Appendix F

COST ESTIMATES

Colorado Springs Airport

Prepared by:

Jacobs Engineering Inc.

Date:

July 2013

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COLORADO SPRINGS AIRPORT

Master Plan Update

Recommended Projects

SUMMARY OF TOTAL PROJECT COSTS

Calculated by: Kevin Davis
Date: **7/8/2013**

Calculated by: John Cessar
Date: **7/9/2013**

Project No.	Description		Cost
PHASE 1			
Contingencies: (Construction @ 15%) (Design @ 10%) (Mobilization @ 4%)			
1	Shift Runway 17R Threshold to the South by 1,790 Feet; construct Taxiways A1, A2, C1 and C2	$	8,491,000
2	Extend Runway 35L to the South by 2,500 Feet; construct Taxiways A8, A9, C7 and C8	$	43,752,000
3	Reduce Length of Runway 13-31 by 400 Feet; construct Taxiways B1 and B2; displace Runway 13 threshold	$	3,567,000
4	Remove Existing High-Speed Exit Taxiway C-1	$	775,000
5	Remove Existing High-Speed Exit Taxiway C-3	$	1,104,000
15	Provide Runway 35R with an Instrument Landing System	$	3,250,000
16	Pave Perimeter Vehicle Service Roads	$	6,142,000
	Subtotal - Phase 1	**$**	**67,081,000**
PHASE 2			
Contingencies: (Construction @ 20%) (Design @ 12%) (Mobilization @ 4%)			
6	Construct Proposed High-Speed Exit Taxiway C4	$	6,651,000
7	Remove Existing Exit Taxiways A6, C6 & C7	$	599,000
8	Construct Proposed High-Speed Taxiway C6	$	6,086,000
	Subtotal - Phase 2	**$**	**13,336,000**
PHASE 3			
Contingencies: (Construction @ 20%) (Design @ 12%) (Mobilization @ 4%)			
10	Realign Taxiway B	$	2,349,000
11	Construct Proposed Bypass Taxiway E2	$	2,168,000
12	Remove Existing Taxiway E2	$	762,000
13	Remove Existing High-Speed Exit Taxiway E4	$	2,188,000
14	Construct Proposed High-Speed Exit Taxiway E4	$	5,107,000
	Subtotal - Phase 3	**$**	**12,574,000**
PHASE 4			
Contingencies: (Construction @ 20%) (Design @ 12%) (Mobilization @ 4%)			
9	Remove and Realign Taxiway A	$	21,301,000
	Subtotal - Phase 4	**$**	**21,301,000**
GRAND TOTAL	**All Recommended Development Projects**	**$**	**114,292,000**

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COLORADO SPRINGS AIRPORT
COLORADO SPRINGS, COLORADO
Master Plan Update
Basic (Unadjusted) Unit Prices
Taken from Bid Table for Recent Projects at Airport

Item No.	Description	Units	Quantity	Unit Price Listed Below Used as Basis For Estimates	Total Cost	Avg. Unit Prices from Bid Tabs "Unadjusted"	BID TAB SUMMARIES Low Bid T/W G&M COS-110 Unit Cost	Low Bid T/W H&M COS-111 Unit Cost	2nd Low Bid R/W 12-30 2010 Unit Cost	Low Bid T/W E G H (III) 2011 Unit Cost	Low Bid T/W E G H (IV) 2013 Unit Cost
P-100a	Mobilization (5%)	LS	1	VARIES	VARIES		$ 230,000.00	$ 241,000.00	$ 50,000.00	$ 580,000.00	$ 500,000.00
P-107	Bituminous Pavement Removal (Full Depth-Taxiway 3-Inch)	SY	1	$5.00	$ 4.91	$ 4.91			$ 6.81		$ 3.00
P-107	Bituminous Pavement Removal (Full Depth-Taxiway 8-Inch)	SY	1	$7.50	$ 7.41	$ 7.41			$ 6.81		$ 8.00
P-140	Asphalt Pavement Removal - Partial (0 to 3.5-Inch Nominal)	SY	1	$3.00	$ 50.77	$ 50.77		$100.00	$1.53		
P-140	Asphalt Pavement Removal - Stair Step	SY	1	$6.60	$ 6.55	$ 6.55			$6.55		
P-140	Asphalt Pavement Removal - Full Depth (Complete)	SY	1	$8.00	$ 8.00	$ 8.00			$8.00		
P-140	Concrete Removal - 14 Inch (Complete)	SY	1	$9.40	$ 9.38	$ 9.38	$6.75	$12.00			
P-140	Concrete Removal - 6 Inch (Complete) [$1.00 for each inch of thickness]	SY	1	$7.00	$ 6.83	$ 6.83	$4.30	$6.00		$4.00	$13.00
P-140	CTB Removal (6-Inch)	SY	1	$3.30	$ 3.28	$ 3.28	$2.56	$4.00			
P-152a	Unclassified Excavation	CY	1	$7.50	$ 7.10	$ 7.10	$8.50	$7.00	$7.00	$8.00	$5.00
P-152b	Subgrade Preparation 12-Inches	SY	1	$4.20	$ 4.17	$ 4.17	$5.00	$5.00	$2.84	$4.00	$4.00
P-154a	Subbase Course	CY	1	$55.00	$ 50.00	$ 50.00	$50.00	$50.00			
P-156a	Silt Fence	LF	1	$2.00	$ 2.00	$ 2.00	$1.50	$3.00		$1.50	
P-209a	Crushed Aggregate Base Course	CY	1	$51.00	$ 50.67	$ 50.67	$50.00	$50.00		$52.00	
P-401a	Bituminous Surface Course	TON	1	$100.00	$ 98.10	$ 98.10	$149.00	$130.00	$60.50	$76.00	$75.00
P-401b	Bituminous Paving Base Course	TON	1	$75.00	$ 74.88	$ 74.88	$89.50	$97.00		$62.00	$51.00
P-401c	Bituminous Binder - Surface Course	TON	1	$920.00	$ 919.00	$ 919.00	$1,200.00	$1,290.00	$505.00	$900.00	$700.00
P-401d	Bituminous Binder - Base Course	TON	1.0	$700.00	$ 691.00	$ 691.00	$754.00	$830.00		$680.00	$500.00
P-501	PCC Pavement, 16-Inch	SY	1	$82.00	$ 81.17	$ 81.17	$84.00	$87.50			$72.00
P-501	PCC Pavement, 16-Inch (Reinforced)	SY	1	$100.00	$ 98.67	$ 98.67	$84.00	$140.00			$72.00
P-603a	Bituminous Tack Coat	GAL	1	$5.00	$ 4.70	$ 4.70	$7.00	$6.00	$3.32	$4.00	$3.20
P-620a	Temporary Runway and Taxiway Painting	SF	1	$1.50	$ 1.34	$ 1.34	$0.70	$1.00	$0.37	$3.00	$1.65
P-620b	Permanent Runway and Taxiway Painting	SF	1	$1.25	$ 1.20	$ 1.20	$0.70	$1.00	$0.55	$2.10	$1.65
P-620c	Obliterate Runway and Taxiway Painting	SF	1	$2.50	$ 2.35	$ 2.35	$3.00	$3.00	$2.11	$1.15	$2.50
P-650a	Runway Sawcut Grooving	SY	1	$5.00	$ 4.50	$ 4.50				$4.50	$4.50
D-705a	Install 6-Inch Non-Perforated Polyethylene Pipe Underdrain	LF	1	$26.50	$ 26.17	$ 26.17	$27.50	$27.00			$24.00
D-705b	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	1	$30.00	$ 29.38	$ 29.38	$32.50	$31.00		$28.00	$26.00
D-705c	Install 6-Inch Non-Perforated PE Pipe Underdrain (Concrete Encased)	LF	1	$49.00	$ 48.50	$ 48.50	$33.50	$32.00		$80.00	
D-750a	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	1	$605.00	$ 604.67	$ 604.67	$664.00	$650.00			$500.00
D-750b	Install Underdrain Inspection Pit	EA	1	$3,800.00	$ 3,792.50	$ 3,792.50	$4,000.00	$4,170.00		$3,600.00	$3,400.00
D-750c	Install Undedrain Outfall	EA	1	$1,200.00	$ 1,000.00	$ 1,000.00	$1,000.00				
D-750d	Install 6-Inch Underdrain Cleanout	EA	1	$700.00	$ 698.75	$ 698.75	$675.00	$670.00		$750.00	$700.00
F-162b	Driveway Gates	EA	1	$3,500.00	$ 3,500.00	$ 3,500.00					$3,500.00
T-901a	Seeding with Hydromulch	AC	1	$2,500.00	$ 2,425.12	$ 2,425.12	$3,100.00	$2,540.00	$1,685.60	$2,500.00	$2,300.00
T-901c	Straw Bales	EA	1	$25.00	$ 23.00	$ 23.00	$20.00	$26.00			
T-905a	Topsoiling (Stripping and Replacement)	AC	1	$2,500.00	$ 2,473.67	$ 2,473.67			$2,921.00	$2,250.00	$2,250.00
T-905a	Topsoiling	SY	1	$1.25	$ 1.00	$ 1.00	$1.00	$1.00			
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	VARIES	VARIES	$ 16,436.00	$20,800.00	$9,380.00	$20,000.00	$22,000.00	$10,000.00
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	1	$4.20	$ 4.16	$ 4.16	$6.00	$7.00	$3.69	$2.15	$1.95
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	1	$3.00	$ 2.89	$ 2.89			$3.42	$2.75	$2.50
L-108f	Field Circuit Lightning Arrestor	LF	1	$2,000.00	$ 1,976.67	$ 1,976.67	$2,500.00	$2,930.00		$500.00	
L-110	Single-Way Duct, 2" Sch. 40 PVC Concrete Encased	LF	1	$22.00	$ 21.17	$ 21.17	$29.50	$27.50	$16.86	$13.50	$18.50
L-110	Single-Way Duct, 2" Sch. 40 PVC Direct Earth Bury	LF	1	$10.50	$ 10.36	$ 10.36	$20.00		$6.44	$8.00	$7.00
L-110	2-Way Duct, 2" Sch. 40 PVC Concrete Encased	LF	1	$22.30	$ 22.29	$ 22.29	$20.00		$16.86		$30.00
L-110	Multi-Way Duct, 2 X 2" Sch 40 PVC Concrete Encased	LF	1	$17.00	$ 16.86	$ 16.86			$16.86		
L-110	Multi-Way Duct, 3 X 2" Sch 40 PVC Concrete Encased	LF	1	$60.00	$ 58.50	$ 58.50		$98.00	$19.00		
L-110	4 w 3" Schedule 40 PVC Concrete Encased Duct	LF	1	$52.00	$ 51.67	$ 51.67	$78.00			$31.00	$46.00
L-110i	4 w 4" Schedule 40 PVC Direct Earth Duct Burial	LF	1	$45.00	$ 44.50	$ 44.50	$44.50				
L-110j	12 w 3" Sch 40 PVC Concrete Encased Duct	LF	1	$65.00	$ 65.00	$ 65.00	$70.00			$60.00	
L-115	Elec. J-Box L-867B In-Pavement	EA	1	$840.00	$ 831.50	$ 831.50			$738.00		$925.00
L-120	Install New Runway Edge Light (Bulb Only)	EA	1	$700.00	$ 685.00	$ 685.00			$685.00		
L-125c	L-850C Inpavement Runway Edge Light	EA	1	$2,300.00	$ 2,300.00	$ 2,300.00	$2,000.00				$2,600.00
L-125d	L-850C Inpavement Runway Edge Light - Yellow / Clear	EA	1	$2,000.00	$ 2,000.00	$ 2,000.00	$2,000.00				
L-125e	L-852T Taxiway Edge Light	EA	1	$1,950.00	$ 1,930.00	$ 1,930.00		$1,930.00	$1,930.00		
L-125g	Reinstall Existing Guidance Sign on New Base	EA	1	$4,700.00	$ 4,628.00	$ 4,628.00	$7,500.00		$1,756.00		

