## PACIFIC COUNTY COST ESTIMATES Map Number: В1 Minimum Structure Height (ft) 13 Structure Type: Berm 480 Structure Capacity: Location: Long Beach, WA, N Place & 41st Place 4800 Safe Haven Square Footage: **Overall Site Square Footage** 3994 8160 Volume of Berm Materials (LCY) Scope Cost Site Utilities \$49.814 Excavation-Backfill \$227.220 \$144.336 Concrete Landscaping \$24.101 **Construction Totals** \$445,471 Design Fees (8%) \$35,638 General Conditions (10%) \$44,547 Contractor Fees, O&P (15%) \$66,821 Construction Contingency (5%) \$22,274 Estimate/Design Contingency (10%) \$44.547 **Project Total** \$659,297 Site Utilities Quantity Unit **Material Cost** Installation Cost **Equipment Cost Location Factor Total Cost** Comments RSMeans, Building Construction Cost Data, 2011, 01 54 EΑ \$116.00 \$185.00 100.00% Domestic Water, Ductile Iron Class 250, MJ, 6" diameter 100 LF 108.20% Assuming 100' distance from service at street RSMeans, Building Construction Cost Data, 2011, 31 23 Excavate, 3/4 CY Excavator 4'-6' deep BCY 108.20% 70 \$2.16 \$2.13 \$324.92 16.13, Excavating Trench RSMeans, Building Construction Cost Data, 2011, 33 11 \$14.60 \$10.70 \$2.72 108.20% Water Utility Distribution Piping Install & Test, 6" Ductile Iron Piping, MJ 100 LF \$3,031.76 Quote per Quigg Bros, Aberdeen, WA, phone Utility Bedding, For Pipe & Conduit, Not Incl. Compaction 12 LCY \$20.00 108.20% conversation on June 29th, 2011 RSMeans Building Construction Cost Data, 2011, 31 05 Haul of Material, 40 MPH, cycle 40 MPH 12 LCY \$7.64 \$14.10 108.20% \$282.27 16. 31 23 23.20 Hauling RSMeans, Building Construction Cost Data, 2011, 31 23 10 ECY \$3.05 \$0.34 108.20% \$36.68 23.16 Fill By Borrow & Utility Bedding Compacting Bedding In Trench RSMeans, Building Construction Cost Data, 2011, 31 23 Backfill, General Fill By Dozer, No Compaction 75 LCY \$0.50 \$1.05 108.20% \$125.78 23.17 General Fill

\$2.88

\$8.30

\$7.64

\$3.05

\$0.50

\$1,200.00

\$2.16

\$8.05

\$0.00

Storm Drainage

Excavate, 3/4 CY Excavator, 6'-10' deep

Install & Test, 12" Bituminous Coated

Haul of Material, 40 MPH, cycle 40 MPH

Backfill, General Fill By Dozer, No Compaction

Compacting Bedding In Trench

Concrete, Precast, 4' ID riser, 4' deep

Excavate, 3/4 CY Excavator, 4'-6' deep

Install & Test PVC, type EB 4 @ 3" diameter

Utility Bedding, For Pipe & Conduit, Not Incl. Compaction

Area Drains/Catch Basins

Electrical

Utility Bedding, For Pipe & Conduit, Not Incl. Compaction

60

100

12

12

10

60

6

70

100

40

BCY

LF

LCY

LCY

ECY

LCY

EΑ

BCY

LF

LCY

\$11.50

\$20.00

\$1,425.00

\$2.00

\$20.00

\$2.85

\$1.53

\$14.10

\$0.34

\$1.05

\$0.00

\$2.13

\$0.00

108.20%

108.20%

108.20%

108.20%

108.20%

108.20%

108.20%

108.20%

108.20%

108.20%

\$371.99

\$2,307.91

\$259.68

\$282.27

\$36.68

\$100.63

\$17.041.50

\$324.92

\$1,087.41

\$865.60

Assuming 100' distance from service at street

Quote per Quigg Bros, Aberdeen, WA, phone

Assuming 6 Area Drains/Catch Basins on Site
RSMeans Assemblies Cost Data, 2011, G3030 210,
Manholes & Catch Basins (Equipment Cost included in

Assuming 100' distance from service at street
RSMeans, Building Construction Cost Data, 2011, 31 23

19 Electrical Underground Ducts and Manholes

Quote per Quigg Bros, Aberdeen, WA, phone

16.13 Excavating, Trench

16, 31 23 23.20 Hauling

23.17 General Fill

Installation Cost)

16.13 Excavating Trench

conversation on June 29th, 2011

Storm Utility Drainage Piping

conversation on June 29th, 2011

23.16 Fill By Borrow & Utility Bedding

RSMeans, Building Construction Cost Data, 2011, 31 23

RSMeans, Building Construction Cost Data, 2011, 33 41

RSMeans Building Construction Cost Data, 2011, 31 05

RSMeans, Building Construction Cost Data, 2011, 31 23

RSMeans, Building Construction Cost Data, 2011, 31 23

RSMeans, Building Construction Cost Data, 2011, 33 71

								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling
								RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	23.17 General Fill
								RSMeans, Building Construction Cost Data, 2011, 31 23
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	\$20,125.20	23.17 General Fill
							\$49,813.97	

Excavation-Backfill Quantity Unit **Material Cost** Installation Cost **Equipment Cost Location Factor** Total Cost Comments Site Preparation RSMeans Building Construction Cost Data, 2011, 31 13 \$320.00 \$525.00 108.20% \$2,742.87 Clear & Grub 3 acres 13, Selective Clearing RSMeans Building Construction Cost Data, 2011, 02 21 \$32.50 \$565.00 \$35.00 108.20% \$2,053.10 13 Site Surveys Survey Site 3 acres RSMeans, Building Construction Cost Data, 2011, 01 54 \$116.00 Mobilization of Equipment 10 EΑ \$69.00 100.00% \$1,850.00 36.50 Mobilization **Material Costs** RSMeans Building Construction Cost Data, 2011, 31 05 16, Aggregates for Earthwork, Select Structural Fill & 3994 LCY \$20.00 \$1.75 \$3.44 108.20% \$108,858.79 Material Cost from Quigg Bros., Aberdeen, WA Fill Material, Select Structural Fill, 1 1/2" minus aggregate RSMeans Building Construction Cost Data, 2011, 31 05 Haul of Material, 40 MPH, cycle 40 MPH 3994 LCY \$7.64 \$14.10 108.20% \$93,949.58 16, 31 23 23.20 Hauling Placement of Material RSMeans Building Construction Data, 2011, 31 23 23.13 Compacting Backfill, 6"to 12" lifts, vibrating roller 3698 ECY \$0.63 \$1.81 108.20% \$9,763.41 Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082 RSMeans Building Construction Cost Data, 2011, 32 11 SF per lift 4622 SY \$1.48 \$0.09 \$0.03 108.20% \$8,001.99 23 Aggregate Base Courses \$227,219.73

Concrete Quantity Unit **Material Cost Installation Cost** Equipment **Location Factor Total Cost** Comments RSMeans, Building Construction Cost Data, 2011, 01 54 Mobilization of Equipment 10 EΑ \$116.00 \$185.00 100.00% \$3,010.00 36.50 Mobilization Based on square root of the berm safe haven area LF Tsunami Wave Inundation Concrete Wall 208 times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in 108.20% \$7,151.49 Excavation, 6' deep 1247 SF \$0.00 \$5.30 \$0.00 Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long 99.30% 208 LF \$46.25 \$81.00 \$0.00 Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Subdrainage Piping, 4" diameter, PVC, perforated 208 LF \$2.04 \$3.77 \$0.00 99.30% \$1,199.13 Installation) Stepped Concrete Wall 4' high 88', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment \$77.00 99.30% \$74,287.92 | Cost Included in Installation) 5' high wall, pumped, 8" thick 675 LF \$33.75 \$0.00 RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in 675 LF \$2.04 \$3.77 \$0.00 108.20% \$4.246.48 Subdrainage Piping, 4" diameter, PVC, perforated RSMeans Building Construction Cost Data, 2011, 03 35 2702 SF \$14,193.52 29.60 Sandblast Concrete Heavy Treatment \$1.46 \$3.31 \$0.52 99.30% Concrete or Gravel Platform Asphaltic Concrete Paving, 6" stone bse, 2" binder course, RSMeans Building Construction Cost Data, 2011, 32 12 \$1.85 108.20% 1" toping 4800 SF \$0.20 \$0.24 16.14 Asphaltic Concrete Paving

Haul of Material, 40 MPH, cycle 40 MPH	89	СУ		\$7.64	\$14.10	108.20%	\$2,090.90	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
							\$144,336.06	
	1	T		1				
Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	151	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$9,319.63	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	907	SY	\$0.20	\$0.10	\$0.06	108.20%	\$353.16	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	50	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$3,085.98	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9								& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	208	LF	\$17.65	\$4.82	\$0.00	95.40%	\$4,455.47	Installation)
	Ì							RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	8160	SF	\$0.32	\$0.46	\$0.00	108.20%	\$6,886.71	23.10, sprinkler irrigation system
							\$24,100.96	

Minimum Structure Height (ft)

10

Map Number:

B2

iviap Number:	BZ			Wilnimum Struct	ucture Height (π) 10				
Structure Type:	Berm			Structure Capaci	ty:	800			
Location:	Long Beach, \	WA, 5th Street	S & Washington	Safe Haven Squa	re Footage:	8000			
Overall Site Square Footage	10598			Volume of Berm	Materials (LCY)	4281			
Scope								Cost	
Site Utilities								\$49,814	
Excavation-Backfill								\$244,752	
Concrete								\$163,089	
Landscaping								\$30,324	
Construction Totals								\$487,978	
Design Fees (8%)								\$39,038	
General Conditions (10%)								\$48,798	
Contractor Fees, O&P (15%)								\$73,197	
Construction Contingency (5%)								\$24,399	
Estimate/Design Contingency (10%)								\$48,798	
Project Total								\$722,208	
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments	
	,					1		RSMeans, Building Construction Cost Data, 2011, 01 54	
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization	
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street	
								RSMeans, Building Construction Cost Data, 2011, 31 23	
Excavate, 3/4 CY Excavator 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench	
								RSMeans, Building Construction Cost Data, 2011, 33 11	
Install & Test, 6" Ductile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	Water Utility Distribution Piping	
								Quote per Quigg Bros, Aberdeen, WA, phone	
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	conversation on June 29th, 2011	
				4	4			RSMeans Building Construction Cost Data, 2011, 31 05	
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling	
Common atting Decidition to Transit	40	FC)/		62.05	60.24	400 200/	626.60	RSMeans, Building Construction Cost Data, 2011, 31 23	
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 23	
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill	
Storm Drainage								Assuming 100' distance from service at street	
Storm Bramage						+		RSMeans, Building Construction Cost Data, 2011, 31 23	
Excavate, 3/4 CY Excavator, 6'-10' deep	60	ВСҮ		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench	
Executate, 5, 1. 61 Executator, 6 10 deep	00	501	I	Q2.00	7£.03	100.2070	75,1.55	Total Encoroting, menon	

Mobilization of Equipment  Material Costs  Fill Material, Select Structural Fill, 1 1/2" minus aggregate  Haul of Material, 40 MPH, cycle 40 MPH  Placement of Material  Compacting Backfill, 6"to 12" lifts, vibrating roller  Stabilization Fabric, Polypropylene, 6oz/SY, 18"' lifts, 5082  SF per lift  Concrete  Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall	10 4281 4281 3964 5926 Quantity 10 268	EA  LCY  LCY  ECY  SY  Unit  EA  LF	\$20.00 \$1.48 Material Cost	\$69.00 \$1.75 \$7.64 \$0.63 \$0.09	\$116.00 \$3.44 \$14.10 \$1.81 \$0.03 Equipment \$185.00	100.00%  108.20%  108.20%  108.20%  Location Factor  100.00%	\$100,700.59 \$10,464.98	RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05-16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05-16, 31 23 23.20 Hauling  RSMeans Building Construction Data, 2011, 31 23 23.1 Backfill RSMeans Building Construction Cost Data, 2011, 32 11 23 Aggregate Base Courses
Material Costs  Fill Material, Select Structural Fill, 1 1/2" minus aggregate  Haul of Material, 40 MPH, cycle 40 MPH  Placement of Material  Compacting Backfill, 6"to 12" lifts, vibrating roller  Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082  SF per lift  Concrete	4281 4281 3964 5926	LCY LCY ECY SY	\$1.48	\$1.75 \$7.64 \$0.63 \$0.09	\$3.44 \$14.10 \$1.81 \$0.03	108.20% 108.20% 108.20% 108.20%	\$116,681.14 \$100,700.59 \$10,464.98 \$10,258.96 \$244,751.64	RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05-16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05-16, 31 23 23.20 Hauling  RSMeans Building Construction Data, 2011, 31 23 23.1 Backfill  RSMeans Building Construction Cost Data, 2011, 32 11-23 Aggregate Base Courses  Comments  RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization
Material Costs  Fill Material, Select Structural Fill, 1 1/2" minus aggregate  Haul of Material, 40 MPH, cycle 40 MPH  Placement of Material  Compacting Backfill, 6"to 12" lifts, vibrating roller  Stabilization Fabric, Polypropylene, 6oz/SY, 18"' lifts, 5082  SF per lift	4281 4281 3964 5926	LCY LCY ECY SY	\$1.48	\$1.75 \$7.64 \$0.63 \$0.09	\$3.44 \$14.10 \$1.81 \$0.03	108.20% 108.20% 108.20% 108.20%	\$116,681.14 \$100,700.59 \$10,464.98 \$10,258.96 \$244,751.64	RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05 16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling  RSMeans Building Construction Data, 2011, 31 23 23.1 Backfill  RSMeans Building Construction Cost Data, 2011, 32 11 23 Aggregate Base Courses
Material Costs  Fill Material, Select Structural Fill, 1 1/2" minus aggregate  Haul of Material, 40 MPH, cycle 40 MPH  Placement of Material  Compacting Backfill, 6"to 12" lifts, vibrating roller  Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082	4281 4281 3964	LCY LCY		\$1.75 \$7.64 \$0.63	\$3.44 \$14.10 \$1.81	108.20% 108.20%	\$116,681.14 \$100,700.59 \$10,464.98 \$10,258.96	RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05-16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05-16, 31 23 23.20 Hauling  RSMeans Building Construction Data, 2011, 31 23 23.1 Backfill RSMeans Building Construction Cost Data, 2011, 32 11 23 Aggregate Base Courses
Material Costs  Fill Material, Select Structural Fill, 1 1/2" minus aggregate  Haul of Material, 40 MPH, cycle 40 MPH  Placement of Material  Compacting Backfill, 6"to 12" lifts, vibrating roller  Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082	4281 4281 3964	LCY LCY		\$1.75 \$7.64 \$0.63	\$3.44 \$14.10 \$1.81	108.20% 108.20%	\$116,681.14 \$100,700.59 \$10,464.98 \$10,258.96	RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05-16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05-16, 31 23 23.20 Hauling  RSMeans Building Construction Data, 2011, 31 23 23.1 Backfill RSMeans Building Construction Cost Data, 2011, 32 11 23 Aggregate Base Courses
Material Costs  Fill Material, Select Structural Fill, 1 1/2" minus aggregate  Haul of Material, 40 MPH, cycle 40 MPH  Placement of Material  Compacting Backfill, 6"to 12" lifts, vibrating roller	4281 4281	LCY LCY	\$20.00	\$1.75 \$7.64	\$3.44 \$14.10	108.20%	\$116,681.14 \$100,700.59	RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05-16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05-16, 31 23 23.20 Hauling  RSMeans Building Construction Data, 2011, 31 23 23.1 Backfill
Material Costs  Fill Material, Select Structural Fill, 1 1/2" minus aggregate  Haul of Material, 40 MPH, cycle 40 MPH	4281	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$116,681.14	RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05 16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Material Costs  Fill Material, Select Structural Fill, 1 1/2" minus aggregate	4281	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$116,681.14	RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05-16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05-
Material Costs			\$20.00					RSMeans, Building Construction Cost Data, 2011, 01 5-36.50 Mobilization  RSMeans Building Construction Cost Data, 2011, 31 05-16, Aggregates for Earthwork, Select Structural Fill &
	10	EA		\$69.00	\$116.00	100.00%	\$1,850.00	RSMeans, Building Construction Cost Data, 2011, 01 5
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	13 Site Surveys
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	RSMeans Building Construction Cost Data, 2011, 31 13 13, Selective Clearing RSMeans Building Construction Cost Data, 2011, 02 21
Excavation-Backfill Site Preparation	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Eight Fore, Mullimum, 20 mgfl, 1 dfff Didtket	O	LA	₹1,∠3U.UU	<b>⊋1,073.00</b>	νυ.υυ	100.2070	\$49,813.97	23.17 General i iii
Backfill, General Fill By Dozer, No Compaction Light Pole, Aluminum, 20' high, 1 arm bracket	44 8	LCY EA	\$1,250.00	\$0.50 \$1.075.00	\$1.05 \$0.00	108.20%	\$73.79	23.17 General Fill RSMeans, Building Construction Cost Data, 2011, 31 2. 23.17 General Fill
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 2
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling RSMeans, Building Construction Cost Data, 2011, 31 2
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	Quote per Quigg Bros, Aberdeen, WA, phone conversation on June 29th, 2011 RSMeans Building Construction Cost Data, 2011, 31 05
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	RSMeans, Building Construction Cost Data, 2011, 33 7 19 Electrical Underground Ducts and Manholes
Excavate, 3/4 CY Excavator, 4'-6' deep	70	ВСҮ		\$2.16	\$2.13	108.20%	\$324.92	RSMeans, Building Construction Cost Data, 2011, 31 2 16.13 Excavating Trench
Concrete, Precast, 4' ID riser, 4' deep Electrical	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Manholes & Catch Basins (Equipment Cost included in Installation Cost)  Assuming 100' distance from service at street
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site RSMeans Assemblies Cost Data, 2011, G3030 210,
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	RSMeans, Building Construction Cost Data, 2011, 31 2 23.17 General Fill
	10	ECY						RSMeans, Building Construction Cost Data, 2011, 31 2
			\$20.00	\$7.64	\$14.10			RSMeans Building Construction Cost Data, 2011, 31 0
			·	,,,,,,	T-100			Quote per Quigg Bros, Aberdeen, WA, phone
Install & Test, 12" Bituminous Coated  Utility Bedding, For Pipe & Conduit, Not Incl. Compaction  Haul of Material, 40 MPH, cycle 40 MPH  Compacting Bedding In Trench	100 12 12 10	LF LCY LCY ECY	\$11.50	\$8.30 \$7.64 \$3.05	\$1.53 \$14.10 \$0.34	108.20% 108.20% 108.20%	\$2,307.91 \$259.68 \$282.27 \$36.68	conversation on June 29th, 2011 RSMeans Building Construction Cost Data, 16, 31 23 23.20 Hauling RSMeans, Building Construction Cost Data 23.16 Fill By Borrow & Utility Bedding

								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 10' pumped, 12" thick (Equipment
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	268	LF	\$46.25	\$81.00	\$0.00	99.30%	\$33,905.74	Cost included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	268	LF	\$2.04	\$3.77	\$0.00	99.30%	\$1,548.07	Installation)
Stepped Concrete Wall 4' high								88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 6' pumped, 8" thick. Material costs
								have been increased 25% for additional reinforcing
								required for seismic event and tsunami. (Equipment
5' high wall, pumped, 8" thick	671	LF	\$33.75	\$77.00	\$0.00	99.30%	\$73,773.31	Cost Included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	671	LF	\$2.04	\$3.77	\$0.00	108.20%	\$4,217.06	Installation)
								RSMeans Building Construction Cost Data, 2011, 03 35
Sandblast Concrete Heavy Treatment	2683	SF	\$1.46	\$3.31	\$0.52	99.30%	\$14,095.20	29.60
Concrete or Gravel Platform								
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,								RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	8000	SF	\$1.85	\$0.20	\$0.24	108.20%	\$19,822.24	16.14 Asphaltic Concrete Paving
	•							RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	148	CY		\$7.64	\$14.10	108.20%	\$3,484.84	16, 31 23 23.20 Hauling
							44.60 000 00	

\$163,088.99

Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	196	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$12,104.09	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	1178	SY	\$0.20	\$0.10	\$0.06	108.20%	\$458.68	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	50	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$3,064.61	
Fencing at Top of Berm, chain link, 2" post, 15/8" rail, 9 ga. Galv. Wire 5' high	268	LF	\$17.65	\$4.82	\$0.00	95.40%		RSMeans Assemblies Cost Data, 2011, G2040 105 Fence & Guardrails (Equipment Costs are included in Installation)
								RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	10598	SF	\$0.32	\$0.46	\$0.00	108.20%	\$8,944.29	23.10, sprinkler irrigation system

\$30,323.65

Map Number:	B3	Minimum Struct	ure Height (ft)	13
Structure Type:	Berm	Structure Capaci	ty:	320
Location:	Long Beach, WA, NE 2nd & Washington	Safe Haven Square Footage:		3200
Overall Site Square Footage	6560	Volume of Berm	Materials (LCY)	3008
Scope				Cost
Site Utilities				\$49,814
Excavation-Backfill				\$172,075
Concrete				\$116,307
Landscaping				\$19,470
Construction Totals				\$357,666
Design Fees (8%)				\$28,613
General Conditions (10%)				\$35,767
Contractor Fees, O&P (15%)				\$53,650
Construction Contingency (5%)				\$17,883
Estimate/Design Contingency (10%)				\$35,767
Project Total		·		\$529,345

Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street
Excavate, 3/4 CY Excavator 4'-6' deep	70	ВСҮ		\$2.16	\$2.13	108.20%	\$324.92	RSMeans, Building Construction Cost Data, 2011, 31 23 16.13, Excavating Trench
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	RSMeans, Building Construction Cost Data, 2011, 33 11 Water Utility Distribution Piping
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	Quote per Quigg Bros, Aberdeen, WA, phone conversation on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
								RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill
Storm Drainage								Assuming 100' distance from service at street
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	RSMeans, Building Construction Cost Data, 2011, 31 23 16.13 Excavating, Trench
Excavate, 5/4 et Excavator, 5 15 deep	- 00	Bei		Ų2.00	ŲZ.03	100.2070	Ç371.33	RSMeans, Building Construction Cost Data, 2011, 33 41
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	Quote per Quigg Bros, Aberdeen, WA, phone conversation on June 29th, 2011
other seating, for tipe a contact, for men compaction		20.	<b>\$20.00</b>			100.2070	ψ <u>2</u> 55.00	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	RSMeans, Building Construction Cost Data, 2011, 31 23 23.16 Fill By Borrow & Utility Bedding
					-			RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site
								RSMeans Assemblies Cost Data, 2011, G3030 210, Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost)
Electrical								Assuming 100' distance from service at street
Excavate, 3/4 CY Excavator, 4'-6' deep	70	ВСҮ		\$2.16	\$2.13	108.20%	\$324.92	RSMeans, Building Construction Cost Data, 2011, 31 23 16.13 Excavating Trench
Excurate, 5/4 or Excurator, 4 o deep	,,,	Bei		Ų2.10	ŲZ.13	100.2070	<b>7324.32</b>	RSMeans, Building Construction Cost Data, 2011, 33 71
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	Quote per Quigg Bros, Aberdeen, WA, phone conversation on June 29th, 2011
			·					RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	RSMeans, Building Construction Cost Data, 2011, 31 23 23.16 Fill By Borrow & Utility Bedding
Deal-Ell Conoral Fill Du Donor No Composition	44	LCY		60.50	Ć1 0F	100 200/	ć72.70	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	RSMeans, Building Construction Cost Data, 2011, 31 23
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	. ,	23.17 General Fill
			<u></u>	<u> </u>			\$49,813.97	
		1	Г	l l		T		
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	<b>Location Factor</b>	Total Cost	Comments
Site Preparation								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing
					·			RSMeans Building Construction Cost Data, 2011, 02 21
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108 20%	\$2.053.10	13 Site Surveys

Survey Site \$32.50 \$565.00 \$35.00 108.20% \$2,053.10 13 Site Surveys acres RSMeans, Building Construction Cost Data, 2011, 01 54 Mobilization of Equipment 10 EΑ \$69.00 \$116.00 36.50 Mobilization 100.00% \$1,850.00 Material Costs

