

Recent Construction Highlights

Flatiron Constructors Intermountain continued with construction at Cantilever 3 WB by casting four pair of segments. Also, construction continued with placing the bottom slab and the webs and diaphragm concrete portions at Pier Table 3 EB, stressing and removing the falsework at Pier Table 4 WB, and forming and installing the reinforcing for the bottom slab, webs, and diaphragms at Span 1 EB CIP Superstructure. The following is a summary of the construction progress for the last month.



Figure 1 – Cantilever 3 WB Segmental Construction – April 16, 2009:

After casting Segment W3-4W and launching the downstation (right) traveler, Flatiron engages the stability prop and installs counterweights totaling 286 kips. The counterweights are necessary to keep the stability prop in compression as cantilever construction progresses.



Figure 2 – Cantilever 3 WB Segmental Construction – April 16, 2009:

The counterweights are placed to straddle the downstation form traveler rails.

Figure 3 – Pier Table 4 WB Stressing Operations – April 21, 2009:
The PT crew stresses the transverse tendons on the top slab at Pier Table 4 WB using a monostrand jack, as work continues in the background with the segments at Cantilever 3 WB.



Figure 4 – Pier Table 4 WB Stressing Operations – April 21, 2009:
A worker uses a ratchet to tighten the nut of a 1 3/8" diameter PT bar as the bar is stressed.

Figure 5 – Cantilever 3 WB Segmental Construction – April 23, 2009:
A Flatiron employee installs the measuring needle prior to stressing a 12-strand cantilever tendon.

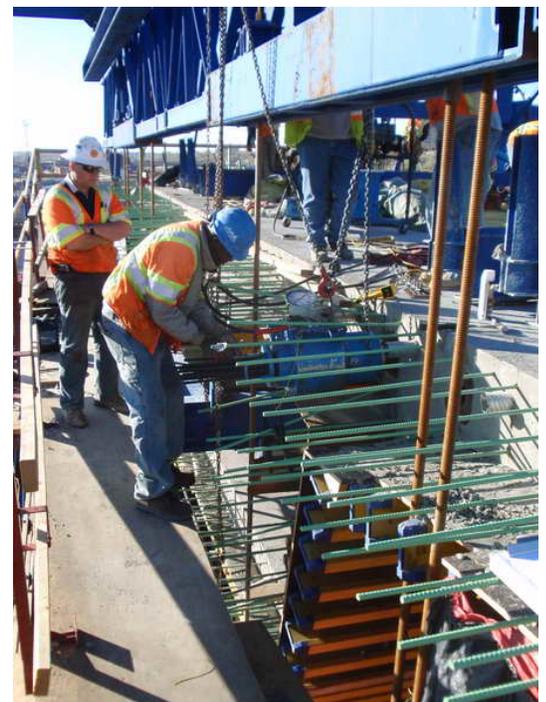




Figure 6 – Cantilever 3 WB Segmental Construction – April 24, 2009:

UPRR engines pass under Cantilever 3 WB as work continues on Segment W3-6E.

Figure 7 – Cantilever 3 WB Segmental Construction – April 24, 2009:

The jack frame is installed on the downstation traveler. The jack frame supports the 600 lb cantilever jack, since the tower crane will not be able to reach the cantilever tip beyond 135' from centerline pier. The final cantilever lengths are 200' and 192' for the downstation and upstation cantilevers, respectively.





Figure 8 – Cantilever 3 WB Superstructure Construction – April 24, 2009:
This is a view of the main-span looking from the top of the flood wall between the WB and EB structures. The form traveler is in place to form Segment W3-6E.



Figure 9 – Cantilever 3 WB Segmental Construction – April 24, 2009:
This is a panoramic view of the main-span portion of Cantilever 3 WB over the UPRR tracks, with construction of Pier Table 3 EB occurring on the left.



Figure 10 – Cantilever 3 WB Segmental Construction – April 24, 2009:

Similar to Figure 9, this is a panoramic view of the side-span portion of Cantilever 3 WB over the Arkansas River, with construction of Span 1 EB CIP Superstructure occurring on the left.