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Item No.	Description	Units	Quantity	Unit Price Listed Below Used as Basis For Estimates	Total Cost	Avg. Unit Prices from Bid Tabs "Unadjusted"	BID TAB SUMMARIES Low Bid T/W G&M COS-110 Unit Cost	Low Bid T/W H&M COS-111 Unit Cost	2nd Low Bid R/W 12-30 2010 Unit Cost	Low Bid T/W E G H (III) 2011 Unit Cost	Low Bid T/W E G H (IV) 2013 Unit Cost
L-125h	Install New Guidance Sign Double Face - 3 Module	EA	1	$8,700.00	$ 8,643.33	$ 8,643.33	$11,200.00	$8,230.00		$6,500.00	
L-125h	Install New Guidance Sign Double Face - 4 Module	EA	1	$6,350.00	$ 6,350.00	$ 6,350.00				$6,500.00	$6,200.00
L-125h	Relocate L-858 Sign, 3 Module	EA	1	$6,850.00	$ 6,850.00	$ 6,850.00	$8,500.00				$5,200.00
L-125i	L-861T Taxiway Edge Light in Shoulder Pavement	EA	1	$1,600.00	$ 1,564.75	$ 1,564.75	$1,700.00		$1,159.00	$1,400.00	$2,000.00
L-125j	L-862 Runway Edge Light	EA	1	$1,500.00	$ 1,500.00	$ 1,500.00					$1,500.00
L-125k	L-862 Runway Edge Light - Yellow / Clear	EA	1	$1,500.00	$ 1,500.00	$ 1,500.00					$1,500.00
L-130	New In-Pavement Surface Condition Sensor w/ 150' Type IIA Cable, Complete	EA	1	$15,000.00	$ 15,000.00	$ 15,000.00				$ 15,000.00	
	New RDR Sign	EA	1	$7,500.00							
	New Sign Panel	EA	1	$500.00							
	Base Can	EA	1	$400.00							
	Handhole	EA	1	$250.00							
	REIL Master & Slave Units	EA	1	$1,500.00							
	Install Inlet	EA	1	$4,000.00							

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Calculated by: Kevin Davis
Date: **7/8/2013**

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COLORADO SPRINGS, COLORADO
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Recommended Projects
SUMMARY OF PROBABLE CONSTRUCTION COSTS

Checked by: John Cessar
Date: **7/9/2013**

Project 1: Shift Runway 17R Threshold to the South by 1,790 Feet

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization (4% x Total Cost of All Other Items)	LS	1	$ 262,000.00	$ 262,000.00
P-140a	Asphalt Pavement Removal (Partial)	SY	1,000	$3.00	$ 3,000.00
P-140b	Asphalt Pavement Removal (Complete)	SY	98,000	$8.00	$ 784,000.00
P-152a	Unclassified Excavation	CY	18,000	$7.50	$ 135,000.00
P-152b	Subgrade Preparation 12-Inches	SY	42,000	$4.20	$ 176,400.00
P-154a	Subbase Course (For Shoulders Only)	CY	5,000	$55.00	$ 275,000.00
P-156a	Silt Fence	LF	2,500	$2.00	$ 5,000.00
P-209a	Crushed Aggregate Base Course (Shoulders)	CY	3,700	$51.00	$ 188,700.00
P-209a	Crushed Aggregate Base Course (Structural Section)	CY	5,700	$51.00	$ 290,700.00
P-310a	Geotextile Fabric	SY	42,000	$2.00	$ 84,000.00
P-401a	Bituminous Surface Course (Taxiways)	TON	11,200	$100.00	$ 1,120,000.00
P-401b	Bituminous Paving Base Course (Taxiways)	TON	11,200	$75.00	$ 840,000.00
P-401c	Bituminous Binder - Surface Course (T/W s)	TON	730	$920.00	$ 671,600.00
P-401d	Bituminous Binder - Base Course (T/W s)	TON	730	$700.00	$ 511,000.00
P-403a	Bituminous Surface Course (Shoulders)	TON	7,100	$75.00	$ 532,500.00
P-403c	Bituminous Binder - Surface Course (Shoulders)	TON	470	$920.00	$ 432,400.00
P-603a	Bituminous Tack Coat	GAL	12,600	$5.00	$ 63,000.00
P-620a	Temporary Runway and Taxiway Painting	SF	25,000	$1.50	$ 37,500.00
P-620b	Permanent Runway and Taxiway Painting	SF	25,000	$1.25	$ 31,250.00
P-620c	Obliterate Runway and Taxiway Painting	SF	15,000	$2.50	$ 37,500.00
D-701l	Install 24-Inch CMP	LF	300	$55.00	$ 16,500.00
D-701m	Install 24-Inch CMP F.E.S.	EA	8	$250.00	$ 2,000.00
T-901a	Seeding with Hydromulch	AC	10.00	$2,500.00	$ 25,000.00
T-901c	Straw Bales	EA	20	$25.00	$ 500.00
T-905a	Topsoiling	SY	41,904	$1.25	$ 52,379.86
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$15,000.00	$ 15,000.00
L-108a	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	220	$4.20	$ 924.00
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	4,000	$4.20	$ 16,800.00
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	4,220	$3.00	$ 12,660.00
L-108f	Field Circuit Lightning Arrestor	LF	1	$2,000.00	$ 2,000.00

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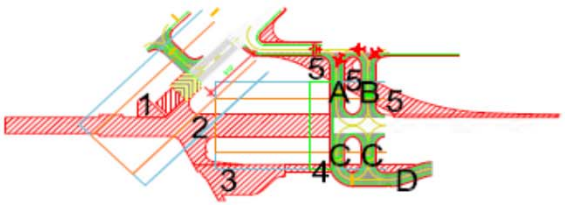
Project 1: Shift Runway 17R Threshold to the South by 1,790 Feet

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
L-110a	Single-Way Duct, 2" Sch. 40 PVC Concrete Encased	LF	220	$22.00	$ 4,840.00
L-110b	Single-Way Duct, 2" Sch. 40 PVC Direct Earth Bury	LF	4,000	$10.50	$ 42,000.00
L-125d	L-850C Inpavement Runway Edge Light - Yellow / Clear	EA	4	$2,300.00	$ 9,200.00
L-125e	L-852T Taxiway Edge Light in Shoulder Pavement	EA	21	$1,950.00	$ 40,950.00
L-125g	Relocate L-858B Runway Distance Remaining Sign	EA	4	$7,500.00	$ 30,000.00
L-125h	Relocate L-858 Sign Panels	EA	12	$500.00	$ 6,000.00
L-125k	L-862 Runway Edge Light - Yellow / Clear	EA	8	$1,500.00	$ 12,000.00
L-125l	L-862E Runway Threshold Light	EA	8	$1,500.00	$ 12,000.00
L-125m	L-867B Base Can	EA	10	$400.00	$ 4,000.00
L-125s	Handhole, Earth Bury	EA	10	$250.00	$ 2,500.00
L-125t	Demolish Existing Handhole	EA	10	$200.00	$ 2,000.00
L-125w	Install L-849 REIL Master and Slave Units	EA	2	$1,500.00	$ 3,000.00
				Raw Construction Cost:	$ 6,792,803.86
				Construction Contingency (15% of Raw Construction Cost):	$ 1,018,921
				Design Cost (10% of Raw Construction Cost):	$ 679,280
				Total Project Cost:	$ 8,491,005

1. Shift the Runway 17R threshold to the south by 1,790 feet. Runway 17R-35L is shown on Figure 5-1 shifted to the south by approximately 1,790 feet. This project provides separation from Runway 13-31, eliminating the runway intersection and reducing the risk of wrong runway departures. The project involves pavement removal, earthwork, and re-marking of the runway. This project would be done in concert with projects 2 and 3 *and Project 4 . In addition, this project includes the installation of new taxiways A1, A2, C1 and C2.*

Project #1



NEW PAVEMENT AREAS

REMOVAL AREAS

Area 1 = 28,231 SF
Area 2 = 577,525 SF
Area 3 = 165,000 SF
Area 4 = 93,200 SF
~~Area 5 = 310,000 SF~~ (Part of Project #4)
Tota Area = 863,956 SF

	STRUCTURAL AND SHOULDER PAVEMENTS	STRUCTURAL PAVEMENT ONLY	SHOULDER PAVEMENT ONLY
Area A = 83,500 SF		46,940 SF	36,560 SF
Area B = 83,500 SF		54,460 SF	29,040 SF
Area C = 201,200 SF		164,610 SF	36,590 SF
Area C' = 41,565 SF		63,800 SF	22,235 SF
Area D = 50,500 SF		28,410 SF	22,090 SF
Totals = 377,135 SF		230,620 SF	146,515 SF

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COLORADO SPRINGS AIRPORT

COLORADO SPRINGS, COLORADO

Master Plan Update

Recommended Projects

SUMMARY OF PROBABLE CONSTRUCTION COSTS

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Project 2: **Extend Runway 35L to the South by 2,500 Feet**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 1,370,000.00	$ 1,370,000.00
P-140a	Asphalt Pavement Removal (Partial) [Includes small portion of T/W and Exist. VSR]	SY	6,000	$3.00	$ 18,000.00
P-140b	Asphalt Pavement Removal (Complete)	SY	6,900	$3.50	$ 24,150.00
P-152a	Unclassified Excavation	CY	1,754,100	$4.00	$ 7,016,400.00
P-152	Unclassifed Excavation - Haul to On-Airport Waste Site (E. of M. Proby Entrance)	CY	371,000	$2.00	$ 742,000.00
P-152	Unclassifed Excavation - Haul to Future Development Area South of Main Entrance)	CY	1,207,690	$2.50	$ 3,019,225.00
P-152	Unclassifed Excavation Debris - Haul to Landfill	Ton	175,400	$15.00	$ 2,631,006.88
P-152b	Subgrade Preparation - 24 Inch (R/W & T/W STRUCTURAL SECTIONS)	SY	101,600	$6.30	$ 640,080.00
P-152c	Subgrade Preparation - 12 Inch (R/W & T/W SHOULDERS)	SY	49,200	$4.20	$ 206,640.00
P-154a	Subbase Course (R/W SHLDRS @ 10")	CY	4,100	$55.00	$ 225,500.00
P-154a	Subbase Course (T/W SHLDR @ 12")	CY	11,600	$55.00	$ 638,000.00
P-156a	Silt Fence	LF	2,500	$2.00	$ 5,000.00
P-209a	Crushed Aggregate Base Course - 8 Inches (R/W STRUCTURAL SECTION)	CY	9,300	$51.00	$ 474,300.00
P-209b	Crushed Aggregate Base Course - 6 Inches (R/W AND T/W SHOULDERS)	CY	8,200	$51.00	$ 418,200.00
P-300a	Aggregate Base Course Class 6 [8" THICK]	CY	3,700	$40.00	$ 148,000.00
P-400a	Asphalt Concrete Pavement (Grading C, 50 Blow Marshall) [6" THICK]	TON	5,400	$70.00	$ 378,000.00
P-401a	Bituminous Surface Course - 13 Inch (T/W STRUCTURAL SECTION)	TON	42,400	$100.00	$ 4,240,000.00
P-401aa	Bituminous Surface Course - 8-INCH (R/W STRUCTURAL SECTION)	TON	18,200	$100.00	$ 1,820,000.00
P-401aaa	Bituminous Surface Course - 6-INCH (R/W SHOULDERS)	TON	4,800	$100.00	$ 480,000.00
P-401b	Bituminous Base Course - 6 INCH (T/W STRUCTURAL SECTION)	TON	26,100	$75.00	$ 1,957,500.00
P-401b	Bituminous Base Course - 8 INCH (R/W STRUCTURAL SECTION)	TON	18,200	$75.00	$ 1,365,000.00
P-401c	Bituminous Binder - Surface Course	TON	4,300	$920.00	$ 3,956,000.00
P-401d	Bituminous Binder - Base Course	TON	2,900	$700.00	$ 2,030,000.00
P-603a	Bitumnious Tack Coat	GAL	40,000	$5.00	$ 200,000.00
P-620a	Temporary Runway and Taxiway Pavement Marking	SF	40,000	$1.50	$ 60,000.00
P-620b	Permanent Runway and Taxiway Pavement Marking	SF	35,000	$1.25	$ 43,750.00
P-620c	Pavement Marking Obliteration	SF	158,000	$2.50	$ 395,000.00
D-701l	Install 24-Inch CMP	LF	150	$35.00	$ 5,250.00
D-701m	Install 24-Inch CMP FES	EA	2	$150.00	$ 300.00
D-705a	Install 6-Inch Non-Perforated Polyethylene Pipe Underdrain	LF	600	$26.50	$ 15,900.00
D-705b	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	17,000	$30.00	$ 510,000.00
D-750d	Install 6-Inch Underdrain Cleanout	EA	20	$700.00	$ 14,000.00
T-901a	Seeding with Hydromulch	AC	10.00	$2,500.00	$ 25,000.00
T-901c	Straw Bales	EA	20	$25.00	$ 500.00
T-905a	Topsoiling	SY	49,173	$1.25	$ 61,465.97
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$20,000.00	$ 20,000.00
L-108a	1/C L-824 Type C, Unshielded #6 AWG 5kV Cable (Runway Circuits)	LF	6,500	$5.00	$ 32,500.00
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	6,500	$4.20	$ 27,300.00

