



Polar Passage, Primate Forest & Rhino Budget Review

September 12, 2018

Jim Mitchell



Design Process & Estimates

Design Process

- Owner Project Requirements (OPR)
- Conceptual Design
- Schematic Design (SD)
- Design Development (DD)
- Construction Documents (CD)

Per contract, estimates are completed at:

- 100% SD
- 100% DD
- 50% CD

Concept drawing estimate provided as a budget check
Specific scope estimates throughout design

50% CD – Cost Estimate



50% CD Revised BUDGET SUMMARY

Project: OZ Polar Passage Primates - Polar Bears
Architect: c/r DESIGN

7/31/2018

#	Summary System BSF	Plaza / Visitor Cost	Site / Demo Cost	Habitat 25,195		Interp / Habitat 3,935		Gift 1,875	LSS & Equip 4,104	EWA #1 Cost	W/OUT EWA Total 38,701	W EWA Total 36,731
				Cost	\$/BSF	Cost	\$/BSF					
02	Demolition	\$ 86,765	-	-	-	-	-	-	-	-	\$ 1,037,794	\$ 86,765
03	Site	\$ 2,130,575	\$ 1,518,652	\$ 3,192,166	\$ 199.70	\$ 126,086	\$ 30.91	-	\$ 166,359	\$ 40.67	\$ 422,963	\$ 7,127,838
04	Structure	-	-	-	-	\$ 854,025	\$ 216.98	\$ 120,533	\$ 76.51	\$ 881,433	\$ 212.99	\$ 1,841,991
05	Exterior Wall	-	-	\$ 425,533	\$ 14.62	\$ 135,274	\$ 35.38	\$ 107,882	\$ 47.99	\$ 142,167	\$ 34.76	\$ 854,656
06	Roadway	-	-	-	-	\$ 294,669	\$ 52.00	\$ 69,212	\$ 38.24	\$ 229,658	\$ 56.15	\$ 494,569
07	Interior Construction	-	-	-	-	\$ 296,603	\$ 75.38	\$ 97,782	\$ 62.04	\$ 168,316	\$ 41.18	\$ 582,211
08	Vertical Transportation	-	-	-	-	-	-	-	-	-	-	-
09	HVAC	-	-	-	-	\$ 148,231	\$ 37.67	\$ 125,415	\$ 78.74	\$ 113,497	\$ 28.39	\$ 736,343
10	Plumbing	-	-	-	-	\$ 178,047	\$ 28.99	\$ 81,360	\$ 51.98	\$ 126,904	\$ 29.58	\$ 328,311
11	Fire Sprinklers	-	-	-	-	-	-	-	-	-	-	-
12	Electrical	\$ 411,292	\$ 117,991	\$ 182,916	\$ 5.58	\$ 343,657	\$ 87.31	\$ 274,200	\$ 174.13	\$ 475,194	\$ 116.10	\$ 1,784,814
14	Equipment	-	-	\$ 297,756	\$ 7.14	\$ 342,009	\$ 86.89	\$ 260,000	\$ 126.98	\$ 2,446,470	\$ 588.18	\$ 3,136,220
	Subtotal	\$ 2,628,572	\$ 1,526,553	\$ 3,987,859	\$ 137.04	\$ 2,566,612	\$ 652.09	\$ 1,866,864	\$ 677.37	\$ 5,129,028	\$ 1,254.04	\$ 1,466,761
	SDI 1.23%	\$ 27,831	\$ 17,327	\$ 42,224	\$ 1.45	\$ 27,175	\$ 6.80	\$ 11,296	\$ 7.17	\$ 54,395	\$ 13.28	\$ 186,157
