Title
Evaluation of I-10 Pomona (07-181304) Long-Life Pavement Rehabilitation Costs

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Part of Item 4.15 PPRC Strategic Plan

Technical Memorandum Prepared for

California Department of Transportation (Caltrans)

by:

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1.0 INTRODUCTION

This technical memorandum summarizes the analysis performed to evaluate the cost of the Long-Life Pavement Rehabilitation Strategies (LLPRS) program. This study is part of the effort to develop an Integrated Pavement Strategy Decision Support System to allow engineers to analyze efficient allocation of financial resources when planning pavement projects.

For this study, cost performances were analyzed for a long-life pavement project on Interstate 10 (EA 07-181304) in Pomona between the 210/57/10 interchange to Garey Avenue undercrossing.

1.1 Project Description

The project studied (EA 07-181304) is a 3.4 mile segment of the San Bernardino Freeway. It was the first concrete LLPRS project constructed and incorporated the use of Fast Setting Hydraulic Cement Concrete (FSHCC). The contract was awarded to Morrison Knudsen Corporation at $15,998,000. Construction began in April 1999 and was completed at the end of July 2000.

1.2 Definitions

For this analysis, the original contract amount and the actual cost of the project are compared. Included in this comparison are the *original bid cost*, *actual bid cost*, and the *total cost* which includes contract change orders. The *original bid cost* consists of the costs of the bid items as proposed by the contractor before construction. The *actual bid cost* is the actual amount

expended for these bid items at the end of the project. The engineer's estimate, which includes the bid estimate, supplemental work, state furnished materials and contingencies anticipated by Caltrans, is also included for comparison.

To analyze the expenditures for these projects, costs were divided into several categories:

- Total cost is divided into direct, indirect, and administrative costs.
- Direct costs consist of cost of the pavement or work done directly relating to building the pavement.
- Indirect costs include non-pavement items such as traffic handling, drainage, and roadside and operational costs.

See Appendix A for a complete list and description of each subcategory.

For each cost category, the percentage of the total cost and a cost multiplier is calculated. Each multiplier represents a ratio of each amount to the direct cost:

$$Multiplier = \frac{Line\ Item\ Cost\ Category}{Direct\ Cost}$$

The percentage difference between the original bid amount and the actual bid amount is also determined.

2.0 RESULTS

Table 1 presents the results of the cost analysis. As shown in Table 1, the original bid amount plus the cost of state furnished materials for the I-10 rehabilitation project was $16,315,000. Figure 1 illustrates the cost breakdown of the original bid plus the cost of state furnished materials.

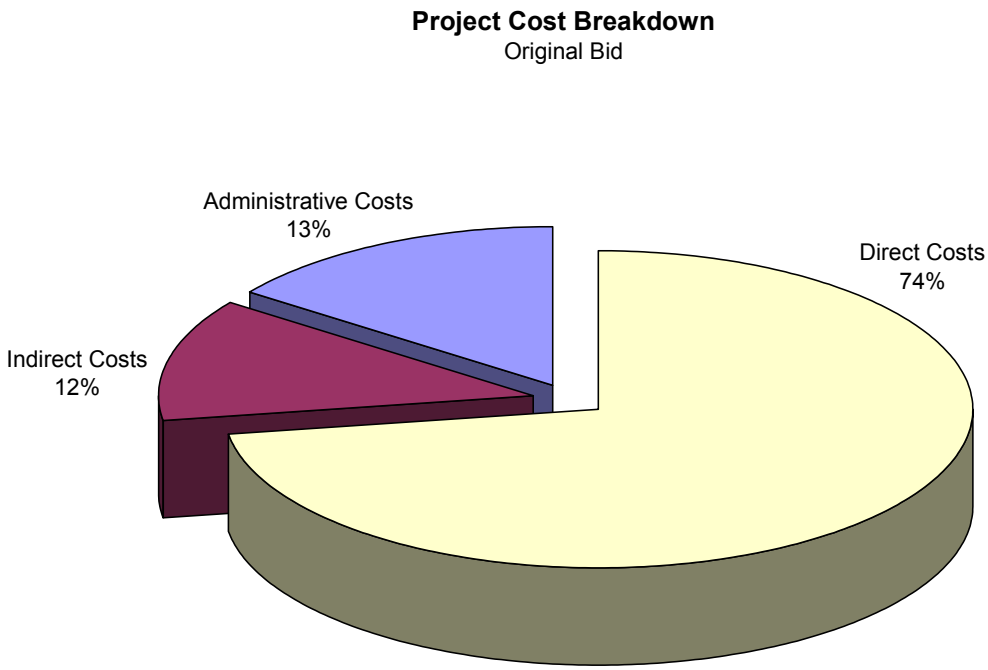

Figure 1. Project cost breakdown based on original bid for I-10 Pomona rehabilitation project.

