



CONTECH[®]
ENGINEERED SOLUTIONS

Contech
Bridge Plank

Make unsound bridges safe with Contech Bridge Plank

Every state is faced with the problem of replacing old bridges. In most cases, the local jurisdictions — counties, townships, municipalities — have the bulk of the nation's bridge problems. Many of these bridges were erected before the turn of the century and most were built before 1935.

A large number of these bridges urgently need major repairs. A common problem is replacing noisy, worn-out wood floors or broken concrete decks on the otherwise structurally adequate bridges. The easy and economical solution is to replace the deck with Contech Bridge Plank.

Corrugated steel Contech Bridge Plank has been proven in service from coast to coast on bridges of many types, including skewed structures.



Contech Bridge Plank is installed quickly, at low cost.



Bridge planks are easily bolted or welded into place to form a continuous bridge deck.

Three standard sizes

Contech Bridge Plank is available in either 6"x2", 9" x 3" or 12" x 4-1/4" corrugations.

Contech Bridge Plank with 6" x 2" trapezoidal corrugations comes in lengths up to 40 feet. Covering widths for the planks may be either 18 or 24 inches. Steel thickness may be either 0.105, 0.135 or 0.179 inches.

Trapezoidal corrugation 9" x 3" planks can be installed the full width of the bridge being re-decked. It has a nominal covering width of nine inches with a height of three inches. It is supplied in a choice of 0.164, 0.179, 0.209, 0.239, 0.313 and 0.375 inch thicknesses.

The 9" x 3" corrugation allows design flexibility because the larger corrugation provides greater strength. For an H20 loading (see Table 4, Page 7) it provides more than twice the unsupported span between stringers of the heaviest 6" x 2" design. Contech also has 12" x 4-1/4" bridge plank in 0.149, 0.164 and 0.179 inch thicknesses.

Restores strength to old structures

Reduced load limits caused by inadequate decking are quickly eliminated with Contech Bridge Plank. You simply specify the gage and corrugation to meet your stringer spacing and load requirements. The corrugated design plus the correct grade of steel ensures ample strength.

Planks may be furnished in galvanized steel to provide many extra years of minimum maintenance service. Recommended stringer-to-stringer net spans are shown in Table 2 on Page 5, Table 4 on Page 7 and Table 5 on the back cover.

Stiffens bridge laterally and eliminates rattles

Positive welded connections provide a rigid panel construction that helps stiffen the entire structure. The deck becomes an integral part of the bridge. Rattling of loose members under traffic is eliminated.

Adds little or no dead weight

Contech Bridge Plank has the high strength-to-weight ratio of corrugated steel design. Total weight is only slightly higher than most timber floors and in some cases (especially replacement of reinforced concrete decks) the load is actually reduced.

Weight per square foot is also shown in Tables 2, 4 and 5 (Pages 5, 7 and back cover).

Fast, low-cost installation

You can have Contech Bridge Plank delivered in convenient lengths to fit your bridge width.

Simply order the number of planks required to cover the deck. Weld holes may be factory-punched to fit the stringer spacing of the bridge. All welding is done from the top of the planks—an important safety factor on any bridge.

With wood stringers, lag screws and similar fasteners have been successfully used.

No special equipment or training is necessary to do a fast, efficient job. Individual sections of Contech Bridge Plank are light enough for easy handling by small crews. The corrugated design makes it easy to stack the sections for convenient hauling and storing.

Durable galvanized planks require no special maintenance

With Contech Bridge Plank, there is nothing to crack, warp or rot. Repeated, expensive repair work on the bridge deck is stopped. The danger of fire is minimized.

The completed deck can be maintained as part of the regular road and bridge programs. The asphalt traffic surface is the same as used on many roads. Painting is not needed on the underside of the deck because of the protection provided by galvanizing.