	Design & Estimating Contingency 1.4%	\$ 131,429	\$ 81,828	\$ 196,398	\$ 6.85	\$ 128,331	\$ 32.60	\$ 53,343	\$ 33.87	\$ 256,451	\$ 6.52	\$ 856,779
	Subtotal w/ Contingency	\$ 2,787,831	\$ 1,735,708	\$ 4,225,581	\$ 145.35	\$ 2,722,117	\$ 691.59	\$ 1,931,563	\$ 718.41	\$ 5,439,784	\$ 1,330.82	\$ 1,476,522
	General Conditions	\$ 254,389	\$ 158,383	\$ 385,048	\$ 13.20	\$ 246,292	\$ 63.11	\$ 103,249	\$ 65.58	\$ 496,378	\$ 121.38	\$ 297,625
	Subtotal w/ General Conditions	\$ 3,042,220	\$ 1,894,091	\$ 4,610,629	\$ 158.61	\$ 2,970,510	\$ 754.70	\$ 1,234,752	\$ 783.97	\$ 5,936,163	\$ 1,451.38	\$ 1,774,148
	Escalation 1.4%	\$ 152,111	\$ 94,756	\$ 230,776	\$ 7.93	\$ 148,525	\$ 37.74	\$ 61,738	\$ 39.20	\$ 296,898	\$ 6.85	\$ 884,603
	Subtotal w/ Escalation	\$ 3,194,331	\$ 1,988,795	\$ 4,841,305	\$ 166.54	\$ 3,119,035	\$ 792.44	\$ 1,296,490	\$ 823.17	\$ 6,232,971	\$ 1,523.95	\$ 1,774,148
	PLIPD Insurance 1.14%	\$ 39,060	\$ 24,319	\$ 59,289	\$ 2.04	\$ 35,139	\$ 9.09	\$ 15,853	\$ 10.07	\$ 75,216	\$ 18.62	\$ 213,341
	Builder's Risk 0.34%	\$ 12,428	\$ 7,738	\$ 18,896	\$ 0.65	\$ 12,135	\$ 3.08	\$ 5,044	\$ 3.28	\$ 24,251	\$ 6.13	\$ 69,617
	Performance Bond 0.75%	\$ 26,632	\$ 16,681	\$ 40,405	\$ 1.39	\$ 26,004	\$ 6.61	\$ 10,889	\$ 6.98	\$ 51,946	\$ 12.71	\$ 148,544
	Contractor's Contingency 3.4%	\$ 81,811	\$ 50,216	\$ 124,121	\$ 4.27	\$ 79,883	\$ 20.30	\$ 33,265	\$ 21.08	\$ 159,635	\$ 39.83	\$ 463,530
	Fee 3.4%	\$ 116,728	\$ 72,675	\$ 177,095	\$ 6.09	\$ 113,977	\$ 28.98	\$ 47,377	\$ 30.08	\$ 227,778	\$ 56.88	\$ 682,644
	Subtotal	\$ 3,470,981	\$ 2,161,044	\$ 5,246,041	\$ 185.95	\$ 3,389,173	\$ 861.07	\$ 1,468,778	\$ 884.46	\$ 6,772,836	\$ 1,655.94	\$ 1,974,104
	Preconstruction 0.59%	\$ 12,633	\$ 7,866	\$ 19,167	\$ 0.66	\$ 12,336	\$ 3.13	\$ 5,129	\$ 3.28	\$ 24,651	\$ 6.03	\$ 68,809
	Interpretive 1.82%	\$ 67,282	\$ 41,896	\$ 102,692	\$ 3.51	\$ 65,706	\$ 16.69	\$ 27,312	\$ 17.34	\$ 131,305	\$ 32.19	\$ 473,009
	Budget Total	\$ 3,550,918	\$ 2,210,806	\$ 5,387,301	\$ 185.13	\$ 3,467,218	\$ 880.90	\$ 1,441,218	\$ 918.06	\$ 6,928,762	\$ 1,661.97	\$ 1,974,104

