

Wheeler

PREFABRICATED STEEL BRIDGES

APPLICATIONS & LOADINGS

Prefabricated Steel Bridges are ideal for recreation and low volume vehicular bridge applications. The efficiency of the truss design maximizes material properties of the primary tubular steel members. These bridges are used for regional hiking/biking/equestrian trails, community parks, pedestrian overpasses, snowmobile routes, golf courses, single lane residential access, etc. Typical loads may include pedestrian, equestrian and maintenance vehicles. Utility dead loads are not uncommon.

PREFABRICATED

The bridges are shop manufactured with primarily welded connections then shipped to the site ready for installation. Limited field assembly is required for most projects.

SPANS 20' - 200'

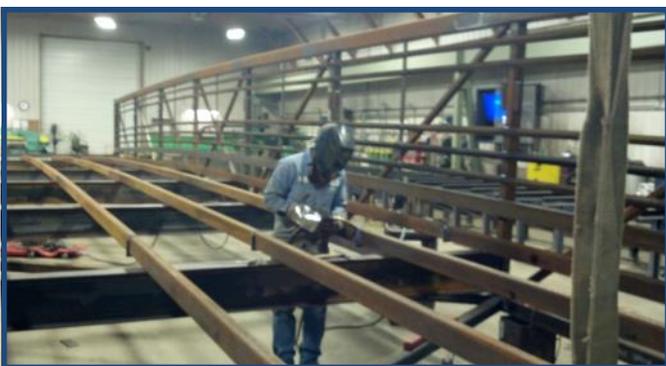
Typical designs allow for clear spans from 20 to 200 feet. Under certain conditions special designs can extend spans to 250 feet. Bridges can be in single or multiple span configurations.

Clear spans up to 100 feet can be fabricated and shipped as one piece if contractor capabilities and site considerations allow. Longer spans are built with field bolted splices and shipped as multiple sections.

WIDTHS 6' - 12'

Widths less than six feet should only be considered for shorter spans. Bridges wider than twelve feet (clear between the railing) may require a longitudinal field splice, increasing the installed cost.





ENGINEERING

Specifications are developed specific to the project to ensure the bridge meets your needs. All aspects are considered including: application, configuration, geometry, loading, materials, etc. A custom design is then created by our registered Professional Engineers. Detailed plans are generated by our staff of drafters. Wheeler can provide sealed plans for projects nationwide.

Prefabricated bridges are compatible with most foundations. Substructure design may be available if site and soil information are provided. Site information, including grade, elevations and soils report, including geotechnical engineer recommendations, will be required prior to substructure design and may effect design fee.

FACILITIES & QUALIFICATIONS

Wheeler maintains approved status as a AISC Quality Certified Intermediate Bridge Fabricator with Fracture Critical Endorsement. Our plant certification has been reviewed and approved annually by the AISC since 1998. This certification confirms that Wheeler has "...the personnel, organization, experience, capability and commitment..." to handle these types of projects.



As a member of the American Welding Society, Wheeler employs AWS Certified Welders.

Inspectors from state and independent agencies across the country have visited our facilities and confirmed our ability to produce quality bridges.

Wheeler **PREFABRICATED STEEL BRIDGES**

TYPICAL TRUSS STYLES



WARREN

The Warren truss provides an alternate appearance and offers optimum efficiency for long spans. It is a parallel chord truss with diagonals in alternating directions creating a “W” pattern. The Warren may or may not include vertical members and often uses overhead bracing.



PRATT

The most common truss style is the Pratt. This is a parallel chord truss with diagonal members slanting toward the center of the span and separated by verticals. Double diagonals can be added at additional expense. The Pratt can be built with underhung floor beams, as an H-section (floor beams connected to the verticals) or with overhead bracing.

