



HO Structure Kit

SINGLE-TRACK RAILROAD ARCHED PRATT TRUSS BRIDGE

933-4521

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, <https://www.walthers.com/page/EngineeredBridgeSystem.pdf>, your new model can easily be used with other Cornerstone bridges and accessories to create a custom structure for your railroad. 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. Early spans were built of wood and later iron, and if a longer or sturdier design was needed, engineers turned to the truss. This triangular-shaped assembly strengthened the floor supports and distributed the stress and strain over a larger area. Many styles soon appeared, including the Pratt Truss developed by Thomas and Caleb Pratt in 1844, which used vertical posts and diagonal cross members sloping up and away from the middle, the opposite of most existing designs. The bigger and heavier locos and cars of the 19th and 20th centuries also demanded stronger and larger bridges, and many roads opted for all-steel Pratt through-truss bridges, used where clearance under the bridge was required. In the 1890s engineers introduced a variation of the design for longer spans, with curved top chords (actually straight sections joined at a slight angle) to strengthen the unsupported center. As the extra length of these designs also required extra height, the top chords were connected by a series of angled struts between panels and straight laterals at each vertical post. Tough and durable, many are still in daily railroad service. Typical of arched Pratt truss bridges built all over North America in the 20th century, your finished model will add a realistic touch to any layout. 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](https://www.walthers.com).

BEFORE STARTING...

To simplify installing your bridge in new or existing scenery, the following are available separately: Single-Track Concrete Bridge Abutments (#933-4551 pkg(2) and Single-Track Concrete Bridge Piers (#933-4550, pkg(2)). Please visit <https://www.walthers.com/page/EngineeredBridgeSystem.pdf> for more ideas and information.

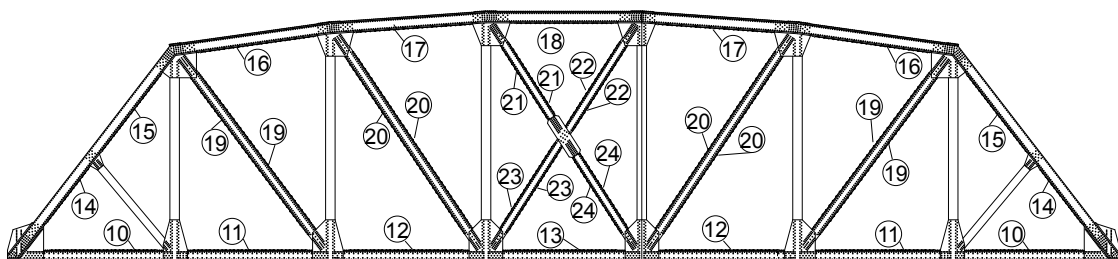
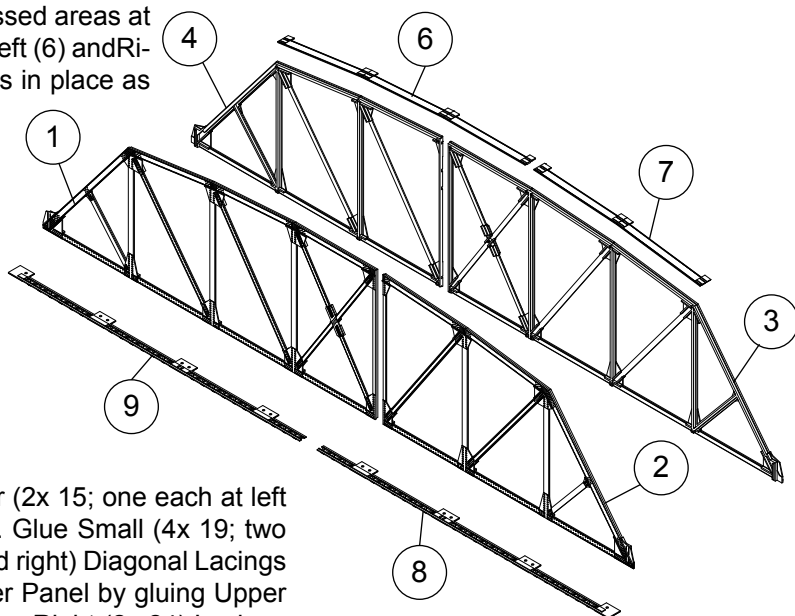
TRUSS ASSEMBLIES

Make one each left and right; work on a flat surface and be sure all parts are straight during assembly.

1) Glue Truss Exterior (Left 1, Right 2) and Interior (Right 3, Left 4) halves at ends as shown. Use the locator pins and mounting points to align both subassemblies and glue together as a single unit. Use recessed areas at top and bottom of truss assemblies to align parts, and glue Left (6) and Right (7) Top Chord, and Left (9) and Right (8) Bottom Chords in place as shown. Repeat these steps for second truss assembly.

