

SUMMARY OF QUANTITIES

Location	Excavation		Concrete		Reinforcing Steel		Bridge Backwall Protection System	Abutment Strip Drain	Slope Protection (Riprap Stone)	Riprap (Reinforced Concrete) (100)	Silica Fume Overlay (40mm)	Prestressed Concrete Beams (K3)	Pile (Concrete) (325)	Test Pile (Concrete) (325)
	Class I	Class II	Grade 30 (AE)(SA)	Grade 30 (AE)	Epoxy Coated Grade 420	Grade 420								
Item	m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	m <sup>3</sup>	Kg.	Kg.	m <sup>2</sup>	m <sup>2</sup>	m <sup>3</sup>	m <sup>2</sup>	m <sup>2</sup>	m	m	m
Abutment No. 1	51		**	11.9	**	840	38	24	411				114.1	
Pier No. 1		118		42.9		3940							232.5	18.5
Pier No. 2		132		46.6		4290							240.0	
Pier No. 3		134		49.1		4450							225.0	18.0
Pier No. 4		121		50.4		4550							263.5	
Abutment No. 2	62		**	22.2	**	1430	55	45	299	368			189.2	
Substructure Total				223.1		19 500	93	69					1264.3	36.5
Superstructure Total			402.0								795.2		763	
Total	113	505	402.0	223.1	61 410	* 19 500	93	69	710	368	1415.1	795.2	† 1264.3	36.5

\*\* Quantities are included in the Superstructure Total Quantity. \* Includes 666 kg for column spirals.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	54-87 K-6657-01	2002	532	1122

† Summary of Piling  
 Abutment No. 1 7@16.3 m  
 Abutment No. 2 11@17.2 m  
 Pier No. 1 15@15.5 m  
 Pier No. 2 16@15.0 m  
 Pier No. 3 15@15.0 m  
 Pier No. 4 17@15.5 m

DESIGN DATA

DESIGN SPECIFICATIONS:  
 AASHTO Specifications, 1996 Edition and latest Interim Specifications. Load Factor Design

DESIGN LOADING:  
 MS18-44 with Kansas Overload Provision and Alternate Military Loading Specification.

Design Dead Load includes an allowance of 0.72 kPa for a future wearing surface.

UNIT STRESSES:

Concrete (Grade 30) f'c = 30 MPa  
 Concrete (Grade 30)(AE) f'c = 30 MPa  
 Concrete (Grade 30)(AE)(SA) f'c = 30 MPa  
 Reinforcing Steel(Grade 420) fy = 420 MPa  
 Prestressed Strand 13mm Grade 1860 Uncoated 7-Wire Low-relaxation Strand

DESIGN PILE LOAD:

	Loading	Design Load (kN per Piling)	Allowable Load (kN per Piling)
Abut. No. 1	Group I (100%)	435	440
	Group III (125%)	404	440
	Group V (140%)	488	550
Pier No. 1	Group I (100%)	488	550
	Group III (125%)	527	550
	Group IV (140%)	456	616
	Group V (140%)	391	440
	Group III (125%)	484	550
Pier No. 2	Group I (100%)	484	550
	Group III (125%)	484	550
	Group IV (140%)	435	616
	Group V (140%)	414	440
	Group III (125%)	507	550
Pier No. 3	Group I (100%)	517	550
	Group III (125%)	448	616
	Group IV (140%)	414	440
	Group V (140%)	474	550
	Group III (125%)	509	550
Abut. No. 2	Group I (100%)	455	616
	Group III (125%)	474	550
	Group V (140%)	368	440

GENERAL NOTES

ABUTMENT STRIP DRAIN: See the General Notes on the "Abutment Strip Drain" sheet.

BRIDGE BACKWALL PROTECTION SYSTEM: See the General Notes on the "Abutment Strip Drain" sheet.

BACKFILL COMPACTION: Compact backfill at the abutments and piers.

EMBANKMENT: Complete the embankment at the abutments as shown on the Bridge Excavation sheet prior to driving the abutment piling or commencing with the abutment footing excavation.

CONCRETE: Superstructure concrete is bid as Concrete (Grade 30)(AE)(SA). Substructure concrete is bid as Concrete (Grade 30)(AE). The Contractor may use Concrete (Grade 30) in the footings. Bevel all exposed edges of concrete with a 20 mm 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.

FALSEWORK PLANS: A licensed Professional Engineer shall design the falsework details. Details shall bear the seal of a licensed Professional Engineer. Submit three sets of details in compliance with KDOT Specifications to the Field Engineer for review.

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

CAMBER: See Superstructure Details sheet for camber and deflection information for prestressed concrete beams.

COLUMN CONSTRUCTION: The footing will cure a minimum 2 days before column construction (placing resteel or formwork) shall be permitted. Column formwork shall not be removed without the approval of the Engineer. Curing shall continue after the formwork is removed as required by the KDOT Specifications.

BRIDGE EXCAVATION: Elevation 398.068 shall designate the Excavation Boundary Plane of Class I and Class II Excavation: Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

PILING: All piling shall be driven to penetrate or bear upon the Pleistocene Deposits above the Wellington Formation. If sufficient bearing and penetration into the denser sands of the Pleistocene Deposits are achieved before the design pile tip elevation is reached, driving should cease to avoid damage to the tip. All piling shall be driven to the minimum computed bearing value equal to the Allowable Pile Driving Load:

Abutment No. 1	440 kN
Pier No. 1	440 kN
Pier No. 2	440 kN
Pier No. 3	440 kN
Pier No. 4	440 kN
Abutment No. 2	440 kN

When using the pile driving formula in the KDOT Specifications, the Contractor shall drive the pile to the Allowable Load and penetration, but in no case shall the pile be driven to more than 660 kN. At any location where problems are experienced, pile damage is suspected, or apparent refusal occurs significantly above the design pile tip elevation, the Engineer may request that the Pile Driving Analyzer (PDA) equipment be used.

