



Building paper and cardstock models

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RATE THIS ARTICLE

JOHN AND AARON GIBBENS describe how to construct cardstock models ...

WE LOVE READING OLD MODEL RAILROAD MAGAZINES.

They are loaded with stories of how people made models from what they had on hand. These folks were creative, making do with what could be found, and turning it into fabulous models.

We remember a magazine cover photo from the '70s showing an amazing black wrought-iron looking bridge built entirely of paper and cardstock. Wow!

Building structures out of paper is not common today. With an abundance of plastic and laser-cut wood kits available, building a model tends to be fairly quick. But then comes time to paint the model – and try our best to make our model look real.

PAPER CARDSTOCK MODELS | 2

1. An HO warehouse (and props) made entirely of paper and cardstock.

Many people love to paint and can produce stunning results. For those who don't produce such superb results, let's introduce you to paper modeling, because paper models are basically *already painted!*

Building structures out of printed paper remains quite popular in Europe but has fallen out of favor here in the United States. Several manufacturers produce excellent models in the UK and Europe, but only a few in the USA.

As new designers come along, our choices for western style models is improving.



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There are three advantages to downloadable paper models. They're inexpensive, immediately accessible, and are "pre-painted." Using photographs and quality illustrations, these models typically look great the moment the final piece is installed. With no cost for packaging, injection molding, laser cutting or shipping, paper models are a tiny fraction of the price of boxed or bagged models.

You can shop at anytime from anywhere you have internet access. You can download and start building your next great scene. Most companies offer free "example" models so you can experience their quality and modeling with paper. For scratchbuilders, paper model companies offer huge arrays of pre-finished pages of wood, brick and metal siding, roofing, stone walls, paving and more.

Modeling with paper may not be for everyone. Construction can take longer than plastic models and there can be more



2. This is John's first attempt at scratchbuilding a paper model, an N-scale low relief model of the Southern Pacific depot in Eugene, Oregon.



J. Fugate

MAKE YOUR OWN STRUCTURE DESIGNS

In this article, John and Aaron talk about paper structure designs you can download, print out, and build.

But if you want to design your own paper structures, check out Model Builder. It is very affordable software from Evan Designs that lets you design your own paper structures on a Windows computer.

WEB: modeltrainsoftware.com/products/model-builder.



3. Paper can be used for more than just buildings. Here paper is used for paving and walls.

parts to assemble, but you save time by not needing to paint. Parts can be small; glue can be messy and some folks just don't think they can cut a straight line. But like any other skill, the more you practice the more your speed and quality will improve.

What you need to make paper models

As with any type of modeling you will need certain basic tools and supplies [4]. These are few and inexpensive, and available at most stores with office supply, craft, or hobby departments. Most modelers will already have most or all of these around their work area. Here's our recommended list of basic tools:

Must haves:

- Scissors
- Hobby knife



4. The basic tools needed to construct paper models are available at most stores, not just specialty hobby shops. Scissors, knife, glue, metal ruler, paper and cardboard will get you started. You may already have them.

- Glue stick glue
- White (PVA) glue
- Metal edge ruler, preferably with cork no-slip backing
- Smartphone, tablet, computer, or borrow a friend's
- Paper
- Poster board
- Mat board

Optional but helpful:

- Color printer - See topic "No Printer? No Problem."
- Tweezers
- Cutting mat

Some of our favorite specialty tools

As you progress in modeling with paper and cardstock you may wish to expand your tool selection. We each have some favorite tools to speed up construction or do it more precisely. None of these are necessary and we would recommend waiting to acquire them until you find the need [5-8].

No printer? No problem.

Perhaps the biggest hurdle for some will be printing the files. Have no fear. If you don't have a color printer, or even a computer (but you do have access to email by smartphone or tablet), you can get quality printed output of the files at any of the thousands of FedEx Office or similar stores.

