steve Jackson

Cover Photo:
Nathaniel Brill

ALL ABOARD!

As winter comes to an end, those of us here in the northeastern United States are looking forward to warmer days, less snow, and more sunlight. As LEGO® fans, we also look forward to the start of AFOL convention season. With a number of different events to choose from, we plan our vacation days to be full of visits with old friends, study of MOCs not seen before, and planning of our own new builds.

For LEGO trains fans, 2014 promises to be a good year. In addition to the many opportunities to get together with other train fans, we can look forward to the release of new train-themed sets from the LEGO Group. New sets are always welcome news, as it shows that LEGO is continuing support of our community.

RAILBRICKS, too, has some fun planned for later in the year. Many of our volunteers will be attending conventions, displaying their creations throughout the country, and later this summer we'll be kicking off sometime special. We're keeping it under wraps for now, but keep an eye out for our next issue. We think you'll like what you'll See.

- Photo by Alfred Speredelozzi

Instructions, Challenges, and Tips & Tricks have been categorized into the following levels:

B Beginner

I Intermediate

A Advanced

Have an idea for RAILBRICKS?

Submit by May 26th, 2014 for inclusion in the next issue!

Who may submit an article?

You!

People submitting articles do not need to be professional level writers. RAILBRICKS is a magazine for fans, by fans. We welcome articles from enthusiasts who build, collect, and play with LEGO® trains.

What sort of articles may be submitted?

We welcome How-To articles, event reports, building instructions and more. if you're not sure if your article or story would be a good fit, email the idea to *editor@railbricks.com* for input.

How long should articles be?

In general, articles should be between 750 to 3,000 words in length, and include any photographs or images that will accompany the text. Longer articles may be published in parts in following issues.

How should articles be prepared?

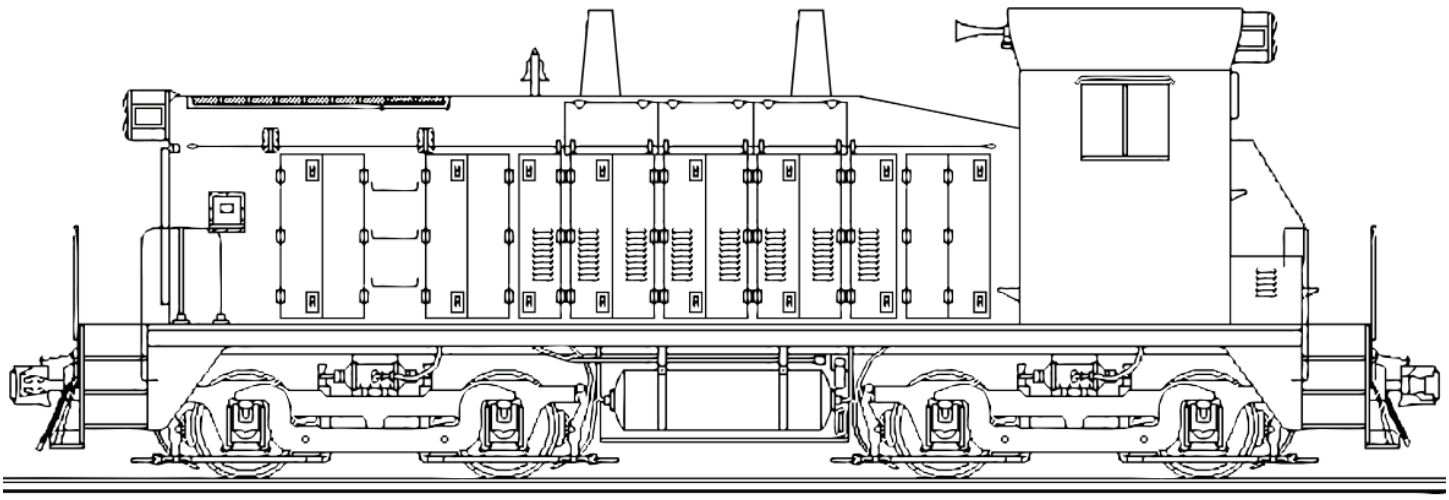
Articles should be typed in either a text document or e-mail, and should use proper grammar, punctuation, and spelling.

How should images be prepared?

Images should be submitted as separate attachments. High resolution images of 300 DPI are preferred as they will reproduce better than lower resolution images.

How are articles submitted?

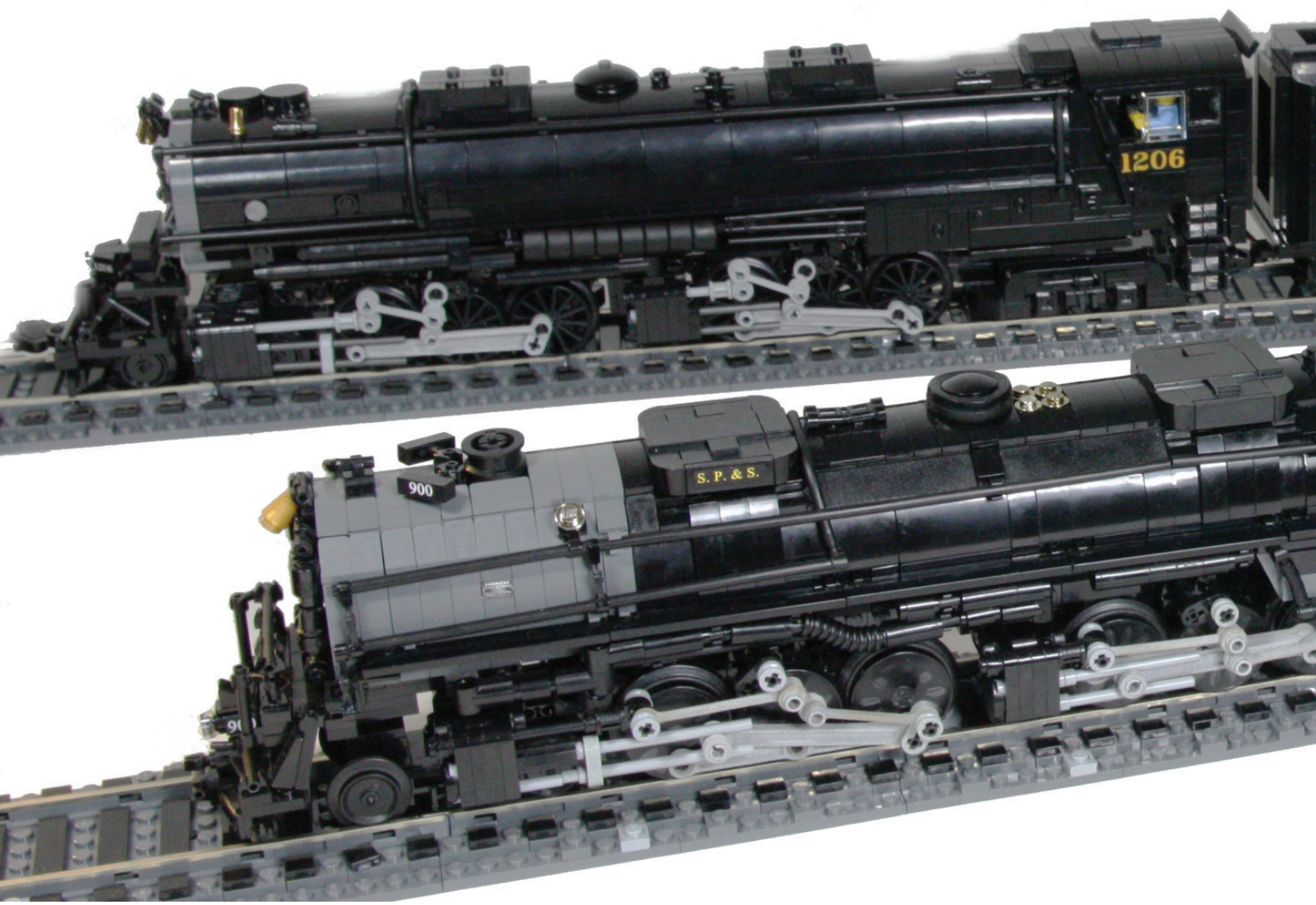
Completed articles may be e-mailed to *editor@railbricks.com*. The text of the article may either be in the body of the e-mail, or added as a file attachment.



RAILBRICKS

The Challenger Challenge

By Cale Leiphart and Nathaniel Brill



Introduction

By Nathaniel Brill

Since Cale helped found it nearly ten years ago, the Pennsylvania LEGO® Users' Group has tried not only to be a way for people to get together and talk LEGO, but also to provide opportunities for members to become better builders; to push each other to always try their hardest. We have all learned so much from each other over the years and had a good time doing it. That's what this article is really about.

Those of us who build train MOCs in PennLUG often work closely together on projects. We bring our works in progress to meetings, we collaborate online, we test at meetings and shows, and we improve our designs. This past year, however, Cale and I decided to try something different. Cale always has great ideas for future projects, and never enough time to tackle them all, but one thing I've really wanted to see him build is another large steam locomotive. He has talked for years about building a Challenger type locomotive, specifically one of the ones owned by the Western Maryland. I too had wanted to build a large steam locomotive and settled on another Challenger, from the Spokane, Portland and Seattle Railway, somewhat by accident. Once I decided on a Challenger, though, it seemed obvious how to convince Cale to build his as well - we would make it a contest. The Challenger Challenge was born.

There have been many train build contests over the years at conventions, among LUGs, and online, but most of these have focused solely on looks. People vote on

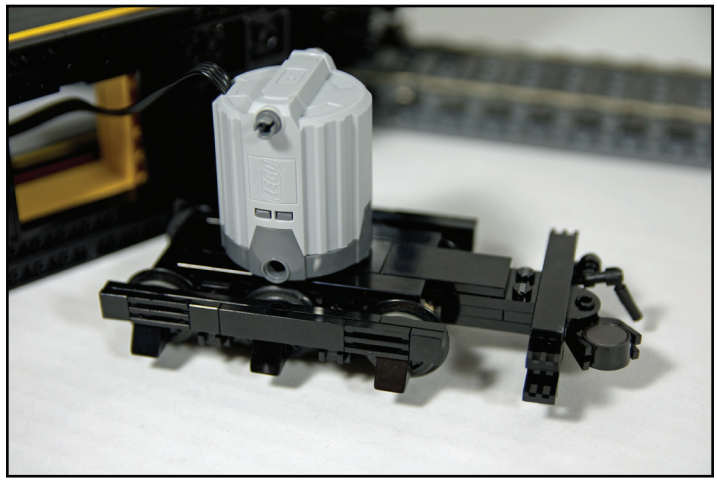
which engine they like the best. There's nothing wrong with that, I suppose, but locomotives, especially steam locomotives, were typically designed with function in mind over form. We wanted to make our contest more than just a beauty pageant. We wanted to put our Challengers through their paces. We each spent about four months working on our respective Challengers, and completed them in time for one of PennLUG's favorite shows, the Greenberg Toy and Train Show in York, PA. We decided to stage the Challenger Challenge there.

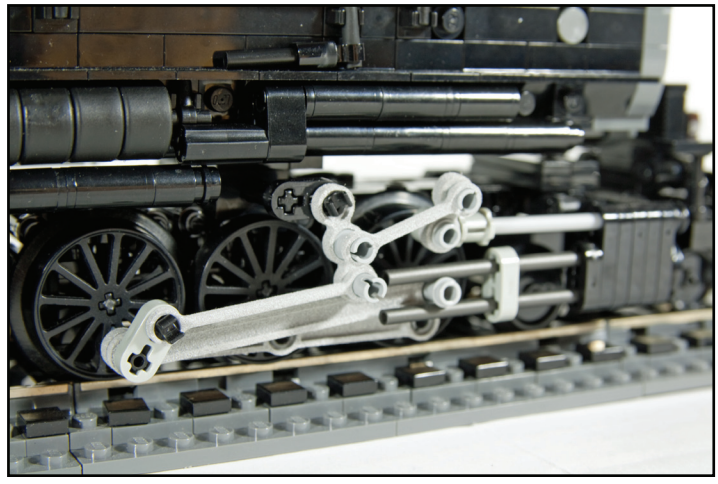
We agreed in advance on a series of tests for our engines, designed to assess every aspect of their running quality. First, we conducted a speed test with each engine required to complete three laps of our layout at top speed while pulling six pieces of rolling stock. My SP&S Challenger won this contest easily. I built it for speed, as I have detailed below, so I was pleased that it fulfilled its purpose on that front. Next, we conducted two tests of pulling power. First, we attached as many pieces of rolling stock as we could to each engine, to see who could pull more. Our pulling capacities were close, but Cale won this test. His slower-speed engine was better able to get traction and was less prone to taking off and leaving the train behind it. Second, we attached our locomotives tender to tender and did a tractor pull. Cale also won this event. Next we conducted a yard maneuverability test. Both locomotives were designed to navigate standard LEGO switches but of course, with the spotlights on, both managed to derail, and so we awarded no points there. The last running test was an efficiency/battery life test. Both our engines use Power Functions rechargeable batteries, so the ability to run for as long as possible is important. I managed to narrowly win this challenge, by running for 3 hours on a charge to Cale's 2 hours, 30 minutes. This result is somewhat complicated, though, for two reasons. First, I was running the whole time with two batteries, as I will detail below so, in a way, Cale's is the more efficient engine, needing only one battery. However, I also ran for 3 hours at nearly twice the speed, and so no doubt covered a much greater distance on my battery charge. We discussed it, and decided I had won.

Our mutual failure in the switching test left us tied 2-2 at this point. We decided it should come down to a vote, but not just any vote. At our February club meeting, we brought our engines, as well as photographs of the prototypes, and asked our members to vote on them based on which they felt was the better model. We discussed details and answered questions and, in the end, I narrowly won the vote and the Challenger Challenge. I am somewhat humbled that I can say I build at a level fit to compete with Cale, but winning really wasn't the point. Both of us got so much more out of this experience than a trophy. We pushed each other to build at our best, and we both improved our design and modeling skills in the process. That's what the Challenger Challenge was really about.

Western Maryland Railway Challenger

By Cale Leiphart





I'm a huge Western Maryland Railway fan. I have an affinity for local history from my home town of York, Pennsylvania and, as a train fan, I also have a keen interest in the railroads that served it. The Western Maryland was one of those. In addition to the local connection, I've long admired the railroad for the way it was run, and the pride the men of the Western Maryland took in their road. Many of my LEGO builds have been WM subjects. However, there is one I've wanted to do for several years but always seemed to put it off, one of the Western Maryland's Challenger type locomotives. It was the largest steam engine built for the Western Maryland and a symbol of their "Fast Freight Line" spirit. I wanted my model of this engine to be something truly special and a fitting tribute to what I think is one of the great railroads. For a long time, though, I guess I just didn't feel my building skill would do the engine justice. It wasn't until last fall my friend and fellow PennLUG train builder Nathaniel Brill, always wanting to push me to build my best, (but also probably growing tired of me talking about the engine) finally convinced me to build it.

Starting in 1940 the Western Maryland Railway purchased 12 Challenger type 4-6-6-4 steam locomotives from Baldwin Locomotive Works. The Western Maryland advertised itself as the "Fast Freight Line" so it's no surprise that they chose a fast, tall-drivered Challenger design when shopping for new motive power. Designated as class M-2, they were most often referred to as "the 1200's" by the men on the WM, referring to their road numbers (1201 to 1212).

While it could be argued that the speed of the Challenger type wasn't the best fit for the Western Maryland's mountainous grades, from their delivery until the arrival

of the WM's new 4-8-4's in 1947 the 1200's did exactly the job they were designed to do. Pulling trains from Hagerstown to Connellsville, Maryland and speeding up schedules on the "Fast Freight Line." With freight train speeds of 50 mph between Hagerstown and Cumberland, and 45 mph between Cumberland and Connellsville, the Challengers made their home on the WM, pulling heavy loads and doing it in a timely fashion. The 1200's also occasionally worked trains east of Hagerstown to Baltimore. However, due to the hilly and curving mainline, with speeds limited to 40 mph, they were not really at home there. After the arrival of the J class 4-8-4's in January 1947 the Challengers rarely ventured east of Cumberland.

