

# **RED RIVER DIVERSION**

## **FARGO – MOORHEAD METRO FLOOD RISK MANAGEMENT PROJECT, FEASIBILITY STUDY, PHASE 4**

### **APPENDIX G – COST ESTIMATES EXHIBIT J – RAILROAD BRIDGE QUANTITIES**

**Report for the US Army Corps of Engineers, and the cities of Fargo, ND &  
Moorhead, MN**

**By: Barr Engineering Co.**

**FINAL – February 28, 2011**

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- G-J1.1 Railroad Bridge Quantities for the FCP Minnesota Diversion
- G-J1.2 Railroad Bridge Quantities for the Phase 3 LPP North Dakota Diversion
- G-J1.3 Railroad Bridge Quantities for the Phase 4 LPP North Dakota Diversion

**APPENDIX G  
COST ESTIMATES**

**EXHIBIT J – RAILROAD BRIDGE QUANTITIES**

**G-J1.0 RAILROAD BRIDGE QUANTITIES**

Attachment G-J1.1 of this Exhibit J presents railroad bridge quantities for the FCP Minnesota Diversion. Attachment G-J1.2 of this Exhibit J presents railroad bridge quantities for the Phase 3 LPP North Dakota Diversion and provides background information for Phase 4. Attachment G-J1.3 of this Exhibit J presents railroad bridge quantities for the Phase 4 LPP North Dakota Diversion.

7/22/2010

**Minnesota Railroad Bridge Cost Estimates**

\*Original Costs taken from TKDA include 35% contingency on bridges and 30% on tracks/raise costs.

**Notes:**

1) Direct Cost = Cost to Prime = Contract Cost = Bare Cost for these Railroad Costs

	Cost Estimate (TKDA)	Phase II Length (ft)	Phase III Length (ft)	Revised Project Cost	Contingency	Revised Contract Cost
<b>Bridge 1</b>						
Bridge	\$4,710,000	575	702	\$5,750,296	35%	\$1,490,817
labor				\$1,437,574		\$1,064,870
equipment				\$345,018		\$255,569
material				\$2,760,142		\$2,044,550
other				\$1,207,562		\$894,490
Tracks/Raise	\$13,820,000			\$13,820,000	30%	\$3,189,231
labor				\$3,455,000		\$2,657,692
equipment				\$829,200		\$637,846
material				\$6,633,600		\$5,102,769
other				\$2,902,200		\$2,232,462
<b>Total</b>	<b>\$18,530,000</b>			<b>\$19,570,296</b>		<b>\$4,680,048</b>
						<b>\$14,890,247</b>
<b>Bridge 2</b>						
Bridge	\$20,190,000	600	716	\$24,093,400	35%	\$6,246,437
labor				\$6,023,350		\$4,461,741
equipment				\$1,445,604		\$1,070,818
material				\$11,564,832		\$8,566,542
other				\$5,059,614		\$3,747,862
Tracks/Raise	\$84,810,000			\$84,810,000	30%	\$19,571,538
labor				\$21,202,500		\$16,309,615
equipment				\$5,088,600		\$3,914,308
material				\$40,708,800		\$31,314,462
other				\$17,810,100		\$13,700,077
<b>Total</b>	<b>\$105,000,000</b>			<b>\$108,903,400</b>		<b>\$25,817,975</b>
						<b>\$83,085,425</b>
<b>Bridge 3</b>						
Bridge	\$4,710,000	575	712	\$5,832,209	35%	\$1,512,054
labor				\$1,458,052		\$1,080,039
equipment				\$349,933		\$259,209
material				\$2,799,460		\$2,073,674
other				\$1,224,764		\$907,232
Tracks/Raise	\$2,370,000			\$2,370,000	30%	\$546,923
labor				\$592,500		\$455,769
equipment				\$142,200		\$109,385
material				\$1,137,600		\$875,077
other				\$497,700		\$382,846
<b>Total</b>	<b>\$7,080,000</b>			<b>\$8,202,209</b>		<b>\$2,058,977</b>
						<b>\$6,143,232</b>
<b>Bridge 4</b>						
Bridge	\$4,710,000	575	713	\$5,840,400	35%	\$1,514,178
labor				\$1,460,100		\$1,081,556
equipment				\$350,424		\$259,573
material				\$2,803,392		\$2,076,587
other				\$1,226,484		\$908,507
Tracks/Raise	\$6,570,000			\$6,570,000	30%	\$1,516,154
labor				\$1,642,500		\$1,263,462
equipment				\$394,200		\$303,231
material				\$3,153,600		\$2,425,846
other				\$1,379,700		\$1,061,308
<b>Total</b>	<b>\$11,280,000</b>			<b>\$12,410,400</b>		<b>\$3,030,332</b>
						<b>\$9,380,068</b>
				<b>\$149,086,304</b>		<b>\$113,498,972</b>

**United States Army Corps of Engineers  
Single Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel  
Bridge 1**

**ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-5-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1.000	Mobilization	LS	1	\$696,000.00	\$ 696,000.00
2.000	Common Exc.	CY	20000	\$ 12.00	\$ 240,000.00
3.000	Embankment	CY	159000	\$ 12.00	\$ 1,908,000.00
4.000	Subballast	CY	30000	\$ 30.00	\$ 900,000.00
5.000	No. 11, Turnout	EA	1	\$ 200,000.00	\$ 200,000.00
6.000	New Track (136# rail, Ties, Ballast)	TF	26271	\$ 250.00	\$ 6,567,750.00
7.000	Salvage Main line Track (Rail, Ties, Ballast, etc.)	TF	13175	\$ 4.00	\$ 52,700.00
8.000	Salvage Shoo-Fly Track (Rail, Ties, Ballast, etc.)	TF	13096	\$ 4.00	\$ 52,384.00
9.000	Remove No. 11, Turnout	EA	1	\$ 10,000.00	\$ 10,000.00
10.000	Property Acquisition	ACRE	90		\$ -
					\$ -
<b>Construction Total</b>					<b>\$ 10,626,834.00</b>
	Contingency (30%)				\$ 3,188,050.20
	<b>TOTAL (Rounded)</b>				<b>\$ 13,820,000.00</b>

Estimated Construction Cost w/o Mobilization		\$9,930,834.00
Percent for Mobilization	7.00	\$695,158.38
Total Mobilization Cost		\$696,000.00

