The fuel and utilities are transferred from the storage facility and services via underground piping, beneath the access pad and gangway, and thence to the Fuel Dock. The overall observed condition of the Dock is that there are minor levels of deterioration being observed. However, in January 2018 a contracted engineer (EMC – Engineers/Scientists, LLC) inspected the concrete landing system that provides access to the Fuel Dock.

Management had concerns because they had noticed an increase in gap had been developing between the concrete pad landing and the approaching concrete stairway to the landing. The consulting engineer made the following conclusions and recommendations: "the pad, underlying supports oils and riprap are failing along a slip service estimated be to be a sector of about 26 feet from the theoretical center of moment, which provides a surface resisting force of about 30 feet in length. It is noted that the lowest elevation of the slip is several feet higher than the designated H beam support. The existing slip of the system westward will continue. When the failure occurs the attached lines and conduit are likely to be severed. Additionally the gangway approach to the fuel Dock from the pad would be damaged possibly lost."[19]

To remedy this the fuel lines must be rerouted, concrete landing removed, loosened underlying soils and riprap removed and the approaching slopes stabilized, tieback/deadman system, correctly designed, or specified H-beam pile, with penetration designed to be driven to several feet below the theoretical slip surface. Adequate subgrade, bedding and leveling course placed, topped with reinforced concrete landing (at least 4" thick). Safety rails and security should then be installed. It has been noted by Port Management that the replacement of the concrete access landing may only provide a somewhat temporary solution. As is the case with the afore-described shipping/receiving docks, the stability of the soils has been compromised from high and recharged upper groundwater flows.

Consequently the soils have lost friction value (loss of soil cohesion), resulting in the development of slip surfaces underground.

An alternative and preferred remedy to H-beam and/or tie back is to convert the floating dock to a fixed dock. Doing so removes the ever-present threat of slope failure and damage to gangway and utility/fuel lines. A sheet pile wall with tie-back would be constructed, and then filled with engineered material to level. Precast concrete pads would be placed atop the compacted fill and leveling course. Fuel and utilities would then be connected without concerns from failing slopes, tide surges or severed/damaged utility/fuel lines.

Views of this commercial Dock are provided in Exhibit A, Page 7. The location of this Dock on Port grounds could be seen in Figures 1.3 and 1.4 of this Grant Project narrative.

Transient and Work Docks

These two docks are service docks, utilized for shipping and receiving alongside moorage, maintenance activities, and loading/unloading.

[19] See Exhibit E-5, Page 3, Conclusion.

The docks themselves are in fair condition, but are held in place by shallow driven, creosote-coated piles[20]. As discussed previously, creosote is no longer an acceptable preservative with respect to the well-being of marine life. Additionally, the piles themselves are in poor condition. Given the very high costs for the mobilization of barge and crane equipment necessary to remove shipping/receiving dock pile, timber and concrete pad systems as proposed in this narrative, it would be helpful to utilize said equipment to place properly installed and specified, Coded coated steel piles in place of these creosote – coded coated piles. Views of this commercial Dock are proved in Exhibit A, Page 8. The location of this Dock on Port grounds could be seen in Figures 1.3 and 1.4 of this Grant Project narrative.

Access, Parking and Material Handling Surfaces

Access, parking and material handling to the Docks (Phase I Resurfacing, about 215,000 ft.^{2}) identified in this narrative is very poor and it inefficient. These surfaces are strewn with potholes, filled with water during rainy season, comprised of compacted gravels, severely degraded asphalt and soil surfaces[21]. Material handling is estimated to be about 80% of the total cost for operations at these docks (forklift unloading of product, placement of product, retrieval and storage of crab pots, nets, gear, etc.). Observations made by Port management, and interviews with yard operators have indicated that the normal retrieval of crab pots, for example, including the retrieval of crab pots, the movement of totes, and the unloading of commercial vessels take about seven minutes per trip on these very poor surfaces.

