

PLOT/TEC Tuesday, July 27, 2015 @ 10:13AM

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	87 N-0612-01	2015	33	84



SUMMARY OF QUANTITIES															
ITEM	LOCATION	CONCRETE			REINFORCING STEEL	STRUCTURAL STEEL			STEEL PILES *	STEEL TEST PILES	CAST STEEL PILE POINTS	CONTRACTOR FURNISHED PDA	WELDED STUD SHEAR CONNECTORS 7/8"φ	BRIDGE DECK STRIP SEAL	BRIDGE DECK GROOVING
		GRADE 4.0 (AE)(SA)	GRADE 4.0 (AE)	EPOXY COATED GRADE 60	AASHTO M 270M GRADE 50W T3	ASTM A709 GRADE 50W T3	ASTM A709 GRADE 50W	L.F.	L.F.	EACH	EACH	EACH	L.F.	SQ. YDS.	
		CU. YDS.	CU. YDS.	LBS.	LBS.	LBS.									
PHASE 1	Abutment No. 1	**	9.5	2,200	--	--	102	34	4	1	--	--	--		
	Abutment No. 2	**	9.5	2,200	--	--	111	37	4	1	--	--	--		
	Substr. Total	--	19.0	4,400	--	--	213	71	8	2	--	--	--		
	Superstr. Total	68.8	--	12,670	52,663	14,363	1,278	--	--	--	1,176	--	136		
PHASE 2	Abutment No. 1	**	9.5	2,200	--	--	136	--	4	--	--	--	--		
	Abutment No. 2	**	9.5	2,200	--	--	148	--	4	--	--	--	--		
	Substr. Total	--	19.0	4,400	--	--	284	--	8	--	--	--	--		
	SuperStr. Total	69.0	--	12,670	52,663	14,363	1,278	--	--	--	1,176	53	136		
TOTAL		137.8	38.0	34,140	105,326	28,726	2,556	497	71	16	2	2,352	53	272	

INDEX TO BRIDGE DRAWINGS	
SH. NO.	DRAWING
33	General Notes and Quantities
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35	Bridge Contour Map
36	Bridge Construction Layout
37	Existing Bridge Demo Plan
38	Existing Bridge Demo Sections & Notes
39	Phase 1 Bridge - Abut. No. 1 Beam Detail
40	Phase 1 Bridge - Abut. No. 2 Beam Detail
41	Phase 1 Bridge - Abut. No. 1 Diaphragm Detail
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43	Phase 1 Bridge - Framing Plan & Girder Details
44	Phase 1 Bridge - Superstructure Details
45	Phase 1 Bridge - Traffic Rail Details
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49	Phase 2 Bridge - Abut. No. 2 Diaphragm Detail
50	Phase 2 Bridge - Framing Plan & Girder Details
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54	Bridge Falsework Details
55	Bridge Project Marker Plaque
56	Standard Pile Details
57	Supports and Spacers for Reinforcing Steel

** Quantities are included in the Superstructure Total Quantity.

CONTRACTOR CONSTRUCTION STAKING: Contractor Construction Staking for clear span bridges requires two independent surveys. See KDOT Specifications.

* NOTE: Use only HP14x89 steel pile on this project

* Summary of Piling
Abut. No. 1 - 7 @ 34', 1 @ 34'
Abut. No. 2 - 7 @ 37', 1 @ 37'

NOTE: See Sheet 38 for Summary of Removal Items and Recapitulation of Quantities regarding bid items for "Removal of Existing Structures" and "Shoring, Temporary".

GENERAL NOTES

EMBANKMENT: Complete the embankment at the abutments as shown on the Bridge Excavation sheet prior to construction of the abutment.

DEMOLITION PLANS: This is a Category B Demolition. Detailed Demolition Plans are included in this plan set on sheets 37 & 38. A Demolition Supervisor, meeting the requirements of the KDOT Specifications, will be required for this project.

BRIDGE EXCAVATION: Refer to Sheet 24 "Excavation Plan for Roadway & Bridge".

BACKFILL COMPACTION: Compact backfill at the abutments and piers.

PILING: Drive all piling to penetrate or bear upon the Shale formation. Driving shall stop, when in the opinion of the Engineer, additional driving may damage the piling. Drive all piling to the value shown in the "Design Pile Load" table.

As a minimum drive each pile to the load and penetration, but in no case shall the pile be driven to more than 110% of Pile Driving Formula Driving Load. Prior to construction, the expected blow counts, pile stresses, and energy requirements for a specific contractor-provided pile hammer shall be computed by use of PDA.

CONTRACTOR FURNISHED PDA: Use the Pile Driving Analyzer equipment at the locations shown on the Construction Layout. Use Pile Driving Analyzer equipment and methods compliant with KDOT Special Provisions. The piling shall remain in place as permanent piling. Drive the piling to the resistance value of (Strength I divided by Phi). At any location where problems are experienced, pile damage suspected, or the Pile Driving Formula Load occurs significantly above the design tip elevation, the Engineer may request that the Pile Driving Analyzer (PDA) equipment be used.

ERECTION ELEVATION CHECKS: After the abutment concrete has cured and before setting any structural steel, present verification to the Engineer that the elevations at the bearings match plan elevation (+ 1/4"). Present verification to the Engineer that the elevations at all field splice locations match the elevations (1/2") in the plans before any connection is fully tightened.