Total Costs for Bridge #1 and Trackwork		
A	Bridge Costs	\$ 4,710,000.00
B	Railroad Track Costs	\$ 13,820,000.00
<b>TOTAL</b>		<b>\$ 18,530,000.00</b>

**United States Army Corps of Engineers  
Dilworth Yard Five Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel (Bridge 2A)  
Dilworth Yard North of Mainlines (5 Tracks and 2 Access Roads)  
Moorhead, Minnesota**

**ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-8-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
2021.501	MOBILIZATION	LUMP SUM	1	\$ 890,000.00	\$ 890,000.00
2105.607	RAILROAD TRACK BALLAST CV (6" DEPTH)	CU. YD.	695	\$ 18.00	\$ 12,510.00
2401.501	STRUCTURAL CONCRETE (1A43)	CU. YD.	760	\$ 480.00	\$ 364,800.00
2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	1440	\$ 540.00	\$ 777,600.00
2401.501	STRUCTURAL CONCRETE (3Y33)	CU. YD.	1520	\$ 300.00	\$ 456,000.00
2401.501	STRUCTURAL CONCRETE (3Y46)	CU. YD.	178	\$ 300.00	\$ 53,400.00
2401.541	REINFORCEMENT BARS	POUND	63840	\$ 1.40	\$ 89,376.00
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	586170	\$ 1.50	\$ 879,255.00
2401.601	FOUNDATION PREPARATION	LUMP SUM	1	\$ 1,630,000.00	\$ 1,630,000.00
2402.595	BEARING ASSEMBLY	EACH	240	\$ 900.00	\$ 216,000.00
2405.502	PRESTRESSED CONCRETE BEAMS 72M	LIN. FT.	11500	\$ 330.00	\$ 3,795,000.00
2405.511	DIAPHRAGMS FOR TYPE 72M P/S BEAMS	LIN. FT.	900	\$ 120.00	\$ 108,000.00
2452.507	STEEL H-PILING DELIVERED 12"	LIN. FT.	75600	\$ 54.00	\$ 4,082,400.00
2452.508	STEEL H-PILING DRIVEN 12"	LIN. FT.	75600	\$ 1.80	\$ 136,080.00
2452.602	PILE ANALYSIS	EACH	21	\$ 2,900.00	\$ 60,900.00
2511.501	RANDOM RIPRAP CLASS V	CU. YD.	720	\$ 60.00	\$ 43,200.00
<b>Construction Subtotal</b>					<b>\$ 13,594,521.00</b>
Engineering and Construction Management (10%)					\$ 1,359,452.10
<b>SUBTOTAL</b>					<b>\$ 14,953,973.10</b>
Contingency (35%)					\$ 5,233,890.59
<b>TOTAL (Rounded)</b>					<b>\$ 20,190,000.00</b>

Estimated Construction Cost w/o Mobilization		\$12,704,521.00
Percent for Mobilization	7.00	\$889,316.47
Total Mobilization Cost		\$890,000.00

**United States Army Corps of Engineers  
Dilworth Yard Four Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel (Bridge 2B)  
Dilworth Yard South of the Mainlines (4 Tracks and 2 Access Roads)  
Moorhead, Minnesota  
ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-8-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
2021.501	MOBILIZATION	LUMP SUM	1	\$ 724,000.00	\$ 724,000.00
2105.607	RAILROAD TRACK BALLAST CV (6" DEPTH)	CU. YD.	556	\$ 18.00	\$ 10,008.00
2401.501	STRUCTURAL CONCRETE (1A43)	CU. YD.	620	\$ 480.00	\$ 297,600.00
2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	1163	\$ 540.00	\$ 628,020.00
2401.501	STRUCTURAL CONCRETE (3Y33)	CU. YD.	1216	\$ 300.00	\$ 364,800.00
2401.501	STRUCTURAL CONCRETE (3Y46)	CU. YD.	178	\$ 300.00	\$ 53,400.00
2401.541	REINFORCEMENT BARS	POUND	52080	\$ 1.40	\$ 72,912.00
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	476380	\$ 1.50	\$ 714,570.00
2401.601	FOUNDATION PREPARATION	LUMP SUM	1	\$ 1,430,000.00	\$ 1,430,000.00
2402.595	BEARING ASSEMBLY	EACH	192	\$ 900.00	\$ 172,800.00
2405.502	PRESTRESSED CONCRETE BEAMS 72M	LIN. FT.	9200	\$ 330.00	\$ 3,036,000.00
2405.511	DIAPHRAGMS FOR TYPE 72M P/S BEAMS	LIN. FT.	720	\$ 120.00	\$ 86,400.00
2452.507	STEEL H-PILING DELIVERED 12"	LIN. FT.	60480	\$ 54.00	\$ 3,265,920.00
2452.508	STEEL H-PILING DRIVEN 12"	LIN. FT.	60480	\$ 1.80	\$ 108,864.00
2452.602	PILE ANALYSIS	EACH	21	\$ 2,900.00	\$ 60,900.00
2511.501	RANDOM RIPRAP CLASS V	CU. YD.	610	\$ 60.00	\$ 36,600.00
<b>Construction Subtotal</b>					<b>\$ 11,062,794.00</b>
Engineering and Construction Management (10%)					\$ 1,106,279.40
<b>SUBTOTAL</b>					<b>\$ 12,169,073.40</b>
Contingency (35%)					\$ 4,259,175.69
<b>TOTAL (Rounded)</b>					<b>\$ 16,430,000.00</b>

Estimated Construction Cost w/o Mobilization		\$10,338,794.00
Percent for Mobilization	7.00	\$723,715.58
Total Mobilization Cost		\$724,000.00

**United States Army Corps of Engineers  
Single Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel  
Bridge 3**

**ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-5-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1.000	Mobilization	LS	1	\$120,000.00	\$ 120,000.00
2.000	Common Exc.	CY	4000	\$ 12.00	\$ 48,000.00
3.000	Embankment	CY	2000	\$ 12.00	\$ 24,000.00
4.000	Subballast	CY	3300	\$ 30.00	\$ 99,000.00
5.000	No. 11, Turnout	EA	1	\$ 200,000.00	\$ 200,000.00
6.000	New Track (136# rail, Ties, Ballast)	TF	5200	\$ 250.00	\$ 1,300,000.00
7.000	Salvage Main line Track (Rail, Ties, Ballast, etc.)	TF	2430	\$ 4.00	\$ 9,720.00
8.000	Salvage Shoo-Fly Track (Rail, Ties, Ballast, etc.)	TF	2770	\$ 4.00	\$ 11,080.00
9.000	Salvage No. 11, Turnout	EA	1	\$ 10,000.00	\$ 10,000.00
10.000	Property Acquisition	ACRE	10		\$ -
					\$ -
	<b>Construction Total</b>				\$ 1,821,800.00
	Contingency (30%)				\$ 546,540.00
	<b>TOTAL (Rounded)</b>				<b>\$ 2,370,000.00</b>