JACOBS

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Date: 7/9/2013

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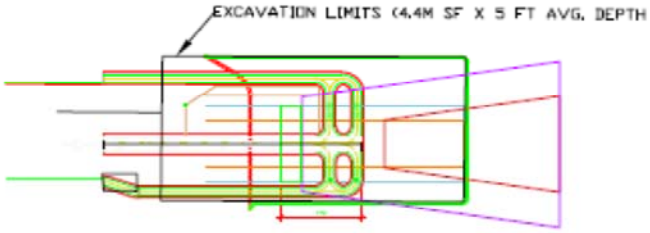
Project 2: **Extend Runway 35L to the South by 2,500 Feet**

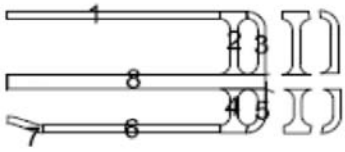
Item No.	Description	Units	Quantity	Unit Cost	Total Cost
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	6,500	$3.00	$ 19,500.00
L-108f	Field Circuit Lightning Arrestor	LF	1	$2,000.00	$ 2,000.00
L-110a	Single-Way Duct, 2" Sch. 40 PVC Concrete Encased	LF	6,500	$22.00	$ 143,000.00
L-110b	Single-Way Duct, 2" Sch. 40 PVC Direct Earth Bury	LF	250	$10.50	$ 2,625.00
L-125	L-850C Inpavement Runway Edge Light - Yellow / Clear	EA	4	$2,300.00	$ 9,200.00
L-125	L-852T Taxiway Edge Light	EA	1	$1,950.00	$ 1,950.00
L-125	L-858B Runway Distance Remaining Sign	EA	1	$7,500.00	$ 7,500.00
L-125	Relocate L-858B Runway Distance Remaining Sign	EA	4	$7,500.00	$ 30,000.00
L-125	Relocate L-858 Sign Panels	EA	12	$200.00	$ 2,400.00
L-125	L-861T Taxiway Edge Light	EA	60	$1,600.00	$ 96,000.00
L-125	L-862 Runway Edge Light - Yellow / Clear	EA	27	$1,500.00	$ 40,500.00
L-125	L-862E Runway Threshold Light	EA	8	$1,500.00	$ 12,000.00
L-125	L-867B Base Can	EA	35	$1,000.00	$ 35,000.00
L-125	Handhole, Earth Bury	EA	10	$250.00	$ 2,500.00
L-125	Demolish Existing Handhole	EA	10	$150.00	$ 1,500.00
L-125	Install L-849 REIL Master and Slave Units	EA	1	$1,500.00	$ 1,500.00
L-1000	**RECONSTRUCT RUNWAY 35L APPROACH LIGHTING SYSTEM**	**LS**	**1**	**$750,000.00**	**$ 750,000.00**
			Raw Construction Cost:		$ 35,001,142.86
	Construction Contingency (15% of Raw Construction Cost):				$ 5,250,171
	Design Cost (10% of Raw Construction Cost):				$ 3,500,114
			Total Project Cost:		$ 43,751,428.57

2. Extend Runway 35L to the south by 2,500 feet. This project would involve extension of Runway 35L to south approximately 2,500 feet. The net increase in departure length for Runway 17R-35L is 710 feet. The net increase in arrival length for Runway 17R is 710 feet, and the net decrease for Runway 35L is 65 feet. The Runway 35L threshold is displaced by approximately 775 feet to provide a Runway Protection Zone (RPZ) clear of Milton E. Proby Parkway. The project involves construction of new pavement, significant earthwork, re-marking of the runway, and relocation of the approach lighting system for Runway 35L arrivals. This project would be done in concert with projects 1 and 3 *and project 4 . Repaving of Vehicle Service Road covered under project 16.*

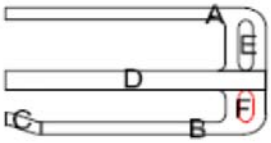
Project #2
Extend R/W 35L



STRUCTURAL PAVEMENT LIMITS



PAVEMENT LIMITS INCLUDE PAVED 25' SHOULDERS



ALL PAVEMENT SURFACE ASSUMED TO BE BITUMINOUS ASPHALT

STRUCTURAL PAVEMENT AREA ONLY
TAXIWAYS
Area 1 = 154,720 SF
Area 2 = 73,900 SF
Area 3 = 55,000 SF
Area 4 = 58,950 SF
Area 5 = 40,255 SF
Area 6 = 128,800 SF
Area 7 = 27,120 SF
T/W TOTAL = 538,745 SF
R/W Area 8 = 375,000 SF

OVERALL PAVEMENT AREA STRUCTURAL. AND SHOULDERS
TAXIWAYS
Area A = 519,500 SF
Area B = 398,200 SF
Area C = 45,200 SF
Area E = - 69,900 SF
Area F = - 41,700 SF
T/W TOTAL = 851,300 SF
R/W Area D = 505,000 SF

ESTIMATE OF PROBABLE CONSTRUCTION COSTS

JACOBS

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Project #3: Reduce Length of Runway 13-31 by 400 Feet

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization (5%)	LS	1	$ 109,000.00	$ 109,000.00
P-140	Asphalt Pavement Removal - Partial (0 to 3.5-Inch Nominal)	SY	3,400	$3.00	$ 10,200.00
P-140	Asphalt Pavement Removal - Full Depth (16 Inch)	SY	12,700	$12.00	$ 152,400.00
P-401a	Bituminous Surface Course (Overlay of 4 inches in Blas Pad Area)	TON	1,000	$100.00	$ 100,000.00
P-401c	Bituminous Binder - Surface Course	TON	65	$920.00	$ 59,800.00
TAXIWAY BITUMINOUS PAVEMENT SECTION (Total Area = 16,670 SY; Structural Area = 11,780 SY)					
P-152a	Unclassified Excavation	CY	11,000	$7.50	$ 82,500.00
P-152b	Subgrade Preparation 12-Inches	SY	16,100	$4.20	$ 67,620.00
P-154a	Subbase Course (For Shoulders Only)	CY	3,000	$55.00	$ 165,000.00
P-156a	Silt Fence	LF	2,500	$2.00	$ 5,000.00
P-209a	Crushed Aggregate Base Course (Shoulders)	CY	1,800	$51.00	$ 91,800.00
P-209a	Crushed Aggregate Base Course (Structural Section)	CY	1,900	$51.00	$ 96,900.00
P-310a	Geotextile Fabric	SY	16,100	$2.00	$ 32,200.00
P-401a	Bituminous Surface Course (Taxiways)	TON	3,700	$100.00	$ 370,000.00
P-401b	Bituminous Paving Base Course (Taxiways)	TON	3,700	$75.00	$ 277,500.00
P-401c	Bituminous Binder - Surface Course (T/W s)	TON	250	$920.00	$ 230,000.00
P-401d	Bituminous Binder - Base Course (T/W s)	TON	250	$700.00	$ 175,000.00
P-403a	Bituminous Surface Course (Shoulders)	TON	3,400	$100.00	$ 340,000.00
P-403c	Bituminous Binder - Surface Course (Shoulders)	TON	230	$920.00	$ 211,600.00
P-603a	Bituminous Tack Coat	GAL	1,170	$5.00	$ 5,850.00
P-620a	Temporary Runway and Taxiway Painting	SF	26,000	$1.50	$ 39,000.00
P-620b	Permanent Runway and Taxiway Painting	SF	26,000	$1.25	$ 32,500.00
P-620c	Obliterate Runway and Taxiway Painting	SF	13,000	$2.35	$ 30,550.00
T-901a	Seeding with Hydromulch	AC	2.61	$2,500.00	$ 6,525.48
T-905a	Topsoiling	SY	12,633	$1.50	$ 18,950.00
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$10,000.00	$ 10,000.00
L-108a	1/C L-824 Type B, Unshielded #6 AWG 5kV Cable (Runway Circuits)	LF	500	$5.00	$ 2,500.00
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	500	$4.20	$ 2,100.00
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	500	$3.25	$ 1,625.00
L-108c	Copper Counterpoise Wire w/ Grounding Rods	LF	500	$3.00	$ 1,500.00
L-108f	Field Circuit Lightning Arrestor	LF	1	$1,000.00	$ 1,000.00
L-110	Single-Way Duct, 2" Sch. 40 PVC Concrete Encased	LF	500	$22.00	$ 11,000.00
L-115	Elec. J-Box L-867B In-Pavement	EA	6	$840.00	$ 5,040.00

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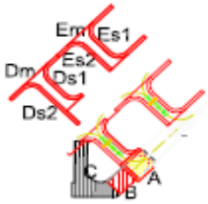
Project #3: Reduce Length of Runway 13-31 by 400 Feet

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
L-120	Install New Runway Edge Light	EA	12	$1,950.00	$ 23,400.00
L-125d	L-850C Inpavement Runway Edge Light - Yellow / Clear	EA	4	$2,000.00	$ 8,000.00
L-125g	Remove and Relocate L-858B Runway Distance Remaining Sign Panels	EA	8	$200.00	$ 1,600.00
L-125h	Relocate L-858 Sign, 3 Module	EA	2	$3,000.00	$ 6,000.00
L-125k	L-862 Runway Edge Light - Yellow / Clear	EA	6	$1,950.00	$ 11,700.00
L-125l	L-862E Runway Threshold Light	EA	8	$1,950.00	$ 15,600.00
L-125s	Handhole, Earth Bury	EA	4	$250.00	$ 1,000.00
L-125w	Install L-849 REIL Master and Slave Units	EA	1	$1,500.00	$ 1,500.00
L-1000	Remove Existing (Old) PAPI and Install New PAPI at New Location	LS	1	$40,000.00	$ 40,000.00
				Raw Construction Cost:	$ 2,853,460.48
				Construction Contingency (15% of Raw Construction Cost):	$ 428,019
				Design Cost (10% of Raw Construction Cost):	$ 285,346
				Total Project Cost:	$ 3,566,825.60

3. Reduce length of Runway 13-31 by 400 feet. Runway 13-31 would be shortened by approximately 400 feet. The shortening of Runway 13-31, like the Runway 17R-35L shift, eliminates the runway intersection. The Runway 13 threshold would be displaced by approximately 510 feet to provide a standard 1,000 foot Runway Safety Area and clear RPZ. This project would be done in concert with projects 1 and 2 and Project 4. *Installation of new Taxiways B1 and B2 included with this project.*

Project #3
Reduce Length of
R/W 13-31 by 400 feet



Striping
Threshold 150'x4'x8EA = 4800 SF
#13 = (60'+90') X 6' = 900 SF
^ arrows = (70'X3') X6 = 1260 SF
Tails = (80'X3') x 2ea = 480 SF
Yellow TW CL. . . . . .
. . (670' + 150') X 0.5' = 410 SF
R/W CL (120' X 3') X 9 = 3240 SF
Dist Mkr (150'X 3') X 2 = 9000 SF
Double (75' X 6') X 4 = 1800 SF
Yellow Chevrons .....
..... (270' X 3') X 4ea = 3240 SF
TOTAL . . . . . = 25,130 SF

A

B

C

PARTIAL PAVEMENT REMOVAL AREA
Area A = 30,150 SF
FULL DEPTH PAVEMENT REMOVAL AREA
Area B = 30,000 SF
Area C = 83,700 SF
Total Area = 113,700 SF