One thing the Challengers did that cannot be disputed is to give the railroad proof it was in the fast freight business. Regardless of the limitations of the locomotives themselves, or their contribution to speeding up freight trains, salesmen had a locomotive with big drivers they could show customers. After all, every little boy at the time knew big drivers meant fast engines and the WM made full use of their new engines in publicity material for many years. In 1952 the WM published a booklet to help celebrate the 100th birthday of the railroad. The Challengers, along with their 4-8-4 Potomacs and new diesels, were all featured in the booklet. However, it was a builder's photo of Challenger 1203 spread across two pages in the top center of the booklet that was most prominent. Even with the decision already made to dieselize the railroad and Challenger 1209 being officially dropped from the roster in August 1952, just three months later, the Challenger was still a symbol of the Western Maryland's "Fast Freight Line." With the onset of dieselization on the Western Maryland, all the big Challengers were retired in 1953. Unfortunately none were preserved.

I have built big articulated engines before, both the Norfolk & Western's Y6b 2-8-8-2 and the B&O's legendary EM-1 2-8-8-4. They were quality builds for their time and both proved to be good runners thanks to their simple rugged drive. For my Challenger, I wanted to improve on the earlier locomotives dramatically and I had some specific goals for myself.

First was speed. My two previous articulated locomotives were great pullers but also quite slow. They both use a tender drive system with two XL Power Functions motors geared in a 1:1 ratio to the wheels. The WM Challenger, though, was a fast engine so I wanted more speed out of my model. I also wanted to retain the ironclad reliability of my previous engines, so I stayed with the two XL tender drive setup. Instead of 1:1 gearing, however, I went with a higher 1.667:1 ratio. This gave me a speed boost at a loss of some pulling power (though the engine is still quite strong) and a half hour less in battery life. I'm happy with the results though.

The cab front was also a big priority on my list. Both the WM and Nate's SP&S Challenger had a very distinctive forward sloping cab front. Though I had been dreading trying to build this part, Nate was adamant that it was a critical detail. I agreed. The two big challenges for this sloping front were to have a front window and a defined window frame, and also to minimize any gaps created by

the angle when mating to straight surfaces. Fortunately it was Nate who suggested the use of the classic 4x4 car sunroof part. We both used this piece but, owing to the difference in the engines we modeled, we both implemented them in different ways.

The boiler on a steam engine is always a hard build in LEGO. Fortunately, new parts and better techniques have advanced the state of the art quite a bit in the last few years. The boiler design on my Y6b and EM-1 was okay then, but for my new engine I wanted a big, fat and beautifully round boiler. Fortunately the newer curve slope parts are perfect for this sort of thing, and with a bit of snot work make for some excellent boilers.

Lastly, I wanted to punch up the detail on this engine and take it to 11. Using custom side rods and valve gear parts by Benn Coifman I was able to create some very convincing motion. Custom chrome gold parts from Chrome Block City made for a lovely bell and whistle. As much piping and greebles as I could stuff in were all carefully thought out and tested for clearances. I wanted this engine to be a showpiece.

It is my hope that that this model serves as a fitting tribute to one of the WM's greatest steam locomotives. I'm also very thankful to my friend Nate who pushed me to build it and has always encouraged me to improve on every new project I take on. He may have built the better engine this time, but that just gives me another goal post to shoot for, and that's fine with me.

Spokane, Portland and Seattle Railway Challenger

By Nathaniel Brill

One of the first AFOLs I ever met was Cale Leiphart. I built and showed my first locomotive MOC when I met him, a UP Big Boy. It was a big mess, but Cale was still enthusiastic to meet another person interested in making LEGO trains. I've kept at it for about 5 years now, and, in a way, this is the culmination of all the work I've done thus far.

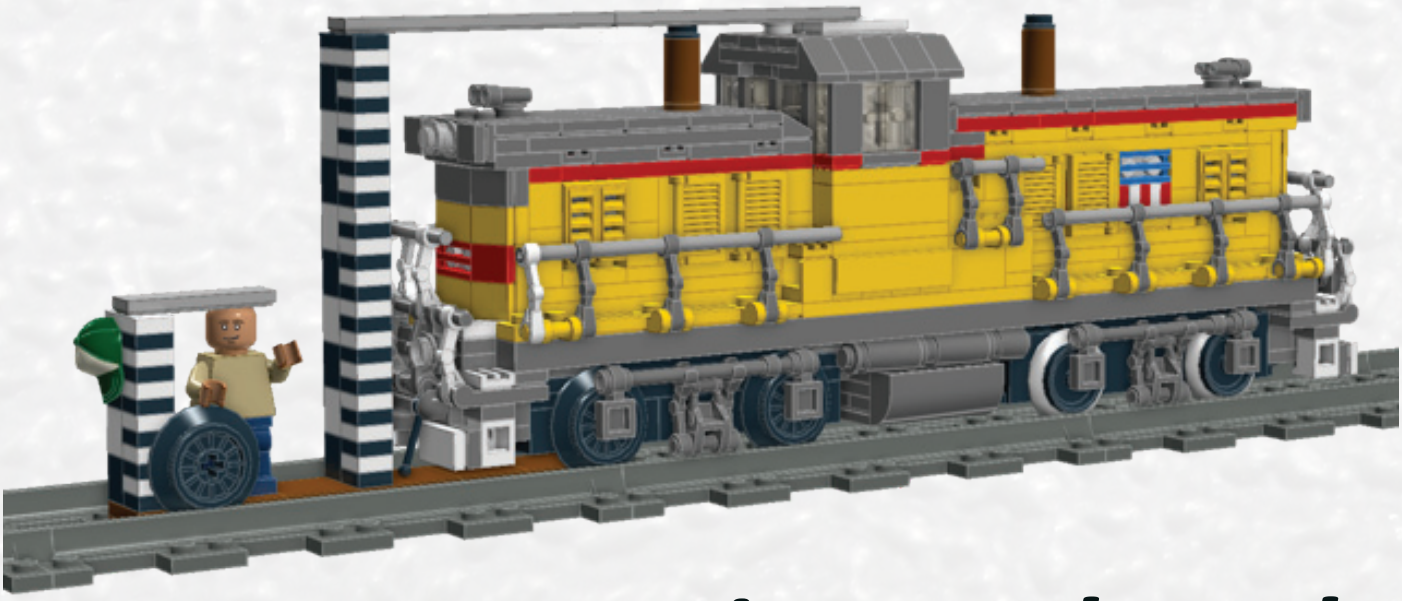
I chose to model the Spokane, Portland and Seattle Challenger mostly on looks, I admit. I am not, and probably never will be, as steeped in railroad history as Cale. All I knew was that I wanted to build a large, articulated steam locomotive, specifically one I thought I could make run well. Aesthetically, I especially like the pumps on the front of the boiler, the length of the engine, and the design of the tender. The model also gave me an opportunity to learn about the engine and the railroad, neither of which I knew anything about.

SP&S was owned by both the Great Northern and Northern Pacific Railroads at the time the Challengers were built. As such, most SP&S equipment was gotten secondhand. The eight Challengers were some of the few locomotives purchased new specifically for SP&S. The first six, designated type Z-6 and numbered 900-905, were built in 1937, featured an open cab, and originally

had the six-axle tender I used for my model. The last two, numbered 910 and 911, and designated Z-8, were built in 1944. These featured an enclosed cab, larger tenders, and slightly more pulling power. All were built by ALCO.

The challengers were SP&S's most powerful locomotives, and served their mainline freight service for about 20 years before being retired and later scrapped. None survive today. In fact, no Challenger types survive besides the two that UP have, although many railroads had Challengers in the 1930s and 40s. This is another reason I wanted to build the SP&S Challenger. There have been many UP Challengers in LEGO, but, as far as I have seen, no other railroads represented; although I'd be happy to be proven wrong there.

My model was a bit of an experiment in power, drawing on ideas from some other great builders, and everything I've learned about PF over the years. It features four PF large motors in the boiler, two driving each set of drivers. This layout was borrowed mainly from Jay Steinhurst's amazing Big Boy. The one difference was that four Ls is a bit much for one battery and IR receiver, so I have two and two. This was first done, as far as I know, by Scott Wardlaw on, you guessed it, a UP Challenger, but with XL motors. My four L motors are geared up for extra speed. Flat out this is about the fastest locomotive I have built, and it can pull a decent train at speed. Additionally, it features standard LEGO train drivers with applied Boxpok decals that I made myself, with custom side rods by Benn Coifman.



On Trains and Scale

by Falk Schultz

Many articles have been written about LEGO® train scales, and discussions about the "ideal scale" are probably as old as the first train model. I don't want to pour oil on the fire of the scale debate. The following are some thoughts aimed at objectively avoiding pitfalls with the tradeoffs that each scale inevitably implies.

LEGO's minifig is what brings most of our models and layouts to life, so let's put it at the center of our considerations, and shed some light on the so called "minifig-scale."

Look at the picture above. A minifig is 12 plates (4 bricks) tall - without a cap, that is. To determine its scale, we need a reference in the real world. As the Minifig was born in Billund, let's look at Denmark. According to Wikipedia, the average Danish male is 6 feet 0 inches tall, leading to the "Minifig-scale" of 12 / 6 = 2 plates per foot.

Now, what does that mean for train MOCs? Again, that depends on the prototype.

A modern North American diesel locomotive is about 10 feet wide. Based on the above Minifig scale, a MOC of such a loco would be 10 * 2 = 20 plates wide, or 8 studs (20 / 2.5 plates per stud = 8). In other words, if you're planning to build that type of engine, 8-wide is the mathematically correct width if "Minifig-scale" is your goal.

How come all those 6 or 7-wide models actually look right with minifigs, though they are mathematically too small? Let's examine the 6-wide MOC above to see what happens.

The prototype, a 2GS14B switcher, is roughly 10 feet wide, 49 feet long and 15 feet high. The model is 6 studs wide, 32 studs long and 9 2/3 bricks high. Let's check the scale:

- Width: (6 * 2.5) / 10 = 1.25 plates per foot.
- Length: (32 * 2.5) / 49 = 1.63 plates per foot
- Height: (9 2/3 * 3) / 15 = 1.93 plates per foot

In other words, the model is built in different scales along its dimensions. The scale used for its height is close to 2 plates per foot, and therefore the height wouldn't change much if one were to rebuild the model in 8-wide instead of 6. What's even more important: those parts of the loco critical to accommodating a minifig (cab and

handrail heights) are built very close to the minifig scale and thereby make it look right in this regard. The other, less critical elements are not, reducing the size and saving on weight and money. This is what is sometimes referred to as "selective compression." The same applies to 7-wide models, though to a lesser extent, as a 7-wide diesel is, per se, closer to the minifig scale than a 6-wide).

Next: wheels. The diameter of today's standard train wheels is around 40 inches (3.33 feet). In minifig scale, we would expect such a wheel to be 3.33 * 2 = 6.66 plates in diameter. As it turns out, the real LEGO train wheel's diameter is only 5+ plates. What's the consequence? Purely in terms of scale, this means the LEGO wheels are too small for 7 and 8-wide engines, but match fine with 6-wide diesels.

Is this our impression when watching models of these scales? Not really. Actually, it appears to be the other way around; the wheel size looks just right for 7 and even 8-wide diesels, while 6-wide ones seem to suffer from what is often called the "big foot syndrome".

The reason for this appearance is the flange of the wheel. Compared to real train wheels, the LEGO wheels have huge flanges, which not only require a more spacious driving gear, but also make a wheel look bigger as a whole.

Last, but not least, let's take a look at the track gauge. The standard gauge is 1,435mm (4 ft. 8.5 in). With the minifig scale applied, we'd expect a 3 ¾-stud gauge, but the venerable "L-gauge" is around 5 studs instead. The track is therefore suitable for 10-wide diesels, but is way out of scale for 6, 7 and even 8 wide engines. Train trucks are almost as wide as the vehicle's base frame that they are attached to, leaving no room left and right for wheel suspensions, springs, journal boxes, brake cylinders, etc...

So, what's the bottom line? There are three.

First, always be aware that the scales and form factors of the minifig, LEGO gauge and train wheels don't match. Whatever the width of your model might be, you'll have to deal with tradeoffs to handle this inconsistency.

Second: If you want to build diesels in the mathematical minifig-scale, 8-wide is your choice. This will also mitigate the L-gauge mismatch to a certain degree, as the frames of the vehicles become wider.

Third: If you decide to build 6 or 7-wide engines, the drawback is that what you save in size and weight you'll have to invest in design effort to have your models still look right with minifigs, and you'll need to deal with the wheel size and gauge.

The key to achieving this is simple: A model doesn't necessarily have to BE perfect with regards to scale; it just needs to LOOK perfect. The human eye is not a camera lens. It can be fooled. Proportions are more important than a consistent scale.

Here are some tricks:

- Horizontal stripes or structural elements tend to visually stretch a model. Stark contrasts between bright and dark colored sections will intensify this effect, as the human eye will focus on the bright part.
- Diagonal stripes will guide the eye to their ends, not letting them rest on details in between
- Eye-catching details do exactly that! Make sure to get them modeled right and use them to distract a viewer from other parts.
- Structural elements like cabs, windows and such that allow a viewer an immediate size comparison are most critical for the first impression being "good" or "wrong".
- For 6-wide models, original train base plates, being hollow, are quite helpful to keep the undercarriage low, reducing the big foot effect.

I'm sure there are many more tricks out there waiting to be discovered. Leg godt - play well!

Brick Fiesta 2013 Show Report

- By Jordan Schwarz

Maybe it's an indication that I'm getting old...

I can remember a time when I carefully arranged my schedule to make a special trip to the LEGO® convention - yes, the LEGO convention - one of only one or two in the United States back in those days. That was back in the era of BrickFest™, LUGNET™, the old dark grey switchover, and 9V Trains.

How times have changed! In this modern era, LEGO conventions abound, and the question is no longer whether to go to the LEGO convention but rather which to attend. If one so chooses, it is possible to attend a different convention nearly every month. These conventions follow a formula of sorts: a period of a few days for adult fans of LEGO to convene and set up displays, followed by a weekend of near-chaos known as the "Public Exhibition," when the show gates open to the general public and these conventions see many hundreds, if not thousands, of visitors.

Although LEGO conventions bear similarity in certain regards, there is also a quality of uniqueness, owing to the specific geographic location, fan base, and the desires of the convention organizers. I had the opportunity to attend Brick Fiesta, a relatively new convention hosted by AFOLs of Texas. True to form, it has the classic hallmarks of a LEGO convention but also brings a distinct Lone Star flair.

Brick Fiesta is a modestly sized fan convention which rotates each year to a different city in Texas. This year's location was the Dallas metro area - more specifically, Mesquite, Texas, known as the "Rodeo Capital of Texas." In fact, the convention center and hotel were immediately adjacent to the rodeo arena, and during the day it was

possible to look a few yards from the convention entrance and see cowboys warming up their horses and practicing for the Saturday evening rodeo.

Brick Fiesta opened on Thursday, July 4 for set-up and opening ceremonies and continued through Sunday, July 7. Saturday and Sunday were public exhibition days. Displays and exhibits filled up a good-sized indoor convention center, and meeting space spilled over into an adjacent ballroom. As indicated from name badges, most attendees were from Texas, but given the size of the state, many still traveled long distances to attend.

Somewhat uniquely, Brick Fiesta travels to different cities. Previous conventions took place in Houston and Austin, and next year will be in San Antonio. In this way, the convention offers equitable treatment of LEGO fans throughout the state, in an area where driving distances between major cities can be hundreds of miles. The convention is run by volunteers from TexLUG, and the leadership roles rotate each year. In this way, the convention is continually infused with new energy (helping to stave off organizer fatigue); although the change of location means that each year presents new planning challenges. The convention is not run on a professional basis; that is to say, organizers do not earn a salary; rather, all proceeds from the event are donated to a local literacy charity.

The Mesquite Hampton Inn & Suites was a great place for Brick Fiesta guests to stay. The family-friendly hotel offered plenty of space and an included breakfast. It was a short distance from several restaurants and connected directly with the convention center. Area restaurants included the Texas staple Whataburger® (known for its restaurants in signature orange-and-white A-frame buildings) and several places to enjoy authentic Texas barbecue beef brisket and pork ribs.