For this project, a large portion of the direct cost was due to the replacement of the pavement with FSHCC. This item alone accounted for about 36 percent of the total cost of the bid items. When the original bid cost is compared to the actual bid cost (see Figure 2), the cost allocation is very similar. However, as shown in Table 1, the total dollar amount for the actual bid cost is less than the original bid. This slight difference of 3.2 percent is due to overestimation of quantities such as striping and pavement.

Although the actual bid cost was less than the contract amount, the total cost of the project was still approximately $1 million more than the original bid cost. This cost overrun can be explained by the contract change orders (CCO). Figure 3 illustrates the cost allocations for these CCOs along with the bid items costs.

Table 1 Project Cost Breakdown for I-10 Pomona Rehabilation Long Life Project (EA 07-181304)

Direct Costs

Category	Engineer's Estimate			Original Bid			Actual Bid Cost			% Difference[1]	CCO			Total Cost			Cost/ lane mile[3]
	Amount	%	Multiplier[2]	Amount	%	Multiplier[2]	Amount	%	Multiplier[2]		Amount	%	Multiplier[2]	Amount	%	Multiplier[2]	13.6 lane-mi.
Repair Existing Pavement	$8,175,410	48.85	0.94	$11,519,610	70.61	0.97	$11,031,413	69.86	0.97	-4.24	$132,185	8.57	0.89	$11,163,598	64.41	0.97	$820,852.82
Earthwork	$415,000	2.48	0.05	$216,550	1.33	0.02	$228,178	1.44	0.02	5.37	$16,901	1.10	0.11	$245,079	1.41	0.02	$18,020.54
Pavement Striping	$124,140	0.74	0.01	$86,660	0.53	0.01	$78,171	0.50	0.01	-9.80	$0	0.00	0.00	$78,171	0.45	0.01	$5,747.83
Subtotal (Direct Costs)	***$8,714,550***	***52.07***	***1.00***	***$11,822,820***	***72.47***	***1.00***	***$11,337,762***	***71.80***	***1.00***	***-4.10***	***$149,086***	***9.67***	***1.00***	***$11,486,848***	***66.27***	***1.00***	***$844,621.19***

Indirect Costs

Category		Engineer's Estimate			Original Bid			Actual Bid Cost			% Difference[1]	CCO			Total Cost			Cost/ lane mile[3]
		Amount	%	Multiplier[2]	Amount	%	Multiplier[2]	Amount	%	Multiplier[2]		Amount	%	Multiplier[2]	Amount	%	Multiplier[2]	13.6 lane-mi.
Traffic Handling	Traffic Control	$2,177,020	13.01	0.25	$589,690	3.61	0.05	$587,345	3.72	0.05	-0.40	$740,831	48.04	4.97	$1,328,176	7.66	0.12	$97,659.99
Drainage	Upgrade/New	$1,284,805	7.68	0.15	$407,044	2.49	0.03	$456,887	2.89	0.04	12.25	$0	0.00	0.00	$456,887	2.64	0.04	$33,594.62
Safety	Guardrail/ Barriers	$1,566,600	9.36	0.18	$611,600	3.75	0.05	$609,215	3.86	0.05	-0.39	$0	0.00	0.00	$609,215	3.51	0.05	$44,795.22
	Other Safety Upgrades	$300,000	1.79	0.03	$35,000	0.21	0.00	$35,000	0.22	0.00	0.00	$0	0.00	0.00	$35,000	0.20	0.00	$2,573.53
Roadside	Erosion Control	$8,000	0.05	0.00	$100,000	0.61	0.01	$16,160	0.10	0.00	-83.84	$0	0.00	0.00	$16,160	0.09	0.00	$1,188.24
	Landscaping	$73,725	0.44	0.01	$170,580	1.05	0.01	$170,580	1.08	0.02	0.00	$3,268	0.21	0.02	$173,848	1.00	0.02	$12,782.98
Operational	New Electrical	$106,000	0.63	0.01	$115,000	0.70	0.01	$115,000	0.73	0.01	0.00	$0	0.00	0.00	$115,000	0.66	0.01	$8,455.88
Subtotal (Indirect Costs)		***$5,516,150***	***32.96***	***0.63***	***$2,028,914***	***12.44***	***0.17***	***$1,990,186***	***12.60***	***0.18***	***-1.91***	***$757,968***	***49.16***	***5.08***	***$2,748,154***	***15.85***	***0.24***	***$202,070.16***

[1] % Difference = (Actual - Original) / Original

[2] Multiplier = (Cost Category)/(Direct Pavement Cost)

[3] Lane Mile Cost = (Total Cost)/(Lane Miles)