Installation

Installation methods for Contech Bridge Plank may vary depending on specific local conditions, available equipment, bridge size, the design and condition of the structure and the practical out-of-service time. Experience shows that in most cases, the recommended installation practices described on the previous pages for 6" x 2" , 9" x 3" and 12" x 4-1/4" bridge plank will ensure good performance on the new deck.



Finishing and paving

Before paving, the deck should be cleaned of debris. A light asphaltic primer coat is recommended. This ensures a good bond between the pavement and the steel deck. Priming is recommended even if an asphalt emulsion type system is planned.

Two courses of asphalt pavement complete the job. The first course fills the corrugations. As soon as it is compacted, the traffic surface can be applied. This wearing course is usually compacted to about two inches over the corrugations at the center of the bridge, tapering to one inch at the edges.

Side dams to retain the pavement at the outer edges of the bridge can be supplied and attached to individual planks, or shipped as separate 12-foot pieces for attachment after the planks are in place. They provide a finished edge for the new deck. An alternate to this practice is to simply chamfer or bevel the edges of the wearing course to the crests of the corrugations.

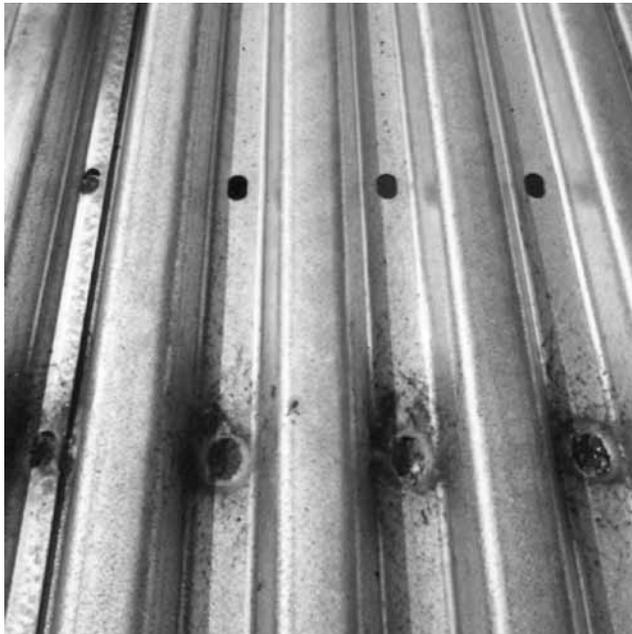
The type, grade and density of asphalt for each specific job can best be determined by local experience. A pavement that has proven satisfactory on roads in a given area can be expected to provide similar service on the deck. Your Contech representative can give you additional installation instructions.



6" x 2" Contech Bridge Plank

Upon request, 6" x 2" Contech Bridge Plank comes factory-punched to fit the stringer spacing of the bridge. These weld or bolt holes (3/4" x 1-1/4") in the valley of each corrugation provide area for either bolts or two 1" fillet welds to hold the plank to stringers.

Welding through these holes to tie the planks to the steel bridge stringer is done from above. In the case of wood stringers, lag screw or other similar connectors are suggested.



6" x 2" planks are normally attached with welds at the valley of each corrugation, at each stringer.

When factory-punched holes are not specified, planks should be field-welded to the bridge stringers with 1/8" x 3" long fillet welds at each stringer.

Adjacent planks are overlapped and should have a 1/8" x 1" long fillet weld on 24" center-to-center spacings.

Continuously butt-weld each splice unless it occurs over a stringer and the shortest piece covers at least three spans. In this case, no butt-weld is required. Splices between stringers should be staggered.

Specification for 6" x 2" Bridge Plank

Scope

This specification covers structural quality, light gage, steel bridge plank to be used for structural support or decking on bridges and overpasses.

Material

Pregalvanized Steel, 12 and 10-gage, shall conform to the requirements of ASTM A 929 or ASTM A 653 and shall have a minimum yield of 36 ksi. Zinc coating shall be applied at a rate of 2.0 ounces per square foot total on both sides.

