

## Transverse (Weak Direction) Splice Options for Full and Partial Depth Grid Reinforced Concrete Decks

There are two preferred transverse panel splices typically specified for full and partial depth grid reinforced concrete decks: a conventional rebar method ideal for cast-in-place construction and an alternating headed stud configuration suited for precast construction.

### Cast-in-Place Construction

The standard cast-in-place transverse panel connection for a partial depth deck is formed when two bare grid panels are placed adjacent to each other, keeping the center-to-center distance between outside main bearing bars a minimum of two inches and not exceeding the main bar spacing of the panel.

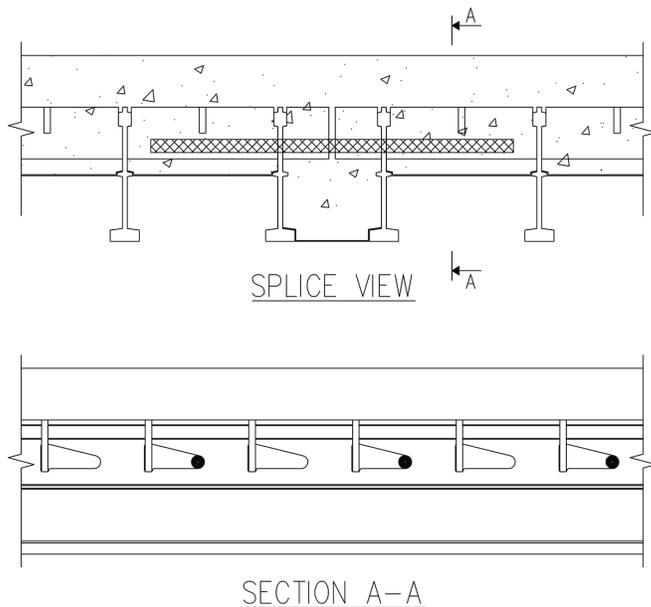


Figure 1

With cross bars spaced at four inches, an 18 inch #4 splice rebar is placed through every other cross bar punch in the adjacent main bars (See Figure 1). A field placed form pan between the bottom flanges of the main bars completes the splice and the deck is ready for concrete placement.

The standard transverse panel connection for a full depth deck is nearly identical to the partial depth deck (See Figure 2). The full depth deck typically has 5/8" diameter lower distribution round bars in the panel spaced at eight inches. For main bearing bars that intersect with the splice rebar, the lower main bar punch is spaced at four inches. So in addition to the #4 splice rebar through the cross bar punch, another #4 splice rebar is placed through the lower punch alternating with the 5/8" diameter lower distribution round bar.

This splice detail was the subject of *Techline* #2, February, 2010 and references Ahmadi, A.K., "Splicing Grid Reinforced Concrete Bridge Deck Panels Without Welding Using Conventional Rebar Methods," Bridge Grid Flooring Manufacturers Association Test Report, 1997. The complete test report can be viewed at <http://www.bgfma.org/resources/pdf/reports/SplicRpt.pdf>

### Precast Construction

The standard precast transverse panel connection for a full or partial depth deck introduces 1/2" diameter concrete anchors facing into the splice region spaced at eight inches (See Figure 3). For partial depth and full depth decks, the cross bars enter into the splice, but do not overlap. The top anchors for each deck type are spaced between the cross bars and the lower anchors (Continued)