Administrative (Indirect) Costs

Category	Engineer's Estimate			Original Bid			Actual Bid Cost			% Difference[1]	CCO			Total Cost			Cost/ lane mile[3]
	Amount	%	Multiplier[2]	Amount	%	Multiplier[2]	Amount	%	Multiplier[2]		Amount	%	Multiplier[2]	Amount	%	Multiplier[2]	13.6 lane-mi.
Admin Related	$25,000	0.15	0.00	$2,146,266	13.16	0.18	$2,146,266	13.59	0.19	0.00	$634,928	41.18	4.26	$2,781,194	16.05	0.24	$204,499.52
State Furnished Materials Related	$317,000	1.89	0.04	$317,000	1.94	0.03	$317,000	2.01	0.03	0.00	$0	0.00	0.00	$317,000	1.83	0.03	$23,308.82
Supplemental Work	$2,162,300	12.92	0.25	$0	0.00	0.00	$0	0.00						$0	0.00	0.00	n/a
Subtotal (Administrative Costs)	***$2,504,300***	***14.96***	***0.29***	***$2,463,266***	***15.10***	***0.21***	***$2,463,266***	***15.60***	***0.22***	***0.00***	***$634,928***	***41.18***	***4.26***	***$3,098,194***	***17.87***	***0.27***	***$227,808.35***

Total (All Costs)

Category	Engineer's Estimate			Original Bid			Actual Bid Cost			% Difference[1]	CCO			Total Cost			Cost/ lane mile[3]
	Amount	%	Multiplier[2]	Amount	%	Multiplier[2]	Amount	%	Multiplier[2]		Amount	%	Multiplier[2]	Amount	%	Multiplier[2]	13.6 lane-mi.
Total (All Costs)	$16,735,000	100	1.92	$16,315,000	100	1.38	$15,791,214	100	1.39	-3.21	$1,541,982	100	10.34	$17,333,196	100	1.51	$1,274,499.69

[1] % Difference = (Actual - Original) / Original
[2] Multiplier = (Cost Category)/(Direct Pavement Cost)
[3] Lane Mile Cost = (Total Cost)/(Lane Miles)

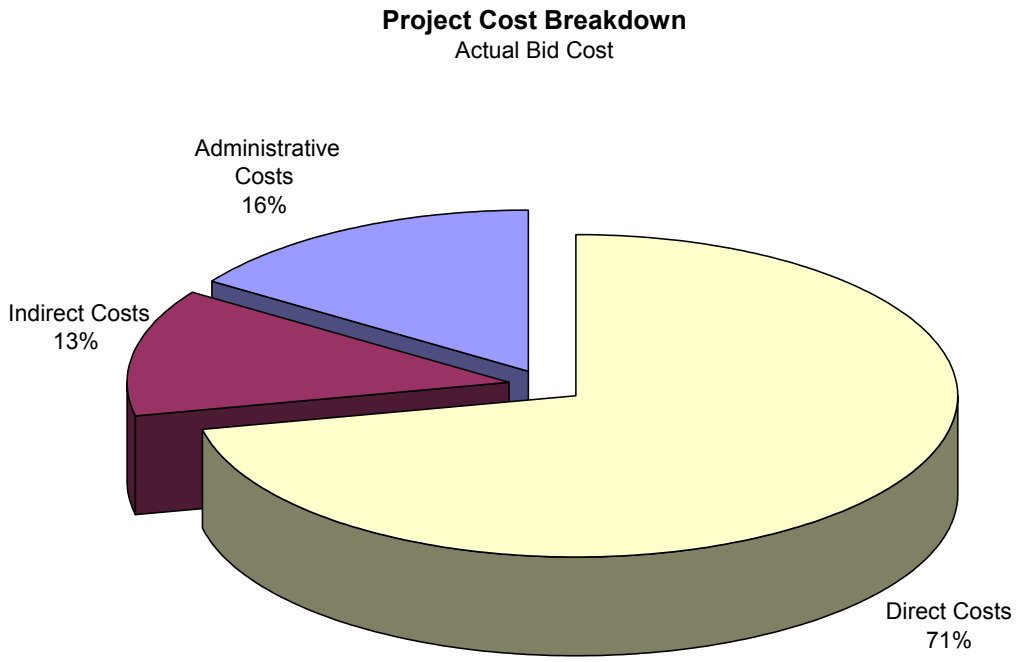

Figure 2. Project cost breakdown of actual bid costs for I-10 Pomona rehabilitation project.