Black steel shall conform to the requirements of ASTM A 1011 with a minimum yield point of 36 ksi.

Manufacture

The planks shall be fabricated with trapezoidal corrugations 6" pitch by 2" depth.

Certifications

Upon request, the manufacturer shall certify that the requirements of this specification have been met.

Product Properties

The nominal physical properties of the steel bridge plank shall conform to the requirements tabulated below.

Table 1 – 6" x 2" Bridge Plank			
Gage	Thickness (Inches)	SECTION PROPERTIES	
		Section Modulus (In. 3 Per Ft.)	Moment of Inertia (In. 4 Per Ft.)
12	0.105	1.062	1.151
10	0.135	1.342	1.466
7	0.179	1.732	1.920

Installation

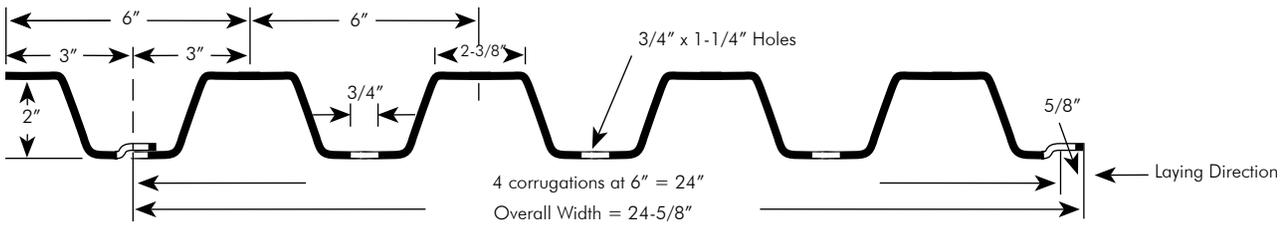
Installation shall be in accordance with the plans and specifications and the manufacturer's recommendations.

Reference the project plans for the gage, length, special punching and quantity requirements.

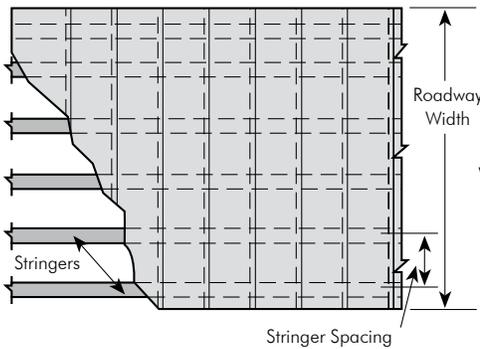
10 and 12-gage plank per above specification is pregalvanized, and 7-gage plank is hot-dip galvanized.

Note: 10 and 12-gage plank is also available in ALUMINIZED STEEL® Type 2. All gages are available in black and hot-dip galvanized steel.

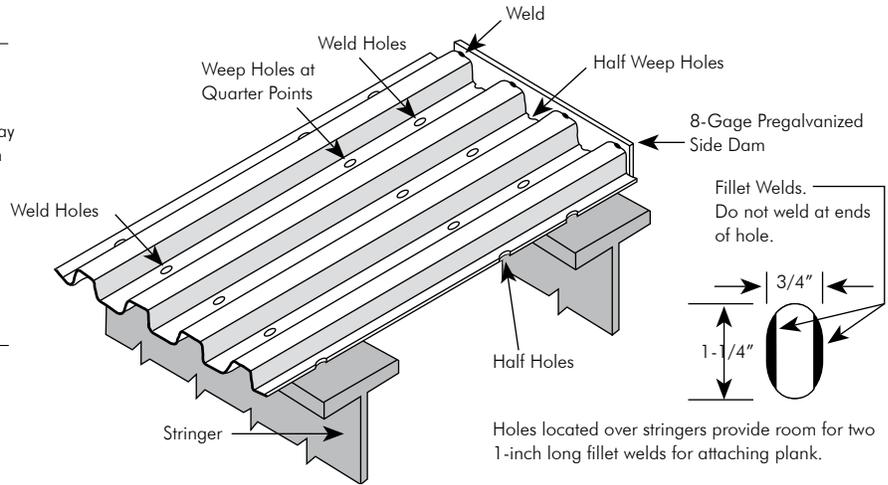
6" x 2" Engineering details and design data