TYPICAL TRUSS STYLES



BOWSTRING

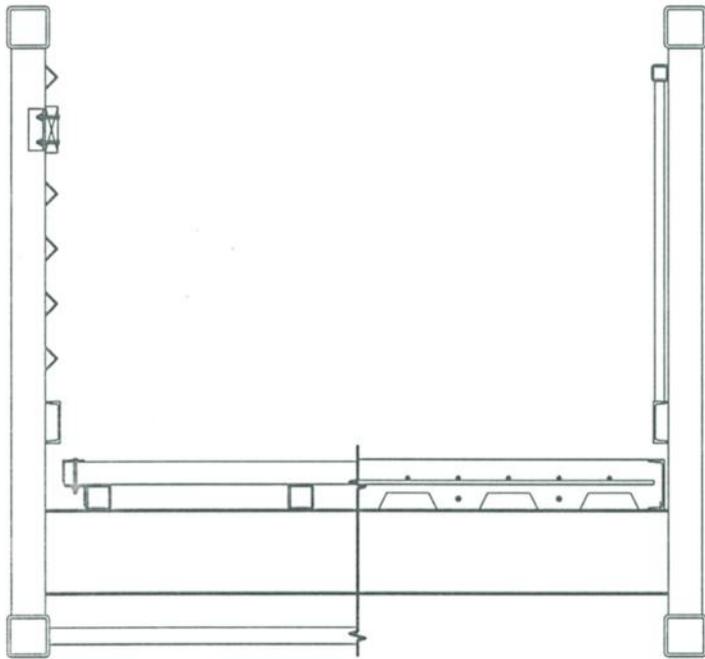
The Bowstring Truss is distinct with the top chord arched relative to the bottom chord. The top chord meets the deck at the ends of the span. It can incorporate Pratt or Warren web configurations and is used in a variety of span lengths for the distinct architecture.



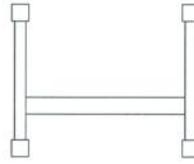
MODIFIED BOW

With a Modified Bow the top chord is arched relative to the bottom, but the chords are separated by verticals at the ends of the span. Pratt webs are typical. The Modified Bow is often used as an affordable alternative to the traditional Pratt and can be used for most span lengths.

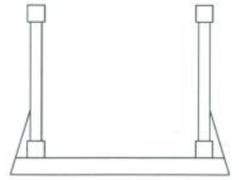
TYPICAL CROSS-SECTION



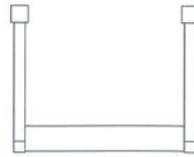
Floor Beam Configuration



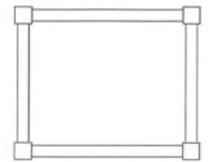
H-section



Underhung



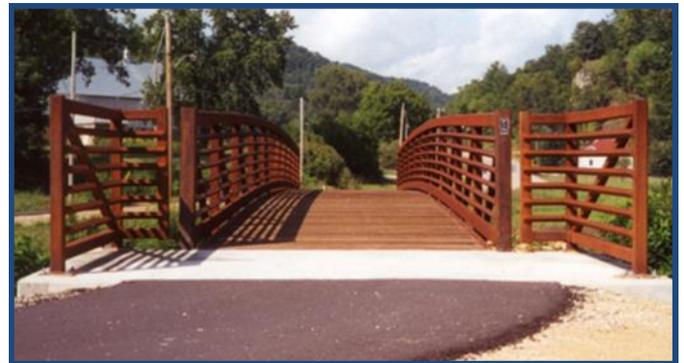
U-section



Overhead Braced

APPROACH RAILING

Approach railing guides users onto the bridge. Custom sections can be built to match or compliment the bridge. Less expensive options utilize treated wood. Regardless of style, approach railing is encouraged.



RAILING

Railing combinations can vary by intended use and differing code requirements. Most bridges incorporate a toe plate, safety rail and rub rail. Orientation for the safety rail is typically vertical or horizontal.



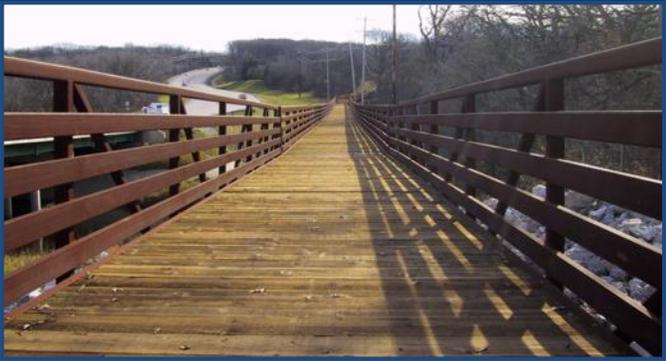
HORIZONTAL



VERTICAL PICKETS

Safety rail spacing can vary by code, but AASHTO standards are typical.

Handrails can be added if ADA requirements apply.