Kevin Hinkle attended the convention on behalf of the LEGO Community & Engagement Committee and presented an update from the LEGO community team. A Legends of Chima™ booth was also on hand, and young visitors to the show could race "Speedorz" on a course similar to Skeeball in order to win prizes. The LEGO company presence was light at Brick Fiesta, a topic that Kevin provided some comment on. Essentially, the LEGO Group tries to provide equal treatment of the dozen or so LEGO conventions in North America each year, and the resources of the LEGO community team are distributed as equitably as possible. As the number of fan conventions has increased, resources have become stretched. In one example, the number of conventions outnumbers LEGO Exclusive flagship sets, so not all conventions see the unveiling of a new flagship set. LEGO store discounts for convention attendees have

been rolled back, too. However, the LEGO Group does try to have a presence at each convention. Kevin Hinkle was on hand for much of Brick Fiesta, mingling with fans and fielding questions (no doubt, about when 9V and monorail would be making their return).

Brick Fiesta saw only a few displays related to trains, but these were impressive. RAILBRICKS' own Tony Sava was on hand with his rendition of the Texas State Railroad museum complex and his complete line-up of locomotives from the TSRR and other roads. Tony is widely known for his beautiful trains, but at Brick Fiesta he showed that he builds amazing layouts and scenery as well. The T.S.R.R. depot and grounds were rendered in stunning realism. Next to Tony's layout, aspiring train builder David Hawkins, having recently emerged from his dark ages, put together a layout of "Steamwood Falls," a mining town. In this layout, trains climbed grades, crossing over beautifully sculpted terrain. The focal point of this layout was the hilltop mine.

TexLUG also brought a town-train layout with a variety of impressive structures, many award-winning veterans of previous Brick Fiesta conventions, including Kurt Baty's fire house and his Grecian temple "Tholos at LEGOpolis."

The TexLUG layout featured an unusual train of sorts, a roller coaster made from RC flex track, built by Chris MacDougald. The flex track is able to accommodate changes in grade and can be bent to form banked turns, making it ideal for a coaster. When tested, the LEGO version functioned just like the real thing, with a tractor hill pulling cars up to the top which then made their way down the steep slopes and banks. The roller coaster was a real crowd pleaser, although the crowd was excited less by normal operations and more by the occasional tendency of the cars to fly off the tracks. According to Chris, there is no fixed formula for the design of the roller coaster. He shows up at conventions with plastic tubs full of parts and gets to work designing a new coaster – from scratch. For him, that's half the fun, and the other half is watching the kids enjoy the coaster.

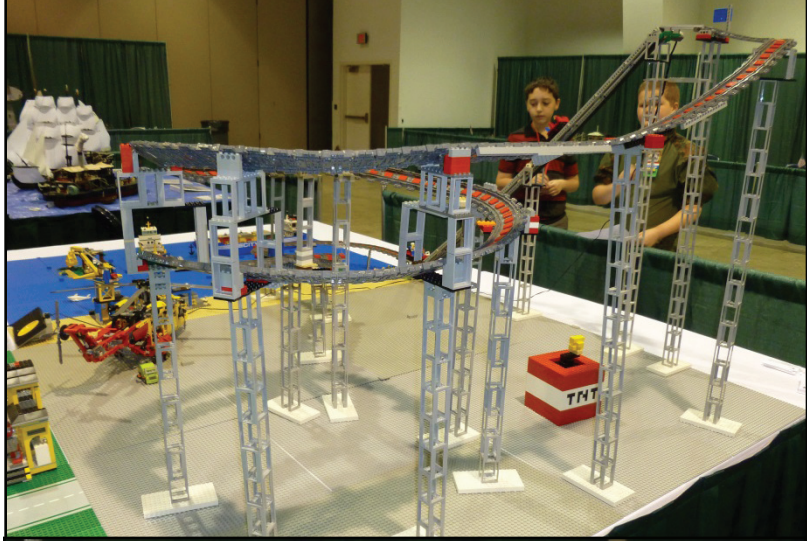
Of course, there was more to see at Brick Fiesta than just trains. The richly detailed Kirby Building featured a street in front with scale renditions of trucks and streetcars. Tony Sava, though known for his trains, also displayed his magnificent Cathedral of St. Francis of Assisi. Builder Nick Chan created several ultra-realistic models related to the Space Shuttle, including a complete representation of NASA's Launch Pad 39A complex.

Space and military models were present in large numbers, including the SHIP Normandy and a military diorama of the Eastern Front during World War II. Vendor Brickmania brought a gigantic, highly detailed scene of the Battle of

Peleliu, including massive models of amphibious assault ships, landing craft, swimming tanks, and US Navy and Japanese aircraft.

Finally, Railbricks readers may be interested to know that your author was the keynote speaker at Brick Fiesta. The first subject of my talk was an overview of RAILBRICKS and its history. I was impressed that many members of the audience read RAILBRICKS or were familiar with it. Throughout the convention, I received lots of positive feedback on the magazine. Thanks for the feedback, and we'll try to keep up the good work!

Brick Fiesta 2013 has drawn to a close, but the convention will return for 2014 in San Antonio. Stay tuned for more from the convention organizers as the next one approaches.



Gearing Up For Success:

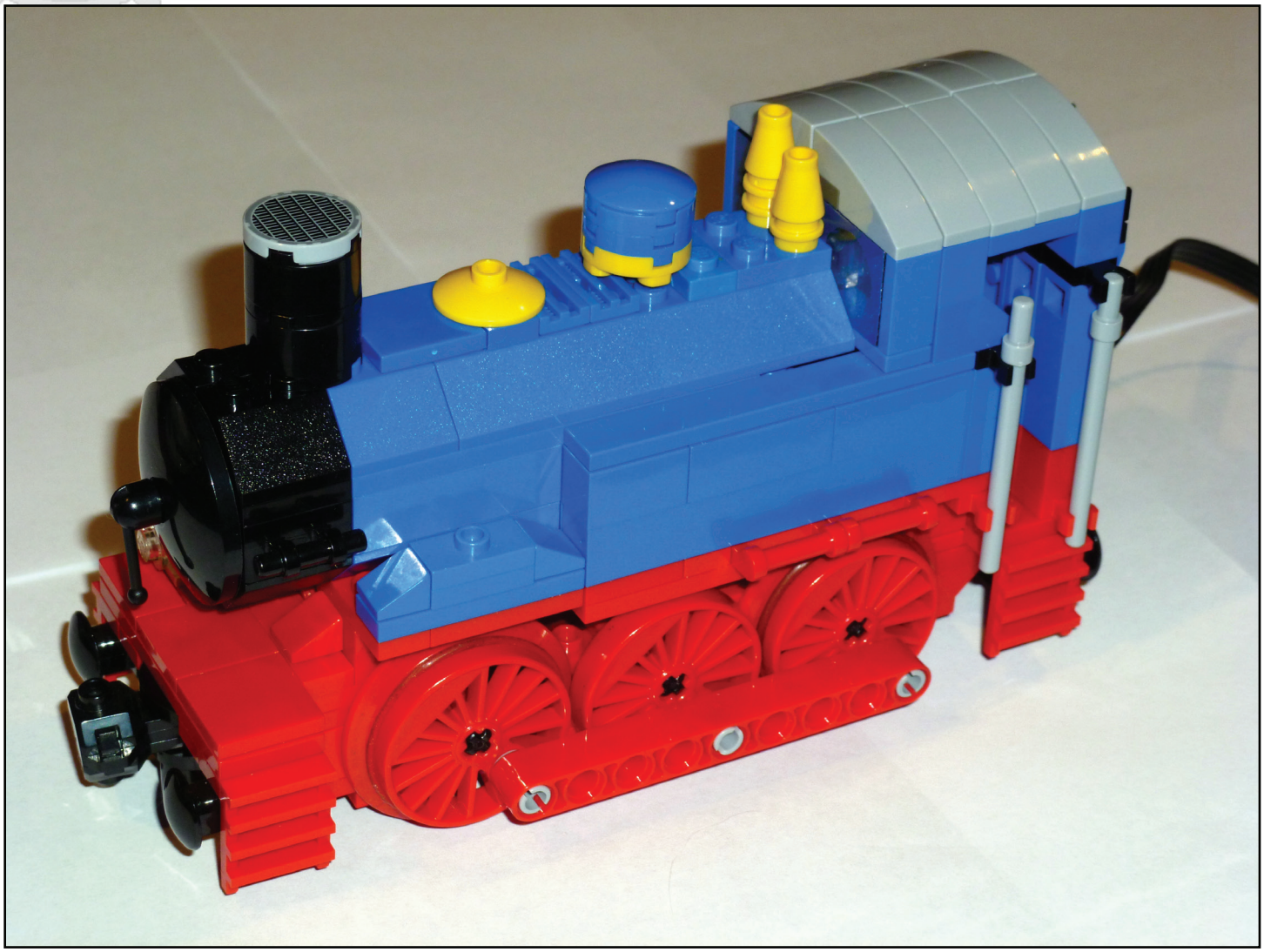
A Train Model Revisited

By Jordan Schwarz

LEGO® steam engines sometimes rival Technic creations in terms of mechanical complexity! When designing a new steam locomotive, it is often best to lay out the difficult mechanical aspects first – the wheels, connecting rods, and motor system. Once the running gear has been designed, the aesthetic portion of the locomotive can easily be added.

The design of running gear is a tricky process. As a case study, consider a familiar blue tank engine that I designed. Its 0-6-0 wheel layout is among the simplest locomotive type, and yet the mechanical aspects took me several design iterations.

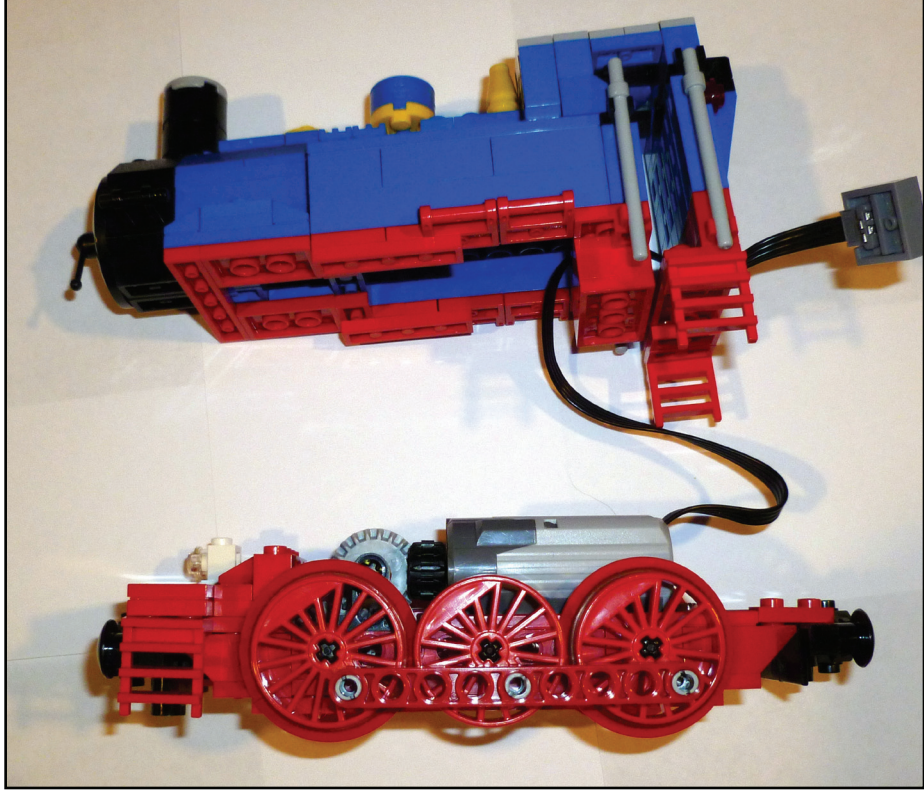
I laid out the blue engine using the modular drivetrain approach. The drivetrain is basically a separate model. The top half, comprising the boiler and cab, is a shell which sits on top of the drivetrain frame. Within seconds, the boiler and cab can be removed, allowing access to the



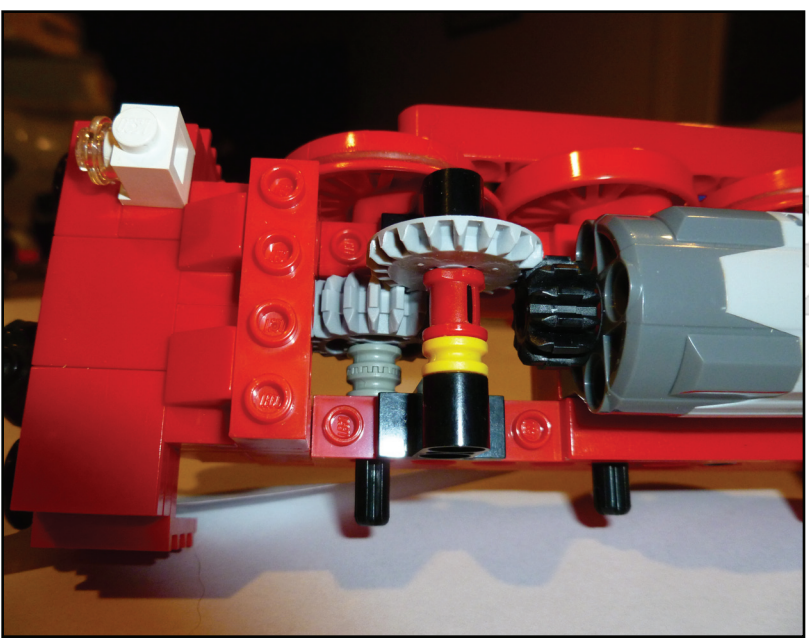
Power Functions medium motor and gear reduction. This designed modularity also permits the same engine frame to be used as the basis for other 0-6-0 locomotive designs.

The battery box and IR receiver are carried in a 2-axle boxcar behind the locomotive, not unlike the layout used by some of the 4.5V trains of the 1980s.

For this locomotive, the building technique is basic; there is little SNOT-work. My intent was to create a solid, robust locomotive that could be played with and picked up without breaking. While I like to create SNOT-ted boilers using cheese wedges, these tend to be more fragile.



This locomotive is 6-wide, so there is scant room for the internal mechanical components. The locomotive is driven by a Power Functions medium motor, but some gear reduction is required to transfer power to the drive axle. Due to space constraints, the gear drive must be no more than 2 studs wide and only 3-4 studs long. Originally, the blue engine was designed for a standard worm gear drive mechanism. This provided high torque but very low speed; in practice, the engine was too slow to be practical. Worm drives are also notorious for causing excessive wear of gear teeth due to high tooth loads. Plastic “dust” can sometimes be seen in worm gear drives after a few hours of hard running.



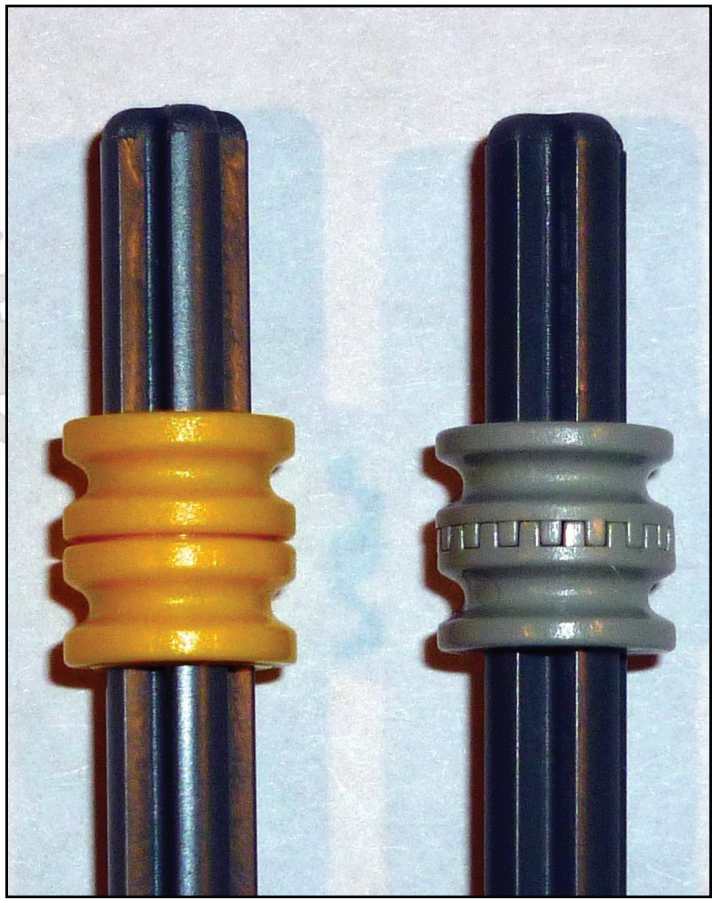
With the weaknesses of worm gear reduction evident, I looked for another compact gear reduction scheme. I explored several kinds of bevel and crown gears, looking for something that would provide the right gear ratio while meeting space constraints. After some experimentation, I found a combination that would work.