DECK FORMS: Steel or prestressed concrete stay-in-place forms will not be allowed.

PIER BEAM CONSTRUCTION: Columns will cure 2 days before pier beam construction (placing resteel or formwork) may begin. Cast in place shear bolts, coil inserts or other devices used as falsework support shall not be placed in the column without the approval of the Engineer. Drilling and grouting of bolts or other devices into the columns shall not be permitted unless shown on the plans. The columns shall cure 4 days before pier beam concrete may be placed. Falsework used to support the pier beam shall not be removed until the pier beam concrete has cured 7 days. Girders or beams shall not be set on the pier beam until after the falsework is removed.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel, except the spiral bars, shall conform to the requirements of ASTM A615M-96, Grade 420. Spiral bars may meet the requirements of either ASTM A615M-96 (Gr. 300 or 420) or A82M, and are included in the bid item "Reinforcing Steel (Gr. 420)". Where non-coated bars come in contact with epoxy bars, they need not be coated.

SLAB CURING PERIOD: No traffic is permitted on a deck, sub-deck or overlay until the seven day curing period is complete. Operations necessary to complete placement of the deck, sub-deck, or overlay are permitted, for a minimum practical time, as noted in the Standard Specifications. No work to place reinforcing steel or forms for the bridge rail or barrier is allowed during this curing period.

CORRAL RAIL: The Contractor may place the Corral Rail continuously from one end of the Bridge to the other. Removal of Falsework prior to placing Corral Rail is optional.

SILICA FUME OVERLAY: Place a 40mm Silica Fume Overlay over the entire deck surface as shown on the plans.

RIPRAP: Place Riprap to the limits and thicknesses shown on the plans or as directed by the Engineer.

CONCRETE PLACING SEQUENCE: The sequence of placing concrete in the slab and curbs shall be as shown, or the Contractor may submit an alternate placing sequence for review. The alternate placing sequence shall be given to the Engineer at the Preconstruction Conference. The alternate placing sequence shall include the proposed rate of concrete placement in cubic meters per hour, the plant capacity, a description of the equipment used in placing the concrete, proposed admixtures, and the quantity of concrete in each placing segment. Any additional cost for the Contractor's alternate plan of placing concrete, including admixtures, shall be at the Contractor's expense and shall be considered Subsidiary to the bid item, "Concrete (Grade 30)(AE)(SA)". Approval of the Contractor's alternate sequence is required prior to placement of concrete in the deck.

ABUTMENT AND PIER DIAPHRAGMS: Concrete for the diaphragms shall not be placed until all beams have cured a minimum of 28 days. Pier and abutment diaphragms shall be placed and hand vibrated to the bottom of deck elevation just prior to the normal paving train operations. The work shall be accomplished in a manner to avoid cold joints in either the slab or diaphragms.

PRESTRESSED BEAM CONCRETE: Use air-entrained concrete with select course aggregate as specified in Table 1102-1 of Special Provision 90M-266. The release strength and 28 day strength requirements shall be as noted on the plans. Submit mix designs to the Bureau of Materials and Research for approval.

ERECTION ELEVATION CHECKS: After Abutment and Pier Concrete has cured and before setting any beams, the Contractor shall present verification to the Engineer that the elevations at the bearings match plan elevation (+/- 5mm).

DECK PROTECTIVE SYSTEM: All reinforcing steel in the deck slab and corral rail shall be epoxy coated and a silica fume overlay shall be placed over the entire deck as shown on the plans.

CONSTRUCTION LOADS: Only foot traffic is permitted on the deck, subdeck or overlay during the seven day curing period. No work to place reinforcing steel or forms for the bridge rail or barrier is allowed during this curing period. Light truck traffic (i.e. pick-up) is allowed 10 days after the pour is completed. Legal loads and heavy stationary loads are permitted after 14 days. No overloads will be permitted prior to 28 days. Overloads require submittal of axle spacing, weight, footprint pressure and approval by the Engineer.

APPROVED SUBMITTALS: see submittal #'s:  
 16 - Steel Pipe Pile Material Certifications,  
 17 - Steel Pipe Pile Material Certifications,  
 17.1 - Steel Pipe Pile Material Certifications,  
 37 - Temporary Diaphragm Shop Drawings,  
 71 - Pre-Stressed I-Beam Layout Details,

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 Drawn by: wil  
 Plotted by: ras 3-20-2002

No.	Revisions	By	Date
CITY OF WICHITA BR. NO. 54-87-19.29(492) F.E.B. STA. 16+005.740 <b>GENERAL NOTES AND SUMMARY OF QUANTITIES</b> KELLOGG (US 54) OVER COWSKIN CREEK SEDGWICK COUNTY			
Professional Engineering Consultants, P.A. 303 S. TOPEKA - WICHITA, KANSAS 67202 316-262-2691 • FAX 316-262-9003			
Designed by	M.D.G.	Checked by	R.A.S.
Drawn by	W.L.L.	Date	Apr 11, 2002 Job No. 97362