New Surface Course
Area A + Shoulders
AREA = 35,100 SF

	NEW TAXIWAY PAVEMENT (Structural Area)
Dm	Area = 37,770 SF
Em	Area = 38,083 SF
	Area = 75,853 SF
	NEW TAXIWAY PAVEMENT (Shoulder Area)
Ds1	Area = 14,720 SF
Ds2	Area = 18,250 SF
Es1	Area = 22,240 SF
Es2	Area = 13,800 SF
	Area = 69,010 SF

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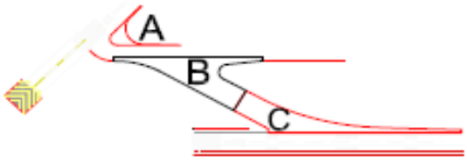
Project #4: Remove Existing High-Speed Exit Taxiway C-1

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization (10%)	LS	1	$ 57,000.00	$ 57,000.00
P-140	Asphalt Pavement Removal - Full Depth (16 Inch)	SY	16,700	$12.00	$ 200,400.00
P-140	Concrete Removal - 15 Inch (Complete)	SY	21,000	$9.40	$ 197,400.00
P-620b	Permanent Runway and Taxiway Painting (Taxiay Edge Striping)	SF	600	$1.50	$ 900.00
P-620c	Obliterate Runway and Taxiway Painting	SF	2,000	$2.50	$ 5,000.00
T-901a	Seeding with Hydromulch	AC	7.59	$2,500.00	$ 18,979.57
T-905a	Topsoiling	SY	37,000	$1.50	$ 55,500.00
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$20,000.00	$ 20,000.00
L-108a	1/C L-824 Type B, Unshielded #6 AWG 5kV Cable (Runway Circuits)	LF	1,200	$5.00	$ 6,000.00
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	1,200	$4.20	$ 5,040.00
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	1,200	$3.00	$ 3,600.00
L-110	Single-Way Duct, 2" Sch. 40 PVC Concrete Encased	LF	1,200	$22.00	$ 26,400.00
L-115	Elec. J-Box L-867B In-Pavement	EA	2	$840.00	$ 1,680.00
L-125i	L-861T Taxiway Edge Light in Shoulder Pavement	EA	6	$1,950.00	$ 11,700.00
L-125h	Install New Guidance Sign Double Face - 3 Module	EA	1	$8,700.00	$ 8,700.00
L-125r	Demolish Existing Base/Light	EA	6	$250.00	$ 1,500.00
				Raw Construction Cost:	$ 619,799.57
				Construction Contingency (15% of Raw Construction Cost):	$ 92,970
				Design Cost (10% of Raw Construction Cost):	$ 61,980
				Total Project Cost:	$ 774,749.46

4. Remove existing high-speed exit Taxiway C-1. This project would be done in concert with project 1. The high-speed exit would no longer be located in the proper placement for Runway 35L arrivals as it is too near the relocated end of the runway. Further, the geometry of the existing taxiway would conflict with the new perpendicular exits at Taxiway C1.

Project #4
Remove Existing High-Speed Exit Taxiway C-1



	FULL DEPTH CONCRETE PAVEMENT REMOVAL
A	Area A = 20,700 SF
B	Area B = 160,000 SF
	SubTotal Area = 180,700 SF
	FULL DEPTH BITUMINOUS PAVEMENT REMOVAL
C	Area C = 150,000 SF

ESTIMATE OF PROBABLE CONSTRUCTION COSTS

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Project #5: Remove Existing High-Speed Exit Taxiway C-3

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization (10%)	LS	1	$ 81,000.00	$ 81,000.00
REMOVE 125000 SF (13,890 SY) of BITUMINOUS PAVEMENT					
P-140	Asphalt Pavement Removal - Full Depth (16 Inch)	SY	14,000	$12.00	$ 168,000.00
REMOVE 100050 SF (7,620 SY) of PCC PAVEMENT [*Because of joints must go to T/W "C" Edge and Rebuild Shoulder with T/W Edge Lights*]					
P-140	Concrete Removal - 15 Inch (Complete)	SY	8,000	$9.40	$ 75,200.00
REPAVE CONCRETE T/W "C" STRUCTURAL SECTION SO NEW SHOULDER CAN BE CONSTRUCTRED (8150 SF)					
P-152b	Subgrade Preparation - 24 Inch (T/W Structural Section)	SY	1,000	$6.30	$ 6,300.00
P-154	Subbase Course - 10" (T/W Shoulders)	CY	300	$55.00	$ 16,500.00
P-209b	C.A.B.C. - 6 Inches (T/W Structural and Shoulder Sections)	CY	200	$51.00	$ 10,200.00
P-501	Portland Cement Concrete Pavement - 16 Inches (T/W Structural Section)	SY	1,000	$82.00	$ 82,000.00
P-403	Bituminous Base Course - 8 Inch (T/W Structural Section)	TON	400	$55.00	$ 22,000.00
P-403	Bituminous Binder - Base Course	TON	26	$550.00	$ 14,300.00
P-501	Portland Cement Concrete Pavement - 16 Inches (T/W Structural Section)	SY	1,000	$82.00	$ 82,000.00
REPAVE SHOULDERS (1200 feet X 25 feet = 30,000 SF/ 9 = 3,333 SY)					
P-152a	Unclassified Excavation	CY	1,200	$10.00	$ 12,000.00
P-152b	Subgrade Preparation - 12 Inch	SY	3,400	$4.20	$ 14,280.00
P-154	Subbase Course - 10"	CY	1,000	$55.00	$ 55,000.00
P-209b	C.A.B.C. - 6 Inches	CY	600	$51.00	$ 30,600.00
P-403	Bituminous Surface Course - 3 Inch (T/W Shoulders)	TON	600	$100.00	$ 60,000.00
P-403	Bituminous Binder - Surface Course	TON	39	$920.00	$ 35,880.00
P-620b	Permanent Runway and Taxiway Painting (Taxiay Edge Striping)	SF	1,200	$1.50	$ 1,800.00
P-620c	Obliterate Runway and Taxiway Painting	SF	500	$2.50	$ 1,250.00
T-901a	Seeding with Hydromulch	AC	4.44	$2,500.00	$ 11,108.24
T-905a	Topsoiling	SY	22,000	$1.50	$ 33,000.00
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$5,000.00	$ 5,000.00
L-108a	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	600	$5.00	$ 3,000.00

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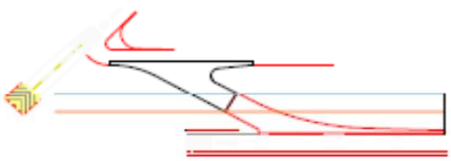
Project #5: Remove Existing High-Speed Exit Taxiway C-3

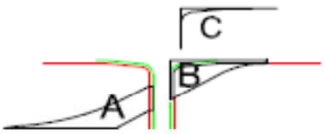
Item No.	Description	Units	Quantity	Unit Cost	Total Cost
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	600	$4.20	$ 2,520.00
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	600	$3.00	$ 1,800.00
L-110	Single-Way Duct, 2" Sch. 40 PVC Concrete Encased	LF	1,200	$22.00	$ 26,400.00
L-115	Elec. J-Box L-867B In-Pavement	EA	2	$840.00	$ 1,680.00
L-125i	L-861T Elevated Taxiway Edge Light in Shoulder Pavement	EA	10	$1,950.00	$ 19,500.00
L-125h	Install New Guidance Sign Double Face - 3 Module	EA	1	$8,700.00	$ 8,700.00
L-125r	Demolish Existing Base/Light	EA	6	$250.00	$ 1,500.00
				Raw Construction Cost:	$ 882,518.24
				Construction Contingency (15% of Raw Construction Cost):	$ 132,378
				Design Cost (10% of Raw Construction Cost):	$ 88,252
				Total Project Cost:	$ 1,103,147.80

5. Remove existing high-speed exit Taxiway C3. The location of this high-speed exit would no longer be properly placed given the shift of the Runway 17R threshold to the south, as it would be 1,500 feet closer to the end of the runway. Moreover, the geometry associated with Taxiway C3 conflicts with the geometry with Taxiway G in the current configuration.

Project #5

Remove Existing High-Speed Exit Taxiway C-3





	STRUCTURAL SECTION PAVEMENT REMOVAL	PCC PAVEMENT AREA	BITUMINOUS PAVEMENT AREA
A	Area A = 124,300 SF	Area A = 0 SF	Area A = 124,300 SF
	SHOULDER PAVEMENT REMOVAL		
B	Area B = 100,050 SF	Area B = 100,050 SF	Area B = 0 SF
	STRUCTURAL SECTION PAVEMENT		
C	Area C = 8,150 SF	Area C = 8,150 SF	Area C = 0 SF

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Project #6: **Construct Proposed High-Speed Exit Taxiway C-4** **[STRUCTURAL AREA = 25,115 SY]**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 194,000.00	$ 194,000.00
P-140a	Asphalt Pavement Removal (Partial) [Includes small portion of T/W and Exist. VSR]	SY	1,000	$5.00	$ 5,000.00
TAXIWAY BITUMINOUS PAVEMENT SECTION (Total Area = 16,670 SY; Structural Area = 11,780 SY)					
P-152a	Unclassified Excavation	CY	11,200	$7.50	$ 84,000.00
P-152b	Subgrade Preparation - 12 Inch (T/W Shoulder Section)	SY	4,900	$4.20	$ 20,580.00
P-152b	Subgrade Preparation - 24 Inch (T/W Structural Section)	SY	16,700	$6.30	$ 105,210.00
P-154	Subbase Course - 12" (R/W Shoulders)	CY	1,600	$55.00	$ 88,000.00
P-156a	Silt Fence	LF	1,000	$2.00	$ 2,000.00
P-209b	C.A.B.C. - 6 Inches (Bituminous T/W Structural and Shoulder Sections)	CY	2,800	$51.00	$ 142,800.00
P-401a	Bituminous Surface Course - 10 Inch (T/W Structural Section)	TON	6,500	$100.00	$ 650,000.00
P-401aa	Bituminous Surface Course - 6-Inch (T/W Shoulder Section)	TON	1,600	$100.00	$ 160,000.00
P-401b	Bituminous Paving Base Course - 3 Inch (T/W Structural Section Only)	TON	2,000	$75.00	$ 150,000.00
P-401c	Bituminous Binder - Surface Course	TON	527	$920.00	$ 484,380.00
P-401d	Bituminous Binder - Base Course	TON	130	$700.00	$ 91,000.00
P-603a	Bitumnious Tack Coat	GAL	7,500	$5.00	$ 37,500.00
TAXIWAY PORTLAND CEMENT CONCRETE SECTION (Total Area = 17,780 SY; Structural Area = 13,335 SY)					
P-152a	Unclassified Excavation	CY	11,900	$7.50	$ 89,250.00
P-152b	Subgrade Preparation - 12 Inch (T/W Shoulder Section)	SY	4,500	$4.20	$ 18,900.00
P-152b	Subgrade Preparation - 24 Inch (T/W Structural Section)	SY	13,400	$6.30	$ 84,420.00
P-154	Subbase Course - 10" (T/W Shoulders)	CY	1,300	$55.00	$ 71,500.00
P-156a	Silt Fence	LF	500	$2.00	$ 1,000.00
P-209b	C.A.B.C. - 6 Inches (T/W Structural and Shoulder Sections)	CY	3,000	$51.00	$ 153,000.00
P-403	Bituminous Surface Course - 3 Inch (T/W Shoulders)	TON	800	$100.00	$ 80,000.00
P-403	Bituminous Binder - Surface Course	TON	52	$920.00	$ 47,840.00
P-403	Bituminous Base Course - 8 Inch (T/W Structural Section)	TON	5,800	$75.00	$ 435,000.00
P-403	Bituminous Binder - Base Course	TON	377	$700.00	$ 263,900.00
P-501	Portland Cement Concrete Pavement - 16 Inches (T/W Structural Section)	SY	13,400	$82.00	$ 1,098,800.00
P-620a	Temporary Runway and Taxiway Pavement Marking	SF	10,450	$1.50	$ 15,675.00
P-620b	Permanent Runway and Taxiway Pavement Marking	SF	10,450	$1.25	$ 13,062.50
P-620c	Pavement Marking Obliteration	SF	200	$2.50	$ 500.00
P-621	Concrete Pavement Grooving	SY	13,400	$5.00	$ 67,000.00
D-701l	Install 24-Inch CMP	LF	800	$35.00	$ 28,000.00
D-701m	Install 24-Inch CMP FES	EA	2	$150.00	$ 300.00
D-705a	Install 6-Inch Non-Perforated Polyethylene Pipe Underdrain	LF	250	$26.50	$ 6,625.00