If the services were properly paved (asphalt is recommended) those trips would be reduced from seven minutes to about a minute and a half, constituting a savings of 4.7 minutes per trip. With the estimated 3500 trips per week, 7 to 8 months per year (typically from December to August) a sizable annual savings of over 8,000 man-hours and 4000 machine hours would be received by the Shipping/Receiving Dock operations, and an approximately equal savings by the delivering commercial vessels. Additionally, legal and protective stormwater/industrial wastewater management would be implemented in the Phase III surfacing areas as a result of this subproject.

Another benefit, aside from the vastly increased efficiency of fishing operations that would be gained by the resurfacing of these areas, would be the control and reduction of the recharge to upper groundwater that is occurring during rainfall. The mounded groundwater serves to accelerate erosion of the Ports embankments beneath the Shipping/Receiving Dock structures.

Additionally, the maintenance, servicing, storage and launching of vessels via the Travel Lift Dock are performed in the adjacent boat yard (Boat Yard Resurfacing, about 2.7 acres). At present all of these surfaces are of gravel or soils. Paving these services would provide eased Travel Lift routing from the Dock to the storage and work areas, and would increase much-needed boat storage and service area. As would be the case for the Phase I resurfacing subproject, legal and protective stormwater/industrial wastewater management would be implemented in the Boat Yard as a result of this project.

[20] (Footnote – Exhibit A, Transient Dock - Support Structure, Photos 1 - 4; Work Dock – Support Structure, Photos 1 & 2).

[21] See Exhibit C, Photo #s 1 – 9.

FUEL DOCK REPLACEMENT SCHEDULE Engineer's Estimate - 2/24/19

	Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
	Year	19					20											21												22								
1	Final Project Design																																					
2	Permitting Period																																					
3	Contractor Procurement																																					
4	Award, Workplan Completion, Order Mtls.																																					
5	Erosion & Pollution Control																																					
6	Mobilization																																					
7	Removal of Structures, Obstructions																																					
8	Relocate Existing Outbuildings Lighting																																					
9	General Excavation																																					
10	Furnish and Drive Steel Sheet Piling																																					
11	Structure Excavation																																					
12	Construct Deadman																																					
13	Nonwoven Filter Geotextile																																					
14	Place General Backfill																																					
15	Stone Embankment																																					
16	Furnish and Install Steel Tieback Rods																																					
17	Complete Backfill																																					
18	Complete Concrete Pad & walkway areas																																					
19	Reinstall Illumination																																					
20	Furnish & Install Dockside Hoist																																					
21	Fuel Line Update & Replacement																																					
22	Demolish Old Fuel Dock																																					
23	Final Inspection																																					

Note: Contractor must continue in-water work (sheet pile driving) for the rest of the docks in Phase I. At 3 - 4 piles driven per day, Pac-Choice (175 piles, 50 days) and Old BC Fisheries (180 piles, 52 days), The total in-

FUEL DOCK REPLACEMENT SCHEDULE Engineer's Estimate - 2/24/19

	Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
	Year	19					20											21												22								
1	Final Project Design																																					
2	Permitting Period																																					
3	Contractor Procurement																																					
4	Award, Workplan Completion, Order Mtls.																																					
5	Erosion & Pollution Control																																					
6	Mobilization																																					
7	Removal of Structures, Obstructions																																					
8	Relocate Existing Outbuildings Lighting																																					
9	General Excavation																																					
10	Furnish and Drive Steel Sheet Piling																																					
11	Structure Excavation																																					
12	Construct Deadman																																					
13	Nonwoven Filter Geotextile																																					
14	Place General Backfill																																					
15	Stone Embankment																																					
16	Furnish and Install Steel Tieback Rods																																					
17	Complete Backfill																																					
18	Complete Concrete Pad & walkway areas																																					
19	Reinstall Illumination																																					
20	Furnish & Install Dockside Hoist																																					
21	Fuel Line Update & Replacement																																					
22	Demolish Old Fuel Dock																																					
23	Final Inspection																																					

Note: Contractor must continue in-water work (sheet pile driving) for the rest of the docks in Phase I. At 3 - 4 piles driven per day, Pac-Choice (175 piles, 50 days) and Old BC Fisheries (180 piles, 52 days), The total in-

