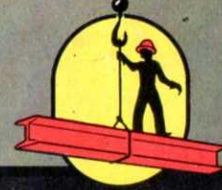


CHAD VALLEY

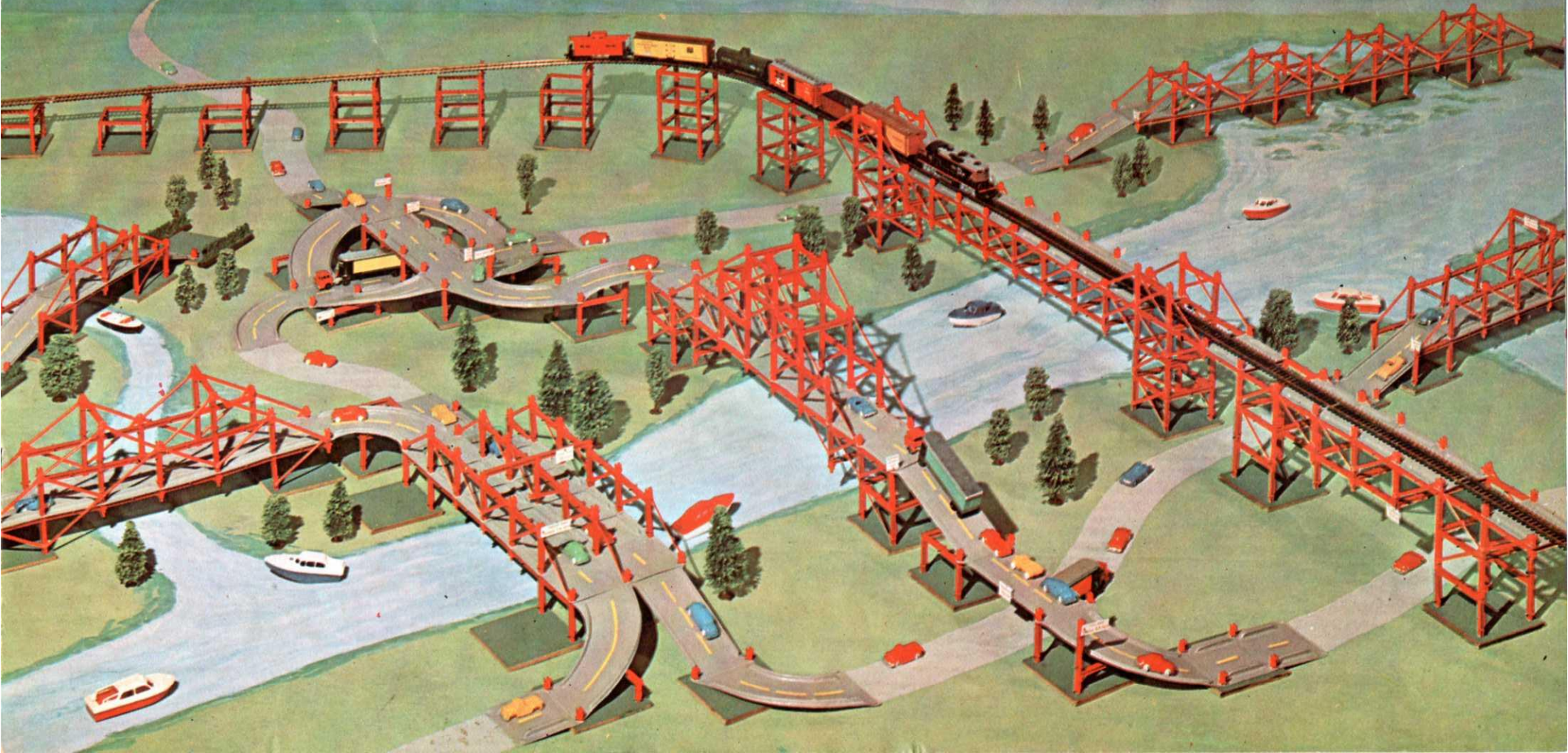
PLANNING BOOK

# BRIDGE and ROADWAYS Building Set

*Build the way Bridges and Roadways are actually Built*



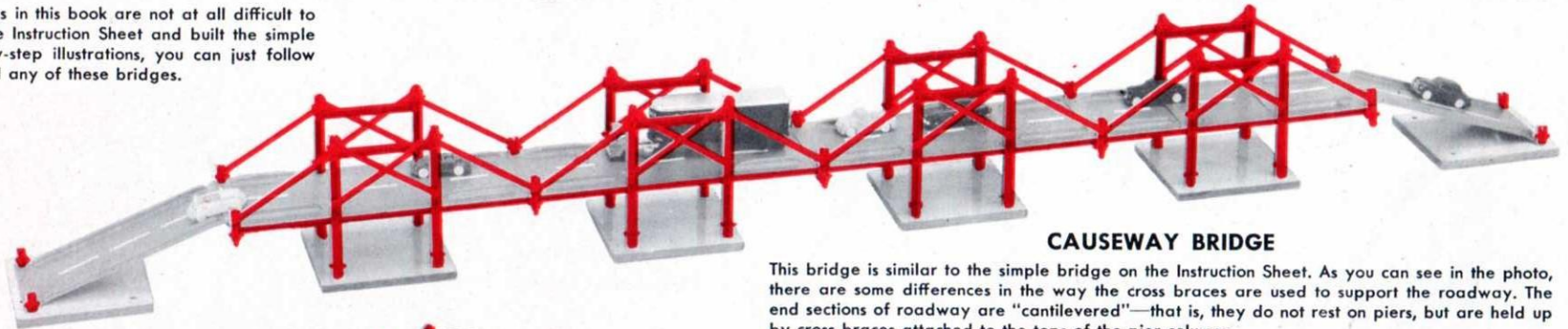
Design and Build  
**UNLIMITED VARIETY of  
REALISTIC STRUCTURES  
with GIRDERS, BRACES,  
FOOTINGS, ROADWAYS**





# It's easy to build realistic bridges like these with Chad Valley BRIDGE and ROADWAYS BUILDING SETS

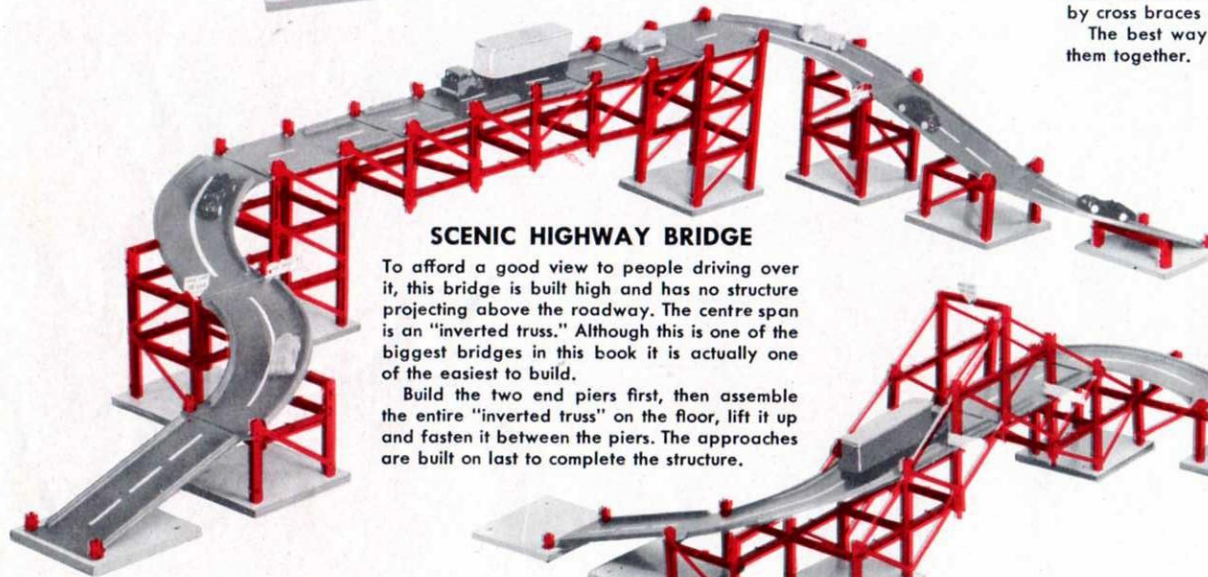
The impressive, realistic bridges in this book are not at all difficult to build. Once you have read the Instruction Sheet and built the simple bridge shown there in step-by-step illustrations, you can just follow the same general steps to build any of these bridges.



