

Appendix H

Cost Estimates

**City of Rancho Palos Verdes
San Ramon Canyon Storm Drain = ALTERNATE 1A Tunnel Alignment Recommended**

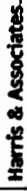


PRELIMINARY Opinion of Probable Construction Costs

January 11, 2011

Bid Item	Description	Quantity	Unit	Unit Price	Total
1	Mobilization (5%)	1	LS	\$480,000	\$480,000
2	Clearing & Grubbing (includes ALL removals)	1	LS	\$35,000	\$35,000
3	Open Trench Shoring & Plating	1	LS	\$35,000	\$35,000
4	Traffic Control	1	LS	\$10,000	\$10,000
5	SWPPP	1	LS	\$50,000	\$50,000
6	Construction Survey	1	LS	\$35,000	\$35,000
7	Canyon Improvements - Fill / Grading Operations	44,770	CY	\$40	\$1,790,800
8	Canyon Improvements -12 inch Perforated Sub-drain	1,100	LF	\$130	\$143,000
9	RC Inlet Structure 54" Pipe (includes RC wing wall structure, <u>medium</u> debris basin) <u>U/S Tarapaca</u>	1	LS	\$110,000	\$110,000
10	Outlet Structure and apron onto beach (including decorative wall rock pattern / rock in invert / railing)	1	LS	\$195,000	\$195,000
11	80" Diameter "Slant Drain" Tunnel Installation - At Beach	295	LF	\$3,650	\$1,076,750
12	80" Diameter Tunnel - Steel Rib with Wood lagging 4' to 5' increments - north of South Rancho Palos Verdes Drive	1,900	LF	\$2,150	\$4,085,000
13	54" HDPE for Tunnel Installation (DR15.5)	2,195	LF	\$230	\$504,850
14	54" Pipe - Open Trench Installation (in open space flat plain) (DR-17)	1,900	LF	\$315	\$598,500
15	Annular Space backfill (light weight cellular grout between 54" HDPE and 80" Tunnel)	1,300	CY	\$100	\$130,000
16	Manhole Structures	5	EA	\$10,000	\$50,000
17	Lean Concrete Seepage Dam (with 8" PVC - Outlet System at each MH)	5	EA	\$2,500	\$12,500
18	Catch Basin Inlets	4	EA	\$8,000	\$32,000
19	Tunneling Spoil Haulage and Disposal	3,000	CY	\$30	\$90,000
20	Launch Pits	1	LS	\$200,000	\$200,000
21	Deep Vertical Ground Movement Monitoring Systems (Geokon MPBX Model # A3 Extensometer, etc.)	1	LS	\$12,000	\$12,000
22	Deep Horizontal Ground Movement Monitoring Systems (Geokon Inclinometer Casing, etc.)	1	LS	\$12,000	\$12,000
23	Temporary Bluff Rock Fall Barrier System (such as "Geobrugg") for Bluff Outlet Construction	1	LS	\$42,000	\$42,000
24	Temporary / permanent Bluff shoring and soldier pile system for Outlet Structure construction	100	VF	\$950	\$95,000
25	Beach Access Road / Trail	1	LS	\$100,000	\$100,000
26	Upper Inlet Access Road from Tarapaca Road (Flexible Pavement)	14,500	SF	\$10	\$145,000
27	Upper Inlet Access Road Retaining Wall	910	LF	\$200	\$182,000
28	PCC Interceptor Drain adjacent to back of retaining wall	910	LF	\$80	\$72,800
Construction Sub-Total=					\$10,324,200
Contingency 20%					\$2,064,840
Construction Total=					\$12,389,040
29	Design Phase (8% Construction cost assumed)	1	LS	\$1,000,000	\$1,000,000
30	Design Administration / CM / Inspection Phase (8% Construction cost assumed)	1	LS	\$1,000,000	\$1,000,000
31	R/W and Easement Acquisition	0.35	ACRE	\$500,000	\$175,000
32	Environmental Mitigation (Hydroseed, Planting and 5-year maintenance)	1	LS	\$200,000	\$200,000
Project Sub-Total=					\$14,764,040
Contingency 30%					\$4,429,212
GRAND TOTAL =					\$19,193,252

City of Rancho Palos Verdes
 San Ramon Canyon Storm Drain = ALTERNATE 2A Canyon Alignment