								RSMeans Building Construction Cost Data, 2011, 31 05
								16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	3008	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$81,984.78	Material Cost from Quigg Bros., Aberdeen, WA
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	3008	LCY		\$7.64	\$14.10	108.20%	\$70,756.22	16, 31 23 23.20 Hauling
Placement of Material								RSMeans Building Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller	2785	ECY		\$0.63	\$1.81	108.20%	\$7,353.11	Backfill
Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082				75.00	7		71/000122	RSMeans Building Construction Cost Data, 2011, 32 11
SF per lift	3081	SY	\$1.48	\$0.09	\$0.03	108.20%	\$5,334.66	23 Aggregate Base Courses
							\$172,074.74	
				, ,				
Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	Location Factor	Total Cost	Comments
Concrete	Quartity	Oille	Waterial Cost	mstanation cost	Equipment	Location ractor	iotai cost	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization
4. p				, , ,			, -,	Based on square root of the berm safe haven area
Tsunami Wave Inundation Concrete Wall	170	LF						times three walls
								RSMeans Assemblies Cost Data, 2011, A2010 110
								building Excavation & Backfill, 6' deep, sand, gravel, or
Excavation, 6' deep	1018	SF	\$0.00	\$5.30	\$0.00	108.20%	\$5,839.16	common earth. (Equipment Cost included in Installation)
Excavation, o deep	1018	31	\$0.00	\$5.50	\$0.00	108.20%	\$3,633.10	RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 10' pumped, 12" thick (Equipment
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	170	LF	\$46.25	\$81.00	\$0.00	99.30%	\$21,443.88	Cost included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	170	LF	\$2.04	\$3.77	\$0.00	99.30%	\$979.09	Installation)
Stepped Concrete Wall 4' high								88', 86', 82', 72', 60' length walls, 12" thick, 5' high.  RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 6' pumped, 8" thick. Material costs
								have been increased 25% for additional reinforcing
								required for seismic event and tsunami. (Equipment
5' high wall, pumped, 8" thick	552	LF	\$33.75	\$77.00	\$0.00	99.30%	\$60,655.84	Cost Included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
Subdecises Disire All diseases DVC as afronted	553		62.04	62.77	ć0.00	400 200/	ć2 467 22	Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	552	LF	\$2.04	\$3.77	\$0.00	108.20%	\$3,467.23	Installation) RSMeans Building Construction Cost Data, 2011, 03 35
Sandblast Concrete Heavy Treatment	2206	SF	\$1.46	\$3.31	\$0.52	99.30%	\$11,588.96	29.60
Concrete or Gravel Platform		-	,	,			, ,	
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,								RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	3200	SF	\$1.85	\$0.20	\$0.24	108.20%	\$7,928.90	16.14 Asphaltic Concrete Paving
Haul of Material 40 MPH, cycle 40 MPH	59	CY		\$7.64	\$14.10	108.20%	\$1,393.94	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Haul of Material, 40 MPH, cycle 40 MPH	39	Cf		\$7.04	\$14.10	108.20%	\$1,393.94	
							\$110,500.55	
			1			1		
Landscaping	Quantity	Unit	Material Costs	Installation Costs	<b>Equipment Costs</b>	<b>Location Factor</b>	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								DCM Building Construction Cost Data 2014, 22 04
Top Soil	121	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$7 492 25	RSMeans Building Construction Cost Data, 2011, 32 91 19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	729	SY	\$0.20	\$0.10	\$0.06	108.20%	\$283.92	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	41	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$2,519.69	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9			1 .	[				& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	170	LF	\$17.65	\$4.82	\$0.00	95.40%	\$3,637.87	Installation)
Irrigation System	6560	SF	\$0.32	\$0.46	\$0.00	108.20%	\$5,536.38	RSMeans Building Construction Costs, 2011, 32 84 23.10, sprinkler irrigation system
Irrigation System	UDCU	31	ŞU.3∠	ŞU.40	ου.υυ	100.20%	\$5,536.38 <b>\$19,470.11</b>	
							71J,→/U.11	J

Name Name have	D.4			Indiana and a	11.1.1.1.163	Ten		
Map Number:	B4			Minimum Struct		10		
Structure Type:	Berm			Structure Capaci		560		
Location:		WA, NE 13th &	Washington	Safe Haven Squa	_	5600		
Overall Site Square Footage	8120			Volume of Berm	Materials (LCY)	3171		
Scope								Cost
Site Utilities								\$49,814
Excavation-Backfill								\$182,597
Concrete								\$133,757
Landscaping								\$23,855
Construction Totals								\$390,022
Design Fees (8%)							\$31,202	
General Conditions (10%)							\$39,002	
Contractor Fees, O&P (15%)								\$58,503
Construction Contingency (5%)								\$19,501
Estimate/Design Contingency (10%)								\$39,002
Project Total								\$577,233
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	<b>Location Factor</b>	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street
5 , 0/4 0/5 , 4/5//		5.07		40.46	42.42	100 200/	4004.00	RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench
Install 9. Tost 6" Dutile Iron Dining MI	100	LF	\$14.60	\$10.70	\$2.72	108.20%	¢2 021 76	RSMeans, Building Construction Cost Data, 2011, 33 11 Water Utility Distribution Piping
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	conversation on June 29th, 2011
other bedding, for tipe & conduit, Not mei. compaction	12	LCI	Ş20.00			100.2070	\$233.00	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
				71101	*		,	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill
Storm Drainage								Assuming 100' distance from service at street
								RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench
Install 0. Test 42ll Bituminas Central	400		644.50	ć0.20	64.52	400 200/	62 207 04	RSMeans, Building Construction Cost Data, 2011, 33 41
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	Quote per Quigg Bros, Aberdeen, WA, phone conversation on June 29th, 2011
other bedding, for tipe & conduit, Not mei. compaction	12	LCI	Ş20.00			100.2070	\$233.00	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
, , , , , , , , , , , , , , , , , , , ,		-			,			RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site
								RSMeans Assemblies Cost Data, 2011, G3030 210,
	_							Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost)
Electrical			1	<del>                                     </del>		+		Assuming 100' distance from service at street
Excavate, 3/4 CY Excavator, 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	RSMeans, Building Construction Cost Data, 2011, 31 23 16.13 Excavating Trench
LACAVAIC, 3/4 CT EXCAVAIOI, 4 -0 ueep	70	DCT		\$2.10	34.13	100.2070	3324.9Z	RSMeans, Building Construction Cost Data, 2011, 33 71
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes
mistan & reserve, type Eb 4 @ 5 diameter	100	LI	9£.00	Ç0.05		100.20/0	71,007.41	Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	conversation on June 29th, 2011
		-						RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling
	•		•	•		•		

								RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	23.17 General Fill
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	\$20,125.20	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
Light Pole, Aluminum, 20 mgn, 1 ami bracket	٥	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	\$49,813.97	23.17 General Fili
							,	
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Site Preparation	Quantity	Offic	iviateriai cost	ilistaliation cost	Equipment Cost	Location Factor	iotal Cost	Comments
								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing RSMeans Building Construction Cost Data, 2011, 02 21
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	13 Site Surveys
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment  Material Costs	10	EA		\$69.00	\$116.00	100.00%	\$1,850.00	36.50 Mobilization
Material Costs								RSMeans Building Construction Cost Data, 2011, 31 05
				4	**			16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	3171	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$86,427.44	Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	3171	LCY		\$7.64	\$14.10	108.20%	\$74,590.42	16, 31 23 23.20 Hauling
Placement of Material								RSMeans Building Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller	2936	ECY		\$0.63	\$1.81	108.20%	\$7,751.57	Backfill
Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082								RSMeans Building Construction Cost Data, 2011, 32 11
SF per lift	4148	SY	\$1.48	\$0.09	\$0.03	108.20%	\$7,181.27 <b>\$182,596.67</b>	23 Aggregate Base Courses
							3182,330.07	
Company								
	O	1114	84-4	to a collection of a sec	F t		T-4-1 C4	0
Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	Location Factor	Total Cost	Comments  RSMeans Ruilding Construction Cost Data 2011 01 54
Mobilization of Equipment	Quantity 10	Unit EA	Material Cost	\$116.00	\$185.00	Location Factor	\$3,010.00	Comments RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Mobilization of Equipment	10	EA	Material Cost					RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area
	,		Material Cost					RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls
Mobilization of Equipment	10	EA	Material Cost					RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall	10	EA LF		\$116.00	\$185.00	100.00%	\$3,010.00	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in
Mobilization of Equipment	10	EA	Material Cost					RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation)
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall	10	EA LF SF		\$116.00	\$185.00	100.00%	\$3,010.00	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall	10	EA LF		\$116.00	\$185.00	100.00%	\$3,010.00 \$7,724.49	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation)
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep	10 224 1347	EA LF SF	\$0.00	\$116.00 \$5.30	\$185.00	100.00%	\$3,010.00 \$7,724.49	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220,
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long  Subdrainage Piping, 4" diameter, PVC, perforated	10 224 1347	EA LF SF	\$0.00	\$116.00 \$5.30	\$185.00	100.00%	\$3,010.00 \$7,724.49	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation)
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long	10 224 1347	EA LF SF LF	\$0.00	\$116.00 \$5.30 \$81.00	\$185.00 \$0.00 \$0.00	100.00% 108.20% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) 88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long  Subdrainage Piping, 4" diameter, PVC, perforated	10 224 1347	EA LF SF LF	\$0.00	\$116.00 \$5.30 \$81.00	\$185.00 \$0.00 \$0.00	100.00% 108.20% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation)
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long  Subdrainage Piping, 4" diameter, PVC, perforated	10 224 1347	EA LF SF LF	\$0.00	\$116.00 \$5.30 \$81.00	\$185.00 \$0.00 \$0.00	100.00% 108.20% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) B8', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long  Subdrainage Piping, 4" diameter, PVC, perforated  Stepped Concrete Wall 4' high	10 224 1347 224	EA  LF  SF  LF	\$0.00 \$46.25 \$2.04	\$116.00 \$5.30 \$81.00 \$3.77	\$185.00 \$0.00 \$0.00 \$0.00	100.00% 108.20% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58 \$1,295.21	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) 88', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long  Subdrainage Piping, 4" diameter, PVC, perforated	10 224 1347	EA LF SF LF	\$0.00	\$116.00 \$5.30 \$81.00	\$185.00 \$0.00 \$0.00	100.00% 108.20% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58 \$1,295.21	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) B8', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long  Subdrainage Piping, 4" diameter, PVC, perforated  Stepped Concrete Wall 4' high  5' high wall, pumped, 8" thick	10 224 1347 224 224	EA  LF  LF  LF	\$0.00 \$46.25 \$2.04 \$33.75	\$116.00 \$5.30 \$81.00 \$3.77	\$185.00 \$0.00 \$0.00 \$0.00	100.00% 108.20% 99.30% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58 \$1,295.21	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) 88', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment Cost Included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long  Subdrainage Piping, 4" diameter, PVC, perforated  Stepped Concrete Wall 4' high	10 224 1347 224	EA  LF  SF  LF	\$0.00 \$46.25 \$2.04	\$116.00 \$5.30 \$81.00 \$3.77	\$185.00 \$0.00 \$0.00 \$0.00	100.00% 108.20% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58 \$1,295.21	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) B8', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment Cost Included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation)
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long  Subdrainage Piping, 4" diameter, PVC, perforated  Stepped Concrete Wall 4' high  5' high wall, pumped, 8" thick	10 224 1347 224 224	EA  LF  LF  LF	\$0.00 \$46.25 \$2.04 \$33.75	\$116.00 \$5.30 \$81.00 \$3.77	\$185.00 \$0.00 \$0.00 \$0.00	100.00% 108.20% 99.30% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58 \$1,295.21	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) 88', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment Cost Included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long  Subdrainage Piping, 4" diameter, PVC, perforated  Stepped Concrete Wall 4' high  5' high wall, pumped, 8" thick  Subdrainage Piping, 4" diameter, PVC, perforated  Sandblast Concrete Heavy Treatment  Concrete or Gravel Platform	10 224 1347 224 224 561	EA  LF  LF  LF	\$0.00 \$46.25 \$2.04 \$33.75	\$116.00 \$5.30 \$81.00 \$3.77 \$77.00	\$185.00 \$0.00 \$0.00 \$0.00 \$0.00	100.00% 108.20% 99.30% 99.30% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58 \$1,295.21 \$61,723.18 \$3,528.24	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) 88', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A 2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment Cost Included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) RSMeans Building Construction Cost Data, 2011, 03 35 29.60
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long  Subdrainage Piping, 4" diameter, PVC, perforated  Stepped Concrete Wall 4' high  5' high wall, pumped, 8" thick  Subdrainage Piping, 4" diameter, PVC, perforated  Sandblast Concrete Heavy Treatment  Concrete or Gravel Platform  Asphaltic Concrete Paving, 6" stone bse, 2" binder course,	10 224 1347 224 224 561 561	EA  LF  SF  LF  LF  LF  SF	\$0.00 \$46.25 \$2.04 \$33.75 \$2.04 \$1.46	\$116.00 \$5.30 \$81.00 \$3.77 \$77.00 \$3.77 \$3.31	\$185.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.52	100.00% 108.20% 99.30% 99.30% 108.20% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58 \$1,295.21 \$61,723.18 \$3,528.24 \$11,792.89	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) 88', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment Cost Included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) RSMeans Building Construction Cost Data, 2011, 03 35 29.60
Mobilization of Equipment  Tsunami Wave Inundation Concrete Wall  Excavation, 6' deep  Walls, Cast in place, 6' deep, pumped, 12" thick, 88' long  Subdrainage Piping, 4" diameter, PVC, perforated  Stepped Concrete Wall 4' high  5' high wall, pumped, 8" thick  Subdrainage Piping, 4" diameter, PVC, perforated  Sandblast Concrete Heavy Treatment  Concrete or Gravel Platform	10 224 1347 224 224 561	EA  LF  LF  LF	\$0.00 \$46.25 \$2.04 \$33.75	\$116.00 \$5.30 \$81.00 \$3.77 \$77.00	\$185.00 \$0.00 \$0.00 \$0.00 \$0.00	100.00% 108.20% 99.30% 99.30% 99.30%	\$3,010.00 \$7,724.49 \$28,367.58 \$1,295.21 \$61,723.18 \$3,528.24	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) 88', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A 2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment Cost Included in Installation) RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in Installation) RSMeans Building Construction Cost Data, 2011, 03 35 29.60

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Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	<b>Location Factor</b>	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	150	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$9,273.94	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	902	SY	\$0.20	\$0.10	\$0.06	108.20%	\$351.43	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	42	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$2,564.03	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9								& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	224	LF	\$17.65	\$4.82	\$0.00	95.40%	\$4,812.46	Installation)
								RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	8120	SF	\$0.32	\$0.46	\$0.00	108.20%	\$6,852.96	23.10, sprinkler irrigation system
·			•	•			¢22 0E4 02	

\$23,854.82

Map Number:	B5			Minimum Struct	ure Height (ft)	10		
Structure Type:	Berm			Structure Capaci	ty:	400		
Location:	Long Beach, \	WA, NE 26th &	Washington	Safe Haven Squa	re Footage:	4000		
Overall Site Square Footage	6520		<del>_</del>	Volume of Berm	Materials (LCY)	2432		
Scope								Cost
Site Utilities								\$49,814
Excavation-Backfill								\$141,213
Concrete								\$111,376
Landscaping								\$19,466
Construction Totals								\$321,869
Design Fees (8%)								\$25,749
General Conditions (10%)								\$32,187
Contractor Fees, O&P (15%)	<u> </u>					· · · · · · · · · · · · · · · · · · ·		\$48,280
Construction Contingency (5%)								\$16,093
Estimate/Design Contingency (10%)								\$32,187
Project Total								\$476,366
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	<b>Location Factor</b>	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street
				44.4				RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench RSMeans, Building Construction Cost Data, 2011, 33 11
Install 9 Test C' Dutile Iron Dining MI	100	LF	\$14.60	\$10.70	\$2.72	108.20%	¢2 024 7C	Water Utility Distribution Piping
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.00	\$10.70	\$2.72	108.20%	\$3,031.76	Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	conversation on June 29th, 2011
other bedding, for tipe & conduct, Not men compaction		LCI	\$20.00			100.2070	Ç233.00	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
, , , , , , , , , , , , , , , , , , , ,					,			RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill
Storm Drainage								Assuming 100' distance from service at street
								RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench
								RSMeans, Building Construction Cost Data, 2011, 33 41
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping
Helling Deddien For Direct Conduits Not lead Co.	12	107	620.00			100 200/	6250.60	Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00	l		108.20%	\$259.68	conversation on June 29th, 2011

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Have a find a first and a firs	42	1.07		67.64	614.40	400 200/	6202.27	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY	-	\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
Compacting bedding in Henen	10	LCI		Ş3.03	<del>90.54</del>	100.2070	730.00	RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site
								RSMeans Assemblies Cost Data, 2011, G3030 210,
								Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost)
Electrical								Assuming 100' distance from service at street
Survey 2/4 CV Survey 41 Cl days	70	0.07		62.46	62.42	400 200/	6224.02	RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13 Excavating Trench RSMeans, Building Construction Cost Data, 2011, 33 71
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes
install & lest 1 ve, type EB 4 @ 5 diameter	100		Ş2.00	Ş0.03		100.2070	71,007.41	Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	conversation on June 29th, 2011
, 3, 1				·				RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling
								RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding
					_			RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	23.17 General Fill
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	¢20 125 20	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
Light Fole, Aluminum, 20 mgn, 1 ann bracket		LA	\$1,230.00	\$1,075.00	\$0.00	108.20%	\$49,813.97	23.17 General Fill
							Ş43,013.37	
	T	П	T			1		
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	<b>Equipment Cost</b>	<b>Location Factor</b>	Total Cost	Comments
Site Preparation								
								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing
	_		444	4			4	RSMeans Building Construction Cost Data, 2011, 02 21
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	13 Site Surveys
Mobilization of Equipment	10	EA		\$69.00	\$116.00	100.00%	\$1,850.00	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Material Costs	10	EA		\$69.00	\$116.00	100.00%	\$1,630.00	36.30 MODILIZATION
iviaterial Costs								RSMeans Building Construction Cost Data, 2011, 31 05
								16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	2432	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$66,285.57	Material Cost from Quigg Bros., Aberdeen, WA
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	2432	LCY		\$7.64	\$14.10	108.20%	\$57,207.16	16, 31 23 23.20 Hauling
Placement of Material								
					4			RSMeans Buidling Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller Stabilization Fabric, Polypropylene, 6oz/SY, 18"' lifts, 5082	2252	ECY		\$0.63	\$1.81	108.20%	\$5,945.07	Backfill RSMeans Building Construction Cost Data, 2011, 32 11
SF per lift	2963	SY	\$1.48	\$0.09	\$0.03	108.20%	\$5,129.48	23 Aggregate Base Courses
or per int	2903	31	\$1.46	Ş0.0 <i>9</i>	Ş0.03	108.20%	\$141,213.24	
							\$141,21 <b>3.2</b> 4	
Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	Location Factor	Total Cost	Comments
	,							RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization
' '						1		
								Based on square root of the berm safe haven area
Tsunami Wave Inudation Concrete Wall	190	LF						
Tsunami Wave Inudation Concrete Wall								Based on square root of the berm safe haven area
Tsunami Wave Inudation Concrete Wall								Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or
	190	LF						Based on square root of the berm safe haven area times three walls  RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in
Tsunami Wave Inudation Concrete Wall  Excavation, 6' deep			\$0.00	\$5.30	\$0.00	108.20%	\$6,528.38	Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation)
	190	LF	\$0.00	\$5.30	\$0.00	108.20%	\$6,528.38	Based on square root of the berm safe haven area times three walls  RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in

\$0.00

99.30%

\$81.00

Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long

190

LF

\$46.25

Walls, Cast In Place, 10' pumped, 12" thick (Equipment \$23,974.98 Cost included in Installation)

have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment 5' high wall, pumped, 8" thick  474  LF  \$33.75  \$77.00  \$0.00  99.30%  \$52,165.60  Cost Included in Installation)  RSMeans Assemblies Cost Data, 2011, A 2020 220,  Subdrainage Piping, 4" diameter, PVC, perforated  474  LF  \$2.04  \$3.77  \$0.00  108.20%  \$2,981.91  Installation)  RSMeans Building Construction Cost Data, 2011, 03 3 3 3 3 3 3 5 0.52  Sandblast Concrete Heavy Treatment  1897  SF  \$1.46  \$3.31  \$0.52  99.30%  \$9,966.81  \$9,966.81									RSMeans Assemblies Cost Data, 2011, A 2020 220,
Stepped Concrete Wall 4' high  88', 86', 82', 72', 60' length walls, 12" thick, 5' high.  RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material co have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment 5' high wall, pumped, 8" thick  474  LF  \$33.75  \$77.00  \$0.00  99.30%  \$52,165.60  Cost Included in Installation)  RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping, 4" diameter, PVC, perforated  474  LF  \$2.04  \$3.77  \$0.00  108.20%  \$2,981.91  Installation)  RSMeans Building Construction Cost Data, 2011, 03 3 Sandblast Concrete Heavy Treatment  1897  SF  \$1.46  \$3.31  \$0.52  99.30%  \$9,966.81  29.60									Subdrainage Piping (Equipment Cost included in
R5Means Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material containing required for seismic event and tsunami. (Equipment 5' high wall, pumped, 8" thick 474 LF \$33.75 \$77.00 \$0.00 99.30% \$52,165.60 Cost Included in Installation)  Subdrainage Piping, 4" diameter, PVC, perforated 474 LF \$2.04 \$3.77 \$0.00 108.20% \$2,981.91 Installation)  Sandblast Concrete Heavy Treatment 1897 SF \$1.46 \$3.31 \$0.52 99.30% \$9,966.81 29.60	Subdrainage Piping, 4" diameter, PVC, perforated	190	LF	\$2.04	\$3.77	\$0.00	99.30%	\$1,094.65	Installation)
Walls, Cast In Place, 6' pumped, 8" thick. Material cohave been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment 5' high wall, pumped, 8" thick 474 LF \$33.75 \$77.00 \$0.00 99.30% \$52,165.60 Cost Included in Installation)  Subdrainage Piping, 4" diameter, PVC, perforated 474 LF \$2.04 \$3.77 \$0.00 108.20% \$2,981.91 Installation)  Sandblast Concrete Heavy Treatment 1897 SF \$1.46 \$3.31 \$0.52 99.30% \$9,966.81 29.60	Stepped Concrete Wall 4' high								88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment 5' high wall, pumped, 8" thick  474  LF  \$33.75  \$77.00  \$0.00  99.30%  \$52,165.60  Cost Included in Installation)  RSMeans Assemblies Cost Data, 2011, A 2020 220,  Subdrainage Piping, 4" diameter, PVC, perforated  474  LF  \$2.04  \$3.77  \$0.00  108.20%  \$2,981.91  Installation)  RSMeans Building Construction Cost Data, 2011, 03 3 3 3 3 3 3 5 0.52  Sandblast Concrete Heavy Treatment  1897  SF  \$1.46  \$3.31  \$0.52  99.30%  \$9,966.81  \$9,966.81									RSMeans Assemblies Cost Data, 2011, A2020 110,
required for seismic event and tsunami. (Equipment 5' high wall, pumped, 8" thick  474  LF  \$33.75  \$77.00  \$0.00  99.30%  \$52,165.60  Cost Included in Installation)  RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping, 4" diameter, PVC, perforated  474  LF  \$2.04  \$3.77  \$0.00  108.20%  \$2,981.91  Installation)  RSMeans Building Construction Cost Data, 2011, 03 3 3 3 3 3 3 3 5 0.52  Sandblast Concrete Heavy Treatment  1897  SF  \$1.46  \$33.75  \$57.00  \$0.00									Walls, Cast In Place, 6' pumped, 8" thick. Material costs
5' high wall, pumped, 8" thick       474       LF       \$33.75       \$77.00       \$0.00       99.30%       \$52,165.60       Cost Included in Installation)         Subdrainage Piping, 4" diameter, PVC, perforated       474       LF       \$2.04       \$3.77       \$0.00       108.20%       \$2,981.91       Installation)         Sandblast Concrete Heavy Treatment       1897       SF       \$1.46       \$3.31       \$0.52       99.30%       \$9,966.81       29.60									have been increased 25% for additional reinforcing
RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping, 4" diameter, PVC, perforated 474 LF \$2.04 \$3.77 \$0.00 108.20% \$2,981.91 Installation)  Subdrainage Piping, 4" diameter, PVC, perforated 474 LF \$2.04 \$3.77 \$0.00 108.20% \$2,981.91 Installation)  RSMeans Building Construction Cost Data, 2011, 03 30 30.00 \$0.									required for seismic event and tsunami. (Equipment
Subdrainage Piping, 4" diameter, PVC, perforated 474 LF \$2.04 \$3.77 \$0.00 108.20% \$2,981.91 Installation)  Sandblast Concrete Heavy Treatment 1897 SF \$1.46 \$3.31 \$0.52 99.30% \$9,966.81 29.60	5' high wall, pumped, 8" thick	474	LF	\$33.75	\$77.00	\$0.00	99.30%	\$52,165.60	Cost Included in Installation)
Subdrainage Piping, 4" diameter, PVC, perforated         474         LF         \$2.04         \$3.77         \$0.00         108.20%         \$2,981.91         Installation)           Sandblast Concrete Heavy Treatment         1897         SF         \$1.46         \$3.31         \$0.52         99.30%         \$9,966.81         29.60									RSMeans Assemblies Cost Data, 2011, A 2020 220,
RSMeans Building Construction Cost Data, 2011, 03   Sandblast Concrete Heavy Treatment   1897   SF   \$1.46   \$3.31   \$0.52   99.30%   \$9,966.81   29.60									Subdrainage Piping (Equipment Cost included in
Sandblast Concrete Heavy Treatment         1897         SF         \$1.46         \$3.31         \$0.52         99.30%         \$9,966.81         29.60	Subdrainage Piping, 4" diameter, PVC, perforated	474	LF	\$2.04	\$3.77	\$0.00	108.20%	\$2,981.91	Installation)
									RSMeans Building Construction Cost Data, 2011, 03 35
Concrete or Gravel Platform	Sandblast Concrete Heavy Treatment	1897	SF	\$1.46	\$3.31	\$0.52	99.30%	\$9,966.81	29.60
Constitution of Carter Indiana	Concrete or Gravel Platform								
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,	Asphaltic Concrete Paving, 6" stone bse, 2" binder course,								RSMeans Building Construction Cost Data, 2011, 32 12
1" toping 4000 SF \$1.85 \$0.20 \$0.24 108.20% \$9,911.12 16.14 Asphaltic Concrete Paving	1" toping	4000	SF	\$1.85	\$0.20	\$0.24	108.20%	\$9,911.12	16.14 Asphaltic Concrete Paving
									RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH 74 CY \$7.64 \$14.10 108.20% \$1,742.42 16, 31 23 23.20 Hauling	Haul of Material, 40 MPH, cycle 40 MPH	74	CY		\$7.64	\$14.10	108.20%		·