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Date: **7/8/2013**

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Project #6: **Construct Proposed High-Speed Exit Taxiway C-4** **[STRUCTURAL AREA = 25,115 SY]**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
D-705b	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	3,500	$30.00	$ 105,000.00
D-750a	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	4	$605.00	$ 2,420.00
D-750b	Install Underdrain Inspection Pit	EA	6	$3,800.00	$ 22,800.00
D-750d	Install 6-Inch Underdrain Cleanout	EA	4	$700.00	$ 2,800.00
D-751d	Install Inlet	EA	1	$4,000.00	$ 4,000.00
T-901a	Seeding with Hydromulch	AC	3.00	$2,500.00	$ 7,500.00
T-901c	Straw Bales	EA	4	$25.00	$ 100.00
T-905a	Topsoiling	SY	9,722	$1.50	$ 14,583.33
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$5,000.00	$ 5,000.00
L-108a	1/C L-824 Type B, Unshielded #6 AWG 5kV Cable (Runway Circuits)	LF	3,500	$5.00	$ 17,500.00
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	3,500	$4.20	$ 14,700.00
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	3,500	$3.00	$ 10,500.00
L-110a	Single-Way Duct, 2" Sch. 40 PVC CLSM Encased	LF	3,500	$22.00	$ 77,000.00
L-125h	Install New Guidance Sign Double Face - 3 Module	EA	3	$8,700.00	$ 26,100.00
L-125i	L-861T Taxiway Edge Light	EA	20	$1,950.00	$ 39,000.00
				Raw Construction Cost:	$ 5,038,245.83
	Construction Contingency (20% of Raw Construction Cost):				$ 1,007,649
	Design Cost (12% of Raw Construction Cost):				$ 604,590
				Total Project Cost:	$ 6,650,484.50

6. Construct proposed high-speed exit Taxiway C4. This project provides a new high-speed exit for Runway 35L arrivals. The location of this high-speed exit accounts for the change in location of the Runway 35L threshold with the runway extension to the south.

ESTIMATE OF PROBABLE CONSTRUCTION COSTS

Project #6:

Construct New High-Speed Exit Taxiway C-4

A' AND B' REPRESENT THE T/W STRUCTURAL SECTION ONLY

Areas A and B REPRESENT THE TAXIWAY AREA INCLUDING STRUCTURAL SECTION AND SHOULDERS

	NEW FULL DEPTH CONCRETE PAVEMENT (15-INCH)
A	Area A = 160,000 SF
A'	Area A' = 120,000 SF (Structural Section)
	Shldr Area = 40,000 SF (A - A')
	FULL DEPTH BITUMINOUS PAVEMENT
B	Area B = 150,000 SF
B'	Area B' = 106,000 SF (Structural Section)
	Shldr Area = 44,000 SF (B - B')

ESTIMATE OF PROBABLE CONSTRUCTION COSTS

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Project #7: Remove Exit Taxiways A6, C6 and C7

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization (10%)	LS	1	$ 18,000.00	$ 18,000.00
REMOVE 118,290 SF (13,143 SY) of BITUMINOUS PAVEMENT					
P-140	Asphalt Pavement Removal - Full Depth (16 Inch)	SY	14,000	$12.00	$ 168,000.00
REMOVE 125,350 SF (13,930 SY) of PCC PAVEMENT [*Because of joints must go to T/W "C" Edge and Rebuild Shoulder with T/W Edge Lights*]					
P-140	Concrete Removal - 15 Inch (Complete)	SY	14,000	$9.40	$ 131,600.00
P-620b	Permanent Runway and Taxiway Painting (Taxiay Edge Striping)	SF	1,200	$1.50	$ 1,800.00
P-620c	Obliterate Runway and Taxiway Painting	SF	500	$2.50	$ 1,250.00
T-901a	Seeding with Hydromulch	AC	5.59	$2,500.00	$ 13,983.01
T-905a	Topsoiling	SY	28,000	$1.50	$ 42,000.00
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$5,000.00	$ 5,000.00
L-108a	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	1,200	$5.00	$ 6,000.00
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	1,200	$4.20	$ 5,040.00
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	1,200	$3.00	$ 3,600.00
L-110	Single-Way Duct, 2" Sch. 40 PVC Concrete Encased	LF	1,200	$22.00	$ 26,400.00
L-115	Elec. J-Box L-867B In-Pavement	EA	2	$840.00	$ 1,680.00
L-125i	L-861T Elevated Taxiway Edge Light in Shoulder Pavement	EA	15	$1,950.00	$ 29,250.00
L-125h	Install New Guidance Sign Double Face - 3 Module	EA		$8,700.00	$ -
L-125r	Demolish Existing Base/Light	EA		$250.00	$ -
				Raw Construction Cost:	$ 453,603.01
	Construction Contingency (20% of Raw Construction Cost):				$ 90,721
	Design Cost (12% of Raw Construction Cost):				$ 54,432
				Total Project Cost:	$ 598,755.98

7. Remove existing exit Taxiways A6, C6, C7. These taxiways currently serve the existing end of Runway 35L. With the extension to Runway 35L, these taxiways are no longer required but may remain in place. However, these exits must be removed to enable the construction of a new high-speed exit Taxiway C6 to serve Runway 17R arrivals. This project would be done in concert with project 8.

ESTIMATE OF PROBABLE CONSTRUCTION COSTS

Project #7
Remove Exit Taxiways A6, C6 & C7

	STRUCTURAL SECTION PAVEMENT REMOVAL	PCC PAVEMENT AREA	BITUMINOUS PAVEMENT AREA
A	Area A = 133,575 SF	Area A = 80,200 SF	Area A = 53,430 SF
	SHOULDER PAVEMENT REMOVAL		
B	Area B = 22,000 SF	Area B = 15,000 SF	Area B = 7,000 SF
C	Area C = 45,000 SF	Area C = 22,500 SF	Area C = 22,500 SF
D	Area D = 15,300 SF	Area D = 7,650 SF	Area D = 7,650 SF
E	Area E = 27,710 SF	Area E = 0 SF	Area E = 27,710 SF
	TOTAL AREAS =	125,350 SF	118,290 SF

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Project #8: **Construct Proposed High-Speed Exit Taxiway C-4** **[STRUCTURAL AREA = 25,115 SY]**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 178,000.00	$ 178,000.00
P-140a	Asphalt Pavement Removal (Partial) [Includes small portion of T/W and Exist. VSR]	SY	1,000	$5.00	$ 5,000.00
TAXIWAY BITUMINOUS PAVEMENT SECTION (Total Area = 34,444 SY; Structural Area = 25,111 SY)					
P-152a	Unclassified Excavation	CY	11,200	$7.50	$ 84,000.00
P-152b	Subgrade Preparation - 12 Inch (T/W Shoulder Section)	SY	9,400	$4.20	$ 39,480.00
P-152b	Subgrade Preparation - 24 Inch (T/W Structural Section)	SY	25,200	$6.30	$ 158,760.00
P-154	Subbase Course - 12" (R/W Shoulders)	CY	1,600	$55.00	$ 88,000.00
P-156a	Silt Fence	LF	1,000	$2.00	$ 2,000.00
P-209b	C.A.B.C. - 6 Inches (Bituminous T/W Structural and Shoulder Sections)	CY	5,800	$51.00	$ 295,800.00
P-401a	Bituminous Surface Course - 10 Inch (T/W Structural Section)	TON	13,700	$100.00	$ 1,370,000.00
P-401aa	Bituminous Surface Course - 6-Inch (T/W Shoulder Section)	TON	3,100	$100.00	$ 310,000.00
P-401b	Bituminous Paving Base Course - 3 Inch (T/W Structural Section Only)	TON	4,100	$75.00	$ 307,500.00
P-401c	Bituminous Binder - Surface Course	TON	1,092	$920.00	$ 1,004,640.00
P-401d	Bituminous Binder - Base Course	TON	267	$700.00	$ 186,550.00
P-603a	Bitumnious Tack Coat	GAL	15,500	$5.00	$ 77,500.00
P-620a	Temporary Runway and Taxiway Pavement Marking	SF	10,450	$1.50	$ 15,675.00
P-620b	Permanent Runway and Taxiway Pavement Marking	SF	10,450	$1.25	$ 13,062.50
P-620c	Pavement Marking Obliteration	SF	2,000	$2.50	$ 5,000.00
P-621	Concrete Pavement Grooving	SY	15,500	$5.00	$ 77,500.00
D-701l	Install 24-Inch CMP	LF	800	$35.00	$ 28,000.00
D-701m	Install 24-Inch CMP FES	EA	2	$150.00	$ 300.00
D-705a	Install 6-Inch Non-Perforated Polyethylene Pipe Underdrain	LF	250	$26.50	$ 6,625.00
D-705b	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	3,500	$30.00	$ 105,000.00
D-750a	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	4	$605.00	$ 2,420.00
D-750b	Install Underdrain Inspection Pit	EA	6	$3,800.00	$ 22,800.00
D-750d	Install 6-Inch Underdrain Cleanout	EA	4	$700.00	$ 2,800.00
D-751d	Install Inlet	EA	1	$4,000.00	$ 4,000.00
T-901a	Seeding with Hydromulch	AC	3.00	$2,500.00	$ 7,500.00
T-901c	Straw Bales	EA	4	$25.00	$ 100.00
T-905a	Topsoiling	SY	15,000	$1.50	$ 22,500.00
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$5,000.00	$ 5,000.00
L-108a	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	3,500	$5.00	$ 17,500.00

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Project #8: **Construct Proposed High-Speed Exit Taxiway C-4** **[STRUCTURAL AREA = 25,115 SY]**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	3,500	$4.20	$ 14,700.00
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	3,500	$3.00	$ 10,500.00
L-110a	Single-Way Duct, 2" Sch. 40 PVC CLSM Encased	LF	3,500	$22.00	$ 77,000.00
L-125h	Install New Guidance Sign Double Face - 3 Module	EA	3	$8,700.00	$ 26,100.00
L-125i	L-861T Taxiway Edge Light	EA	20	$1,950.00	$ 39,000.00
				Raw Construction Cost:	$ 4,610,312.50
				Construction Contingency (20% of Raw Construction Cost):	$ 922,062.50
				Design Cost (12% of Raw Construction Cost):	$ 553,237.50
				Total Project Cost:	$ 6,085,612.50

8. Construct proposed high-speed exit Taxiway C6. This project provides a new high-speed exit for Runway 17R arrivals. The location of this high-speed exit accounts for the change in location of the Runway 17R threshold to the south. This project would be done in concert with project 7.