Figure 11 – Pier Table 4 WB Stressing Operations – April 28, 2009:

Workers install the 12-strand jack on the transverse diaphragm tendons at Pier Table 4 WB. The diagonal tendons can be seen at the bottom of the pier table and are required at Pier Table 4 due to the horizontal curvature of the bridge.

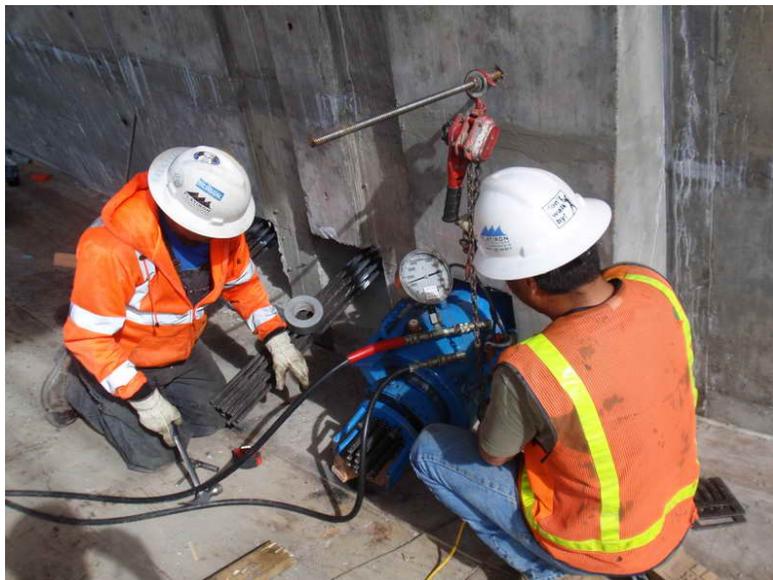
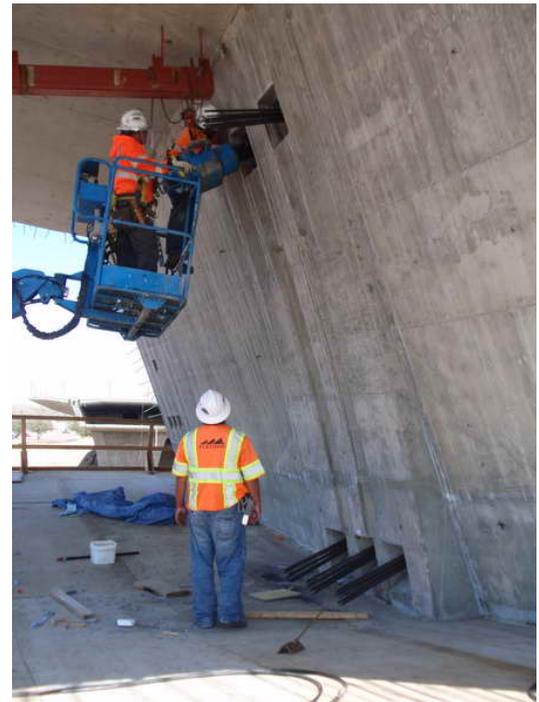


Figure 12 – Pier Table 4 WB Stressing Operations – April 28, 2009:

Workers stress the diagonal tendons at Pier Table 4 WB. The diagonal tendons sweep under the doghouse and anchor at the top of the web on the opposite side. These anchor at the top of the web and are not accessible. Thus, the Contractor was required to develop a way to keep the dead end wedges seated until stressed.

Figure 13 – Cantilever 3 WB Segmental Construction – April 29, 2009:
Segment W3-6E contains the first pair of anchor blocks for this cantilever. As seen, there are two double anchor blocks at each web for a total of eight bottom slab tendons anchoring in this segment.



Figure 14 – Pier Table 3 EB Construction– April 29, 2009:
The diaphragm reinforcing and post-tensioning is completed for the bottom slab concrete placement portion at Pier Table 3 EB. Work continues at Cantilever 3 WB in the background.

Figure 15 – Cantilever 3 WB Grouting Operations – May 4, 2009:
The PT crew begins grouting in earnest with the arrival of warmer weather.





