Project Summary:

April 13, 2009
Day 484 of 1278

Recent Construction Highlights

Flatiron Constructors Intermountain continued with construction at Cantilever 3 WB by casting three pair of segments. Also, construction continued with placing the webs and diaphragm concrete and began forming the top slab at Pier Table 4 WB, stripped the formwork and lowered the falsework at Span 5 WB, began laying out the bottom slab forms at Span 1 EB CIP Superstructure, and began forming the bottom slab and webs at Pier Table 3 EB. The following is a summary of the construction progress for the last month.

Figure 1 – Pier Table 3 EB Falsework Construction – March 11, 2009:
Falsework bent erection begins at Pier Table 3 EB using a 175 ton crane behind the floodwall on the right, as work continues at Cantilever 3 WB, Segments W3-2W and W3-2E on the left.

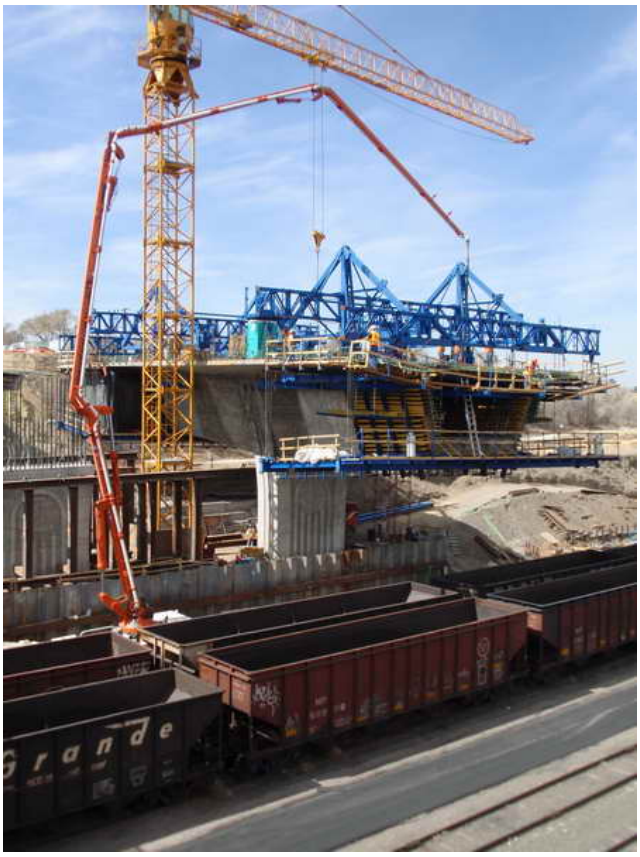


Figure 2 – Cantilever 3 WB Segmental Construction – March 18, 2009:
The concrete pump is staged between the temporary shoring wall and empty UPRR coal train cars to place the concrete for Segment W3-2E.

Figure 3 – Span 5 WB Falsework Removal – March 25, 2009:
The first two spans (of six) are lowered according to Flatiron's falsework removal plan. A temporary stripping beam holds up the third span until the winches are reconfigured on the deck.

Figure 4 – Cantilever 3 WB Segmental Construction – March 31, 2009:
Concrete is placed for Segment W3-3E using a 52 meter pump truck. The pump truck must be long enough to clear the far sawhorse.

Figure 5 – Cantilever 3 WB Segmental Construction – March 31, 2009:
The photo to the right shows that work is proceeding while coal train cars are stored under the cantilever. The track on the left (Track 21) has been taken out of service for the duration of the project. However, Flatiron must coordinate with the UPRR to temporarily foul (occupy) Track 20, such as for material delivery or concrete pours.

Figure 6 – Pier Table 4 WB Construction – March 31, 2009: With tension ties installed between the webs and the outside web forms stripped, Flatiron begins assembling the top slab formwork support scaffolding.