PRELIMINARY Opinion of Probable Construction Costs
 January 11, 2011

Bid Item	Description	Quantity	Unit	Unit Price	Total
1	Mobilization (5%)	1	LS	\$250,000	\$250,000
2	Clearing & Grubbing (includes ALL removals)	1	LS	\$50,000	\$50,000
3	Shoring & Piling	1	LS	\$50,000	\$50,000
4	Traffic Control	1	LS	\$40,000	\$40,000
5	SWPPP	1	LS	\$100,000	\$100,000
6	Construction Survey	1	LS	\$35,000	\$35,000
7	RC Inlet Structure 48" Pipe (includes RC wing wall structure, large debris basin)	1	LS	\$200,000	\$200,000
8	RC Inlet Structure (RC wing wall structure & small debris basin)	1	LS	\$110,000	\$110,000
9	48" Pipe - Prepared Canyon Bottom Installation Downstream of Tarapaca	1,210	LF	\$400	\$484,000
10	48" Pipe - Prepared Canyon Bottom Installation Upstream of Tarapaca (in light canyon)	710	LF	\$450	\$319,500
11	12" Perforated Sub-Drain	1,400	LF	\$130	\$182,000
12	Canyon Energy Dissipators (Ungrouted Riprap)	7	EA	\$5,000	\$35,000
13	Canyon Fill and Grading Operations	44,120	CY	\$40	\$1,764,800
14	Manhole Structures	6	EA	\$10,000	\$60,000
15	Lean Concrete Seepage Dam (with 8" PVC - Outlet System at each MH)	6	EA	\$2,500	\$15,000
16	Catch Basin Inlets	6	EA	\$8,000	\$48,000
17	Upper Inlet Access Road from Tarapaca Road (Flexible Pavement)	14,500	SF	\$10	\$145,000
18	Upper Inlet Access Road Retaining Wall	910	LF	\$200	\$182,000
19	PCC Interceptor Drain adjacent to back of retaining wall	910	LF	\$60	\$54,600
20	Upper Inlet Access Road from 25th Street	1	LS	\$150,000	\$150,000
21	Additional "Interim" PVDE Switchback Stabilization Costs - separate project	600	LF	\$2,000	\$1,200,000
22	Additional City Costs due to Permitting and Long Project Schedule	1	LS	\$500,000	\$500,000
City of RPV Sub-total					\$5,993,100
Contingency 20%					\$1,198,620
City of RPV Construction Cost					\$7,191,720
23	Design Phase (10% Construction cost assumed)	1	LS	\$720,000	\$720,000
24	Design Administration / CM / Inspection Phase (10% Construction cost assumed)	1	LS	\$720,000	\$720,000
25	R/W and Easement Acquisition	1.43	ACRE	\$500,000	\$715,000
26	Environmental Mitigation (Hydroseed, Planting and 5-year maintenance)	1	LS	\$200,000	\$200,000
City of RPV Soft Cost Sub-total					\$2,355,000
City of RPV Sub-total					\$9,546,720
Contingency 30%					\$2,864,016
City of RPV Grand Total					\$12,410,736
City of Los Angeles Improvements					
27	Upgrades to existing LA City SD System	2,850	LF	\$1,000	\$2,850,000
28	Improve Existing 84" Outlet to the Beach	1	LS	\$250,000	\$250,000
City of Los Angeles Sub-total					\$2,900,000
Contingency 20%					\$580,000
City of Los Angeles Construction Cost					\$3,480,000
29	Design Phase (12% Construction cost assumed)	1	LS	\$417,600	\$417,600
30	Design Administration / CM / Inspection Phase (10% Construction cost assumed)	1	LS	\$348,000	\$348,000
City of Los Angeles Soft Cost Sub-total					\$765,600
City of Los Angeles Sub-total					\$4,245,600
Contingency 30%					\$1,273,680
City of Los Angeles Grand Total					\$5,519,280
GRAND TOTAL =					\$17,930,016

City of Rancho Palos Verdes
San Ramon Canyon Storm Drain = Upper Canyon Alternative
Extension to Alternatives 1B
PRELIMINARY Opinion of Probable Construction Costs
 January 11, 2011



Harris & Associates.

Bid Item	Description	Quantity	Unit	Unit Price	Total
1	Additional Mobilization (5%)	1	LS	\$75,000	\$75,000
2	Additional Clearing & Grubbing (includes ALL removals)	1	LS	\$30,000	\$30,000
3	Shoring and Plating	1	LS	\$30,000	\$30,000
4	SWPPP	1	LS	\$30,000	\$30,000
5	Contruction Survey	1	LS	\$35,000	\$35,000
6	Prepared Canyon Bottom Backfill Installation thru Existing Canyon - 12 inch Perforated Sub-drain	1235	LF	\$130	\$160,550
7	Prepared Canyon Bottom Backfill Installation thru Existing Canyon - Fill / Grading Operations	22,910	CY	\$30	\$687,300
8	48" HDPE Pipe - Prepared Canyon Bottom Backfill Installation Downstream of Tarapaca (in tight canyon)	1,235	LF	\$350	\$432,250
9	RC Inlet Structure 54" Pipe (includes RC wing wall structure)	-1	LS	\$110,000	-\$110,000
10	Remove existing energy dissipator and construct Junction Structure Connection to existing upper canyon outlet structure	1	LS	\$25,000	\$25,000
11	Small RC Inlet Structure at Mid-Canyon	1	LS	\$50,000	\$50,000
12	Manhole Structures	4	EA	\$10,000	\$40,000
13	Lean Concrete Seepage Dam (with 8" PVC - Outlet System at each MH)	4	EA	\$2,500	\$10,000
14	Additional City Costs due to Permitting and Long Project Schedule	1	LS	\$125,000	\$125,000
Construction Sub-Total=					\$1,620,100
Contingency 20%					\$324,020
Alternative 1A					\$12,389,040
Construction Total=					\$14,333,160
15	Design Phase (8% Construction cost assumed)	1	LS	\$1,200,000	\$1,200,000
16	Design Administration / CM / Inspection Phase (8% Construction cost assumed)	1	LS	\$1,200,000	\$1,200,000
17	R/W and Easement Acquisition	1.45	ACRE	\$500,000	\$725,000
18	Environmental Mitigation (Hydroseed, Planting and 5-year maintenance)	1	LS	\$400,000	\$400,000
Project Sub-Total=					\$17,858,160
Contingency 30%					\$5,357,448
GRAND TOTAL =					\$23,215,608