Project #8: Construct New High-Speed Exit Taxiway C-6

A' AND B' REPRESENT THE T/W STRUCTURAL SECTION ONLY

Areas A and B REPRESENT THE TAXIWAY AREA INCLUDING STRUCTURAL SECTION AND SHOULDERS

	FULL DEPTH BITUMINOUS PAVEMENT
A	Area A = 160,000 SF
B	Area B = 150,000 SF
	Total Area = 310,000 SF
A'	Area A' = 120,000 SF (Structural Section)
B'	Area B' = 106,000 SF (Structural Section)
	Structural Area = 126,000 SF
	Shldr Area = 184,000 SF (310,000 - 126,000)

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Project #9 **Remove and Realign Taxiway A**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 621,000.00	$ 621,000.00
P-140a	Asphalt Pavement Removal (Complete) [19 inch total depth]	SY	70,425	$12.00	$ 845,100.00
TAXIWAY BITUMINOUS PAVEMENT SECTION (Total Area = 34,444 SY; Structural Area = 25,111 SY)					
P-152	Unclassified Excavation	CY	58,600	$7.50	$ 439,500.00
P-152	Subgrade Preparation - 12 Inch (T/W Shoulder Section)	SY		$4.20	$ -
P-152	Subgrade Preparation - 24 Inch (T/W Structural Section)	SY	105,200	$6.30	$ 662,760.00
P-154	Subbase Course - 12" (T/W Shoulders)	CY		$55.00	$ -
P-156	Silt Fence	LF	1,000	$2.00	$ 2,000.00
P-209	C.A.B.C. - 6 Inches (Bituminous T/W Structural and Shoulder Sections)	CY	29,300	$51.00	$ 1,494,300.00
P-401	Bituminous Surface Course - 10 Inch (T/W Structural Section)	TON	57,200	$100.00	$ 5,720,000.00
P-401	Bituminous Surface Course - 6-Inch (T/W Shoulder Section)	TON		$100.00	$ -
P-401	Bituminous Paving Base Course - 3 Inch (T/W Structural Section Only)	TON	17,200	$75.00	$ 1,290,000.00
P-401	Bituminous Binder - Surface Course	TON	3,718	$920.00	$ 3,420,560.00
P-401	Bituminous Binder - Base Course	TON	1,118	$700.00	$ 782,600.00
P-603	Bitumnious Tack Coat	GAL	47,300	$5.00	$ 236,500.00
P-620	Temporary Runway and Taxiway Pavement Marking	SF	8,000	$1.50	$ 12,000.00
P-620	Permanent Runway and Taxiway Pavement Marking	SF	8,000	$1.25	$ 10,000.00
P-620	Pavement Marking Obliteration	SF	2,500	$2.50	$ 6,250.00
P-621	Concrete Pavement Grooving	SY		$5.00	$ -
D-701	Install 24-Inch CMP	LF	800	$35.00	$ 28,000.00
D-701	Install 24-Inch CMP FES	EA	2	$150.00	$ 300.00
D-705	Install 6-Inch Non-Perforated Polyethylene Pipe Underdrain	LF	250	$26.50	$ 6,625.00
D-705	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	3,500	$30.00	$ 105,000.00
D-750	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	4	$605.00	$ 2,420.00
D-750	Install Underdrain Inspection Pit	EA	6	$3,800.00	$ 22,800.00
D-750	Install 6-Inch Underdrain Cleanout	EA	4	$700.00	$ 2,800.00
D-751	Install Inlet	EA	1	$3,800.00	$ 3,800.00
T-901	Seeding with Hydromulch	AC	3.00	$2,500.00	$ 7,500.00
T-901	Straw Bales	EA	4	$25.00	$ 100.00

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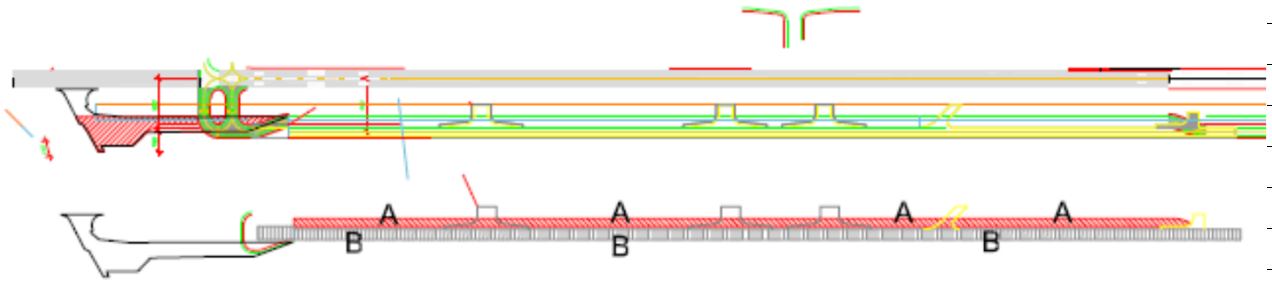
Project #9 **Remove and Realign Taxiway A**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
T-905	Topsoiling	CY	15,000	$15.00	$ 225,000.00
L-100	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$5,000.00	$ 5,000.00
L-108	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	3,500	$5.00	$ 17,500.00
L-108	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	3,500	$4.20	$ 14,700.00
L-108	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	3,500	$3.00	$ 10,500.00
L-110	Single-Way Duct, 2" Sch. 40 PVC CLSM Encased	LF	3,500	$22.00	$ 77,000.00
L-125	Install New Guidance Sign Double Face - 3 Module	EA	3	$8,700.00	$ 26,100.00
L-125	L-861T Taxiway Edge Light	EA	20	$1,950.00	$ 39,000.00
				Raw Construction Cost:	$ 16,136,715.00
				Construction Contingency (20% of Raw Construction Cost):	$ 3,227,343.00
				Design Cost (12% of Raw Construction Cost):	$ 1,936,405.80
				Total Project Cost:	$ 21,300,463.80

9. Remove and realign Taxiway A. The realignment of Taxiway A would provide a parallel taxiway for ADG IV aircraft, with a centerline to centerline separation from Runway 17R-35L of 500 feet.

Project #9: Remove and Realign Taxiway A



A	REMOVAL OF TAXIWAY BITUMINOUS PAVEMENT AREA = 633,825 SF
B	REMOVAL OF TAXIWAY BITUMINOUS PAVEMENT Area B = 946,000 SF

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Project #10 **Realign Taxiway B**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 69,000.00	$ 69,000.00
P-140a	Portland Cement Concrete Pavement Removal (Complete) [16 inch Depth]	SY	14,000	$10.00	$ 140,000.00
TAXIWAY SHOULDERS BITUMINOUS PAVEMENT SECTIONS (Total Area = 3,489 SY)					
P-152	Unclassified Excavation	CY	1,200	$7.50	$ 9,000.00
P-152	Subgrade Preparation - 12 Inch (T/W Shoulder Section)	SY	3,500	$4.20	$ 14,700.00
P-154	Subbase Course - 12" (T/W Shoulders)	CY	1,200	$55.00	$ 66,000.00
P-156	Silt Fence	LF	1,000	$2.00	$ 2,000.00
P-209	C.A.B.C. - 6 Inches (Bituminous T/W Shoulder Section)	CY	600	$51.00	$ 30,600.00
P-401	Bituminous Surface Course - 6-Inch (T/W Shoulder Section)	TON	1,200	$100.00	$ 120,000.00
P-401	Bituminous Binder - Surface Course	TON	78	$920.00	$ 71,760.00
P-603	Bitumnious Tack Coat	GAL	1,047	$5.00	$ 5,233.33
TAXIWAY PORTLAND CEMENT CONCRETE SECTION (Total Area = 5,567 SY)					
P-152a	Unclassified Excavation	CY	3,800	$7.50	$ 28,500.00
P-152b	Subgrade Preparation - 24 Inch (T/W Structural Section) *(50% more effort thanfor 12-Inch Prep)*	SY	5,600	$6.30	$ 35,280.00
P-156a	Silt Fence	LF	500	$2.00	$ 1,000.00
P-209b	C.A.B.C. - 6 Inches (T/W Structural and Shoulder Sections)	CY	1,000	$51.00	$ 51,000.00
P-403	Bituminous Base Course - 8 Inch (T/W Structural Section)	TON	2,500	$75.00	$ 187,500.00
P-403	Bituminous Binder - Base Course	TON	163	$700.00	$ 113,750.00
P-501	Portland Cement Concrete Pavement - 16 Inches (T/W Structural Section)	SY	5,600	$82.00	$ 459,200.00
P-620	Temporary Runway and Taxiway Pavement Marking	SF	2,500	$1.50	$ 3,750.00
P-620	Permanent Runway and Taxiway Pavement Marking	SF	2,500	$1.25	$ 3,125.00
P-620	Pavement Marking Obliteration	SF	500	$2.50	$ 1,250.00
P-621	Concrete Pavement Grooving	SY	5,567	$5.00	$ 27,835.00
D-701	Install 24-Inch CMP	LF	800	$35.00	$ 28,000.00
D-701	Install 24-Inch CMP FES	EA	2	$150.00	$ 300.00
D-705	Install 6-Inch Non-Perforated Polyethylene Pipe Underdrain	LF	250	$26.50	$ 6,625.00
D-705	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	3,500	$30.00	$ 105,000.00
D-750	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	4	$605.00	$ 2,420.00

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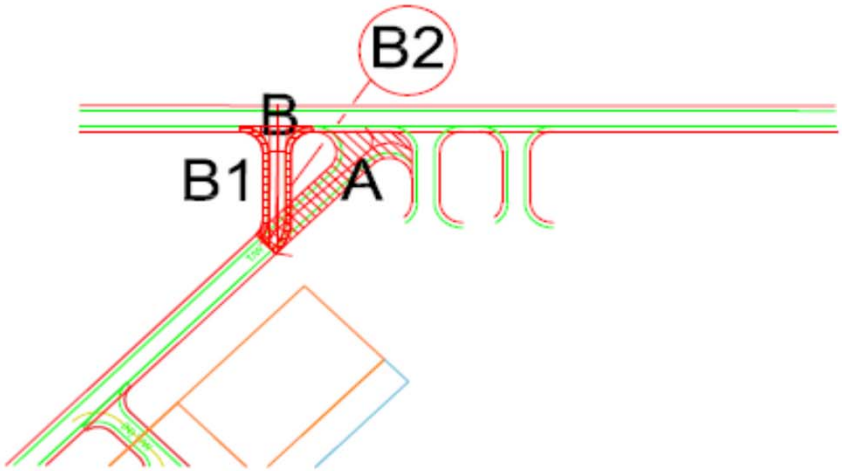
Project #10 **Realign Taxiway B**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
D-750	Install Underdrain Inspection Pit	EA	6	$3,800.00	$ 22,800.00
D-750	Install 6-Inch Underdrain Cleanout	EA	4	$700.00	$ 2,800.00
D-751	Install Inlet	EA	1	$4,000.00	$ 4,000.00
T-901	Seeding with Hydromulch	AC	3.70	$2,500.00	$ 9,250.00
T-901	Straw Bales	EA	20	$25.00	$ 500.00
T-905	Topsoiling	SY	18,000	$1.50	$ 27,000.00
L-100	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$5,000.00	$ 5,000.00
L-108	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	2,000	$5.00	$ 10,000.00
L-108	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	2,000	$4.20	$ 8,400.00
L-108	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	2,000	$3.00	$ 6,000.00
L-110	Single-Way Duct, 2" Sch. 40 PVC CLSM Encased	LF	2,000	$22.00	$ 44,000.00
L-125	Install New Guidance Sign Double Face - 3 Module	EA	2	$8,700.00	$ 17,400.00
L-125	L-861T Taxiway Edge Light	EA	20	$1,950.00	$ 39,000.00
				Raw Construction Cost:	$ 1,778,978.33
				Construction Contingency (20% of Raw Construction Cost):	$ 355,795.67
				Design Cost (12% of Raw Construction Cost):	$ 213,477.40
				Total Project Cost:	$ 2,348,251.40

10. Realign Taxiway B. Taxiway B currently intersects Taxiways E, E4, and G creating the potential for pilot confusion. Taxiway B would be realigned to intersect Taxiway E at a ninety degree angle, eliminating the potential and providing equivalent functionality.

