

**Pajaro Dunes GHAD
 Rock Revetment Repair
 Pajaro Dunes Resort, Watsonville, California
 30% Engineer's Estimate
 7 April 2020**

Item No.	Description	Qty	Unit	Unit Cost	Total
1	Mobilization (5%)	1	LS	\$ 140,000	\$ 140,000
* 2	Water Pollution Control	1	LS	\$ 30,000	\$ 30,000
* 3	Traffic Control	1	LS	\$ 20,000	\$ 20,000
* 4	Clearing and Grubbing	1	LS	\$ 20,000	\$ 20,000
* 5	Remove and Replace Beach Access Stairs	5	EA	\$ 35,000	\$ 175,000
* 6	Steel Sheet Piling (Excavation and Rock Revetment Shoring)	1	LS	\$ 1,000,000	\$ 1,000,000
* 7	Excavation Dewatering	1	LS	\$ 100,000	\$ 100,000
8 (F)	Temporary Excavation (Sand)	14,000	CY	\$ 12	\$ 168,000
9 (F)	Remove and Stockpile Revetment Rock (Pajaro Dunes)	10,600	TON	\$ 19	\$ 201,400
10 (F)	Remove and Stockpile Revetment Rock (State of California)	450	TON	\$ 19	\$ 8,550
11	Rock Slope Protection Fabric (Class 10)	3,900	SQYD	\$ 4	\$ 15,600
12	Marine Cell	190	EA	\$ -	\$ -
13	Rock Slope Protection (1/4 T, Method B)	9,200	CY	\$ 100	\$ 920,000
14 (F)	Rock Slope Protection (4 T, Method A)	10,600	TON	\$ 30	\$ 318,000
15 (F)	Sand Backfill	11,000	CY	\$ 25	\$ 275,000

Total \$ 3,116,550
 Total +30% \$ 4,051,600

Total + 30% (Rounded) \$ 4,100,000

Legend

(F) = Final Pay Item (construction quantity will not be measured for payment)
 * = Item was not included in estimate prepared by ARUP dated 5 January 2015

Notes

1. Estimate does not include soft costs such as environmental permitting, biological monitoring, engineering design, construction management

Project Dimensions	Notes	Non-Caltrans Costs
Revetment Length = 1,865.0 ft	Existing and repair	
Revetment Width = 10.0	Existing and repair	
Revetment Height = 8.0 ft	Existing and repair	
Revetment Repair Foundation Height = 4.4 ft	New marine cell	
Revetment Unit Weight Calculation		
Revetment Specific Gravity = 3.0	Assumed	
Rock Density = 187.2	Calculated	
Revetment Void Ratio = 25.0 %	Assumed	
Revetment Unit Weight = 141.0 pcf	Calculated	
Shoring and Excavation		
Shoring Length = 145.0 ft	For 2 lots at a time	
Shoring Depth = 40.0 ft	Assumed	
Excavation Width = 16.0 ft	3 ft clear, ea side	
Excavation Depth = 17.0 ft	Assumes beach at elev 12	
Marine Cell Materials and Cost		
Triton UX200 Geogrid= 11,749.6 ft		200 ft/roll 59.00 rolls \$608.00 /roll \$ 35,872.00
Bodkin bars = 374.0 ea		50 bars/box 8.00 boxes \$150.00 /box \$ 1,200.00
=		Delivery \$ 10,000.00
=		Installation (3x material cost) \$111,216.00