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ICE HOUSE REPAIR SCHEDULE

Engineer's Estimate - 2/24/19

	Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
	Year	19					20											21												22							
1	Final Project Design																																				
2	Permitting Period																																				
3	Contractor Procurement																																				
4	Award, Workplan Completion																																				
7	Mobilization																																				
9	General Excavation																																				
10	Furnish and Install Steel Wharf Fenders																																				
11	Nonwoven Filter Geotextile																																				
12	Place General Backfill																																				
13	Complete Backfill																																				
14	Final Inspection																																				

To avoid scheduling constraints while completing the Fuel, Pac-Choice & Old BC Fisheries Shipping and Receiving Docks, a separate contractor would be selected to complete this work. An excavator, equipped with a vibratory hammer, can be used to drive the piles. Therefore, a barge-mounted crane would not be necessary.

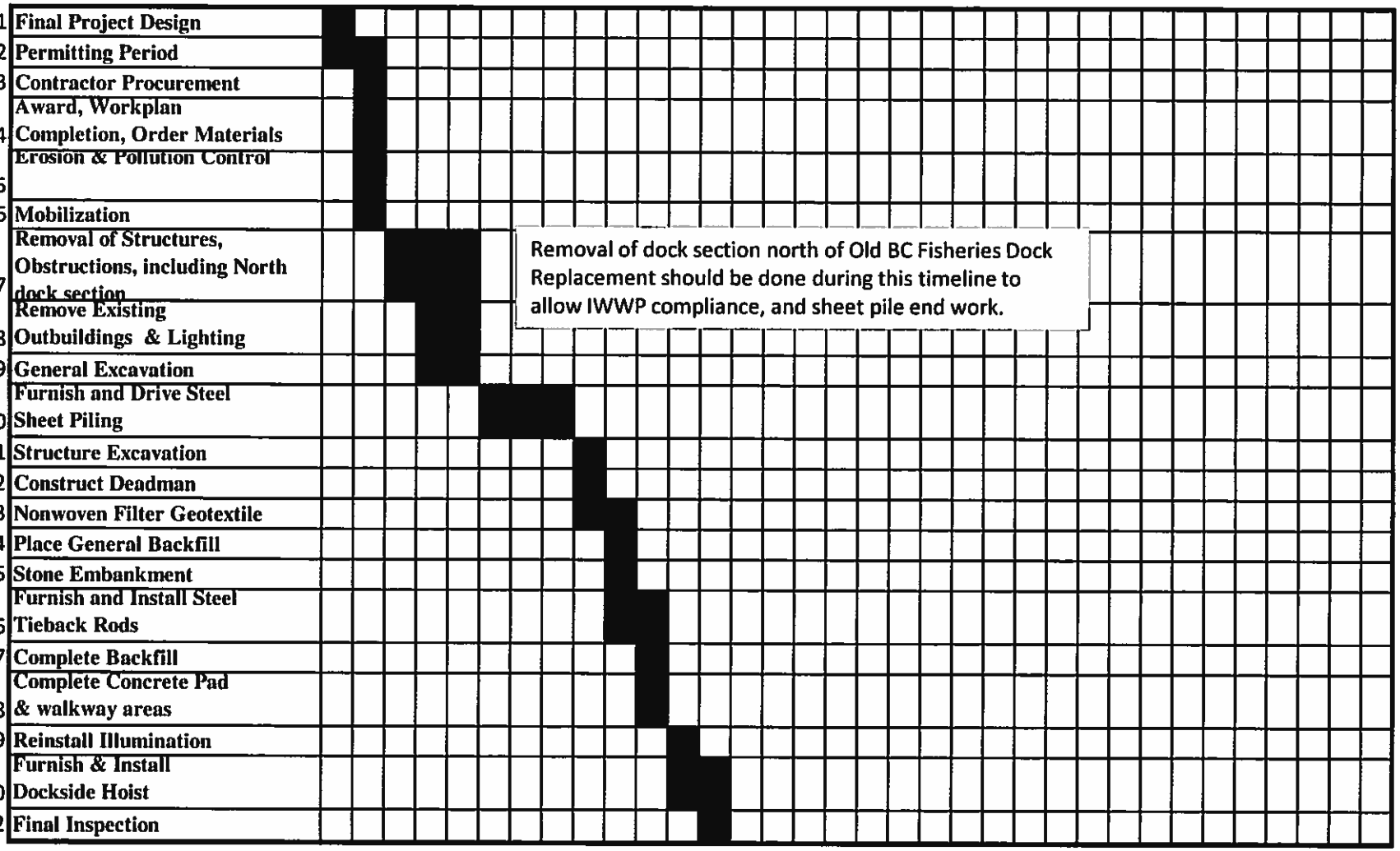
PAC-CHOICE DOCK SCHEDULE Engineer's Estimate - 2/18/19

Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
Year	19					20											21												22							

1	Final Project Design	
2	Permitting Period	
3	Contractor Procurement	
4	Award, Workplan Completion, Order Mtls.	
5	Erosion & Pollution Control Control	
6	Mobilization	
7	Removal of Structures, Obstructions	
8	Remove Existing Outbuildings & Lighting	
9	General Excavation	
10	Furnish and Drive Steel Sheet Piling	
11	Structure Excavation	
12	Construct Deadman	
13	Nonwoven Filter Geotextile	
14	Place General Backfill	
15	Stone Embankment	
16	Furnish and Install Steel Tieback Rods	
17	Complete Backfill	
18	Complete Concrete Pad & walkway areas	
19	Reinstall Illumination	
20	Furnish & Install Dockside Hoist	
21	Final Inspection	

OLD BC FISHERIES DOCK SCHEDULE Engineer's Estimate - 2/19/19

Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Year	19					20											21												22						



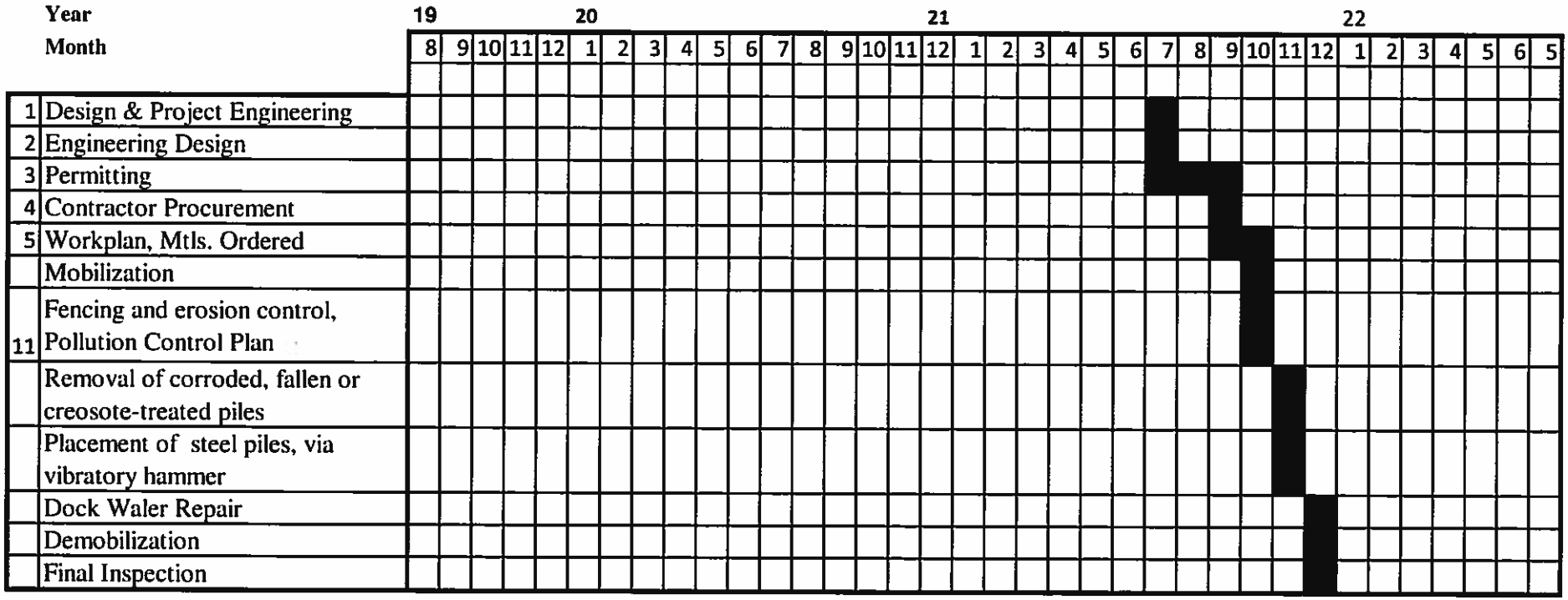
PHASE I RESURFACING Engineer's Estimate - 2/16/19

	Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
	Year	19					20											21											22									

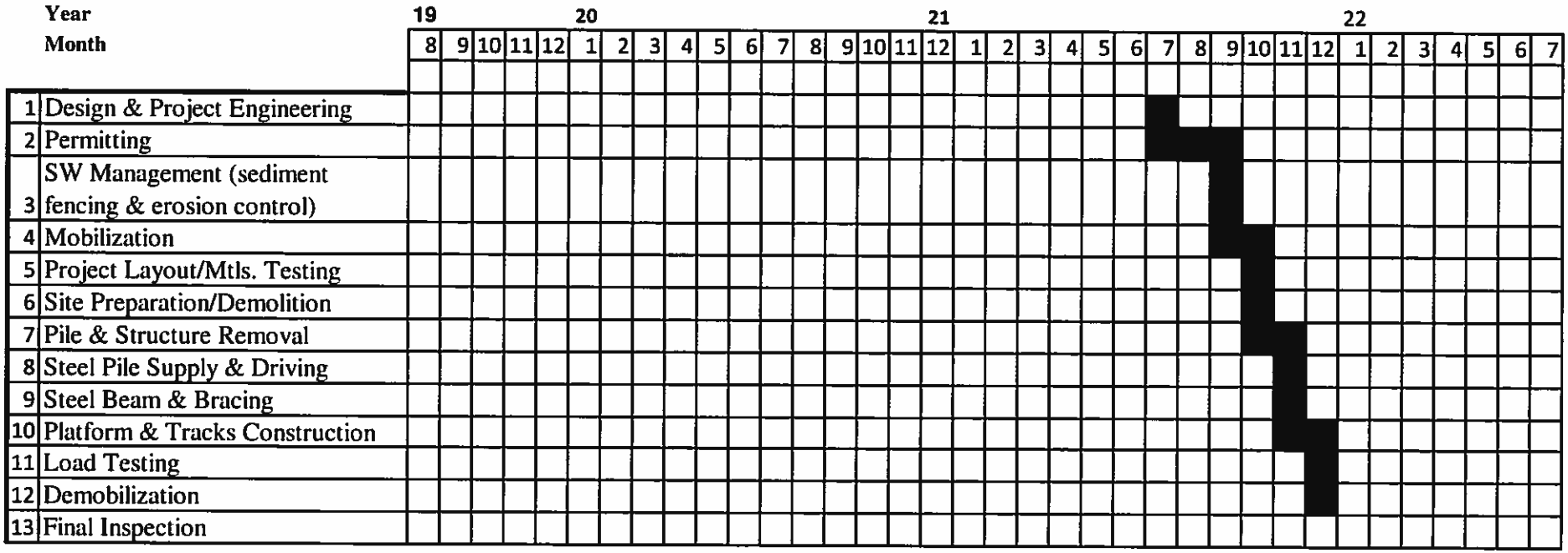
1	Design & Project Engineering	
2	Permitting	
3	Erosion Contrl	
4	Mobilization	
5	Project Layout/Mtls. Testing	
6	Site Preparation/Demolition	
7	Excavation & Grading	
8	Geotextile Fabric	
9	Aggregate Sub-Base	
10	Cleanouts & Catch Basins	
12	Utility Boxes	
13	Waterline Installation	
14	3" Asphalt Overlay (215,000 sf) (150 lbs/cf)	
15	Conveyance Pipe	
16	Trench Drain	
17	CIP Curb	
18	Curb & Gutter	
19	Concrete Sidewalk	
20	Electric Conduit & Wiring	
21	Lighting w Foundation	
22	Landscaping & Plantings	
23	Striping	
24	Final Inspection	

