



# Appendix H Preliminary Cost Estimate Assumptions

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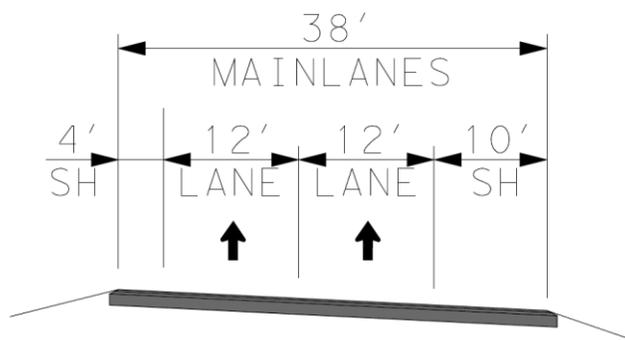
Lubbock Outer Route

Planning level preliminary cost estimates were developed for each option for all Segments. The costs were developed for the interim configuration (frontage roads only) as well as ultimate configuration (main lanes and frontage roads). In addition, costs for bridges and interchanges were included, along with % costs for lump sum items.

**Main lanes:**

The main lanes will be two 12' lanes in each direction with a 4' inside shoulder and 10' outside shoulder with a total of 38' roadbed for each direction. The unit cost development for main lanes is shown in Figure H-1 and Table H-1 below:

**Figure H-1: Main lane Typical Section**



**Table H-1: Main lane Preliminary Cost Assumption**

Mainlane Costs									
(NEW 2-LANE: 2-12' Lns. w/ 4' and 10' shoulders)									
Material	Length (Ft.)	Width (Ft.)	Area (SY)	Depth (in.)	Qty.	Units	Unit Price (\$)	Cost (\$)	
D-GR HMA TY-D SAC-A PG70-28 (2")	1.00	38.00	4.22	2	0.46	Ton	\$ 90.00	41.80	
D-GR HMA TY-B PG70-28 (4")	1.00	38.00	4.22	4	0.93	Ton	\$ 82.00	76.17	
Flex Base (14")	1.00	39.67	4.41	14	4.41	SY	\$ 15.00	66.11	
Cement Treated (Exist Matl) (5%)	1.00	41.33	4.59	6	4.59	SY	\$ 3.00	13.78	
Cement (5%)	-	-	-	-	0.06	Ton	\$ 140.00	8.68	
ASPH (AC-20-5TR)	1.00	79.33	8.81	-	1.76	Gal.	\$ 4.00	7.05	
AGGR (TY-PB GR-4 SAC-B)	1.00	79.33	8.81	-	0.08	CY	\$ 100.00	8.01	
								<b>221.60</b>	= TOTAL
									TOTAL PRICE PER FOOT OF ROADWAY
									(ONLY 1/2 OF 4-LANE DIVIDED)
									Cost Per Mile = \$1,170,062

**Frontage Roads:**

The frontage roads will be two 12' lanes in each direction with a 4' inside shoulder and 8' outside shoulder with a total of 36' roadbed for each direction. The unit cost development for main lanes is shown in Figure H-2 and Table H-2 below:

Figure H-2: Frontage road Typical Section

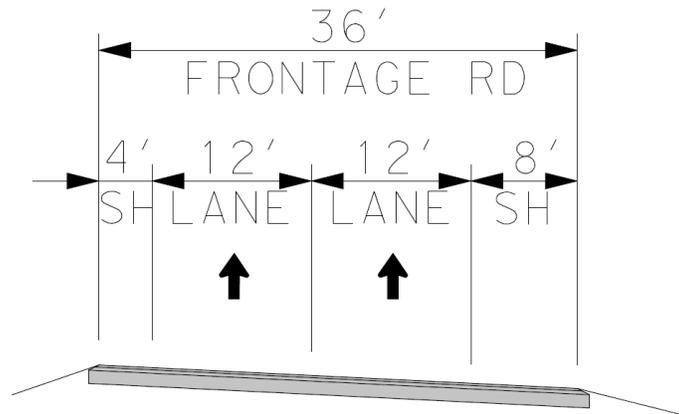


Table H-2: Frontage Road Preliminary Cost Assumptions

Frontage Road									
(NEW 2-LANE: 2-12' Lns. w/ 4' and 8' shoulders)									
Material	Length (Ft.)	Width (Ft.)	Area (SY)	Depth (in.)	Qty.	Units	Unit Price (\$)	Cost (\$)	
D-GR HMA TY-D SAC-A PG70-28 (2")	1.00	36.00	4.00	2	0.44	Ton	\$ 90.00	39.60	
D-GR HMA TY-B PG70-28 (4")	1.00	36.50	4.06	4	0.89	Ton	\$ 82.00	73.16	
Flex Base (14")	1.00	37.67	4.19	14	4.19	SY	\$ 15.00	62.78	
Cement Treated (Exist Matl) (5%)	1.00	38.17	4.24	6	4.24	SY	\$ 3.00	12.72	
Cement (5%)	-	-	-	-	0.06	Ton	\$ 140.00	8.01	
ASPH (AC-20-5TR)	1.00	72.00	8.00	-	1.60	Gal.	\$ 4.00	6.40	
AGGR (TY-PB GR-4 SAC-B)	1.00	72.00	8.00	-	0.07	CY	\$ 100.00	7.27	
								<b>209.95</b>	= TOTAL
								TOTAL PRICE PER FOOT OF ROADWAY (ONLY 1 SIDE OF THE FRONTAGE ROAD)	
								Cost Per Mile = \$1,108,530	

**Bridges:**

Costs for bridges were estimated based on a unit cost of \$75/sq ft. The details of the bridge cost estimates are provided in Table H- 3.