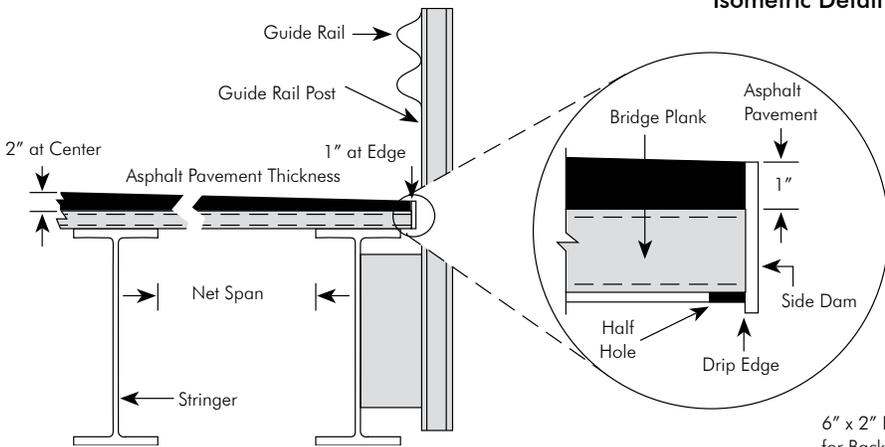
Cross Section – Bridge Plank



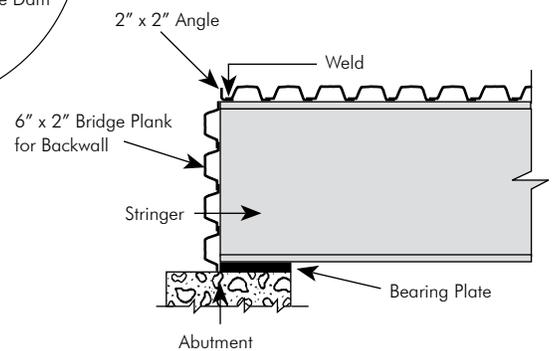
Plan View – Bridge Floor



Isometric Detail



Typical Cross Section



Typical End Treatment

Table 2 – 6" x 2" Corrugation

Gage	Approx. Weights, (psf)	Allowable Net Span,* Inches (See Typical Cross Section)		
		HS 15	HS 20	HS 25
12	5.98	25	21	20
10	7.63	28	24	22
7	10.06	32	27	24

Note: 36,000 psi yield steel. Average weight of surfacing for 6" x 2" plank is 28.2 pounds per square foot based on 2-inch depth over the corrugations at the center, tapering to 1" at the edge.
 *Refer to AISI Handbook's chapter on Steel Bridge Flooring.

9" x 3" Contech Bridge Plank

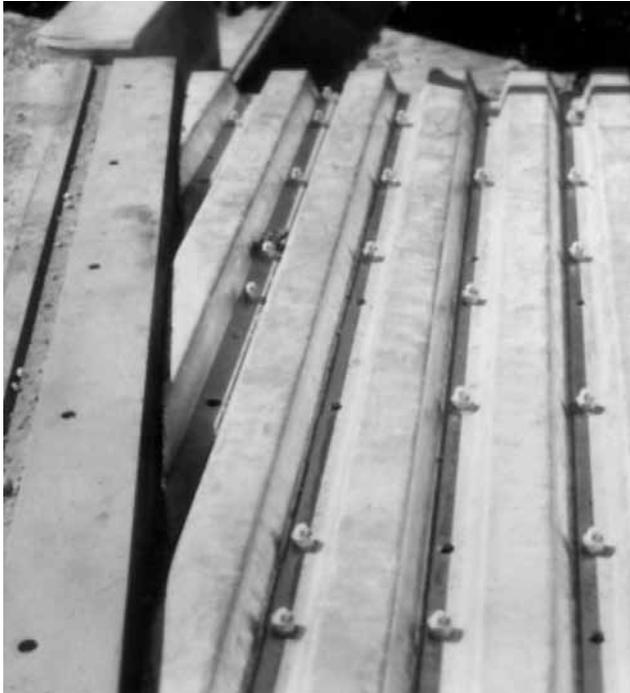
9" x 3" Contech Bridge Plank has one trapezoidal corrugation per section. The maximum length is 19 feet, unless factory welding is specified.