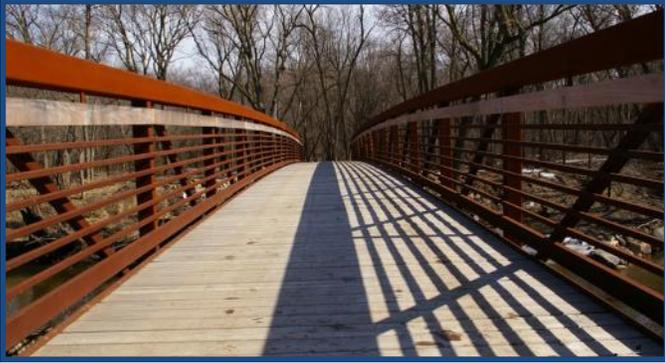
Wheeler recommends incorporating a vertical post at the end of the bridge. This provides easy termination of the safety rail and transition to any approach rail. If slanted ends are preferred, it is still recommended to extend the safety rail to the end of the bridge.



Custom safety railing is available at additional expense. Contact us to review project specific options.

DECK MATERIALS

All bridges are available with treated timber, tropical hardwood, asphalt or concrete decks. Composite and FRP materials may be considered under limited loading conditions. Steel grating has been used for decks requiring more drainage.



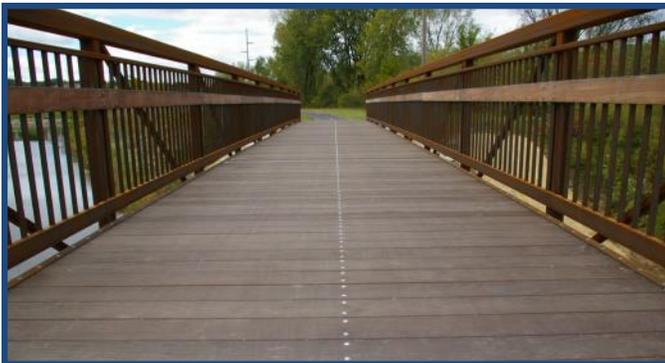
TREATED TIMBER

The most economical and easiest to maintain, wood decks are typically shop installed. If preferred, they can be shipped loose to reduce the structure lifting weight and field installed after the bridge is set.



TIMBER WEAR COURSE

Applied for added abrasion resistance, this is common for multi-use applications including equestrian and snowmobile traffic. Often the wear course is installed diagonal to the bridge centerline.



TROPICAL HARDWOOD

Premium wood providing greater dimensional stability and smoother finish. Ipe is the most common specie.



CONCRETE

Asphalt and concrete decks are installed after the bridge is set in position. An asphalt wear surface can be added to structural timber panels or steel bridge plank. Reinforced concrete decks are poured-in-place with shop installed stay-in-place steel deck pans and side forms.



STEEL GRATING

COMPOSITE

There are a wide variety of FRP, PVC, and recycled plastic/wood composite decking materials offered in the market place. The appropriate application of these products must be reviewed project specific. Some products may only be used as a wear surface.

FINISH



WEATHERING STEEL

Atmospheric Corrosion Resistant Self-Weathering Steel is a special formulation that develops a protective oxide patina. Under acceptable atmospheric conditions the steel “rusts” to a patina, eventually stabilizing and protecting the steel from further corrosion. Color of the patina will progress from reddish to dark brown.

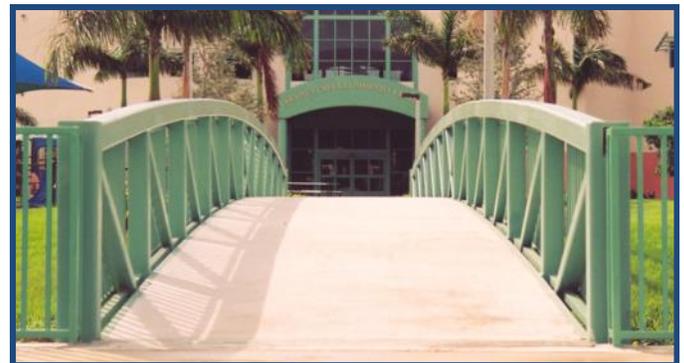


Weathering steel provides an economical choice with a rustic appearance and relatively little maintenance. The bridge will never require recoating and can be blasted to remove graffiti. It will simply rust again in the affected area.



PAINT

Painted bridges can be considered for applications where weathering steel is undesirable. Two and three coat paint systems used for other highway applications are available in virtually any color.



Painted bridges are more expensive due to the cost of materials and application. They also require additional sealing of accessory connections and more extensive sand blasting.