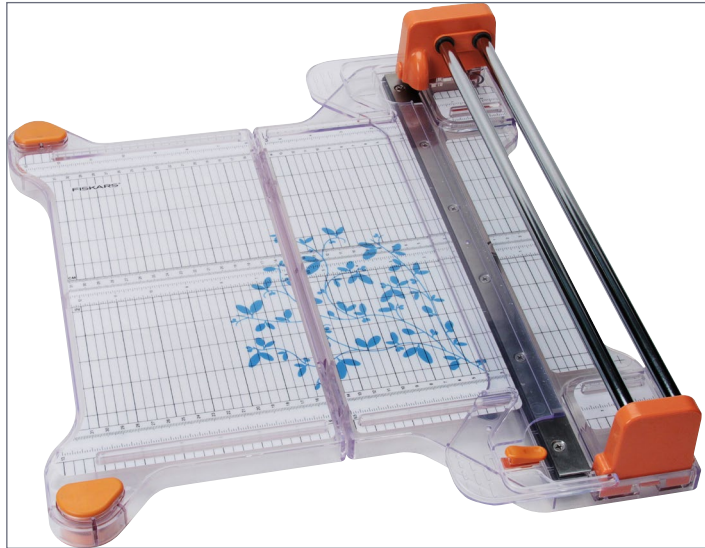
While on the road we needed to print out some PDF documents and had no access to a printer. The only tool we had was a mobile phone. John's wife smartly suggested he call a nearby FedEx Office to see if they could help. They made it so easy!

PAPER CARDSTOCK MODELS | 7



5. The Chopper by Northwest Short Line. For making slender, small or repetitive cuts of mat board you can't beat The Chopper. Although expensive in comparison

to basic tools this can be a real time saver. An inexpensive alternative: a simple razor glass scraper from the hardware store. Some of the advantages at a tiny fraction of the cost.



6. A rotary paper cutter: We like the deluxe version from Fiskars but even an inexpensive model will assist you in making long straight paper cuts.

PAPER CARDSTOCK MODELS | 8



7. Mini scissors: I use a pair of expensive German-made sewing snips that excel at small cuts and trimming edges. Many bonsai snips will also work well. Look for a thin blade that will hold an edge. Thick blades will tend to curl the paper and cardstock as you cut.



8. Rotary punch: This doesn't get used very often but is practically indispensable if you need to make small diameter circles in mat or poster board. We specify its use in making

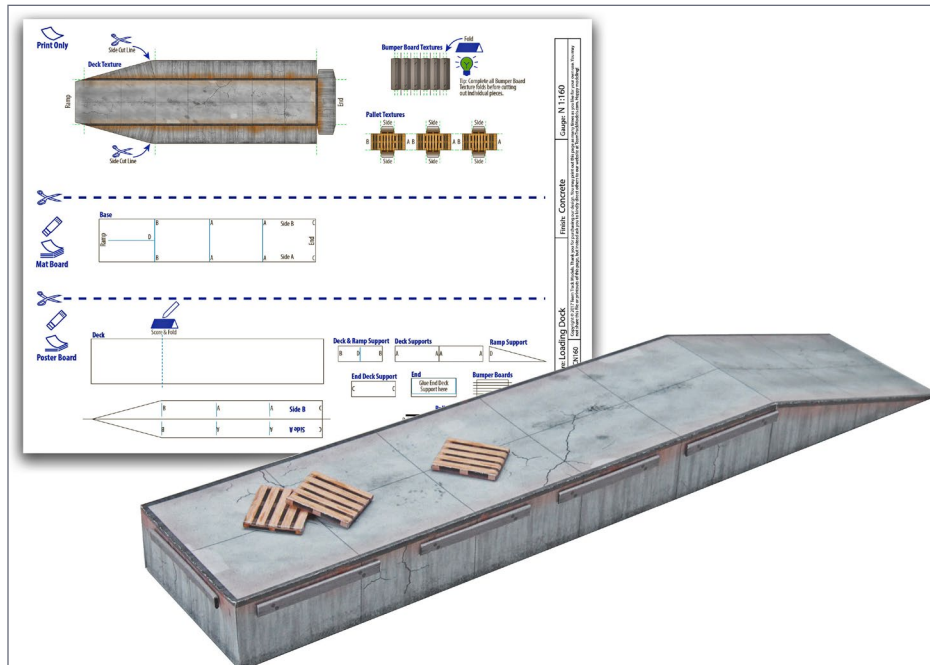
round industrial roof vents for instance. Hint: the 4mm punch is perfect for making N-scale barrels! Four punches of mat board glued together and painted with a felt pen or paint makes a quick 24" diameter by 36" tall standard metal drum.