This six-month period is best for completing the proposed Phase I paving project, for at least 3 reasons:
1. The dry season begins in April at this location, providing amenable conditions for asphalt & concrete work; **2.** This six-month time period is outside the in-water work period (Oct. - end of February), and so the surfacing work need not conflict with proposed in-water (dock repair/replacement) and **3.** All resurfacing work should be done after that requiring heavy equipment (cranes, excavators) has been done at the Fuel, Pac-Choice and Old BC Fisheries Shipping/Receiving Docks, in order to prevent damage to new (asphalt) surfaces.

TRANSIENT & WORK DOCK REPAIR **Engineer's Estimate 2/24/19**



TRAVEL LIFT DOCK **Engineer's Estimate 2/24/19**



	Year	19					20												21												22							
	Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
1	Design & Project Engineering																																				
2	Permitting																																				
3	SW Management (sediment fencing & erosion control)																																				
4	Mobilization																																				
5	Project Layout/Mtls. Testing																																				
6	Site Preparation/Demolition																																				
7	Pile & Structure Removal																																				
8	Steel Pile Supply & Driving																																				
9	Steel Beam & Bracing																																				
10	Platform & Tracks Construction																																				
11	Load Testing																																				
12	Demobilization																																				
13	Final Inspection																																				

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HALLMARK DOCK REPLACEMENT SCHEDULE Engineer's Estimate - 2/24/19

	Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
	Year	19					20											21												22								
1	Final Project Design																																					
2	Permitting Period																																					
3	Contractor Procurement																																					
4	Award, Workplan Completion, Order Mtls.																																					
5	Erosion & Pollution Control																																					
6	Mobilization																																					
7	Removal of Structures, Obstructions																																					
8	Relocate Existing Outbuildings Lighting																																					
9	General Excavation																																					
10	Furnish and Drive Steel Sheet Piling																																					
11	Structure Excavation																																					
12	Construct Deadman																																					
13	Nonwoven Filter Geotextile																																					
14	Place General Backfill																																					
15	Stone Embankment																																					
16	Furnish and Install Steel Tieback Rods																																					
17	Complete Backfill																																					
18	Complete Concrete Pad & walkway areas																																					
19	Reinstall Illumination																																					
20	Furnish & Install Dockside Hoist																																					
23	Final Inspection																																					

HALLMARK ROAD & YARD RESURFA(Engineer's Estimate - 2/17/19

Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10
Year	20											21												22										

1	Design & Project Engineering																																	
2	Permitting																																	
3	Erosion Contrl																																	
4	Mobilization																																	
5	Project Layout/Mtls. Testing																																	
6	Site Preparation/Demolition																																	
7	Excavation & Grading																																	
8	Geotextile Fabric																																	
9	Aggregate Sub-Base																																	
10	Cleanouts & Catch Basins																																	
12	Utility Boxes																																	
13	Waterline Installation																																	
14	3" Asphalt Overlay (215,000 sf) (150 lbs/cf)																																	
15	Conveyance Pipe																																	
16	Trench Drain																																	
17	CIP Curb																																	
18	Curb & Gutter																																	
19	Concrete Sidewalk																																	
20	Electric Conduit & Wiring																																	
21	Lighting w Foundation																																	
22	Landscaping & Plantings																																	
23	Striping																																	
24	Final Inspection																																	

This six-month period is best for completing the proposed Phase III paving project, for at least 3 reasons: **1.** The dry season begins in April at this location, providing amenable conditions for asphalt & concrete work; **2.** This six-month time period is outside the in-water work period (Oct. - end of February), and so the surfacing work need not conflict with proposed in-water (dock repair/replacement) and **3.** All resurfacing work should be done after that requiring heavy equipment (cranes, excavators) has been done at the Hallmark Shipping/Receiving Dock, in order to prevent damage to new (asphalt) surfaces.