Project: OZ Polar Passage Primates - Primates
Architect: c/r DESIGN

#	Summary System BSF	Plaza / Visitor Cost	Site / Demo Cost	Chimp Habitat 6,375		Chimpanzee Building 5,000		Red Ape Renovation 900	Rhino Habitat 6,250	EWA #1 Cost	W/OUT EWA Total 19,625	W EWA Total 16,625
				Cost	\$/BSF	Cost	\$/BSF					
02	Demolition	-	-	\$ 30,000	-	-	-	\$ 1,640	\$ 0.26	\$ 7,200	\$ 0.81	\$ 273,283
03	Site	-	\$ 845,160	\$ 781,472	\$ 25.82	\$ 81,178	\$ 16.24	\$ 13,583	\$ 3.31	\$ 138,650	\$ 14.68	\$ 298,472
04	Structure	-	-	\$ 366,648	\$ 12.60	\$ 1,602,012	\$ 300.40	\$ 100,860	\$ 34.64	\$ 53,231	\$ 5.75	\$ 2,022,750
05	Exterior Wall	-	-	-	-	\$ 334,207	\$ 66.84	\$ 91,586	\$ 32.39	\$ 21,860	\$ 2.36	\$ 447,633
06	Roadway	-	-	-	-	\$ 290,594	\$ 58.12	\$ 12,800	\$ 3.13	-	-	\$ 303,394
07	Interior Construction	-	-	-	-	\$ 228,637	\$ 45.73	\$ 40,288	\$ 8.85	-	-	\$ 268,925
08	Vertical Transportation	-	-	-	-	-	-	-	-	-	-	-
09	HVAC	-	-	-	-	\$ 274,347	\$ 54.87	-	-	-	-	\$ 155,243
10	Plumbing	-	-	-	-	\$ 145,522	\$ 28.18	-	-	\$ 2,460	\$ 0.27	\$ 305,345
11	Fire Sprinklers	-	-	-	-	-	-	-	-	-	-	-
12	Electrical	-	\$ 70,742	\$ 86,353	\$ 2.97	\$ 427,488	\$ 85.50	-	-	-	-	\$ 288,748
14	Equipment	-	-	\$ 226,490	\$ 7.78	\$ 518,590	\$ 103.70	-	-	\$ 82,510	\$ 8.92	\$ 827,450
	Subtotal	\$ -	\$ 945,902	\$ 1,430,673	\$ 48.17	\$ 3,016,885	\$ 766.50	\$ 260,136	\$ 63.89	\$ 393,241	\$ 32.78	\$ 1,886,965
	SDI 1.23%	\$ -	\$ 9,231	\$ 14,569	\$ 0.45	\$ 38,722	\$ 7.74	\$ 2,648	\$ 0.65	\$ 3,087	\$ 0.33	\$ 29,165
	Design & Estimating Contingency 1.4%	\$ -	\$ 47,295	\$ 71,544	\$ 16.35	\$ 194,144	\$ 38.63	\$ 13,007	\$ 3.25	\$ 15,162	\$ 1.54	\$ 337,152
	Subtotal w/ Contingency	\$ -	\$ 1,002,829	\$ 1,516,886	\$ 48.85	\$ 4,031,751	\$ 806.35	\$ 275,792	\$ 69.78	\$ 321,491	\$ 34.76	\$ 1,889,131
	General Conditions	\$ -	\$ 150,293	\$ 227,214	\$ 51.83	\$ 603,875	\$ 120.77	\$ 41,308	\$ 46.98	\$ 48,153	\$ 5.21	\$ 386,794
	Subtotal w/ General Conditions	\$ -	\$ 1,153,032	\$ 1,744,200	\$ 120.79	\$ 4,635,626	\$ 927.13	\$ 317,100	\$ 124.65	\$ 369,644	\$ 39.96	\$ 2,269,827
	Escalation 1.4%	\$ -	\$ 57,452	\$ 87,216	\$ 19.83	\$ 231,781	\$ 46.38	\$ 15,858	\$ 17.82	\$ 18,482	\$ 2.00	\$ 496,623
	Subtotal w/ General Conditions	\$ -	\$ 1,210,684	\$ 1,831,416	\$ 140.72	\$ 4,867,407	\$ 973.48	\$ 332,958	\$ 142.22	\$ 388,126	\$ 41.96	\$ 2,269,827
	PLIPD Insurance 1.14%	\$ -	\$ 14,828	\$ 22,430	\$ 5.13	\$ 59,614	\$ 11.92	\$ 4,078	\$ 1.00	\$ 4,754	\$ 0.51	\$ 27,784
	Builder's Risk 0.34%	\$ -	\$ 4,718	\$ 7,137	\$ 1.60	\$ 18,968	\$ 3.79	\$ 1,289	\$ 0.32	\$ 1,513	\$ 0.16	\$ 64,631
	Performance Bond 0.75%	\$ -	\$ 10,110	\$ 15,292	\$ 3.50	\$ 46,646	\$ 9.33	\$ 2,780	\$ 0.68	\$ 3,241	\$ 0.35	\$ 17,609
	Contractor's Contingency 3.1%	\$ -	\$ 31,008	\$ 46,907	\$ 10.72	\$ 124,666	\$ 24.93	\$ 8,528	\$ 2.09	\$ 9,841	\$ 1.07	\$ 59,532
	Fee 3.4%	\$ -	\$ 44,243	\$ 66,927	\$ 16.30	\$ 177,873	\$ 35.67	\$ 12,147	\$ 2.97	\$ 14,184	\$ 1.52	\$ 84,941
	Subtotal	\$ -	\$ 1,315,931	\$ 1,996,104	\$ 484.88	\$ 5,289,175	\$ 1,057.83	\$ 361,806	\$ 462.01	\$ 421,757	\$ 45.86	\$ 2,525,760
	Preconstruction 0.78%	\$ -	\$ 8,817	\$ 14,851	\$ 3.39	\$ 35,476	\$ 7.09	\$ 2,750	\$ 0.69	\$ 3,147	\$ 0.34	\$ 88,009
	Interpretive 1.82%	\$ -	\$ 22,591	\$ 34,174	\$ 7.81	\$ 96,825	\$ 19.18	\$ 6,213	\$ 6.98	\$ 7,342	\$ 0.78	\$ 202,508
	Budget Total	\$ -	\$ 1,347,999	\$ 2,039,129	\$ 466.09	\$ 5,419,469	\$ 1,083.89	\$ 378,718	\$ 411.91	\$ 432,147	\$ 46.72	\$ 2,525,760