\$111,375.88

Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	121	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$7,446.56	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	724	SY	\$0.20	\$0.10	\$0.06	108.20%	\$282.19	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	35	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$2,167.00	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9								& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	190	LF	\$17.65	\$4.82	\$0.00	95.40%	\$4,067.27	Installation)
								RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	6520	SF	\$0.32	\$0.46	\$0.00	108.20%	\$5,502.62	23.10, sprinkler irrigation system

\$19,465.64

Map Number:	B6	Minimum Struct	ure Height (ft)	10
Structure Type:	Berm	Structure Capacity: 4		480
Location:	Ocean Park, WA, 227th and U Street	Safe Haven Squa	re Footage:	4800
Overall Site Square Footage	7320	Volume of Berm	Materials (LCY)	2801
Scope				Cost
Site Utilities				\$49,814
Excavation-Backfill				\$161,878
Concrete				\$122,937
Landscaping				\$21,684
Construction Totals				\$356,314
Design Fees (8%)				\$28,505
General Conditions (10%)				\$35,631
Contractor Fees, O&P (15%)				\$53,447
Construction Contingency (5%)	_	•		\$17,816
Estimate/Design Contingency (10%)	_			\$35,631
Project Total				\$527,344

		ı	ı					T
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	<b>Equipment Cost</b>	Location Factor	Total Cost	Comments
	_						4	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6 100	EA LF		\$116.00	\$185.00	100.00% 108.20%	\$1,806.00	36.50 Mobilization
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street  RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator 4'-6' deep	70	ВСҮ		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench
	400		444.60	440.70	42.72	400 200/	40.004.75	RSMeans, Building Construction Cost Data, 2011, 33 11
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	Water Utility Distribution Piping
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	Quote per Quigg Bros, Aberdeen, WA, phone converstaion on June 29th, 2011
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
				** *-				RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
Bookfill Conoral Fill Dy Donor No Compostion	75	LCY		\$0.50	\$1.05	108.20%	Ć12F 70	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
Backfill, General Fill By Dozer, No Compaction  Storm Drainage	/5	LCY		\$0.50	\$1.05	108.20%	\$125.78	Assuming 100' distance from service at street
Storm Dramage								RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	ВСҮ		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench
Excavate, 5/4 of Excavator, 0 10 deep	00	Bei		Ş2.00	Q2.03	100.2070	Ç371.33	RSMeans, Building Construction Cost Data, 2011, 33 41
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping
·				·	· · · · · · · · · · · · · · · · · · ·			Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
								RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site RSMeans Assemblies Cost Data, 2011, G3030 210,
								Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17.0/1.50	Installation Cost)
Electrical		LA	\$1,425.00	\$1,200.00	Ş0.00	100.2070	\$17,041.50	Assuming 100' distance from service at street
								RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13 Excavating Trench
				·	•			RSMeans, Building Construction Cost Data, 2011, 33 71
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes
								Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	converstaion on June 29th, 2011
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling
Consumeration of Deciditions to Transpla	25	507		62.05	60.24	400 200/	ć420.20	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	23.17 General Fill
Backfill, General Fill by Dozel, No Compaction	44	LCT		\$0.50	\$1.05	106.20%	\$75.79	RSMeans, Building Construction Cost Data, 2011, 31 23
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	\$20,125.20	23.17 General Fill
0 , 1 , 1 , 1 , 1 , 1	_		, ,	, ,-	,		\$49,813.97	
							,	
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	<b>Equipment Cost</b>	<b>Location Factor</b>	Total Cost	Comments
Site Preperation								
								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing
	-							RSMeans Building Construction Cost Data, 2011, 02 21
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	13 Site Surveys
			1				4	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	FΛ	1	\$60.00	\$116.00	100 00%	\$1.850.00	36 50 Mobilization

\$116.00

100.00%

\$1,850.00 36.50 Mobilization

\$69.00

10

EΑ

Mobilization of Equipment

Material Costs

								RSMeans Building Construction Cost Data, 2011, 31 05
								16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	2801	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$76,342.88	Material Cost from Quigg Bros., Aberdeen, WA
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	2801	LCY		\$7.64	\$14.10	108.20%	\$65,887.03	16, 31 23 23.20 Hauling
Placement of Material								
				4	4			RSMeans Buidling Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082	2594	ECY		\$0.63	\$1.81	108.20%	\$6,847.10	Backfill RSMeans Building Construction Cost Data, 2011, 32 11
SF per lift	3556	SY	\$1.48	\$0.09	\$0.03	108.20%	\$6,155.38	23 Aggregate Base Courses
or per inc	3330	<u> </u>	Ų21.10	φ0.03	Ģ0.03	10012070	\$161,878.35	
							,.	
Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	<b>Location Factor</b>	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization
T	200							Based on square root of the berm safe haven area
Tsunami Wave Inudation Concrete Wall	208	LF						times three walls RSMeans Assemblies Cost Data, 2011, A2010 110
								building Excavation & Backfill, 6' deep, sand, gravel, or
								common earth. (Equipment Cost included in
Excavation, 6' deep	1247	SF	\$0.00	\$5.30	\$0.00	108.20%	\$7,151.49	Installation)
								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 10' pumped, 12" thick (Equipment
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	208	LF	\$46.25	\$81.00	\$0.00	99.30%	\$26,263.28	Cost included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
	200		42.04	40.77	40.00	00.000/	44 400 40	Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated  Stepped Concrete Wall 4' high	208	LF	\$2.04	\$3.77	\$0.00	99.30%	\$1,199.13	Installation)
Stepped Concrete Wall 4 high								88', 86', 82', 72', 60' length walls, 12" thick, 5' high. RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 6' pumped, 8" thick. Material costs
								have been increased 25% for additional reinforcing
								required for seismic event and tsunami. (Equipment
5' high wall, pumped, 8" thick	520	LF	\$33.75	\$77.00	\$0.00	99.30%	\$57,144.56	Cost Included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	520	LF	\$2.04	\$3.77	\$0.00	108.20%	\$3,266.52	Installation)
	2070	0=	44.46	40.04	40.50	00.000/	440.040.00	RSMeans Building Construction Cost Data, 2011, 03 35
Sandblast Concrete Heavy Treatment Concrete or Gravel Platform	2078	SF	\$1.46	\$3.31	\$0.52	99.30%	\$10,918.09	29.60
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,						+		RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	4800	SF	\$1.85	\$0.20	\$0.24	108.20%	\$11.893.34	16.14 Asphaltic Concrete Paving
- 10,56			7	75.25	77121		7,	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	89	CY		\$7.64	\$14.10	108.20%	\$2,090.90	16, 31 23 23.20 Hauling
							\$122,937.31	
Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
L				4	4			RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA	<del>                                     </del>	\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping			<del>                                     </del>			+		RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	136	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$8 360 25	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	813	SY	\$0.20	\$0.10	\$0.06	108.20%	\$316.81	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	38	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$2,373.83	O,
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9			1			1		& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	208	LF	\$17.65	\$4.82	\$0.00	95.40%	\$4,455.47	Installation)
L				44	44			RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	7320	SF	\$0.32	\$0.46	\$0.00	108.20%	\$6,177.79	23.10, sprinkler irrigation system
							\$21,684.15	j

Map Number:	B7			Minimum Struct	ure Height (ft)	13				
<u> </u>	Berm			Structure Capaci		160				
Location:		210th & SR 103	<u> </u>	Safe Haven Squa	•	1600				
Overall Site Square Footage	4960		·		Materials (LCY) 2022					
	4500			volunie of Berni	waterials (ECT)	LULL				
Scope								Cost		
Site Utilities Excavation-Backfill					\$49,814 \$116,930					
Concrete					\$116,93( \$81,193					
Landscaping								\$14,420		
Construction Totals								\$262,356		
Design Fees (8%)								\$20,988		
General Conditions (10%)								\$26,236		
Contractor Fees, O&P (15%)								\$39,353		
Construction Contingency (5%)								\$13,118		
Estimate/Design Contingency (10%)								\$26,236		
Project Total								\$388,286		
-										
au										
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments		
								RSMeans, Building Construction Cost Data, 2011, 01 54		
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization		
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street RSMeans, Building Construction Cost Data, 2011, 31 23		
Excavate, 3/4 CY Excavator 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench		
Excavate, 3/4 CT Excavator 4-0 deep	70	ВСТ		\$2.10	Ş2.13	108.20%	J324.32	RSMeans, Building Construction Cost Data, 2011, 33 11		
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	Water Utility Distribution Piping		
γ ο,			,		,		, , , , , , , , , , , , , , , , , , , ,	Quote per Quigg Bros, Aberdeen, WA, phone		
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011		
								RSMeans Building Construction Cost Data, 2011, 31 05		
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling		
								RSMeans, Building Construction Cost Data, 2011, 31 23		
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 23		
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill		
Storm Drainage	73	LCI		\$0.50	Ş1.05	100.2070	Ş123.76	Assuming 100' distance from service at street		
								RSMeans, Building Construction Cost Data, 2011, 31 23		
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench		
								RSMeans, Building Construction Cost Data, 2011, 33 41		
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping		
								Quote per Quigg Bros, Aberdeen, WA, phone		
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011		
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling		
ridar of Material, 40 Mil 11, Cycle 40 Mil 11		LCI		ψ7.0 <del>4</del>	Ç14.10	100.2070	7202.27	RSMeans, Building Construction Cost Data, 2011, 31 23		
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding		
								RSMeans, Building Construction Cost Data, 2011, 31 23		
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill		
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site		
								RSMeans Assemblies Cost Data, 2011, G3030 210,		
Compared Depared ALID street Alidean	6	F.A.	Ć4 425 00	ć4 200 00	ć0.00	400 200/	647.044.50	Manholes & Catch Basins (Equipment Cost included in		
Concrete, Precast, 4' ID riser, 4' deep Electrical	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost) Assuming 100' distance from service at street		
Licented			<u> </u>			<u> </u>		RSMeans, Building Construction Cost Data, 2011, 31 23		
Excavate, 3/4 CY Excavator, 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13 Excavating Trench		
, , , , , , , , , , , , , , , , , , ,	-	-			, -			RSMeans, Building Construction Cost Data, 2011, 33 71		
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes		
								Quote per Quigg Bros, Aberdeen, WA, phone		
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	converstaion on June 29th, 2011		
								RSMeans Building Construction Cost Data, 2011, 31 05		
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling		

Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	. ,	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
							\$49,813.97	
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Site Preperation								
								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	RSMeans Building Construction Cost Data, 2011, 02 21 13 Site Surveys
Mobilization of Equipment	10	EA	pos.co	\$69.00	\$116.00	100.00%	. ,	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Material Costs								
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	2022	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$55.110.78	RSMeans Building Construction Cost Data, 2011, 31 05 16, Aggregates for Earthwork, Select Structural Fill & Material Cost from Quigg Bros., Aberdeen, WA
Haul of Material, 40 MPH, cycle 40 MPH	2022	LCY		\$7.64	\$14.10	108.20%		RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Placement of Material							*	-
Compacting Backfill, 6"to 12" lifts, vibrating roller	1872	ECY		\$0.63	\$1.81	108.20%	\$4,942.82	RSMeans Buidling Construction Data, 2011, 31 23 23.13 Backfill
Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082		i	1	1		1		RSMeans Building Construction Cost Data, 2011, 32 11

			T.	1		1		T
Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization
								Based on square root of the berm safe haven area
Tsunami Wave Inudation Concrete Wall	120	LF						times three walls
								RSMeans Assemblies Cost Data, 2011, A2010 110
								building Excavation & Backfill, 6' deep, sand, gravel, or
								common earth. (Equipment Cost included in
Excavation, 6' deep	720	SF	\$0.00	\$5.30	\$0.00	108.20%	\$4,128.91	Installation)
								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 10' pumped, 12" thick (Equipment
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	120	LF	\$46.25	\$81.00	\$0.00	99.30%	\$15,163.11	Cost included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	120	LF	\$2.04	\$3.77	\$0.00	99.30%	\$692.32	Installation)
Stepped Concrete Wall 4' high								88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 6' pumped, 8" thick. Material costs
								have been increased 25% for additional reinforcing
								required for seismic event and tsunami. (Equipment
5' high wall, pumped, 8" thick	390	LF	\$33.75	\$77.00	\$0.00	99.30%	\$42,890.15	Cost Included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	390	LF	\$2.04	\$3.77	\$0.00	108.20%	\$2,451.70	Installation)
								RSMeans Building Construction Cost Data, 2011, 03 35
Sandblast Concrete Heavy Treatment	1560	SF	\$1.46	\$3.31	\$0.52	99.30%	\$8,194.63	29.60
Concrete or Gravel Platform								
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,							<u> </u>	RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	1600	SF	\$1.85	\$0.20	\$0.24	108.20%	\$3,964.45	16.14 Asphaltic Concrete Paving
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	30	CY		\$7.64	\$14.10	108.20%	\$696.97	16, 31 23 23.20 Hauling
			•	•		•	\$21 102 25	i

\$81,192.25

			1			_		1
Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	92	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$5,664.87	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	551	SY	\$0.20	\$0.10	\$0.06	108.20%	\$214.67	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	29	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$1,781.69	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9								& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	120	LF	\$17.65	\$4.82	\$0.00	95.40%	\$2,572.37	Installation)
								RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	4960	SF	\$0.32	\$0.46	\$0.00	108.20%	\$4,186.04	23.10, sprinkler irrigation system

\$14,419.64

Map Number:	B8			Minimum Struct	ure Height (ft)	17		
Structure Type:	Berm			Structure Capaci	tv:	160		
Location:	Ocean Park, 1	188th & SR 103		Safe Haven Squa	re Footage:	1600		
Overall Site Square Footage	6080			Volume of Berm	Materials (LCY)	3156		
Scope						•		Cost
Site Utilities								\$49,814
Excavation-Backfill								\$178,105
Concrete								\$97,665
Landscaping								\$17,241
Construction Totals								\$342,825
Design Fees (8%)								\$27,426
General Conditions (10%)								\$34,282
Contractor Fees, O&P (15%)								\$51,424
Construction Contingency (5%)								\$17,141
Estimate/Design Contingency (10%)								\$34,282
Project Total								\$507,381
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	<b>Equipment Cost</b>	<b>Location Factor</b>	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street
				44.4	44.4			RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench
Install 0 Test Cli Dutile Issu Bising MI	400		644.60	640.70	ć2.72	400 200/	¢2.024.76	RSMeans, Building Construction Cost Data, 2011, 33 11
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	Water Utility Distribution Piping  Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011
other bedding, for tipe & conduct, Not mer. compaction	12	LCI	\$20.00			100.2070	\$233.00	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
				7.121	*====		7-0-1-1	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill
Storm Drainage								Assuming 100' distance from service at street
								RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench
								RSMeans, Building Construction Cost Data, 2011, 33 41
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping
								Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011

			I	1		1		RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	RSMeans, Building Construction Cost Data, 2011, 31 23 23.16 Fill By Borrow & Utility Bedding
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
Area Drains/Catch Basins				·	·			Assuming 6 Area Drains/Catch Basins on Site
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	RSMeans Assemblies Cost Data, 2011, G3030 210, Manholes & Catch Basins (Equipment Cost included in Installation Cost)
Electrical								Assuming 100' distance from service at street
Excavate, 3/4 CY Excavator, 4'-6' deep	70	ВСҮ		\$2.16	\$2.13	108.20%	\$324.92	RSMeans, Building Construction Cost Data, 2011, 31 23 16.13 Excavating Trench
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	RSMeans, Building Construction Cost Data, 2011, 33 71 19 Electrical Underground Ducts and Manholes
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	Quote per Quigg Bros, Aberdeen, WA, phone converstaion on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	RSMeans, Building Construction Cost Data, 2011, 31 23 23.16 Fill By Borrow & Utility Bedding
, 5 5				,	,		,	RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	23.17 General Fill RSMeans, Building Construction Cost Data, 2011, 31 23
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	\$20,125.20	
							\$49,813.97	
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Site Preperation								
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	RSMeans Building Construction Cost Data, 2011, 31 13 13, Selective Clearing
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	RSMeans Building Construction Cost Data, 2011, 02 21 13 Site Surveys
Mobilization of Equipment	10	EA		\$69.00	\$116.00	100.00%	\$1,850.00	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Material Costs								
								RSMeans Building Construction Cost Data, 2011, 31 05
511.44 (01)	2456		400.00	44.75	40.44	100 200/	405.040.54	16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	3156	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$86,018.61	Material Cost from Quigg Bros., Aberdeen, WA RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH Placement of Material	3156	LCY		\$7.64	\$14.10	108.20%	\$74,237.58	16, 31 23 23.20 Hauling
- deciment of Material								RSMeans Buidling Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller	2922	ECY		\$0.63	\$1.81	108.20%	\$7,714.90	Backfill RSMeans Building Construction Cost Data, 2011, 32 11
Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082 SF per lift	2015	SY	\$1.48	\$0.09	\$0.03	108.20%	\$3,488.05	23 Aggregate Base Courses
			•				\$178,105.10	
Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	Location Factor	Total Cost	Comments
Controll	Quantity	Oill	iviaterial Cost	stanation cost	Lyaipinent	Location Factor	iotai Cost	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization
Tsunami Wave Inudation Concrete Wall	120	LF						Based on square root of the berm safe haven area times three walls
								RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in
Excavation, 6' deep	720	SF	\$0.00	\$5.30	\$0.00	108.20%	\$4,128.91	Installation) RSMeans Assemblies Cost Data, 2011, A2020 110,
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	120	LF	\$46.25	\$81.00	\$0.00	99.30%	\$15,163.11	Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation)

							RSMeans Assemblies Cost Data, 2011, A 2020 220,
							Subdrainage Piping (Equipment Cost included in
120	LF	\$2.04	\$3.77	\$0.00	99.30%	\$692.32	Installation)
							88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
							RSMeans Assemblies Cost Data, 2011, A2020 110,
							Walls, Cast In Place, 6' pumped, 8" thick. Material costs
							have been increased 25% for additional reinforcing
							required for seismic event and tsunami. (Equipment
510	LF	\$33.75	\$77.00	\$0.00	99.30%	\$56,087.12	Cost Included in Installation)
							RSMeans Assemblies Cost Data, 2011, A 2020 220,
							Subdrainage Piping (Equipment Cost included in
510	LF	\$2.04	\$3.77	\$0.00	108.20%	\$3,206.07	Installation)
							RSMeans Building Construction Cost Data, 2011, 03 35
2040	SF	\$1.46	\$3.31	\$0.52	99.30%	\$10,716.06	29.60
							RSMeans Building Construction Cost Data, 2011, 32 12
1600	SF	\$1.85	\$0.20	\$0.24	108.20%	\$3,964.45	16.14 Asphaltic Concrete Paving
							RSMeans Building Construction Cost Data, 2011, 31 05
30	CY		\$7.64	\$14.10	108.20%	\$696.97	16, 31 23 23.20 Hauling
	510 510 2040	510 LF 510 LF 2040 SF	510 LF \$33.75  510 LF \$2.04  2040 SF \$1.46	510 LF \$33.75 \$77.00  510 LF \$2.04 \$3.77  2040 SF \$1.46 \$3.31  1600 SF \$1.85 \$0.20	510 LF \$33.75 \$77.00 \$0.00  510 LF \$2.04 \$3.77 \$0.00  2040 SF \$1.46 \$3.31 \$0.52  1600 SF \$1.85 \$0.20 \$0.24	510 LF \$33.75 \$77.00 \$0.00 99.30%  510 LF \$2.04 \$3.77 \$0.00 108.20%  2040 SF \$1.46 \$3.31 \$0.52 99.30%  1600 SF \$1.85 \$0.20 \$0.24 108.20%	120       LF       \$2.04       \$3.77       \$0.00       99.30%       \$692.32         510       LF       \$33.75       \$77.00       \$0.00       99.30%       \$56,087.12         510       LF       \$2.04       \$3.77       \$0.00       108.20%       \$3,206.07         2040       SF       \$1.46       \$3.31       \$0.52       99.30%       \$10,716.06         1600       SF       \$1.85       \$0.20       \$0.24       108.20%       \$3,964.45

\$97,665.01

Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	113	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$6,944.04	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	676	SY	\$0.20	\$0.10	\$0.06	108.20%	\$263.14	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	38	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$2,329.91	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9								& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	120	LF	\$17.65	\$4.82	\$0.00	95.40%	\$2,572.37	Installation)
								RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	6080	SF	\$0.32	\$0.46	\$0.00	108.20%	\$5,131.28	23.10, sprinkler irrigation system

\$17,240.73

Map Number:	B9	Minimum Struct	ture Height (ft)	26	
Structure Type:	Berm	Structure Capac	ity:	120	
Location:	Ocean Park, 162nd Ln & SR 103	Safe Haven Squa	are Footage:	1200	
Overall Site Square Footage	8200	Volume of Berm	n Materials (LCY)	6035	
Scope					Cost
Site Utilities					\$49,814
Excavation-Backfill					\$331,846
Concrete					\$116,541
Landscaping					\$21,954
Construction Totals					\$520,156
Design Fees (8%)					\$41,612
General Conditions (10%)					\$52,016
Contractor Fees, O&P (15%)					\$78,023
Construction Contingency (5%)				_	\$26,008
Estimate/Design Contingency (10%)				_	\$52,016
Project Total					\$769,830

