

**Recent Construction Highlights**

Flatiron Constructors Intermountain continued with construction of Pier 3 WB Pier Table and Span 5 WB CIP Superstructure. Span 1 WB CIP Superstructure falsework was removed and Span 1 EB CIP Superstructure falsework assembly began. The following is a summary of the construction progress for the last month.



**Figure 1 – Pier Table 3 WB Construction – November 11, 2008:**

Flatiron continues with the Pier Table construction at Pier 3 WB. Unfortunately, progress was slow since last month's update because the reinforcing supplier delivered reinforcing that did not meet the specified tolerances. All of the web reinforcing was removed and replaced.



**Figure 2 – Pier Table 3 WB Construction – November 11, 2008:**

The ironworkers concentrate on installing the diaphragm reinforcing after tying the outside face web reinforcing. The EFCO Superstud running between the webs in the upper portion of the diaphragm was installed by Flatiron to be used as a template for the diaphragm reinforcing.

**Figure 3 – Span 1 WB CIP Superstructure Falsework Removal – November 13, 2008:**  
The winches are installed on the deck for the 1<sup>st</sup> drop portion of the falsework removal. The falsework removal will consist of removing two spans of falsework stringers near the abutment, followed by removing the remaining stringer spans near the pier in a second operation.



**Figure 4 – Span 5 WB CIP Superstructure Construction – November 14, 2008:**  
Web formwork installation nears completion at Span 5 WB as a BNSF train passes below. The formwork for the portion that cantilevers into Span 4 WB is all that remains before reinforcing installation can begin.

**Figure 5 – Span 1 WB CIP Superstructure Falsework Removal – November 14, 2008:**  
A worker uses the man-lift to remove the safety PT bars once the winches are engaged. With the falsework bents removed, the first two stringer spans will be lowered together. The third stringer span is held in place by a temporary stripping beam that is suspended by PT bars and is visible below the generator.



**Figure 6 – Span 1 WB CIP Superstructure Falsework Removal – November 14, 2008:**  
The 1<sup>st</sup> drop of the falsework removal procedure is complete. Flatiron removed the stringers from the lower portion of the slope using the forklift and then removed the upper stringers by knocking them loose with the forklift and allowing the beams to slide down the slope for retrieval.



**Figure 7 – Pier Table 3 WB Construction – November 18, 2008:**  
With the diaphragm reinforcing installation nearly complete, the ironworkers begin to tie the bottom slab reinforcing for the pier table. The winches for the 2<sup>nd</sup> drop of Span 1 WB falsework can be seen on the deck on the right, as well as Span 5 WB CIP superstructure construction progressing in the background.

**Figure 8 – Span 1 WB CIP Superstructure Falsework Removal– November 18, 2008:**  
The 50-ton crane removes the support pipes from Bent 1-4. The second drop occurred on November 19<sup>th</sup> and re-assembly of the bents began shortly thereafter for Span 1 EB Superstructure Construction.



**Figure 9 – Pier Table 3 WB Construction – November 20, 2008:**

The bottom slab is cast using a pump truck staged in the UPRR property just upstation of the shoring wall and pier table. The pier table falsework bents consist of HP members, instead of pipe, to maximize the use of available materials onsite. Also, uplift restraints are required on Bent 3-3, since the stringers on the upstation side are in cantilever. The uplift restraints are the beams running longitudinally over the bottom caps of the bents.