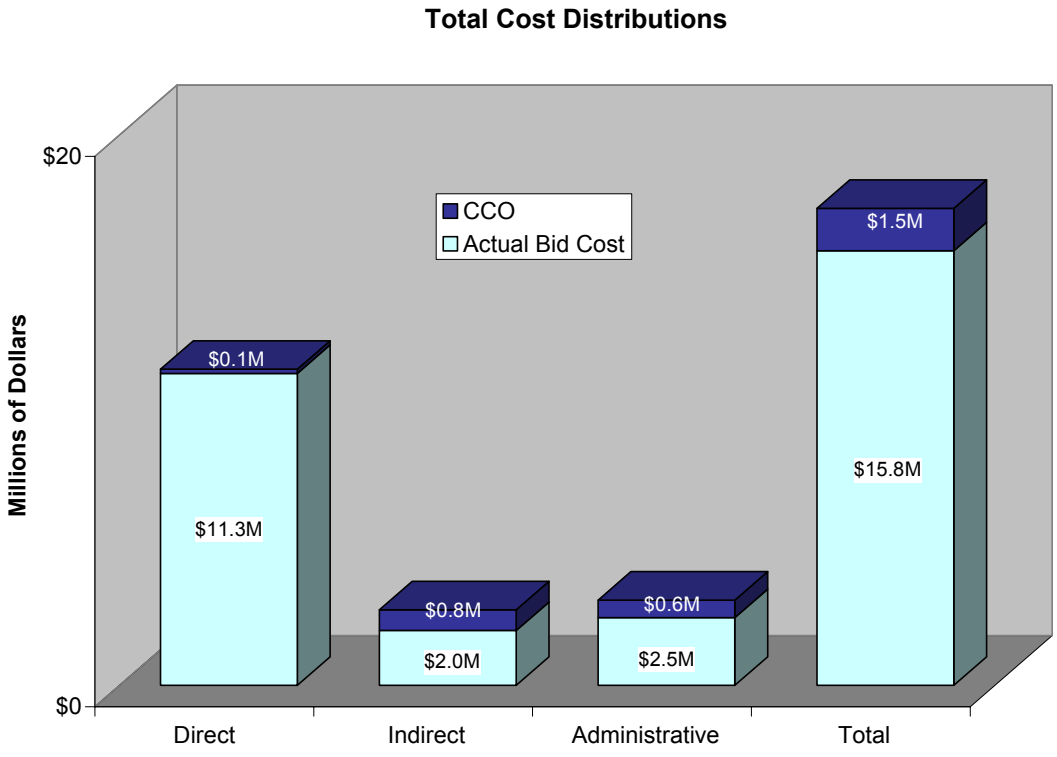

Figure 3. Actual bid cost and CCO distributions of the total cost of the I-10 Pomona rehabilitation project.

Figure 4 shows that about half of the CCO cost can be attributed to indirect costs. Table 1 shows that a large portion of this cost is due to traffic handling. This cost is comprised of traffic control flagging and signs and incentive payment for the 55-hour weekend construction closure. The other half of the cost of CCOs is due to administrative costs. These costs are mainly caused by resolution of the Proposed Final Estimate.

The total cost breakdown of the project is illustrated in Figure 5. Total cost is comprised of the actual bid cost and the contract change orders (CCOs) combined. Although the difference between the original bid and the total cost of the project is about $1 million, the difference between the engineer's estimate and the total cost is only about $0.6 million. However, as shown in Table 1, the multipliers from the engineer's estimate are often larger than those of the total cost multipliers. In comparison to the direct cost, the indirect and administrative costs were overestimated. For the total cost of the project, the multiplier that represents the ratio of the total cost to direct cost is 1.51. From the engineers estimate, the ratio is much higher (1.92) due to overestimation of the indirect costs and underestimation of direct costs.

3.0 CONCLUSIONS

The difference between the engineer's estimate and the total cost of the Long Life Pavement Project in I-10 Pomona is about 3.5 percent. However, the differences between the cost for each category from the engineer's estimate and the total cost vary between 0 and 23 percent. To get a better prediction of the cost allocations for similar projects, the given multipliers for each category in relation to the total cost can be used as a guide.