## CAUSEWAY BRIDGE

This bridge is similar to the simple bridge on the Instruction Sheet. As you can see in the photo, there are some differences in the way the cross braces are used to support the roadway. The end sections of roadway are "cantilevered"—that is, they do not rest on piers, but are held up by cross braces attached to the tops of the pier columns.

The best way to build this bridge is to construct each of the four units separately, then join them together.



## SCENIC HIGHWAY BRIDGE

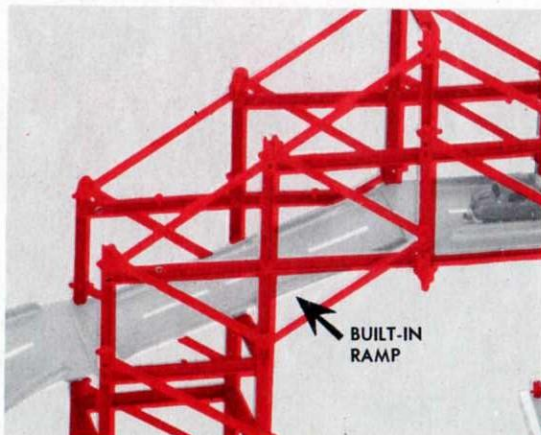
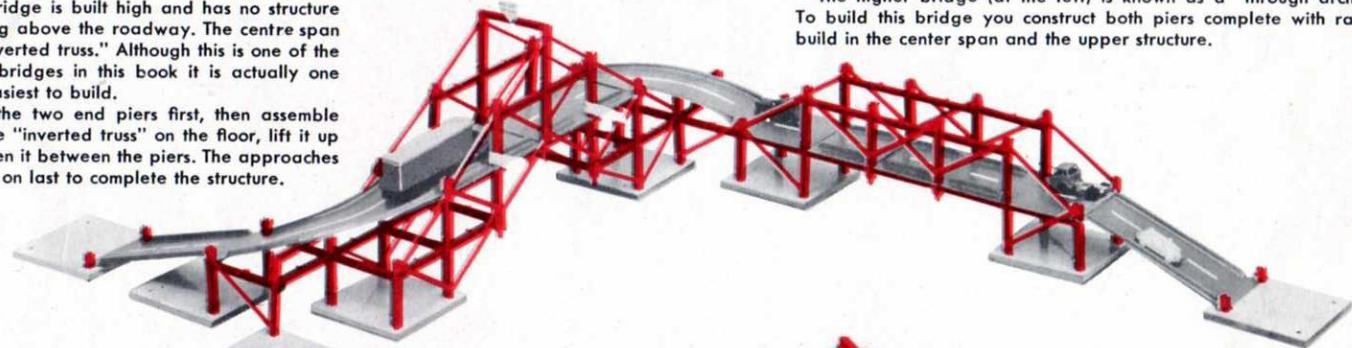
To afford a good view to people driving over it, this bridge is built high and has no structure projecting above the roadway. The centre span is an "inverted truss." Although this is one of the biggest bridges in this book it is actually one of the easiest to build.

Build the two end piers first, then assemble the entire "inverted truss" on the floor, lift it up and fasten it between the piers. The approaches are built on last to complete the structure.

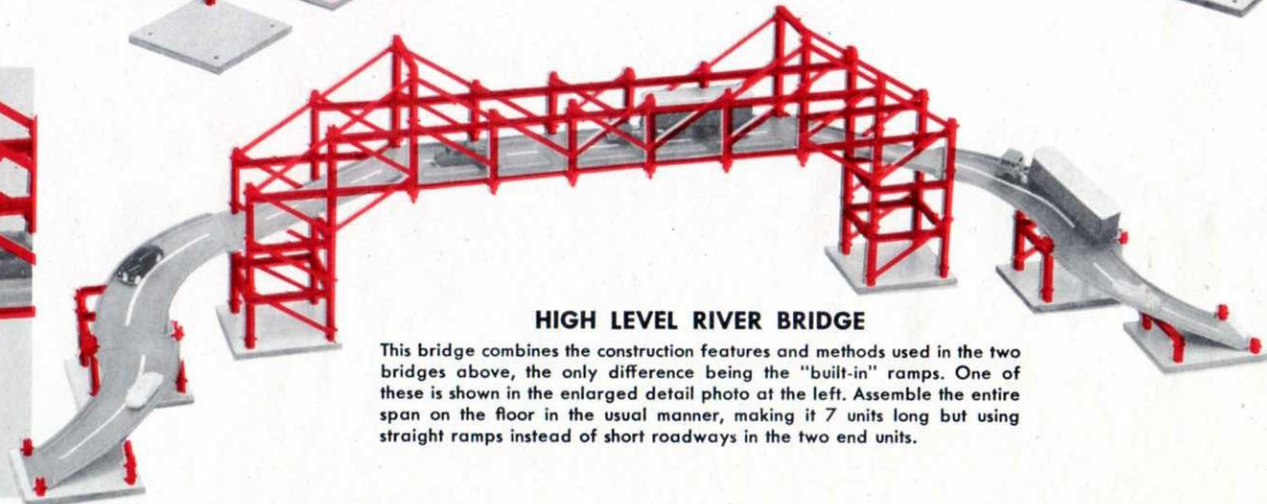
## CURVED HIGHWAY BRIDGE (below)

This is made up of two bridges, built separately and then joined together with a curved ramp. The bridge at the right is exactly like the simple bridge shown in the Instruction Sheet except that the centre span is three units long (note the double cross bracing in the middle of the span).

The higher bridge (at the left) is known as a "through arch" bridge. To build this bridge you construct both piers complete with ramps, then build in the center span and the upper structure.



BUILT-IN  
RAMP



## HIGH LEVEL RIVER BRIDGE

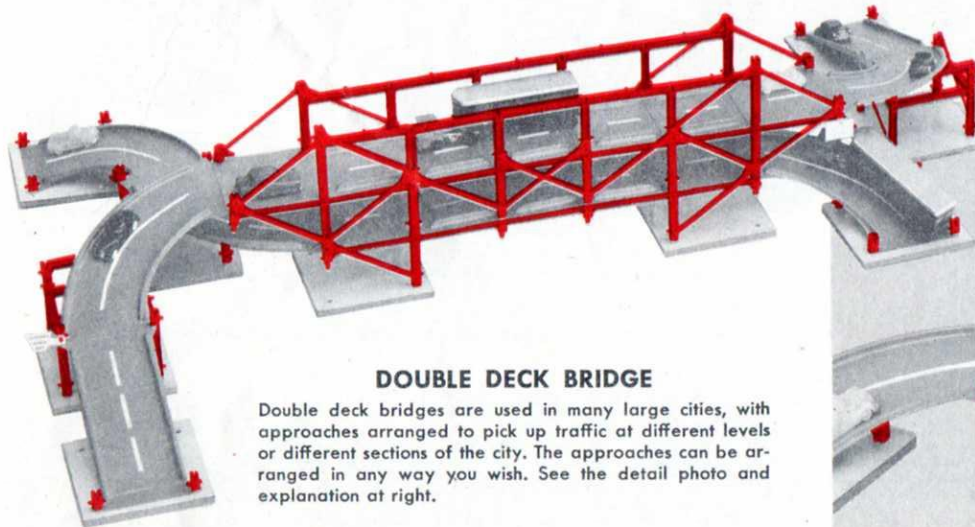
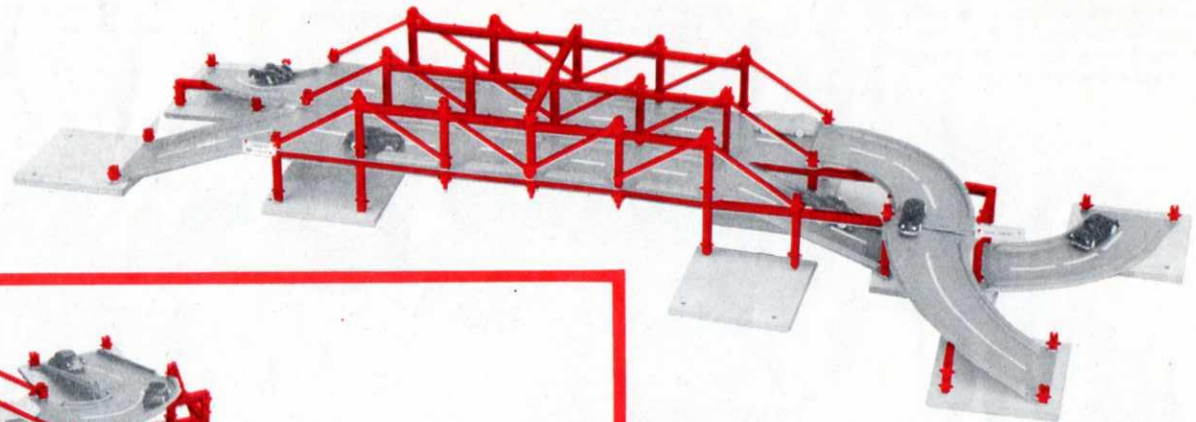
This bridge combines the construction features and methods used in the two bridges above, the only difference being the "built-in" ramps. One of these is shown in the enlarged detail photo at the left. Assemble the entire span on the floor in the usual manner, making it 7 units long but using straight ramps instead of short roadways in the two end units.