Project #10 Realign Taxiway B



	REMOVAL OF TAXIWAY PC PAVEMENT
A	AREA = 118,050 SF
	NEW PC CONCRETE PAVEMENT STRUCTURAL SECTION
B	Area B = 50,100 SF
	NEW BITUM. PAVEMENT SHOULDERS
B1	Area B1 = 14,800 SF
B2	Area B2 = 16,600 SF

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Project #11	**Construct Proposed Bypass Taxiway E2**				
Item No.	**Description**	**Units**	**Quantity**	**Unit Cost**	**Total Cost**
P-100a	Mobilization	LS	1	$ 70,000.00	$ 70,000.00
P-140	Asphalt Pavement Removal - Partial (0 to 3.5-Inch Nominal)	SY	900	$3.00	$ 2,700.00
TAXIWAY SHOULDERS BITUMINOUS PAVEMENT SECTIONS (Total Area = 3,489 SY)					
P-152	Unclassified Excavation (Shoulders Only)	CY	2,100	$7.50	$ 15,750.00
P-152	Subgrade Preparation - 12 Inch (Shoulders Only)	SY	3,100	$4.20	$ 13,020.00
P-154	Subbase Course - 12" (T/W Shoulders)	CY	1,100	$55.00	$ 60,500.00
P-156	Silt Fence	LF	1,000	$2.00	$ 2,000.00
P-209	C.A.B.C. - 6 Inches (Bituminous T/W Shoulder Section)	CY	600	$51.00	$ 30,600.00
P-401	Bituminous Surface Course - 6-Inch (T/W Shoulder Section)	TON	1,000	$100.00	$ 100,000.00
P-401	Bituminous Binder - Surface Course	TON	65	$920.00	$ 59,800.00
P-603	Bitumnious Tack Coat	GAL	918	$5.00	$ 4,590.00
TAXIWAY PORTLAND CEMENT CONCRETE SECTION (Total Area = 5,567 SY)					
P-152a	Unclassified Excavation	CY	3,500	$7.50	$ 26,250.00
P-152b	Subgrade Preparation - 24 Inch (T/W Structural Section)	SY	5,200	$6.30	$ 32,760.00
P-156a	Silt Fence	LF	500	$2.00	$ 1,000.00
P-209b	C.A.B.C. - 6 Inches (T/W Structural Section)	CY	900	$51.00	$ 45,900.00
P-403	Bituminous Base Course - 8 Inch (T/W Structural Section)	TON	2,300	$100.00	$ 230,000.00
P-403	Bituminous Binder - Base Course	TON	150	$920.00	$ 137,540.00
P-501	Portland Cement Concrete Pavement - 16 Inches (T/W Structural Section)	SY	5,200	$82.00	$ 426,400.00
P-620	Temporary Taxiway Pavement Marking	SF	2,500	$1.50	$ 3,750.00
P-620	Permanent Taxiway Pavement Marking	SF	2,500	$1.25	$ 3,125.00
P-620	Pavement Marking Obliteration	SF		$2.50	$ -
P-621	Concrete Pavement Grooving	SY	5,567	$5.00	$ 27,835.00
D-701	Install 24-Inch CMP	LF	800	$35.00	$ 28,000.00
D-701	Install 24-Inch CMP FES	EA	2	$150.00	$ 300.00
D-705	Install 6-Inch Non-Perforated Polyethylene Pipe Underdrain	LF	700	$26.50	$ 18,550.00
D-705	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	3,500	$30.00	$ 105,000.00

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Project #11 **Construct Proposed Bypass Taxiway E2**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
D-750	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	4	$605.00	$ 2,420.00
D-750	Install Underdrain Inspection Pit	EA	4	$3,800.00	$ 15,200.00
D-750	Install 6-Inch Underdrain Cleanout	EA	4	$700.00	$ 2,800.00
D-751	Install Inlet	EA	1	$4,000.00	$ 4,000.00
T-901	Seeding with Hydromulch	AC	4.30	$2,500.00	$ 10,750.00
T-901	Straw Bales	EA	20	$25.00	$ 500.00
T-905	Topsoiling	CY	21,000	$1.50	$ 31,500.00
L-100	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$5,000.00	$ 5,000.00
L-108	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	2,000	$5.00	$ 10,000.00
L-108	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	2,000	$4.20	$ 8,400.00
L-108	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	2,000	$3.00	$ 6,000.00
L-110	Single-Way Duct, 2" Sch. 40 PVC CLSM Encased	LF	2,000	$22.00	$ 44,000.00
L-125	Install New Guidance Sign Double Face - 3 Module	EA	2	$8,700.00	$ 17,400.00
L-125	L-861T Taxiway Edge Light	EA	20	$1,950.00	$ 39,000.00
				Raw Construction Cost:	$ 1,642,340.00
				Construction Contingency (20% of Raw Construction Cost):	$ 328,468.00
				Design Cost (12% of Raw Construction Cost):	$ 197,080.80
				Total Project Cost:	$ 2,167,888.80

11. Construct proposed bypass Taxiway E2. This proposed taxiway would provide a bypass taxiway to serve aircraft needing to access the Runway 17L end.

Project #11 Construct Proposed Bypass Taxiway E2

	PROJECT #11 CONSTRUCT PROPOSED BYPASS TAXIWAY E2
A	Structural Area = 46,534 SF
A'	Shoulder Area = 27,540 SF (12,690 + 14,850)

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Project #12 **Remove Existing Taxiway E2**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 30,000.00	$ 30,000.00
P-140	Portland Cement Concrete Pavement Removal (Complete) [16 inch Depth]	SY	14,000	$9.40	$ 131,600.00
P-152	Unclassified Excavation	CY	1,200	$7.50	$ 9,000.00
P-152	Subgrade Preparation - 12 Inch (T/W Shoulder Section)	SY	3,500	$4.20	$ 14,700.00
P-620	Pavement Marking Obliteration	SF	500	$2.50	$ 1,250.00
BITUMINOUS PAVEMENT FOR R/W AND T/W SHOULDER (Total Area = 2,050 SY {625 + 1425})					
P-152	Unclassified Excavation (Shoulders Only)	CY	1,400	$7.50	$ 10,500.00
P-152	Subgrade Preparation - 12 Inch (Shoulders Only)	SY	2,100	$4.20	$ 8,820.00
P-154	Subbase Course - 12" (T/W Shoulders)	CY	1,100	$55.00	$ 60,500.00
P-156	Silt Fence	LF	1,000	$2.00	$ 2,000.00
P-209	C.A.B.C. - 6 Inches (Bituminous T/W Shoulder Section)	CY	400	$51.00	$ 20,400.00
P-401	Bituminous Surface Course - 6-Inch (T/W Shoulder Section)	TON	700	$100.00	$ 70,000.00
P-401	Bituminous Binder - Surface Course	TON	46	$920.00	$ 41,860.00
P-603	Bitumnious Tack Coat	GAL	918	$5.00	$ 4,590.00
P-621	Concrete Pavement Grooving	SY		$5.00	$ -
D-705	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	1,350	$30.00	$ 40,500.00
D-750	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	4	$605.00	$ 2,420.00
D-750	Install Underdrain Inspection Pit	EA	4	$3,800.00	$ 15,200.00
D-750	Install 6-Inch Underdrain Cleanout	EA	4	$700.00	$ 2,800.00
D-751	Install Inlet	EA	1	$4,000.00	$ 4,000.00
T-901	Seeding with Hydromulch	AC	3.70	$3,100.00	$ 11,470.00
T-901	Straw Bales	EA	20	$20.00	$ 400.00
T-905	Topsoiling	SY	18,000	$1.50	$ 27,000.00
L-100	Electrical Demolition (T/W Edge Lights and Hold Sign)	LS	1	$5,000.00	$ 5,000.00
L-108	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	800	$5.00	$ 4,000.00
L-108	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	800	$4.20	$ 3,360.00

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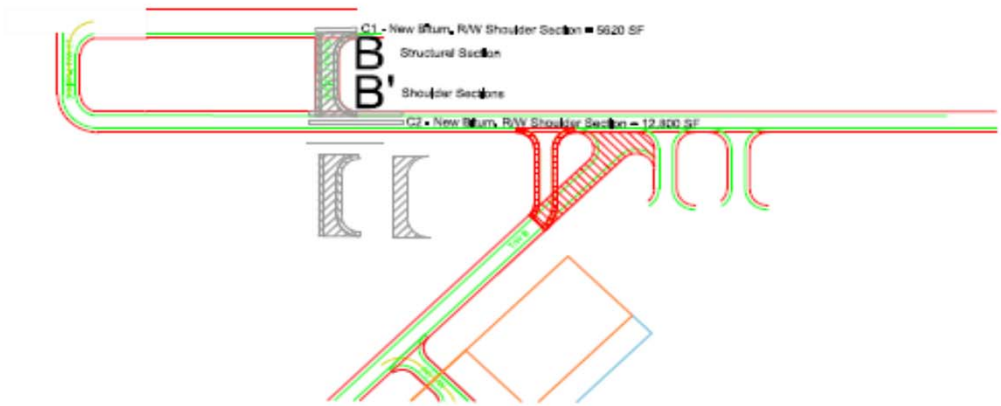
Project #12 **Remove Existing Taxiway E2**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
L-108	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	1,600	$3.00	$ 4,800.00
L-110	Single-Way Duct, 2" Sch. 40 PVC CLSM Encased	LF	1,600	$22.00	$ 35,200.00
L-125	Runway Edge Light	EA	4	$1,950.00	$ 7,800.00
L-125	Taxiway Edge Light	EA	4	$1,950.00	$ 7,800.00
				Raw Construction Cost:	$ 576,970.00
				Construction Contingency (20% of Raw Construction Cost):	$ 115,394.00
				Design Cost (12% of Raw Construction Cost):	$ 69,236.40
				Total Project Cost:	$ 761,600.40

12. Construct proposed bypass Taxiway E2. This proposed taxiway would provide a bypass taxiway to serve aircraft needing to access the Runway 17L end.

Project #12 Remove Existing Taxiway E2



	PROJECT #12 REMOVE TAXIWAY E2
B	Structural Area = 43,250 SF
B'	Shoulder Area = 27,010 SF (12,310 + 14,700)
	BITUMINOUS SHOULDER AREAS
C1	Bitum. R/W Shldr Area = 5,620 SF
C2	Bitum. T/W Shldr Area = 12,800 SF
C2	Total Shoulder Area = 18,420 SF

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Project #13 **Remove Existing High-Speed Exit Taxiway E4**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 70,000.00	$ 70,000.00
P-140	Portland Cement Concrete Pavement Removal (Complete) [16 inch Depth]	SY	28,000	$9.40	$ 263,200.00
P-140	Portland Cement Concrete Pavement Removal (Complete) [8 inch Depth]	SY	3,000	$8.00	$ 24,000.00
P-140	Bituminous Pavement Removal (Complete) [Shoulders]	SY	6,000	$7.50	$ 45,000.00
P-152	Unclassified Excavation After Pavement Removal	CY	18,100	$7.50	$ 135,750.00
P-620	Pavement Marking Obliteration	SF	500	$2.50	$ 1,250.00
BITUMINOUS PAVEMENT FOR R/W AND T/W SHOULDER (Total Area = 2,050 SY {625 + 1425})					
P-152	Unclassified Excavation After Pavement Removal	CY	2,900	$7.50	$ 21,750.00
P-152	Subgrade Preparation - 12 Inch (Shoulders Only)	SY	8,700	$4.20	$ 36,540.00
P-154	Subbase Course - 12" (T/W Shoulders)	CY	2,900	$55.00	$ 159,500.00
P-156	Silt Fence	LF	2,000	$2.00	$ 4,000.00
P-209	C.A.B.C. - 6 Inches (Bituminous T/W Shoulder Section)	CY	1,500	$51.00	$ 76,500.00
P-401	Bituminous Surface Course - 6-Inch (T/W Shoulder Section)	TON	2,900	$100.00	$ 290,000.00
P-401	Bituminous Binder - Surface Course	TON	189	$920.00	$ 173,420.00
P-603	Bitumnious Tack Coat	GAL	3,903	$5.00	$ 19,512.50
P-621	Concrete Pavement Grooving	SY		$5.00	$ -
D-705	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	3,122	$30.00	$ 93,660.00
D-750	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	4	$605.00	$ 2,420.00
D-750	Install Underdrain Inspection Pit	EA	4	$3,800.00	$ 15,200.00
D-750	Install 6-Inch Underdrain Cleanout	EA	4	$700.00	$ 2,800.00
D-751	Install Inlet	EA	1	$4,000.00	$ 4,000.00
T-901	Seeding with Hydromulch	AC	7.50	$2,500.00	$ 18,750.00
T-901	Straw Bales	EA	10	$25.00	$ 250.00
T-905	Topsoiling	SY	37,000	$1.50	$ 55,500.00
L-100	Electrical Demolition (T/W Edge Lights and Hold Sign)	LS	1	$5,000.00	$ 5,000.00
L-108	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	3,150	$5.00	$ 15,750.00
L-108	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	3,150	$4.20	$ 13,230.00
L-108	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	3,150	$3.00	$ 9,450.00

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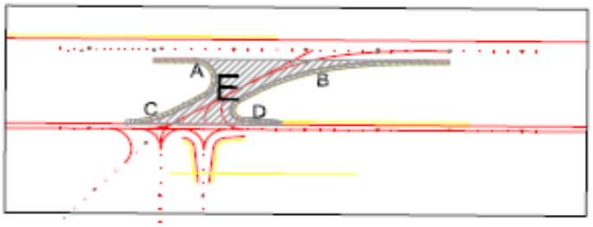
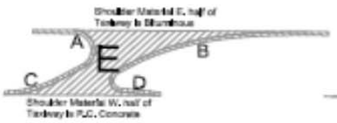
Project #13 **Remove Existing High-Speed Exit Taxiway E4**

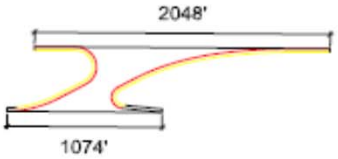
Item No.	Description	Units	Quantity	Unit Cost	Total Cost
L-110	Single-Way Duct, 2" Sch. 40 PVC CLSM Encased	LF	3,150	$22.00	$ 69,300.00
L-125	Runway Edge Light	EA	10	$1,950.00	$ 19,500.00
L-125	Taxiway Edge Light	EA	6	$1,950.00	$ 11,700.00
				Raw Construction Cost:	$ 1,656,932.50
				Construction Contingency (20% of Raw Construction Cost):	$ 331,386.50
				Design Cost (12% of Raw Construction Cost):	$ 198,831.90
				Total Project Cost:	$ 2,187,150.90

13. Remove existing high-speed exit Taxiway E4. The geometry at the intersection of Taxiway E, E4, G, and H is convoluted, potentially giving rise to pilot confusion. This taxiway would be replaced in a location approximately 1,400 feet south to eliminate this potential.