	ı	ı		1		ı		
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
	_							RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street
Excavate, 3/4 CY Excavator 4'-6' deep	70	ВСҮ		\$2.16	\$2.13	108.20%	\$324.92	RSMeans, Building Construction Cost Data, 2011, 31 23 16.13, Excavating Trench
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	RSMeans, Building Construction Cost Data, 2011, 33 11 Water Utility Distribution Piping
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	Quote per Quigg Bros, Aberdeen, WA, phone converstaion on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	RSMeans, Building Construction Cost Data, 2011, 31 23 23.16 Fill By Borrow & Utility Bedding
				·	·			RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction  Storm Drainage	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill  Assuming 100' distance from service at street
Storm Drainage								RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	ВСҮ		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	RSMeans, Building Construction Cost Data, 2011, 33 41 Storm Utility Drainage Piping
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	Quote per Quigg Bros, Aberdeen, WA, phone converstaion on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
, . <b>,</b> ., .								RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site
								RSMeans Assemblies Cost Data, 2011, G3030 210, Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost)
Electrical								Assuming 100' distance from service at street
								RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13 Excavating Trench
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	RSMeans, Building Construction Cost Data, 2011, 33 71 19 Electrical Underground Ducts and Manholes
								Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	converstaion on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
				7.101	*=··=*		70.000	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
								RSMeans, Building Construction Cost Data, 2011, 31 23
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	\$20,125.20	23.17 General Fill
							\$49,813.97	
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	<b>Equipment Cost</b>	<b>Location Factor</b>	Total Cost	Comments
Site Preperation								
								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres	-	\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	RSMeans Building Construction Cost Data, 2011, 02 21 13 Site Surveys
		40.00	Ç52.55	ψ505.00	ψοσ.σο	100.2073	, <b>2</b> ,000.10	RSMeans, Building Construction Cost Data, 2011, 01 54
Mahilipation of Fautoment	10	I	l	¢c0.00	¢11C 00	100.000/	Ć1 0F0 00	26 EO Mobilization

\$116.00

100.00%

\$1,850.00 36.50 Mobilization

\$69.00

10

EΑ

Mobilization of Equipment

Material Costs

	,							
								RSMeans Building Construction Cost Data, 2011, 31 05 16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	6035	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$164,487.43	Material Cost from Quigg Bros., Aberdeen, WA
			·					RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH  Placement of Material	6035	LCY		\$7.64	\$14.10	108.20%	\$141,959.37	16, 31 23 23.20 Hauling
Placement of Material								RSMeans Buidling Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller	5588	ECY		\$0.63	\$1.81	108.20%	\$14,752.67	Backfill
Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082	2311	SY	\$1.48	\$0.09	\$0.03	108.20%	\$4,001.00	RSMeans Building Construction Cost Data, 2011, 32 11
SF per lift	2311	31	\$1.46	Ş0.0 <del>9</del>	ŞU.US	108.20%	\$331,846.43	23 Aggregate Base Courses
							, ,	
Concrete	Quantitu	Unit	Material Cost	Installation Cost	Equipment	Location Factor	Total Cost	Comments
Concrete	Quantity	Onit	iviaterial Cost	installation cost	Equipment	Location Factor	iotal Cost	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization
								Based on square root of the berm safe haven area
Tsunami Wave Inudation Concrete Wall	104	LF						times three walls RSMeans Assemblies Cost Data, 2011, A2010 110
								building Excavation & Backfill, 6' deep, sand, gravel, or
								common earth. (Equipment Cost included in
Excavation, 6' deep	624	SF	\$0.00	\$5.30	\$0.00	108.20%	\$3,575.74	Installation)
								RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	104	LF	\$46.25	\$81.00	\$0.00	99.30%	\$13,131.64	Cost included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
Subdrainage Piping, 4" diameter, PVC, perforated	104	LF	\$2.04	\$3.77	\$0.00	99.30%	\$599.57	Subdrainage Piping (Equipment Cost included in Installation)
Stepped Concrete Wall 4' high	104	Li	\$2.04	\$3.77	30.00	99.30%	\$333.37	88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
.,								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 6' pumped, 8" thick. Material costs
								have been increased 25% for additional reinforcing
5' high wall, pumped, 8" thick	675	LF	\$33.75	\$77.00	\$0.00	99.30%	\$74,287.92	required for seismic event and tsunami. (Equipment Cost Included in Installation)
5 filgif wall, pulliped, 8 thick	0/3	Li	\$33.73	\$77.00	30.00	99.30%	\$74,267.32	RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	675	LF	\$2.04	\$3.77	\$0.00	108.20%	\$4,246.48	Installation)
Sandblast Concrete Heavy Treatment	2702	SF	\$1.46	\$3.31	\$0.52	99.30%	\$14,193.52	RSMeans Building Construction Cost Data, 2011, 03 35 29.60
Concrete or Gravel Platform	2702	31	\$1.40	<b>\$3.31</b>	Ç0.32	33.3070	Ç14,133.32	25.00
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,								RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	1200	SF	\$1.85	\$0.20	\$0.24	108.20%	\$2,973.34	16.14 Asphaltic Concrete Paving RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	22	CY		\$7.64	\$14.10	108.20%	\$522.73	16, 31 23 23.20 Hauling
· · · ·	l	l	ı		•		\$116,540.93	-
Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
Landscaping	Quantity	Oint	Waterial Costs	mistaliation costs	Equipment costs	Location ractor	iotai cost	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								DCM and Duilding Construction Co. 12 1 201 201
Top Soil	152	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$9,365 31	RSMeans Building Construction Cost Data, 2011, 32 91 19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	911	SY	\$0.20	\$0.10	\$0.06	108.20%	\$354.90	Mechanical Seeding, 44lb/sy
, a. o occa			\$33.00	\$24.00	\$0.00	108.20%	\$3,085.98	
Top Soil at Stepped Concrete Walls	50	LCY	\$33.00	7				
Top Soil at Stepped Concrete Walls	50	LCY	\$33.00	7=330				
Top Soil at Stepped Concrete Walls  Fencing at Top of Berm, chain link, 2" post, 15/8" rail, 9					\$0.00	95.40%	\$2 227 72	& Guardrails (Equipment Costs are included in
Top Soil at Stepped Concrete Walls	50 104	LCY LF	\$17.65	\$4.82	\$0.00	95.40%	\$2,227.73	
Top Soil at Stepped Concrete Walls  Fencing at Top of Berm, chain link, 2" post, 15/8" rail, 9					\$0.00 \$0.00	95.40% 108.20%	\$2,227.73 \$6,920.47 <b>\$21,954.40</b>	Installation) RSMeans Building Construction Costs, 2011, 32 84 23.10, sprinkler irrigation system

Map Number:	B10			Minimum Struct	uro Hoight (ft)	10		
	Berm			ł		320		
Structure Type: Location:		Cranberry & SR	102	Structure Capaci Safe Haven Squa	•	3200		
	5720	cramberry & 3h	103	Volume of Berm		2062		
	3720			volume of Berni	iviaterials (ECT)	2002		
Scope								Cos
Site Utilities Excavation-Backfill								\$49,81 <sup>4</sup> \$120,49 <sup>5</sup>
Concrete								\$120,45.
Landscaping								\$17,184
Construction Totals								\$286,328
Design Fees (8%)								\$22,900
General Conditions (10%)								\$28,633
Contractor Fees, O&P (15%)								\$42,949
Construction Contingency (5%)								\$14,31
Estimate/Design Contingency (10%)								\$28,633
Project Total								\$423,765
et. 11.11.1								
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Mark Westing of Fredricus and		F.A.		Ć446.00	¢405.00	400.000/	¢4 000 00	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment  Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	6 100	EA LF		\$116.00	\$185.00	100.00% 108.20%	\$1,806.00	36.50 Mobilization Assuming 100' distance from service at street
Domestic water, Ductile from class 250, MJ, 6 diameter	100	LF				106.20%		RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench
•				·			,	RSMeans, Building Construction Cost Data, 2011, 33 11
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	Water Utility Distribution Piping
								Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011
Houl of Motorial 40 MARLL quals 40 MARLL	12	LCV		¢7.64	¢14.10	100 200/	¢202.27	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
				70.00	7000		700.00	RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill
Storm Drainage								Assuming 100' distance from service at street
					4		44	RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	RSMeans, Building Construction Cost Data, 2011, 33 41 Storm Utility Drainage Piping
mistan & rest, 12 Brammous coated	100		<b>VII.50</b>	φο.50	Ų1.55	100.2070	72,507.51	Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling
	40	501		42.05	40.04	100 200/	40.000	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill
Area Drains/Catch Basins	- 55	20.		φο.50	ψ1.03	10012070	ψ200.03	Assuming 6 Area Drains/Catch Basins on Site
								RSMeans Assemblies Cost Data, 2011, G3030 210,
			1					Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost)
Electrical						1		Assuming 100' distance from service at street
Excavate, 3/4 CY Excavator, 4'-6' deep	70	BCY	1	\$2.16	\$2.13	108.20%	\$324.92	RSMeans, Building Construction Cost Data, 2011, 31 23 16.13 Excavating Trench
Excavate, 3/4 CT Excavator, 4-0 deep	70	BCT	<del> </del>	<i>γ</i> 2.10	72.13	100.20%	3324.3Z	RSMeans, Building Construction Cost Data, 2011, 33 71
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes
			,	,		1 20-27-	, ,	Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	converstaion on June 29th, 2011
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY	1	\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling

Backfill, General Fill By Dozer, No Compaction	44	LCY	<u> </u>	\$0.50	\$1.05	108.20%		23.17 General Fill RSMeans, Building Construction Cost Data, 2011, 31 2
ight Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%		23.17 General Fill
ight Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	\$20,125.20	23.17 General Fill

Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Site Preperation								
								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing
								RSMeans Building Construction Cost Data, 2011, 02 21
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	13 Site Surveys
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$69.00	\$116.00	100.00%	\$1,850.00	36.50 Mobilization
Material Costs								
								RSMeans Building Construction Cost Data, 2011, 31 05
								16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	2062	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$56,201.01	Material Cost from Quigg Bros., Aberdeen, WA
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	2062	LCY		\$7.64	\$14.10	108.20%	\$48,503.77	16, 31 23 23.20 Hauling
Placement of Material								
								RSMeans Buidling Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller	1909	ECY		\$0.63	\$1.81	108.20%	\$5,040.60	Backfill
Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082	•						•	RSMeans Building Construction Cost Data, 2011, 32 11
SF per lift	2370	SY	\$1.48	\$0.09	\$0.03	108.20%	\$4,103.59	23 Aggregate Base Courses

\$120,494.92

Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	Location Factor	Total Cost	Comments
Concrete	Quantity	Onit	Waterial Cost	mstanation cost	Equipment	Location ractor	iotai cost	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization
Mobilization of Equipment	10	EA		\$116.00	\$105.00	100.00%	\$5,010.00	Based on square root of the berm safe haven area
Tsunami Wave Inudation Concrete Wall	170	LF						times three walls
Isunann wave mudation concrete wan	170	LF						RSMeans Assemblies Cost Data, 2011, A2010 110
								building Excavation & Backfill, 6' deep, sand, gravel, or
								common earth. (Equipment Cost included in
Excavation, 6' deep	1018	SF	\$0.00	\$5.30	\$0.00	108.20%		Installation)
Excavation, 6 deep	1016	31	\$0.00	\$5.50	\$0.00	106.20%	\$5,659.10	RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 10' pumped, 12" thick (Equipment
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	170	LF	\$46.25	\$81.00	\$0.00	99.30%		Cost included in Installation)
waiis, cast iii piace, o deep, puiliped, 12 tilick, 88 long	170	Li	340.23	Ş61.00	\$0.00	33.30%	321,443.88	RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	170	LF	\$2.04	\$3.77	\$0.00	99.30%		Installation)
Stepped Concrete Wall 4' high	170	LI	32.04	Ş3.77	30.00	33.30/6	3979.09	88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
Stepped Concrete Wall 4 High								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 6' pumped, 8" thick. Material costs
								have been increased 25% for additional reinforcing
								required for seismic event and tsunami. (Equipment
5' high wall, pumped, 8" thick	424	LF	\$33.75	\$77.00	\$0.00	99.30%		Cost Included in Installation)
5 High wan, pumped, 6 thick	727	L)	\$33.73	\$77.00	Ş0.00	33.30%	Ş <del>4</del> 0,030.33	RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	424	LF	\$2.04	\$3.77	\$0.00	108.20%	\$2,667.10	Installation)
Sabaramage riping, 4 diameter, r vc, periorated	727	Li Li	Ş2.04	Ş3.77	Ş0.00	100.2070	72,007.10	RSMeans Building Construction Cost Data, 2011, 03 35
Sandblast Concrete Heavy Treatment	1697	SF	\$1.46	\$3.31	\$0.52	99.30%	\$8,914.59	, ,
Concrete or Gravel Platform	1037	- 31	Ş1.40	75.51	Ş0.3 <u>2</u>	33.30%	\$6,514.55	25.00
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,								RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	3200	SF	\$1.85	\$0.20	\$0.24	108.20%	\$7,928.90	16.14 Asphaltic Concrete Paving
± 10km2	3200	J1	71.03	70.20	70.27	100.2070	Ç1,520.50	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	59	CY		\$7.64	\$14.10	108.20%	\$1,393.94	16, 31 23 23.20 Hauling
			1	T T.	Ŧ= ···==		\$98.834.98	, ,

\$98,834.98

Landscaping	Quantity	Unit	Material Costs	Installation Costs	<b>Equipment Costs</b>	<b>Location Factor</b>	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	106	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$6,532.88	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	636	SY	\$0.20	\$0.10	\$0.06	108.20%	\$247.56	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	31	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$1,938.23	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9								& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	170	LF	\$17.65	\$4.82	\$0.00	95.40%	\$3,637.87	Installation)
								RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	5720	SF	\$0.32	\$0.46	\$0.00	108.20%	\$4,827.45	23.10, sprinkler irrigation system
			•				\$17,183.99	

Map Number:	B11			Minimum Struct	ure Height (ft)	17				
Structure Type:	Berm			Structure Capaci	ity:	320				
Location:	Ocean Park,	U Street & 260t	th Street	Safe Haven Squa	re Footage:	3200				
Overall Site Square Footage	8800			Volume of Berm	Materials (LCY)	6164				
Scope						•		Cost		
Site Utilities								\$49,814		
Excavation-Backfill								\$341,687		
Concrete								\$139,603		
Landscaping								\$24,791		
Construction Totals					\$555,895					
Design Fees (8%)								\$44,472		
General Conditions (10%)								\$55,590		
Contractor Fees, O&P (15%)								\$83,384		
Construction Contingency (5%)								\$27,795		
Estimate/Design Contingency (10%)								\$55,590		
Project Total								\$822,725		
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments		
								RSMeans, Building Construction Cost Data, 2011, 01 54		
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization		
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street		
5		5.07		42.46	42.42	400 000/	4004.00	RSMeans, Building Construction Cost Data, 2011, 31 23		
Excavate, 3/4 CY Excavator 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench RSMeans, Building Construction Cost Data, 2011, 33 11		
Install & Test 6" Dutile Iron Dining MI	100	LF	\$14.60	\$10.70	\$2.72	108.20%	¢2 021 76	Water Utility Distribution Piping		
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	Quote per Quigg Bros, Aberdeen, WA, phone		
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011		
other bedding, for tipe & conduct, Not men compaction	12	LCI	Ψ20.00			100.2070	Ç233.00	RSMeans Building Construction Cost Data, 2011, 31 05		
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling		
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					,		,	RSMeans, Building Construction Cost Data, 2011, 31 23		
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding		
				·				RSMeans, Building Construction Cost Data, 2011, 31 23		
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill		
Storm Drainage								Assuming 100' distance from service at street		
					_			RSMeans, Building Construction Cost Data, 2011, 31 23		
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench		
								RSMeans, Building Construction Cost Data, 2011, 33 41		
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping		
L.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								Quote per Quigg Bros, Aberdeen, WA, phone		
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011		

		•	1	, ,				1
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Tradi of Material, 40 MFTT, Cycle 40 MFTT	12	LCI		\$7.04	\$14.10	108.20%	\$202.27	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site RSMeans Assemblies Cost Data, 2011, G3030 210,
								Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost)
Electrical								Assuming 100' distance from service at street
Evenuate 2/4 CV Evenuator 4' 6' doon	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	RSMeans, Building Construction Cost Data, 2011, 31 23 16.13 Excavating Trench
Excavate, 3/4 CY Excavator, 4'-6' deep	70	БСТ		\$2.10	\$2.15	106.20%	\$524.92	RSMeans, Building Construction Cost Data, 2011, 33 71
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes
								Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	converstaion on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Tradi of Material, 40 Mi 11, Cycle 40 Mi 11	40	LCI		\$7.04	Ş14.10	108.20%	ŞJ40.J1	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	23.17 General Fill RSMeans, Building Construction Cost Data, 2011, 31 23
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	\$20.125.20	23.17 General Fill
0 1 1 1 7 1 0 7 1 1 1 1 1			, ,	, ,	,		\$49,813.97	
Face of the Book City								
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Site Preperation								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing
								RSMeans Building Construction Cost Data, 2011, 02 21
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	13 Site Surveys
Mobilization of Equipment	10	EA		\$69.00	\$116.00	100.00%	\$1,850.00	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Material Costs	10	LA		\$09.00	\$110.00	100.00%	\$1,650.00	30.30 WODIIIZALION
								RSMeans Building Construction Cost Data, 2011, 31 05
								16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	6164	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$168,003.40	Material Cost from Quigg Bros., Aberdeen, WA
Haul of Material, 40 MPH, cycle 40 MPH	6164	LCY		\$7.64	\$14.10	108.20%	\$144 993 80	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Placement of Material	0104	LCI		\$7.04	Ψ14.10	100.2070	7144,555.00	10, 31 23 23.20 Hading
								RSMeans Buidling Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller	5707	ECY		\$0.63	\$1.81	108.20%	\$15,068.01	Backfill RSMeans Building Construction Cost Data, 2011, 32 11
Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082 SF per lift	4030	SY	\$1.48	\$0.09	\$0.03	108.20%	\$6.976.09	23 Aggregate Base Courses
5. pc	1050	<u>.</u>	Ų.1.10	φοιοσ	ţ0.03	100.2070	\$341,687.27	257,651.0501.000
Constant	_							
Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	Location Factor	Total Cost	Comments
	Qualitity							
Mobilization of Equipment		FΛ		\$116.00	\$185.00	100 00%	\$3,010,00	
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization  Based on square root of the berm safe haven area
Mobilization of Equipment  Tsunami Wave Inudation Concrete Wall		EA LF		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization Based on square root of the berm safe haven area times three walls
• •	10			\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110
	10			\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or
Tsunami Wave Inudation Concrete Wall	10	LF	\$0.00					36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in
	10		\$0.00	\$116.00 \$5.30	\$185.00 \$0.00	100.00%	\$3,010.00 \$5,839.16	Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or
Tsunami Wave Inudation Concrete Wall	10	LF	\$0.00					36.50 Mobilization Based on square root of the berm safe haven area times three walls RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation)

								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	170	LF	\$2.04	\$3.77	\$0.00	99.30%	\$979.09	Installation)
Stepped Concrete Wall 4' high								88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 6' pumped, 8" thick. Material costs
								have been increased 25% for additional reinforcing
								required for seismic event and tsunami. (Equipment
5' high wall, pumped, 8" thick	721	LF	\$33.75	\$77.00	\$0.00	99.30%	\$79,319.17	Cost Included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	721	LF	\$2.04	\$3.77	\$0.00	108.20%	\$4,534.07	Installation)
								RSMeans Building Construction Cost Data, 2011, 03 35
Sandblast Concrete Heavy Treatment	2885	SF	\$1.46	\$3.31	\$0.52	99.30%	\$15,154.80	29.60
Concrete or Gravel Platform								
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,								RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	3200	SF	\$1.85	\$0.20	\$0.24	108.20%	\$7,928.90	16.14 Asphaltic Concrete Paving
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	59	CY		\$7.64	\$14.10	108.20%		16, 31 23 23.20 Hauling
							¢120 C02 00	

\$139,603.00

Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	163	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$10,050.58	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	978	SY	\$0.20	\$0.10	\$0.06	108.20%	\$380.86	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	53	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$3,294.99	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9								& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	170	LF	\$17.65	\$4.82	\$0.00	95.40%	\$3,637.87	Installation)
								RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	8800	SF	\$0.32	\$0.46	\$0.00	108.20%	\$7,426.85	23.10, sprinkler irrigation system

\$24,791.15

Map Number:	B12	Minimum Struct	ure Height (ft)	13	
Structure Type:	Berm	Structure Capac	ity:	320	
Location:	Illwaco, WA, Fire Dept. (N Street & 37th St)	Safe Haven Squa	re Footage:	3200	
Overall Site Square Footage	6560	Volume of Berm	Materials (LCY)	3008	
Scope					Cost
Site Utilities					\$49,814
Excavation-Backfill					\$172,075
Concrete					\$116,307
Landscaping					\$19,470
Construction Totals					\$357,666
Design Fees (8%)					\$28,613
General Conditions (10%)					\$35,767
Contractor Fees, O&P (15%)					\$53,650
Construction Contingency (5%)		•			\$17,883
Estimate/Design Contingency (10%)		•			\$35,767
Project Total		•			\$529,345

		1				T		
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	<b>Equipment Cost</b>	Location Factor	Total Cost	Comments
As-billiostics of Francisco		F.4		¢446.00	Ć405.00	400.000/	¢4 006 00	RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6 100	EA LF		\$116.00	\$185.00	100.00% 108.20%	\$1,806.00	36.50 Mobilization
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF				108.20%		Assuming 100' distance from service at street RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator 4'-6' deep	70	ВСҮ		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	RSMeans, Building Construction Cost Data, 2011, 33 11 Water Utility Distribution Piping
Helita, Dadding For Ding & Conduit Not Ingl. Compacting	12	LCY	¢20.00			100 200/	¢250.60	Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011 RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
Storm Drainage	,,,	201		\$0.50	ψ1.05	100.2070	Ç125.70	Assuming 100' distance from service at street
Storm Brainage								RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating, Trench
Install 9 Test 12" Dituminaus Costad	100	1.5	\$11.50	će 20	Ć1 F2	100 200/	ć2 207 01	RSMeans, Building Construction Cost Data, 2011, 33 41
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping  Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
That of Materialy 10 Milling Syste 10 Milling		20.		ψ7.0·1	Ψ11110	100.2070	QLOLIL!	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	RSMeans, Building Construction Cost Data, 2011, 31 23 23.17 General Fill
Area Drains/Catch Basins	- 00	20.		φο.30	Ų1.03	100.2070	Ψ100.03	Assuming 6 Area Drains/Catch Basins on Site
·								RSMeans Assemblies Cost Data, 2011, G3030 210,
								Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost)
Electrical								Assuming 100' distance from service at street RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 4'-6' deep	70	ВСҮ		\$2.16	\$2.13	108.20%	\$324.92	16.13 Excavating Trench
Excavate, 3/4 CT Excavator, 4 -0 deep	70	ВСТ		\$2.10	32.13	108.20%	Ş324.32	RSMeans, Building Construction Cost Data, 2011, 33 71
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes
								Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	converstaion on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
riadi di Material, 40 Mi 11, Cycle 40 Mi 11	40	LCI		\$7.04	ÿ14.10	100.2070	Ş540.51	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding
Deal-Ell Connect Ell De Desse No Connection	4.4	1.07		ć0 F0	Ć4 05	100 200/	672.70	RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%	\$73.79	23.17 General Fill RSMeans, Building Construction Cost Data, 2011, 31 23
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	. ,	23.17 General Fill
							\$49,813.97	
Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	<b>Location Factor</b>	Total Cost	Comments
Site Preperation			<b></b>					
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	RSMeans Building Construction Cost Data, 2011, 31 13 13, Selective Clearing
0.00		ucics		Ç320.00	Ç3 <u>2</u> 3.00	100.2070	Y2,172.01	RSMeans Building Construction Cost Data, 2011, 02 21
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	13 Site Surveys
			ĺ					RSMeans, Building Construction Cost Data, 2011, 01 54