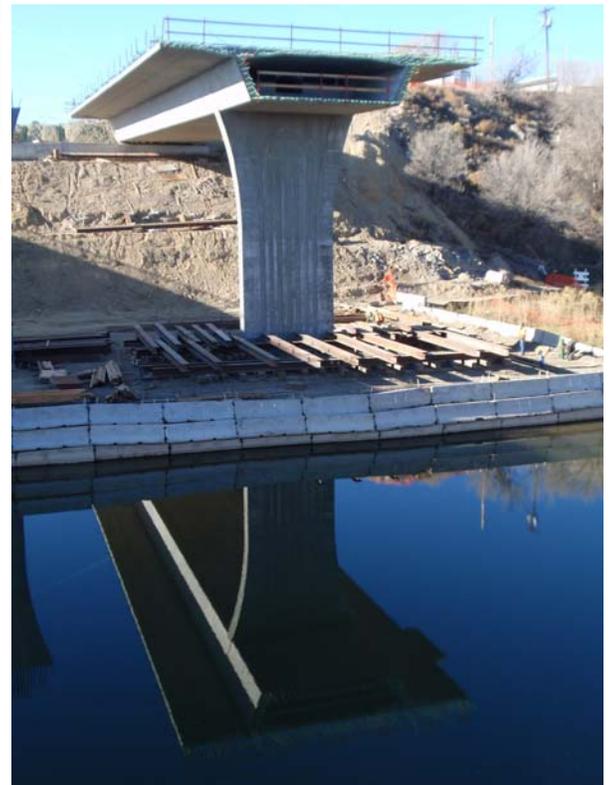


**Figure 10 – Project Overview – November 24, 2008:**

The picture to the left is taken from the cantilever tip of Span 5 WB CIP Superstructure looking downstation. Work continues on the diaphragm and webs at Pier 3 WB Pier Table in the background.

**Figure 11 – Span 1 WB CIP Superstructure Falsework Removal – November 24, 2008:**

Looking downstation from the top of the floodwall, the falsework removal operations will be complete after the last two stringer spans are disassembled. The overlook at Pier 2 is apparent in the reflection off the Arkansas River.



**Figure 12 – Pier Table 3 WB Construction – November 25, 2008:**

The downstation face of the diaphragm formwork is flown into place using the tower crane. Materials are delivered from the existing bridge and stored adjacent to Pier 3 EB until needed. Although lane closures are needed when materials are delivered from the existing bridge, this benefits the Contractor from having to coordinate their operations with the Railroads (i.e. delivering materials within the Rail Yard).



**Figure 13 – Pier Table 3 WB Construction – November 25, 2008:**

With the downstation formwork installed, the foreman directs the tower crane operator to begin flying in the upstation formwork. The draped tendon anchors are mounted to the forms prior to installation and can just be seen on the downstation forms. Also visible are the vertical PT Bars and the transverse diaphragm tendons sweeping over the doghouse.

**Figure 14 – Pier Table 3 WB Construction –  
December 3, 2008:**

The web and diaphragm formwork installation is complete and the crew begins installing form ties and connecting the draped tendon rigid pipes to the anchors.



**Figure 15 – Span 5 WB CIP Superstructure  
Construction – December 3, 2008:**

The web and bottom slab reinforcing installation began on December 1<sup>st</sup> and continues with the ironworkers tying the longitudinal reinforcing bars.

**Figure 16 – Pier Table 3 WB Construction –  
December 5, 2008:**

The foreman places the concrete for the diaphragm and web portion of Pier Table 3 WB. The Contractor has installed cooling tubes in the diaphragm because it is considered mass concrete. The cooling system manifold is visible on both sides of diaphragm (inlet and outlet manifolds).

(Photo: Kevin McLaughlin)





**Figure 17 – Span 1 EB CIP Superstructure Construction – December 5, 2008:**

The falsework bent assembly is nearly complete for Span 1 EB. The Contractor has chosen to use Span 1 WB as a temporary storage platform for some of the falsework stringers. (Photo: Kevin McLaughlin)