Figure 7 – Span 5 WB Falsework Removal – March 31, 2009: The forklift begins to clean up the falsework stringers under Span 5 WB following the falsework lowering procedure. The Contractor removed the falsework in three separate operations with a total of eight winches. The portion cantilevering out from Pier 5 into Span 4 is approximately 44' in length, measured along centerline girder.

Project Summary:

April 13, 2009
Day 484 of 1278

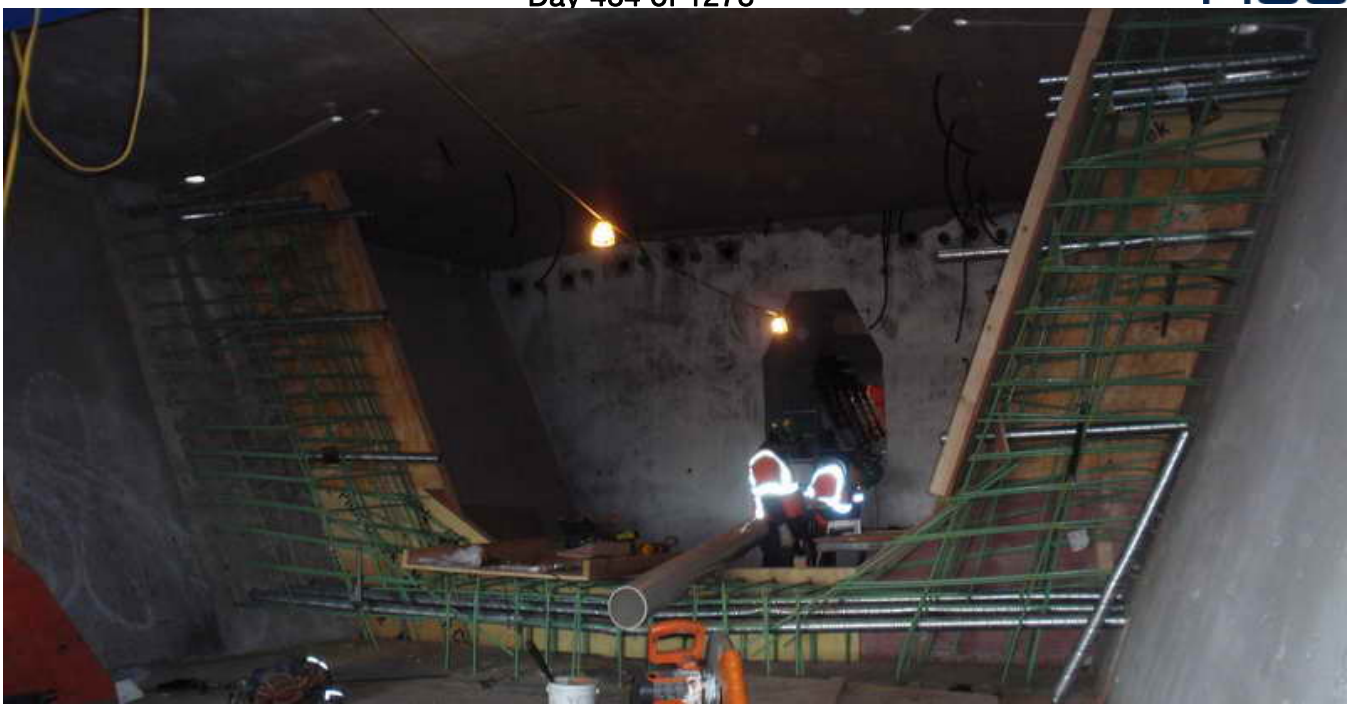


Figure 8 – Cantilever 3 WB Superstructure Construction – April 1, 2009:
With the first two side-span segments cast and the downstation form traveler in position to cast the third typical side-span segment, crews begin forming and installing the reinforcing and post-tensioning for the stability prop diaphragm. The diaphragm could not be cast with the pier table portion because the interior section of the bridge had to be clear to secure the form traveler to the bottom slab. All reinforcing is coupled to the pier table through the use of form savers (threaded reinforcing that mount flush with the forms). The galvanized ducts are for 1¾" diameter PT bars that will be stressed prior to engaging the prop. Finally, the 8" diameter PVC duct next to the workers will be used to cast a void in the upper corners of the diaphragm to accommodate the future draped tendon profile.