The solution used a series of bevel gears. The first pair meshed at a right angle and provided an increase in torque (but at a less aggressive gear ratio than the worm drive). The second gear pair provided no reduction, serving only to transfer the power to the engine's drive axle.

Note the two grey Technic half-bushings visible on the drive axle. These were not present in my original design, which caused a problem: when running under load, the grey bevel gear would shift on its axle, causing it to stop engaging the other gear. A bushing was needed to keep the gear from sliding.

The bushing is made from some “vintage” Technic parts. Because of the way the gears meshed, there was a small offset between the bevel half gear (on the intermediate axle) and the bevel full gear (on the drive axle). Although this offset was slight, it meant that a standard Technic bushing was too thick to fit.

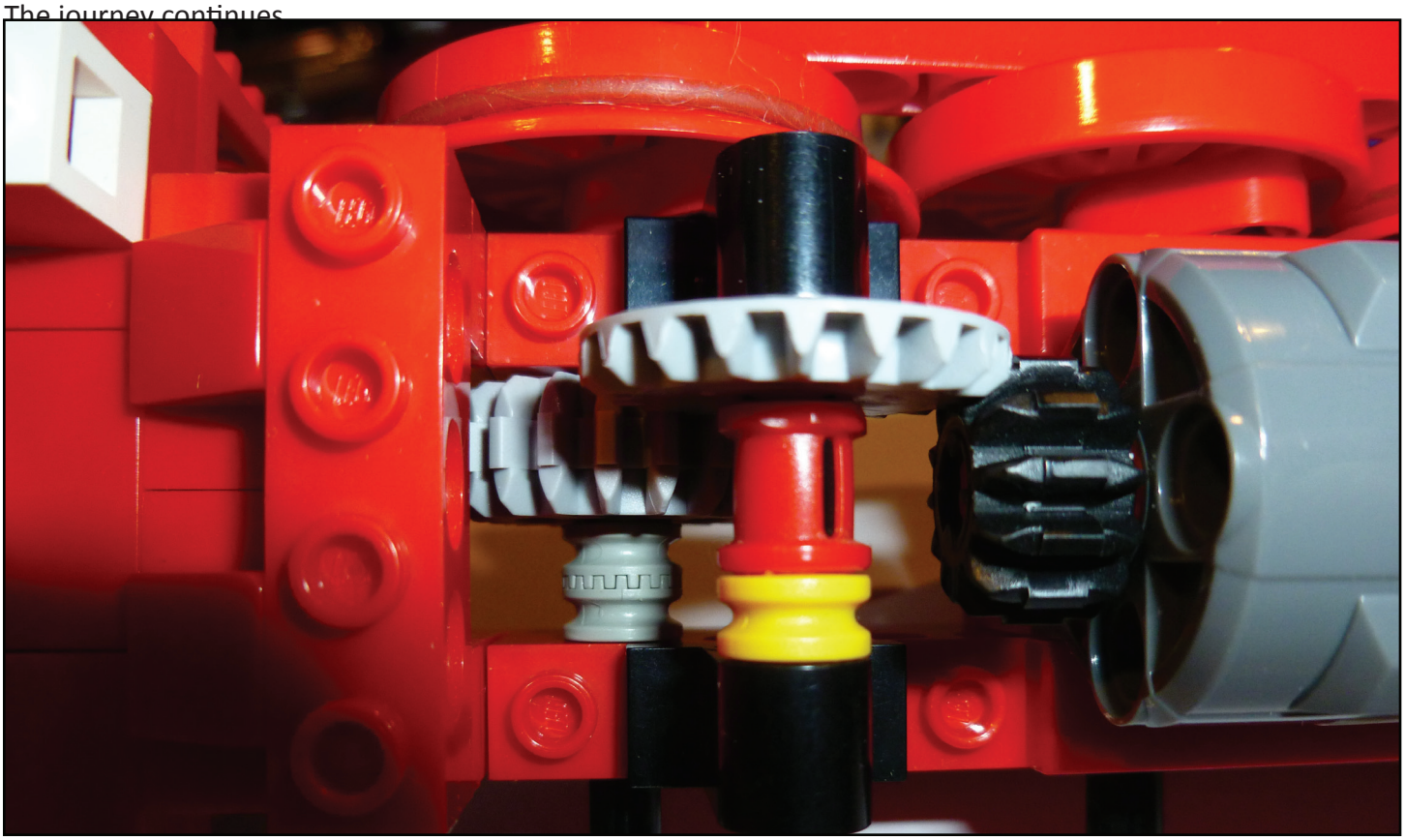
Back in the 1980s, Technic half-bushings had splines which allowed them to interlock with one another. When stacked, two of these splined bushings were slightly shorter than a stack of modern Technic half-bushings. This produced a bushing of just the right thickness.



This case study provides a cautionary reminder: even when the running gear is laid out in a way that *should* work, sometimes it doesn't. New designs have to be put to the test (sometimes over a long period of time), and design can often be an iterative process.

In the LEGO medium, a model is never truly finished. There is always room for incremental improvement and redesign. A model grows in sophistication as the skill of its creator advance and as new elements and colors are made available. This means that even "finished" models can be returned to later, with a refined perspective, and can be reworked for even more realism and better function.

The blue engine has been reworked, and its new gear mechanism is thus far working well in practice. The engine runs reliably and at a realistic speed. I am happy with the results – for now. One day, you might see another article, describing yet another redesign of this engine. The journey continues.

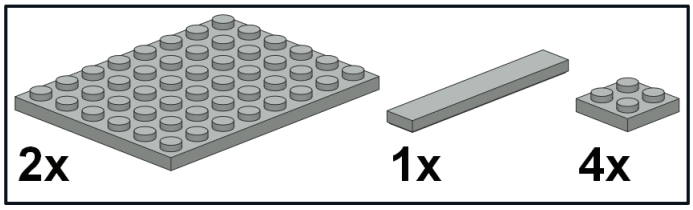


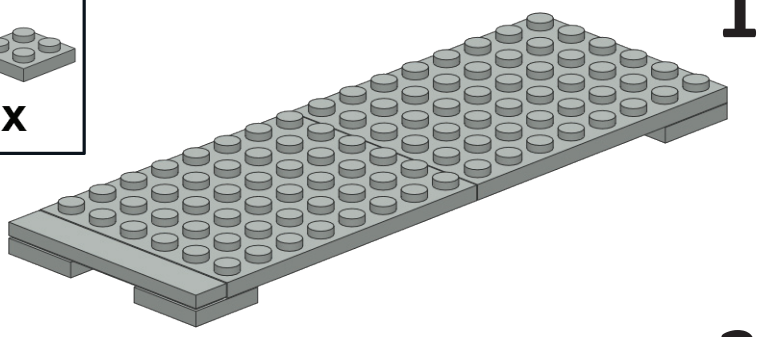
Container by Lolasso

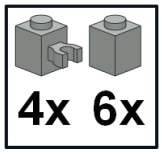
Text and Instructions by Steve Barile

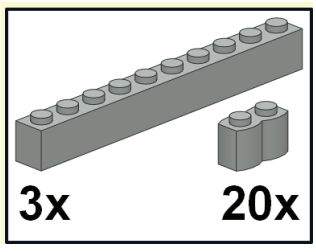
I first saw this container design on Flickr by Lalasso and instantly added to my favorites. Every time I'd see the container photos I promised myself I'd build one, and I finally did. It's a quick enjoyable build that delivers big smiles. Even my GF and colleagues love this MOC, mainly because the highly detailed doors that actually open! The log bricks produce nice shadowing that evoke a corrugated effect and the overall proportions are pleasing. I have built ten so far, with the goal to build all possible colors. Of course some are not complete; all the elements required in the more rare colors are not available (yet). I place those deep in the stack to hide the missing parts. Now that I have a stack on my kitchen counter it's a constant reminder to keep sorting and cleaning up my LEGO area so I can build my home layout. I highly recommend keeping an inspirational model in plain view and this MOC is perfect for that. The parts list and instructions are included in this issue. Happy building!!!

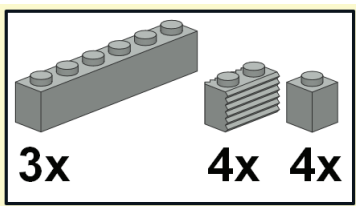
Container by Lolasso (Flickr name)

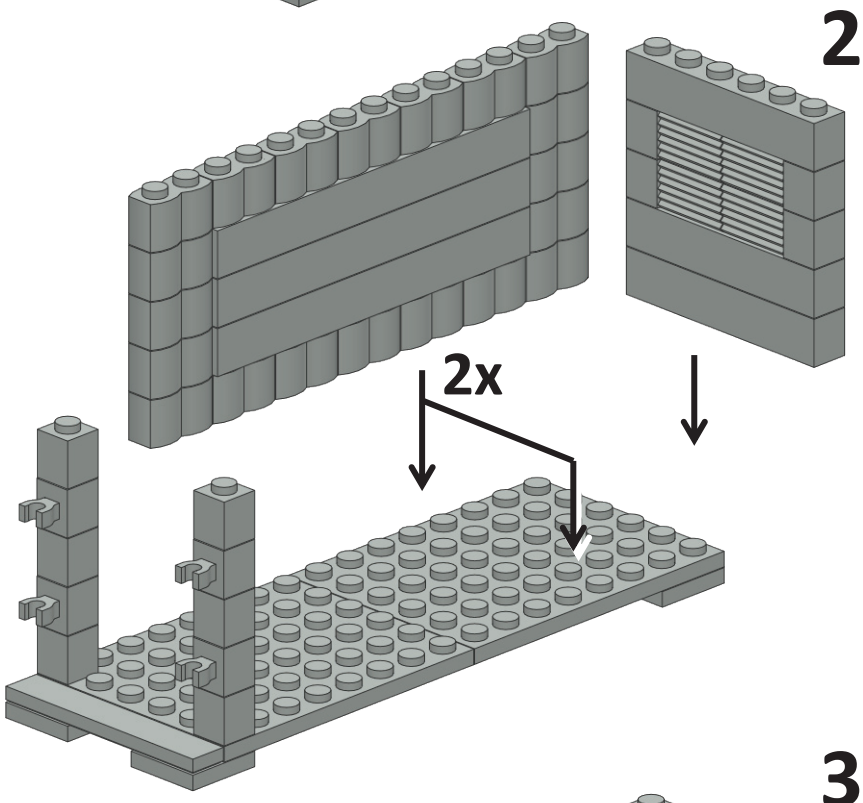


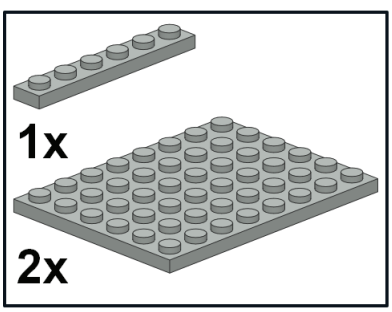


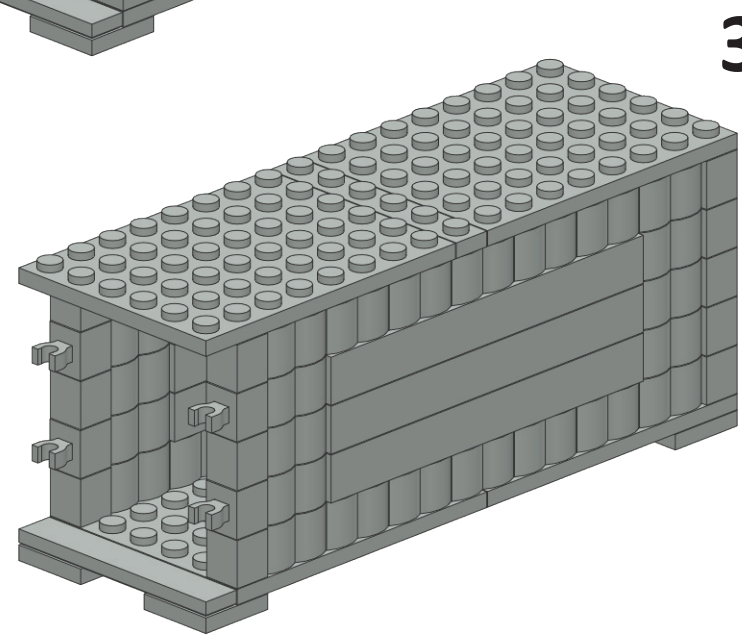


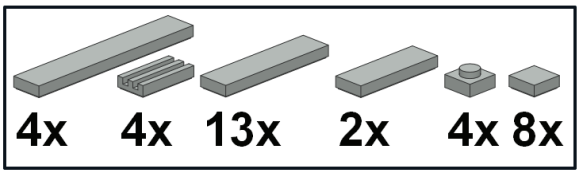




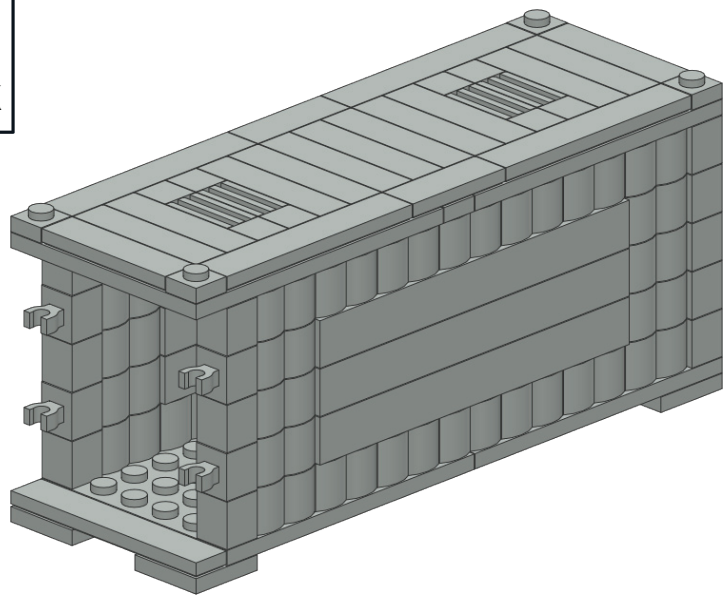


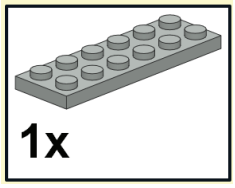


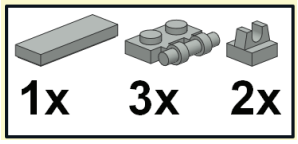


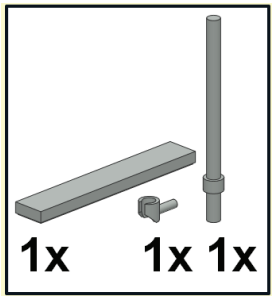


4

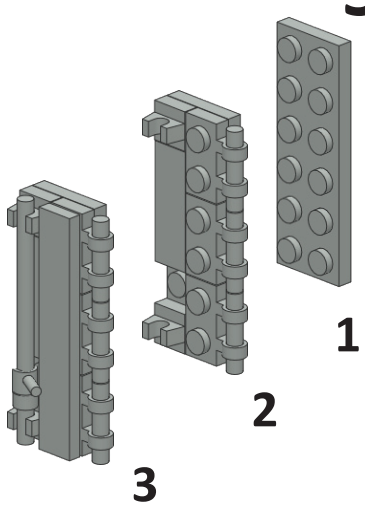




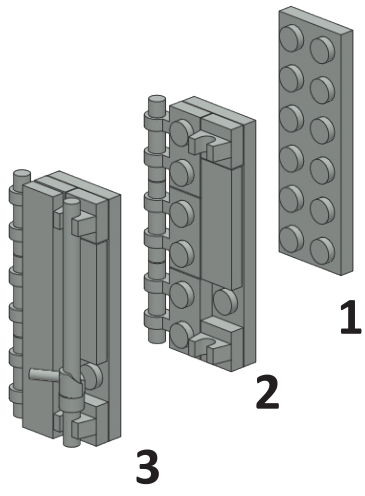




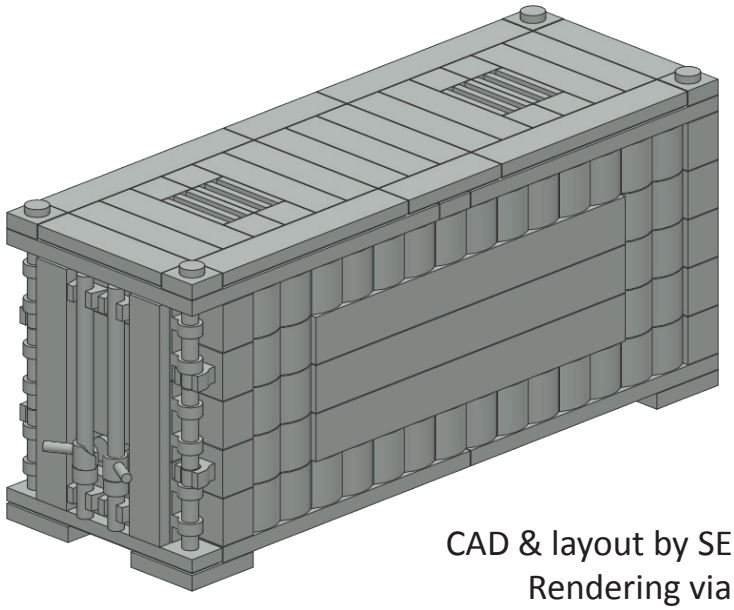
5a



5b



6



Notes:
Colors - gray, bley, dk gray, dk bley, green, white, red, black, tan…

The 1x10x3 flat area on the sides can be stickered or a brick built lettering or logo