\$116.00

100.00%

\$1,850.00 36.50 Mobilization

\$69.00

10

EΑ

Mobilization of Equipment

Material Costs

								RSMeans Building Construction Cost Data, 2011, 31 05 16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	3008	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$81,984.78	Material Cost from Quigg Bros., Aberdeen, WA
Haul of Material, 40 MPH, cycle 40 MPH	3008	LCY		\$7.64	\$14.10	108.20%	\$70,756.22	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
Placement of Material								DCM Duidling Construction Data 2004 24 22 22 42
Compacting Backfill, 6"to 12" lifts, vibrating roller Stabilization Fabric, Polypropylene, 6oz/SY, 18"' lifts, 5082	2785	ECY		\$0.63	\$1.81	108.20%	\$7,353.11	RSMeans Buidling Construction Data, 2011, 31 23 23.13 Backfill RSMeans Building Construction Cost Data, 2011, 32 11
SF per lift	3081	SY	\$1.48	\$0.09	\$0.03	108.20%	\$5,334.66	23 Aggregate Base Courses
			•			•	\$172,074.74	
		ı				<u> </u>	ı	1
Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	<b>Location Factor</b>	Total Cost	Comments
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Tsunami Wave Inudation Concrete Wall	170	LF						Based on square root of the berm safe haven area times three walls
Excavation, 6' deep	1018	SF	\$0.00	\$5.30	\$0.00	108.20%	\$5,839.16	RSMeans Assemblies Cost Data, 2011, A2010 110 building Excavation & Backfill, 6' deep, sand, gravel, or common earth. (Equipment Cost included in Installation)
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	170	LF	\$46.25	\$81.00	\$0.00	99.30%		RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 10' pumped, 12" thick (Equipment Cost included in Installation)
wans, case in place, o deep, pumped, 12 thick, oo long	170		\$40.25	\$61.00	Ţ0.00	33.30%	721,443.00	RSMeans Assemblies Cost Data, 2011, A 2020 220,
Subdrainage Piping, 4" diameter, PVC, perforated	170	LF	\$2.04	\$3.77	\$0.00	99.30%	\$979.09	Subdrainage Piping (Equipment Cost included in Installation)
Stepped Concrete Wall 4' high								88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
5' high wall, pumped, 8" thick	552	LF	\$33.75	\$77.00	\$0.00	99.30%	\$60,655.84	RSMeans Assemblies Cost Data, 2011, A2020 110, Walls, Cast In Place, 6' pumped, 8" thick. Material costs have been increased 25% for additional reinforcing required for seismic event and tsunami. (Equipment Cost Included in Installation)
5 mgn wan, pumped, 6 tinek	332	E.	<del>-</del>	\$77.00	Ş0.00	33.3070	\$00,033.84	RSMeans Assemblies Cost Data, 2011, A 2020 220, Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	552	LF	\$2.04	\$3.77	\$0.00	108.20%	\$3,467.23	Installation)
Sandblast Concrete Heavy Treatment	2206	SF	\$1.46	\$3.31	\$0.52	99.30%	\$11,588.96	RSMeans Building Construction Cost Data, 2011, 03 35 29.60
Concrete or Gravel Platform Asphaltic Concrete Paving, 6" stone bse, 2" binder course,								RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	3200	SF	\$1.85	\$0.20	\$0.24	108.20%	\$7,928.90	16.14 Asphaltic Concrete Paving
Haul of Material, 40 MPH, cycle 40 MPH	59	CY		\$7.64	\$14.10	108.20%	\$1,393.94	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
							\$116,306.99	
						1	1	1
Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	<b>Location Factor</b>	Total Cost	Comments
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Berm Landscaping				+				RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	121	LCY	\$33.00	\$24.00	\$0.00	108.20%		19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	729	SY	\$0.20	\$0.10	\$0.06	108.20%	\$283.92	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls  Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9	41	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$2,519.69	RSMeans Assemblies Cost Data, 2011, G2040 105 Fence & Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	170	LF	\$17.65	\$4.82	\$0.00	95.40%	\$3,637.87	Installation) RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	6560	SF	\$0.32	\$0.46	\$0.00	108.20%	\$5,536.38 \$19,470.11	23.10, sprinkler irrigation system
							\$19,470.11	J

Map Number:	B13			Minimum Struct	uro Hoight (ft)	17		
•	Berm			ł		240		
Structure Type: Location:		Vandalia (Orte	lius Dr. 9.	Structure Capaci Safe Haven Squa	•	2400		
Overall Site Square Footage	6880	vanuana (Orte	ilus Di. &	Volume of Berm		3813		
·	0880			volume of Berni	iviaterials (ECT)	3613		
Scope								Cos
Site Utilities Excavation-Backfill								\$49,81 <sup>4</sup> \$214,81
Concrete								\$120,222
Landscaping							\$19,966	
Construction Totals								\$404,818
Design Fees (8%)								\$32,385
General Conditions (10%)								\$40,483
Contractor Fees, O&P (15%)								\$60,72
Construction Contingency (5%)								\$20,24
Estimate/Design Contingency (10%)								\$40,483
Project Total								\$599,130
Cir - Hailinia								
Site Utilities	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	RSMeans, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Domestic Water, Ductile Iron Class 250, MJ, 6" diameter	100	LF		\$110.00	\$185.00	108.20%	\$1,800.00	Assuming 100' distance from service at street
zomeste trate, zacine non class zoo, mi, o anamete.	100					10012070		RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13, Excavating Trench
								RSMeans, Building Construction Cost Data, 2011, 33 11
Install & Test, 6" Dutile Iron Piping, MJ	100	LF	\$14.60	\$10.70	\$2.72	108.20%	\$3,031.76	Water Utility Distribution Piping
								Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	RSMeans Building Construction Cost Data, 2011, 31 05 16, 31 23 23.20 Hauling
riadi of Material, 40 Mi II, Cycle 40 Mi II	12	LCI		\$7.04	Ş14.10	100.2070	\$202.27	RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	75	LCY		\$0.50	\$1.05	108.20%	\$125.78	23.17 General Fill
Storm Drainage								Assuming 100' distance from service at street
Fuggueta 2/4 CV Fugguetas Cl 10l daga	60	BCY		\$2.88	\$2.85	108.20%	6274.00	RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	БСТ		\$2.00	\$2.05	106.20%	\$371.99	16.13 Excavating, Trench RSMeans, Building Construction Cost Data, 2011, 33 41
Install & Test, 12" Bituminous Coated	100	LF	\$11.50	\$8.30	\$1.53	108.20%	\$2,307.91	Storm Utility Drainage Piping
·			·					Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	12	LCY	\$20.00			108.20%	\$259.68	converstaion on June 29th, 2011
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	12	LCY		\$7.64	\$14.10	108.20%	\$282.27	16, 31 23 23.20 Hauling RSMeans, Building Construction Cost Data, 2011, 31 23
Compacting Bedding In Trench	10	ECY		\$3.05	\$0.34	108.20%	\$36.68	23.16 Fill By Borrow & Utility Bedding
Compacting bedding in Henen	10	LCI		Ş3.03	Ş0.5 <del>4</del>	100.2070	Ç30.00	RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	60	LCY		\$0.50	\$1.05	108.20%	\$100.63	23.17 General Fill
Area Drains/Catch Basins								Assuming 6 Area Drains/Catch Basins on Site
								RSMeans Assemblies Cost Data, 2011, G3030 210,
	_		4	4				Manholes & Catch Basins (Equipment Cost included in
Concrete, Precast, 4' ID riser, 4' deep	6	EA	\$1,425.00	\$1,200.00	\$0.00	108.20%	\$17,041.50	Installation Cost)
Electrical								Assuming 100' distance from service at street  RSMeans, Building Construction Cost Data, 2011, 31 23
Excavate, 3/4 CY Excavator, 4'-6' deep	70	BCY		\$2.16	\$2.13	108.20%	\$324.92	16.13 Excavating Trench
, , , ,					,		,	RSMeans, Building Construction Cost Data, 2011, 33 71
Install & Test PVC, type EB 4 @ 3" diameter	100	LF	\$2.00	\$8.05		108.20%	\$1,087.41	19 Electrical Underground Ducts and Manholes
								Quote per Quigg Bros, Aberdeen, WA, phone
Utility Bedding, For Pipe & Conduit, Not Incl. Compaction	40	LCY	\$20.00	\$0.00	\$0.00	108.20%	\$865.60	converstaion on June 29th, 2011
Haul of Material 40 MBH, cyclo 40 MBH	40	LCV		¢7.64	¢14.10	109 209/	¢040.01	RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	40	LCY		\$7.64	\$14.10	108.20%	\$940.91	16, 31 23 23.20 Hauling

Compacting Bedding In Trench	35	ECY		\$3.05	\$0.34	108.20%	\$128.38	23.16 Fill By Borrow & Utility Bedding RSMeans, Building Construction Cost Data, 2011, 31 23
Backfill, General Fill By Dozer, No Compaction	44	LCY		\$0.50	\$1.05	108.20%		23.17 General Fill
L			4	4				RSMeans, Building Construction Cost Data, 2011, 31 23
Light Pole, Aluminum, 20' high, 1 arm bracket	8	EA	\$1,250.00	\$1,075.00	\$0.00	108.20%	. ,	23.17 General Fill
	•	•	•			•	\$49,813.97	

Excavation-Backfill	Quantity	Unit	Material Cost	Installation Cost	Equipment Cost	Location Factor	Total Cost	Comments
Site Preperation								
								RSMeans Building Construction Cost Data, 2011, 31 13
Clear & Grub	3	acres		\$320.00	\$525.00	108.20%	\$2,742.87	13, Selective Clearing
								RSMeans Building Construction Cost Data, 2011, 02 21
Survey Site	3	acres	\$32.50	\$565.00	\$35.00	108.20%	\$2,053.10	13 Site Surveys
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$69.00	\$116.00	100.00%	\$1,850.00	36.50 Mobilization
Material Costs								
								RSMeans Building Construction Cost Data, 2011, 31 05
								16, Aggregates for Earthwork, Select Structural Fill &
Fill Material, Select Structural Fill, 1 1/2" minus aggregate	3813	LCY	\$20.00	\$1.75	\$3.44	108.20%	\$103,925.53	Material Cost from Quigg Bros., Aberdeen, WA
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	3813	LCY		\$7.64	\$14.10	108.20%	\$89,691.98	16, 31 23 23.20 Hauling
Placement of Material								
								RSMeans Buidling Construction Data, 2011, 31 23 23.13
Compacting Backfill, 6"to 12" lifts, vibrating roller	3531	ECY		\$0.63	\$1.81	108.20%	\$9,320.95	Backfill
Stabilization Fabric, Polypropylene, 6oz/SY, 18" lifts, 5082								RSMeans Building Construction Cost Data, 2011, 32 11
SF per lift	3022	SY	\$1.48	\$0.09	\$0.03	108.20%	\$5,232.07	23 Aggregate Base Courses

\$214,816.49

Concrete	Quantity	Unit	Material Cost	Installation Cost	Equipment	<b>Location Factor</b>	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	10	EA		\$116.00	\$185.00	100.00%	\$3,010.00	36.50 Mobilization
								Based on square root of the berm safe haven area
Tsunami Wave Inudation Concrete Wall	147	LF						times three walls
								RSMeans Assemblies Cost Data, 2011, A2010 110
								building Excavation & Backfill, 6' deep, sand, gravel, or
								common earth. (Equipment Cost included in
Excavation, 6' deep	882	SF	\$0.00	\$5.30	\$0.00	108.20%	\$5,056.86	Installation)
								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 10' pumped, 12" thick (Equipment
Walls, Cast in place, 6' deep, pumped, 12" thick, 88 ' long	147	LF	\$46.25	\$81.00	\$0.00	99.30%	\$18,570.94	Cost included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	147	LF	\$2.04	\$3.77	\$0.00	99.30%	\$847.91	Installation)
Stepped Concrete Wall 4' high								88', 86', 82', 72', 60' length walls, 12" thick, 5' high.
								RSMeans Assemblies Cost Data, 2011, A2020 110,
								Walls, Cast In Place, 6' pumped, 8" thick. Material costs
								have been increased 25% for additional reinforcing
								required for seismic event and tsunami. (Equipment
5' high wall, pumped, 8" thick	625	LF	\$33.75	\$77.00	\$0.00	99.30%	\$68,692.42	Cost Included in Installation)
								RSMeans Assemblies Cost Data, 2011, A 2020 220,
								Subdrainage Piping (Equipment Cost included in
Subdrainage Piping, 4" diameter, PVC, perforated	625	LF	\$2.04	\$3.77	\$0.00	108.20%	\$3,926.62	Installation)
								RSMeans Building Construction Cost Data, 2011, 03 35
Sandblast Concrete Heavy Treatment	2498	SF	\$1.46	\$3.31	\$0.52	99.30%	\$13,124.44	29.60
Concrete or Gravel Platform								
Asphaltic Concrete Paving, 6" stone bse, 2" binder course,					·			RSMeans Building Construction Cost Data, 2011, 32 12
1" toping	2400	SF	\$1.85	\$0.20	\$0.24	108.20%	\$5,946.67	16.14 Asphaltic Concrete Paving
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	44	CY		\$7.64	\$14.10	108.20%	\$1,045.45	16, 31 23 23.20 Hauling
							\$120,221,32	

\$120,221.32

Landscaping	Quantity	Unit	Material Costs	Installation Costs	Equipment Costs	Location Factor	Total Cost	Comments
								RSMeans, Building Construction Cost Data, 2011, 01 54
Mobilization of Equipment	6	EA		\$116.00	\$185.00	100.00%	\$1,806.00	36.50 Mobilization
Berm Landscaping								
								RSMeans Building Construction Cost Data, 2011, 32 91
Top Soil	127	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$7,857.72	19.13 Top Dress by hand, 1 CY for 600 SF
Hydro-Seed	764	SY	\$0.20	\$0.10	\$0.06	108.20%	\$297.77	Mechanical Seeding, 44lb/sy
Top Soil at Stepped Concrete Walls	46	LCY	\$33.00	\$24.00	\$0.00	108.20%	\$2,853.54	
								RSMeans Assemblies Cost Data, 2011, G2040 105 Fence
Fencing at Top of Berm, chain link, 2" post, 1 5/8" rail, 9								& Guardrails (Equipment Costs are included in
ga. Galv. Wire 5' high	147	LF	\$17.65	\$4.82	\$0.00	95.40%	\$3,150.49	Installation)
								RSMeans Building Construction Costs, 2011, 32 84
Irrigation System	6880	SF	\$0.32	\$0.46	\$0.00	108.20%	\$5,806.44	23.10, sprinkler irrigation system

\$19,965.97

Map Number:	PK 1	Minimum Structure Height:	26
Structure Type:	Parking Garage	Structure Capacity:	800
Location:	<b>Shoalwater Bay Casino</b>	Safe Haven Square Footage:	8000
Levels	4	Total Square Foot	32000
Cost per Square Foot*	\$37.43	Perimeter (LF)	358
* Based on RSMeans Square Foot Cost	s 2011, 85,000 SF, LF Perimeter 529 (Subtract	\$1.45 per 100 LF less), does not include	le Contractor Fees & Architect Fees *
Scope			Cost
Square Foot Cost			\$1,197,760
Total			\$1,197,760
Design Fees (8%)			\$95,821
General Conditions (10%)			\$119,776
Contractor Fees, O&P (15%)			\$179,664
Construction Contingency (5%)			\$59,888
Estimate/Design Contingency (10%)			\$119,776
Project Total			\$1,772,685

Map Number:	PK 1	Minimum Structure Height:	20				
Structure Type:	Parking Garage	Structure Capacity:	400				
Location:	<b>Shoalwater Bay Casino</b>	Safe Haven Square Footage:	4000				
Levels	3	Total Square Foot	12000				
Cost per Square Foot*	\$36.43	Perimeter (LF)	253				
* Based on RSMeans Square Foot Costs 2011	I, 85,000 SF, LF Perimeter 529 (Subtract	\$1.45 per 100 LF less), does not includ	le Contractor Fees & Architect Fees *				
Scope			Cost				
Square Foot Cost			\$437,160				
Total			\$437,160				
Design Fees (8%)			\$34,973				
General Conditions (10%)			\$43,716				
Contractor Fees, O&P (15%)			\$65,574				
Construction Contingency (5%)			\$21,85				
Estimate/Design Contingency (10%)			\$43,716				
Project Total			\$646,997				

Map Number:	T1	Minimum Structure Height:	20					
Structure Type:	Tower	Structure Capacity:	80					
Location:	Tokeland, WA, 3088 Kindred Ave.	Safe Haven Square Footage:	800					
Levels	2	Columns Required	4					
		Piles per Column	2					
Scope			Cost					
Site Utilities			\$15,257					
Excavation-Backfill			\$9,423					
Foundation			\$66,161					
Structure		\$70,429 \$18,391						
Roofing								
Stairs/Ramps/Guardrails			\$53,102					
Fire Protection			\$9,144					
Total			\$241,907					
Design Fees (8%)			\$19,353					
General Conditions (10%)			\$24,191					
Contractor Fees, O&P (15%)			\$36,286					
Construction Contingency (5%)			\$12,095					
Estimate/Design Contingency (10%)			\$24,191					
Project Total			\$358,023					

			Cost per	Material	Installation	Equipment	Location		
Site Utilities	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									RSMeans, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	10	EA			\$116.00	\$185.00	100.00%	\$3,010.00	54 36.50 Mobilization
Fire Water, Ductile Iron Class 250, MJ, 4" diameter	50	LF		\$16.05					Assuming 50' distance from service at street
									RSMeans, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator 4'-6' deep	35	BCY			\$2.16	\$2.13	108.20%	\$162.46	23 16.13, Excavating Trench
									RSMeans, Building Construction Cost Data, 2011, 33
Install & Test, 4" Ductile Iron Piping, MJ	50	LF		\$12.50	\$8.55	\$2.17	108.20%	\$1,256.20	11 Water Utility Distribution Piping
Utility Bedding, For Pipe & Conduit, Not Incl.									Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY		\$20.00			108.20%	\$129.84	conversation on June 29th, 2011
									RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY			\$7.64	\$14.10	108.20%	\$141.14	16, 31 23 23.20 Hauling
									RSMeans, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY			\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
									RSMeans, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY			\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Storm Service									Assuming 50' distance from service at street
									RSMeans, Building Construction Cost Data, 201, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY			\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating Trench
									RSMeans, Building Construction Cost Data, 2011, 33
Install & Test, 8" Bituminous Coated	50	LF		\$10.70	\$5.25	\$0.97	108.20%	\$915.37	41 Storm Utility Drainage Piping
Utility Bedding, For Pipe & Conduit, Not Incl.									Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY		\$20.00			108.20%	\$129.84	conversation on June 29th, 2011

								<del>-</del>
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY		\$7.64	\$14.10	108.20%	\$141.14	16, 31 23 23.20 Hauling
								RSMeans, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY		\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY		\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Site Drainage/Area Drains/Catch Basins								Assume 1 area drain for structure
								RSMeans Assemblies Cost Data, 2011, G3030 210,
Concrete, Precast, 4' ID riser, 4' deep	1	EA	\$1,425.00	\$1,200.00	0.00%	108.20%	\$2,840.25	Manholes & Catch Basins
Electrical	50	LF						Assuming 50' distance from service at street
Electrical Service, includes service installation,								RSMeans Assemblies Cost Data, 2011, D 5010 120,
breakers, metering, 20' conduit & wire, 3 phase, 4								Electric Service, 3 Phase - 4 Wire, equipment included
wire, 120/208 volts, 60 A	1	EA	\$960.00	\$920.00		100.50%	\$1,889.40	in installation cost
								RSMeans, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator, 4'-6' deep	35	BCY		\$2.16	\$2.13	108.20%	\$162.46	23 16.13 Excavating Trench
								RSMeans, Building Construction Cost Data, 2011, 33
Install & Test PVC, type EB 4 @ 3" diameter	50	LF	\$2.00	\$8.05		108.20%	\$543.71	71 19 Electrical Underground Ducts and Manholes
								RSMeans, Building Construction Cost Data, 2011, 26
Wire, 600 volt, copper type THW, solid, #12	50	CLF	\$11.95	\$36.50	0	100.50%	\$2,434.61	05 19.90 Wire
Utility Bedding, For Pipe & Conduit, Not Incl.								Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	19	LCY	\$20.00			108.20%	\$411.16	conversation on June 29th, 2011
								RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	19	LCY		\$7.64	\$14.10	108.20%	\$446.93	16, 31 23 23.20 Hauling
·								RSMeans, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	19	ECY		\$3.05	\$0.34	108.20%	\$69.69	23 23.16 Fill By Borrow & Utility Bedding
								RSMeans, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	22	LCY		\$0.50	\$1.05	108.20%	\$36.90	23 23.17 General Fill
4		1						

\$15,257.23

			Cost per	Material	Installation	Equipment	Location		
Excavation-Backfill	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	<b>Total Cost</b>	Comments
									RSMeans Building Construction Cost Data, 2011, 01 54
Mobilization	8	EA	\$0.00	\$0.00	\$69.00	\$116.00	100.00%	\$1,480.00	36 - Equipment Mobilization
									Is clear and grub needed for structure in urban
									setting? RSMeans Building Construction Cost Data,
Clear and Grub Site	0.25	ACRE	\$0.00	\$0.00	\$1,750.00	\$1,300.00	108.20%	\$825.03	2011, 31 11 10.10 Clear and Grub Site
									Grade Beams, 3' wide, 3' deep, 568 lf. RSMeans
									Building Construction Cost Data, 2011, 31 23 16.16
									3/4 CY bucket, (Price Included in grade beam
Excavation for Grade Beams	20	BCY	\$0.00	\$0.00	\$0.00	\$0.00	108.20%	\$0.00	foundation price)
									1225 SF mat, 2' deep. RSMeans Building Construction
Excavation for slab, subgrade and capillary break	59	BCY	\$0.00	\$0.00	\$7.20	\$7.17	108.20%	\$921.38	Cost Data, 2011, 31 23 16.16 3/4 CY bucket
Removal of Foundation Spoils, Haul of Material, 40									RSMeans Building Construction Cost Data, 2011, 31 05
MPH, cycle 40 MPH	99	LCY			\$7.64	\$14.10	108.20%	\$2,330.49	16, 31 23 23.20 Hauling
									Quote per Quigg Bros, Aberdeen, WA, phone
Backfill Slab, subgrade, capillary break	86	ECY		\$20.00			108.20%		conversation on June 29th, 2011
									RSMeans Building Construction Cost Data, 2011, 31 05
Haul of Material, 40 MPH, cycle 40 MPH	86	ECY			\$7.64	\$14.10	108.20%	\$2,013.54	16, 31 23 23.20 Hauling

\$9,422.82

			Cost per	Material	Installation	Equipment	Location		
Foundation	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									Piling needs to 2x the height of the structure which is
Piling									23-35'?
									Per phone conversation with Quigg Bros, Aberdeen,
Mobilization for piling	1	EA	\$12,000.00	\$0.00	\$0.00	\$0.00	100.00%	\$12,000.00	WA on June 29th, 2011
									Driven pipe piles 40' long, 18"x.5", per phone
									conversation with Quigg Bros, Aberdeen, WA on June
Battered Piles, 18" Diameter, 30'-40' Deep	8	EA	\$0.00	\$3,500.00	\$1,200.00	\$0.00	100.00%	\$37,600.00	29th,2011. Equipment Included in Material/Labor Cost
									RSMeans Assemblies Cost Data 2011, A1010 250 Pile
									Caps (Equipment Costs are included in Installation
Pile Caps, Cap Size 6'-6" x 3'-6" x 37"	4	EA	\$0.00	\$370.00	\$540.00		99.30%	\$3,614.52	Cost)
Foundation Cast-In-Place/Tower									
									RSMeans Assemblies Cost Data 2011, A 1020 210
Grade Beams 30' span, 28" deep, 14" wide, 2 KLF									Grade Beams (Equipment Cost is included in
load	113	LF		\$34.50	\$53.00		99.30%	\$9,830.20	Installation Cost)
									Piling needs to 2x the height of the structure which is
Foundation Cast-In-Place/ Footings for Ramp									23-35'?
									RSMeans Assemblies Cost Data, 2011, A1010 210,
Spread Footings, load 75K, soil capacity 6 KSF, 4'-0"									Spread Footings (Equipment Cost is included in
sq x 12" deep	12	EA	\$0.00	\$94.50	\$167.00	\$0.00	99.30%	\$3,116.03	Installation Cost)