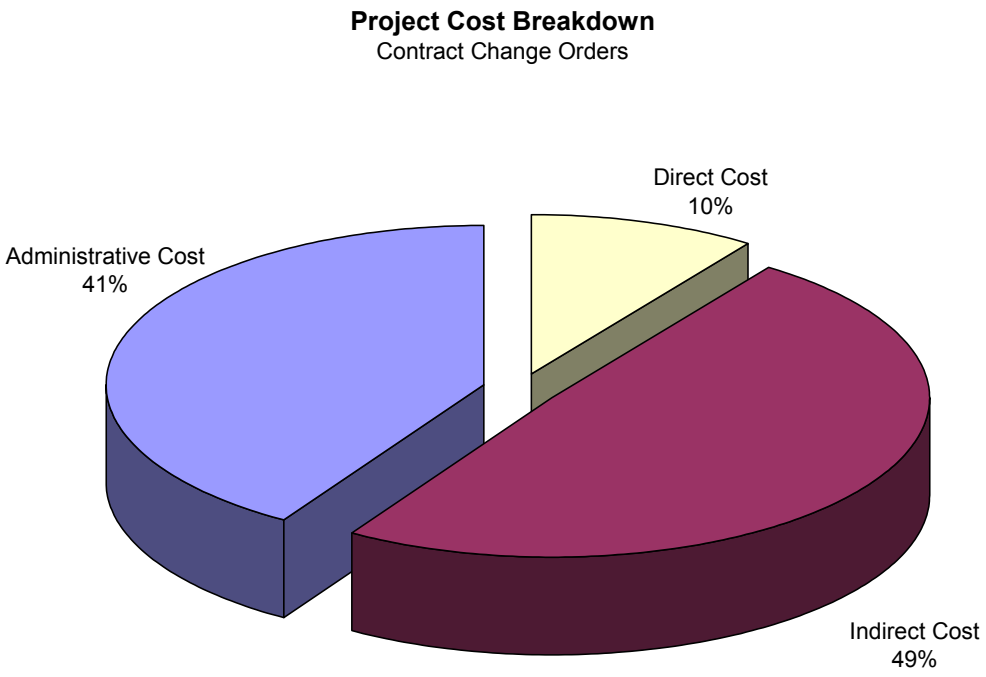

Figure 4. Project cost breakdown of the contract change orders for I-10 Pomona rehabilitation project.

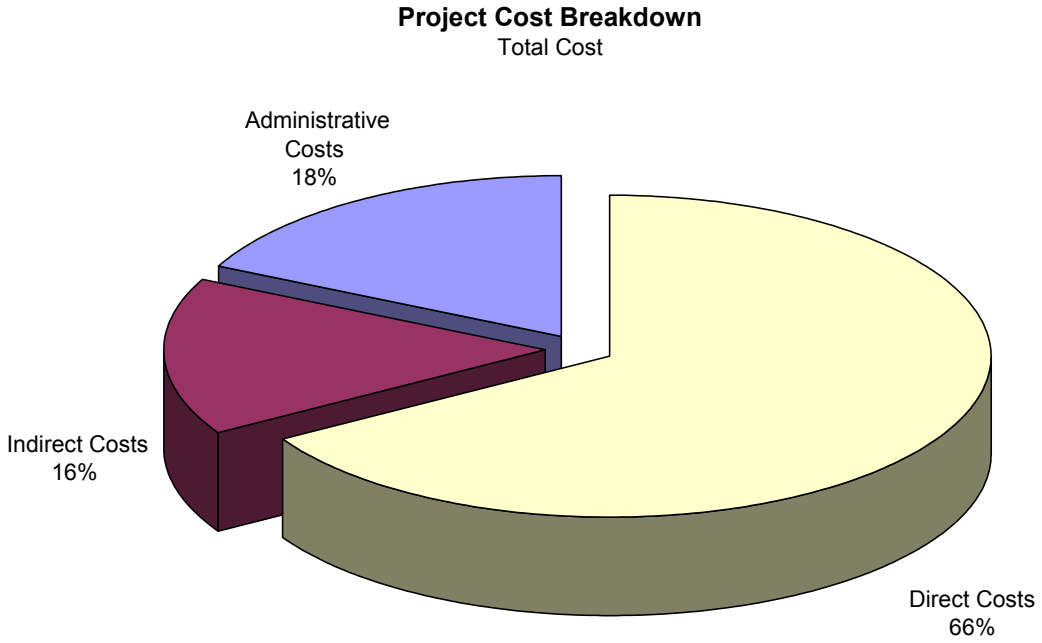

Figure 5. Cost breakdown of the total cost of the I-10 Pomona rehabilitation project.

4.0 APPENDIX A: COST CATEGORIES, DESCRIPTIONS, AND AMOUNTS

Table A1 Cost Categories and Descriptions

Category	Code	Item	Description	Sample Items (Partial List)
Direct	D-010	Repair Existing Pavement	Work done to existing pavement to repair deficiencies and extend life	Overlays, Reconstruct Existing, Replace AC, PCC Slab Replacement, Cold Planing, Grinding
	D-020	Earthwork	Work done to embankments to construct pavement repairs and eliminate dropoffs	Shoulder Backing, Embankment reconstruction next to pavement
	D-030	Pavement Striping	Work done to restripe new pavement	Permanent traffic stripes and markers
	I-034	Open Graded Surface	Placement of open graded surfaces on top of pavement	OGAC, RAC-O
Traffic Handling	I-011	Traffic Control	Costs incurred to manage traffic during construction	Traffic Control, Construction Area Signs, Temporary Signing and Striping, Temporary Barriers, Portable Message Signs
	I-012	Temporary Detours	Temporary pavement, bridges, and drainage built to handle traffic during construction	Asphalt Concrete, Aggregate Base and Subbase, Earthwork related to detours
	I-013	Permanent Widening for Construction Traffic Handling	Permanent pavement placed to be used for traffic handling during construction	Asphalt Concrete, Aggregate Base and Subbase, Earthwork related widening work
	I-014	Others	Work not covered in above items	
Drainage	I-021	Dikes/Curbs	Replace existing dikes and curbs	Place Dike (Type ___), Minor Concrete Curb. Includes costs to replace existing dikes and curbs
	I-022	Modify within Pavement	Work done to adjust drainage systems to match new pavement profile	Adjust or replace inlets, manholes
	I-023	Repair Existing	Work done to repair existing deficiencies	Replaced damaged pipes, inlets. Fix ponding or other drainage deficiencies
	I-024	Upgrade/New	Improvements to overall drainage system	New systems placed due to widenings, realignments
	I-025	Storm Water Upgrades	Work done to address storm water issues	Detention Basins, Catch Basins, Litter Catchers
Safety	I-031	Identified in Safety Analysis	Work done to address site specific issues raised in the project safety analysis	Associated paving and earthwork for realignments, left or right turns lanes
	I-032	Guardrail/Barriers	Replacement and upgrade of guardrails and barriers	Metal Beam Guardrail, Concrete Barriers, End Anchors, Crash Cushions
	I-033	Meet 3R Design Standards	Work done to upgrade facility to meet 3R Design Standards	Shoulder Widening, Lane Widening, Vertical Clearance
	I-035	Other Safety Upgrades	Safety work not identified above	