This plank has a nominal covering width of nine inches with a height of three inches and is supplied in a choice of steel thickness generally heavier than the 6" x 2" Contech Bridge Plank.

Fastening 9" x 3" plank to stringers is generally done by welding or by utilizing bolts and S-clamps.

The leading edge (no offset) can be welded to each stringer flange with a 1/8" x 3" long fillet weld (3/16" x 3" for heavier than 3 gage). Continuously butt weld each splice unless it occurs over a stringer and the shortest piece covers at least three spans. In this case, no butt weld is required. Splices between stringers should be staggered.

Advantages of the 9" x 3" corrugation bridge planks are larger corrugations for use with greater stringer spacings spans. The heaviest gage steel used for 9" x 3" bridge plank provides more than twice the unsupported span of the heaviest 6" x 2".



Even when the bridge abutment is on a skew, field cutting of bridge plank is a simple process and permits installation at right angles to the bridge stringers.

Specification for 9" x 3" Bridge Plank

Scope

This specification covers structural quality, light gage, steel bridge plank to be used for structural support or decking on bridges and overpasses.

Material

Steel — 8, 7, and 5-gage — shall conform to the requirements of ASTM A 1011, meeting a minimum yield of 40 ksi. Steel, 3-gage and heavier, shall conform to the requirements of ASTM A 1018, meeting a minimum yield of 40 ksi. Zinc coating shall conform to ASTM A 123, except that the zinc shall be applied at a rate of 2.0 ounces per square foot total both sides.

Manufacture

The planks shall be fabricated with trapezoidal corrugations 9" pitch by 3" depth.

Certifications

Upon request, the manufacturer shall certify that the requirements of this specification have been met.

Product Properties

The nominal physical properties of the steel bridge plank shall conform to the requirements tabulated below.

Table 3 – 9" x 3" Bridge Plank

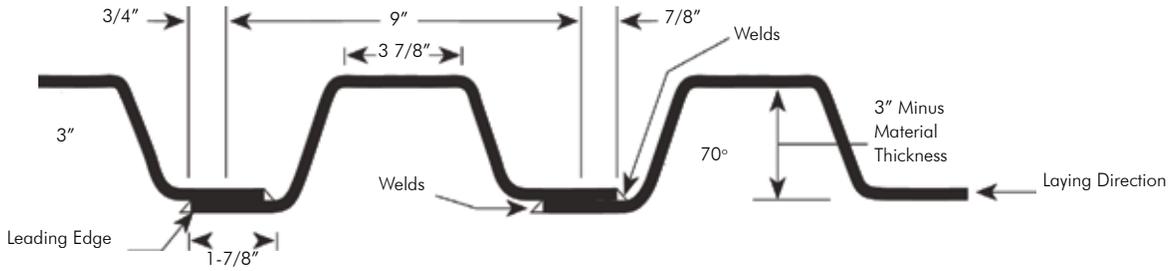
Gage	Thickness (Inches)	SECTION PROPERTIES	
		Section Modulus (In. 3 Per Ft.)	Moment of Inertia (In. 4 Per Ft.)
8	0.164	2.906	4.680
7	0.179	3.173	5.120
5	0.209	3.680	5.973
3	0.239	4.160	6.840
5/16"	0.313	5.316	8.751
3/8"	0.375	6.276	10.331