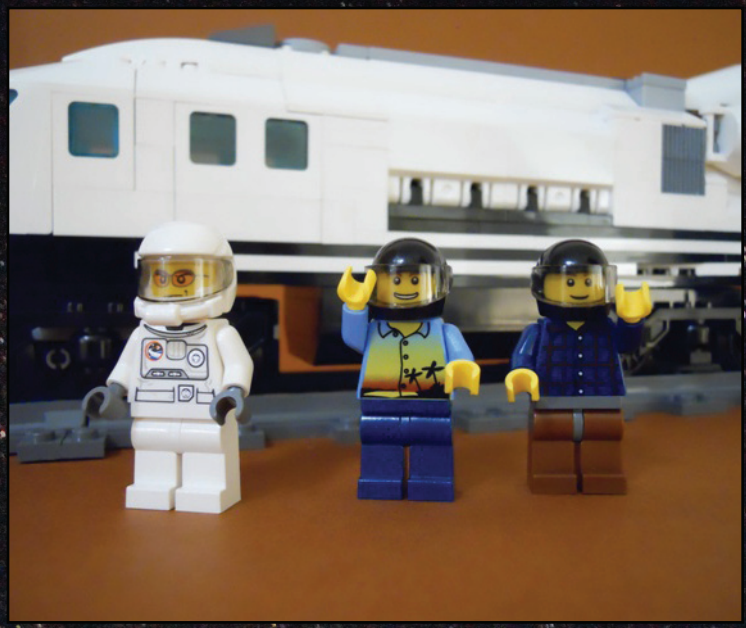
CAD & layout by SEBarile
Rendering via LPUB

The story of the Locoshuttle began when NASA decided to retire their fleet of Space Shuttles. Slovenian engineers decided to purchase one for a good price and modified it to a Speed Adventure ride to run on railway tracks.

What emerged what this: The LEGO® LOCOSHUTTLE P-11!

The cabin has space for a pilot and two people. An additional engine was added above the originals, and Impulse power was added to the rear truck.

The photo to the right shows the pilot who used to fly the NASA Space shuttle, now a part-time driver of Locoshuttle, and two Speed Adventure fans, who paid a lot of money for the ride.



LOCOSHUTTLE P-11

REPUBLIKA SLOVENIJA

Model, Photos and Article by Primož Zupančič

"Classic Trains" Logo by Jordan Schwarz
See *http://www.printfection.com/brick/Classic-Trains/_s_300049* for Classic Trains gear.

MOC Locoshuttle P-11 was made in 2011, and is based on the original LEGO set 3367 Space shuttle.

The locomotive is 37 studs long and between 6 to 8 studs wide. Total construction time was approximately 4 hours.

Some modifications were done to complete the build. To fix the front truck to the assembly, an extra hole was drilled in the baseplate. There was not enough spacd for the original PF battery box. Therefore, the luggage compartnent was increased by 4 studs. A 9-volt battery, representing a fuel tank, was placed inside. A connecting cable ran from the battery to the IR receiver. The battery is easier to change than that of the original battery box.

To the right is a view of the original LEGO Space Shuttle vs. the LEGO Locoshuttle P-11

For this model the following were used:

- Two original sets of Space Shuttle 3367 (One to compare as the original and another used to build with),
- Receiver, transmitter, an electric motor and a few parts of the chassis of the LEGO City Passenger Train 7938
- The rest of the bricks were purchased through BrickLink®.

SPEED IS FINE

- By Didier Enjary, Photos by Denis Huot

When dealing with LEGO® trains, realism is a subject which comes up over and over. Realism is often about details: details of design and colors, details of dimensions and details of functions.

Realism also resides in layout planning and operation. Some enjoy the discontinued 12V System with all its automated functions, such as lights, switches and uncouplers. Others do some modifications to install DCC (Digital Command Control) into their creations for finer control.

Speed

Realism is also about speed. In France, we are proud of our TGV, the bullet train. The least one can say is that it is iconic. Contrary to what happens in North America, in Europe "train" means high speed passenger trains as demonstrated by the UK Flying Scotsman (see *RAILBRICKS #6*) or the German ICE, while in America, "train" is almost always about heavy freight trains.

Back in the LEGO world, speed is not easily achieved. Power is limited to 9 volts with low current input, curves with a small radius and straight track connecting with seams of a noticeable size. Those are conditions that high speed can not handle. Speed doesn't just depend on the design of rolling stock. It is mainly a question of track and powering solutions.

The Purist Way

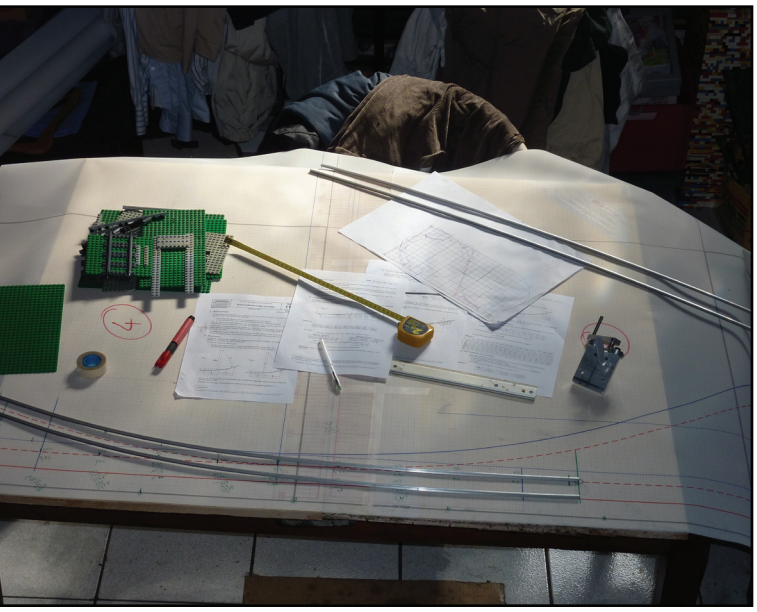
Some tricks do exist to resolve the issues facing high-speed layouts. Large radius curves can be built as described in the article "Smooth Curves Without Cutting Corners" in *RAILBRICKS* Issue #1 or "Fun with Radii" in *RAILBRICKS* Issue #7. Larger curves allow trains to run at full throttle without ither tilting or derailing. Those curves can also be improved by raising the outer side of the rail, creating a superelevation (also called a cant).

The powering issue is more technical to work out. At first sight, one might think that increasing the number of motors would make one's train run faster. That is true, but at a very small scale - you will certainly not double the speed of your engine this way. Worse, you might even slow it down because motors are heavy.

The best solution is to power your train via the track and quickly dismiss the Power Function System. With the 9V System you have to use multiple speed regulators in order to prevent the current from falling down with distance or motor consumption.

Nevertheless, you are powering the layout under 9 volts, whatever current you send into the rails. If you want to increase speed, you have to feed the system with higher voltage. There is a way to do this, [first demonstrated by Daniel Stoeffler (*http://freelug.org/spip.php?article1195*), which consists of plugging two speed regulators in series through an additional piece of track. This way, you are powering your layout under a theoretical 18 volts.

Note that the LEGO electrical components (motors and speed regulators) are not meant to be used that way, but it does work. There is, however, a chance that the lifetime of the components might be shortened. Use these tips at your own risk.

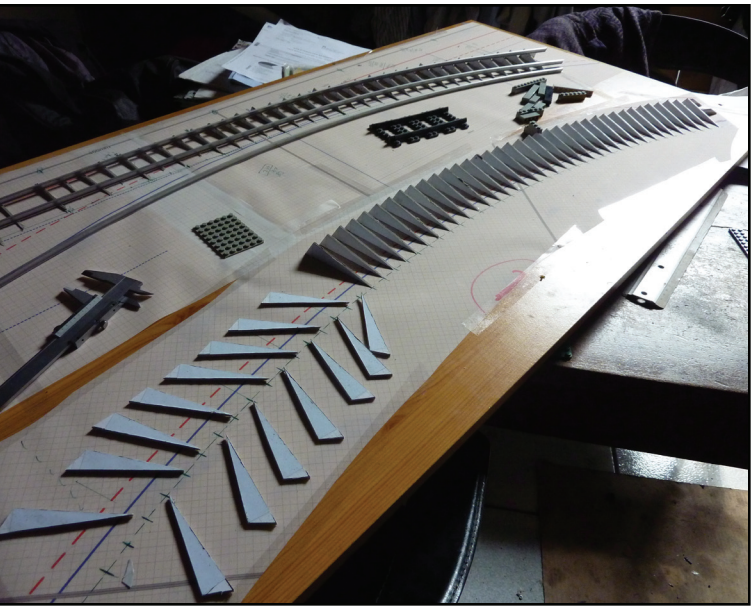


Modders Are in The House

If you are not a purist, you can modify LEGO parts or make use of non-LEGO parts. This is the choice Denis Huot and Xavier Viallefont made to create a high-speed track of their own. This layout is exhibited about once a year in various events taking place in France since 2008 (Fana'Briques, BriqueExpo...) and the following discussion is largely inspired by two articles they wrote for the FreeLUG website based on their experience.

Leveling

A high-speed line has to be level. You can not use disparate tables to setup the layout. Denis and Xavier use wooden tables. Their height can easily be finely tuned on uneven floors.

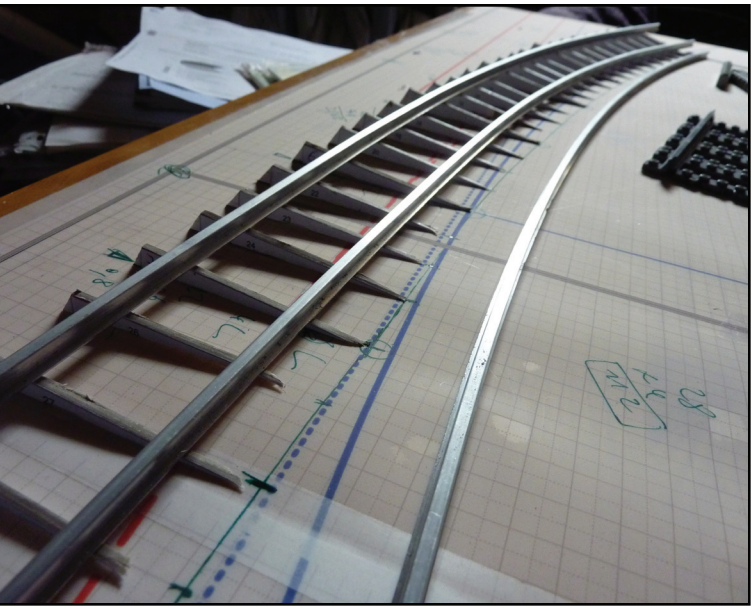


Gauge

The gauge of the LEGO track is larger than that of the motors and trucks. It is quite logical as it makes the friction on curves less important. As previously mentioned, the high-speed line makes use of a large radius curve. As a consequence, the gauge of the high-speed line is a bit smaller than the LEGO gauge, making the rolling stock more stable at high speed.

Length

The first attempts at high speed were made on 13 and 19 meter long straight lines and the conclusion was obvious. The faster you go, the longer the line had to be. Today, the high-speed line is 30 meters long (without curves) but is still too short: the use of a ramp to get help from gravity to slow down the train before the curve or to speed it up in the line entry, is required.



Seams and Splints

LEGO straight tracks are 12.8 cm long. As a consequence the train encounters a seam 8 times each meter. This is unacceptable for a high-speed train, so the high-speed line is built from 1-meter-long aluminum rails, connected with the help of splints, making the seams almost imperceptible.

Curves

The high-speed line curves are not only large radius (1.5m) but also feature a superelevation (maximum 13°). As in the real world, an Euler spiral is used as a track transition curve in order to limit the consequences of centripetal acceleration.

Powering

The high-speed line is powered with a custom power supply offering a 60V electrical source. Quite surprisingly, the LEGO motors withstand the overload for a short time.

Measuring

Now you just have to make your train run. Some IT material and a couple of sensors allow for display of statistics on train speed (up to 21 km/h) during events.

Conclusion

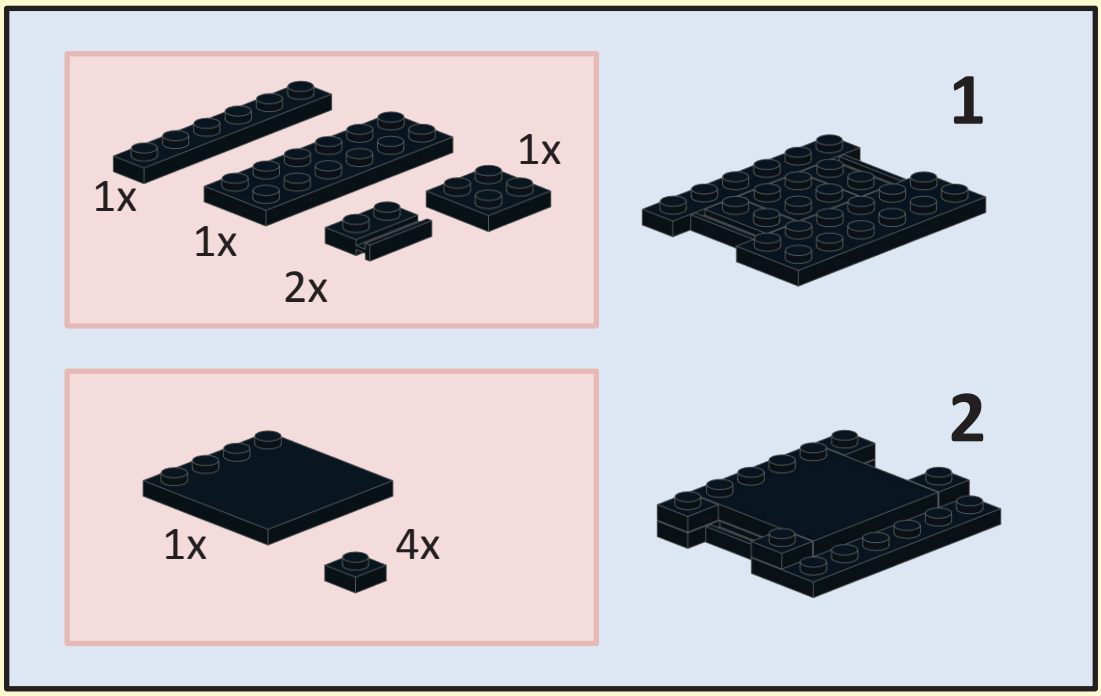
The high-speed line is a must-see at events and is greatly enjoyed both by train AFOLs and visitors.

