



HO Structure Kit
**90' SINGLE-TRACK DECK
GIRDER RAILROAD BRIDGE**
933-4508

Thanks for purchasing this Cornerstone® kit. Please read these instructions and study the drawings before starting construction. All parts are styrene, so use compatible glue and paint to finish your model. As part of the Cornerstone Engineered Bridge System walthers.com/bridgesystem, your new model can easily be used with other Cornerstone single-track bridges and accessories to create a custom structure for your railroad. PLEASE NOTE: Parts are included to build your choice of an Open or Ballasted Deck Bridge, which can be completed with Walthers Code 83 Bridge Track (#948-886 or 949-899), plus flexible, sectional, hand-laid track or your own rail, all sold separately. To complete installation, Single-Track Railroad Bridge Concrete Abutments (#933-4551) and Single-Track Railroad Bridge Concrete Piers (#933-4550) are each available separately. Additional kits can also be used with the Steel Railroad Bridge Tower Kit (#933-4554) and Steel Railroad Bridge Tower Bent (#933-4555), each sold separately to model a continuous viaduct.

While simple bridges had been around for centuries, railroads presented engineers with new challenges to design structures that could withstand the tremendous weight, vibration, pushing (compression) and pulling (tension) forces exerted by a moving train. In 1847, the sturdy "plate girder bridge" was introduced, with individual iron plates and braces riveted together and directly to the ladder-shaped floor supports. With the rise of the steel industry, durable I-beams and sheet steel became readily available in various sizes, ushering in the next generation of plate girder bridges. Where sufficient clearance was available, engineers specified deck girder bridges, with the supporting girders installed below the deck. This was a favorite design with railroads, as they required less material they could be built faster and at a lower cost, and allowed unlimited side and overhead clearance for passing trains. Ideal for medium length spans from 20 to 100' (6 to 30m) long, two styles of floors or decks were commonly used: open decks used longer bridge ties the width of the floor beams and were cheaper to build, but the ballasted deck with a steel pan to hold standard ties and ballast, required less maintenance, and provided a smooth and quiet ride. Because of their versatility and adaptability, deck girder bridges were easily built side-by-side for multi-track lines, used in multiples with piers where longer spans were needed, built on bents and towers for viaducts, and also used in combination as approach spans for other types of bridges. Today, many of these sturdy steel bridges are still in daily railroad service, or have been preserved as part of recreational trails. For more ideas and information on the Cornerstone Engineered Bridge System please visit walthers.com/bridgesystem. For additional products to complete your scene, see your participating hobby dealer, check out the latest Walthers Model Railroad Reference Book or visit us online at walthers.com.

Before starting construction...

The Cornerstone Engineered Bridge System includes a wide range of accessories to complete installation of your new bridge, including:

Single-Track Railroad Bridge Concrete Abutments (933-4551)

Single-Track Railroad Bridge Concrete Piers (933-4550)

Bridge Shoes and Adaptor Assortment (933-4559) simplifies aligning & combining Cornerstone bridge kits for longer spans.

- 1) **Note** the raised ridges on the outside edges of the Bottom Bracing (2), use these to align parts, and glue a Side Girder (1) in place as shown.
- 2) Align the Cross Frames (7x 6) with the inset areas at both ends and the center of the Side Girder, and glue in place.
- 3) Align Cross Frames with openings on remaining Side Girder, glue in place and to Bottom Bracing.
- 4) Glue End Posts (4x 5) in place as shown.
- 5) Glue Floor Beam (4) to upper surface of completed Side Girder assembly.

DECK ASSEMBLY

PLEASE NOTE: Parts are included to build either an Open Deck (7) or a Ballasted Deck (10) Bridge. We suggest test fitting your completed bridge on your layout to help with final alignment before securing the track.

Open Deck

PLEASE NOTE: This version may be built to use different kinds of track:

A) To use Flexible Track or Rail (each sold separately):

- 1) Make sure Deck (7) is centered side-to-side on the Floor Beam and glue in place.
- 2) **Note** the two sets of raised alignment points on the Deck; the outside set with tie plates and spikes is for the running rail, the inside set with spikes only is for a guardrail. For flexible track, remove ties to fit. Align rails on the outside and glue rails in place. Cut guardrails to fit from lengths of rail and glue to inside mounting points.
- 3) Glue Right (12), Left (13) and Rear (14) Handrails to refuge platform as shown.