### DOUBLE ROADWAY BRIDGE

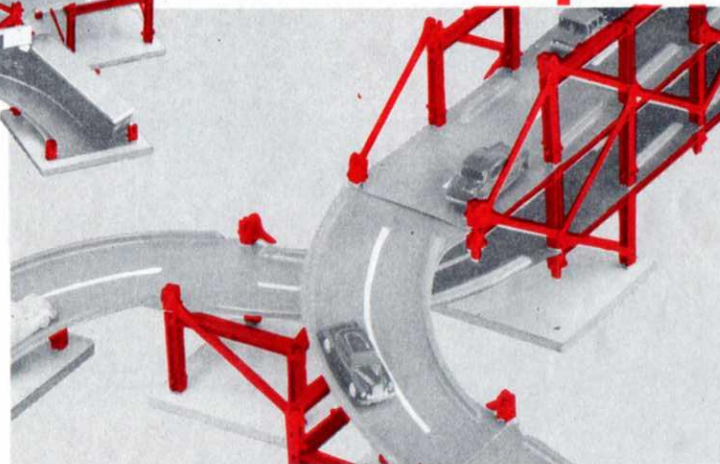
Note the cross-over approach at the right hand end of this bridge. This bridge allows two busy highways to cross a river and each other at the same place, with no traffic jams.

To build this double bridge, first construct the two double piers, then assemble the double roadway on the floor in the usual manner and attach it to the piers. Build the approaches after you have built the span.



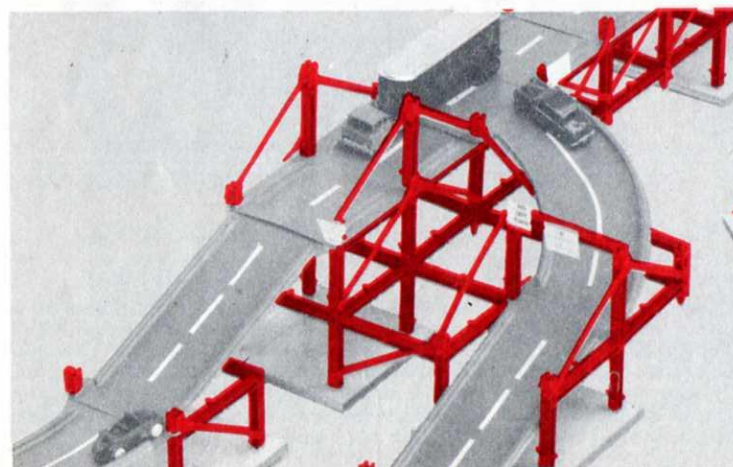
### DOUBLE DECK BRIDGE

Double deck bridges are used in many large cities, with approaches arranged to pick up traffic at different levels or different sections of the city. The approaches can be arranged in any way you wish. See the detail photo and explanation at right.

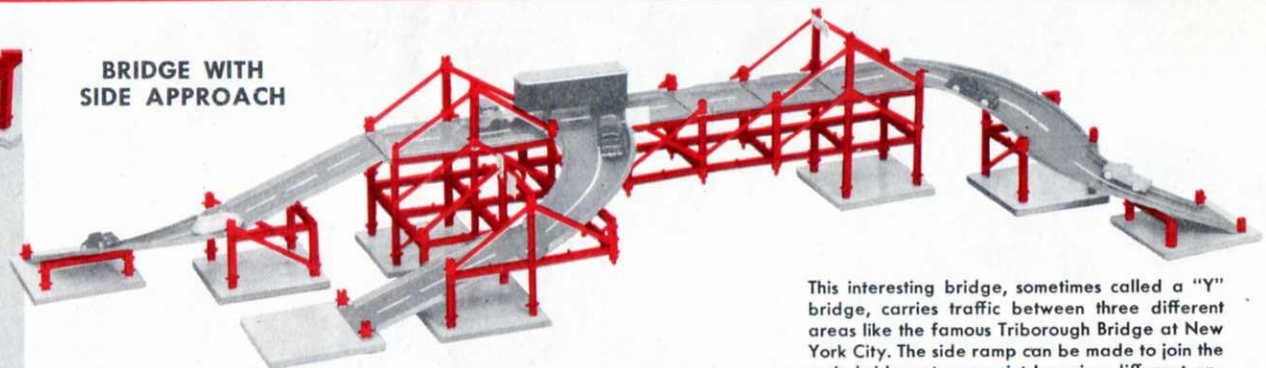


You will note that the ends of both levels of this bridge, where the approaches are attached, are "cantilevered" similar to the ends of the Causeway Bridge on the preceding page. This enlarged detail view shows how the cross braces are arranged to support the ends of the cantilever roadway. You can, if you prefer, use regular columns instead of the stubs to support the corners of the lower level.

To build a double deck bridge construct the lower level first, complete with approaches, then build on the upper level.



### BRIDGE WITH SIDE APPROACH



The detail photo at the left shows the construction of the piers for the bridge and side ramp. They are joined together here for extra rigidity but this is not absolutely necessary—you can simplify this construction if you wish by omitting the beams that connect the ramp to the main pier. Note also the cantilever construction of the side approach pier; this is done to avoid using additional columns and a footing which would block traffic under the bridge.

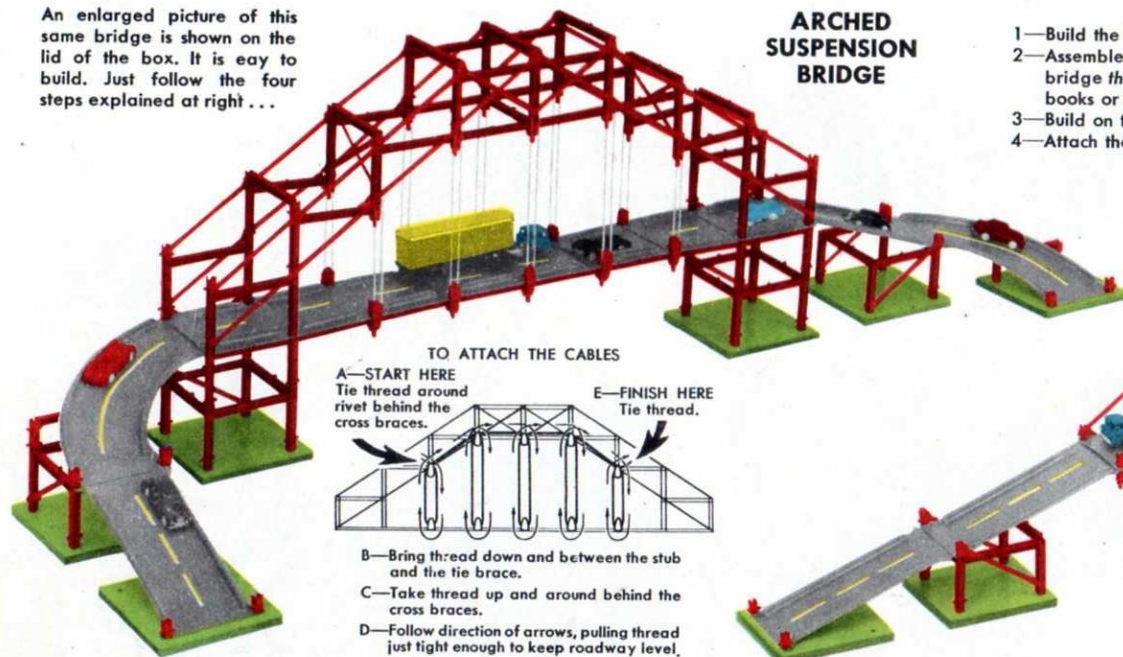
This interesting bridge, sometimes called a "Y" bridge, carries traffic between three different areas like the famous Triborough Bridge at New York City. The side ramp can be made to join the main bridge at any point by using different approach arrangements.