Estimated Construction Cost w/o Mobilization		\$1,701,800.00
Percent for Mobilization	7.00	\$119,126.00
Total Mobilization Cost		\$120,000.00

Total Costs for Bridge #3 and Trackwork		
A	Bridge Costs	\$ 4,710,000.00
B	Railroad Track Costs	\$ 2,370,000.00
<b>TOTAL</b>		<b>\$ 7,080,000.00</b>

**United States Army Corps of Engineers  
Single Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel  
Bridge 4**

**ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-5-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1.000	Mobilization	LS	1	\$331,000.00	\$ 331,000.00
2.000	Common Exc.	CY	8000	\$ 12.00	\$ 96,000.00
3.000	Embankment	CY	56000	\$ 12.00	\$ 672,000.00
4.000	Subballast	CY	15000	\$ 30.00	\$ 450,000.00
5.000	No. 11, Turnout	EA	1	\$ 200,000.00	\$ 200,000.00
6.000	New Track (136# rail, Ties, Ballast)	TF	12967	\$ 250.00	\$ 3,241,750.00
7.000	Salvage Main line Track (Rail, Ties, Ballast, etc.)	TF	6070	\$ 4.00	\$ 24,280.00
8.000	Salvage Shoo-Fly Track (Rail, Ties, Ballast, etc.)	TF	6897	\$ 4.00	\$ 27,588.00
9.000	Salvage No. 11, Turnout	EA	1	\$ 10,000.00	\$ 10,000.00
10.000	Property Acquisition	ACRE	42		\$ -
					\$ -
<b>Construction Total</b>					\$ 5,052,618.00
Contingency (30%)					\$ 1,515,785.40
<b>TOTAL (Rounded)</b>					<b>\$ 6,570,000.00</b>

Estimated Construction Cost w/o Mobilization		\$4,721,618.00
Percent for Mobilization	7.00	\$330,513.26
Total Mobilization Cost		\$331,000.00

Total Costs for Bridge #4 and Trackwork		
A	Bridge Costs	\$ 4,710,000.00
B	Railroad Track Costs	\$ 6,570,000.00
<b>TOTAL</b>		<b>\$ 11,280,000.00</b>



**United States Army Corps of Engineers  
Dilworth Yard North Option (Bridge 2A)  
Moorhead, Minnesota  
ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-13-2010**

**TRACK AND GRADING**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1	Mobilization	LS	1	1200000	\$1,200,000
2	Clear & Grub	AC	0	5000	\$0
3	Common Exc.	CY	46,000	12	\$552,000
4	Embankment	CY	68,000	12	\$816,000
5	Subballast	CY	46,000	30	\$1,380,000
6	#11 Turnout	EA	41	250000	\$10,250,000
7	#20 Turnout	EA	6	400000	\$2,400,000
8	New Track (136# rail, Ties, Ballast)	TF	88,300	250	\$22,075,000
9	Upgrade Track (136# rail, Ties, Ballast)	TF	25,500	200	\$5,100,000
10	Hwy 336 Overpass (See Calcs Section)	LS	1	0	\$5,720,000
11	Signal System	LS	1	0	\$0
12	Drainage (See Calcs Section)	LS	1	1200000	\$1,200,000
13	Property Acquisition	AC	28.00	0	\$0
14	Utility Relocation	LS	1	0	\$0
15	Track Removal	TF	50,500	25	\$1,262,500
16	Turnout Removal	EA	16	15000	\$240,000
17	Staging (See Calcs Section)	LS	1	5500000	\$5,500,000
<b>Track and Grading Subtotal</b>					<b>\$57,695,500</b>
Engineering & Construction Management (10%)					\$5,769,550
Environmental and Permitting (3%)					\$1,730,865
<b>Subtotal</b>					<b>\$65,195,915</b>
<b>Contingency (30%)</b>					<b>\$19,558,775</b>
<b>Diversion Channel Bridge (See Calcs Section)</b>					<b>\$20,190,000</b>
<b>TOTAL ESTIMATED PROJECT COST</b>					<b>\$105,000,000</b>

**United States Army Corps of Engineers  
Dilworth Yard South Option (Bridge 2B)  
Moorhead, Minnesota  
ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-13-2010**

**TRACK AND GRADING**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1	Mobilization	LS	1	1200000	\$1,200,000
2	Clear & Grub	AC	0	5000	\$0
3	Common Exc.	CY	0	12	\$0
4	Embankment	CY	510,000	12	\$6,120,000
5	Subballast	CY	102,000	30	\$3,060,000
6	#11 Turnout	EA	45	250000	\$11,250,000
7	#20 Turnout	EA	8	400000	\$3,200,000
8	New Track (136# rail, Ties, Ballast)	TF	76,100	250	\$19,025,000
9	Upgrade Track (136# rail, Ties, Ballast)	TF	7,300	200	\$1,460,000
10	Hwy 336 Overpass (See Calcs Section)	LS	1	0	\$4,985,000
11	Signal System	LS	1	0	\$0
12	Drainage (See Calcs Section)	LS	1	1925000	\$1,925,000
13	Property Acquisition	AC	106.00	0	\$0
14	Utility Relocation	LS	1	0	\$0
15	Track Removal	TF	72,100	25	\$1,802,500
16	Turnout Removal	EA	44	15000	\$660,000
17	Staging (See Calcs Section)	LS	1	6800000	\$6,800,000
	<b>Track and Grading Subtotal</b>				<b>\$61,487,500</b>
	Engineering & Construction Management (10%)				\$6,148,750
	Environmental and Permitting (3%)				\$1,844,625
	<b>Subtotal</b>				<b>\$69,480,875</b>
	<b>Contingency (30%)</b>				<b>\$20,844,263</b>
	<b>Diversion Channel Bridge (See Calcs Section)</b>				<b>\$16,430,000</b>
<b>TOTAL ESTIMATED PROJECT COST</b>					<b>\$106,800,000</b>