Combined Estimate \$ 32,568,989 \$ 37,088,853
EWA #1 \$ 4,499,864
Complete Estimate \$ 37,068,853 Check

50% CD – Cost Estimate

Lease Crutcher Lewis

Standard Estimate Report
PPR Polar Bears 50% CD

Page 15
7/31/2018 8:08 PM

Item	Description	Takeoff Qty	Total	
			Unit Cost	Amount
04.350	<i>Precast Concrete</i>			
----	Brace Points - Interp	8.00 ea	27,315 /ea	219
----	Strongbacks / Hoisting / Rigging	4,920.00 sf	1,164 /sf	5,726
----	Strongbacks / Hoisting / Rigging	560.00 sf	1,353 /sf	758
----	Grout Embeds	120.00 ea	91.95 /ea	11,034
----	Brace Rental	156.00 ea	33.75 /ea	5,265
	<i>Precast Concrete</i>		69,796/sf	382,482
	5,480.00 sf			
	537.719 Labor hours			
04.500	<i>Structural Steel</i>			
----	Galv Structural Steel- Holding	6.40 ton	5,778.00 /ton	36,979
----	Galv Structural Steel - Intrap	5.15 ton	5,778.00 /ton	29,757
----	Galv Structural Steel- Holding ERECT	6.40 ton	3,500.00 /ton	22,400
----	Galv Structural Steel - Intrap ERECT	5.15 ton	3,500.00 /ton	18,025
	<i>Structural Steel</i>		11,047.515/ton	107,161
	9.70 ton			
04.570	<i>Metal Decking</i>			
	010 Roof Decking	2,510.00 sf	4.75 /sf	11,923
	<i>Metal Decking</i>		4.75 /sf	11,923
	2,510.00 sf			
04.590	<i>Steel Stairs</i>			
	010 Design Build Stairs	1.00 flt	18,750.00 /flt	18,750
	<i>Steel Stairs</i>			18,750
04.600	<i>Misc. Steel</i>			
----	Misc Steel - Holding	2,900.00 sf	2.50 /sf	7,250
----	Misc Steel - Interp	1,170.00 sf	2.50 /sf	2,925
	<i>Misc. Steel</i>		2.585/bsf	10,175
	3,936.00 bsf			
04.800	<i>Wood Structure</i>			
	210 CLT-5 FOB	1,400.00 sf	24.725 /sf	34,615
	210 CLT-5 Install	8.00 ea	721.90 /ea	5,775
	250 Safety Equipment	1,400.00 sf	0.863 /sf	1,208
	400 Buy Trusses	0.00 lf		0
	410 Set Trusses	0.00 lf		0
	500 Buy Glu-lam 3 1/8x16 1/2	260.00 bf	2.875 /bf	748
	500 Buy Glu-lam 5 1/8x16 1/2	385.00 bf	2.875 /bf	1,107
	510 Set Glu-lam	6.00 ea	434.40 /ea	2,606
	510 Set Glu-lam	1.00 ea	724.00 /ea	724
	600 Buy Hardware GL hangers	14.00 ea	172.50 /ea	2,415
	600 Buy Hardware Truss hangers	0.00 ea		0
	600 Spline Connector @ Ridge	34.00 lf	28.75 /lf	978
	900 Nails & Screws	100.00 lbs	4.025 /lbs	403
----	Fascia (see roof/exterior)	0.00 lf		0
	<i>Wood Structure</i>		36.127/bsf	50,578
	1,400.00 bsf			
	94.00 Labor hours			
04.900	<i>Layout and Engineering</i>			
	001 Layout and Engineering	2.60 wks	2,656.00 /wks	6,906
	001 Layout and Engineering	3.12 wks	2,656.00 /wks	8,287
----	General Foreman	1.50 wks	2,656.00 /wks	3,984
----	General Foreman	4.67 wks	2,656.00 /wks	12,404