Use a roadway section *without curbs* at the place where the side approach joins on.

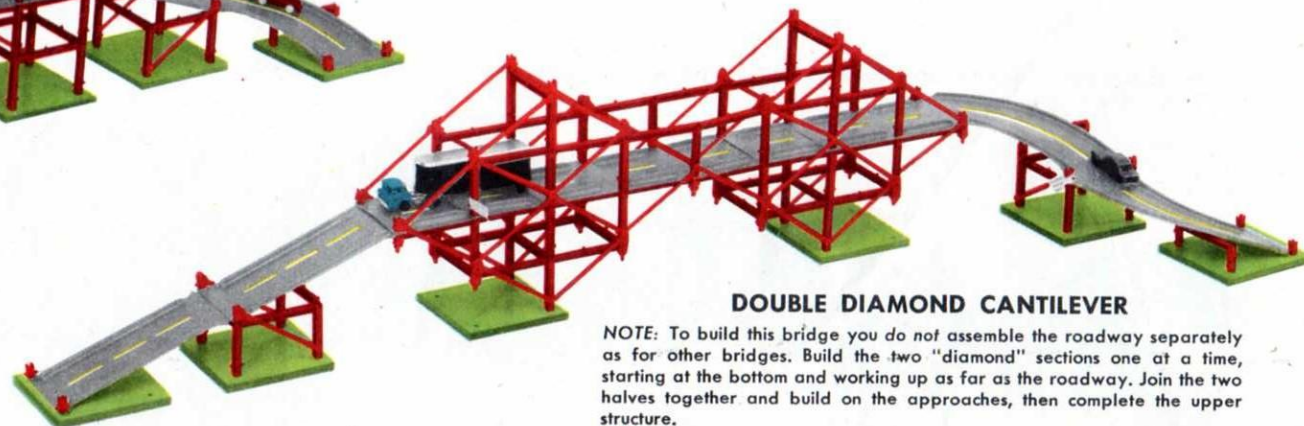


# It's fun to be a bridge engineer and build **SUSPENSION, CANTILEVER** and **DRAW BRIDGES** like these

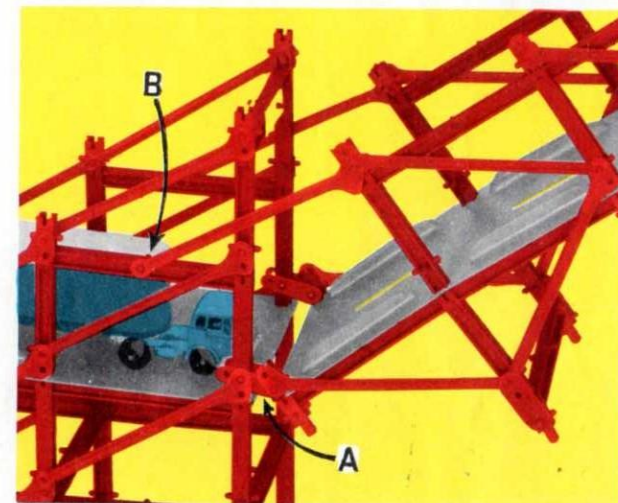
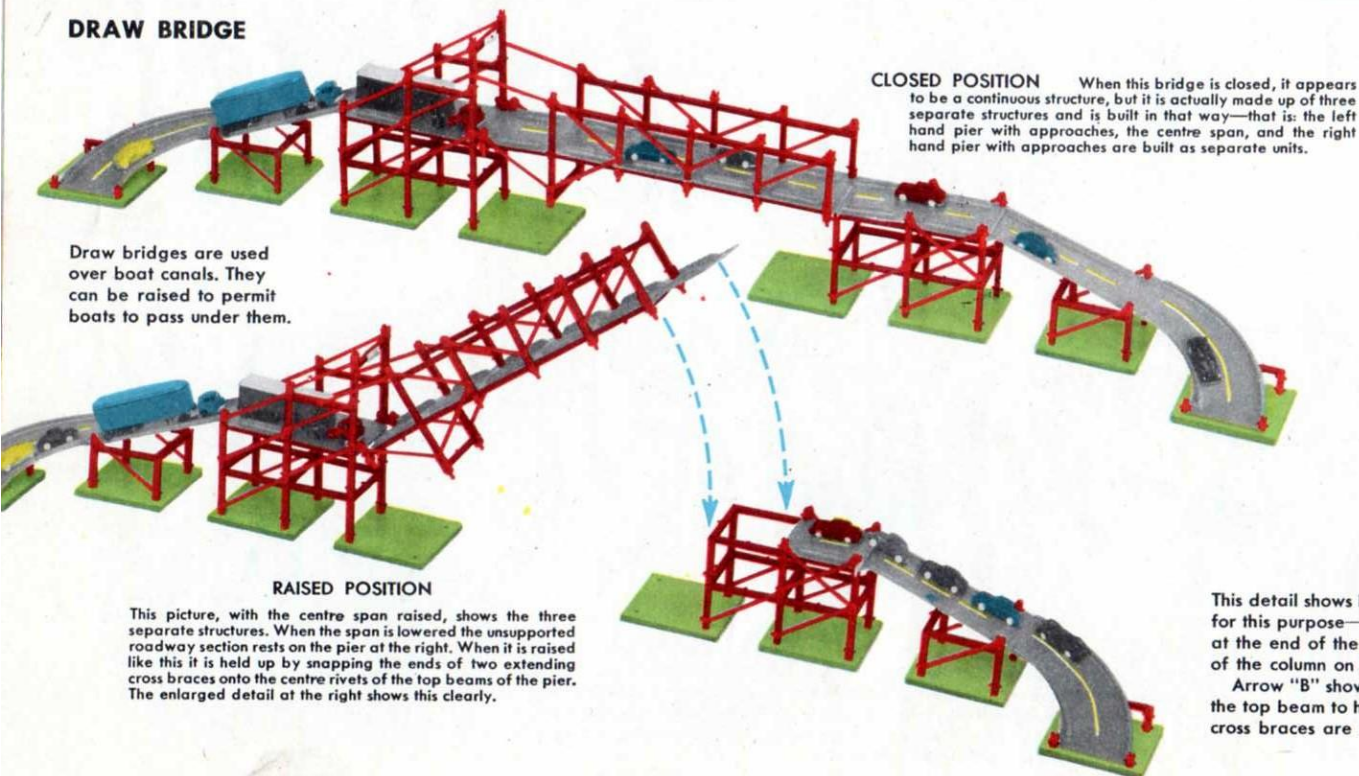
An enlarged picture of this same bridge is shown on the lid of the box. It is easy to build. Just follow the four steps explained at right...



- 1—Build the end piers and approaches complete.
- 2—Assemble the roadway on the floor in the usual manner and attach it to the piers. Because this is a suspension bridge the roadway is not self-supporting. To support it temporarily while you build the upper arch, slide some books or some other object underneath to hold the roadway level.
- 3—Build on the upper arch, working in from both ends to meet at the centre.
- 4—Attach the suspension cables (nylon thread) on both sides of the bridge as shown in the diagram.



## DRAW BRIDGE



This detail shows how the centre span is hinged to the pier at arrow "A." Two tie braces are used for this purpose—the hole at the broad end of the tie brace is snapped onto the rivet of the stub at the end of the span roadway, and the middle hole of the tie brace is snapped onto the rivet of the column on the pier. Use two tie braces at each side of the hinge.

Arrow "B" shows where the end of one of the extending cross braces is fastened to the rivet of the top beam to hold the span in raised position. When the span is to be closed, the ends of these cross braces are simply unhooked from the rivets so the span can be lowered.