It occurs to us their handy solution would work for any of our modelers who don't have a color printer, or who wish to have vibrant, waterproof, toner-based color printing!

Here's how it works.

Email the PDFs to printandgo@fedex.com. You will receive a retrieval code back by email.

Go to any FedEx Office location and use the self-service printers. At the Print & Go payment kiosk near the self-service printer, select **Print** and then **Print with Retrieval Code**. Enter the code



9. Here's an example of a basic model available for free online at one of the several vendors. We'll use this to illustrate the basic steps to building a paper model.

and follow the instructions to print the files you sent via email. You even pay at the kiosk.

And for those who feel intimidated by a self-serve process, you can work directly with an employee to print them for you.

Basic steps to building any paper model

Since this article is an overview of modeling with paper we're not going to show each step in building a specific model. Instead, we're going to show you the basic process so you know what to expect. Your model will typically come with its own set of detailed instructions.

To build a paper model you will download the model files, print out the pages and assemble. Assembly starts with gluing some of the model pages or parts to heavier cardstock such as poster and mat board for rigidity. These are then cut out and glued together, forming a finished model.

Here's the basic steps to build a simple paper loading dock model [9], one of the many free models offered by paper model companies (this one is available from our company at www.teamtrackmodels.com).

To begin, you need to download the files. After you make your purchase, typically, you will have a link provided either by email or on the paper model company website [10]. Click the link to download and save the model files. If storage space is limited such as on a mobile phone or tablet, we recommend having a Dropbox or Google Drive account for download storage. They are free, reliable, and accessible from any computer or device.

The next step is to print the model pages and, if desired, the instructions. Color laser printers and copiers have good color

dynamics and are waterproof but the finish is somewhat glossy. In general, we recommend laser printed pages for their durability and bold color. Inkjet printers can be less vibrant on regular paper but don't "shine" with reflected light. If you print using inkjet it can be a good idea to give your pages a coat of dull clear spray to protect the print.

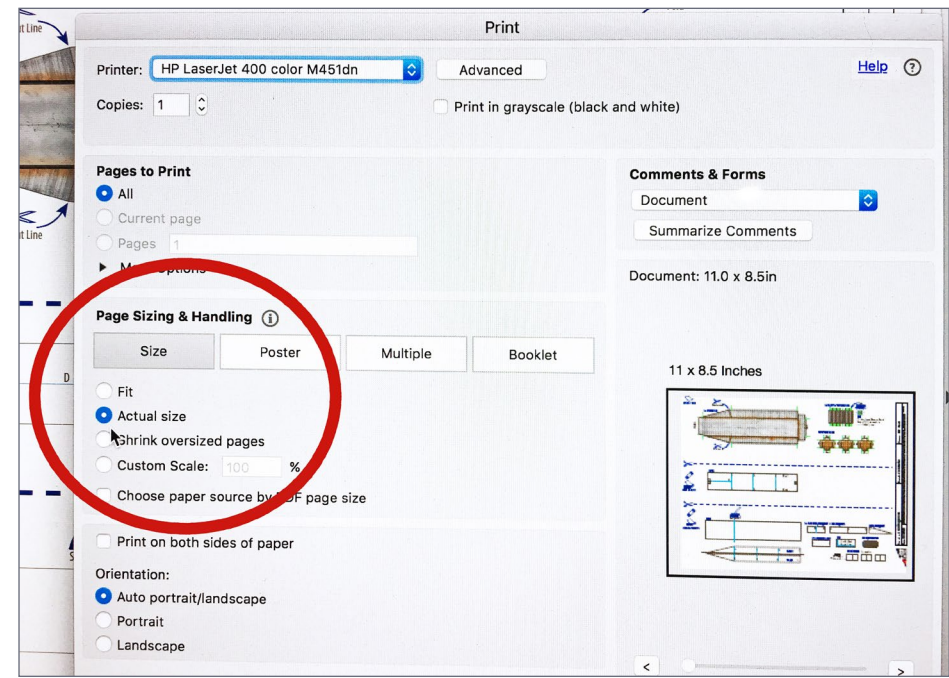
Your order is complete

Hi there. Your recent order on Team Track Models has been completed. Your order details are shown below for your reference:

Order #2622

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Concrete Loading Dock - N - 1:160		
Scale: n-us-1160	1	\$0.00
<ul style="list-style-type: none"> Download 1: LDC_N160.pdf Download 2: LDC_instructions.pdf 		
Subtotal:		\$0.00
Total:		\$0.00

10. Once you complete the checkout process (even with free models) you are presented with the links to download your files.



