



The following product categories may be used in the construction of a steel bridge:

**Wide Flange Shapes:**

The most common type of rolled section used as a primary member in highway bridges is the wide-flange beam. To maintain economy of material, rolled beams are sometimes equipped with a cover plate on the bottom flange.

**Plate Girder:**

Steel plate girders are typically shop welded. A minimum flange size of 12 by  $\frac{3}{4}$ " and a minimum web thickness of  $\frac{7}{16}$ " is recommended to control flange and web distortions and simplify fabrication and erection.

**Sheet:**

For bridges on local roads, a corrugated metal form filled with concrete or asphalt can be used for the bridge deck. Such a system may require closed spacing or primary members.

**Bars:**

Steel bars may be used to construct a steel grid deck. Steel Grid can be left open or filled with concrete. They are useful when light decks are desired. While an open steel grid has less dead load than one filled with concrete, it does not offer as good a riding surface and can be prone to poor skid resistance. An open grid deck system is also susceptible to corrosion from the elements and chemicals.

An Exodermic™ deck typically weighs 35% to 50% less than a reinforced concrete deck that would be specified for the same span. Reducing the deadload on a structure can often mean increasing the live load rating. The efficient use of materials in an Exodermic™ deck means the deck can be much lighter without sacrificing strength, stiffness, ride quality, or expected life. Precast Exodermic™ decks can be erected during a short, nighttime work window, allowing a bridge to be kept fully open to traffic during the busy daytime hours. Cast-in-place Exodermic™ decks also permit considerable savings in construction time – the steel grid panels come to the site essentially ready for concrete. The steel grid component of an Exodermic™ deck acts as a pre-cut, pre-formed, stay-in-place form. Panels are quickly placed, and layout of the single mat of rebar is simple and straightforward, without the need for chairs or other aids in most cases. Cantilevered decks can be formed without temporary supports.<sup>1</sup>

**H-Piles:**

Piles (steel H-piles) are used when the soil under a footing cannot provide adequate support for the substructure. Although steel piling is relatively expensive on a per foot furnish basis, it has a number of advantages. They are available in high strength and corrosion-resistant steels. They can penetrate to bedrock where other piles would be destroyed by driving. Due to the light weight and ease of splicing, they are useful where great depths of unstable material must be penetrated before reaching the desired load

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<sup>1</sup> [www.exodermic.com](http://www.exodermic.com)

carrying stratum and in locations where reduced clearances require use of short sections. They are useful where piles must be closely spaced to carry a heavy load because they displace a minimal amount of material when driven.<sup>2</sup>

**Sheet Piles:**

Sheet pile is a hot-rolled structural shape with interlocks on the flange tips. The interlocks permit individual sections to be connected in order to form a continuous steel wall which is earth tight and virtually water resistant. Sheet piling is transportable and is a fast and economical solution for a durable, long lasting wall system. It may be used for bridge abutments (permanent) or for cofferdams used to construct piers for bridges (temporary).<sup>3</sup>

**Corrugated Pipe:**

Corrugated pipe ranges in sizes from 6" – 144" diameter. Bolted Structural Plate ranges in size from >144" to excess of 80'. They are available in bottomless steel boxes, virtually eliminating corrosion (service life of 100 years according to the National Corrugated Steel Pipe Association).

**Structural Bolts:**

A wider variety of structural bolts, washers and nuts along with installation equipment are used on pedestrian and highway bridges.

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<sup>2</sup> [www.rembo.com](http://www.rembo.com)

<sup>3</sup> [www.nasspa.com](http://www.nasspa.com)