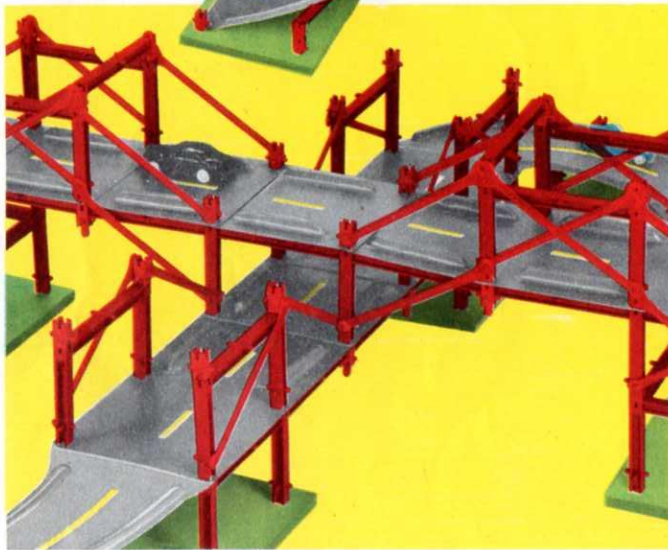


# Build CLOVERLEAF INTERCHANGES, OVERPASSES, many other modern ROADWAY FEATURES

meccanoindex.co.uk

As you travel by automobile or bus, you ride over or under or through a great many new structures designed to speed road traffic safely past congested areas. With your No. 5 Bridge and Roadway Set you can build a model of any roadway or expressway feature you see. Here are a few to get you started.

## ELEVATED CROSSOVER BRIDGE



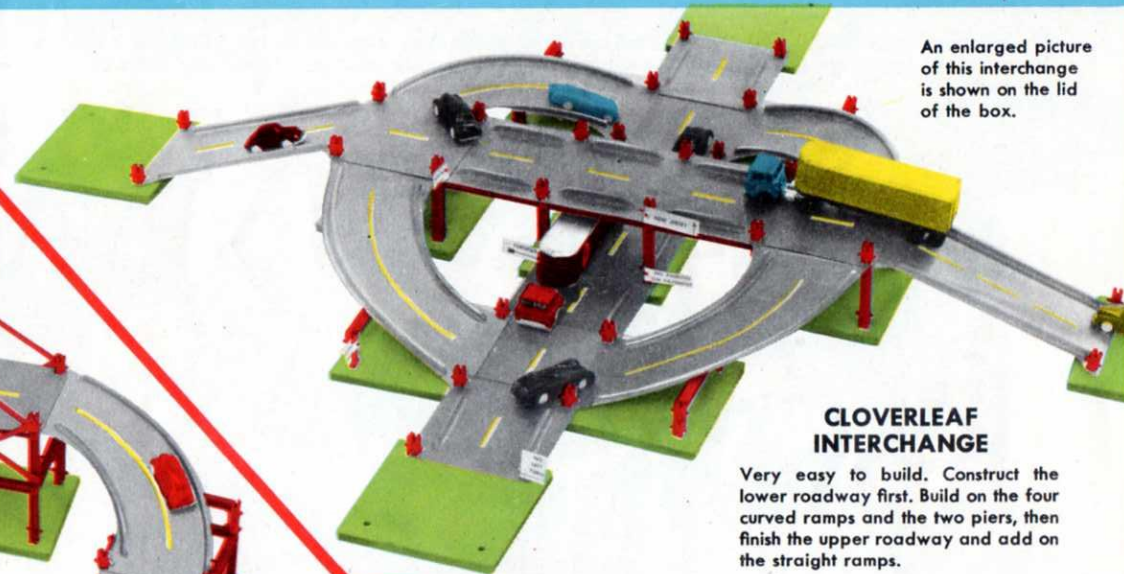
This enlarged detail photo shows that the lower bridge is just a simple bridge, five roadway sections long. The cross braces that support the span of the upper level also help support the span of the lower level, making this a very strong and rigid structure. You will note that there is no pier under the centre of the bridge as it is all supported from the end piers.

Build the lower bridge first. The upper bridge is then built over it, working from the end piers toward the centre and joining the two levels with cross braces as shown.

An enlarged picture of this interchange is shown on the lid of the box.

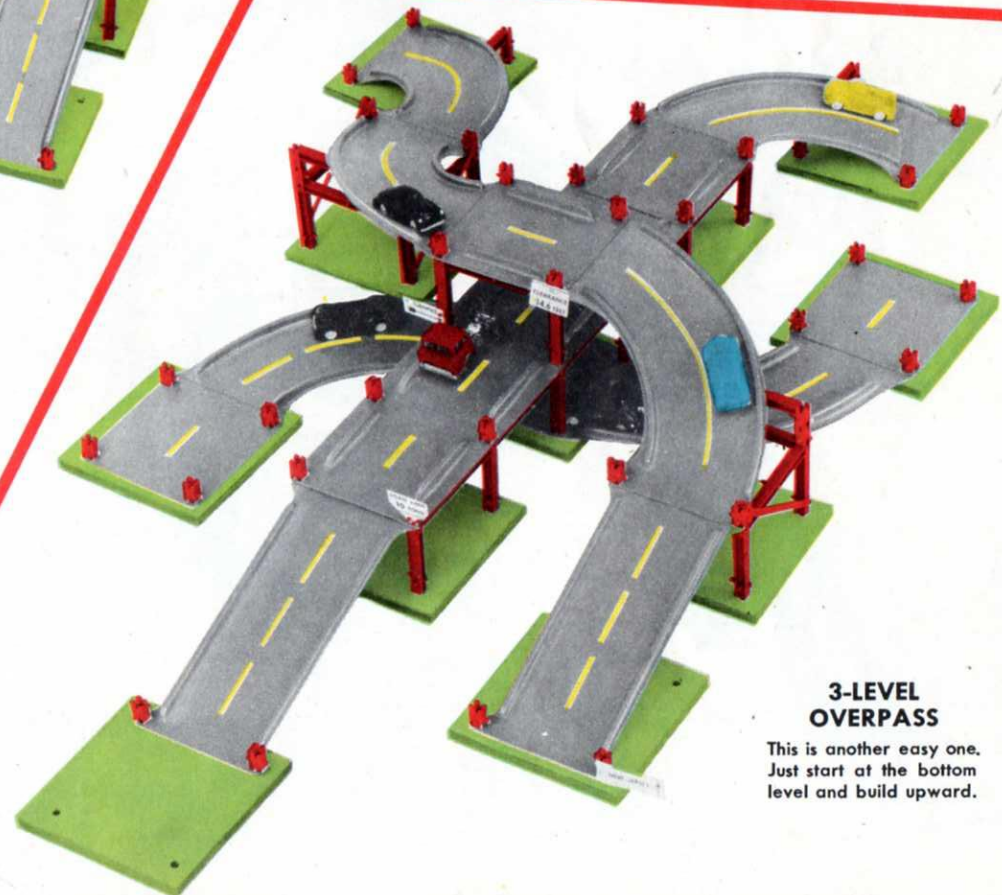
## CLOVERLEAF INTERCHANGE

Very easy to build. Construct the lower roadway first. Build on the four curved ramps and the two piers, then finish the upper roadway and add on the straight ramps.



## 3-LEVEL OVERPASS

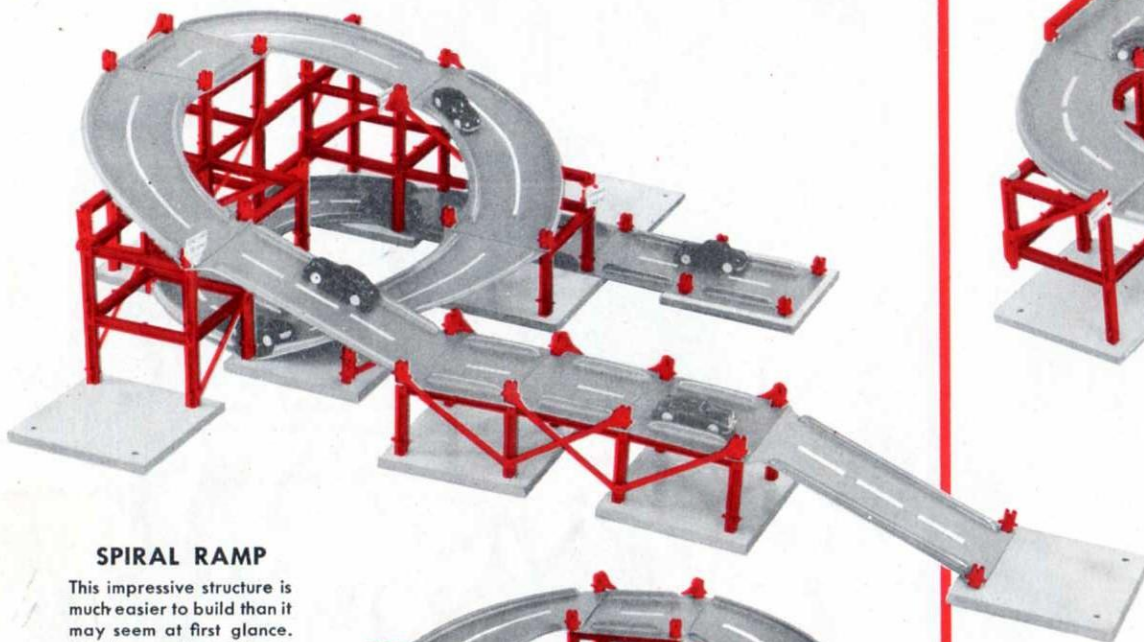
This is another easy one. Just start at the bottom level and build upward.