11. When printing the model pages, print them at actual size without any fitting or scaling, unless your model comes in one size but you want to model a different size.

Print the pages needed with scale set to none [11]. This preserves the original scale of the model. Some models include instructions on how to print to different scales. These are usually drawn at HO and can be printed in smaller scales even though this leaves a lot of empty space on the page.

Some parts or pages need to be glued to thicker cardstock before cutting out while some are glued after as per the model instructions. When gluing paper to heavier stock, apply the glue to the poster or mat board [12] and then press the paper to the board.

We have found that applying the glue directly to the paper can cause the paper to stretch, resulting in pieces that don't fit or

assemble properly. A rolling pin (called a brayer) can be useful to get all the bubbles out from underneath the paper and give a better finish.

The most time-consuming aspect of paper modeling is cutting out the parts. Care in cutting results in smoother lines, better piece fitting, and a better overall model upon completion [13]. The advantage of paper models over plastic or wood is that mistakes are easily and inexpensively repaired by simply reprinting a replacement piece.

Paper can be cut with good scissors but cardstock parts need careful cutting with a hobby knife. One of the best knives we've found is the cheap dollar store snap-blade knife.



12. It is most important, especially on larger pieces, to apply glue to the heavier stock. The process of applying glue to thin paper will stretch the paper, rendering your part shape larger than intended.



13. When cutting, keep your knife vertical and use a metal straight edge to get precise cuts. The best knife we've found for cutting poster and mat boards is a cheap snap-blade knife.

They can be found for as low as three for a dollar, have 10 or so blades in each knife, are sharp and sturdy, and last longer than pointier hobby knives. Replace your blades frequently as mat and poster board will dull them very quickly.

The assembly stage brings your model to life. Follow the model's instructions. They were written during the design/build process and will help prevent errors and mistakes. Some models have pictograms to show how the pieces go together.

Apply glue sparingly. A little goes a long way. Allow drying time between steps [14]. While simple models can be built in an hour or two, complex models can require many evenings.

Some structures include light to heavy weathering depending on the effect the designer intended, but you can add weathering to

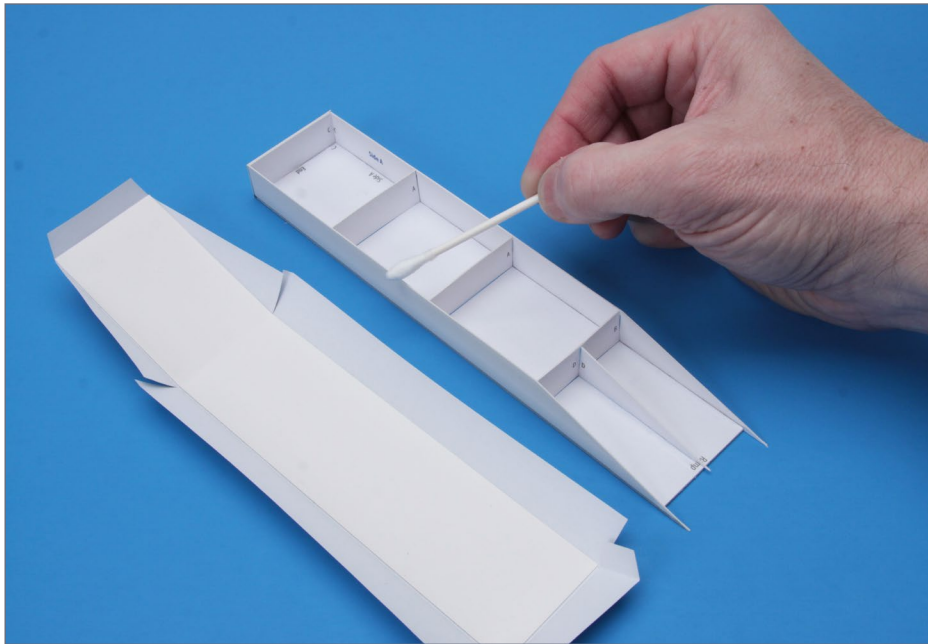
your structures with colored pencils and pastels [15]. Go lightly at first and keep adding detail until you've reached the desired effect. A coat of dull clear finish can seal in your work if desired.

