



## Bridge Grid Flooring Manufacturers Association Installation Tolerances & Guidelines for Open Grid Decks

### **A. INSTALLATION TOLERANCES**

Alignment: Main bearing bar and cross bar misalignment between adjacent grid deck panels shall be no more than 1/4".

Gap: Distance between main bearing bars and cross bars between adjacent grid deck panels shall be between 0 and 1/2".

### **B. INSTALLATION GUIDELINES**

#### **HANDLING AND STORAGE**

Steel grid units are usually shipped on open trucks. The units should always be lifted from the trucks and subsequently handled by means of mechanical equipment. Four-point chain or cable hooks or slings should be attached near each edge of the unit at a point about one-fourth of the unit length from each end. Careless handling and lifting of the units with improper devices may cause excessive out-of-squareness of ends, etc.

The units should not be placed on the ground, but should always be laid with ample blocking under the lower units of the pile or stack of units. When handling the filled type decking, the blocking will prevent stones, lumps or any projections on the surface of the ground from forcing the form strips up out of position. When units have been shop cambered, blocking should be arranged to retain the camber in the units by duplicating the contour of the blocking during shipment and storage.

#### **LOCATION OF PANEL UNITS ON BRIDGE**

Before placing the units on the bridge stringers (floor beams), the location of each unit should be carefully marked on the support to correspond with the location shown on the shop drawing erection plan. Measuring from a fixed point to avoid cumulative error, the best method is to mark on the support at the centerlines of the splices between units for the full length of the bridge. In this way, any gain or loss in length or width is readily discovered as soon as

the units show any tendency to overrun or underrun.

#### **ALIGNMENT AND POSITIONING**

The units, when not stored at the bridge site, are usually delivered to the bridge by truck, lifted off, and swung into position with a light crane. The units should then be properly aligned and tack welded into position or bolted into position using a minimal number of connection bolts drawn to a snug tight condition. As the work progresses toward the other end of the bridge, the units already laid serve as a rigid working deck on which pneumatic tired cranes can operate without runways. While the BGFMA fabricators manufacture grid decks to the best commercial practice possible for this product, the fabricating shop must be allowed a small tolerance with regard to all dimensions of each unit. (See BGFMA TS-01, Fabrication Tolerances for Grid Decks) These tolerances apply to flatness of units, sweep or bow in a horizontal direction, out-of-squareness at ends, and top and bottom crossbar alignment. Any sweep or horizontal bow must be removed from units before tack welding or bolting to ensure proper alignment of crossbars and preserve overall dimensions of the completed deck. This can usually be done by tack welding or bolting the unit to supporting steel at one point and pinching or pulling the unit into proper alignment with a mechanical device.

A simple hand leverage or screw clamp will usually provide the means of bringing the units into contact with the support steel. If a greater force is needed to bring the steel grid units down to conform to the crown of the roadway, this can be accomplished by driving a truck or other equipment, such as a heavy weight equipped with rollers, over the units. Sometimes it is feasible to weld one end of short lengths of fully threaded stud rods or bolts to the stringers and then pull the units into position by means of nuts pulling against suitable cross members on top of the grid deck units.

## CROSSBAR ALIGNMENT OF OPEN GRID

After panels have been set, some of the crossbars may not be in ideal alignment for the welded or bolted splice, if specified. These bars are brought into alignment with the use of a light hammer, clamp or specially designed tool.

## DISTORTED SUPPORTING MEMBERS WITH OPEN GRID

In cases where the structural supporting members do not conform to the required theoretical profile and severe distortion of the decking units would be required to achieve contact, the main bearing bars may be left up to a maximum of  $3/16$ " high above the supporting steel, provided the hold-down welds are built up to maintain  $1/4$ " fillet leg against the grid units. See the welding detail in the "Welding of Open Grid" section.

In the case of using a bolted down connection detail, shims providing  $1/16$ " adjustability should be placed between the structural steel and the bolt down plate. Bolts should be tightened to a snug tight condition.

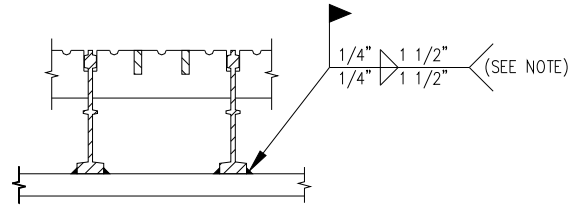
## SUPPORT OF CONSTRUCTION LOADS

Panels to be used as open grid bridge deck are ideal working platforms. These may be subjected to a maximum load equal to the design load.

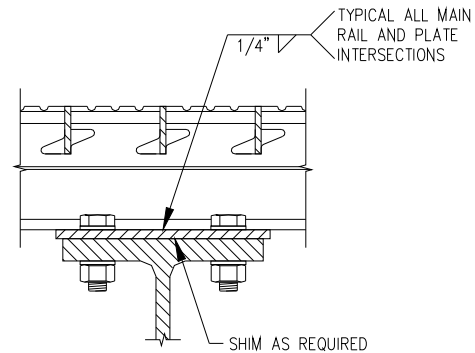
Decks to be filled with concrete after welding can also be used as working platforms before concrete is poured. Design spans for HS20 and HS25 are provided in fabricators literature. For these spans, HS10 may be permitted on the deck before filling with concrete or during concreting. Since spans on which the grid deck is used may vary, users of grid decks are advised to contact BGFMA or any of the members to confirm maximum erection loads that may be permitted during installation.

## FINAL ATTACHMENT OF OPEN GRID

After the grid units have been tack welded or partially bolted, and top and bottom cross bars put into proper alignment, welding or final bolting can proceed in accordance with plans and specifications.



NOTE: TYPICAL AT EVERY BEARING BAR AND SUPPORT INTERSECTION. MAXIMUM ROOT OPENING =  $3/16$ ". ROOT OPENINGS UP TO  $5/16$ " MAY BE USED WITH A BACKING WELD OR SUITABLE BACKING. IF THE ROOT OPENING IS GREATER THAN  $1/16$ ", THE LEG OF THE FILLET WELD SHALL BE INCREASED BY THE AMOUNT OF THE ROOT OPENING.



## CAMBER

In order to provide drainage or to match a fixed crown on the approaches, it is often necessary that the grid units conform to a specified camber. Unless this camber is unusually severe, the units have enough flexibility to naturally conform to the desired camber. Since the supporting steel cannot be set to an absolutely true level, a certain amount of pulling or adjusting will always be required, even in case of a theoretically level roadway.