\$66,160.75

		Ī	Cost per	Material	Installation	Equipment	Location	l	
Structure	Quantity	Unit	Unit	Cost	Cost	Costs	Factor	Total Cost	Comments
	-								RSMeans, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	10	EA			\$116.00	\$185.00	100.00%	\$3,010.00	54 36.50 Mobilization
									Beam and Column sizes are not determined and
									estimate takes in "best guess" to assume sizes for this
Concrete Structure								\$0.00	project.
									RSMeans Assemblies Cost Data, 2011, B1010 201, CIP
Concrete Columns, rated for 1000 K load, 20' high,									Column, Round Tied (Equipment Cost included in
26" round, concrete strength, 6000 PSI	80	VLF		\$158.00	\$7.85	\$0.00	99.30%	\$13,175.12	Installation Cost)
Slab-On-Grade, 6" thick, non-industrial, reinforced,									RSMeans Assemblies Cost Data, 2011, A1030 120, Slab
Ground Floor	800	SF		\$3.01	\$2.97		99.30%	\$4,750.51	on Grade, Plain & Reinforced
									RSMeans Assemblies Cost Data, 2011, B1010 213
Cast-In-Place Beam and Slab, Two Way, 30x30, 170									Rectangular Precast Beams (Equipment Cost included
PSF, 9" thick slab, 1st Floor	800	LF		\$6.95	\$11.55		99.30%	\$14,696.40	in Installation Cost)
									RSMeans Assemblies Cost Data, 2011, B1010 229
Cast-In-Place Beam and Slab, Two Way, 30x30, 351									Precast Plank with No Topping (Equipment Cost
PSF, 9" thick slab, 2nd Floor (evacuation level)	800	SF		\$8.95	\$13.60		99.30%	\$17,913.72	included in Installation Cost)
									Wood structure, hip roof to support galvanized steel
Wood Structure									panels
									Supply quote from Levee Lumber, Hoquiam, WA,
									RSMeans Assemblies Cost Data, 2011, B1020 102,
									Roof Construction, Wood/Flat or Pitched (Equipment
Wood Columns 12"x12", 10' High, Select Structural	40	VLF		\$9.85	\$2.62		97.30%	\$485.33	Cost included in Installation Cost)

									Supply quote from Levee Lumber, Hoquiam, WA,
									RSMeans Building Construction Cost Data 2011, Glued-
Perimeter Joists, 3 1/8"x12", GLM 30' span	113	LF		\$4.85	\$1.95	\$22.00	97.30%	\$3,170.37	Laminated Beams 06 18 13.20
									RSMeans Assemblies Cost Data, 2011, B1020 102,
									Roof Construction, Wood/Flat or Pitched (Equipment
2x10 Wood Joist w/ 1/2" CDX, 12" OC	800	SF		\$2.02	\$2.05		97.30%	\$3,168.09	Cost included in Installation Cost)
									RSMeans Assemblies Cost Data, 2011, B1020 102,
Roof, wood/pitched, 3"x12" 12" OC w/ sheating									Roof Construction, Wood/Flat or Pitched (Equipment
plywood on roof, 5/16" CDX	1120	SF		\$4.59	\$2.62		97.30%	\$7,857.17	Cost included in Installation Cost)
Weather Proofing/Coatings add 15% (Premium for									Assumed that PTS wood is 15% more compared on
PTS Wood)	\$14,680.96	%	15.00%					\$2,202.14	price difference shown in means
								\$70.428.86	

Roofing	Quantity	Unit	Cost per Unit	Material Cos	stallation Cos	quipment Co	cation Fact	Total Cost	Comments
									RSMeans, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	4	EA			\$116.00	\$185.00	100.00%	\$1,204.00	54 36.50 Mobilization
									Hip and ridge style roof, peak of roof 15'. (Equipment
Roofing/Hip and Ridge Roof Steel Panels									Cost is included in Installation Cost)
									RSMeans Assemblies Cost Data, 2011, B3010 135,
Flat Roof Steel Panels, Flat Seam, Copper, 1/4" min.									Formed Metal (Equipment Cost is included in
slope, 20 oz, 1.2 PSF	1120	SF		\$9.50	\$5.80			\$17,187.41	Installation Cost)

\$18,391.41

Stairs/Ramps/Guardrails	Quantity	Unit	Cost per Uni	Material Cos	nstallation Cos	quipment Co	cation Fact	Total Cost	Comments
-									RSMeans, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	6	EA			\$116.00	\$185.00	100.00%	\$1,806.00	54 36.50 Mobilization
									Beam and Column sizes are not determined and
									estimate takes in "best guess" to assume sizes for this
Exterior Ramp, Rises 20', 5' wide									project.
									RSMeans Assemblies Cost Data, 2011, B1010, 208
Steel Columns, 20' high, Wide Flanged, 6", 12									Steel Columns (Equipment Cost is included in
locations	240	VLF		\$26.50	\$7.85	\$0.00	95.40%	\$7,864.78	Installation Cost)
W Shape Beams and Girders, bay size 15X20,, Total									RSMeans Building Construction Cost Data, 2011,
Load 263 PSF.	800	SF		\$11.70	\$3.82	\$1.50	95.40%	\$12,989.66	Structural Steel Framing, 05 12 23.17
									RSMeans Assemblies Cost Data, 2011, B1010 258,
Floor Construction, Metal Deck/Concrete Fill, Deck									Metal Deck/Concrete Fill (Equipment Cost is included
Span 6 ft, 150 PSF Superimposed Load	800	SF		\$2.38	\$2.38		95.40%	\$3,632.83	in Installation Cost)
									RSMeans Building Construction Cost Data, 2011, 05 05
Weather Proofing/Coatings (Galvanized)	7.5	Tons	\$400.00	\$0.00	0	0	95.40%	\$2,862.00	13.50, Paints and Protective Coatings
									Galvanized, 2 Rail, 1 1/2" diameter, RSMeans Building
Hand Rail/Guard Rail	270	LF		\$32.50	\$9.80		95.40%	\$10,895.63	Construction Cost Date 2011, 05 52 Metal Railings
Ladders/Stairs									
Steel ladder to attic space 20" wide bolted to									RSMeans Building Construction Cost Data 2011, 05 51
concrete without cage	10	VLF		\$65.00	\$31.50	\$2.18	95.40%	\$920.61	33 - Vertical Metal Ladders
Accordion Ladder for Escape after Tsunami,									RSMeans Building Construction Cost Data 2011, 11 33
Disappearing Stairs, Heavy duty, 16'-0" ceiling	2	ea		\$1,400.00	\$172.00		95.40%	\$2,999.38	10.10, Disappearing Stairway
Platform Perimeters Railing (120 LF for each									
platform, 2 locations)									
									Galvanized, 2 Rail, 1 1/2" diameter, RSMeans Building
Hand Rail/Guard Rail	226	LF		\$32.50	\$9.80		95.40%	\$9,131.11	Construction Cost Date 2011, 05 52 Metal Railings

\$53,102.01

Fire Protection	Quantity	Unit	Cost per Unit	Material Cost	Installation Costs	Equipment Cost	Location Factor	Total Cost	Comments
	Quantity	Oilit	Onit	Cost	Costs	Cost	ractor	iotai cost	Comments
Fire Protection, Wet Pipe System									
									RSMeans Building Construction Cost Data, 2011, 01 54
Mobilization	4	EA		\$69.00	\$116.00		100.00%	\$740.00	36 - Equipment Mobilization
									RSMeans Square Foot Costs, 2011, D4010 410, Wet
									Pipe Sprinkler Systems (Equipment Cost included in
First Floor, 2000 SF, Light Hazard	800	SF		\$4.50	\$3.04		97.00%	\$5,851.04	Installation Cost)
									RSMeans Square Foot Costs, 2011, D4010 410, Wet
									Pipe Sprinkler Systems (Equipment Cost included in
Second Floor, 2000 SF, Light Hazard	800	SF		\$1.21	\$2.08		97.00%	\$2,553.04	Installation Cost)
	•					•		\$9,144.08	

Map Number:	T2	Minimum Structure Height:	20
Structure Type:	Tower	Structure Capacity:	120
Location:	Tokeland, WA, Tokeland Rd & Evergreen St.	Safe Haven Square Footage:	1200
Levels	2	Columns Required	4
		Piles per Column	2
Scope	•		Cost
Site Utilities			\$15,257
Excavation-Backfill			\$12,200
Foundation			\$68,370
Structure			\$96,268
Roofing			\$26,985
Stairs/Ramps/Guardrails			\$55,154
Fire Protection			\$13,346
Total			\$287,581
Design Fees (8%)			\$23,006
General Conditions (10%)			\$28,758
Contractor Fees, O&P (15%)			\$43,137
Construction Contingency (5%)			\$14,379
Estimate/Design Contingency (10%)			\$28,758
Project Total			\$425,619

			Cost per	Material	Installation	Equipment	Location		
Site Utilities	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	10	EA			\$116.00	\$185.00	100.00%	\$3,010.00	54 36.50 Mobilization
Fire Water, Ductile Iron Class 250, MJ, 4" diameter	50	LF		\$16.05					Assuming 50' distance from service at street
									RS Means, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator 4'-6' deep	35	BCY			\$2.16	\$2.13	108.20%	\$162.46	23 16.13, Excavating Trench

								RS Means, Building Construction Cost Data, 2011, 33
Install & Test, 4" Ductile Iron Piping, MJ	50	LF	\$12.50	\$8.55	\$2.17	108.20%	\$1,256.20	11 Water Utility Distribution Piping
Utility Bedding, For Pipe & Conduit, Not Incl.			·					Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY	\$20.00			108.20%	\$129.84	conversation on June 29th, 2011
·								RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY		\$7.64	\$14.10	108.20%	\$141.14	05 16, 31 23 23.20 Hauling
								RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY		\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
								RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY		\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Storm Service								Assuming 50' distance from service at street
								RS Means, Building Construction Cost Data, 201, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY		\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating Trench
								RS Means, Building Construction Cost Data, 2011, 33
Install & Test, 8" Bituminous Coated	50	LF	\$10.70	\$5.25	\$0.97	108.20%	\$915.37	41 Storm Utility Drainage Piping
Utility Bedding, For Pipe & Conduit, Not Incl.								Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY	\$20.00			108.20%	\$129.84	conversation on June 29th, 2011
·								RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY		\$7.64	\$14.10	108.20%	\$141.14	05 16, 31 23 23.20 Hauling
								RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY		\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
								RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY		\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Site Drainage/Area Drains/Catch Basins								Assume 1 area drain for structure
-								RS Means Assemblies Cost Data, 2011, G3030 210,
Concrete, Precast, 4' ID riser, 4' deep	1	EA	\$1,425.00	\$1,200.00	0.00%	108.20%	\$2,840.25	Manholes & Catch Basins
Electrical	50	LF						Assuming 50' distance from service at street
Electrical Service, includes service installation,								RS Means Assemblies Cost Data, 2011, D 5010 120,
breakers, metering, 20' conduit & wire, 3 phase, 4								Electric Service, 3 Phase - 4 Wire, equipment included
wire, 120/208 volts, 60 A	1	EA	\$960.00	\$920.00		100.50%	\$1,889.40	in installation cost
								RS Means, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator, 4'-6' deep	35	BCY		\$2.16	\$2.13	108.20%	\$162.46	23 16.13 Excavating Trench
								RS Means, Building Construction Cost Data, 2011, 33
Install & Test PVC, type EB 4 @ 3" diameter	50	LF	\$2.00	\$8.05		108.20%	\$543.71	71 19 Electrical Underground Ducts and Manholes
								RS Means, Building Construction Cost Data, 2011, 26
Wire, 600 volt, copper type THW, solid, #12	50	CLF	\$11.95	\$36.50	0	100.50%	\$2,434.61	05 19.90 Wire
Utility Bedding, For Pipe & Conduit, Not Incl.								Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	19	LCY	\$20.00			108.20%	\$411.16	conversation on June 29th, 2011
								RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	19	LCY		\$7.64	\$14.10	108.20%	\$446.93	05 16, 31 23 23.20 Hauling
								RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	19	ECY		\$3.05	\$0.34	108.20%	\$69.69	23 23.16 Fill By Borrow & Utility Bedding
		1						RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	22	LCY		\$0.50	\$1.05	108.20%	\$36.90	23 23.17 General Fill
						•	\$15,257.23	

	5 1611			Cost per	Material	Installation				
E>	cavation-Backfill	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
										RS Means Building Construction Cost Data, 2011, 01
Mo	bilization	8	EA	\$0.00	\$0.00	\$69.00	\$116.00	100.00%	\$1,480.00	54 36 - Equipment Mobilization

									Is clear and grub needed for structure in urban
									setting? RS Means Building Construction Cost Data,
Clear and Grub Site	0.25	ACRE	\$0.00	\$0.00	\$1,750.00	\$1,300.00	108.20%	\$825.03	2011, 31 11 10.10 Clear and Grub Site
									Grade Beams, 3' wide, 3' deep, 568 lf. RS Means
									Building Construction Cost Data, 2011, 31 23 16.16
									3/4 CY bucket, (Price Included in grade beam
Excavation for Grade Beams	20	BCY	\$0.00	\$0.00	\$0.00	\$0.00	108.20%	\$0.00	foundation price)
									1225 SF mat, 2' deep. RS Means Building Construction
Excavation for slab, subgrade and capillary break	89	BCY	\$0.00	\$0.00	\$7.20	\$7.17	108.20%	\$1,382.07	Cost Data, 2011, 31 23 16.16 3/4 CY bucket
Removal of Foundation Spoils, Haul of Material, 40									RS Means Building Construction Cost Data, 2011, 31
MPH, cycle 40 MPH	136	LCY			\$7.64	\$14.10	108.20%	\$3,201.70	05 16, 31 23 23.20 Hauling
									Quote per Quigg Bros, Aberdeen, WA, phone
Backfill Slab, subgrade, capillary break	118	ECY		\$20.00			108.20%	\$2,544.86	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	118	ECY			\$7.64	\$14.10	108.20%	\$2,766.27	05 16, 31 23 23.20 Hauling
						•		\$12,199.93	

			Cost per	Material	Installation	Equipment	Location		
Foundation	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									Piling needs to 2x the height of the structure which is
Piling									23-35'?
									Per phone conversation with Quigg Bros, Aberdeen,
Mobilization for piling	1	EA	\$12,000.00	\$0.00	\$0.00	\$0.00	100.00%	\$12,000.00	WA on June 29th, 2011
									Driven pipe piles 40' long, 18"x.5", per phone
									conversation with Quigg Bros, Aberdeen, WA on June
Battered Piles, 18" Diameter, 30'-40' Deep	8	EA	\$0.00	\$3,500.00	\$1,200.00	\$0.00	100.00%	\$37,600.00	29th,2011. Equipment Included in Material/Labor Cost
									RS Means Assemblies Cost Data 2011, A1010 250 Pile
									Caps (Equipment Costs are included in Installation
Pile Caps, Cap Size 6'-6" x 3'-6" x 37"	4	EA	\$0.00	\$370.00	\$540.00		99.30%	\$3,614.52	Cost)
Foundation Cast-In-Place/Tower									
									RS Means Assemblies Cost Data 2011, A 1020 210
Grade Beams 30' span, 28" deep, 14" wide, 2 KLF									Grade Beams (Equipment Cost is included in
load	139	LF		\$34.50	\$53.00		99.30%	\$12,039.49	Installation Cost)
									Piling needs to 2x the height of the structure which is
Foundation Cast-In-Place/ Footings for Ramp									23-35'?
					-				RS Means Assemblies Cost Data, 2011, A1010 210,
Spread Footings, load 75K, soil capacity 6 KSF, 4'-0"									Spread Footings (Equipment Cost is included in
sq x 12" deep	12	EA	\$0.00	\$94.50	\$167.00	\$0.00	99.30%	\$3,116.03	Installation Cost)
								\$68,370.04	

Installation Equipment Material Location Cost per Structure Quantity Unit Unit Cost Cost Costs Factor **Total Cost** Comments RS Means, Building Construction Cost Data, 2011, 01 Mobilization of Equipment 10 EΑ \$116.00 \$185.00 100.00% \$3,010.00 54 36.50 Mobilization Beam and Column sizes are not determined and estimate takes in "best guess" to assume sizes for this \$0.00 Concrete Structure project.

									RS Means Assemblies Cost Data, 2011, B1010 201, CII
Concrete Columns, rated for 1000 K load, 20' high,									Column, Round Tied (Equipment Cost included in
26" round, concrete strength, 6000 PSI	80	VLF		\$158.00	\$7.85	\$0.00	99.30%	\$13,175.12	Installation Cost)
Slab-On-Grade, 6" thick, non-industrial, reinforced,				-	·				RS Means Assemblies Cost Data, 2011, A1030 120,
Ground Floor	1200	SF		\$3.01	\$2.97		99.30%	\$7,125.77	Slab on Grade, Plain & Reinforced
					·				RS Means Assemblies Cost Data, 2011, B1010 213
Cast-In-Place Beam and Slab, Two Way, 30x30, 170									Rectangular Precast Beams (Equipment Cost included
PSF, 9" thick slab, 1st Floor	1200	LF		\$6.95	\$11.55		99.30%	\$22,044.60	in Installation Cost)
									RS Means Assemblies Cost Data, 2011, B1010 229
Cast-In-Place Beam and Slab, Two Way, 30x30, 351									Precast Plank with No Topping (Equipment Cost
PSF, 9" thick slab, 2nd Floor (evacuation level)	1200	SF		\$8.95	\$13.60		99.30%	\$26,870.58	included in Installation Cost)
									Wood structure, hip roof to support galvanized steel
Wood Structure									panels
									Supply quote from Levee Lumber, Hoquiam, WA, RS
									Means Assemblies Cost Data, 2011, B1020 102, Roof
									Construction, Wood/Flat or Pitched (Equipment Cost
Wood Columns 12"x12", 10' High, Select Structural	40	VLF		\$9.85	\$2.62		97.30%	\$485.33	included in Installation Cost)
									Supply quote from Levee Lumber, Hoquiam, WA, RS
									Means Building Construction Cost Data 2011, Glued-
Perimeter Joists, 3 1/8"x12", GLM 30' span	139	LF		\$4.85	\$1.95	\$22.00	97.30%	\$3,882.90	Laminated Beams 06 18 13.20
									RS Means Assemblies Cost Data, 2011, B1020 102,
									Roof Construction, Wood/Flat or Pitched (Equipment
2x10 Wood Joist w/ 1/2" CDX, 12" OC	1200	SF		\$2.02	\$2.05		97.30%	\$4,752.13	Cost included in Installation Cost)
									RS Means Assemblies Cost Data, 2011, B1020 102,
Roof, wood/pitched, 3"x12" 12" OC w/ sheating									Roof Construction, Wood/Flat or Pitched (Equipment
plywood on roof, 5/16" CDX	1680	SF		\$4.59	\$2.62		97.30%	\$11,785.75	Cost included in Installation Cost)
Weather Proofing/Coatings add 15% (Premium for									Assumed that PTS wood is 15% more compared on
PTS Wood)	\$20,906.12	%	15.00%						price difference shown in means
	<u> </u>							\$96.268.11	

\$96,268.11

Roofing	Quantity	Unit	Cost per Unit	/laterial Cos	stallation Cos	quipment Co	cation Fact	Total Cost	Comments
									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	4	EA			\$116.00	\$185.00	100.00%	\$1,204.00	54 36.50 Mobilization
									Hip and ridge style roof, peak of roof 15'. (Equipment
Roofing/Hip and Ridge Roof Steel Panels									Cost is included in Installation Cost)
									RS Means Assemblies Cost Data, 2011, B3010 135,
Flat Roof Steel Panels, Flat Seam, Copper, 1/4" min.									Formed Metal (Equipment Cost is included in
slope, 20 oz, 1.2 PSF	1680	SF		\$9.50	\$5.80		100.30%	\$25,781.11	Installation Cost)

\$26,985.11

Stairs/Ramps/Guardrails	Quantity	Unit	Cost per Unit	Material Cos	nstallation Cos	quipment Co	cation Fact	Total Cost	Comments
									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	6	EA			\$116.00	\$185.00	100.00%	\$1,806.00	54 36.50 Mobilization
									Beam and Column sizes are not determined and
									estimate takes in "best guess" to assume sizes for this
Exterior Ramp, Rises 20', 5' wide									project.
									RS Means Assemblies Cost Data, 2011, B1010, 208
Steel Columns, 20' high, Wide Flanged, 6", 12									Steel Columns (Equipment Cost is included in
locations	240	VLF		\$26.50	\$7.85	\$0.00	95.40%	\$7,864.78	Installation Cost)

W Shape Beams and Girders, bay size 15X20,, Total									RS Means Building Construction Cost Data, 2011,
Load 263 PSF.	800	SF		\$11.70	\$3.82	\$1.50	95.40%	\$12,989.66	Structural Steel Framing, 05 12 23.17
									RS Means Assemblies Cost Data, 2011, B1010 258,
Floor Construction, Metal Deck/Concrete Fill, Deck									Metal Deck/Concrete Fill (Equipment Cost is included
Span 6 ft, 150 PSF Superimposed Load	800	SF		\$2.38	\$2.38		95.40%	\$3,632.83	in Installation Cost)
									RS Means Building Construction Cost Data, 2011, 05
Weather Proofing/Coatings (Galvanized)	7.5	Tons	\$400.00	\$0.00	0	0	95.40%	\$2,862.00	05 13.50, Paints and Protective Coatings
									Galvanized, 2 Rail, 1 1/2" diameter, RS Means Building
Hand Rail/Guard Rail	270	LF		\$32.50	\$9.80		95.40%	\$10,895.63	Construction Cost Date 2011, 05 52 Metal Railings
Ladders/Stairs									
Steel ladder to attic space 20" wide bolted to									RS Means Building Construction Cost Data 2011, 05 51
concrete without cage	10	VLF		\$65.00	\$31.50	\$2.18	95.40%	\$920.61	33 - Vertical Metal Ladders
Accordion Ladder for Escape after Tsunami,									RS Means Building Construction Cost Data 2011, 11 33
Disappearing Stairs, Heavy duty, 16'-0" ceiling	2	ea		\$1,400.00	\$172.00		95.40%	\$2,999.38	10.10, Disappearing Stairway
Platform Perimeters Railing (120 LF for each									
platform, 2 locations)									
Hand Rail/Guard Rail	277	LF		\$32.50	\$9.80		95.40%		Galvanized, 2 Rail, 1 1/2" diameter, RS Means Building Construction Cost Date 2011, 05 52 Metal Railings
Italiu Nail/Quatu Nail	2//	LF		Ş32.5U	39.80		95.40%	\$11,183.28	

\$55,154.18

			Cost per	Material	Installation	Equipment	Location		
Fire Protection	Quantity	Unit	Unit	Cost	Costs	Cost	Factor	Total Cost	Comments
Fire Protection, Wet Pipe System									
									RS Means Building Construction Cost Data, 2011, 01
Mobilization	4	EA		\$69.00	\$116.00		100.00%	\$740.00	54 36 - Equipment Mobilization
									RS Means Square Foot Costs, 2011, D4010 410, Wet
									Pipe Sprinkler Systems (Equipment Cost included in
First Floor, 2000 SF, Light Hazard	1200	SF		\$4.50	\$3.04		97.00%	\$8,776.56	Installation Cost)
									RS Means Square Foot Costs, 2011, D4010 410, Wet
									Pipe Sprinkler Systems (Equipment Cost included in
Second Floor, 2000 SF, Light Hazard	1200	SF		\$1.21	\$2.08		97.00%	\$3,829.56	Installation Cost)

\$13,346.12

Map Number:	Т3	Minimum Structure Height:	20
Structure Type:	Tower	Structure Capacity:	60
Location:	Tokeland, WA, Tokeland Rd & Pine Ln	Safe Haven Square Footage:	600
Levels	2	Columns Required	4
		Piles per Column	2
Scope			Cost
Site Utilities			\$15,257
Excavation-Backfill			\$8,034
Foundation			\$64,844