100% DD – February 2018



100% SD - \$4.4 million over
100% DD - \$10 million over
50% CD - \$2.3 million over

50% CD – August 2018

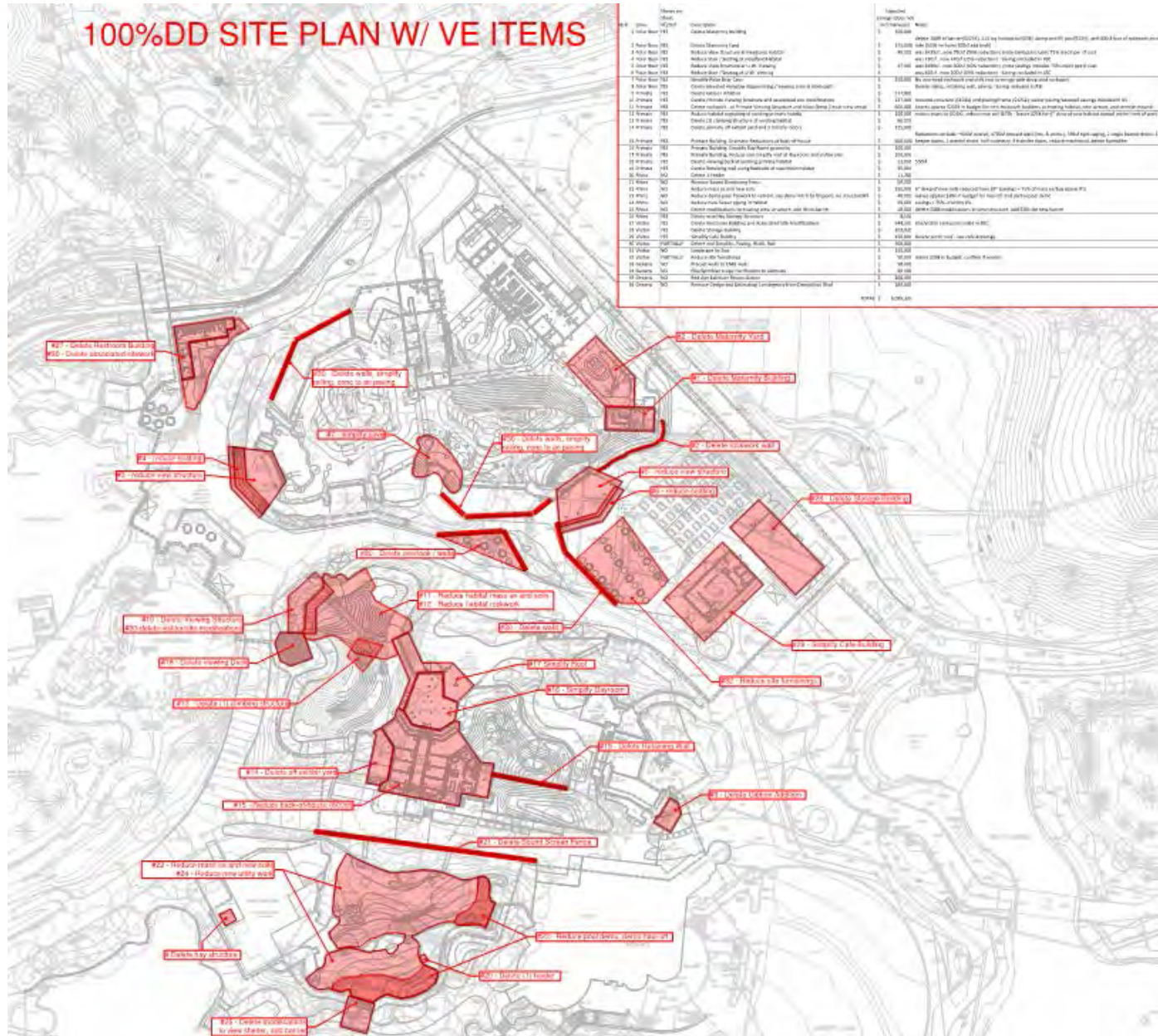


100% SD - \$4.4 million over
100% DD - \$10 million over
50% CD - \$2.3 million over

100% DD – Value Engineering Exercise



100% DD – Value Engineering Exercise



100% DD – Budget Options Log



BUDGET OPTIONS LOG

DATE: 8/1/2018

BUDGET OPTIONS SUMMARY

Project: Polar Primate Rhino	ACCEPTED:	(2,089,479)
Architect: clr Design	POTENTIAL:	(2,863,400)
	REJECTED:	(123,000)

#	Summary System	Concept ESTIMATE	ACCEPTED CHANGES	POTENTIAL CHANGES	REVISED TOTAL
02	Demolition	125,245	0	0	125,245
03	Sitework	8,954,851	-549,000	-1,913,700	8,405,851
04	Structure	3,864,741	0	-3,000	3,864,741
05	Exterior Wall	1,261,709	-53,500	-68,500	1,208,209
06	Roofing	797,963	-204,000	-204,000	593,963
07	Interior Construction	831,646	0	0	831,646
08	Vert. Transportation	0	0	0	0
09	HVAC	1,060,710	0	0	1,060,710
10	Plumbing	468,693	0	0	468,693
11	Fire Sprinklers	0	0	0	0
12	Electrical	2,369,397	-114,000	-114,000	2,255,397
13	General	0	0	0	0
14	Equipment	4,023,670	-129,368	-129,368	3,894,302
	Sub Total	23,758,625	(1,049,868)	(2,432,568)	22,708,757