Installation

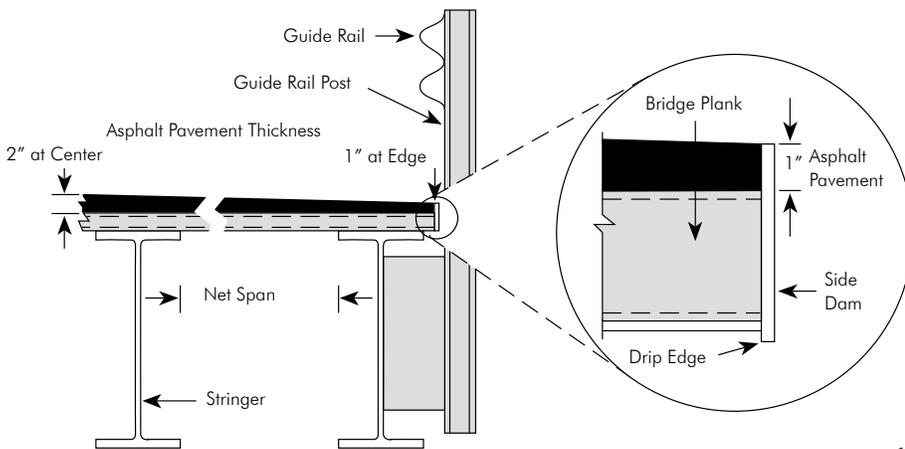
Installation shall be in accordance with the plans and specifications and the manufacturer's recommendations.

Reference the project plans for the gage, length, special punching and quantity requirements.

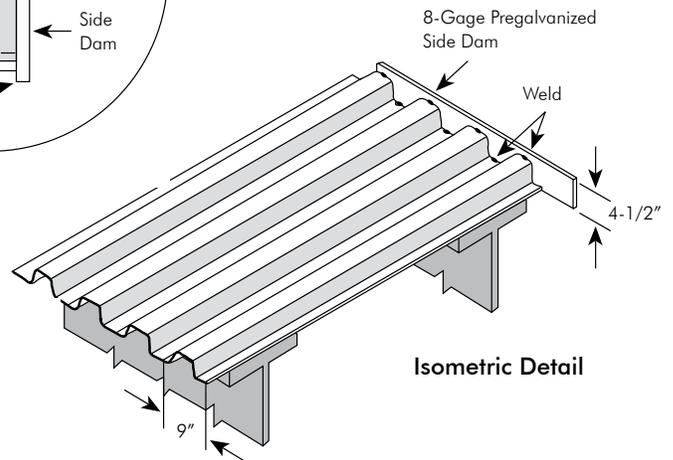
9" x 3" Engineering details and design data



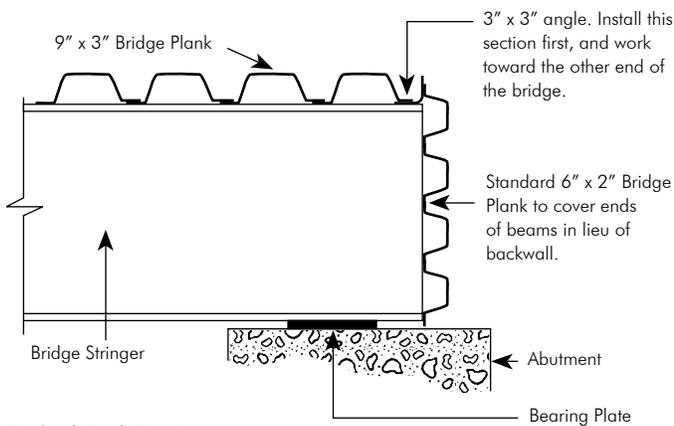
Cross Section – Bridge Plank



Typical Cross Section



Isometric Detail



Typical End Treatment

Table 4 – 9" x 3" Corrugation

Gage	Approx. Weights, (psf)	Allowable Net Span,* Inches (See Typical Cross Section)		
		HS 15	HS 20	HS 25
8	10.5	48	40	35
7	11.5	52	42	37
5	13.5	58	47	40
3	15.3	63	51	44
5/16"	19.8	77	61	52
3/8"	23.8	88	70	59