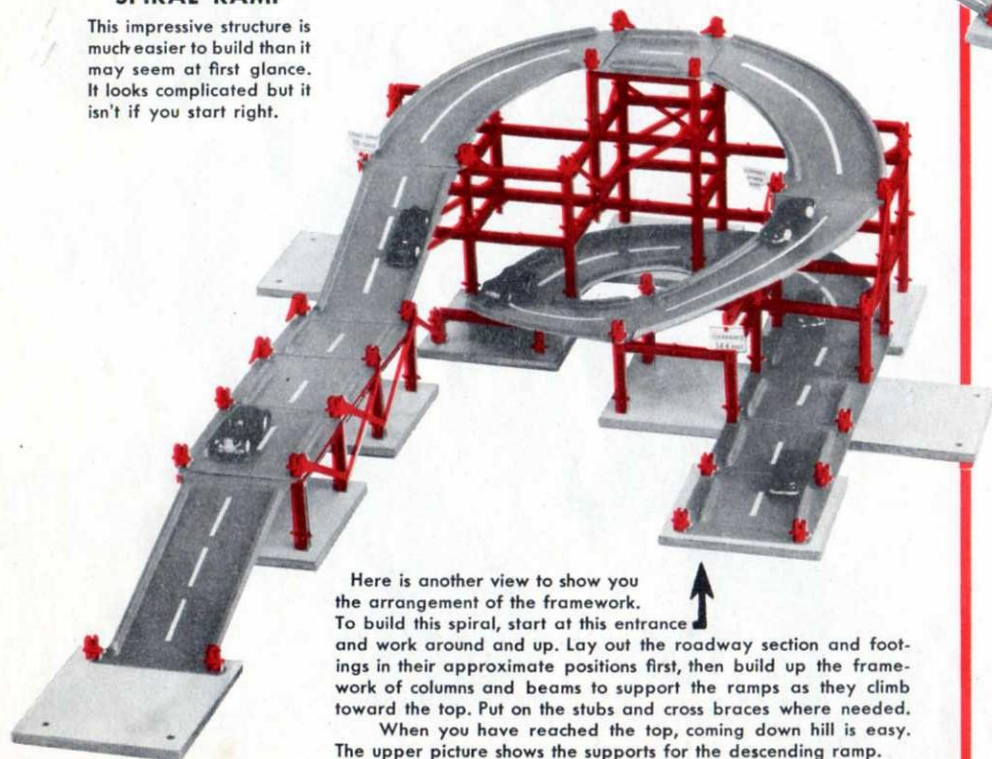
# These are lots of fun to build and even more fun to use with your toy cars and trucks

The intriguing structures on this page make full use of the roadways and ramps in the No. 5 Bridge and Roadways Set. Here are just two examples of the countless interesting ways to use your set. How many more can you design and build?



## SPIRAL RAMP

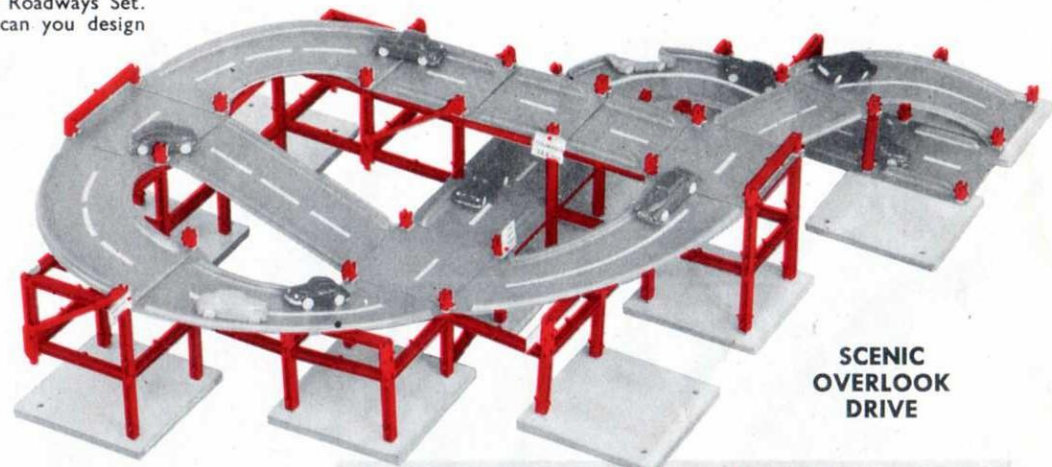
This impressive structure is much easier to build than it may seem at first glance. It looks complicated but it isn't if you start right.



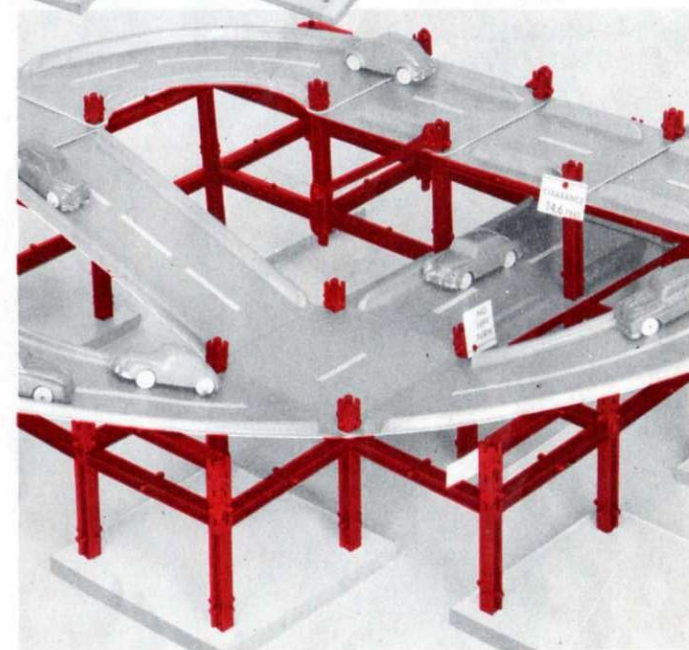
Here is another view to show you the arrangement of the framework.

To build this spiral, start at this entrance and work around and up. Lay out the roadway section and footings in their approximate positions first, then build up the framework of columns and beams to support the ramps as they climb toward the top. Put on the stubs and cross braces where needed.

When you have reached the top, coming down hill is easy. The upper picture shows the supports for the descending ramp.



## SCENIC OVERLOOK DRIVE



This is strictly for fun. You know that a roadway planned like this would cause endless traffic jams on a busy expressway, but for sightseeing, or just for play, it's perfect.

To build, start at the level entrance and build up around the curve until you come to the 4-way intersection. The enlarged photo shows some of the details for building out from that point.

You will find that the framework consists almost entirely of simple girder construction, requiring very little cross bracing except for some cantilever (3-legged) corner piers. You can see one of these cantilever piers at the left hand corner of the upper photo.

**DESIGN YOUR OWN HIGHWAY FEATURES** • A suggestion for planning other structures of this type is first to lay out the footings and all roadway and ramp sections on the floor, in the approximate positions you want. This will give you the general shape of the structure and help you figure out what girder construction you will need to make your grades, crossovers and intersections.



**RAILROAD BRIDGES** • Thrilling to build and use with your toy trains. You can arrange your tracks on various levels and cross one track over another, building long easy grades as described at the bottom of this page.

If model trains are your hobby you can build bridges and trestles that will become a permanent part of your railroad layout, spanning valleys with bridges of any height, length and type desired.

### HEAVY DUTY CANTILEVER BRIDGE (right)

You are familiar with cantilever construction because several bridges on preceding pages, including the very first bridge in this book, were cantilevered. This one, however, is much more strongly built and braced, as you would expect in a railroad bridge.

To build this bridge, first construct the two piers two columns high. Next, assemble the center span (5 units long) and attach it to the piers. Then assemble the two end extensions and attach them to the piers, after which you can finish building the piers up to their full height and complete the cross bracing.