Figure 16 – Cantilever 3 WB Segmental Construction – May 6, 2009:
Cantilever 3 WB continues to approach Span 1 WB, as seen looking South from the Railroad access road. Concrete placement for the closure segment is anticipated next month.

Figure 17 – Pier Table 4 WB Falsework Removal – May 7, 2009:
The winches lower the falsework at Pier 4 WB in a single operation. Coordination with both the UPRR and BNSF Railroads was required, since temporary track closures were needed for this operation. The 6-hour window was met and several BNSF trains passed through the jobsite immediately upon re-opening of the track.



Figure 18 – Cantilever 3 WB Segmental Construction – May 12, 2009:
The ironworkers tie the deviation diaphragm reinforcing in Segment W3-8E.

Figure 19 – Span 1 EB CIP Superstructure Construction – May 12, 2009:
The ironworkers install the reinforcing at the abutment diaphragm.



Figure 20 – Span 1 EB CIP Superstructure Construction – May 12, 2009:
Kevin McLaughlin (FIGG) and Robert Montoya (CDOT) inspect the reinforcing at Pier 2 EB diaphragm.

Figure 21 – Span 1 EB CIP Superstructure Construction – May 12, 2009:
The photo to the right is an overview of Span 1 EB. The deviator diaphragm and anchor block reinforcing is visible, in addition to the typical section reinforcing.





Project Summary:

May 13, 2009
 Day 514 of 1278

Substructure Construction	<u>To</u> <u>Date</u>		<u>Total</u>	<u>Unit</u>	<u>% Complete</u>
48" Diameter Drilled Shafts (Monuments)	3	of	4	Each	75%
48" Diameter Drilled Shafts (Abutments)	11	of	14	Each	79%
60" Diameter Drilled Shafts (Pier 2 & 5)	6	of	8	Each	75%
96" Diameter Drilled Shafts (Pier 3 & 4)	8	of	8	Each	100%
Type I Footings (Pier 2 & 5)	3	of	4	Each	75%
Type II Footings (Pier 3 & 4)	4	of	4	Each	100%
3'-6" Piers (Pier 2 & 5)	3	of	4	Each	75%
7'-1" Piers (Pier 3 & 4)	4	of	4	Each	100%
Abutments	3/4	of	2	Each	38%

Superstructure Construction	<u>To</u> <u>Date</u>		<u>Total</u>	<u>Unit</u>	<u>% Complete</u>
Westbound					
End Span CIP Westbound	2	of	2	Each	100%
Abutment Diaphragm Westbound	2	of	2	Each	100%
Pier Diaphragm Westbound	2	of	2	Each	100%
Pier Table Westbound	2	of	2	Each	100%
Cantilever 3 Segments Westbound	14	of	22	Each	64%
Cantilever 4 Segments Westbound	0	of	20	Each	0%
Closure Segments Westbound	0	of	3	Each	0%
Eastbound					
End Span CIP Eastbound	0	of	2	Each	0%
Abutment Diaphragm Eastbound	0	of	2	Each	0%
Pier Diaphragm Eastbound	0	of	2	Each	0%
Pier Table Eastbound	2/3	of	2	Each	33%
Cantilever 3 Segments Eastbound	0	of	22	Each	0%
Cantilever 4 Segments Eastbound	0	of	20	Each	0%
Closure Segments Eastbound	0	of	3	Each	0%