Structure	\$57,430
Roofing	\$14,095
Stairs/Ramps/Guardrails	\$51,879
Fire Protection	\$7,043
Total	\$218,582
Design Fees (8%)	\$17,487
General Conditions (10%)	\$21,858
Contractor Fees, O&P (15%)	\$32,787
Construction Contingency (5%)	\$10,929
Estimate/Design Contingency (10%)	\$21,858
Project Total	\$323,501

			Cost per	Material	Installation	Equipment	Location		
Site Utilities	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
	-								RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	10	EA			\$116.00	\$185.00	100.00%	\$3,010.00	54 36.50 Mobilization
Fire Water, Ductile Iron Class 250, MJ, 4" diameter	50	LF		\$16.05					Assuming 50' distance from service at street
									RS Means, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator 4'-6' deep	35	BCY			\$2.16	\$2.13	108.20%	\$162.46	23 16.13, Excavating Trench
									RS Means, Building Construction Cost Data, 2011, 33
Install & Test, 4" Ductile Iron Piping, MJ	50	LF		\$12.50	\$8.55	\$2.17	108.20%	\$1,256.20	11 Water Utility Distribution Piping
Utility Bedding, For Pipe & Conduit, Not Incl.									Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY		\$20.00			108.20%	\$129.84	conversation on June 29th, 2011
		_							RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY			\$7.64	\$14.10	108.20%	\$141.14	05 16, 31 23 23.20 Hauling
									RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY			\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
					4	4			RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY			\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Storm Service									Assuming 50' distance from service at street
5	60	D.C) /			<b>42.00</b>	62.05	400 200/	6274.00	RS Means, Building Construction Cost Data, 201, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY			\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating Trench
Install & Test, 8" Bituminous Coated	50	LF		\$10.70	\$5.25	\$0.97	108.20%	\$915.37	RS Means, Building Construction Cost Data, 2011, 33
•	50	LF		\$10.70	\$5.25	\$0.97	108.20%	\$915.37	41 Storm Utility Drainage Piping
Utility Bedding, For Pipe & Conduit, Not Incl.	6	LCY		\$20.00			108.20%	\$129.84	Quote per Quigg Bros, Aberdeen, WA, phone conversation on June 29th, 2011
Compaction	0	LC1		\$20.00			108.20%	\$129.64	RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY			\$7.64	\$14.10	108.20%	\$141.14	05 16, 31 23 23.20 Hauling
Hadi of Material, 40 MFH, Cycle 40 MFH	0	LC1			\$7.04	\$14.10	100.20/0	3141.14	RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY			\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
compacting bedding in trenen	3	LCI			75.05	Ş0.5-	100.2070	710.54	RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY			\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Site Drainage/Area Drains/Catch Basins	30	201			φο.σο	Ψ1.03	100.2070	Ç03.73	Assume 1 area drain for structure
									RS Means Assemblies Cost Data, 2011, G3030 210,
Concrete, Precast, 4' ID riser, 4' deep	1	EA		\$1,425.00	\$1,200.00	0.00%	108.20%	\$2.840.25	Manholes & Catch Basins
Electrical	50	LF		. ,	. ,,			. ,	Assuming 50' distance from service at street
Electrical Service, includes service installation,									RS Means Assemblies Cost Data, 2011, D 5010 120,
breakers, metering, 20' conduit & wire, 3 phase, 4									Electric Service, 3 Phase - 4 Wire, equipment included
wire, 120/208 volts, 60 A	1	EA		\$960.00	\$920.00		100.50%	\$1,889.40	in installation cost
VIIC, 120, 200 VOID, 00 A	Τ.	LA	1	7,500.00	7720.00	1	100.5070	71,005.40	in instantation cost

								RS Means, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator, 4'-6' deep	35	BCY		\$2.16	\$2.13	108.20%	\$162.46	23 16.13 Excavating Trench
								RS Means, Building Construction Cost Data, 2011, 33
Install & Test PVC, type EB 4 @ 3" diameter	50	LF	\$2.00	\$8.05		108.20%	\$543.71	71 19 Electrical Underground Ducts and Manholes
								RS Means, Building Construction Cost Data, 2011, 26
Wire, 600 volt, copper type THW, solid, #12	50	CLF	\$11.95	\$36.50	0	100.50%	\$2,434.61	05 19.90 Wire
Utility Bedding, For Pipe & Conduit, Not Incl.								Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	19	LCY	\$20.00			108.20%	\$411.16	conversation on June 29th, 2011
								RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	19	LCY		\$7.64	\$14.10	108.20%	\$446.93	05 16, 31 23 23.20 Hauling
								RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	19	ECY		\$3.05	\$0.34	108.20%	\$69.69	23 23.16 Fill By Borrow & Utility Bedding
								RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	22	LCY		\$0.50	\$1.05	108.20%	\$36.90	23 23.17 General Fill

			Cost per	Material	Installation	Equipment	Location		
Excavation-Backfill	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									RS Means Building Construction Cost Data, 2011, 01
Mobilization	8	EA	\$0.00	\$0.00	\$69.00	\$116.00	100.00%	\$1,480.00	54 36 - Equipment Mobilization
									Is clear and grub needed for structure in urban
									setting? RS Means Building Construction Cost Data,
Clear and Grub Site	0.25	ACRE	\$0.00	\$0.00	\$1,750.00	\$1,300.00	108.20%	\$825.03	2011, 31 11 10.10 Clear and Grub Site
									Grade Beams, 3' wide, 3' deep, 568 lf. RS Means
									Building Construction Cost Data, 2011, 31 23 16.16
									3/4 CY bucket, (Price Included in grade beam
Excavation for Grade Beams	20	BCY	\$0.00	\$0.00	\$0.00	\$0.00	108.20%	\$0.00	foundation price)
									1225 SF mat, 2' deep. RS Means Building Construction
Excavation for slab, subgrade and capillary break	44	BCY	\$0.00	\$0.00	\$7.20	\$7.17	108.20%	\$691.04	Cost Data, 2011, 31 23 16.16 3/4 CY bucket
Removal of Foundation Spoils, Haul of Material, 40									RS Means Building Construction Cost Data, 2011, 31
MPH, cycle 40 MPH	81	LCY			\$7.64	\$14.10	108.20%	\$1,894.88	05 16, 31 23 23.20 Hauling
									Quote per Quigg Bros, Aberdeen, WA, phone
Backfill Slab, subgrade, capillary break	70	ECY		\$20.00			108.20%	\$1,506.14	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	70	ECY			\$7.64	\$14.10	108.20%	\$1,637.18	05 16, 31 23 23.20 Hauling
								\$8,034.27	

			Cost per	Material	Installation	Equipment	Location		
Foundation	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									Piling needs to 2x the height of the structure which is
Piling									23-35'?
									Per phone conversation with Quigg Bros, Aberdeen,
Mobilization for piling	1	EA	\$12,000.00	\$0.00	\$0.00	\$0.00	100.00%	\$12,000.00	WA on June 29th, 2011
									Driven pipe piles 40' long, 18"x.5", per phone conversation with Quigg Bros, Aberdeen, WA on June
Battered Piles, 18" Diameter, 30'-40' Deep	8	EA	\$0.00	\$3,500.00	\$1,200.00	\$0.00	100.00%	\$37,600.00	29th,2011. Equipment Included in Material/Labor Cost

									RS Means Assemblies Cost Data 2011, A1010 250 Pile
									Caps (Equipment Costs are included in Installation
Pile Caps, Cap Size, 6'-6" x 3'-6" x 37"	4	EA	\$0.00	\$370.00	\$540.00		99.30%	\$3,614.52	Cost)
Foundation Cast-In-Place/Tower									
									RS Means Assemblies Cost Data 2011, A 1020 210
Grade Beams 30' span, 28" deep, 14" wide, 2 KLF									Grade Beams (Equipment Cost is included in
load	98	LF		\$34.50	\$53.00		99.30%	\$8,513.20	Installation Cost)
									Piling needs to 2x the height of the structure which is
Foundation Cast-In-Place/ Footings for Ramp									23-35'?
									RS Means Assemblies Cost Data, 2011, A1010 210,
Spread Footings, load 75K, soil capacity 6 KSF, 4'-0"									Spread Footings (Equipment Cost is included in
sq x 12" deep	12	EA	\$0.00	\$94.50	\$167.00	\$0.00	99.30%	\$3,116.03	Installation Cost)
					-			\$64,843.76	

Installation Equipment Cost per Material Location Structure **Total Cost** Quantity Unit Unit Cost Cost Costs Factor Comments RS Means, Building Construction Cost Data, 2011, 01 \$116.00 \$185.00 100.00% \$3,010.00 54 36.50 Mobilization Mobilization of Equipment 10 EΑ Beam and Column sizes are not determined and estimate takes in "best guess" to assume sizes for this **Concrete Structure** \$0.00 project. RS Means Assemblies Cost Data, 2011, B1010 201, CIP Concrete Columns, rated for 1000 K load, 20' high, Column, Round Tied (Equipment Cost included in 26" round, concrete strength, 6000 PSI 80 VLF \$158.00 \$7.85 \$0.00 99.30% \$13,175.12 Installation Cost) Slab-On-Grade, 6" thick, non-industrial, reinforced, RS Means Assemblies Cost Data, 2011, A1030 120, SF Ground Floor 600 \$3.01 \$2.97 99.30% \$3,562.88 Slab on Grade, Plain & Reinforced RS Means Assemblies Cost Data, 2011, B1010 213 Cast-In-Place Beam and Slab, Two Way, 30x30, 170 Rectangular Precast Beams (Equipment Cost included PSF, 9" thick slab, 1st Floor 600 LF \$6.95 \$11.55 99.30% \$11,022.30 in Installation Cost) RS Means Assemblies Cost Data, 2011, B1010 229 Cast-In-Place Beam and Slab, Two Way, 30x30, 351 Precast Plank with No Topping (Equipment Cost PSF, 9" thick slab, 2nd Floor (evacuation level) 600 SF \$8.95 \$13.60 99.30% \$13,435.29 included in Installation Cost) Wood structure, hip roof to support galvanized steel Wood Structure Supply quote from Levee Lumber, Hoguiam, WA, RS Means Assemblies Cost Data, 2011, B1020 102, Roof Construction, Wood/Flat or Pitched (Equipment Cost Wood Columns 12"x12", 10' High, Select Structural VLF \$9.85 \$2.62 97.30% \$485.33 40 included in Installation Cost) Supply quote from Levee Lumber, Hoguiam, WA, RS Means Building Construction Cost Data 2011, Glued-Perimeter Joists, 3 1/8"x12", GLM 30' span 98 LF \$4.85 \$1.95 \$22.00 97.30% \$2,745.62 Laminated Beams 06 18 13.20 RS Means Assemblies Cost Data, 2011, B1020 102, Roof Construction, Wood/Flat or Pitched (Equipment SF \$2.02 \$2.05 97.30% \$2,376.07 Cost included in Installation Cost) 2x10 Wood Joist w/ 1/2" CDX, 12" OC 600 RS Means Assemblies Cost Data, 2011, B1020 102, Roof, wood/pitched, 3"x12" 12" OC w/ sheating Roof Construction, Wood/Flat or Pitched (Equipment plywood on roof, 5/16" CDX 840 SF \$4.59 \$2.62 97.30% \$5,892.88 | Cost included in Installation Cost) Weather Proofing/Coatings add 15% (Premium for Assumed that PTS wood is 15% more compared on PTS Wood) \$11,499.90 % 15.00% \$1,724.98 price difference shown in means \$57,430.48

Roofing	Quantity	Unit	Cost per Unit	/laterial Cos	stallation Cos	quipment Co	cation Fact	Total Cost	Comments
									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	4	EA			\$116.00	\$185.00	100.00%	\$1,204.00	54 36.50 Mobilization
									Hip and ridge style roof, peak of roof 15'. (Equipment
Roofing/Hip and Ridge Roof Steel Panels									Cost is included in Installation Cost)
									RS Means Assemblies Cost Data, 2011, B3010 135,
Flat Roof Steel Panels, Flat Seam, Copper, 1/4" min.									Formed Metal (Equipment Cost is included in
slope, 20 oz, 1.2 PSF	840	SF		\$9.50	\$5.80		100.30%	\$12,890.56	Installation Cost)
								\$14,094.56	

Stairs/Ramps/Guardrails	Quantity	Unit	Cost per Unit	Material Cos	nstallation Cos	quipment Co	cation Fact	Total Cost	Comments
									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	6	EA			\$116.00	\$185.00	100.00%	\$1,806.00	54 36.50 Mobilization
									Beam and Column sizes are not determined and
									estimate takes in "best guess" to assume sizes for this
Exterior Ramp, Rises 20', 5' wide									project.
									RS Means Assemblies Cost Data, 2011, B1010, 208
Steel Columns, 20' high, Wide Flanged, 6", 12									Steel Columns (Equipment Cost is included in
locations	240	VLF		\$26.50	\$7.85	\$0.00	95.40%	\$7,864.78	Installation Cost)
W Shape Beams and Girders, bay size 15X20,, Total									RS Means Building Construction Cost Data, 2011,
Load 263 PSF.	800	SF		\$11.70	\$3.82	\$1.50	95.40%	\$12,989.66	Structural Steel Framing, 05 12 23.17
									RS Means Assemblies Cost Data, 2011, B1010 258,
Floor Construction, Metal Deck/Concrete Fill, Deck									Metal Deck/Concrete Fill (Equipment Cost is included
Span 6 ft, 150 PSF Superimposed Load	800	SF		\$2.38	\$2.38		95.40%	\$3,632.83	in Installation Cost)
									RS Means Building Construction Cost Data, 2011, 05
Weather Proofing/Coatings (Galvanized)	7.5	Tons	\$400.00	\$0.00	0	0	95.40%	\$2,862.00	05 13.50, Paints and Protective Coatings
									Galvanized, 2 Rail, 1 1/2" diameter, RS Means Building
Hand Rail/Guard Rail	270	LF		\$32.50	\$9.80		95.40%	\$10,895.63	Construction Cost Date 2011, 05 52 Metal Railings
Ladders/Stairs									
Steel ladder to attic space 20" wide bolted to									RS Means Building Construction Cost Data 2011, 05 51
concrete without cage	10	VLF		\$65.00	\$31.50	\$2.18	95.40%	\$920.61	33 - Vertical Metal Ladders
Accordion Ladder for Escape after Tsunami,									RS Means Building Construction Cost Data 2011, 11 33
Disappearing Stairs, Heavy duty, 16'-0" ceiling	2	ea		\$1,400.00	\$172.00		95.40%	\$2,999.38	10.10, Disappearing Stairway
Platform Perimeters Railing (120 LF for each									
platform, 2 locations)									
									Galvanized, 2 Rail, 1 1/2" diameter, RS Means Building
Hand Bail/Cuard Bail	400			622.50	¢0.00		05 400/	67.007.70	, , , ,
Hand Rail/Guard Rail	196	LF		\$32.50	\$9.80		95.40%	•	Construction Cost Date 2011, 05 52 Metal Railings
	\$51,878.67								

Installation | Equipment Cost per Material Location **Fire Protection Total Cost** Quantity Unit Unit Cost Costs Cost Factor Comments Fire Protection, Wet Pipe System RS Means Building Construction Cost Data, 2011, 01 \$116.00 100.00% \$740.00 54 36 - Equipment Mobilization Mobilization 4 EΑ \$69.00 RS Means Square Foot Costs, 2011, D4010 410, Wet Pipe Sprinkler Systems (Equipment Cost included in \$4,388.28 Installation Cost) First Floor, 2000 SF, Light Hazard 600 SF \$4.50 \$3.04 97.00%

							RS Means Square Foot Costs, 2011, D4010 410, Wet
							Pipe Sprinkler Systems (Equipment Cost included in
Second Floor, 2000 SF, Light Hazard	600	SF	\$1.21	\$2.08	97.00%	\$1,914.78	Installation Cost)
						\$7.043.06	

Map Number:	T4	Minimum Structure Height:	22
Structure Type:	Tower	Structure Capacity:	80
Location:	Tokeland, WA, Wipple Ave & SR 105	Safe Haven Square Footage:	800
Levels	2	Columns Required	4
		Piles per Column	2
Scope			Cost
Site Utilities			\$15,257
Excavation-Backfill			\$9,423
Foundation			\$66,161
Structure			\$70,429
Roofing			\$18,391
Stairs/Ramps/Guardrails			\$53,888
Fire Protection			\$9,144
Total			\$242,694
Design Fees (8%)			\$19,415
General Conditions (10%)			\$24,269
Contractor Fees, O&P (15%)			\$36,404
Construction Contingency (5%)			\$12,135
Estimate/Design Contingency (10%)	,		\$24,269
Project Total			\$359,187

			Cost per	Material	Installation	Equipment	Location		
Site Utilities	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	10	EA			\$116.00	\$185.00	100.00%	\$3,010.00	54 36.50 Mobilization
Fire Water, Ductile Iron Class 250, MJ, 4" diameter	50	LF		\$16.05					Assuming 50' distance from service at street
									RS Means, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator 4'-6' deep	35	BCY			\$2.16	\$2.13	108.20%	\$162.46	23 16.13, Excavating Trench
									RS Means, Building Construction Cost Data, 2011, 33
Install & Test, 4" Ductile Iron Piping, MJ	50	LF		\$12.50	\$8.55	\$2.17	108.20%	\$1,256.20	11 Water Utility Distribution Piping
Utility Bedding, For Pipe & Conduit, Not Incl.									Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY		\$20.00			108.20%	\$129.84	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY			\$7.64	\$14.10	108.20%	\$141.14	05 16, 31 23 23.20 Hauling
									RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY			\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding

									RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY			\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Storm Service					·				Assuming 50' distance from service at street
									RS Means, Building Construction Cost Data, 201, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	ВСҮ			\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating Trench
									RS Means, Building Construction Cost Data, 2011, 33
Install & Test, 8" Bituminous Coated	50	LF		\$10.70	\$5.25	\$0.97	108.20%	\$915.37	41 Storm Utility Drainage Piping
Utility Bedding, For Pipe & Conduit, Not Incl.									Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY		\$20.00			108.20%	\$129.84	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY			\$7.64	\$14.10	108.20%	\$141.14	05 16, 31 23 23.20 Hauling
									RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY			\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
									RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY			\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Site Drainage/Area Drains/Catch Basins									Assume 1 area drain for structure
									RS Means Assemblies Cost Data, 2011, G3030 210,
Concrete, Precast, 4' ID riser, 4' deep	1	EA		\$1,425.00	\$1,200.00	0.00%	108.20%	\$2,840.25	Manholes & Catch Basins
Electrical	50	LF							Assuming 50' distance from service at street
Electrical Service, includes service installation,									RS Means Assemblies Cost Data, 2011, D 5010 120,
breakers, metering, 20' conduit & wire, 3 phase, 4									Electric Service, 3 Phase - 4 Wire, equipment included
wire, 120/208 volts, 60 A	1	EA		\$960.00	\$920.00		100.50%	\$1,889.40	in installation cost
									RS Means, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator, 4'-6' deep	35	BCY			\$2.16	\$2.13	108.20%	\$162.46	23 16.13 Excavating Trench
									RS Means, Building Construction Cost Data, 2011, 33
Install & Test PVC, type EB 4 @ 3" diameter	50	LF		\$2.00	\$8.05		108.20%	\$543.71	71 19 Electrical Underground Ducts and Manholes
									RS Means, Building Construction Cost Data, 2011, 26
Wire, 600 volt, copper type THW, solid, #12	50	CLF		\$11.95	\$36.50	0	100.50%	\$2,434.61	05 19.90 Wire
Utility Bedding, For Pipe & Conduit, Not Incl.									Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	19	LCY		\$20.00			108.20%	\$411.16	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	19	LCY	1		\$7.64	\$14.10	108.20%	\$446.93	05 16, 31 23 23.20 Hauling
					4	4			RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	19	ECY	1		\$3.05	\$0.34	108.20%	\$69.69	23 23.16 Fill By Borrow & Utility Bedding
D LCH C LETTE D N C .:	22	1.00			40.50	64.05	400 2001	dac oc	RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	22	LCY			\$0.50	\$1.05	108.20%	\$36.90	23 23.17 General Fill
								\$15,257.23	

			Cost per	Material	Installation	Equipment	Location		
Excavation-Backfill	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									RS Means Building Construction Cost Data, 2011, 01
Mobilization	8	EA	\$0.00	\$0.00	\$69.00	\$116.00	100.00%	\$1,480.00	54 36 - Equipment Mobilization
									Is clear and grub needed for structure in urban
									setting? RS Means Building Construction Cost Data,
Clear and Grub Site	0.25	ACRE	\$0.00	\$0.00	\$1,750.00	\$1,300.00	108.20%	\$825.03	2011, 31 11 10.10 Clear and Grub Site
									Grade Beams, 3' wide, 3' deep, 568 lf. RS Means
									Building Construction Cost Data, 2011, 31 23 16.16
									3/4 CY bucket, (Price Included in grade beam
Excavation for Grade Beams	20	BCY	\$0.00	\$0.00	\$0.00	\$0.00	108.20%	\$0.00	foundation price)

									1225 SF mat, 2' deep. RS Means Building Construction
Excavation for slab, subgrade and capillary break	59	BCY	\$0.00	\$0.00	\$7.20	\$7.17	108.20%	\$921.38	Cost Data, 2011, 31 23 16.16 3/4 CY bucket
Removal of Foundation Spoils, Haul of Material, 40									RS Means Building Construction Cost Data, 2011, 31
MPH, cycle 40 MPH	99	LCY			\$7.64	\$14.10	108.20%	\$2,330.49	05 16, 31 23 23.20 Hauling
									Quote per Quigg Bros, Aberdeen, WA, phone
Backfill Slab, subgrade, capillary break	86	ECY		\$20.00			108.20%	\$1,852.38	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	86	ECY			\$7.64	\$14.10	108.20%	\$2,013.54	05 16, 31 23 23.20 Hauling
								\$9,422.82	

Cost per Material Installation Equipment Location **Foundation** Quantity Unit Unit Cost Cost Cost Factor **Total Cost** Comments Piling needs to 2x the height of the structure which is Piling Per phone conversation with Quigg Bros, Aberdeen, \$12,000.00 100.00% \$12,000.00 WA on June 29th, 2011 Mobilization for piling 1 EΑ \$0.00 \$0.00 \$0.00 Driven pipe piles 40' long, 18"x.5", per phone conversation with Quigg Bros, Aberdeen, WA on June EΑ Battered Piles, 18" Diameter, 30'-40' Deep 8 \$0.00 \$3.500.00 \$1,200,00 \$0.00 100.00% \$37,600.00 29th,2011. Equipment Included in Material/Labor Cost RS Means Assemblies Cost Data 2011, A1010 250 Pile Caps (Equipment Costs are included in Installation \$3,614.52 Cost) Pile Caps, Cap Size 6'-6" x 3'-6" x 37" 4 EΑ \$0.00 \$370.00 \$540.00 99.30% Foundation Cast-In-Place/Tower RS Means Assemblies Cost Data 2011, A 1020 210 Grade Beams 30' span, 28" deep, 14" wide, 2 KLF Grade Beams (Equipment Cost is included in \$53.00 LF \$34.50 \$9,830.20 Installation Cost) 113 99.30% Piling needs to 2x the height of the structure which is Foundation Cast-In-Place/ Footings for Ramp 23-35'? RS Means Assemblies Cost Data, 2011, A1010 210, Spread Footings, load 75K, soil capacity 6 KSF, 4'-0" Spread Footings (Equipment Cost is included in \$0.00 \$94.50 \$167.00 \$0.00 99.30% Installation Cost) sq x 12" deep 12 EΑ \$3,116.03 \$66,160.75