Category	Code	Item	Description	Sample Items (Partial List)
Roadside	I-041	Embankment Upgrades	Work done to pavement not impacted by paving operations	Flattening Slopes
	I-042	Erosion Control	All erosion control work done to new or existing pavements	
	I-043	Roadside/Ditch Paving	Paving work done to the roadside	
	I-044	Landscaping	Upgrade or addition of landscaping	
	I-045	Environmental Mitigation	Work done to meet environmental commitments	
Right of Way	I-051	New Right of Way	New Right of Way	Costs are incurred prior to construction and are found separately in the Right of Way costs
	I-052	Temp. Construction Easements	Temporary Construction Easements	
	I-053	Utility Relocations	Utility Relocations	
Bridges	I-061	All Bridge Work Done on Bridges	All work done to bridges	Replacement, Widening, Bridge Rail Upgrade
Operational	I-071	Lane Additions	Work done to add lanes not required for traffic handling during construction	Auxiliary, Truck, Passing, and Turn Lanes not constructed for traffic handling or safety reasons
	I-072	Other Widening (beyond 3R Stds)	Other widening work performed that is not required for traffic handling during construction	Additional shoulder widening beyond 3R Design Standards
	I-073	ITS/Fiber Optic	All work to upgrade or install new Intelligent Transportation elements	Cameras, Radios, Changeable Message Signs, Fiber Optics
	I-074	Electrical Code Upgrades	Upgrades to existing electrical systems to meet current code	Usually part of a lump sum item. Need cost breakdown from electrical
	I-075	New Electrical	New non-ITS electrical systems	New Lighting, Traffic Signals, Ramp Meters
	I-076	Sign Structures	Replacement or construction of new sign structures	Furnish and Place Sign Structure
	I-077	Roadside Signs	Replacement or construction of new roadside signs	Roadside Signs
Administrative	I-080	Administrative Related	Administrative Related Costs	Mobilization, Time Related Overhead
	I-090	State Furnished Materials	State Furnished Materials	Found Separately. Includes COZEEP, additional traffic control, etc.
		Supplemental Work	Supplemental Work	Found Separately