**United States Army Corps of Engineers  
Single Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel  
Moorhead, Minnesota**

**ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-8-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
2021.501	MOBILIZATION	LUMP SUM	1	\$ 208,000.00	\$ 208,000.00
2105.607	RAILROAD TRACK BALLAST CV (6" DEPTH)	CU. YD.	139	\$ 18.00	\$ 2,502.00
2401.501	STRUCTURAL CONCRETE (1A43)	CU. YD.	200	\$ 480.00	\$ 96,000.00
2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	333	\$ 540.00	\$ 179,820.00
2401.501	STRUCTURAL CONCRETE (3Y33)	CU. YD.	304	\$ 300.00	\$ 91,200.00
2401.501	STRUCTURAL CONCRETE (3Y46)	CU. YD.	178	\$ 300.00	\$ 53,400.00
2401.541	REINFORCEMENT BARS	POUND	16800	\$ 1.40	\$ 23,520.00
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	147200	\$ 1.50	\$ 220,800.00
2401.601	FOUNDATION PREPARATION	LUMP SUM	1	\$ 590,000.00	\$ 590,000.00
2402.595	BEARING ASSEMBLY	EACH	48	\$ 900.00	\$ 43,200.00
2405.502	PRESTRESSED CONCRETE BEAMS 72M	LIN. FT.	2300	\$ 330.00	\$ 759,000.00
2405.511	DIAPHRAGMS FOR TYPE 72M P/S BEAMS	LIN. FT.	180	\$ 120.00	\$ 21,600.00
2452.507	STEEL H-PILING DELIVERED 12"	LIN. FT.	15120	\$ 54.00	\$ 816,480.00
2452.508	STEEL H-PILING DRIVEN 12"	LIN. FT.	15120	\$ 1.80	\$ 27,216.00
2452.602	PILE ANALYSIS	EACH	7	\$ 2,900.00	\$ 20,300.00
2511.501	RANDOM RIPRAP CLASS V	CU. YD.	275	\$ 60.00	\$ 16,500.00
	<b>Construction Subtotal</b>				<b>\$ 3,169,538.00</b>
	Engineering and Construction Management (10%)				\$ 316,953.80
	<b>SUBTOTAL</b>				<b>\$ 3,486,491.80</b>
	Contingency (35%)				\$ 1,220,272.13
					4,706,763.93
	<b>TOTAL (Rounded)</b>				<b>\$ 4,710,000.00</b>

# TKDA

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www.tkda.com

April 29, 2010

Mark Bittner  
City of Fargo  
200 3rd Street North  
Fargo, North Dakota 58102

Re: Fargo/Moorhead Diversion Channel – ND Railroad Bridge Estimates

TKDA Project No.: 14614.000

Dear Mr. Bittner:

Please see below a summary of the construction cost estimates for railroad work related to the Minnesota diversion channel alignment. Attached is backup information regarding the cost calculations.

Please let me know if you have any comments regarding the information provided in these documents.

Sincerely,

Joshua R. L. Collins, P.E.

## SUMMARY PAGE

### COSTS

#### 1.) Bridge Cost Estimates

- Railroad Bridge #1 – BNSF - Hillsboro Subdivision - \$11,000,000
- Railroad Bridge #2 – BNSF – Prosper Subdivision - \$7,260,000
- Railroad Bridge #3 – BNSF – KO Subdivision - \$22,390,000
- Railroad Bridge #4 – RRVW – 4<sup>th</sup> Subdivision - \$6,260,000

### PROPERTY

- 1.) Railroad Bridge #1 Shoofly – 33 Acres
- 2.) Railroad Bridge #2 Shoofly – 13 Acres
- 3.) Railroad Bridge #3 Shoofly – 14 Acres
- 4.) Railroad Bridge #4 Shoofly – 11 Acres

### BNSF COSTS - TBD

- 1.) Signal system costs to be determined by BNSF. No costs were submitted to TKDA for inclusion into this cost estimate.

### NOTES

- 1.) Sales Tax is not included in prices.
- 2.) Single Track Bridges (#1, #2, & #4) will consist of five – 85' spans of 63" pre-stressed concrete beams with composite concrete deck.
- 3.) Contingencies
  - a. Bridges – 35% - At this stage in the design, it's best to keep the numbers conservative due to the many unknowns during the conceptual stages of design.
  - b. Trackwork – 30% - Typical contingency for this stage of design due to the large number of uncertainties.
- 4.) Location Specific Comments:
  - a. Bridge #1
    - Adjacent roadway raises not included in costs of bridge
    - Property acquisition not included in the costs of the bridge
  - b. Bridge #2
    - Property acquisition not included in the costs of the bridge

Mr. Mark Bittner

City of Fargo

Fargo/Moorhead Diversion Channel – MN Railroad Bridge Estimate Review

April 29, 2010

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b. Bridge #3

- A new Sheyenne River Diversion Channel bridge will need to be constructed to raise the track over the bridge. The Sheyenne River Diversion Channel will also need a bridge for the shoofly. These are in addition to the mainline bridges over the Fargo/Moorhead Diversion Channel.
- Property acquisition not included in the costs of the bridge

c. Bridge #4

- CR 14 (46<sup>th</sup> Street) roadway raise not included in the cost of the bridge
- Property acquisition not included in the costs of the bridge

# TKDA

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444 Cedar Street, Suite 1500  
Saint Paul, MN 55101

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(651) 292-0083 Fax  
www.tkda.com

April 29, 2010

Re: Fargo/Moorhead Diversion Channel – ND Railroad Bridge Estimates  
TKDA Project No.: 14614.000  
Table of Contents – Document Description

## **TABLE OF CONTENTS**

- 01) Summary Page – Summary of project assumptions and other details related to the project.
- 02) Table of Contents – Description of included documents
- 03) Bridge 1 Est – Estimate for Railroad Bridge #1 including bridge and shoofly costs.
- 04) Bridge 2 Est – Estimate for Railroad Bridge #3 including bridge and shoofly costs.
- 05) Bridge 3 Est – Estimate for Railroad Bridge #3 including bridge and shoofly costs.
- 06) Bridge 4 Est - Estimate for Railroad Bridge #4 including bridge and shoofly costs.
- 07) Calcs – Bridge 1, 2, 4 Est – Detailed estimate of bridges 1, 2, and 4 as used in documents 03, 04, and 06 above. These three bridges would be largely identical in their design features and length.
- 08) Calcs – Bridge 3 Est – Detailed estimate of double track bridge used for spanning the Sheyenne Diversion Channel and the Fargo/Moorhead Diversion Channel on BNSF's KO Subdivision.
- 09) Calcs – Sheyenne Bridge Est – Hand calculations for the Sheyenne River Diversion Channel bridges (same costs for fmainline and shoofly) adjacent to the Bridge #3 on BNSF's KO Subdivision.
- 10) Calcs – Rail Elevations at Bridges – Summary sheet of the rail elevations at each bridge location.