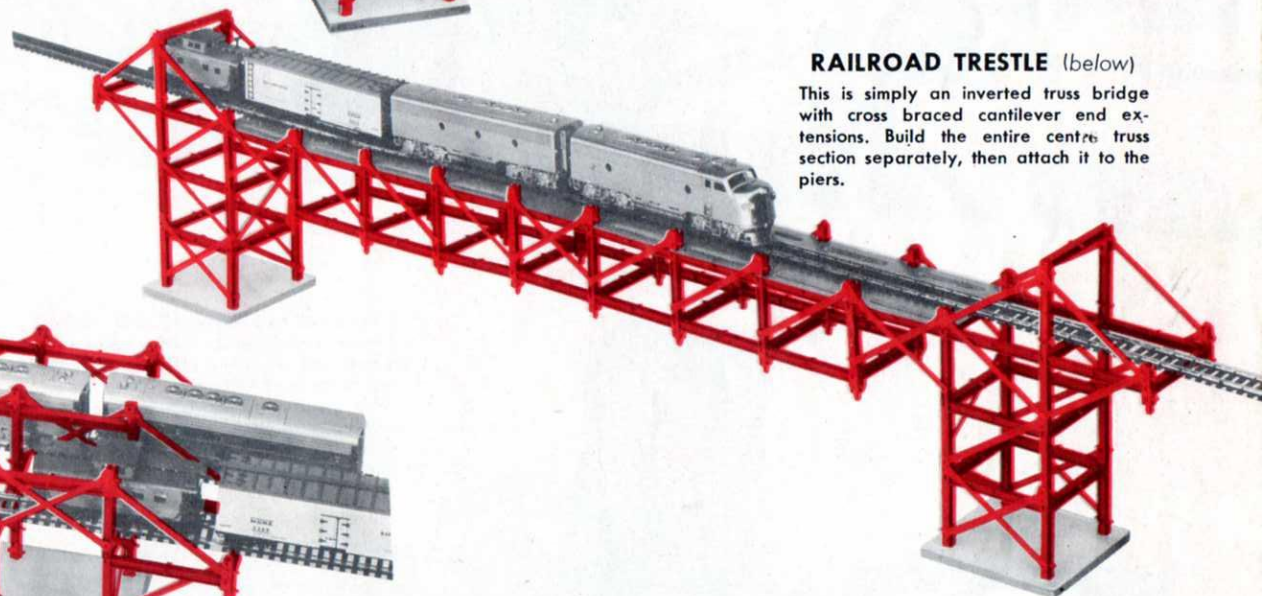
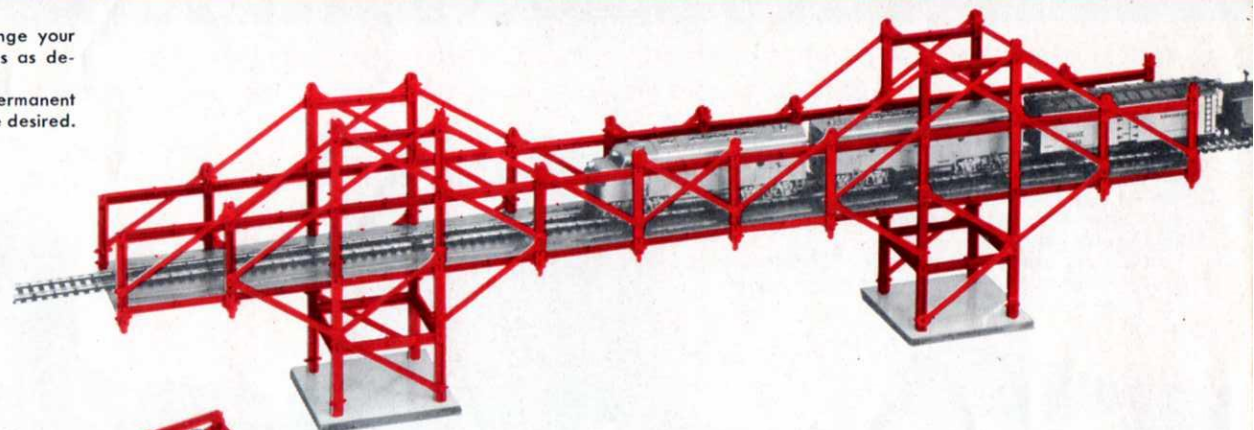
### DOUBLE TRACK BRIDGE (below)

You will start this by building the center pier first, then build out toward both ends attaching cross braces as you go.

As you can see, this bridge does not use the roadway sections. They are really not necessary for railroad bridges, and without them the bridge has a real railroad-like appearance.

### RAILROAD TRESTLE (below)

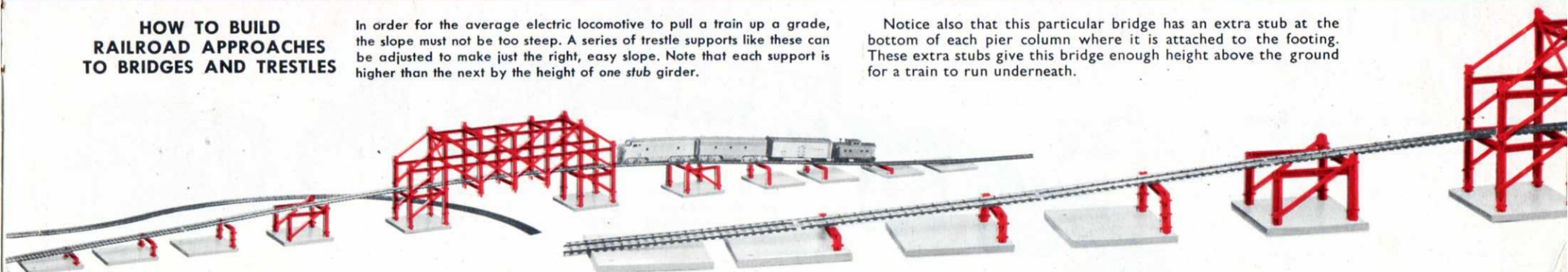
This is simply an inverted truss bridge with cross braced cantilever end extensions. Build the entire center truss section separately, then attach it to the piers.



### HOW TO BUILD RAILROAD APPROACHES TO BRIDGES AND TRESTLES

In order for the average electric locomotive to pull a train up a grade, the slope must not be too steep. A series of trestle supports like these can be adjusted to make just the right, easy slope. Note that each support is higher than the next by the height of one stub girder.

Notice also that this particular bridge has an extra stub at the bottom of each pier column where it is attached to the footing. These extra stubs give this bridge enough height above the ground for a train to run underneath.





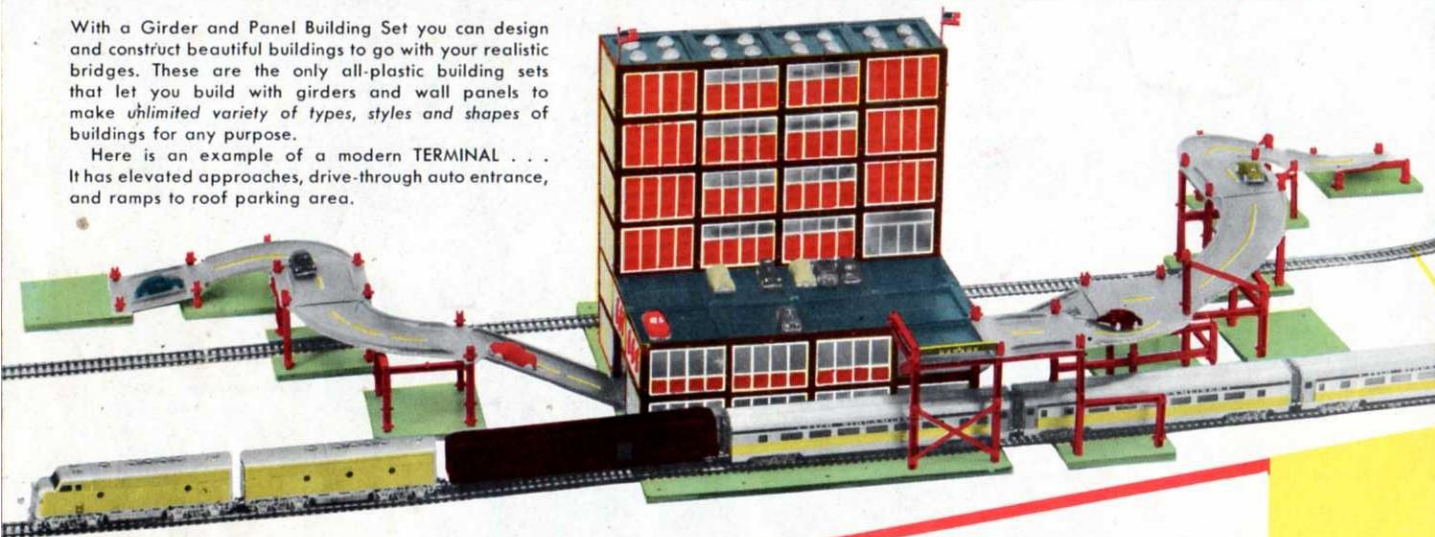
# You can combine your Bridge and Roadways Set with Chad Valley's GIRDER and PANEL BUILDING SETS