Table A2 Engineer's Estimate, Original Bid Cost, Actual Bid Costs

Bid No.	Item Code	Item Descriptions	Engineer's Estimate		Original Contract		Actual Contract		Cost Code
			Quantity	Amount	Quantity	Amount	Quantity	Actual	
1	70010	Progress Schedule (Critical Path)	Lump Sum	$25,000.00	Lump Sum	$10,000.00	Lump Sum	$10,000.00	I-080
2	120090	Construction Area Signs	Lump Sum	$40,000.00	Lump Sum	$45,000.00	Lump Sum	$45,000.00	I-011
3	120100	Traffic Control System	Lump Sum	$550,115.00	Lump Sum	$400,000.00	Lump Sum	$400,000.00	I-011
4	120151	Temporary Traffic Stripe (Tape)	8890	$40,005.00	8890	$62,230.00	8493	$59,451.00	I-011
5	120159	Temporary Traffic Stripe (Paint)	22800	$22,800.00	22800	$10,260.00	19919	$8,963.55	I-011
6	120165	Channelizer (Surface Mounted)	170	$5,100.00	170	$5,950.00	48	$1,680.00	I-011
7	120200	Flashing Beacon (Portable)	16	$32,000.00	16	$12,000.00	24	$18,000.00	I-011
8	120300	Temporary Pavement Marker	15500	$62,000.00	15500	$54,250.00	15500	$54,250.00	I-011
9	129000	Temporary Railing (Type K)	720	$21,600.00	720	$21,600.00	640.5	$19,215.00	I-011
10	14896	Moveable Concrete Barrier	Lump Sum	$1,545,000.00	Lump Sum	$590,000.00	Lump Sum	$590,000.00	I-011
11	129100	Temporary Crash Cushion Module	Lump Sum	$300,000.00	Lump Sum	$35,000.00	Lump Sum	$35,000.00	I-011
12	150306	Repair Spalled Concrete	80	$40,000.00	80	$44,000.00	69.241	$38,082.55	D-010
13	150711	Remove Painted Traffic Stripe	13200	$26,400.00	13200	$19,800.00	793	$1,189.50	D-030
14	150174	Remove Thermoplastic Traffic Stripe	3520	$10,560.00	3520	$6,160.00	882	$1,543.50	D-030
15	150722	Remove Pavement Marker	10300	$20,600.00	10300	$10,300.00	16128	$16,128.00	D-030
16	153103	Cold Plane Asphalt Concrete Pavement	2760	$27,600.00	2760	$16,560.00	3395.33	$20,371.98	D-010
17	160101	Clearing and Grubbing	Lump Sum	$25,000.00	Lump Sum	$25,000.00	Lump Sum	$25,000.00	I-044
18	190101	Roadway Excavation	3840	$384,000.00	3840	$192,000.00	4332.56	$216,628.00	D-020
19	14898	Haul and Dispose Type X Material	40	$10,000.00	40	$13,000.00	0	$0.00	D-020
20	14899	Haul and Backfill Type Y Material	210	$21,000.00	210	$11,550.00	210	$11,550.00	D-020
21	200001	Highway Planting	Lump Sum	$20,000.00	Lump Sum	$60,000.00	Lump Sum	$60,000.00	I-044
22	202007	Duff	10000	$8,000.00	10000	$100,000.00	1616	$16,160.00	I-044
23	204099	Plant Establishment Work	Lump Sum	$8,000.00	Lump Sum	$15,000.00	Lump Sum	$15,000.00	I-044
24	208000	Irrigation System	Lump Sum	$20,000.00	Lump Sum	$70,000.00	Lump Sum	$70,000.00	I-044
25	14900	50-mm Galvanized Steel Pipe	29	$725.00	29	$580.00	29	$580.00	I-044
26	14901	Fast Setting Hydraulic Cement Treated Permeable Base	310	$31,000.00	310	$116,250.00	429.26	$160,972.50	D-010
27	390103	Asphalt Concrete (Type B)	9520	$476,000.00	9520	$666,400.00	9225.5	$645,785.00	D-010
28	394002	Place Asphalt Concrete (Miscellaneous Area)	230	$3,450.00	230	$9,200.00	731.8	$29,272.00	D-010

Bid No.	Item Code	Item Descriptions	Engineer's Estimate		Original Contract		Actual Contract		Cost Code
			Quantity	Amount	Quantity	Amount	Quantity	Actual	
29	14902	Replace Pavement (Fast Setting Hydraulic Cement Concrete)	15900	$5,173,860.00	15900	$5,803,500.00	14120.14	$5,153,851.10	D-010
30	420201	Grind Existing Concrete Pavement	159000	$954,000.00	159000	$1,192,500.00	158928	$1,191,960.00	D-010
31	510502	Minor Concrete (Minor Structure)	129	$129,000.00	129	$322,500.00	129	$322,500.00	I-061
32	14903	Retrofit Dowel (Smooth, Epoxy Coated)	31400	$628,000.00	31400	$2,355,000.00	32415	$2,431,125.00	D-010
33	14904	Dowel (Smooth, Epoxy Coated)	39900	$399,000.00	39900	$638,400.00	41157	$658,512.00	D-010
34	14897	Drill and Bond the Tie Bar (Epoxy Cartridge)	20900	$313,500.00	20900	$355,300.00	22293	$378,981.00	D-010
35	681067	250-mm Perforated Plastic Pipe Underdrain	130	$130,000.00	130	$30,550.00	290	$68,150.00	I-024
36	681134	80-mm Plastic Pipe (Edge Drain)	360	$9,000.00	360	$12,600.00	405.08	$14,177.80	I-024
37	681137	80-mm Plastic Pipe (Edge Drain Outlet)	120	$6,000.00	120	$6,000.00	113.1	$5,655.00	I-024
38	681501	Furnish and Install Drain Pipe (Horizontal Drain)	2670	$267,000.00	2670	$26,700.00	2777	$27,770.00	I-024
39	681502	Drill Hole (Horizontal Drain)	2670	$801,000.00	2670	$253,650.00	2777	$263,815.00	I-024
40	690154	200-mm Corrugated Steel Pipe Downdrain	120	$15,000.00	120	$5,400.00	115	$5,175.00	I-024
41	727904	Minor Concrete (Ditch Lining)	35	$8,750.00	35	$10,500.00	35	$10,500.00	I-024
42	740500	Drainage Pumping Equipment	Lump Sum	$12,000.00	Lump Sum	$30,000.00	Lump Sum	$30,000.00	I-024
43	741001	Pumping Plant Electrical Equipment	Lump Sum	$34,000.00	Lump Sum	$30,000.00	Lump Sum	$30,000.00	I-024
44	750001	Miscellaneous Iron and Steel	822	$2,055.00	822	$1,644.00	822	$1,644.00	I-024
45	840561	100-mm Thermoplastic Traffic Stripe	250	$250.00	250	$250.00	287	$287.00	D-030
46	840563	200-mm Thermoplastic Traffic Stripe	1980	$5,940.00	1980	$7,920.00	2666	$10,664.00	D-030
47	840656	Paint Traffic Stripe (2-coat)	51000	$38,250.00	51000	$17,850.00	52333	$18,316.55	D-030
48	850101	Pavement Marker (Non-Reflective)	7960	$15,920.00	7960	$11,940.00	9764	$14,646.00	D-030
49	850102	Pavement Marker (Reflective)	3110	$6,220.00	3110	$12,440.00	3849	$15,396.00	D-030
50	14905	Electrical Service	Lump Sum	$82,000.00	Lump Sum	$90,000.00	Lump Sum	$90,000.00	I-075
51	860810	Inductive Loop Detector	Lump Sum	$24,000.00	Lump Sum	$25,000.00	Lump Sum	$25,000.00	I-075
52	999990	Mobilization	Lump Sum	$1,425,000.00	Lump Sum	$2,136,266.00	Lump Sum	$2,136,266.00	I-080
		Totals		*$14,255,700.00*		*$15,998,000.00*		*$15,474,214.03*	