**United States Army Corps of Engineers  
Single Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel  
North Dakota Railroad Bridge 1 (Single Track)  
ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-29-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1.000	Mobilization	LS	1	\$388,000.00	\$ 388,000.00
2.000	Common Exc.	CY	6000	\$ 12.00	\$ 72,000.00
3.000	Embankment	CY	80000	\$ 12.00	\$ 960,000.00
4.000	Subballast	CY	17000	\$ 30.00	\$ 510,000.00
5.000	No. 11, Turnout	EA	1	\$ 200,000.00	\$ 200,000.00
6.000	New Track (136# rail, Ties, Ballast)	TF	14890	\$ 250.00	\$ 3,722,500.00
7.000	Salvage Main line Track (Rail, Ties, Ballast, etc.)	TF	7288	\$ 4.00	\$ 29,152.00
8.000	Salvage Shoo-Fly Track (Rail, Ties, Ballast, etc.)	TF	7550	\$ 4.00	\$ 30,200.00
9.000	Remove No. 11, Turnout	EA	1	\$ 10,000.00	\$ 10,000.00
10.000	Property Acquisition	ACRE	33		\$ -
					\$ -
	<b>Construction Total</b>				\$ 5,921,852.00
	Contingency (30%)				\$ 1,776,555.60
	<b>Trackwork TOTAL (Rounded)</b>				\$ 7,700,000.00

Estimated Construction Cost w/o Mobilization		\$5,533,852.00
Percent for Mobilization	7.00	\$387,369.64
Total Mobilization Cost		\$388,000.00

Total Costs for Bridge #1 and Trackwork		
A	Bridge Costs (See Calcs Section)	\$ 3,300,000.00
B	Railroad Track Costs (from above)	\$ 7,700,000.00
<b>TOTAL</b>		<b>\$ 11,000,000.00</b>



**United States Army Corps of Engineers  
 Single Track - 35,000 CFS Option  
 Railroad Bridge Over Diversion Channel  
 North Dakota Railroad Bridge 2 (Single Track)  
 ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-29-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1.000	Mobilization	LS	1	\$200,000.00	\$ 200,000.00
2.000	Common Exc.	CY	3000	\$ 12.00	\$ 36,000.00
3.000	Embankment	CY	24000	\$ 12.00	\$ 288,000.00
4.000	Subballast	CY	10000	\$ 30.00	\$ 300,000.00
5.000	No. 11, Turnout	EA	1	\$ 200,000.00	\$ 200,000.00
6.000	New Track (136# rail, Ties, Ballast)	TF	7920	\$ 250.00	\$ 1,980,000.00
7.000	Salvage Main line Track (Rail, Ties, Ballast, etc.)	TF	3810	\$ 4.00	\$ 15,240.00
8.000	Salvage Shoo-Fly Track (Rail, Ties, Ballast, etc.)	TF	4110	\$ 4.00	\$ 16,440.00
9.000	Remove No. 11, Turnout	EA	1	\$ 10,000.00	\$ 10,000.00
10.000	Property Acquisition	ACRE	13		\$ -
					\$ -
	<b>Construction Total</b>				<b>\$ 3,045,680.00</b>
	Contingency (30%)				\$ 913,704.00
	<b>Trackwork TOTAL (Rounded)</b>				<b>\$ 3,960,000.00</b>

Estimated Construction Cost w/o Mobilization		\$2,845,680.00
Percent for Mobilization	7.00	\$199,197.60
Total Mobilization Cost		\$200,000.00

Total Costs for Bridge #2 and Trackwork		
A	Bridge Costs (See Calcs Section)	\$ 3,300,000.00
B	Railroad Track Costs (from above)	\$ 3,960,000.00
<b>TOTAL</b>		<b>\$ 7,260,000.00</b>

**United States Army Corps of Engineers  
Single Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel  
North Dakota Railroad Bridge 3 (Double Track)  
ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-29-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1.000	Mobilization	LS	1	\$308,000.00	\$ 308,000.00
2.000	Common Exc.	CY	8000	\$ 12.00	\$ 96,000.00
3.000	Embankment	CY	24000	\$ 12.00	\$ 288,000.00
4.000	Subballast	CY	11000	\$ 30.00	\$ 330,000.00
5.000	No. 11, Turnout	EA	2	\$ 200,000.00	\$ 400,000.00
6.000	New Track (136# rail, Ties, Ballast)	TF	12820	\$ 250.00	\$ 3,205,000.00
7.000	Salvage Main line Track (Rail, Ties, Ballast, etc.)	TF	5664	\$ 4.00	\$ 22,656.00
8.000	Salvage Shoo-Fly Track (Rail, Ties, Ballast, etc.)	TF	7156	\$ 4.00	\$ 28,624.00
9.000	Salvage No. 11, Turnout	EA	2	\$ 10,000.00	\$ 20,000.00
10.000	Property Acquisition	ACRE	14		\$ -
					\$ -
	<b>Construction Total</b>				\$ 4,698,280.00
	Contingency (30%)				\$ 1,409,484.00
	<b>Trackwork TOTAL (Rounded)</b>				<b>\$ 6,110,000.00</b>

Estimated Construction Cost w/o Mobilization		\$4,390,280.00
Percent for Mobilization	7.00	\$307,319.60
Total Mobilization Cost		\$308,000.00

Total Costs for Bridge #3 and Trackwork		
A	Diversion Channel Railroad Bridge Costs (See Calcs Section)	\$ 5,740,000.00
B	Sheyenne Diversion Channel RR Bridge - Mainline (See Calcs Section)	\$ 5,270,000.00
C	Sheyenne Diversion Channel RR Bridge - Shoofly (See Calcs Section)	\$ 5,270,000.00
D	Railroad Track Costs (from above)	\$ 6,110,000.00
<b>TOTAL</b>		<b>\$ 22,390,000.00</b>