**Table H-3: Preliminary Cost Estimates for Bridges**

SEGMENT	CROSS STREET	LENGTH	WIDTH	AREA	NO. OF BRIDGES	TOTAL AREA	COST / SF	TOTAL COST	
		FT	FT	SF					
1	Inler Ave (FM 179)	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	FM 2641/CR	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	FM 2641	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	FM 2641	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Urusline St (CR 6400)	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	4th St (FM 2235)	300	40	12,000	2	24,000	\$75.00	\$1,800,000	<b>\$10,800,000</b>
2	RR Tracks S. of 19th	1,100	40	44,000	2	88,000	\$75.00	\$6,600,000	
	34th St	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	66th St	300	40	12,000	2	24,000	\$75.00	\$1,800,000	<b>\$10,200,000</b>
3	Inler Ave (FM 179)	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Upland	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Milwaukee	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Frankfort	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Slide (FM 1730)	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Quaker	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Indiana	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	University	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Ave. P	300	40	12,000	2	24,000	\$75.00	\$1,800,000	<b>\$16,200,000</b>
4	MLK	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	FM 3431	300	40	12,000	2	24,000	\$75.00	\$1,800,000	
	Fiddlewood Ave	300	40	12,000	2	24,000	\$75.00	\$1,800,000	<b>\$5,400,000</b>

**Interchanges:**

Interchanges were assumed at all major crossings including US 84 (North and South), SH 114/19<sup>th</sup> Street, US 87S, and US 82/US 62. Details of the cost estimates for bridges are provided in Table H-4.

**Table H-4: Preliminary Cost Estimates for Interchanges**

LOCATION	BRIDGE COST	FR/RAMP COST	TRAFFIC SIGNAL COST	EMBANKMENT COST	RETAINING WALL COST	TOTAL COST
US 84 N	\$4,200,000	\$489,620	\$100,000	\$6,125,000	\$3,969,000	\$ 14,883,620
US 84 S	\$2,400,000	\$489,620	\$100,000	\$1,680,550	\$1,089,000	\$ 5,759,170
	<b>\$6,600,000</b>	<b>\$979,241</b>	<b>\$200,000</b>	<b>\$7,805,550</b>	<b>\$5,058,000</b>	<b>\$ 20,642,791</b>
19th St. (SH 114)	<b>\$2,400,000</b>	<b>\$489,620</b>	<b>\$200,000</b>	<b>\$2,420,000</b>		\$ 5,509,620
US 87 S	\$4,200,000	\$489,620	\$100,000	\$6,125,000	\$3,969,000	\$ 14,883,620
	\$2,400,000	\$489,620	\$100,000	\$1,680,550	\$1,089,000	\$ 5,759,170
	<b>\$6,600,000</b>	<b>\$979,241</b>	<b>\$200,000</b>	<b>\$7,805,550</b>	<b>\$5,058,000</b>	<b>\$ 20,642,791</b>
US 82/62 (1)	\$4,200,000	\$489,620	\$100,000	\$6,125,000	\$2,304,000	\$ 13,218,620
	\$2,400,000	\$489,620	\$100,000	\$1,680,550		\$ 4,670,170
	<b>\$6,600,000</b>	<b>\$979,241</b>	<b>\$200,000</b>	<b>\$7,805,550</b>	<b>\$2,304,000</b>	<b>\$ 17,888,791</b>
US 82/62 (2)	\$6,600,000	\$489,620	\$100,000	\$3,555,550	\$2,304,000	\$ 13,049,170
	\$2,400,000	\$489,620	\$100,000	\$2,718,700		\$ 5,708,320
	<b>\$9,000,000</b>	<b>\$979,241</b>	<b>\$200,000</b>	<b>\$6,274,250</b>	<b>\$2,304,000</b>	<b>\$ 18,757,491</b>

### **Lump sum Cost Items:**

For this preliminary cost estimate, items like engineering and drainage were added as a percentage of construction cost. Additionally, a 25% contingency was included to the overall cost to develop the preliminary cost estimate. Table 5 shows the % used for each general item.

**Table H-5: % of Construction cost for General Items**

<b>General Item</b>	<b>% of Construction Cost</b>
Engineering & Design	5%
Surveys and investigations	3%
Mobilization	20%
General construction management	2%
QC/inspection/supervision	3%
Traffic control	5%
Drainage	3%
Safety Items	1%
Safety lighting	1%
Traffic signals	1%
Utility adjustments	10%
Landscaping	1%
Environmental mitigation	5%

### **Preliminary Cost Estimates by Segment:**

The preliminary cost estimates for each segment are shown in Table 6.

**Table H-6: Preliminary Cost Estimate by Segment**

<b>Segment</b>	<b>Option</b>	<b>Interim (2013\$ M)</b>	<b>Ultimate (2013\$ M)</b>
1	A	\$ 50.4	\$ 182.2
	B	\$ 49.0	\$ 181.1
	C	\$ 52.0	\$ 185.7
	D	\$ 50.6	\$ 184.5
2	A	\$ 36.3	\$ 118.7
	B	\$ 36.7	\$ 119.0
	C	\$ 35.5	\$ 116.6
	D	\$ 35.7	\$ 116.9
3	A	\$ 72.2	\$ 219.4
	B	\$ 71.2	\$ 219.3
	C	\$ 54.4	\$ 198.2
	D	\$ 69.5	\$ 216.5
	E	\$ 68.6	\$ 216.5
4	A	\$ 31.8	\$ 141.7

B	\$ 38.1	\$ 150.2
C	\$ 49.4	\$ 167.4
D	\$ 35.5	\$ 146.5
E	\$ 51.4	\$ 171.8