2) PLEASE NOTE: Three different sizes of Upper Lacings (16, 17, 18) and four sizes of Lower Lacings (10, 11, 12, 13) are included; use locating ridges molded on back to align parts between inset areas of truss assemblies. Glue Lower Center (1x 13), Middle Lower (2x 12, 2x 11) and End Lower Lacings (2x 10) to Truss assembly as shown. Glue Upper Center (1x 18), Middle Upper (2x 17) and End Upper Lacings (2x 16) to Truss assembly. Repeat these steps on second truss assembly.

3) Glue Lower (2x 14; one each at left and right) and Upper (2x 15; one each at left and right) Inside End Post Lacings at both ends as shown. Glue Small (4x 19; two each at left and right) and Medium (4x 20 two each at left and right) Diagonal Lacings on top and bottom of diagonals as shown. Finish the Center Panel by gluing Upper (2x 21) and Lower Left (2x 23), and Upper (2x 22) and Lower Right (2x 24) Lacings on top and bottom of center diagonals as shown. Repeat these steps on second truss assembly.



DECK ASSEMBLY

PLEASE NOTE: Be sure all joints are straight and level before glue dries.

1) Support left and right truss assemblies so they stand upright; carefully align pins on End Beams (2x 25) with openings at ends of each truss assembly and glue in place, keeping parts straight and level.

2) PLEASE NOTE: Install the X-shaped Bottom Laterals (7x 30) with the raised ridges facing upward; align four mounting pins on bottom with openings in the top of each large gusset on left and right Bottom Chords; glue together where parts meet.

3) Note the correct alignment of angle braces on Floor Beams (6x 26); align pins with openings in truss assemblies and glue in place.

4) PLEASE NOTE: Make sure flat ends (straight, without notch) of Stringers (2x each 27, 28) face outward; align Stringers as shown over End and Floor Beams and glue where parts meet.

5) PLEASE NOTE: Align the V-shaped openings on the ends of each Stringer Lateral (7x 29) with the vertical ribs on the inside of the Stringers, press into place on lower, inside edge of Beams and Stringers and glue where parts meet.

6) PLEASE NOTE: Carefully cut Large (2x 31) and Small Top Laterals (2x 32) from sprues; do not remove small mounting tabs on outside edges. Align tabs with rectangular mounting points on inside of trusses, and glue in place as shown.

7) PLEASE NOTE: Refer to the drawing below; assemble all Top Struts by inserting - do not glue - parts through each other to form an X as shown. Note placement of the large and small flanges and the top; during assembly make sure all molded lacing detail faces as shown. Assemble End Top Struts (2x 35, 36) and Center Top Struts (3x 33, 34). Turn the bridge upside down to locate angled pins on underside of each gusset plate on top chords. Test fit each brace between angled pins, adjust as needed so parts fit square and snug, and apply a little glue where Struts meet the plates.

8) Align inset areas on back of End Posts (2x 5) and Top Cover Plates (4x 44) with openings in truss ends and glue in place.

FLOOR ASSEMBLY

8) To reduce damage in the event of a derailment, track on bridges features wider ties and inside guardrails. Parts for an Open Deck (2x 40) are included, which can be used with your own rail, or install Walther's Bridge Track (#948-886 sold separately). We suggest test fitting your completed bridge on your layout during this step to help with final alignment before securing the track.

8A) To use rail (sold separately): make sure Decks are centered side-to-side on Stringers and glue in place. Note the two sets of raised alignment features on the Decks; the outside set with tie plates and spikes is for the running rail, the inside set with spikes only is for a guardrail. Align rails on the outside and glue rails in place. Cut guardrails to fit from lengths of rail and glue to inside mounting points.

8B) To use Walther's Bridge Track #948-886 (sold separately), align Bridge Track on Stringers and glue in place if desired.

FINAL ASSEMBLY

9) PLEASE NOTE: Whether used as a stand-alone bridge, or a center-span combined with other Cornerstone Bridges as approaches, four sizes and styles of Bridge Shoes and Pedestals are included to adjust and align your model. Parts from the Bridge Shoes and Adaptor Assortment (933-4559, sold separately) may also be used: please visit <https://www.walters.com/page/EngineeredBridgeSystem.pdf> for more ideas, information and illustrations of specific bridge combinations.

We suggest test fitting your completed bridge on your layout at this point to determine final alignment, then select and install the appropriate parts of your choice.

Small Bridge Shoes

9A) Align pins with mounting points and glue Left (4x 42) and Right (4x 41) Shoes together. With the long end facing inward, glue the recessed area on each completed shoe to the raised pad on the Bottom Chord at all four corners. Glue tab on each shoe to recessed area on Pedestal (4x 43).

Pedestals

9B) Select Extra-Small (4x 43), Small (4x 37), Medium (4x 38) or Large (4x 39) style as desired; align recessed areas on top with raised pad on the Bottom Chord and glue in place at all four corners