**United States Army Corps of Engineers  
 Single Track - 35,000 CFS Option  
 Railroad Bridge Over Diversion Channel  
 North Dakota Railroad Bridge 4 (Single Track)  
 ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-5-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
1.000	Mobilization	LS	1	\$150,000.00	\$ 150,000.00
2.000	Common Exc.	CY	4000	\$ 12.00	\$ 48,000.00
3.000	Embankment	CY	8000	\$ 12.00	\$ 96,000.00
4.000	Subballast	CY	7000	\$ 30.00	\$ 210,000.00
5.000	No. 11, Turnout	EA	1	\$ 200,000.00	\$ 200,000.00
6.000	New Track (136# rail, Ties, Ballast)	TF	6160	\$ 250.00	\$ 1,540,000.00
7.000	Salvage Main line Track (Rail, Ties, Ballast, etc.)	TF	3050	\$ 4.00	\$ 12,200.00
8.000	Salvage Shoo-Fly Track (Rail, Ties, Ballast, etc.)	TF	3110	\$ 4.00	\$ 12,440.00
9.000	Salvage No. 11, Turnout	EA	1	\$ 10,000.00	\$ 10,000.00
10.000	Property Acquisition	ACRE	11		\$ -
					\$ -
	<b>Construction Total</b>				\$ 2,278,640.00
	Contingency (30%)				\$ 683,592.00
	<b>Trackwork TOTAL (Rounded)</b>				\$ 2,960,000.00

Estimated Construction Cost w/o Mobilization		\$2,128,640.00
Percent for Mobilization	7.00	\$149,004.80
Total Mobilization Cost		\$150,000.00

Total Costs for Bridge #4 and Trackwork		
A	Diversion Channel Bridge Costs (See Calcs Section)	\$ 3,300,000.00
B	Railroad Track Costs (from above)	\$ 2,960,000.00
<b>TOTAL</b>		<b>\$ 6,260,000.00</b>

**United States Army Corps of Engineers  
North Dakota Single Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel  
Single Track  
Fargo, North Dakota**

**ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-26-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
2021.501	MOBILIZATION	LUMP SUM	1	\$ 160,000.00	\$ 160,000.00
2105.607	RAILROAD TRACK BALLAST CV (6" DEPTH)	CU. YD.	103	\$ 18.00	\$ 1,854.00
2401.501	STRUCTURAL CONCRETE (1A43)	CU. YD.	176	\$ 480.00	\$ 84,480.00
2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	283	\$ 540.00	\$ 152,820.00
2401.501	STRUCTURAL CONCRETE (3Y33)	CU. YD.	225	\$ 300.00	\$ 67,500.00
2401.501	STRUCTURAL CONCRETE (3Y46)	CU. YD.	132	\$ 300.00	\$ 39,600.00
2401.541	REINFORCEMENT BARS	POUND	14800	\$ 1.40	\$ 20,720.00
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	115300	\$ 1.50	\$ 172,950.00
2401.601	FOUNDATION PREPARATION	LUMP SUM	1	\$ 417,200.00	\$ 417,200.00
2402.595	BEARING ASSEMBLY	EACH	40	\$ 900.00	\$ 36,000.00
2405.502	PRESTRESSED CONCRETE BEAMS 63M	LIN. FT.	1700	\$ 330.00	\$ 561,000.00
2405.511	DIAPHRAGMS FOR TYPE 63M P/S BEAMS	LIN. FT.	150	\$ 120.00	\$ 18,000.00
2452.507	STEEL H-PILING DELIVERED 12"	LIN. FT.	12240	\$ 54.00	\$ 660,960.00
2452.508	STEEL H-PILING DRIVEN 12"	LIN. FT.	12240	\$ 1.80	\$ 22,032.00
2452.602	PILE ANALYSIS	EACH	6	\$ 2,900.00	\$ 17,400.00
2511.501	RANDOM RIPRAP CLASS V	CU. YD.	230	\$ 60.00	\$ 13,800.00
	<b>Total</b>				<b>\$ 2,446,316.00</b>
	<b>Contingency</b>		<b>35 %</b>		<b>\$ 856,210.60</b>
	<b>Total (Rounded)</b>				<b>\$ 3,300,000.00</b>

Estimated Construction Cost w/o Mobilization		\$2,284,462.00
Percent for Mobilization	7.00	\$159,912.34
Total Mobilization Cost		\$160,000.00

**United States Army Corps of Engineers  
North Dakota Double Track - 35,000 CFS Option  
Railroad Bridge Over Diversion Channel  
Double Track - KO Subdivision  
Fargo, North Dakota**

**ENGINEER'S ESTIMATE OF PROBABLE CONSTRUCTION COSTS 4-26-2010**

Item No.	Item Description	Unit	Quantity	Estimated Unit Cost	Estimated Total Cost
2021.501	MOBILIZATION	LUMP SUM	1	\$ 279,000.00	\$ 279,000.00
2105.607	RAILROAD TRACK BALLAST CV (6" DEPTH)	CU. YD.	213	\$ 18.00	\$ 3,834.00
2401.501	STRUCTURAL CONCRETE (1A43)	CU. YD.	289	\$ 480.00	\$ 138,720.00
2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	498	\$ 540.00	\$ 268,920.00
2401.501	STRUCTURAL CONCRETE (3Y33)	CU. YD.	435	\$ 300.00	\$ 130,500.00
2401.501	STRUCTURAL CONCRETE (3Y46)	CU. YD.	132	\$ 300.00	\$ 39,600.00
2401.541	REINFORCEMENT BARS	POUND	24300	\$ 1.40	\$ 34,020.00
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	195700	\$ 1.50	\$ 293,550.00
2401.601	FOUNDATION PREPARATION	LUMP SUM	1	\$ 417,200.00	\$ 417,200.00
2402.595	BEARING ASSEMBLY	EACH	80	\$ 900.00	\$ 72,000.00
2405.502	PRESTRESSED CONCRETE BEAMS 63M	LIN. FT.	3400	\$ 330.00	\$ 1,122,000.00
2405.511	DIAPHRAGMS FOR TYPE 63M P/S BEAMS	LIN. FT.	300	\$ 120.00	\$ 36,000.00
2452.507	STEEL H-PILING DELIVERED 12"	LIN. FT.	24480	\$ 54.00	\$ 1,321,920.00
2452.508	STEEL H-PILING DRIVEN 12"	LIN. FT.	24480	\$ 1.80	\$ 44,064.00
2452.602	PILE ANALYSIS	EACH	12	\$ 2,900.00	\$ 34,800.00
2511.501	RANDOM RIPRAP CLASS V	CU. YD.	315	\$ 60.00	\$ 18,900.00
	<b>Total</b>				<b>\$ 4,255,028.00</b>
	<b>Contingency</b>		<b>35 %</b>		<b>\$ 1,489,259.80</b>
	<b>Total (Rounded)</b>				<b>\$ 5,740,000.00</b>