And that's it. That's the basic process for completing a paper structure for your layout.

Textures for scratchbuilders

Most of the companies that have building and structures also have large selections of printable textures and finishes including roofing, siding, flooring, and more [16].

Inexpensive printable textures can be a gold mine of finishes for the scratchbuilder. Regardless of the base building materi-



14. A cotton swab or Microbrush will speed up and help control the application of PVA glue.



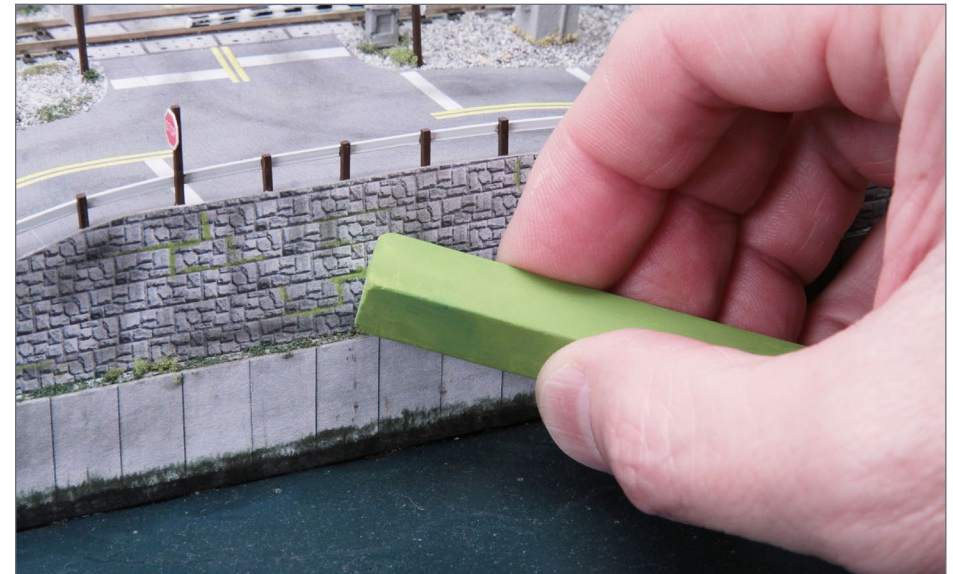
J. Fugate

MORE THAN JUST BACKGROUND STRUCTURES

You can use these paper structures for more than just background buildings. With a bit of extra effort, you can add more layers to get more of a 3D bas-relief look, resulting in foreground structures that are hard to tell from plastic, resin, or laser cut wood structures.

Back in the January 2012 issue of *Model Railroad Hobbyist*, Lance Mindheim discusses the process of adding 3D effects to paper structures made from digital photos (similar to what the authors show here), giving a foreground building that can look more realistic than plastic, resin, or laser cut structures.

WEB: model-railroad-hobbyist.com/magazine/mrh-2012-01-jan.