	SDI 1.223%	247,681	(12,840)	(29,750)	234,841
	Design & Estimating Contingency 3.5%	1,187,931	-393,125	-85,140	794,806
	Subtotal - Direct Costs	25,194,237	(1,455,833)	(2,547,458)	23,738,405
	General Conditions	2,619,479	0	0	2,619,479
	Subtotal - w/ General Conditions	27,813,716	-1,455,833	-2,547,458	26,357,884
	Escalation 3.5%	1,390,686	-468,160	-89,161	922,526
	Subtotal - w/ Escalation	29,204,402	-1,923,993	-2,636,619	27,280,410
	PL/PD Insurance 1.10%	358,479	-22,984	-31,497	335,495
	Builder's Risk 0.35%	114,061	-7,313	-10,022	106,748
	Performance Bond 0.75%	244,417	-15,671	-21,475	228,746
	Contractors Contingency 2.50%	748,034	-49,249	-67,490	698,785
	Fee 3.48%	1,067,295	-70,269	-96,295	997,026
	Subtotal	31,736,689	-2,089,479	-2,863,400	29,647,210
	Preconstruction	176,800	0	0	176,800
	Interpretive	675,500	0	0	675,500
	Budget Total	32,588,989	(2,089,479)	(2,863,400)	30,499,510
	EWA 1				4,499,864
	COMBINED ESTIMATE W/ VE				34,999,374
	Notes:			Current Budget	\$33,735,000
	D&E Contingency has been reduced from 6% to 3.5%				(\$1,264,374)
	Escalation has been reduced from 5.5% to 3.5%				
	Accepted = 50% CD Estimate				-3.7%
	Potential = 100% DD Estimate Budget Options				