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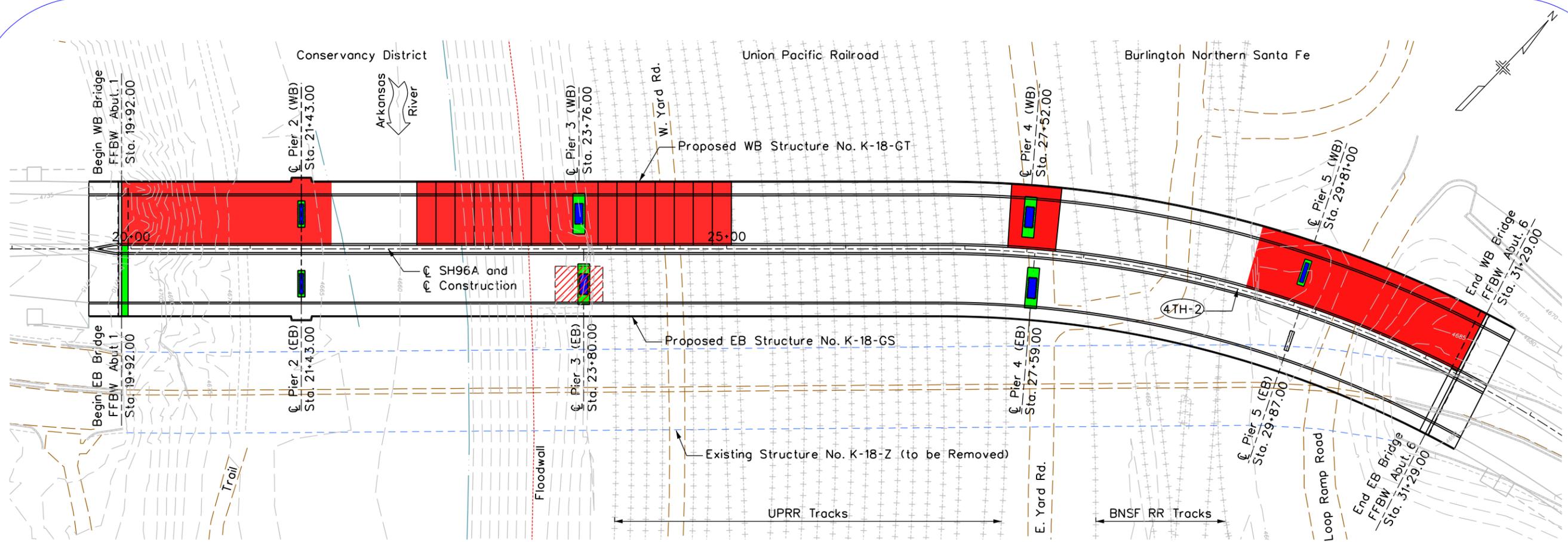
**May 13, 2009
Day 514 of 1278**