Photo by Jérôme 'JAC' Teissier

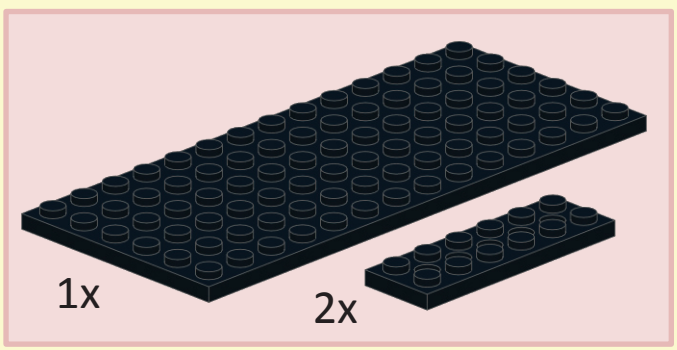
OLD TIME COACH

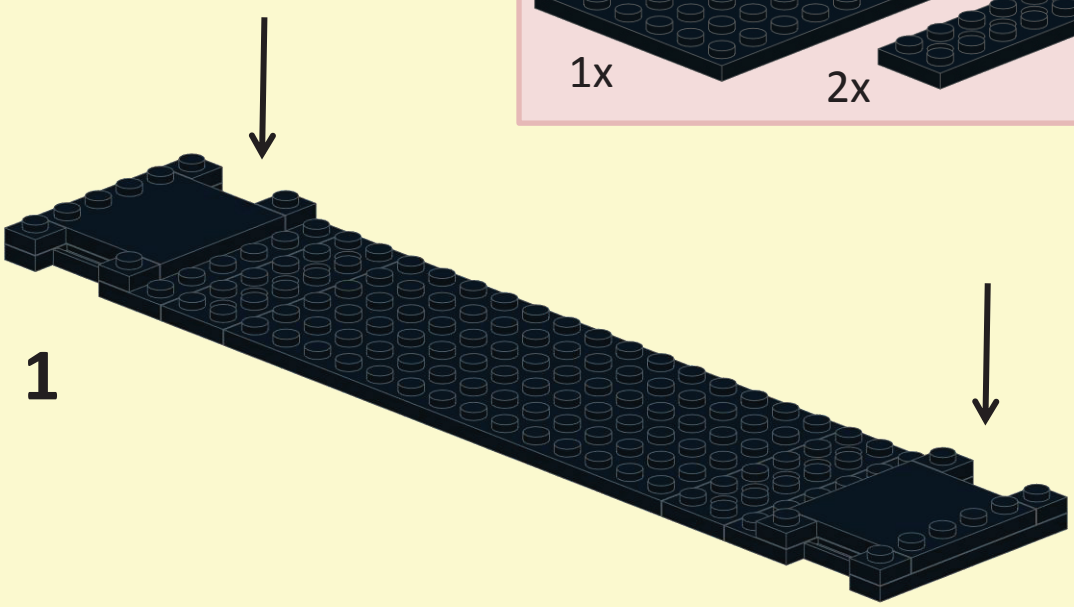
230 PIECES

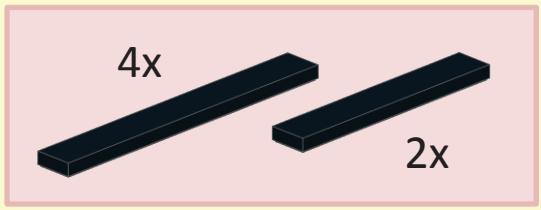
By Steve Barile



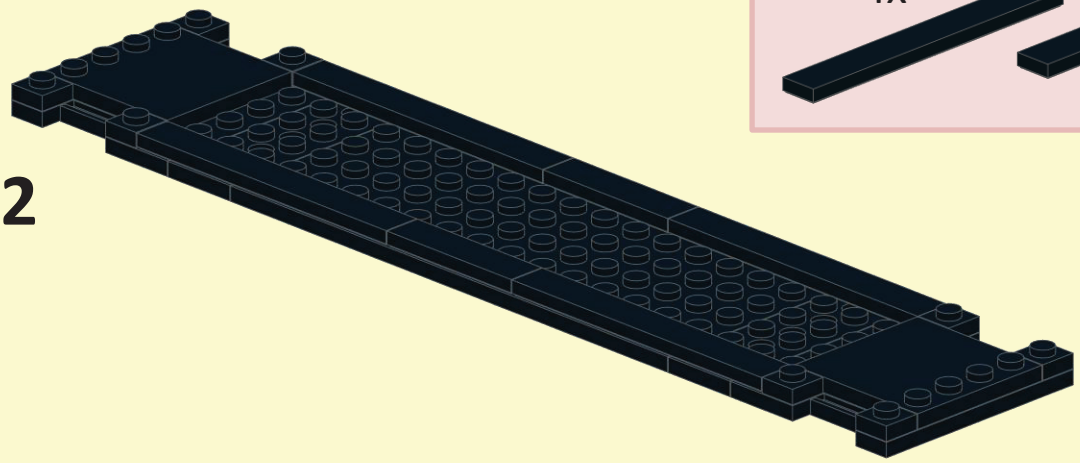
2x

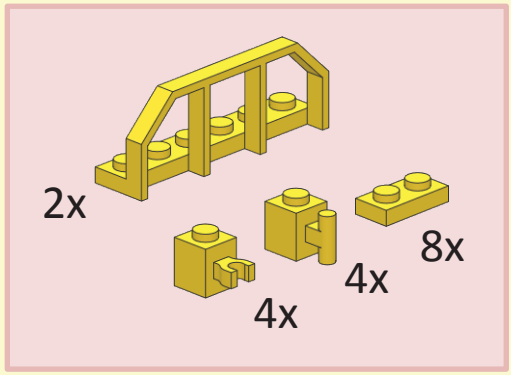




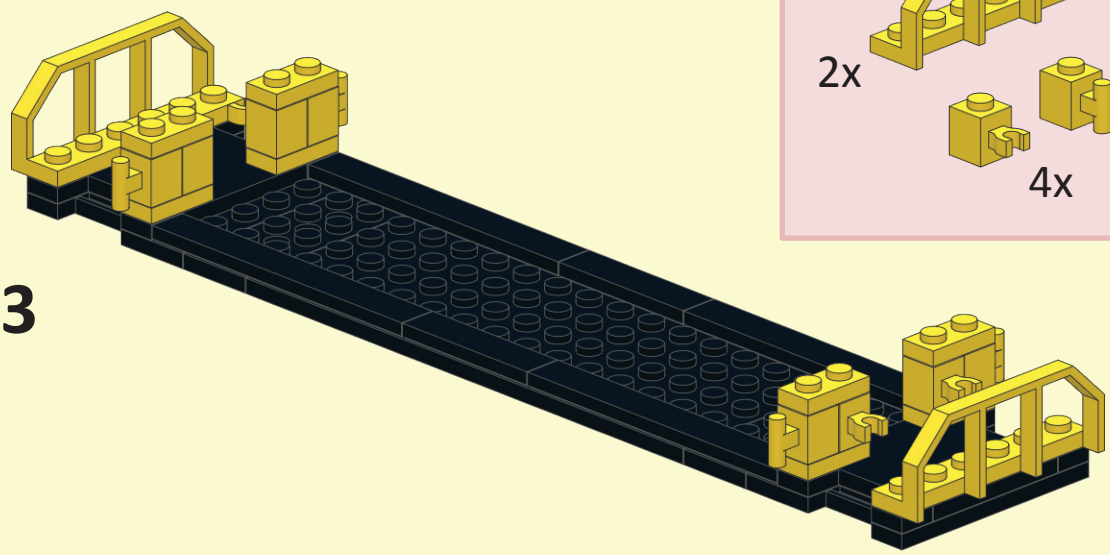


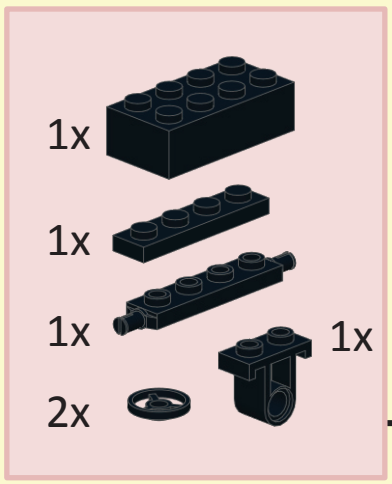
2

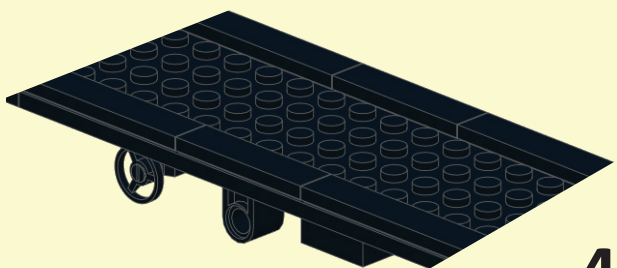




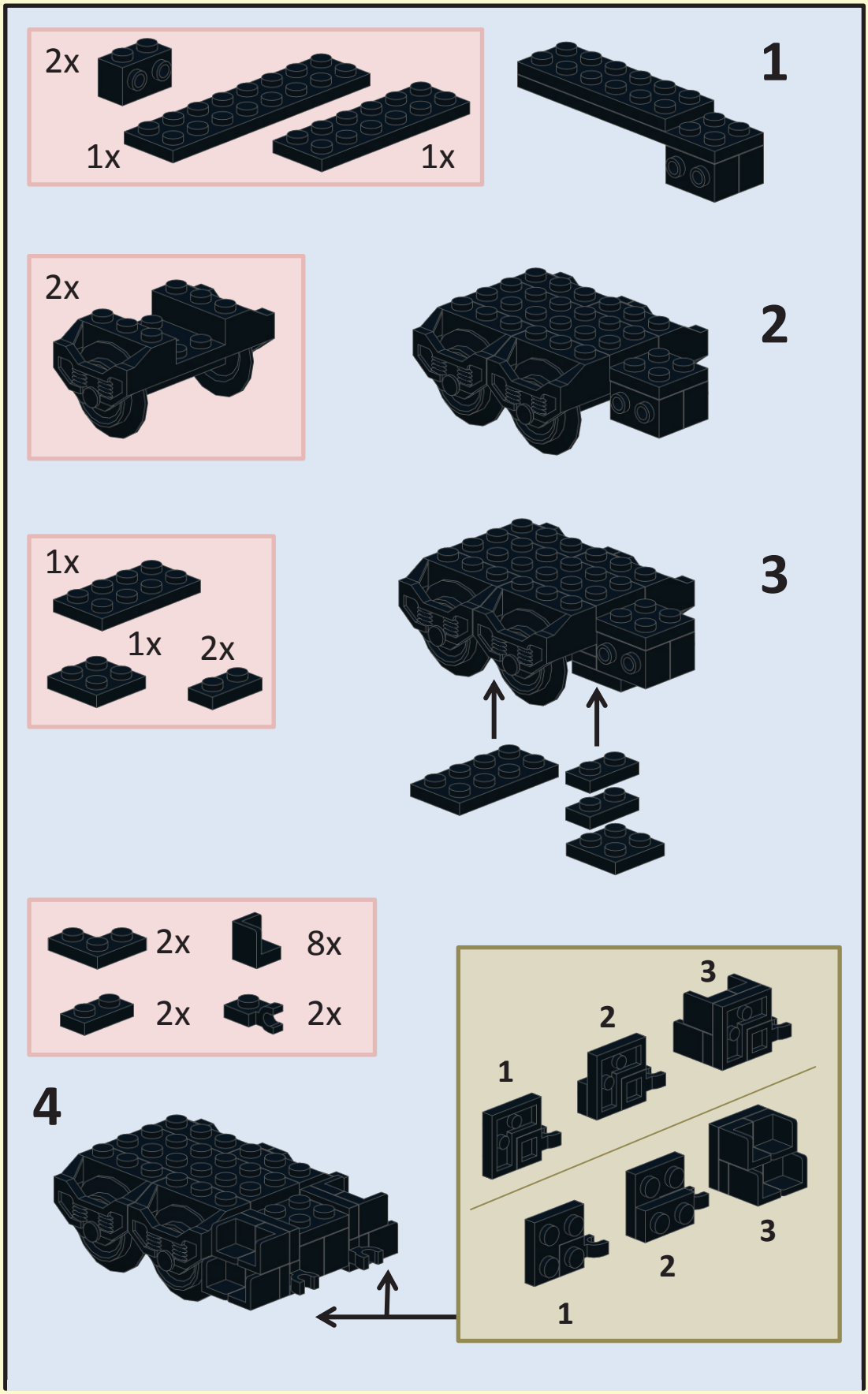
3

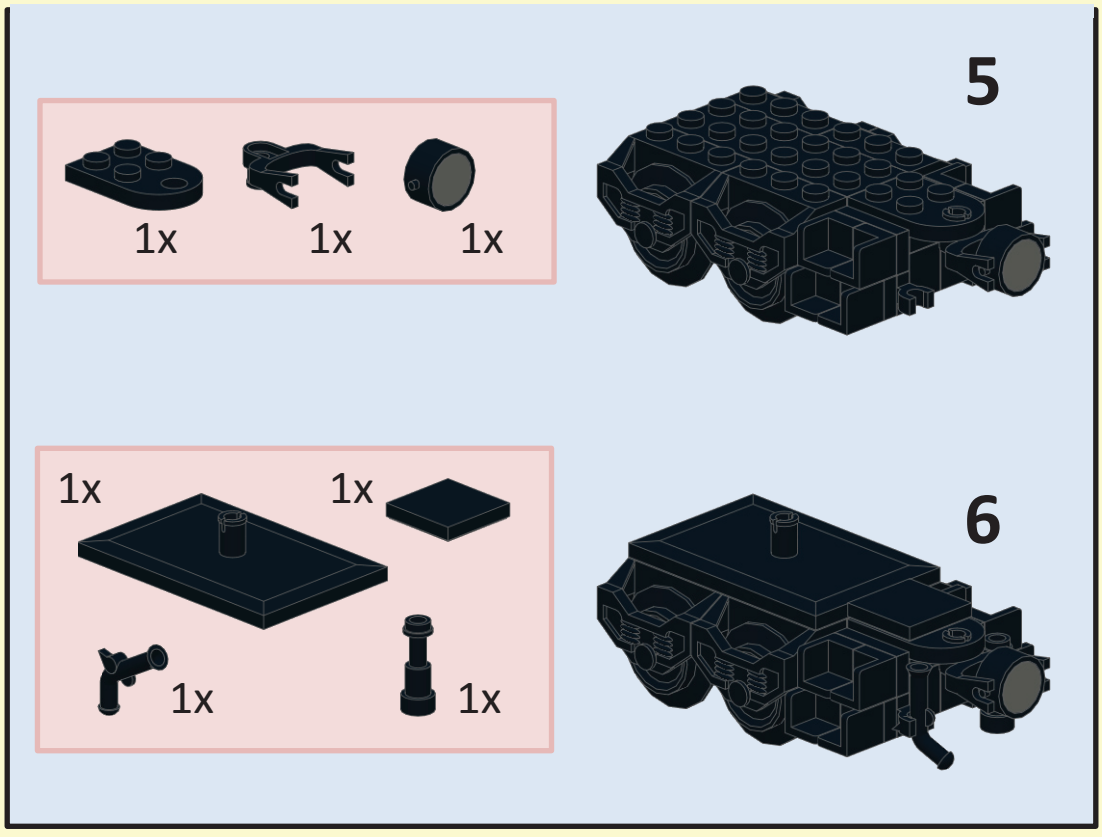