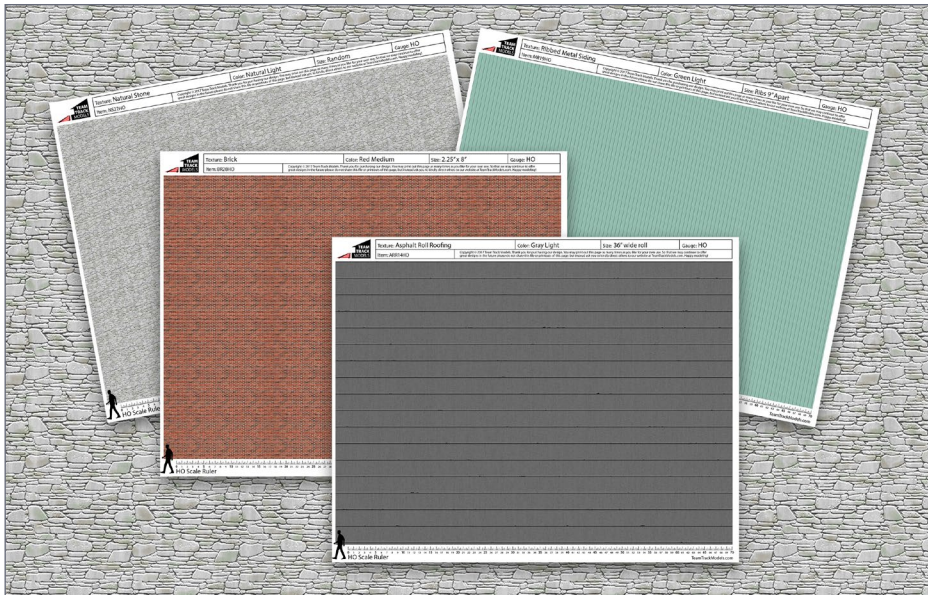
15. You can add weathering with simple pastel chalks and colored pencils. Here we're adding a bit of moss and algae color to this N-scale concrete block shoreline wall.

al, whether it is cardstock, styrene, or wood, printed textures can be an excellent method of finishing a model without the difficulty of paint.