City of Rancho Palos Verdes
 San Ramon Canyon Storm Drain = Upper Canyon Alternative
 Extension to Alternatives 2B
 PRELIMINARY Opinion of Probable Construction Costs
 January 11, 2011



Harris & Associates.

Bid Item	Description	Quantity	Unit	Unit Price	Total
1	Additional Mobilization (5%)	1	LS	\$70,000	\$70,000
2	Additional Clearing & Grubbing (includes ALL removals)	1	LS	\$30,000	\$30,000
3	Shoring and Plating	1	LS	\$30,000	\$30,000
4	SWPPP	1	LS	\$30,000	\$30,000
5	Construction Survey	1	LS	\$35,000	\$35,000
6	Prepared Canyon Bottom Installation thru Existing Canyon - 12 inch Perforated Sub-drain	1235	LF	\$130	\$160,550
7	Prepared Canyon Bottom Installation thru Existing Canyon - Fill / Grading Operations	22,910	CY	\$30	\$687,300
8	48" HDPE Pipe - Prepared Canyon Bottom Installation Downstream of Tarapaca (in tight canyon)	1,235	LF	\$350	\$432,250
9	RC Inlet Structure 48" Pipe (includes RC wing wall structure, large debris basin) U/S Tarapaca	-1	LS	\$200,000	-\$200,000
10	Remove existing energy dissipator and construct Junction Structure Connection to existing upper canyon outlet structure	1	LS	\$25,000	\$25,000
11	Small RC Inlet Structure at Mid-Canyon (RC wing wall structure & small debris basin)	1	LS	\$80,000	\$80,000
12	Manhole Structures	4	EA	\$10,000	\$40,000
13	Lean Concrete Seepage Dam (with 8" PVC - Outlet System at each MH)	4	EA	\$2,500	\$10,000
14	Additional City Costs due to Permitting and Long Project Schedule	1	LS	\$125,000	\$125,000
Construction Sub-Total=					\$1,555,100
Contingency 20%					\$311,020
Alternative 2A					\$10,671,720
Construction Total=					\$12,537,840
15	Design Phase (8% Construction cost assumed)	1	LS	\$1,100,000	\$1,100,000
16	Design Administration / CM / Inspection Phase (8% Construction cost assumed)	1	LS	\$1,100,000	\$1,100,000
17	R/W and Easement Acquisition	2.60	ACRE	\$500,000	\$1,300,000
18	Environmental Mitigation (Hydroseed, Planting and 5-year maintenance)	1	LS	\$400,000	\$400,000
Project Sub-Total=					\$16,437,840
Contingency 30%					\$4,931,352
GRAND TOTAL =					\$21,369,192

City of Rancho Palos Verdes
San Ramon Canyon Storm Drain
Low Cost Alternative
PRELIMINARY Opinion of Probable Construction Costs
 November 12, 2010



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Bid Item	Description	Quantity	Unit	Unit Price	Total
1	Mobilization	1	LS	\$60,000	\$60,000
2	Clearing and Grubbing	1	LS	\$30,000	\$30,000
3	Shoring and Plating	1	LS	\$20,000	\$20,000
4	SWPPP	1	LS	\$30,000	\$30,000
5	Contruction Survey	1	LS	\$35,000	\$35,000
6	Interim Inlet Structure	1	LS	\$55,000	\$55,000
7	48" HDPE Pipe - Prepared Canyon Bottom Installation	900	LF	\$400	\$360,000
8	12 inch Perforated Sub-drain	900	LF	\$130	\$117,000
9	Oulet Energy Dissipator Structure downstream of Tarapaca Landslide	1	LS	\$55,000	\$55,000
10	Grading Operations	21,000	CY	\$30	\$630,000
11	RC Inlet Structure (RC wing wall structure & large debris basin)	1	LS	\$125,000	\$125,000
12	Additional City Costs due to Permitting and Long Project Schedule	1	LS	\$125,000	\$125,000
Construction Sub-Total=					\$1,642,000
Contingency 20%					\$328,400
Construction Total=					\$1,970,400
13	Design Phase (10% Construction cost assumed)	1	LS	\$200,000	\$200,000
14	Design Administration / CM / Inspection Phase (10% Construction cost assumed)	1	LS	\$200,000	\$200,000
15	RW and Easement Acquisition	0.50	ACRE	\$500,000	\$250,000
16	Environmental Mitigation (Hydroseed, Planting and 5-year maintenance)	1	LS	\$200,000	\$200,000
Project Sub-Total=					\$2,820,400
Contingency 30%					\$846,120
GRAND TOTAL =					\$3,666,520