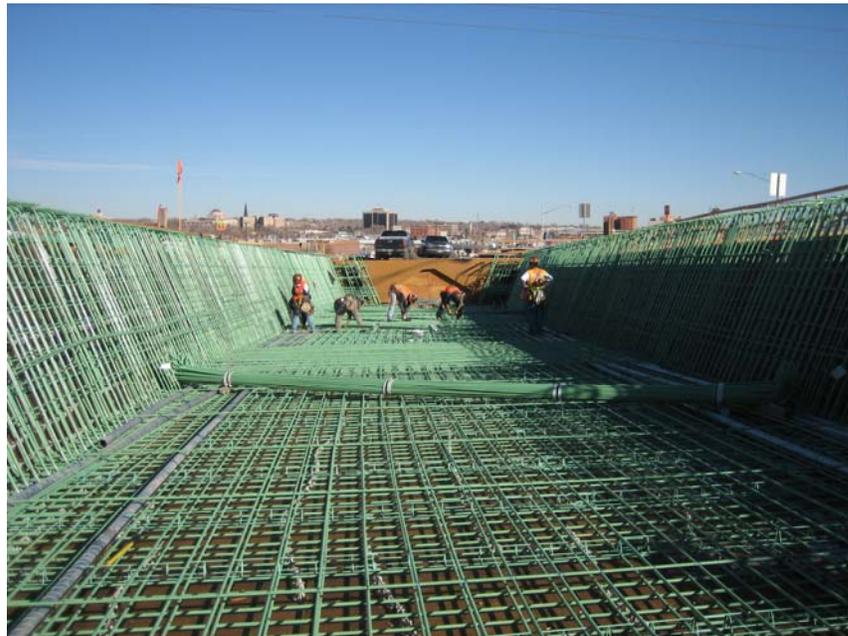
**Figure 18 – Span 5 WB CIP Superstructure Construction – December 9, 2008:**

The ironworkers begin tying the pier diaphragm reinforcing at Pier 5 WB after completing the web reinforcing installation (inside and outside faces). (Photo: Kevin McLaughlin)

**Figure 19 – Pier Table 3 WB Construction – December 10, 2008:**

The downstation formwork is removed from the diaphragm and interior webs after sufficient cooling of the diaphragm. (Photo: Kevin McLaughlin)





**Figure 20 – Span 5 WB CIP Superstructure – December 11, 2008:**

The ironworkers install the top mat of the bottom slab reinforcing after Flatiron loosely installs the bottom slab post-tensioning ducts. The abutment diaphragm bulkhead is visible in the background. (Photo: Kevin McLaughlin)



**Figure 21 – Pier Table 3 WB Construction – December 12, 2008:**

This picture shows a close-up of the pier flare that extends up into the web at the pier table. The rustications terminate 8-feet below the top slab, which is at the same location the rustications terminate at the constant depth section (Piers 2 & 5). The blockouts above the rustications contain the 12-strand transverse diaphragm anchorages. (Photo: Kevin McLaughlin)



**Figure 22 – Pier Table 3 WB Construction – December 16, 2008:**

Flatiron installs the timber bracing to the scaffolding system that will support the top deck portion of the pier table. The blockouts near the downstation (left) tip will house 1 ¾" diameter PT Bars after an additional diaphragm is cast for the stability prop. The stability prop is required to resist the out-of-balance moments during cantilever construction. Pike's Peak is just visible in the background.



**Project Summary:**

December 16, 2008  
 Day 366 of 1278

<b>Substructure Construction</b>	<b><u>To</u> <u>Date</u></b>		<b><u>Total</u></b>	<b><u>Unit</u></b>	<b><u>% Complete</u></b>
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%

<b>Superstructure Construction</b>	<b><u>To</u> <u>Date</u></b>		<b><u>Total</u></b>	<b><u>Unit</u></b>	<b><u>% Complete</u></b>
<b>Westbound</b>					
End Span CIP Westbound	1	of	2	Each	50%
Abutment Diaphragm Westbound	1	of	2	Each	50%
Pier Diaphragm Westbound	1	of	2	Each	50%
Pier Table Westbound	2/3	of	2	Each	33%
Cantilever 3 Segments Westbound	0	of	22	Each	0%
Cantilever 4 Segments Westbound	0	of	20	Each	0%
Closure Segments Westbound	0	of	3	Each	0%
<b>Eastbound</b>					
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	0	of	2	Each	0%
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%