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BOATYARD RESURFACING Engineer's Estimate - 2/17/19

	Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Year	20											21												22												
1	Design & Project Engineering																																				
2	Permitting																																				
3	Erosion Contrl																																				
4	Mobilization																																				
5	Project Layout/Mtls. Testing																																				
6	Site Preparation/Demolition																																				
7	Excavation & Grading																																				
8	Geotextile Fabric																																				
9	Aggregate Sub-Base																																				
10	Cleanouts & Catch Basins																																				
12	Utility Boxes																																				
13	Waterline Installation																																				
14	3" Asphalt Overlay (215,000 sf) (150 lbs/cf)																																				
15	Conveyance Pipe																																				
16	Trench Drain																																				
17	CIP Curb																																				
18	Curb & Gutter																																				
19	Concrete Sidewalk																																				
20	Electric Conduit & Wiring																																				
21	Lighting w Foundation																																				
22	Landscaping & Plantings																																				
23	Striping																																				
24	Final Inspection																																				

As is the case for the two previous proposed surfacing projects, this six-month period is best for completing this final proposed Phase III paving project, for at least 3 reasons: **1.** The dry season begins in April at this location, providing amenable conditions for asphalt & concrete work; **2.** This six-month time period is outside the in-water work period (Oct. - end of February), and so the surfacing work need not conflict with proposed in-water (dock repair/replacement) and **3.** All resurfacing work should be done after that requiring heavy equipment (cranes, excavators) has been done at the Travel Lift Shipping/Receiving Dock, in order to prevent damage to

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Port of Brookings Harbor: Fixed Fuel Dock-Sheet Pile Wall & Fuel Line Repair

Engineer's Estimate (Preliminary)
2/11/2019

Item No.	Item	Unit	Quantity	Unit Price	Total Price	Remarks
1	Final Project Design	LS	1	$18,000	$18,000	
2	Permitting	LS	1	$15,000	$15,000	Shared with Ice House, Pac-Choice, Old BC Fisheries Docks
3	Contractor Procurement	LS	1	$3,000	$3,000	Shared with Ice House, Pac-Choice, Old BC Fisheries Docks
4	Mobilization	LS	1	$36,000	$36,000	Shared with Ice House, Pac-Choice, Old BC Fisheries Docks
5	Erosion Control	LS	1	$4,000	$4,000	
6	Pollution Control Plan	LS	1	$500	$500	
7	Removal of Structures and Obstructions	LS	1	$66,346	$66,346	Anything man-made not removable as General Excavation, plus sloughed out fill and other soil outside limits of Gen. Exc.
8	Relocate Existing Outbuildings	LS	1	$11,538	$11,538	
9	General Excavation	Cy	700	$5	$3,500	Excavation to bottom of working pad
10	Stone Embankment	Cy	721	$50	$36,058	Clean 1 to 4 inch backfill below water
11	Cement Treated Soil	Cy	1125	$7	$7,875	Deadman CTS & upper 2-foot section only
12	Portland Cement	Ton	93	$150	$14,019	5% of CTS
13	Nonwoven Filter Geotextile	Sy	346	$1	$346	
14	Shoring	Sy	35	$400	$13,846	
15	Structure Excavation	Cy	35	$15	$519	Additional excavation for deadman below Gen. Exc.
16	Selected General Backfill	Cy	773	$8	$6,185	Backfill behind deadmen and below CTS between sheet pile wall and deadman CTS, using on-site soils.
17	Furnish and Drive Steel Sheet Piling	$Ft.^2$	7308	$70	$511,592	Steel cost & $25,000 shipping plus 15% mark-up & installation @ $2700/pile
18	Furnish and Install Steel Tieback Rods	Ft	1826	$32	$58,431	Includes couplers, sleeves, grout, plates, etc.
19	Reinforcement	Lbs.	4269	$1	$4,696	
20	Coated Reinforcement	Lbs.	2596	$1	$3,245	
21	General Structural Concrete, Class 3300	Cy	118	$500	$59,135	
22	Steel Channel Walers	Lbs.	9040	$7	$58,763	Includes waler, waler bolts, brackets, skaffolding, welding, plates, installation, etc..
23	Steel Ladders	Lbs.	404	$10	$4,038	All stainless steel.
24	Wharf Fenders	Ft.	297	$20	$5,942	
25	Aggregate Base	Cy	288	$45	$12,981	12" layer below CTS and sand fill.
26	Level 3, 1/2 Inch Dense MHMAC Mixture	Ton	72	$150	$10,817	
27	Remove and Reinstall Illumination	LS	1	$3,462	$3,462	
28	Furnish and Install Dockside Hoist	LS	1	$15,000	$15,000	
29	Backfill Former pad & walkway areas	Cy	270	$5	$1,350	
30	Fuel Line Update & Replacement	LF	250	$128	$32,000	Includes two sumps, installation
31	Demolish Old Fuel Dock	LS	1	$7,000	$7,000	Includes disposal
				Subtotal of Biddable Items:	$1,025,185	
				Contingencies @ 10%:	$102,500	
				Construction Engineering @ 15%:	$153,800	
				Construction Total:	**$1,281,485**	