ERECTION: Bring each line of girders to the correct line, grade (or relative grade) and camber, and secure in place prior to connection of the girder field splices. Provide falsework bents as necessary to maintain the correct line and elevation. Submit information which clearly shows the proposed layout and use of falsework bents. The Engineer shall approve such information prior to erection of structural steel.

ERECTION PLANS: This is a Category A Structure. Submit detailed Erection Plans to the Field Engineer per KDOT Specifications. A Licensed Professional Engineer is not required.

CONCRETE: Superstructure concrete is bid as Concrete (Grade 4.0)(AE)(SA). Substructure concrete is bid as Concrete (Grade 4.0)(AE). Bevel all exposed edges of all concrete with a 3/4" triangular molding, except as otherwise noted on the plans. Construction joints are optional with the Contractor, but if used, place only at locations shown, or at locations approved by the Engineer.

CONCRETE PLACING: Place and hand vibrate all concrete for the abutments above the construction joint to the bottom of the deck elevation just prior to the normal paving train operations. Do this work in a manner to avoid cold joints in either the slab or in the abutment.

CONSTRUCTION JOINTS: The construction joints shown are optional with the Contractor. If used, place the construction joints only at locations shown or at locations approved by the Engineer.

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. See the Bridge Design Manual, Section 16.1 "Review and Approval of Falsework Plans", for a listing of items to be included on the falsework plan. Submit electronic plans conforming to 105.10(b) of the Standard Specification with details in compliance with KDOT Specifications to the Field Engineer for review.

FALSEWORK PLANS AND SHOP DRAWINGS: Use the U.S. Customary system of units on falsework plans and shop drawing details.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

STRUCTURAL STEEL: Girder flange plates shall meet AASHTO M270 Grade 50W T3 requirements except as noted. Girder web plates shall meet ASTM A709 Grade 50W T3 requirements except as noted. All other structural steel shall meet ASTM A709 Grade 50W, unless noted otherwise.

WELDING: Material and construction shall conform to KDOT Specifications. On the shop drawings, show a code or symbol at the tail of the weld symbol, which refers to an approved pre-qualified weld procedure.

WELDED STUD SHEAR CONNECTORS: Weld Shear Stud Connectors with automatically timed stud welding equipment connected to a suitable power source. All stud welding shall conform to KDOT Specifications. For bridges with skewed reinforcing steel, the Contractor has the option to place the Welded Shear Stud Connectors parallel to the skew angle.

FABRICATION OF WELDED SPLICES: See Figure 6.4.1-2 "Flange and Web Welded Splice Configurations" of the Bridge Design Manual. All web and flange splices shall be full penetration welds.

RADIOGRAPHIC INSPECTION OF GIRDERS: Radiograph all butt welds in the flanges and all but the middle one third of the web butt welds in each span.

TEMPERATURE: The design temperature for all dimensions is 60° F.

PAINTING TOP FLANGES: (Studs applied in the shop) Apply a 3 mil primer coat of an approved inorganic zinc primer to the tops of the top flanges and to the studs.

(Studs applied in the field) Shop Work - Blast clean the tops of the top flanges to SSPC-SP10 Specifications (latest Revision).

Field Work - Blast clean the tops of the top flanges to SSPC-SP6 Specifications (latest Revision) before the studs are applied. After the studs are applied, blast clean the tops of the top flanges and the studs to SSPC-SP6 Specifications and paint with an approved organic zinc primer to a minimum dry film thickness of 3 mils.

PAINTING: Blast clean all surfaces of all weathering steel, including all contact surfaces of bolted connections, to meet SSPC-SP6 Specifications (latest Revision). Blast clean to meet SSPC-SP10 Specifications and prime coat the embedded portion of the beams, including the abutment diaphragms; the top flanges, including the shear studs; and the top flange splice plates. Paint the areas of the girder near the expansion devices in accordance with KDOT Specifications.

DESIGN DATA

DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 2012 Edition and latest Interim Specifications.

DESIGN LOADING: HL-93
Design Dead Load includes an allowance of 15 psf for a future wearing surface.

UNIT STRESSES:
Concrete (Grade 4.0)(AE): $f'c = 4 \text{ ksi}$
Concrete (Grade 4.0)(AE)(SA): $f'c = 4 \text{ ksi}$
Reinforcing Steel (Grade 60): $f_y = 60 \text{ ksi}$
Structural Steel (AASHTO M270 Gr. 50W T3): $f_y = 50 \text{ ksi}$
Structural Steel (ASTM A709 Gr. 50W): $f_y = 50 \text{ ksi}$

DESIGN PILE LOAD (TONS/PILE)		
LOCATION	STRENGTH I	SERVICE I
Abutment	98	66
Phi $\phi = 0.65$		

LRFR RATING FACTORS		
Rating Level	Inventory	Operating
Design Load		
HL-93 Loading	2.30	2.99
2011 Manual For Bridge Evaluation		

LFD RATING FACTORS		
Rating Level	Inventory	Operating
Design Load		
HS-20 Loading	2.50	3.25
2011 Manual For Bridge Evaluation		

CONSTRUCTION PLANS FOR
21ST STREET BRIDGE AT DERBY REFINERY
WICHITA, KANSAS

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GENERAL NOTES AND QUANTITIES

PROJECT NO.	472-85120	
DATE	JULY 2015	
SCALE	N/A	
DESIGNED	KJS	
DRAWN	WNJ	
CHECKED	KJS	
NO.	REVISION	DATE
SHEET NO.		