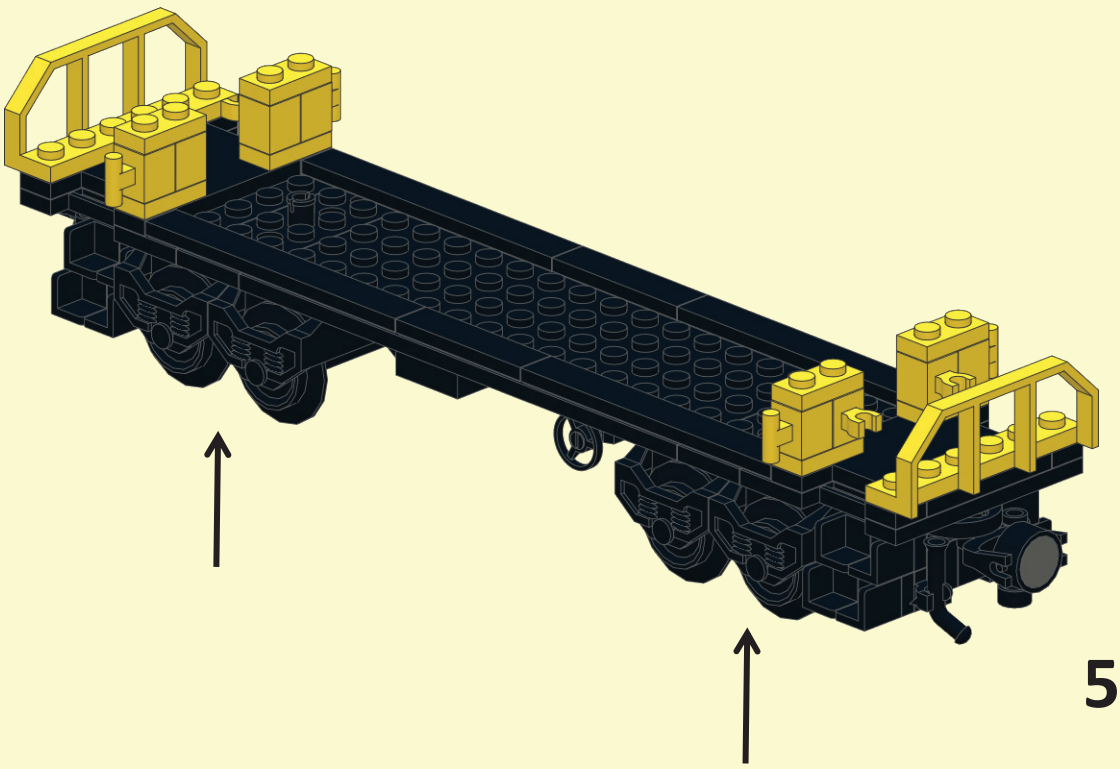


4

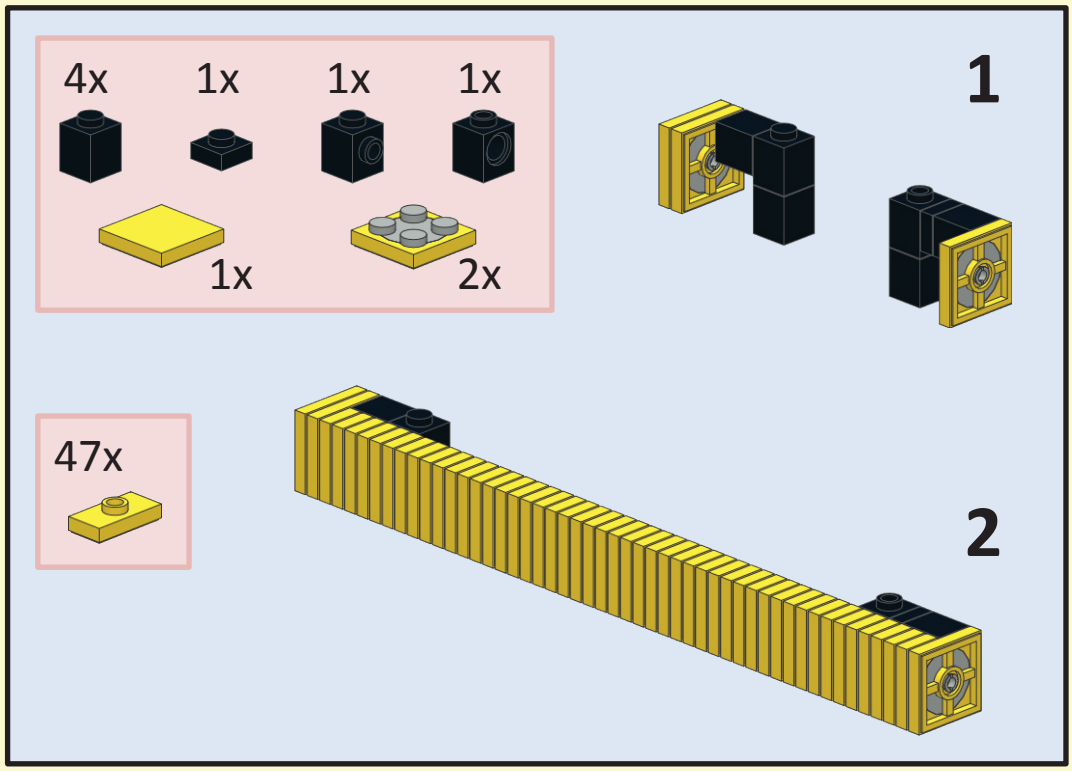

2x
1x
1x
1
2x
2
1x
1x
2x
3
2x
8x
2x
2x
4
3
2
1
1
2
3



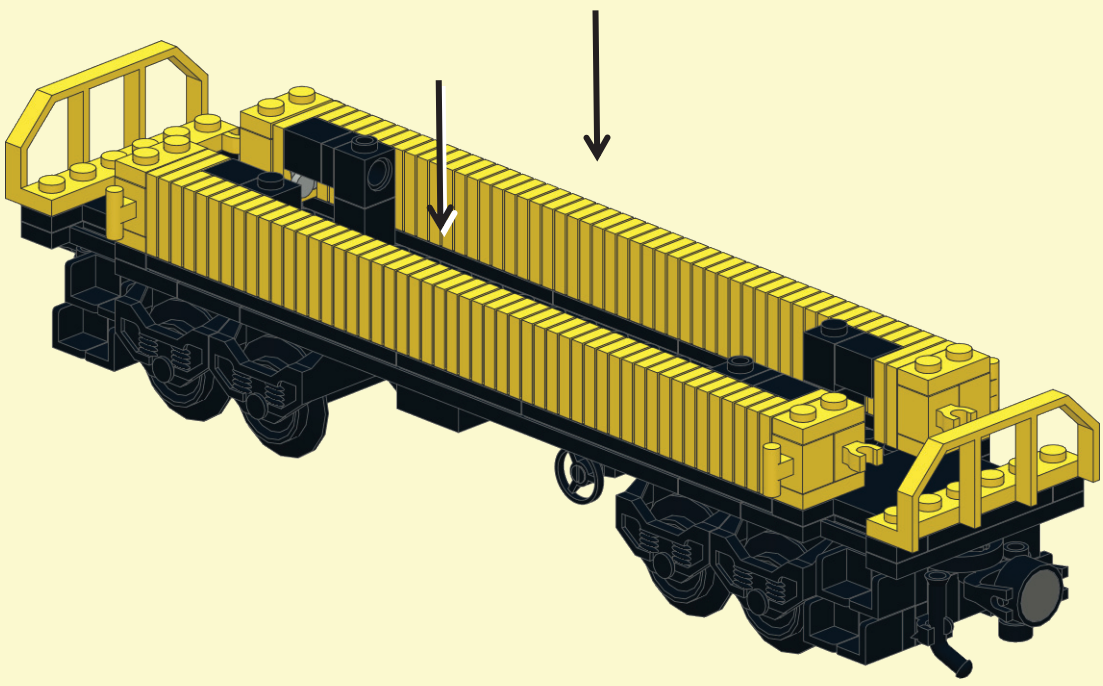
2x



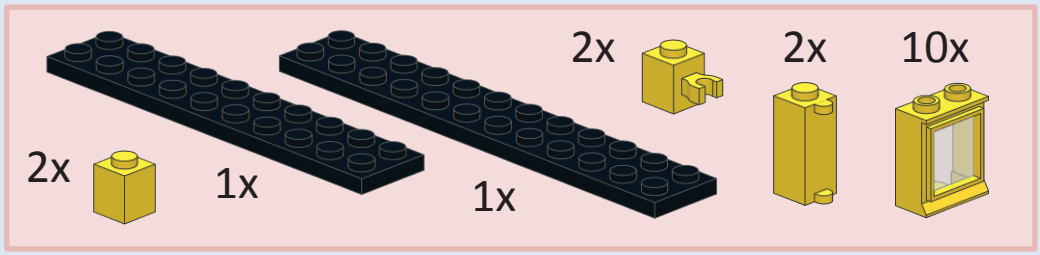
5

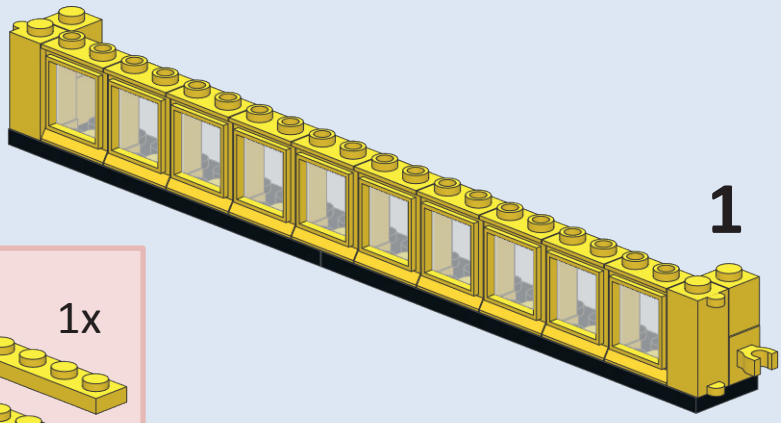


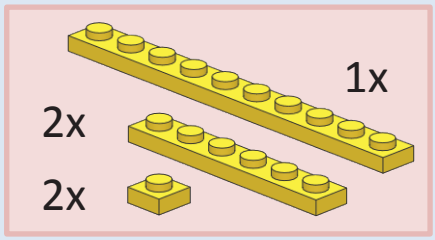
2x

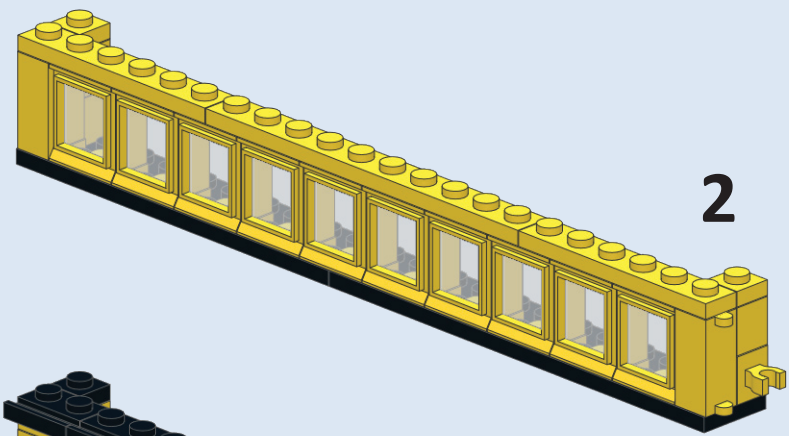


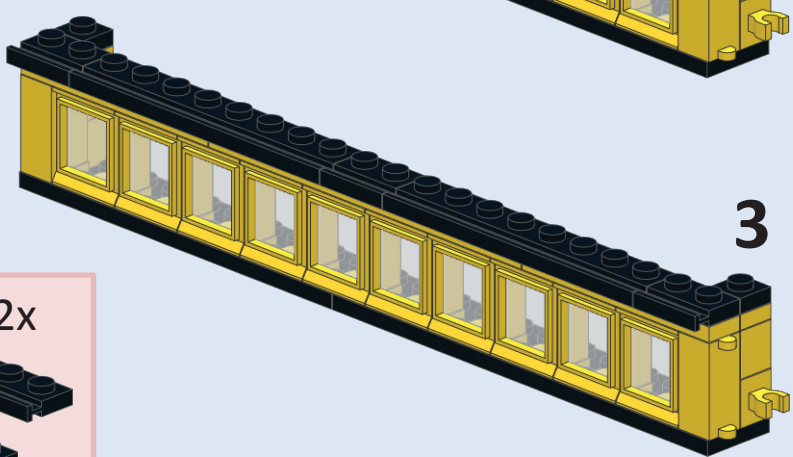
6

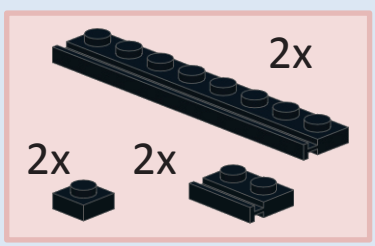




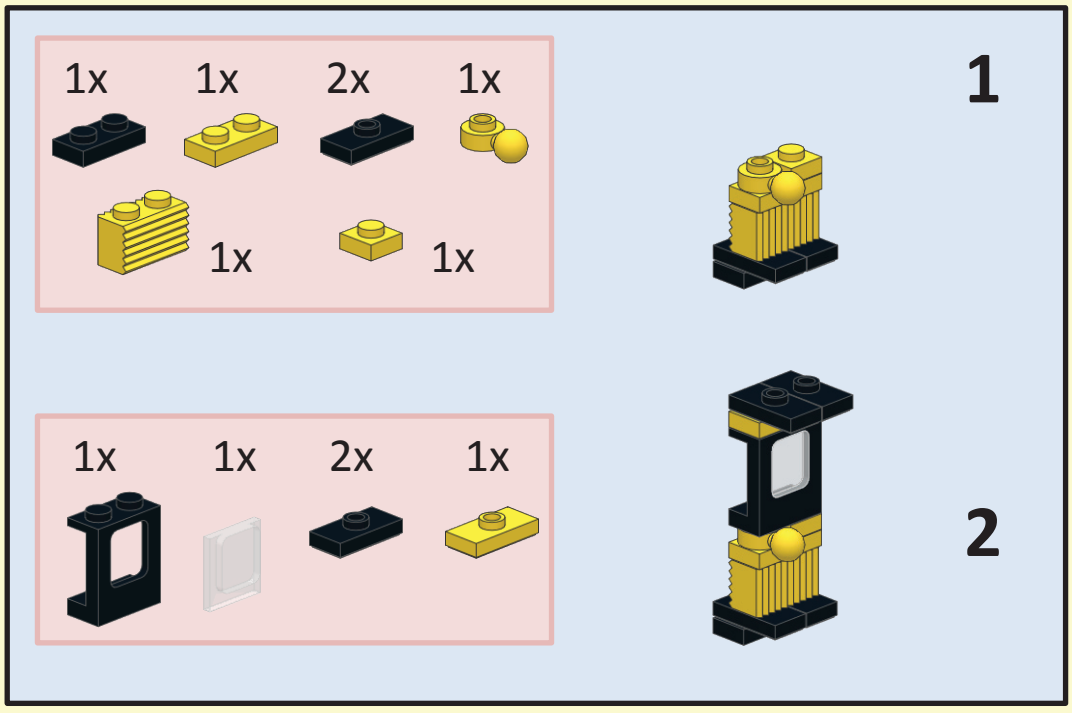