Note: 40,000 psi yield steel. Average weight of surfacing asphalt pavement, based on 2-inch depth over the corrugations at the center, tapering to one inch at the edge is 33.8 psf for 9" x 3" bridge plank.

*Refer to AISI Handbook's Chapter on Steel Bridge Flooring. Holes can be punched for use as bolt holes and/or weep holes.

Contech Bridge Plank for Rehabilitation

Contech offers 12" x 4-1/4" Bridge Plank. It features a single trapezoidal corrugation per section and is available in 9, 8, and 7 gage black or hot-dip galvanized steel. It is fastened to stringers as described for 9"x 3" plank on Page 6.

The economic advantage of 12" x 4-1/4" Bridge Plank comes from a higher section modulus compared with other corrugations.

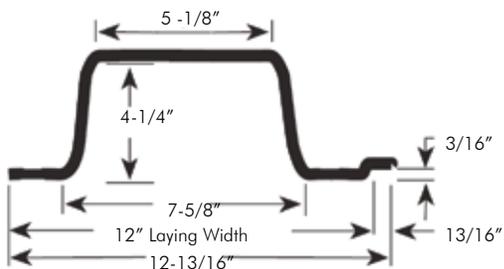
Specification for 12" x 4-1/4" Bridge Plank

Table 5 – 12" x 4-1/4" Corrugation

Gage	Approx. Weights, (psf)	Allowable Net Span,* Inches (See Typical Cross Section)		
		HS 15	HS 20	HS 25
9	9.59	66	53	45
8	10.55	71	57	48
7	11.50	75	60	51

Based on 45,000 psi yield steel. Average weight of asphalt surfacing based on 2" depth over corrugations at center, tapering to 1" at edge, is 40.9 psf for 12" x 4-1/4" bridge plank.

*Refer to AISI Handbook's Chapter on Steel Bridge Flooring.



Cross Section – Bridge Plank

Scope

This specification covers structural quality, light gage, steel bridge plank to be used for structural support or decking on bridges and overpasses.

Material

Black steel shall conform to the requirements of ASTM A 1011, meeting a minimum yield point of 45 ksi. Zinc coating shall conform to ASTM A 123, except that the zinc shall be applied at a rate of 2.0 ounces per square foot total both sides.

Manufacture

The planks shall be fabricated with trapezoidal corrugations 12" pitch by 4-1/4" depth.

Certifications

Upon request, the manufacturer shall certify that the requirements of this specification have been met.

Product Properties

The nominal physical properties of the steel bridge plank shall conform to the requirements tabulated below.

Table 6 – 12" x 4-1/4" Bridge Plank

Gage	Thickness (Inches)	SECTION PROPERTIES	
		Section Modulus (In. 3 Per Ft.)	Moment of Inertia (In. 4 Per Ft.)
9	0.149	3.65	8.62
8	0.164	4.01	9.48
7	0.179	4.34	10.34

Installation

Installation shall be in accordance with the plans and specifications and the manufacturer's recommendations.

Reference the project plans for the gage, length, special punching, and quantity requirements.

For more information, call one of Contech's Regional Offices located in the following cities:

Ohio (Corporate Office)	513-645-7000
California (Roseville)	800-548-4667
Colorado (Denver)	720-587-2700
Florida (Orlando)	321-348-3520
Maine (Scarborough)	207-885-9830
Maryland (Baltimore)	410-740-8490
Oregon (Portland)	503-258-3180
Texas (Dallas)	972-590-2000

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