B) To use Walthers Bridge Track (948-886 or 948-899 sold separately):

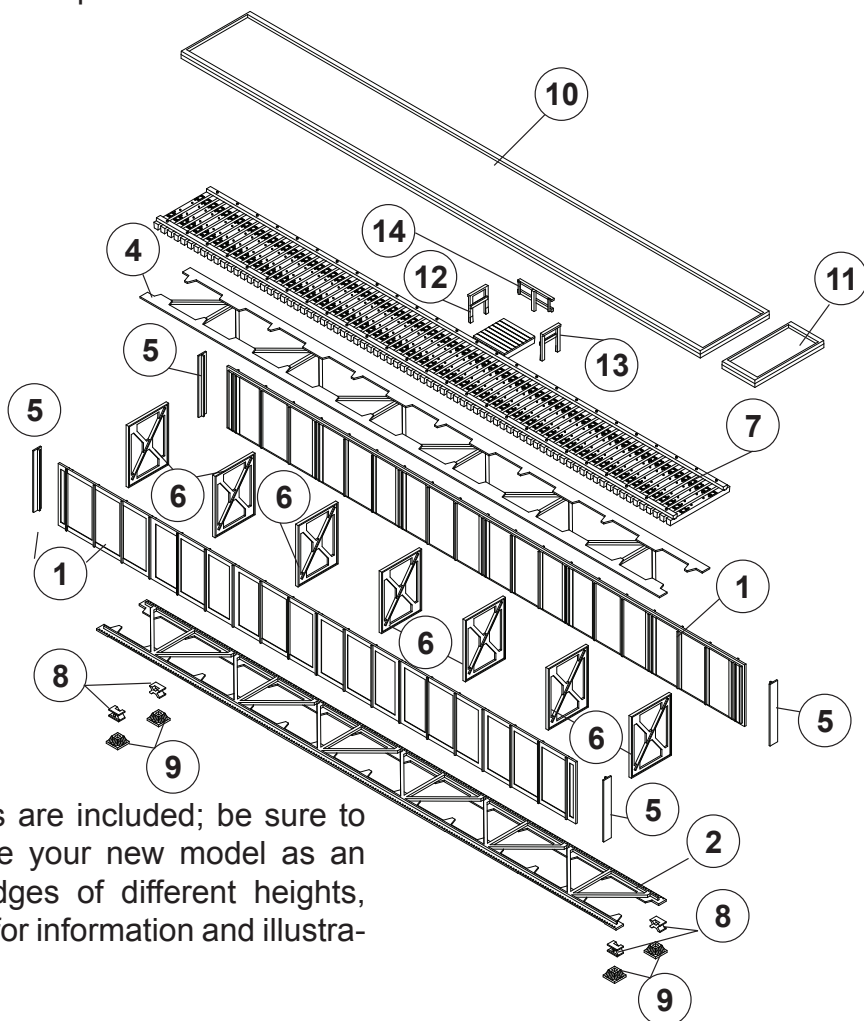
- 1) Align Bridge Track with Floor Beam and glue in place if desired.

Ballasted Deck (10 & 11)

- 1) **PLEASE NOTE:** Use the raised ridges on the bottom of Deck (10), to align the Deck with the Floor Beams and glue in place

- 2) Deck Extensions (2x 11) are optional for use on curves; some cutting or adjustment may be needed. Test fit, then glue to end of Deck.

- 3) Test fit a length of flexible or sectional track to the deck; the last tie at each end should rest against the inside raised lip of the Deck. Center the track and glue in place if desired. Finish assembly by adding ballast (sold separately).



Final Assembly - All Versions

PLEASE NOTE: Two styles of Bridge Shoes are included; be sure to use the same style at each location. To use your new model as an approach span with other Cornerstone Bridges of different heights, please visit www.walthers.com/bridgesystem for information and illustrations of specific bridge combinations.

- 1) Select either the Small (4x 9) or Large (4x 8) style, align the top of the Shoe with the edges of the raised pads at both ends of the Floor Beam and glue in place at all four corners.