100% DD – Budget Options Log

Total budget estimate incl. EWA #1			34,999,374	
Current Budget			(32,921,319)	Does not include \$790k
Over Budget			2,078,055	
Adds not included in estimate				
PB shift doors between holding	5 @ 7,000		35,000	
PB shift doors to the outside	6 @ 7,000		42,000	
Primate three panel door	1 @ 40,000		40,000	
Primate single window & 2 shift doors			-15,000	
Total adds not in estimate			102,000	
Total over budget			2,180,055	

100% DD – Budget Options Log

13	Plaza/Visitor - Landscape by Zoo (or a portion)		(150,000)	(150,000)	VE #31 on CLR log - Allowance	Still an option?		
14	Plaza/Visitor - Reduce Site Furnishings				VE #32 on CLR log. - Allowance	No Change from 100% DD to 50%		
15	Sitework Structure - Simplify Café				VE #29 on CLR log.	Cost of Café at 50% is 116,141.		
16	Sitework Structure - Delete Storage Building		(303,000)	(303,000)	VE #28 on CLR log.	Storage Building as returned.		
17	S/S - Headland Habitat - Reduce View Structure		(110,000)	(110,000)	VE #03 on CLR log.			
17a	HH View - Change Metal Roofing to Local/SnapLoc/Galv Steel	(23,000)	(23,000)		VE #03 on CLR log.			
18	S/S - Meadow Ridge Habitat - Simplify the Cave		(200,000)	(200,000)	VE #07 on CLR log.	Increased by 100,000 from 100%		
19	S/S - Reduce Seating at Headland Habitat View Structure		TBD		VE #04 on CLR log.			
20	S/S - U.W. Viewing - Delete View Structure		(185,000)	(185,000)	VE #05 on CLR log.			
20a	UW View - Change Metal Roofing to Local/SnapLoc/Galv	(22,000)	(22,000)					
21	S/S - Reduce Seating at U.W. View Structure		TBD		VE #06 on CLR log.			
22	S/S - Delete Restroom Building				VE #27 on CLR log.			
23	Habitats - Reduce Habitat Cut/Substrate to 6" from 24"	(38,500)	(77,000)	(38,500)		Animal Substrate still 18"		
24	Habitats - Reduce Glass/Glazing by 10%		(41,000)	(41,000)	Allowance			
25	Reduce rockwork @ West Pool (West & North)		TBD			Need to add back SS Mesh Barrier		
26	Bid savings for Metal Building	(35,000)	(35,000)					
	Subtotal	(243,500)	(1,396,000)	(1,152,500)				

100% DD – VE Reductions

Examples of reductions:

- Remove Gibbon
- Delete maternity yard and bldg.
- Simplify cave
- Reduce view shelters
- Reduce primate building by 600 sq. ft.
- Simplify dayroom and visitor view roof
- Delete primate off exhibit yard
- Delete primate central plaza viewing
- Simplify paving, walls and rails
- Reduce rockwork both projects
- Electrical reduction goal
- Reduce café overhang
- Defer Restroom bldg.
- 100% DD, reduced D&E Contingency from 10% to 6%, currently down to 3.5%
- 100% DD, reduced escalation from 7.5% to 5%, currently 3.5%

Reduced cost of design by \$8 million

Key Success Factors in Design Process

- Ballot measure commitments and guiding principles
- Zoo staff identifying priorities and trade offs
- Design team that brings best practices and solutions
- Combining final projects for design coordination
- CMGC involved in design and cost estimating
- Experienced zoo bond team to help lead and problem solve

Questions?