**Project Summary:**

**December 16, 2008  
Day 366 of 1278**

**Project Milestone Dates**

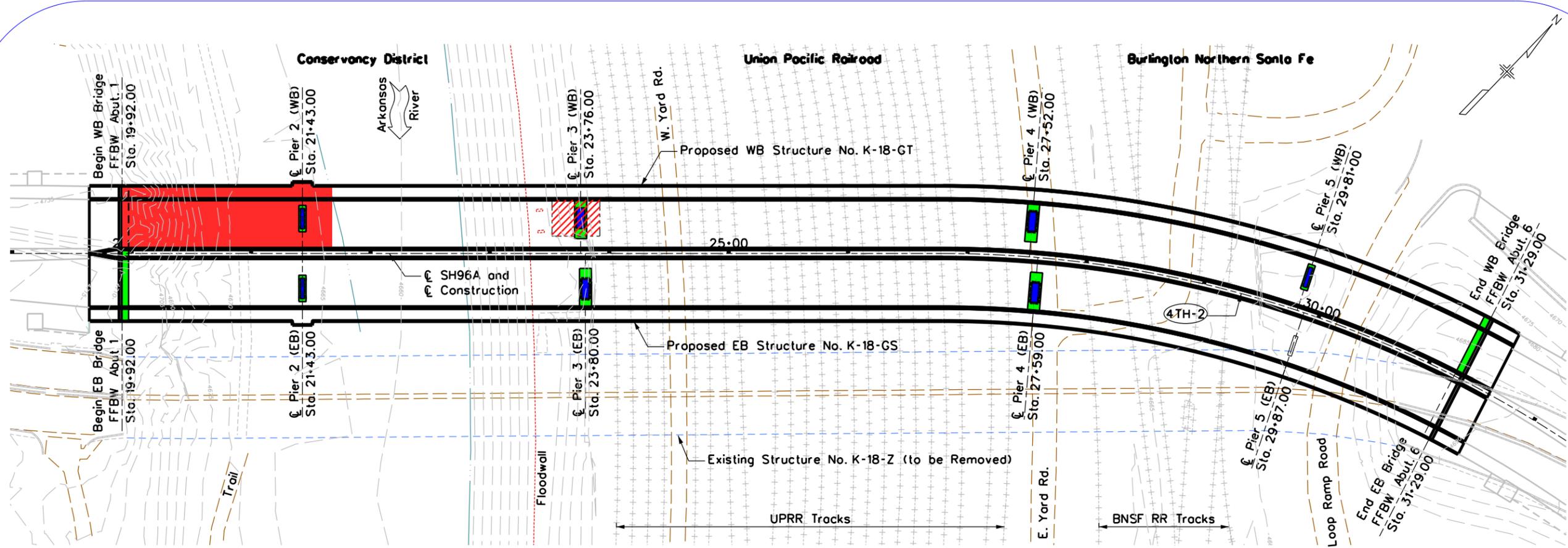
Milestone Event	Date	Actual
Project Award	October 18, 2007	October 18, 2007
Notice to Proceed	November 8, 2007	November 8, 2007
*Abutment 1 Drill Caissons	March 11, 2008	February 6, 2008
*Abutment 1 Cap Form/Rebar/Pour	April 1, 2008	March 6, 2008
*Pier 2 Drill Caissons	February 28, 2008	February 26, 2008
*Pier 2 Form/Rebar/Pour Footing	March 11, 2008	March 24, 2008
Pier 2 Column Form/Rebar/Pour	April 8, 2008	April 9, 2008
Pier 3 Drill Caissons	April 1, 2008	April 1, 2008
Pier 3 Form/Rebar/Pour Footing	May 27, 2008	May 27, 2008
Pier 3 Column Form/Rebar/Pour	July 24, 2008	July 25, 2008
Pier 4 Drill Caissons	June 2, 2008	June 3, 2008
Pier 4 Form/Rebar/Pour Footing	July 23, 2008	August 1, 2008
Pier 4 Column Form/Rebar/Pour	September 11, 2008	September 11, 2008
Pier 5 WB Drill Caissons	May 27, 2008	May 27, 2008
Pier 5 WB Form/Rebar/Pour Footing	June 4, 2008	June 4, 2008
Pier 5 WB Column Form/Rebar/Pour	July 2, 2008	July 1, 2008
Abutment 6 Drill Caissons	April 16, 2008	April 17, 2008
Abutment 6 Cap Form/Rebar/Pour	April 30, 2008	April 30, 2008
Span 1 WB Form/Rebar/Pour Bottom Slab/Webs/Diaphragms	August 26, 2008 (Finish)	August 29, 2008
Span 1 WB Form/Rebar/Pour Deck	October 3, 2008 (Finish)	October 10, 2008
Pier 3 Pier Table Form/Rebar/Pour Diaphragm & Webs	December 11, 2008 (Finish)	December 5, 2008
Pier 3 Pier Table Form/Rebar/Pour Deck	January 21, 2009 (Finish)	
Span 5 WB Form/Rebar/Pour Bottom Slab/Webs/Diaphragms	December 24, 2008 (Finish)	
Span 5 WB Form/Rebar/Pour Deck	January 23, 2009 (Finish)	
Span 1 EB Form/Rebar/Pour Bottom Slab/Webs/Diaphragms	February 11, 2009 (Finish)	
Span 1 EB Form/Rebar/Pour Deck	March 10, 2009 (Finish)	
Form and Pour First Segment – Cantilever 3 WB	March 16, 2009	
Form and Pour First Closure – Span 2 WB	August 14, 2009 (Finish)	
Shift Traffic to New Structure	May 10, 2010	
Install Last Drilled Caissons – Abutment 6 (EB Only)	July 1, 2010	
Form and Pour Last Segment – Cantilever 4 EB	October 15, 2010	
Form and Pour Last Closure – Span 3 EB	December 6, 2010	
Complete Structure and Final Traffic Configuration	March 28, 2011 (Finish)	