## BUILD MODERN BUILDINGS THE WAY REAL BUILDINGS ARE BUILT . . .

construct framework of GIRDERS on the Masonite foundation, build on walls with prefab PANELS

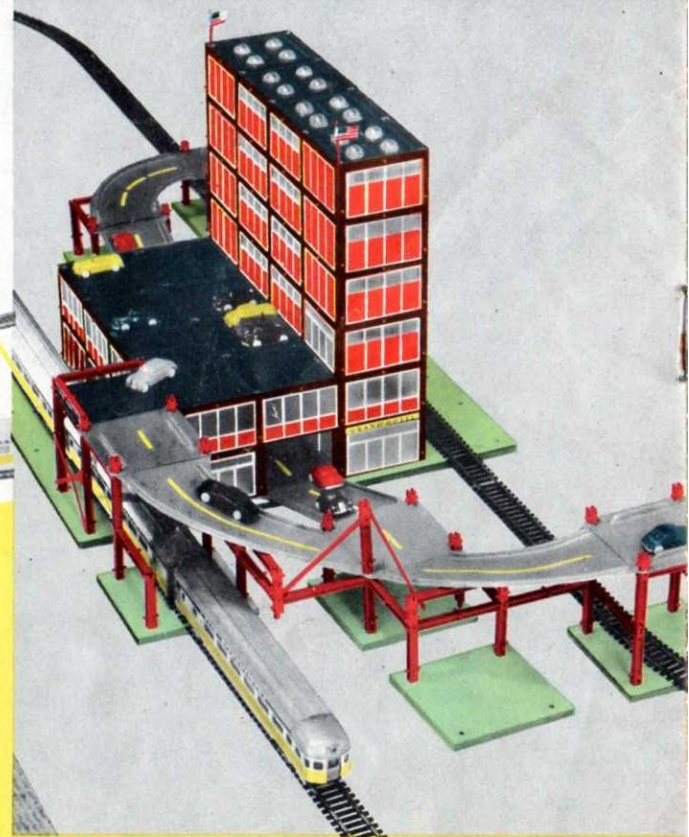
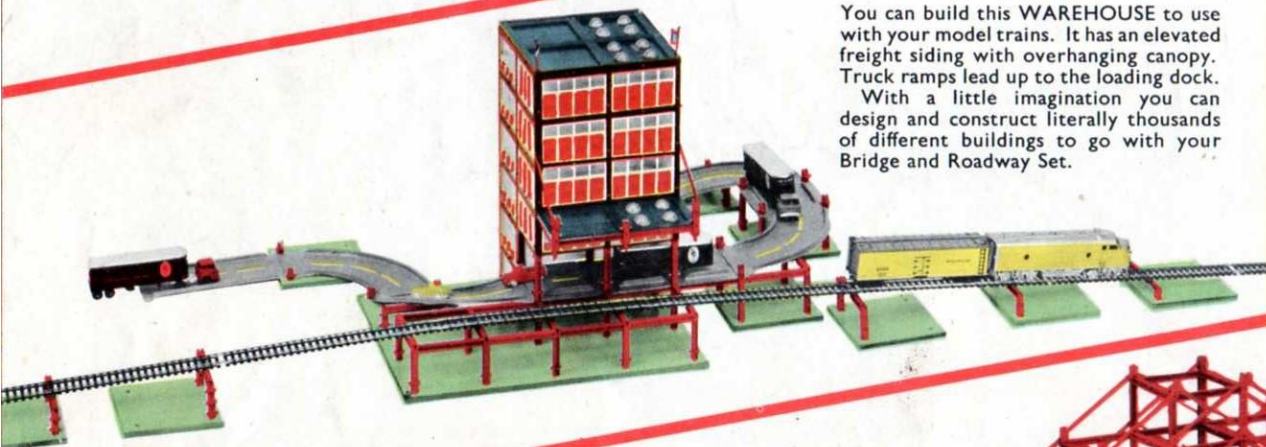
With a Girder and Panel Building Set you can design and construct beautiful buildings to go with your realistic bridges. These are the only all-plastic building sets that let you build with girders and wall panels to make unlimited variety of types, styles and shapes of buildings for any purpose.

Here is an example of a modern TERMINAL . . . It has elevated approaches, drive-through auto entrance, and ramps to roof parking area.



You can build this WAREHOUSE to use with your model trains. It has an elevated freight siding with overhanging canopy. Truck ramps lead up to the loading dock.

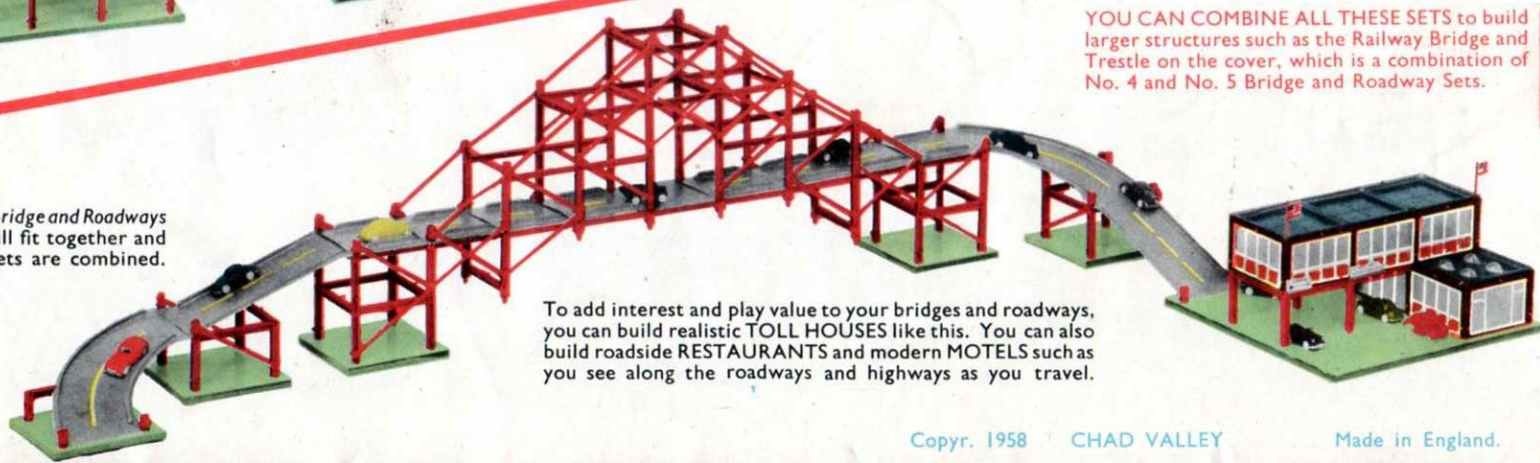
With a little imagination you can design and construct literally thousands of different buildings to go with your Bridge and Roadway Set.



This side view of the TERMINAL shows how cars and taxicabs can overpass the railroad tracks to drive into the ground floor of the building. A ramp leads up to the roof where cars are parked. You can build many variations, such as running the trains into the depot.

Chad Valley Girder and Panel Building Sets and the Bridge and Roadways Sets are same scale, so that all structural parts will fit together and can be used interchangeably when any of the sets are combined.

There are three sizes of Girder and Panel sets. The Terminal building at the top of this page was built with Set No. 3; the Warehouse was built with Set No. 2; the Toll House was built with Set No. 1. Any of these sets can be combined with either the No. 4 or No. 5 Bridge and Roadway set, or with each other.



To add interest and play value to your bridges and roadways, you can build realistic TOLL HOUSES like this. You can also build roadside RESTAURANTS and modern MOTELS such as you see along the roadways and highways as you travel.

YOU CAN COMBINE ALL THESE SETS to build larger structures such as the Railway Bridge and Trestle on the cover, which is a combination of No. 4 and No. 5 Bridge and Roadway Sets.