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Project USACE DIVERSION CHANNEL Proj. No. 14614 Sheet 6 of         

Computations for NORTH DAKOTA RAILROAD BRIDGES By JES Date 4-22-10

Chkd          Date         

FOR 35,000 CFS OPTION

$$\frac{425' - 2(3') - 100'}{2} = 159.5'$$

159.5' ÷ 5 = 31.9' VERTICAL DISTANCE ALONG SLOPE

- NEED TO ADD A PIER AS 106'-3" IS TOO LONG FOR 72" P/S I-BEAM

- 5 SPANS @ 85'

FOR PIERS IN CHANNEL BOTTOM

$$31.9' - 1.5' = 30.4' \text{ TOP PIER TO GROUND}$$

$$85' - \frac{1}{2}(100' - 85') = 77.5' \text{ UP THE SLOPE}$$

FOR PIER IN SLOPE

$$30.4' - \frac{1}{5}(77.5') = 14.9' \text{ TOP PIER TO GROUND}$$

## ESTIMATE WORKING LOAD FOR A TYPICAL PIER

### DEAD LOAD

FOOTING	$(18' \times 9' \times 4')(150 \#/\text{ft}^3) =$	97,200*
PIER	$(16')(3.67' \times 30.4' + 2')(150 \#/\text{ft}^3) =$	285,400*
72" BEAM	$4(5.45 \text{ft}^2 \times 85')(150 \#/\text{ft}^3) =$	278,000*
DECK	$15'(0.92' \times 85')(150 \#/\text{ft}^3) =$	176,000*
CURBS	$2(1.75')(1.08')(85')(150 \#/\text{ft}^3) =$	48,200*
WALK	$2(3.00' \times 0.67')(85')(150 \#/\text{ft}^3) =$	51,300*
BALLAST	$(1.25' \times 12.35')(85')(150 \#/\text{ft}^3) =$	196,800*
RAIL	$85'(200 \#/\text{ft}) =$	17,000*
		<hr/>
		1,149,900*

### LIVE LOAD

MAXIMUM PIER REACTION

$$2(417,425 \#) = 834,900 \#$$

### WORKING LOAD

$$1,149,000 \# + 834,900 \# = 1,983,900 \#$$

$$\text{NO. OF PILES} = \frac{1,983,900 \#}{0.6(200,000 \#)} = 17 \text{ PILES/PIER}$$

### PILING QUANTITY

$$6(17 \text{ PILES})(120' \text{ PILE}) = 12,240'$$

### ESTIMATE STRUCTURAL CONCRETE (1A43)

PIER FOOTING

$$4(18' \times 9')(4' \times \frac{1}{27}) = 96 \text{ YD}^3$$

ABUTMENT FOOTING

$$2(24 \text{ YD}^3 + 16 \text{ YD}^3) = 80 \text{ YD}^3$$

$$176 \text{ YD}^3$$

### ESTIMATE STRUCTURAL CONCRETE (3Y43)

PIER STEM

$$2(16')(3.67')(32.4')(\frac{1}{27}) = 141 \text{ YD}^3$$

$$2(16')(3.67')(16.9')(\frac{1}{27}) = 74 \text{ YD}^3$$

ABUTMENT STEM

$$68 \text{ YD}^3$$

$$283 \text{ YD}^3$$

### ESTIMATE STRUCTURAL CONCRETE (3Y33)

$$5(85.0')(15.0')(0.95')(\frac{1}{27}) = 225 \text{ YD}^3$$

# TKDA

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Project USACE DIVERSION CHANNEL Proj. No. 14614 Sheet 7 of       

Computations for NORTH DAKOTA RAILROAD BRIDGES By JES Date 4-26-10

Chkd        Date       

### ESTIMATE STRUCTURAL CONCRETE (3Y46)

$$5(85.0')^2(4.17 \text{ Ft}^2) \frac{1}{27} = 132 \text{ YD}^3$$

### PLAIN REINFORCEMENT

$$176 \text{ YD}^3(84\#) = 14,800\#$$

### EPDXY COATED REINFORCEMENT

$$68 \text{ YD}^3(111\#/\text{YD}^3) + 215 \text{ YD}^3(227\#/\text{YD}^3) \\ + 357 \text{ YD}^3(165\#/\text{YD}^3) = 115,300\#$$