Project #13: Remove Existing High Speed Exit Taxiway E4







	REMOVAL OF SHOULDER BITUMINOUS PAVEMENT
A	Area A = 15,680 SF
B	Area B = 37,560 SF
	Total Area = 53,240 SF
	REMOVAL OF P.C. CONCRETE PAVEMENT
C	Area C = 15,025 SF
D	Area D = 11,720 SF
	Total Area = 26,745 SF
	REMOVAL OF STRUCTURAL PCC PAVEMENT
E	Area D = 244,340 SF

NEW RUNWAY SHOULDER BITUM. PAVEMENT
Area = 51,200 SF (2018' x 25')
NEW TAXIWAY SHOULDER BITUM. PAVEMENT
Area = 26,850 SF (1074' x 25')
TOTAL SHOULDER BITUM. PAVEMENT
Total Shldr Area = 78,050 SF (51,200 + 26,850)

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Project #14 **Construct Proposed High-Speed Exit Taxiway C-4** **[STRUCTURAL AREA = 25,115 SY]**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 150,000.00	$ 150,000.00
P-140a	Asphalt Pavement Removal (Full Depth Existing Shoulder)	SY	6,612	$5.00	$ 33,061.11
TAXIWAY BITUMINOUS PAVEMENT SECTION (SHOULDERS - AREA = 76520 SF/(8502 SY))					
P-152a	Unclassified Excavation	CY	5,700	$6.00	$ 34,200.00
P-152b	Subgrade Preparation - 12 Inch (T/W Shoulder Section)	SY	8,600	$2.50	$ 21,500.00
P-154	Subbase Course - 12" (R/W Shoulders)	CY	1,500	$36.00	$ 54,000.00
P-156a	Silt Fence	LF	1,000	$1.50	$ 1,500.00
P-209b	C.A.B.C. - 6 Inches (T/W Shoulder Section)	CY	1,500	$52.00	$ 78,000.00
P-401aa	Bituminous Surface Course - 6-Inch (T/W Shoulder Section)	TON	2,800	$80.00	$ 224,000.00
P-401c	Bituminous Binder - Surface Course	TON	182	$800.00	$ 145,600.00
P-603a	Bitumnious Tack Coat	GAL	2,551	$2.00	$ 5,101.33
TAXIWAY PORTLAND CEMENT CONCRETE SECTION (Total Area = 17,780 SY; Structural Area = 13,335 SY)					
P-152a	Unclassified Excavation	CY	14,200	$6.00	$ 85,200.00
P-152b	Subgrade Preparation - 24 Inch (T/W Structural Section)	SY	21,300	$2.50	$ 53,250.00
P-156a	Silt Fence	LF	500	$1.50	$ 750.00
P-209b	C.A.B.C. - 6 Inches (T/W Structural Sections)	CY	3,600	$52.00	$ 187,200.00
P-403	Bituminous Base Course - 8 Inch (T/W Structural Section)	TON	9,300	$55.00	$ 511,500.00
P-403	Bituminous Binder - Base Course	TON	605	$550.00	$ 332,475.00
P-501	Portland Cement Concrete Pavement - 16 Inches (T/W Structural Section)	SY	21,300	$72.00	$ 1,533,600.00
P-620a	Temporary Runway and Taxiway Pavement Marking	SF	4,445	$1.25	$ 5,556.25
P-620b	Permanent Runway and Taxiway Pavement Marking	SF	4,445	$1.25	$ 5,556.25
P-620c	Pavement Marking Obliteration	SF		$3.50	$ -
P-621	Concrete Pavement Grooving	SY	15,500	$5.00	$ 77,500.00
D-701l	Install 24-Inch CMP	LF	800	$35.00	$ 28,000.00
D-701m	Install 24-Inch CMP FES	EA	2	$150.00	$ 300.00
D-705a	Install 6-Inch Non-Perforated Polyethylene Pipe Underdrain	LF	250	$26.00	$ 6,500.00
D-705b	Install 6-Inch Perforated Polyethylene Pipe Underdrain	LF	2,380	$25.00	$ 59,500.00

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Calculated by: Kevin Davis
Date: 7/8/2013
Checked by: John Cessar
Date: 7/9/2013

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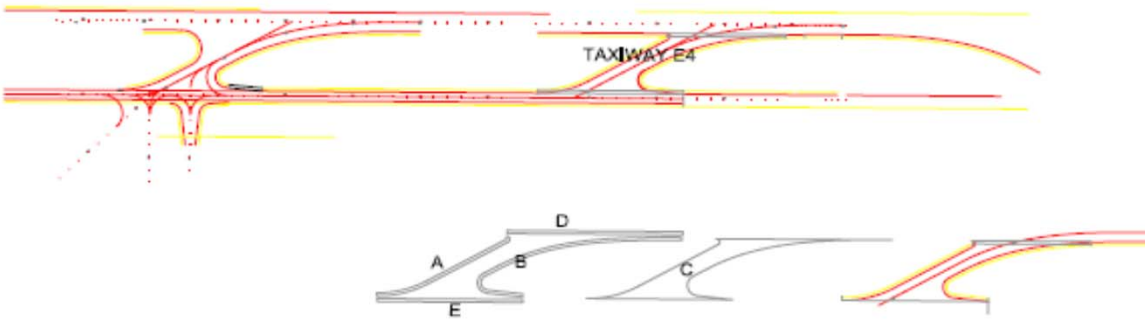
Project #14 **Construct Proposed High-Speed Exit Taxiway C-4** **[STRUCTURAL AREA = 25,115 SY]**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
D-750a	Tie Underdrain Pipe into Existing Manhole/ Inlet	EA	4	$200.00	$ 800.00
D-750b	Install Underdrain Inspection Pit	EA	6	$3,400.00	$ 20,400.00
D-750d	Install 6-Inch Underdrain Cleanout	EA	4	$700.00	$ 2,800.00
D-751d	Install Inlet	EA	1	$4,000.00	$ 4,000.00
T-901a	Seeding with Hydromulch	AC	4.00	$3,100.00	$ 12,400.00
T-901c	Straw Bales	EA	4	$20.00	$ 80.00
T-905a	Topsoiling	CY	4,400	$15.00	$ 66,000.00
L-100a	Electrical Demolition (R/W Edge Lights, MALSR, PAPIs, RDR Signs, T/W Edge Lights)	LS	1	$5,000.00	$ 5,000.00
L-108a	1/C L-824 Type C, Unshielded #8 AWG 5kV Cable (Runway Circuits)	LF	2,500	$5.00	$ 12,500.00
L-108aa	1/C L-824 Type B, Unshielded #8 AWG 5kV Cable (Taxiway Circuits)	LF	2,500	$5.00	$ 12,500.00
L-108b	1/C #6 AWG BSD copper Counterpoise Wire w/ Grounding Rods	LF	2,500	$2.00	$ 5,000.00
L-110a	Single-Way Duct, 2" Sch. 40 PVC CLSM Encased	LF	2,500	$20.00	$ 50,000.00
L-125h	Install New Guidance Sign Double Face - 3 Module	EA	2	$6,500.00	$ 13,000.00
L-125i	Taxiway Edge Lights	EA	20	$1,500.00	$ 30,000.00
				Raw Construction Cost:	$ 3,868,329.94
				Construction Contingency (20% of Raw Construction Cost):	$ 773,665.99
				Design Cost (12% of Raw Construction Cost):	$ 464,199.59
				Total Project Cost:	$ 5,106,195.53

14. Construct proposed high-speed exit Taxiway E4. This project provides a new high-speed exit for Runway 35R arrivals. The location of this high-speed exit accounts for the removal of existing Taxiway E4.

Project #14: Construct Proposed High-Speed Exit Taxiway E4



	NEW SHOULDER BITUMINOUS PAVEMENT
A	Area A = 27,570 SF
B	Area B = 48,950 SF
	Total Area = 76,520 SF
	NEW STRUCTURAL PCC PAVEMENT
C	Area C = 191,400 SF

	REMOVAL OF EXIST. BITUM. PAVEMENT SHOULDER
E	Area D = 32,510 SF
D	Area D = 27,000 SF
	Total Area = 59,510 SF

Dimensions taken from Drawing titled "Kevin Cost Est Drawing"

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Project #15 **Provide Runway 35R with and Instrument Landing System (ALSF-II)**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
P-100a	Mobilization	LS	1	$ 100,000.00	$ 100,000.00
L-1000	Furnish and Install ALSF-II Instrument Landing System for Runway 35R	LS	1	$2,500,000.00	$ 2,500,000.00
				Raw Construction Cost:	$ 2,600,000.00
	Construction Contingency (15% of Raw Construction Cost):				$ 390,000
	Design Cost (10% of Raw Construction Cost):				$ 260,000
				Total Project Cost:	$ 3,250,000.00

Kevin,

The ALSF-2 system would cost about $2.5 million. That would include the actual system and the building for the electrical equipment. You can add whatever fluff you are adding to that. Let me know if you need anything else.

Zach Ambariantz
Electrical Engineer
JACOBS
707 17th Street, Suite 2400
Denver, CO 80202-5131
Phone - 303-223-5880
Fax - 303-820-4819
zachary.ambariantz@jacobs.com
www.jacobs.com

fluff = contingency

15. Provide Runway 35R with an Instrument Landing System. The approach to Runway 35R would be enhanced by the addition of an ALSF-II. The ALSF-II would provide Category II capability for arrivals in inclement weather conditions.

ESTIMATE OF PROBABLE CONSTRUCTION COSTS

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Date: **7/9/2013**

Project 16: **VSR Improvements**

Item No.	Description	Units	Quantity	Unit Cost	Total Cost
	2013 Estimate of Future VSR Project for Master Plan Updatre				
Project #16A	VSR Project West of T/W E	LF	6,542	$120.00	$ 785,040
Project #16B	VSR Project 3/4 Perimeter of R/W 17L/35R	LF	25,325	$120.00	$ 3,039,000
Project #16C	VSR located NW of R/W 17R/35L	LF	7,800	$120.00	$ 936,000
P-100a	Mobilization @ 4%	LS	1	$153,000.00	$ 153,000.00
			Raw Construction Cost:		$ 4,913,040.00
	Construction Contingency (15% of Raw Construction Cost):				$ 736,956
	Design Cost (10% of Raw Construction Cost):				$ 491,304
	Total Project Cost:				$ 6,141,300.00

Historical Bid Tab

2007	**VSR Project East of R/W 17R**	**LF**	**8,458**	**$117.75**	**$ 995,930**

16. Pave perimeter vehicle service road. The perimeter vehicle service road requires realignment around the ends of Runway 17R-35L. In addition, the perimeter road is not paved in its entirety. The FAA Runway Safety Action Team has expressed a desire that the perimeter road be paved to reduce the number of vehicles using taxiways and runways to move about the airport.