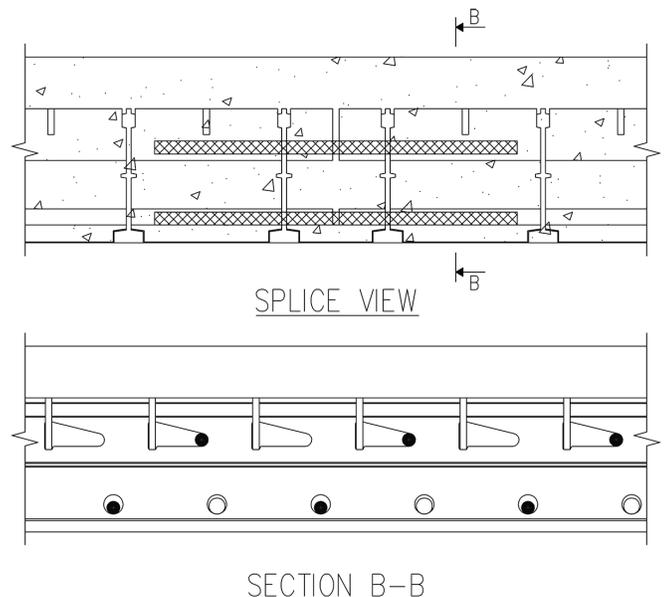
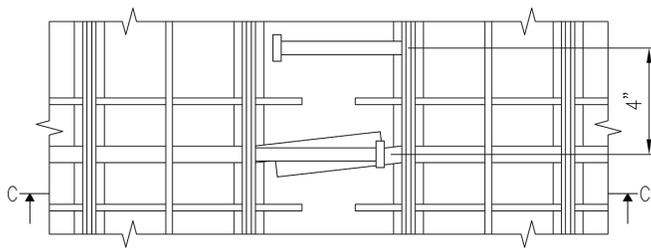
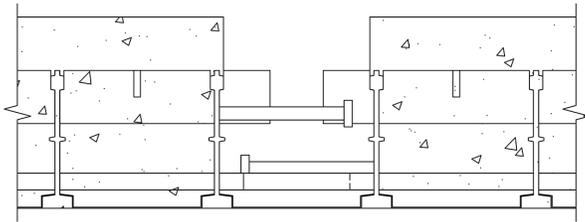


Figure 2



PLAN VIEW



SECTION C-C

Figure 3

tained by field welding the cross bars for both systems. Additionally, the lower distribution round bars for the full depth system only (See Figure 4) are field welded. The cross bars extend into the splice region and overlap with the adjacent panel. A 3/16" field fillet weld on both sides of the joint connects the cross bars. This would be the only field weld for a partial depth system. For full depth concrete filled decks, the 5/8" diameter lower distribution round bars extend into the splice region and overlap. A 3/16" Single-Flare-V-Groove field weld is used to connect the round bars.

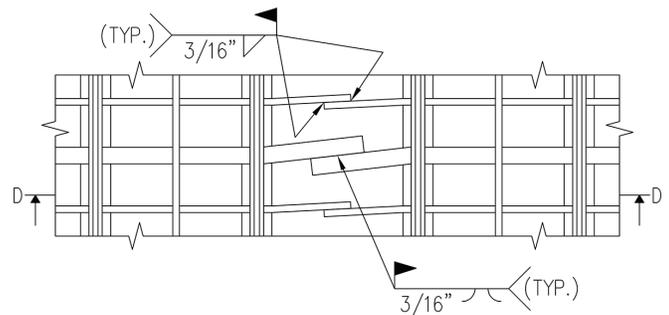
More detail for standard cast-in-place and precast splices can be found in the BGFMA brochure for Grid Reinforced Concrete and Exodermic Bridge Decks at: [http://www.bgfma.org/resources/pdf/Brochure/BridgeDecksBro\\_WebVrs.pdf](http://www.bgfma.org/resources/pdf/Brochure/BridgeDecksBro_WebVrs.pdf)

alternate with the top anchors and face the opposite direction. In the full depth deck only, the lower concrete anchors are positioned to miss the 5/8" diameter lower distribution round bar. However, the lower distribution round bar does extend into the splice region and overlaps with the adjacent panel as shown in the figure but the joint is not welded.

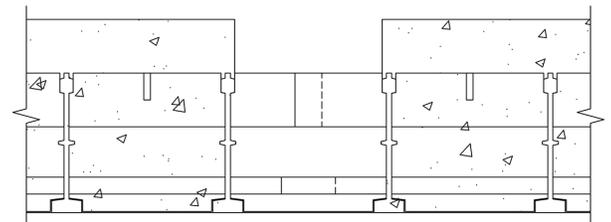
Research for the standard precast field splice is discussed in: Earls, Christopher J. & Johnston Jr., Thomas R., "Behavior of Field Splice Details in Precast Concrete-Filled Steel Grid Bridge Deck," Journal of Bridge Engineering, Vol. 9, No. 2 (2004), 127-136.

### **Panel Continuity and Composite Girders**

In *Techline #8*, composite girders and panel continuity options for both cast-in-place and precast Exodermic panels were discussed. Regardless of the construction method, cast-in-place or precast, panel continuity for partial and full depth decks is ob-



PLAN VIEW



SECTION D-D

Figure 4



Bridge Grid Flooring Manufacturers Association  
 300 East Cherry Street  
 North Baltimore, OH 45872  
 p 877.257.5499  
 © 2014, BGFMA