### RAILROAD TRACK BALLAST

$$5(85')(13')(0.5') \frac{1}{27} = 103 \text{ YD}^3$$

### KO SUBDIVISION - 2 TRACKS @ 14' CENTERS

### ESTIMATE STRUCTURAL CONCRETE (1A45)

PIER

$$96 \text{ YD}^3 + 4(14')(9')(4') \frac{1}{27} = 171 \text{ YD}^3$$

ABUTMENT

$$80 \text{ YD}^3 + 2(14')(9')(4') \frac{1}{27} = 118 \text{ YD}^3$$

$$289 \text{ YD}^3$$

### ESTIMATE STRUCTURAL CONCRETE (3Y43)

PIER

$$141 \text{ YD}^3 + 2(3.67')(32.4')(14') \frac{1}{27} = 265 \text{ YD}^3$$

$$74 \text{ YD}^3 + 2(3.67')(16.9')(14') \frac{1}{27} = 139 \text{ YD}^3$$

ABUTMENT

$$68 \text{ YD}^3 + 2(14')(4')(3.5') \frac{1}{27}$$

$$+ 2(14')(1.5')(7.42') \frac{1}{27} = 94 \text{ YD}^3$$

$$498 \text{ YD}^3$$

### ESTIMATE STRUCTURAL CONCRETE (3Y33)

$$225 \text{ YD}^3 + 5(85' \times 14')(0.95') \frac{1}{27} = 435 \text{ YD}^3$$

### PLAIN REINFORCEMENT

$$289 \text{ YD}^3(84\#) = 24,300\#$$

### EPDXY COATED REINFORCEMENT

$$94 \text{ YD}^3(111\#/\text{YD}^3) + 404 \text{ YD}^3(227\#/\text{YD}^3)$$

$$+ 567 \text{ YD}^3(165\#/\text{YD}^3) = 195,700\#$$

### RAILROAD TRACK BALLAST

$$5(85')(27')(0.5') \frac{1}{27} = 213 \text{ YD}^3$$

### EAST OF BRIDGE 3

9 SPAN ~ 348' LONG

APPROXIMATE 39' SPANS

$$\frac{8676.68}{6342.08} (348') (\$8,200/\text{FT}) = \$3,904,000$$

$$35\% \text{ CONTINGENCY} \quad \$1,366,000$$

$$\$5,270,000$$

## Top of Rail Elevations at Bridges

Perpendicular to Coordinates Given

Bridge Location	Description	Main1	Main 2	Low Chord Elevation	Elevation Needed (Mainline)*	Elevation Difference
RR Bridge 1	Hillsboro Subdivision	889.48		891.16	899.40	9.92
RR Bridge 2	Prosper Subdivision	902.00		897.79	906.03	4.03
RR Bridge 3	K.O. Subdivision	908.09	908.01	901.59	909.83	1.82
RR Bridge 4	RRV&W	918.39		912.14	920.38	1.99

\* Structure Depth = 8.24' (includes 63" PCB and track structure)



FMM Diversion Phase IV

HEI

Approximate Railroad Bridge Lengths

2/22/2011

	Bridge #	Location	Station	Length (ft)	Grade Raise (ft)
LPP	4	BNSF Railway	313+05	588	10.5
	9	BNSF Railway	685+40	633	3.5
	12	BNSF Railway	888+90	645	0.4
	18	RRVW Railway	1464+35	677	0.0

2/22/2011

### North Dakota Railroad Bridge Cost Estimates

\*Original Costs taken from TKDA include 35% contingency on bridges and 30% on tracks/raise costs.

	Cost Estimate (TKDA)	Phase 2 Length (ft)	Phase 4 Length (ft)	Revised Cost
<b>Bridge 1</b>				
Bridge	\$3,300,000	425	588	\$4,565,647
Tracks/Raise	\$7,700,000			\$7,700,000
<b>Total</b>	<b>\$11,000,000</b>			<b>\$12,265,647</b>
<b>Bridge 2</b>				
Bridge	\$3,300,000	425	633	\$4,915,059
Tracks/Raise	\$3,960,000			\$3,960,000
<b>Total</b>	<b>\$7,260,000</b>			<b>\$8,875,059</b>
<b>Bridge 3</b>				
Bridge	\$5,740,000	425	645	\$8,711,294
Tracks/Raise	\$16,650,000			\$16,650,000
<b>Total</b>	<b>\$22,390,000</b>			<b>\$25,361,294</b>
<b>Bridge 4</b>				
Bridge	\$3,300,000	425	677	\$5,256,706
Tracks/Raise	\$2,960,000			\$2,960,000
<b>Total</b>	<b>\$6,260,000</b>			<b>\$8,216,706</b>

2/22/2011

LPP North Dakota Railroad Bridge Cost Estimates

\*Original Costs taken from TKDA include 35% contingency on bridges and 30% on tracks/raise costs

	Cost Estimate (TKDA)	Phase 2 Length (ft)	Phase 4 Length (ft)	Revised Cost				
<b>Bridge 1</b>								
Bridge	\$3,300,000	425	588	\$4,565,647	35%	\$1,183,686	\$3,381,961	
labor							\$845,490	
equipment							\$202,918	
material							\$1,623,341	
other							\$710,212	
Tracks/Raise	\$7,700,000			\$7,700,000	30%	\$1,776,923	\$5,923,077	
labor							\$1,480,769	
equipment							\$355,385	
material							\$2,843,077	
other							\$1,243,846	
<b>Total</b>	<b>\$11,000,000</b>			<b>\$12,265,647</b>		<b>\$2,960,609</b>	<b>\$9,305,038</b>	
<b>Bridge 2</b>								
Bridge	\$3,300,000	425	633	\$4,915,059	35%	\$1,274,275	\$3,640,784	
labor							\$910,196	
equipment							\$218,447	
material							\$1,747,576	
other							\$764,565	
Tracks/Raise	\$3,960,000			\$3,960,000	30%	\$913,846	\$3,046,154	
labor							\$761,538	
equipment							\$182,769	
material							\$1,462,154	
other							\$639,692	
<b>Total</b>	<b>\$7,260,000</b>			<b>\$8,875,059</b>		<b>\$2,188,121</b>	<b>\$6,686,938</b>	
<b>Bridge 3</b>								
Bridge	\$5,740,000	425	645	\$8,711,294	35%	\$2,258,484	\$6,452,810	
labor							\$1,613,203	
equipment							\$387,169	
material							\$3,097,349	
other							\$1,355,090	
Tracks/Raise	\$16,650,000			\$16,650,000	30%	\$3,842,308	\$12,807,692	
labor							\$3,201,923	
equipment							\$768,462	
material							\$6,147,692	
other							\$2,689,615	
<b>Total</b>	<b>\$22,390,000</b>			<b>\$25,361,294</b>		<b>\$6,100,791</b>	<b>\$19,260,503</b>	
<b>Bridge 4</b>								
Bridge	\$3,300,000	425	677	\$5,256,706	35%	\$1,362,850	\$3,893,856	
labor							\$973,464	
equipment							\$233,631	
material							\$1,869,051	
other							\$817,710	
Tracks/Raise	\$2,960,000			\$2,960,000	30%	\$683,077	\$2,276,923	
labor							\$569,231	
equipment							\$136,615	
material							\$1,092,923	
other							\$478,154	
<b>Total</b>	<b>\$6,260,000</b>			<b>\$8,216,706</b>		<b>\$2,045,927</b>	<b>\$6,170,779</b>	
			<b>Total</b>	<b>\$54,718,706</b>		<b>\$13,295,448</b>	<b>\$41,423,258</b>	