**All items designated with an asterisk (\*) are based on Rev 2 Baseline Schedule submitted February 25, 2008.**

**All remaining items are estimated based on the November 20, 2008 updated project schedule.**

**All dates represent the “Start” of the activity, unless otherwise noted.**

The updated project schedule reflects milestone dates later than originally projected (in the Baseline Schedule – Rev 2 and previous updates). This is mainly due to the drilled shaft subcontractor requiring more time for drilling the 8’ diameter shafts than originally anticipated. Flatiron plans to construct Span 5 WB CIP Superstructure simultaneous with Span 1 EB CIP Superstructure to improve the schedule. Since cantilever construction is critical path, Flatiron intends to construct Pier 4 WB Pier Table falsework prior to completing Pier 3 WB Pier Table construction.



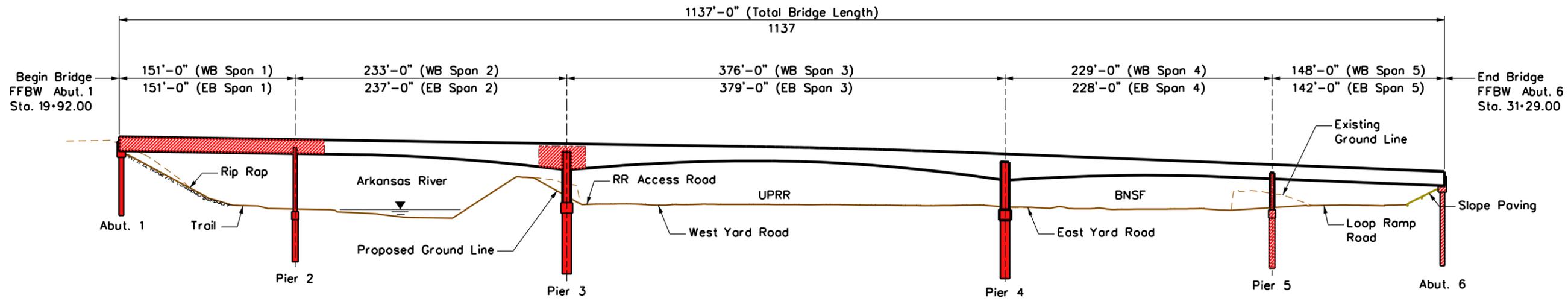
**PLAN**

**LEGEND - PLAN**

- - Pier Completed
- - Footing Completed
- - Superstructure Completed
- Superstructure Completed (Webs, Bottom Slab, & Diaphragms)

**LEGEND - ELEVATION**

- Completed Elements (WB Only)
- Completed Elements (WB And EB)



**ELEVATION**

