Precast Prestressed Concrete Stay-In-Place Deck Panel Construction

2011 Caltrans-PCMAC Consultants Bridge Workshop
November 17, 2011
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Introduction

Precast prestressed concrete stay-in-place (SIP) deck panels:

- Solid prestressed concrete slabs that span between bridge girders.
- Partial depth panels that serve as permanent structural formwork for the CIP concrete deck pour as well as providing the principal positive moment reinforcing for the precast/cast-in place composite deck.
Background

Use of SIP panels dates back to 1950’s

Some of the States that have used PCPS Concrete SIP deck panels:

<table>
<thead>
<tr>
<th>Washington</th>
<th>Utah</th>
<th>Arizona</th>
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<tbody>
<tr>
<td>Texas</td>
<td>Colorado</td>
<td>Indiana</td>
</tr>
<tr>
<td>Virginia</td>
<td>Indiana</td>
<td>Ontario (Canada)</td>
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<tr>
<td>New York</td>
<td>Georgia</td>
<td>South Dakota</td>
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<td>California</td>
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Partial depth SIP concrete depth panels have been utilized successfully, for a long period of time across the nation.
Advantages

- Speed of Construction
- Public Safety
- High Quality Concrete and Soffit Finish

- Worker Safety
- Reduced Construction Waste
- Reduction in Field Placed Reinforcing and Concrete
Anatomy of a Panel

- Thickness 3.5 inches
- Laying length up to 8 feet
- Panel lengths up to 9’-6”
- 3/8” diameter prestressing strands at 6” (with 6” ext.)
- A few pieces of #3 mild reinforcing
- Single layer 6x6 – D4xD4 welded wire reinforcing
Panel
Panel + Strands @ 8” (mid-depth)
Panel + Strands @ 8” (mid-depth) + (3)#3
Panel + Strands @ 8” (mid-depth) + (3)#3 + 6x6-D4xD4 deformed mesh
Panel + Strands @ 8” (mid-depth) + (3)#3 + 6x6-D4xD4 deformed mesh + Lift loops
Panel + Strands @ 8” (mid-depth) + (3)#3 + 6x6-D4xD4 deformed mesh + Lift loops
Updated XS Sheets and Standard Special Provisions are close to publication (est. Summer 2012)
Bearing At Supports

Two alternate bearing systems:

1) EPS Camber Strips
2) Leveling Bolts

Bulb-Tee/Wide Flange Girder

Typical Section - Leveling Bolt System

1 1/2" = 1'-0"
Panel to Panel Joints

Top of CIP Deck Pour

Precast Deck Panel

1/4" Panel-Panel Joint (Perpendicular to Girder Lines)
Panel Fabrication
Installation
Thank You

Con-Fab California Corporation