TECH-LINE

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Transverse (Weak Direction) Splice Options for Exodermic® Decks

All Exodermic® deck projects will require one or more transverse panel splices. The type of splice selected will depend on the construction method and deck continuity requirements.

Cast-in-Place Construction

Standard cast-in-place transverse panel connections are formed when two bare grid panels are placed adjacent to each other keeping the center-to-center distance between outside WT main bearing bars of each panel a maximum of 8" apart (*See Figure 1*). A strip of 20 gage galvanized sheet metal is placed on the tops of the adjacent panel WT flanges. The first layer of the rebar mat is placed directly on the top of the WT web at the specified spacing (typically 6") and is continuous across adjacent panels. The top layer of the rebar mat is laid parallel to the main bearing bars at the specified spacing. When the deck is poured, the panel connection is filled full depth.

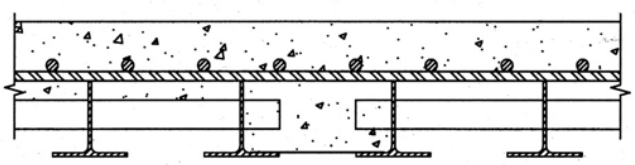

Figure 1

Precast Construction

Precast transverse panel connections come in multiple configurations and depend upon the project requirements. The standard precast transverse panel splice detail offers a high degree of continuity between panels by alternately extending bent #4 rebar (90° for 4" WT shapes, and 180° for taller WT shapes) from the lower layer of adjacent panels into the gap between the panels (*See Figure 2*). The length of the bent rebar extension is dependent on the gap distance between the main bearing bars of adjacent panels keeping the center-to-center distance between outside WT main bearing bars of each panel a maximum of 8" apart. Location of the lower rebar shall be coordinated to avoid interference with each other and the minimal extension of the cross bar into the splice. Additionally, alternating concrete anchors from adjacent panels set lower on the WT can be staggered into the gap. A strip of 20 gage galvanized sheet metal is placed on the tops of the adjacent panel WT flanges.

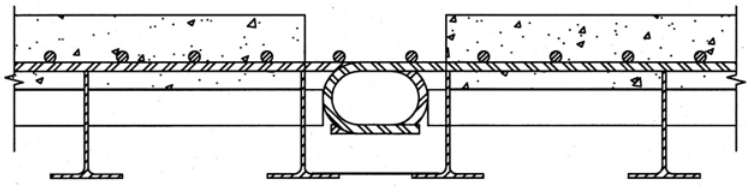

Figure 2

One of the simplest precast panel splice options is the standard shear key configuration (*See Figure 3*). The "shear key" is formed into the precast panel so that when panels are set, a pocket is created between adjacent panels. The shear key opens from 1.5" at the top to 3.5" at the center to 1" at the bottom. The height of the shear key is dependent upon the WT main bearing bar height. For containment purposes, foam backer rod or other suitable material is placed at the bottom of the 1" gap between adjacent panels. The shear key cavity and haunches are then filled with rapid setting concrete or grout and then wet cured. A pencil vibrator is required to consolidate the closure pour material in the narrow opening at the top. The shear key splice detail is ideal for simple spans in which the entire deck is in compression. (continued on back page)

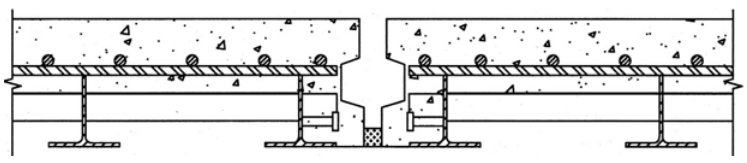

Figure 3

Panel Continuity and Composite Girders

When designing composite girders parallel to traffic, it is necessary to know how much deck steel contributes to the strength of the section, especially in negative bending over a pier for instance. For cast-in-place decks, the lower layer of rebar contributes because it spans continuously over all panels. The typical lower layer of rebar consists of #4's at 6". If this is insufficient, designers are encouraged to increase the number of bars as a first solution. The cross bars could be extended into the panel splice and either bolted or welded. Keep in mind however that only the lower un-punched portion of the cross bar can contribute without additional welding at the cross bar/WT web intersection. If the cross bars are bolted or welded at the splice, the 8" maximum spacing between adjacent panels can be waived, however the distance between adjacent WT main bearing bars cannot exceed the typical main bar spacing.

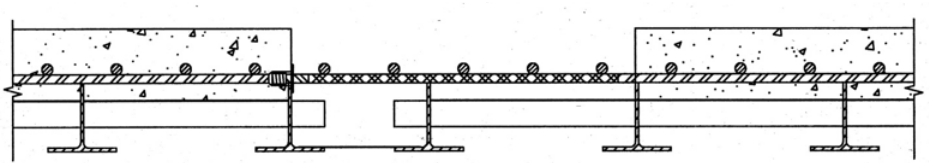

Figure 4

When rebar continuity is required with precast panel construction, the preferred solution is to incorporate the use of mechanical couplers (*See Figure 4*). Precast concrete is formed to the web of the fascia WT on the left side panel with female rebar couplers. The right side panel is precast leaving the lower rebar exposed and extended sufficiently to obtain the desired rebar splice. After the two panels have been set, the loose galvanized sheet form pan is laid into gap, and a male treaded rebar is turned into the female coupler and spliced with the extended rebar from the right panel. The main bar direction rebar is placed in the spliced gap, after which the closure pour is made. As with cast-in-place procedures, the cross bars can be bolted or welded to obtain additional strength if required.

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