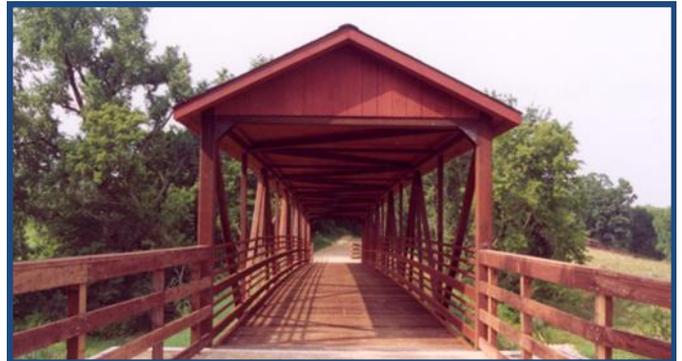


Precautions with weathering steel include rust staining in runoff areas below the bridge and avoiding salt latent atmospheres (coastal areas or bridges over highways requiring winter maintenance).

OVERHEAD BRACING



Overhead bracing can be incorporated into most truss configurations. It often reduces member sizes by adding stability and may be required for the longest spans. The bridge depth of section, measured from the top of deck to the bottom of the lowest member (typically the bottom chord) can be minimized by adding overhead bracing.



For bridges requiring fencing or roofs, designs with overhead bracing are preferred.

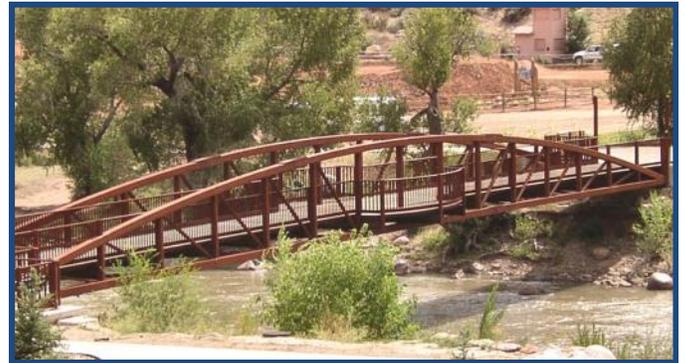
ARCHITECTURAL FEATURES

Wheeler often works with consultants and architects to incorporate specific architectural features. Please contact us to review the potential for your next bridge. We will discuss the feasibility and cost implications of the elements.



ACCESSORIES

Please review your specific requirements with a Wheeler representative prior to requesting price estimates.



OVERLOOKS

Adding a walk-through viewing area provides many opportunities to enhance the user experience. It also allows those who stop on the bridge to move out of the main traffic lanes. Overlooks can be added under certain span and loading conditions. Multiple truss configurations are compatible.



LIGHTING

Lighting design by others. Field installed by locally licensed electrician. Brackets can be shop installed.



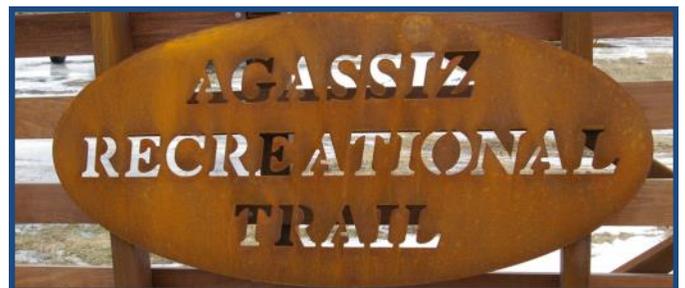
UTILITY HANGERS

All utility design and installation by others. Brackets can be provided when locations are specified.



FENCING

Available in chain-link (galvanized or vinyl coated) or welded wire panels (galvanized, painted or weathering steel)



SIGNS

State-of-the-art plasma table available for cutting images provided in CAD format.



SHIPPING

The bridges are shop manufactured and shipped to the site ready for installation.

Bridge spans less than 80 feet in length are often shipped as one piece without a field splice.

Spans between 80 and 100 feet will be reviewed to determine if they can be shipped without a splice.

Spans greater than 100 feet will be shipped in sections and require field bolted splice connections.

***Bridges are shipped via independent carrier. Delivery is made to a location nearest the site, which is easily accessible to normal over-the-road tractor/trailer equipment. Oversized loads warrant additional consideration and providing suitable access shall be the responsibility of others. All trucks delivering materials will need to be unloaded at the time of arrival.*

INSTALLATION

Prefabricated bridges install in minimal time.

Detailed, written instruction in the proper splicing (if required) and lifting procedures will be provided. The method and sequence of erection shall be the responsibility of others.

All unloading, field erection and installation is the responsibility of others.

Wheeler

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