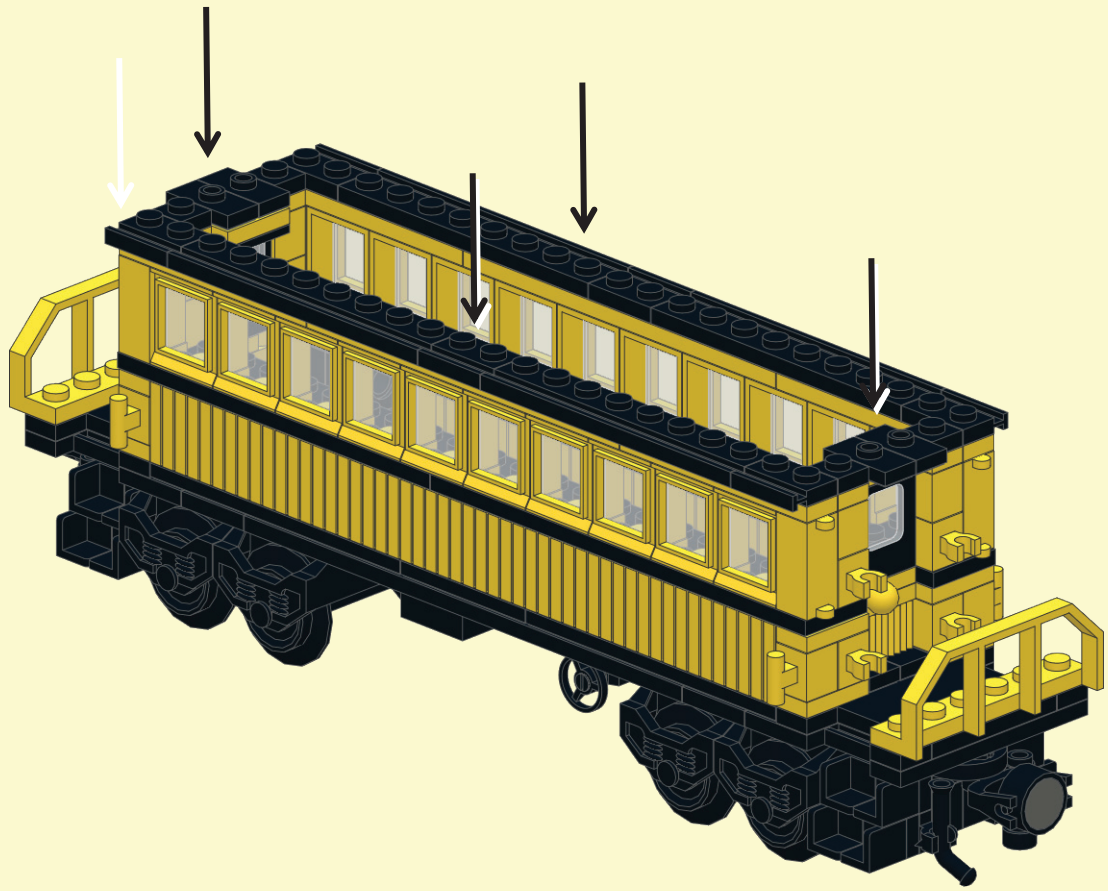


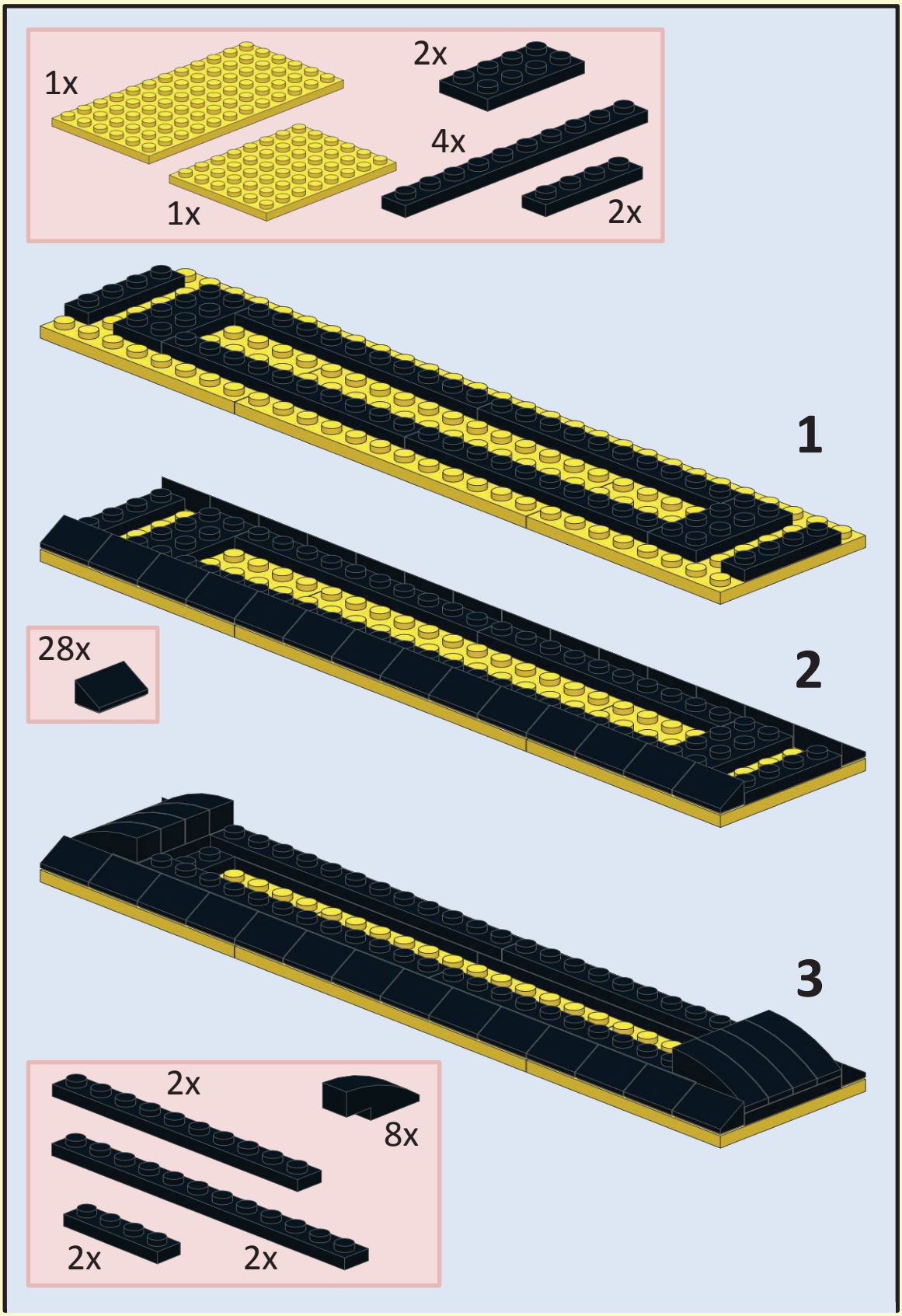


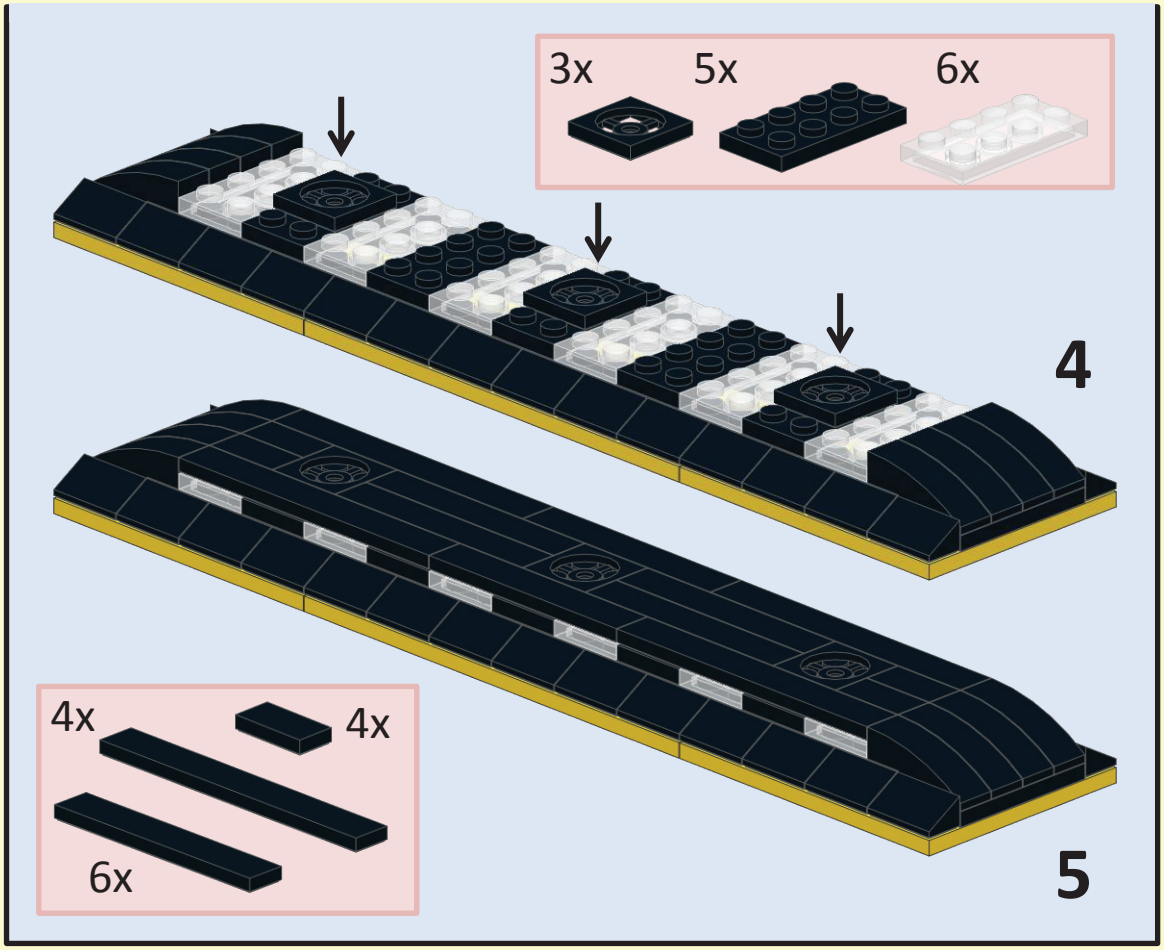


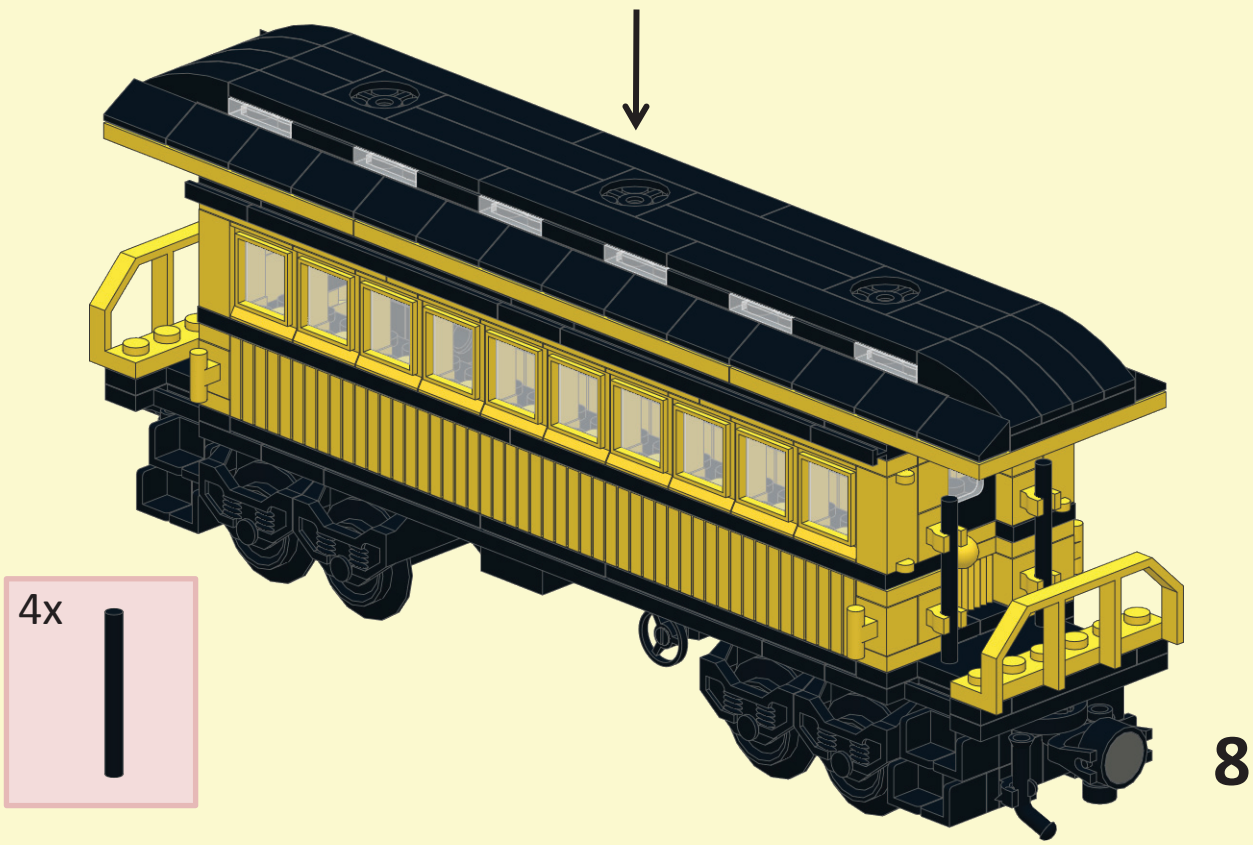
2x

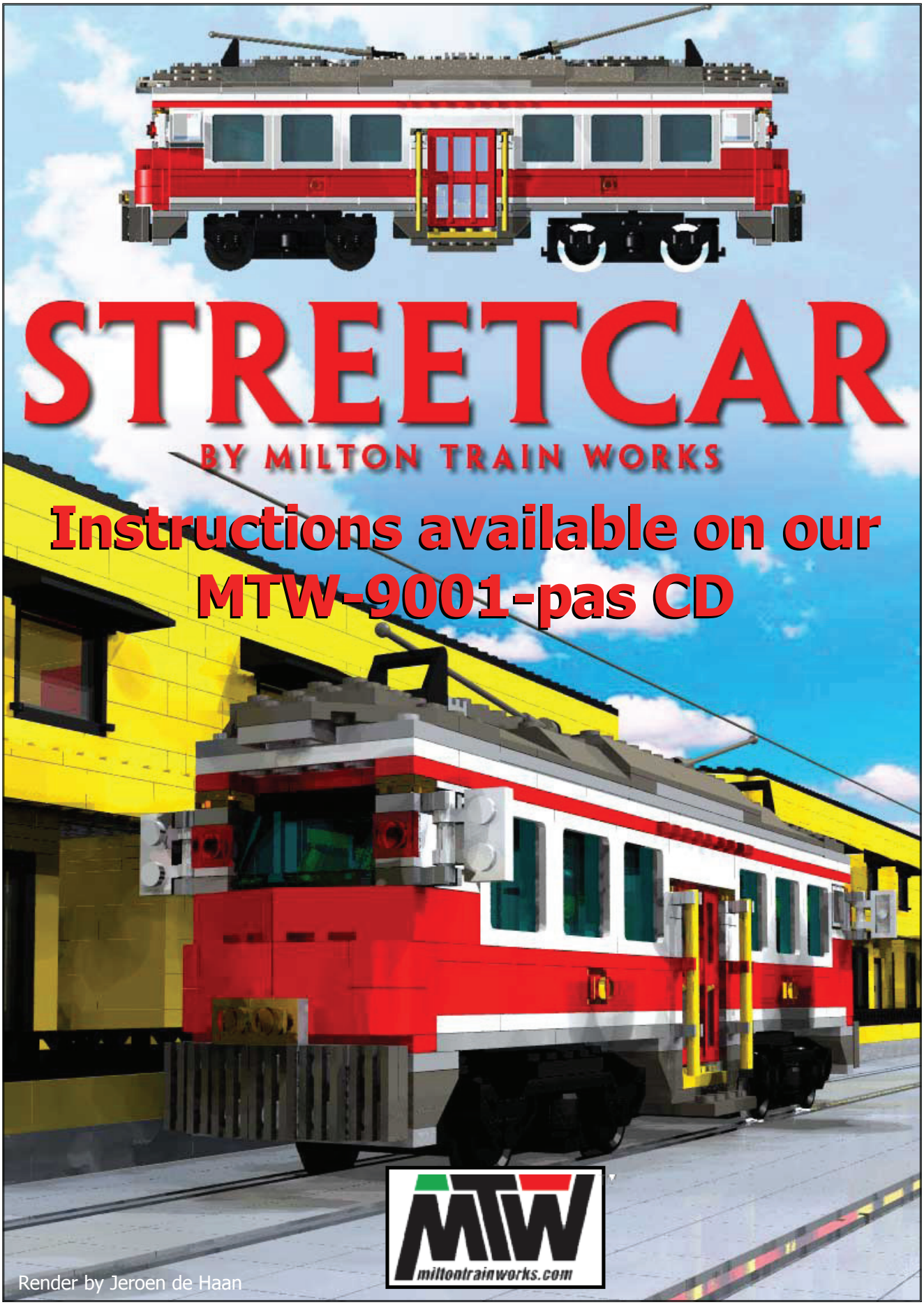

1x
1x
2x
1x
1x
1x
1
1x
1x
2x
1x
2
2x


7


1x
2x
4x
1x
2x
1
28x
2
3
2x
8x
2x
2x


3x
5x
6x
4
4x
4x
6x
5


4x
8


STREETCAR
BY MILTON TRAIN WORKS
Instructions available on our
MTW-9001-pas CD
MTW
miltontrainworks.com
Render by Jeroen de Haan

BR23 Original Design by Reinhard "Ben" Beneke featuring BBB train wheels