Figure 9 – Cantilever 3 WB Segmental Construction – April 3, 2009:
The stability prop diaphragm forming is complete. The diaphragm is used to transfer the out-of-balance moments during cantilever construction to the prop, which will be installed after casting the fourth pair of typical segments. The blue rails are the back end of the downstation traveler's interior formwork support frame.

Figure 10 – Pier Table 4 WB Construction– April 6, 2009:
Looking across the main-span from the existing bridge, work continues on forming the top slab portion at Pier Table 4 WB.

Figure 11 – Cantilever 3 WB Segmental Construction – April 6, 2009:
A Flatiron employee tests the pull-out strength of a 1¼" diameter PT bar that was epoxied into the 5' diameter stability prop drilled shaft.

Figure 12 – Pier Table 3 EB Construction– April 7, 2009:
Workers begin laying out the 4x4 supports for the bottom slab plywood. Forming will begin for the webs, diaphragm, and bottom slab now that the web forms have been stripped at Pier Table 4 WB.

Figure 13 – Cantilever 3 WB Segmental Construction – April 7, 2009:
Flatiron hoists a 300-ton capacity bar jack up to the 1¾" diameter PT bars for stressing at the stability prop diaphragm. Each bar is temporarily stressed to 295 kips each. These bars are removed after continuity is achieved through the side-span closure and longitudinal post-tensioning is complete.

Figure 14 – Cantilever 3 WB Segmental Construction– April 9, 2009:
The pump truck sets up to pour segment W3-4E behind the coal cars.

Figure 15 – Cantilever 3 WB Segmental Construction – April 10, 2009:
The top cap of the stability prop is lifted into place and suspended from lifting holes cast in the bottom slab and prop diaphragm.

Figure 16 – Cantilever 3 WB Segmental Construction –April 13, 2009:
Cantilever 3 WB construction continues with casting of Segment W3-4W (right side) scheduled for April 14, 2009. After the segment is cast, stressed, and the side-span (right) traveler is launched, the stability prop will be engaged and 286 kips of counterweights will be placed on the joint between Segments W3-2W and W3-3W on the deck.

Figure 17 – Cantilever 3 WB Segmental Construction – April 13, 2009:
The stability prop is a 4' diameter pipe with 1" wall thickness. The prop will be initially loaded to 750 kips through four 150-ton jacks placed on the top cap prior to installing the counterweights on the deck.

Figure 18 – Cantilever 3 WB Segmental Construction– April 13, 2009:
A panoramic view of the project looking southeast from the top of the flood wall.

Project Summary:

April 13, 2009
Day 484 of 1278

Substructure Construction	To Date		Total	Unit	% Complete
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	To Date		Total	Unit	% Complete
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	1	of	2	Each	50%
Cantilever 3 Segments Westbound	7	of	22	Each	32%
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	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:

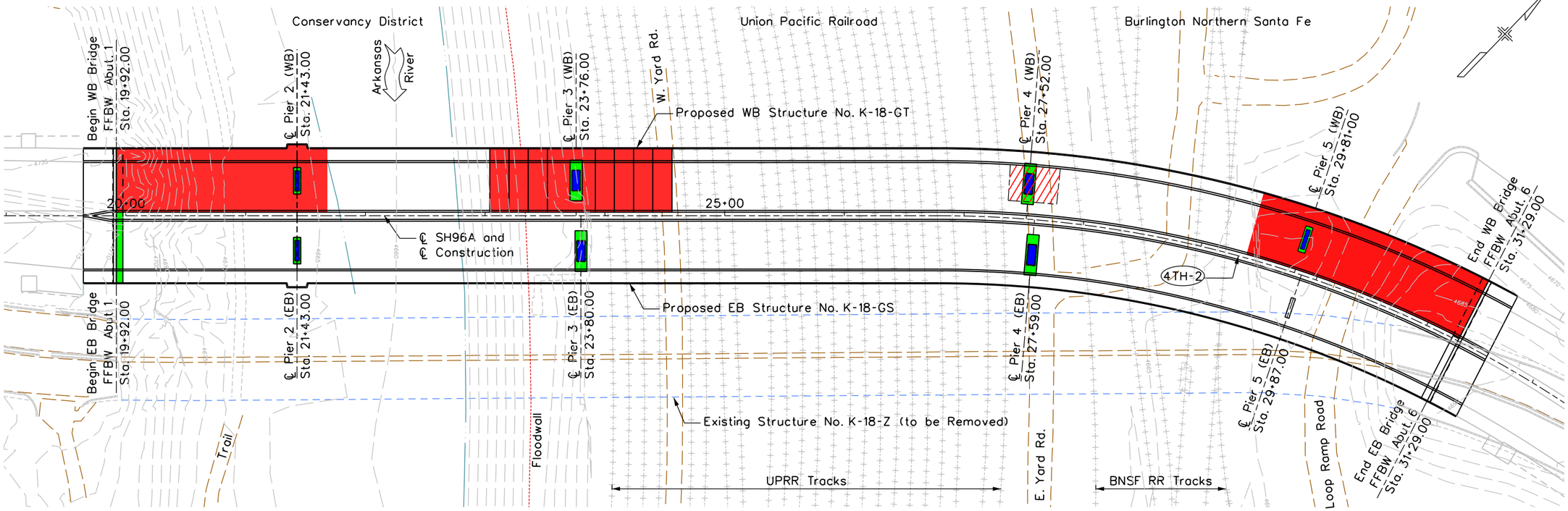
April 13, 2009
Day 484 of 1278

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
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
Form and Pour First Segment – W3-1E	November 19, 2008	February 16, 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 approaching one pair of segments a week, after the initial form traveler set-up and a 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.



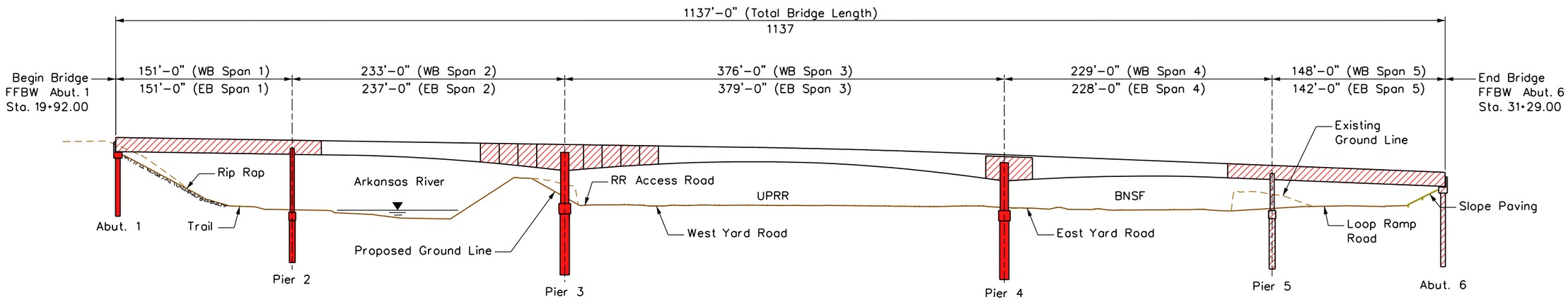
PLAN

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

FIGG

4th Street Bridge Project - Project Completion Status - Apri 13, 2008