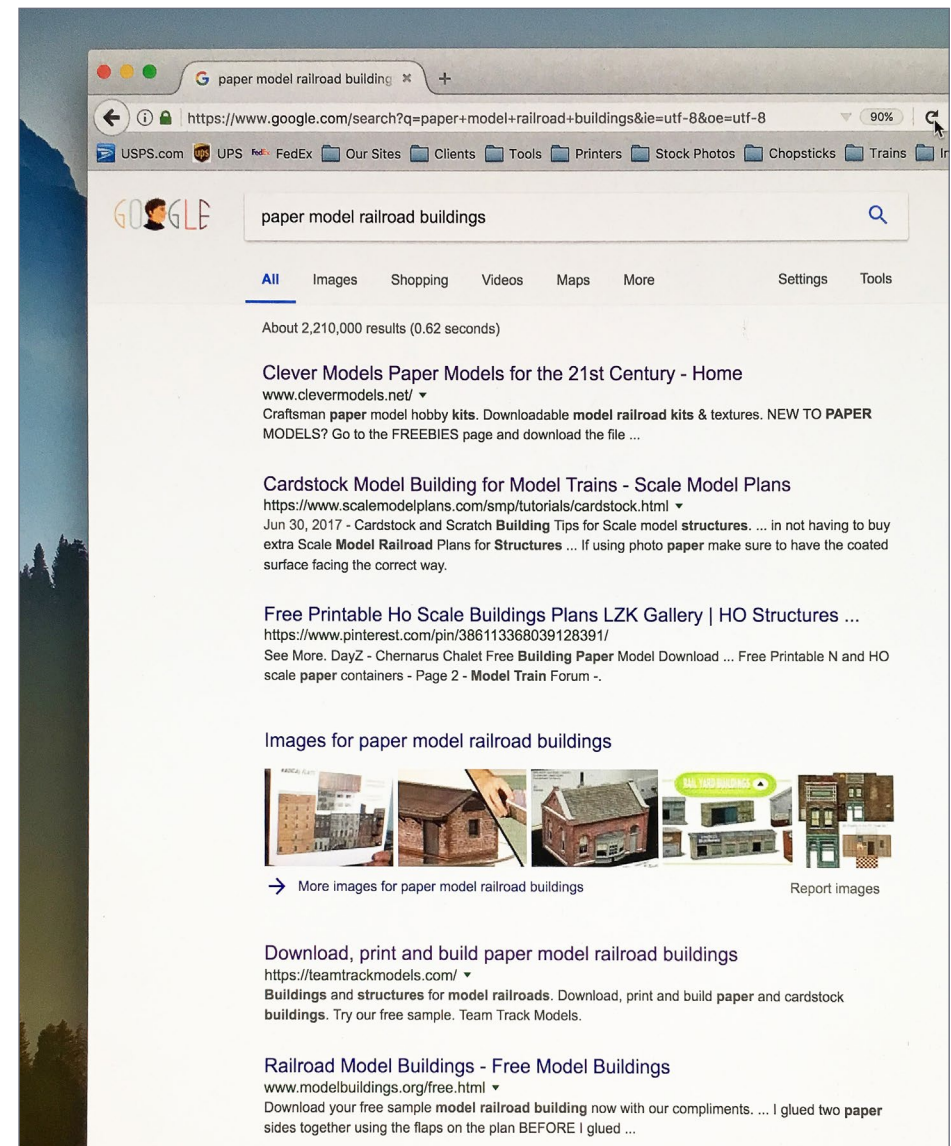
Where to get models

Enter “paper model railroad buildings” into your favorite search engine [17]. You will have many options from which to choose. Businesses offering models for sale typically have excellent model quality, finish and instructions.

Sites offering only free models can be good, but they tend to be simpler models with less graphic quality and less structural detail. A few companies you might try are:



16. Thousands of textures are available to scratchbuilders for practically any finish and color desired such as stone, brick, ribbed metal siding, and asphalt roll roofing.



17. A simple search will bring up several reputable companies to choose from. Look for sites that are secure, those that start with https:// as opposed to just http:// to know you have a safe and secure connection, especially if you're making a payment.

- Clever Models [www.clevermodels.net]
- Scale Scenes [www.scalescenes.com]
- Scale Model Plans [www.scalemodelplans.com]
- Team Track Models [www.teamtrackmodels.com] (our little company)

Many sites offer a free model to download and practice with such as the Concrete Loading Dock model shown earlier [9].

Try a company's free model to look at how good the graphics are and their level of quality of construction before buying kits. Usually they are smaller and easily put together in a short amount of time.

This gives you, the builder, the opportunity to view their graphic quality and building methodology. Use these to practice your building techniques before spending money on more complicated designs.

Note about CA allergies

Cyanoacrylate glue (superglue or CA) is one of a modeler's favorite glues. It bonds many materials and does it quick and strong. When we first began building our paper models naturally we used CA. Last spring, I (John) started having severe colds.

I'd be ill for several days, start to get better for a couple days and then get sick again. This went on for months, including an expensive trip to the doctor and an unsuccessful round of antibiotics, without finding a cure.

I started to wonder if the glue could be the cause, and with a little research I found that a small portion of folks are allergic to CA. The severe cold-like symptoms' onset was about 12

hours after exposure and last about 3 days. Bingo, that was it! I stopped using CA and after a few days I was well.

We decided that if CA can make people sick, perhaps we should look for an alternative [18]. To the rescue is good old PVA (such as Elmer's Glue All). For paper modeling PVA has an excellent bond, reasonably sets in only about twice the seconds as CA and allows for a little adjustment.

We've grown to like using PVA more than CA for most cases when constructing paper models. Our research suggests that medical grade CA (which is also safe for gluing foam) might not cause a reaction, and it seems to not cause me (John) any ill side-effects. ✓



18. Two glue alternatives for people with allergies to CA: Foam Safe CA (also referred to as Medical CA) and PVA such as Elmer's Glue-All.

JOHN AND AARON GIBBENS



John and Aaron Gibbens operate Team Track Models (www.team-trackmodels.com), a new-in-2017 downloadable paper model company in Eugene, Oregon. The brothers are both

model railroaders in N scale.

Aaron has been an HO model railroader most of his life before converting to N scale a couple years ago. Outside of work he is a Lieutenant with the local volunteer fire department and enjoys barbecuing.

John started model railroading four years ago with N scale T-Trak modules. He was looking for an activity to do in the winter months. He operates a catalog design company with his wife and enjoys sailing and movies. ■



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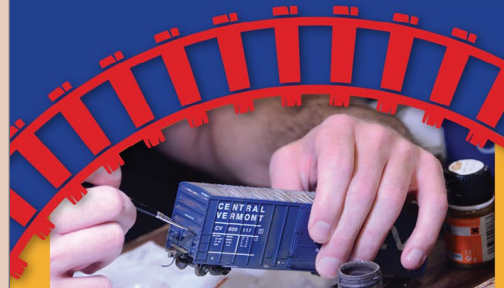
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