Material Installation Equipment Cost per Location Structure Quantity Unit Unit Cost Cost Costs Factor **Total Cost** Comments RS Means, Building Construction Cost Data, 2011, 01 Mobilization of Equipment 10 EΑ \$116.00 \$185.00 100.00% \$3,010.00 54 36.50 Mobilization Beam and Column sizes are not determined and estimate takes in "best guess" to assume sizes for this Concrete Structure \$0.00 RS Means Assemblies Cost Data, 2011, B1010 201, CIP Concrete Columns, rated for 1000 K load, 20' high, Column, Round Tied (Equipment Cost included in \$13,175.12 Installation Cost) 26" round, concrete strength, 6000 PSI 80 VLF \$158.00 \$7.85 \$0.00 99.30% Slab-On-Grade, 6" thick, non-industrial, reinforced, RS Means Assemblies Cost Data, 2011, A1030 120, SF \$2.97 800 \$3.01 99.30% \$4,750.51 Slab on Grade, Plain & Reinforced RS Means Assemblies Cost Data, 2011, B1010 213 Cast-In-Place Beam and Slab, Two Way, 30x30, 170 Rectangular Precast Beams (Equipment Cost included 800 LF \$6.95 \$11.55 \$14,696.40 in Installation Cost) PSF, 9" thick slab, 1st Floor 99.30%

									RS Means Assemblies Cost Data, 2011, B1010 229
Cast-In-Place Beam and Slab, Two Way, 30x30, 351									Precast Plank with No Topping (Equipment Cost
PSF, 9" thick slab, 2nd Floor (evacuation level)	800	SF		\$8.95	\$13.60		99.30%	\$17,913.72	included in Installation Cost)
Wood Structure									Wood structure, hip roof to support galvanized steel panels
									Supply quote from Levee Lumber, Hoquiam, WA, RS
									Means Assemblies Cost Data, 2011, B1020 102, Roof
									Construction, Wood/Flat or Pitched (Equipment Cost
Wood Columns 12"x12", 10' High, Select Structural	40	VLF		\$9.85	\$2.62		97.30%	\$485.33	included in Installation Cost)
									Supply quote from Levee Lumber, Hoquiam, WA, RS
									Means Building Construction Cost Data 2011, Glued-
Perimeter Joists, 3 1/8"x12", GLM 30' span	113	LF		\$4.85	\$1.95	\$22.00	97.30%	\$3,170.37	Laminated Beams 06 18 13.20
									RS Means Assemblies Cost Data, 2011, B1020 102,
									Roof Construction, Wood/Flat or Pitched (Equipment
2x10 Wood Joist w/ 1/2" CDX, 12" OC	800	SF		\$2.02	\$2.05		97.30%	\$3,168.09	Cost included in Installation Cost)
									RS Means Assemblies Cost Data, 2011, B1020 102,
Roof, wood/pitched, 3"x12" 12" OC w/ sheating									Roof Construction, Wood/Flat or Pitched (Equipment
plywood on roof, 5/16" CDX	1120	SF		\$4.59	\$2.62		97.30%	\$7,857.17	Cost included in Installation Cost)
Weather Proofing/Coatings add 15% (Premium for									Assumed that PTS wood is 15% more compared on
PTS Wood)	\$14,680.96	%	15.00%					\$2,202.14	price difference shown in means
			-					\$70,428.86	

Roofing	Quantity	Unit	Cost per Unit	/laterial Cos	stallation Cos	quipment Co	cation Fact	Total Cost	Comments
									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	4	EA			\$116.00	\$185.00	100.00%	\$1,204.00	54 36.50 Mobilization
									Hip and ridge style roof, peak of roof 15'. (Equipment
Roofing/Hip and Ridge Roof Steel Panels									Cost is included in Installation Cost)
									RS Means Assemblies Cost Data, 2011, B3010 135,
Flat Roof Steel Panels, Flat Seam, Copper, 1/4" min.									Formed Metal (Equipment Cost is included in
slope, 20 oz, 1.2 PSF	1120	SF		\$9.50	\$5.80		100.30%	\$17,187.41	Installation Cost)

\$18,391.41

Staire / Damana / Creardinaile				l					
Stairs/Ramps/Guardrails	Quantity	Unit	Cost per Uni	Material Cos	nstallation Cos	juipment Co	cation Fact	Total Cost	Comments
									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	6	EA			\$116.00	\$185.00	100.00%	\$1,806.00	54 36.50 Mobilization
									Beam and Column sizes are not determined and
									estimate takes in "best guess" to assume sizes for this
Exterior Ramp, Rises 20', 5' wide									project.
									RS Means Assemblies Cost Data, 2011, B1010, 208
Steel Columns, 20' high, Wide Flanged, 6", 12									Steel Columns (Equipment Cost is included in
locations	264	VLF		\$26.50	\$7.85	\$0.00	95.40%	\$8,651.25	Installation Cost)
W Shape Beams and Girders, bay size 15X20,, Total									RS Means Building Construction Cost Data, 2011,
Load 263 PSF.	800	SF		\$11.70	\$3.82	\$1.50	95.40%	\$12,989.66	Structural Steel Framing, 05 12 23.17
									RS Means Assemblies Cost Data, 2011, B1010 258,
Floor Construction, Metal Deck/Concrete Fill, Deck									Metal Deck/Concrete Fill (Equipment Cost is included
Span 6 ft, 150 PSF Superimposed Load	800	SF		\$2.38	\$2.38		95.40%	\$3,632.83	in Installation Cost)
									RS Means Building Construction Cost Data, 2011, 05
Weather Proofing/Coatings (Galvanized)	7.5	Tons	\$400.00	\$0.00	0	0	95.40%	\$2,862.00	05 13.50, Paints and Protective Coatings

Hand Rail/Guard Rail	270	LF	\$32.50	\$9.80		95.40%		Galvanized, 2 Rail, 1 1/2" diameter, RS Means Building Construction Cost Date 2011, 05 52 Metal Railings
,	270	LF	\$52.50	\$9.60		95.40%	\$10,695.05	Construction Cost Date 2011, 05 52 Metal Railings
Ladders/Stairs								
Steel ladder to attic space 20" wide bolted to								RS Means Building Construction Cost Data 2011, 05 51
concrete without cage	10	VLF	\$65.00	\$31.50	\$2.18	95.40%	\$920.61	33 - Vertical Metal Ladders
Accordion Ladder for Escape after Tsunami,								RS Means Building Construction Cost Data 2011, 11 33
Disappearing Stairs, Heavy duty, 16'-0" ceiling	2	ea	\$1,400.00	\$172.00		95.40%	\$2,999.38	10.10, Disappearing Stairway
Platform Perimeters Railing (120 LF for each								
platform, 2 locations)								
								Galvanized, 2 Rail, 1 1/2" diameter, RS Means Building
Hand Rail/Guard Rail	226	LF	\$32.50	\$9.80		95.40%	\$9,131.11	Construction Cost Date 2011, 05 52 Metal Railings
	_						\$53,888.48	

_, _ , ,			Cost per	Material	Installation	Equipment	Location		
Fire Protection	Quantity	Unit	Unit	Cost	Costs	Cost	Factor	Total Cost	Comments
Fire Protection, Wet Pipe System									
									RS Means Building Construction Cost Data, 2011, 01
Mobilization	4	EA		\$69.00	\$116.00		100.00%	\$740.00	54 36 - Equipment Mobilization
									RS Means Square Foot Costs, 2011, D4010 410, Wet
									Pipe Sprinkler Systems (Equipment Cost included in
First Floor, 2000 SF, Light Hazard	800	SF		\$4.50	\$3.04		97.00%	\$5,851.04	Installation Cost)
									RS Means Square Foot Costs, 2011, D4010 410, Wet
									Pipe Sprinkler Systems (Equipment Cost included in
Second Floor, 2000 SF, Light Hazard	800	SF		\$1.21	\$2.08		97.00%	\$2,553.04	Installation Cost)
								\$9,144.08	

T5 Map Number: Minimum Structure Height: 24 80 Structure Type: Tower Structure Capacity: Location: Tokeland, WA, Warrenton Cannery Rd & SR Safe Haven Square Footage: 800 **Columns Required** Levels Piles per Column Scope Cost \$15,257 Site Utilities Excavation-Backfill \$9,423 \$66,161 Foundation \$70,429 Structure Roofing \$18,391 Stairs/Ramps/Guardrails \$54,675 \$9,144 Fire Protection \$243,480 Total

Design Fees (8%)	\$19,478
General Conditions (10%)	\$24,348
Contractor Fees, O&P (15%)	\$36,522
Construction Contingency (5%)	\$12,174
Estimate/Design Contingency (10%)	\$24,348
Project Total	\$360,351

			Cost per	Material	Installation	Equipment	Location		
Site Utilities	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
	-								RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	10	EA			\$116.00	\$185.00	100.00%	\$3,010.00	54 36.50 Mobilization
Fire Water, Ductile Iron Class 250, MJ, 4" diameter	50	LF		\$16.05					Assuming 50' distance from service at street
									RS Means, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator 4'-6' deep	35	BCY			\$2.16	\$2.13	108.20%	\$162.46	23 16.13, Excavating Trench
									RS Means, Building Construction Cost Data, 2011, 33
Install & Test, 4" Ductile Iron Piping, MJ	50	LF		\$12.50	\$8.55	\$2.17	108.20%	\$1,256.20	11 Water Utility Distribution Piping
Utility Bedding, For Pipe & Conduit, Not Incl.									Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY		\$20.00			108.20%	\$129.84	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY			\$7.64	\$14.10	108.20%	\$141.14	05 16, 31 23 23.20 Hauling
									RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY			\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
									RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY			\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Storm Service									Assuming 50' distance from service at street
									RS Means, Building Construction Cost Data, 201, 31 23
Excavate, 3/4 CY Excavator, 6'-10' deep	60	BCY			\$2.88	\$2.85	108.20%	\$371.99	16.13 Excavating Trench
									RS Means, Building Construction Cost Data, 2011, 33
Install & Test, 8" Bituminous Coated	50	LF		\$10.70	\$5.25	\$0.97	108.20%	\$915.37	41 Storm Utility Drainage Piping
Utility Bedding, For Pipe & Conduit, Not Incl.									Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	6	LCY		\$20.00			108.20%	\$129.84	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	6	LCY			\$7.64	\$14.10	108.20%	\$141.14	05 16, 31 23 23.20 Hauling
									RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	5	ECY			\$3.05	\$0.34	108.20%	\$18.34	23 23.16 Fill By Borrow & Utility Bedding
									RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	38	LCY			\$0.50	\$1.05	108.20%	\$63.73	23 23.17 General Fill
Site Drainage/Area Drains/Catch Basins									Assume 1 area drain for structure
									RS Means Assemblies Cost Data, 2011, G3030 210,
Concrete, Precast, 4' ID riser, 4' deep	1	EA		\$1,425.00	\$1,200.00	0.00%	108.20%	\$2,840.25	Manholes & Catch Basins
Electrical	50	LF							Assuming 50' distance from service at street
Electrical Service, includes service installation,									RS Means Assemblies Cost Data, 2011, D 5010 120,
breakers, metering, 20' conduit & wire, 3 phase, 4									Electric Service, 3 Phase - 4 Wire, equipment included
wire, 120/208 volts, 60 A	1	EA		\$960.00	\$920.00		100.50%	\$1,889.40	in installation cost
									RS Means, Building Construction Cost Data, 2011, 31
Excavate, 3/4 CY Excavator, 4'-6' deep	35	BCY			\$2.16	\$2.13	108.20%	\$162.46	23 16.13 Excavating Trench
									RS Means, Building Construction Cost Data, 2011, 33
Install & Test PVC, type EB 4 @ 3" diameter	50	LF		\$2.00	\$8.05		108.20%	\$543.71	71 19 Electrical Underground Ducts and Manholes

								RS Means, Building Construction Cost Data, 2011, 26
Wire, 600 volt, copper type THW, solid, #12	50	CLF	\$11.95	\$36.50	0	100.50%	\$2,434.61	05 19.90 Wire
Utility Bedding, For Pipe & Conduit, Not Incl.								Quote per Quigg Bros, Aberdeen, WA, phone
Compaction	19	LCY	\$20.00			108.20%	\$411.16	conversation on June 29th, 2011
								RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	19	LCY		\$7.64	\$14.10	108.20%	\$446.93	05 16, 31 23 23.20 Hauling
								RS Means, Building Construction Cost Data, 2011, 31
Compacting Bedding In Trench	19	ECY		\$3.05	\$0.34	108.20%	\$69.69	23 23.16 Fill By Borrow & Utility Bedding
								RS Means, Building Construction Cost Data, 2011, 31
Backfill, General Fill By Dozer, No Compaction	22	LCY		\$0.50	\$1.05	108.20%	•	23 23.17 General Fill
							¢1E 2E7 22	

			Cost per	Material	Installation	Equipment	Location		
Excavation-Backfill	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									RS Means Building Construction Cost Data, 2011, 01
Mobilization	8	EA	\$0.00	\$0.00	\$69.00	\$116.00	100.00%	\$1,480.00	54 36 - Equipment Mobilization
									Is clear and grub needed for structure in urban
									setting? RS Means Building Construction Cost Data,
Clear and Grub Site	0.25	ACRE	\$0.00	\$0.00	\$1,750.00	\$1,300.00	108.20%	\$825.03	2011, 31 11 10.10 Clear and Grub Site
									Grade Beams, 3' wide, 3' deep, 568 lf. RS Means
									Building Construction Cost Data, 2011, 31 23 16.16
									3/4 CY bucket, (Price Included in grade beam
Excavation for Grade Beams	20	BCY	\$0.00	\$0.00	\$0.00	\$0.00	108.20%	\$0.00	foundation price)
									1225 SF mat, 2' deep. RS Means Building Construction
Excavation for slab, subgrade and capillary break	59	BCY	\$0.00	\$0.00	\$7.20	\$7.17	108.20%	\$921.38	Cost Data, 2011, 31 23 16.16 3/4 CY bucket
Removal of Foundation Spoils, Haul of Material, 40									RS Means Building Construction Cost Data, 2011, 31
MPH, cycle 40 MPH	99	LCY			\$7.64	\$14.10	108.20%	\$2,330.49	05 16, 31 23 23.20 Hauling
									Quote per Quigg Bros, Aberdeen, WA, phone
Backfill Slab, subgrade, capillary break	86	ECY		\$20.00			108.20%	\$1,852.38	conversation on June 29th, 2011
									RS Means Building Construction Cost Data, 2011, 31
Haul of Material, 40 MPH, cycle 40 MPH	86	ECY			\$7.64	\$14.10	108.20%	\$2,013.54	05 16, 31 23 23.20 Hauling
	<u> </u>							\$9,422.82	

			Cost per	Material	Installation	Equipment	Location		
Foundation	Quantity	Unit	Unit	Cost	Cost	Cost	Factor	Total Cost	Comments
									Piling needs to 2x the height of the structure which is
Piling									23-35'?
									Per phone conversation with Quigg Bros, Aberdeen,
Mobilization for piling	1	EA	\$12,000.00	\$0.00	\$0.00	\$0.00	100.00%	\$12,000.00	WA on June 29th, 2011
									Driven pipe piles 40' long, 18"x.5", per phone
									conversation with Quigg Bros, Aberdeen, WA on June
Battered Piles, 18" Diameter, 30'-40' Deep	8	EA	\$0.00	\$3,500.00	\$1,200.00	\$0.00	100.00%	\$37,600.00	29th,2011. Equipment Included in Material/Labor Cost
									RS Means Assemblies Cost Data 2011, A1010 250 Pile
									Caps (Equipment Costs are included in Installation
Pile Caps, Cap Size 6'-6" x 3'-6" x 37"	4	EA	\$0.00	\$370.00	\$540.00		99.30%	\$3,614.52	Cost)
Foundation Cast-In-Place/Tower									

Grade Beams 30' span, 28" deep, 14" wide, 2 KLF load	113	LF		\$34.50	\$53.00		99.30%		RS Means Assemblies Cost Data 2011, A 1020 210 Grade Beams (Equipment Cost is included in Installation Cost)
Foundation Cast-In-Place/ Footings for Ramp									Piling needs to 2x the height of the structure which is 23-35'?
Spread Footings, load 75K, soil capacity 6 KSF, 4'-0" sq x 12" deep	12	EA	\$0.00	\$94.50	\$167.00	\$0.00	99.30%	\$3,116.03	RS Means Assemblies Cost Data, 2011, A1010 210, Spread Footings (Equipment Cost is included in Installation Cost)
								\$66,160.75	
Structure	Quantity	Unit	Cost per Unit	Material Cost	Installation Cost	Equipment Costs	Location Factor	Total Cost	Comments
Mobilization of Equipment	10	EA			\$116.00	\$185.00	100.00%		RS Means, Building Construction Cost Data, 2011, 01 54 36.50 Mobilization
Concrete Structure									Beam and Column sizes are not determined and estimate takes in "best guess" to assume sizes for this project.
Concrete Columns, rated for 1000 K load, 20' high, 26" round, concrete strength, 6000 PSI	80	VLF		\$158.00	\$7.85	\$0.00	99.30%		RS Means Assemblies Cost Data, 2011, B1010 201, Cl Column, Round Tied (Equipment Cost included in Installation Cost)
Slab-On-Grade, 6" thick, non-industrial, reinforced,					·				RS Means Assemblies Cost Data, 2011, A1030 120,
Ground Floor	800	SF		\$3.01	\$2.97		99.30%		Slab on Grade, Plain & Reinforced
Cast-In-Place Beam and Slab, Two Way, 30x30, 170 PSF, 9" thick slab, 1st Floor	800	LF		\$6.95	\$11.55		99.30%		RS Means Assemblies Cost Data, 2011, B1010 213 Rectangular Precast Beams (Equipment Cost included in Installation Cost)
Cast-In-Place Beam and Slab, Two Way, 30x30, 351	555				<b>VII.00</b>		33.3670		RS Means Assemblies Cost Data, 2011, B1010 229 Precast Plank with No Topping (Equipment Cost
PSF, 9" thick slab, 2nd Floor (evacuation level)	800	SF		\$8.95	\$13.60		99.30%	\$17,913.72	included in Installation Cost) Wood structure, hip roof to support galvanized steel
Wood Structure									panels
Wood Columns 12"x12", 10' High, Select Structural	40	VLF		\$9.85	\$2.62		97.30%	\$485.33	Supply quote from Levee Lumber, Hoquiam, WA, RS Means Assemblies Cost Data, 2011, B1020 102, Roof Construction, Wood/Flat or Pitched (Equipment Cost included in Installation Cost)
Perimeter Joists, 3 1/8"x12", GLM 30' span	113	LF		\$4.85	\$1.95	\$22.00	97.30%		Supply quote from Levee Lumber, Hoquiam, WA, RS Means Building Construction Cost Data 2011, Glued-Laminated Beams 06 18 13.20
2x10 Wood Joist w/ 1/2" CDX, 12" OC	800	SF		\$2.02	\$2.05		97.30%	\$3,168.09	RS Means Assemblies Cost Data, 2011, B1020 102, Roof Construction, Wood/Flat or Pitched (Equipment Cost included in Installation Cost)
Roof, wood/pitched, 3"x12" 12" OC w/ sheating plywood on roof, 5/16" CDX	1120	SF		\$4.59	\$2.62		97.30%		RS Means Assemblies Cost Data, 2011, B1020 102, Roof Construction, Wood/Flat or Pitched (Equipment Cost included in Installation Cost)
Weather Proofing/Coatings add 15% (Premium for PTS Wood)	\$14,680.96	%	15.00%						Assumed that PTS wood is 15% more compared on price difference shown in means
PTS Wood)	\$14,680.96	%	15.00%					\$2,202.14 <b>\$70,428.86</b>	price difference shown in means

Roofing Quantity Unit Cost per Univaterial Costallation Costuipment Cocation Fact Total Cost Comments

RS Means, Building Construction Cost Data, 2011, 01

Mobilization of Equipment 4 EA \$116.00 \$185.00 100.00% \$1,204.00 54 36.50 Mobilization

							Hip and ridge style roof, peak of roof 15'. (Equipment
Roofing/Hip and Ridge Roof Steel Panels							Cost is included in Installation Cost)
							RS Means Assemblies Cost Data, 2011, B3010 135,
Flat Roof Steel Panels, Flat Seam, Copper, 1/4" min.							Formed Metal (Equipment Cost is included in
slope, 20 oz, 1.2 PSF	1120	SF	\$9.50	\$5.80	100.30%	\$17,187.41	Installation Cost)
slope, 20 oz, 1.2 PSF	1120	SF	\$9.50	\$5.80	100.30%	\$17,187.41	

\$18,391.41

Stairs/Ramps/Guardrails	Quantity	Unit	Cost per Uni	Material Cos	nstallation Cos	quipment Co	cation Fact	Total Cost	Comments
• •									RS Means, Building Construction Cost Data, 2011, 01
Mobilization of Equipment	6	EA			\$116.00	\$185.00	100.00%	\$1,806.00	54 36.50 Mobilization
									Beam and Column sizes are not determined and
									estimate takes in "best guess" to assume sizes for this
Exterior Ramp, Rises 20', 5' wide									project.
									RS Means Assemblies Cost Data, 2011, B1010, 208
Steel Columns, 20' high, Wide Flanged, 6", 12									Steel Columns (Equipment Cost is included in
locations	288	VLF		\$26.50	\$7.85	\$0.00	95.40%	\$9,437.73	Installation Cost)
W Shape Beams and Girders, bay size 15X20,, Total									RS Means Building Construction Cost Data, 2011,
Load 263 PSF.	800	SF		\$11.70	\$3.82	\$1.50	95.40%		Structural Steel Framing, 05 12 23.17
									RS Means Assemblies Cost Data, 2011, B1010 258,
Floor Construction, Metal Deck/Concrete Fill, Deck									Metal Deck/Concrete Fill (Equipment Cost is included
Span 6 ft, 150 PSF Superimposed Load	800	SF		\$2.38	\$2.38		95.40%	\$3,632.83	in Installation Cost)
									RS Means Building Construction Cost Data, 2011, 05
Weather Proofing/Coatings (Galvanized)	7.5	Tons	\$400.00	\$0.00	0	0	95.40%	\$2,862.00	05 13.50, Paints and Protective Coatings
				400 =0	40.00		0= 100/		Galvanized, 2 Rail, 1 1/2" diameter, RS Means Building
Hand Rail/Guard Rail	270	LF		\$32.50	\$9.80		95.40%	\$10,895.63	Construction Cost Date 2011, 05 52 Metal Railings
Ladders/Stairs									DCA4 D 1111 O 1 11 O 1 D 1 2044 OF 54
Steel ladder to attic space 20" wide bolted to	40			ACE 00	624.50	62.40	05 400/		RS Means Building Construction Cost Data 2011, 05 51
concrete without cage	10	VLF		\$65.00	\$31.50	\$2.18	95.40%		33 - Vertical Metal Ladders
Accordion Ladder for Escape after Tsunami,	_			ć4 400 00	6472.00		05 400/		RS Means Building Construction Cost Data 2011, 11 33
Disappearing Stairs, Heavy duty, 16'-0" ceiling	2	ea		\$1,400.00	\$172.00		95.40%	\$2,999.38	10.10, Disappearing Stairway
Platform Perimeters Railing (120 LF for each									
platform, 2 locations)									
									Galvanized, 2 Rail, 1 1/2" diameter, RS Means Building
Hand Rail/Guard Rail	226	LF		\$32.50	\$9.80		95.40%		Construction Cost Date 2011, 05 52 Metal Railings
riana Kanj Gadra Kan	220	LF		ب32.30	00،وړ		33.4070	\$54.674.96	

\$54,674.96

			Cost per	Material	Installation	Equipment	Location		
Fire Protection	Quantity	Unit	Unit	Cost	Costs	Cost	Factor	Total Cost	Comments
Fire Protection, Wet Pipe System									
									RS Means Building Construction Cost Data, 2011, 01
Mobilization	4	EA		\$69.00	\$116.00		100.00%	\$740.00	54 36 - Equipment Mobilization
									RS Means Square Foot Costs, 2011, D4010 410, Wet
									Pipe Sprinkler Systems (Equipment Cost included in
First Floor, 2000 SF, Light Hazard	800	SF		\$4.50	\$3.04		97.00%	\$5,851.04	Installation Cost)
									RS Means Square Foot Costs, 2011, D4010 410, Wet
									Pipe Sprinkler Systems (Equipment Cost included in
Second Floor, 2000 SF, Light Hazard	800	SF		\$1.21	\$2.08		97.00%	\$2,553.04	Installation Cost)

\$9,144.08