Table A3 Contract Change Orders (CCO)

CCO No.	Item Description	Amount	Cost Code
1	Traffic Control Flagging and Signs	235,909.49	I-011
2	Training	1,058.00	I-080
3	Maintain Electrical Systems	13,868.04	I-074
4	Additional Planting, Irrigations, Removal of Shrubs	3,268.46	I-044
5	Partnering	3,557.07	I-080
7	Modify Saw Cut Length of Retrofit Dowel	-	D-010
8	Remove and Replace Unsuitable Base	16,277.83	D-010
9	Place 0.3 M Class 2 Aggregate	1,267.10	D-010
10	Provide Samples and Beams for FSHCC	83,150.37	D-010
11	Establish Dispute Review Board	3,900.00	I-080
12	Remove and Dispose of Buried Man-Made Object	16,901.28	D-020
13	Mod Order of Work	-	
14	Construct Thick Slab on Grade	8,989.86	D-010
16	Incentive Payment for 55-hour Weekend	489,840.00	I-011
17	Advertisement in Local Newspapers	15,081.83	I-011
19	Interest Payments	-	I-080
20	Install Retrofit Dowels in Transverse Crack	22,500.00	D-010
21	Item Adjustments	(6,031.79)	I-080
22	Resolution of NDPC 3	44,183.24	I-080
23	Resolution of NDPC 19 and 23	90,725.22	I-080
24	Resolution of NDPC 39	147,026.83	I-080
25	Resolution of NDPC 3, 5, 6, 15, 17, 20, 22, 24, 25, 28	169,834.31	I-080
26	Resolution of NCPC 34	34,526.30	I-080
27	Deleting Item 19	(13,000.00)	I-080
28	Resolution of PFE Entitlement	44,379.96	I-080
29	Full Compensation of Claim	53,098.58	I-080
30	Resolution of PFE Claim	35,669.80	I-080
31	Arbitration of Settlement	26,000.00	I-080
	Total	*$1,541,981.78*	

Table A4 State Furnished Materials

Item Description	Amount
COZEEP Contract	$100,000
Traffic Management Plan	$50,000
Tow Truck Service Patrol	$100,000
Helicopter Surveillance	$10,000
Resident Engineer's Office	$24,000
Laminated Wood Box Post	$3,000
Ground Water Testing	$30,000
Total	*$317,000*

Table A5 Supplemental Work

Item Description	Quantity	Amount
Incentive Payment	LS	$500,000
Federal Trainee Program	LS	$12,000
Maintain Traffic	LS	$150,000
Maintain Detour	LS	$50,000
Additional Road Work (Replace Pavement, Permeable Base, Retrofit Dowels, Tie Bars, Concrete Spall Repair, Grind Concrete)	LS	$350,000
Repair Existing Irrigation System	LS	$10,000
Minor Landscape Modifications	LS	$1,000
Modify Existing Irrigation System	LS	$5,000
Prune Existing Plants	LS	$10,000
Detour Signing	LS	$30,000
2nd 55-Hour Closure	LS	$200,000
Partnering	LS	$7,000
Maintain Existing Electrical System	LS	$20,000
Additional Planting	LS	$1,000
Disputes Review Board	LS	$5,400
Temporary Drainage Pumping Equipment	LS	$14,000
Contingencies	LS	$796,900
Total		***$2,162,300***