Project Milestone Dates

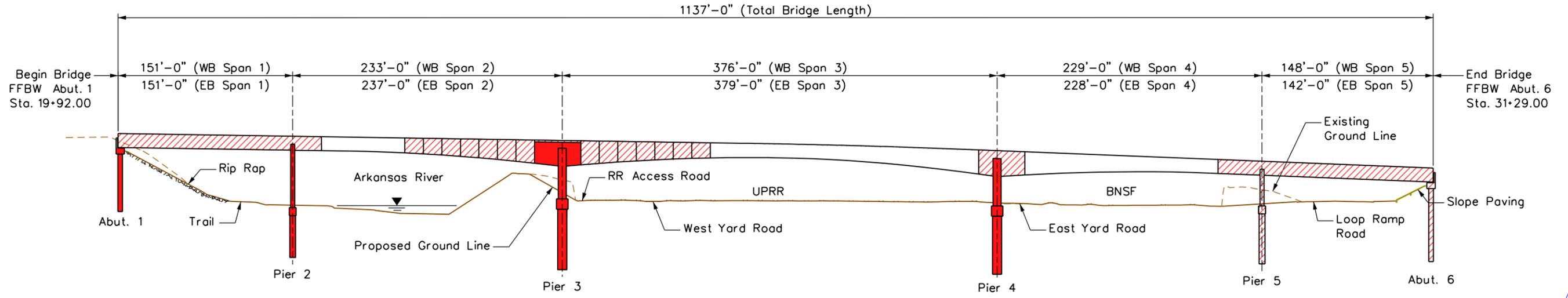
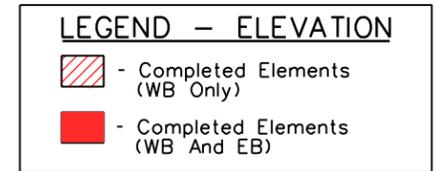
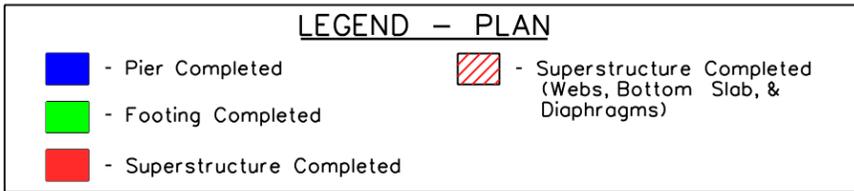
Milestone Event	April 2008 Baseline Finish Date	Actual
Project Award	October 18, 2007	October 18, 2007
Notice to Proceed	November 8, 2007	November 8, 2007
Abutment 1 Drill Caissons	February 15, 2008	February 15, 2008
Abutment 1 Cap Form/Rebar/Pour	March 6, 2008	March 6, 2008
Pier 2 EB Drill Caissons	March 3, 2008	March 3, 2008
Pier 2 WB Form/Rebar/Pour Footing	March 24, 2008	March 24, 2008
Pier 2 WB Column Form/Rebar/Pour	April 29, 2008	April 29, 2008
Pier 3 EB Drill Caissons	April 17, 2008	May 1, 2008
Pier 3 WB Form/Rebar/Pour Footing	May 15, 2008	June 4, 2008
Pier 3 WB Column Form/Rebar/Pour	July 1, 2008	August 5, 2008
Pier 4 EB Drill Caissons	May 8, 2008	July 1, 2008
Pier 4 WB Form/Rebar/Pour Footing	May 13, 2008	August 8, 2008
Pier 4 WB Column Form/Rebar/Pour	August 20, 2008	September 18, 2008
Pier 5 WB Drill Caissons	April 17, 2008	May 30, 2008
Pier 5 WB Form/Rebar/Pour Footing	April 21, 2008	June 12, 2008
Pier 5 WB Column Form/Rebar/Pour	October 21, 2008	July 11, 2008
Abutment 6 WB Drill Caissons	April 18, 2008	April 22, 2008
Abutment 6 WB Cap Form/Rebar/Pour	May 8, 2008	May 8, 2008
Span 1 WB Form/Rebar/Pour Bottom Slab/Webs/Diaphragms	June 17, 2008	August 29, 2008
Span 1 WB Form/Rebar/Pour Deck	July 8, 2008	October 10, 2008
Pier Table 3 WB Form/Rebar/Pour Bottom Slab	August 18, 2008	November 21, 2008
Pier Table 3 WB Form/Rebar/Pour Diaphragm & Webs	September 4, 2008	December 5, 2008
Pier Table 3 WB Form/Rebar/Pour Deck	October 7, 2008	December 31, 2008
Span 5 WB Form/Rebar/Pour Bottom Slab/Webs/Diaphragms	February 12, 2009	January 29, 2009
Span 5 WB Form/Rebar/Pour Deck	March 12, 2009	March 6, 2009
Form and Pour First Segment – W3-1E	November 19, 2008	February 16, 2009
Pier Table 4 WB Form/Rebar/Pour Bottom Slab	March 5, 2009	February 26, 2009
Pier Table 4 WB Form/Rebar/Pour Diaphragm & Webs	March 23, 2009	March 20, 2009
Pier Table 4 WB Form/Rebar/Pour Deck	April 23, 2009	April 15, 2009
Form and Pour First Closure – Span 2 WB	May 19, 2009	
Shift Traffic to New WB Structure	February 17, 2010	
Install Last Drilled Caissons – Abutment 6 (EB Only)	April 26, 2010	
Form and Pour Last Segment – E4-10E	October 12, 2010	
Form and Pour Last Closure – Span 3 EB	November 16, 2010	
Complete Structure and Final Traffic Configuration	March 4, 2011	

All items are based on the April 2008 Baseline Schedule. All dates represent the “Finish” of the activity, unless otherwise noted.

Several substructure milestone dates are later than originally projected. This is mainly due to the drilled shaft subcontractor requiring more time for drilling the 8’ diameter shafts than originally anticipated. Cantilever construction is approximately one pair of segments a week, but has slowed because of deviator segment construction and the associated learning curve. Pier Table construction is keeping ahead of segmental construction, with the intent to move the form travelers immediately to the next pier table when a cantilever is complete to avoid any down-time/storage on the travelers.



PLAN



ELEVATION