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Port of Brookings : Ice House-Sheet Pile Wall Repair

Engineer's Estimate (Preliminary)
2/10/2019

Item No.	Item	Unit	Quantity	Unit Price	Total Price	Remarks
1	Final Project Design	LS	1	$18,000	$1,000	
2	Permitting	LS	1	$15,000	$15,000	Shared with Fuel, Pac-Choice, Old BC Fisheries Docks
3	Contractor Procurement	LS	1	$3,000	$3,000	Shared with Fuel, Pac-Choice, Old BC Fisheries Docks
1	Mobilization	LS	1	$36,000	$36,000	Shared with Other Subprojects in Phase I
2	Erosion Control	LS	1	$5,000	$5,000	
3	Pollution Control Plan	LS	1	$500	$500	
4	Removal of Structures and Obstructions	LS	1	$42,000	$42,000	Anything man-made not removable as General Excavation
6	General Excavation	Cy	600	$5	$3,000	Excavation to bottom of working pad
10	Nonwoven Filter Geotextile	Sy	300	$1	$300	
11	Shoring	Sy	60	$400	$24,000	
13	Selected General Backfill	Cy	300	$8	$2,400	
21	Wharf Fenders	Ft.	350	$20	$7,000	Fenders already owned by Port
22	Aggregate Base	Cy	250	$45	$11,250	
				Subtotal of Biddable Items:	$150,450	
				Contingencies @ 10%:	$15,000	
				Construction Engineering @ 15%:	$5,000	
				Construction Total:	**$170,450**	

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Port of Brookings Harbor: Pac-Choice Dock-Sheet Pile Wall Repair

Engineer's Estimate (Preliminary)
2/10/2019

No.	Item	Unit	Quantity	Unit Price	Total Price	Remarks
1	Final Project Design	LS	1	$18,000	$18,000	
2	Permitting	LS	1	$15,000	$15,000	Shared with Ice House, Fuel Dock, Old BC Fisheries Dock
3	Contractor Procurement	LS	1	$3,000	$3,000	Shared with Ice House, Fuel Dock, Old BC Fisheries Dock
4	Mobilization	LS	1	$36,000	$36,000	Shared w Other Subprojects in Phase I
5	Erosion Control	LS	1	$4,500	$4,500	
6	Pollution Control Plan	LS	1	$500	$500	
7	Removal of Structures and Obstructions	LS	1	$77,404	$77,404	Anything man-made not removable as General Excavation, plus sloughed out fill and other soil outside limits of Gen. Exc.
8	Relocate Existing Outbuildings	LS	1	$13,462	$13,462	
9	General Excavation	Cy	2558	$5	$12,788	Excavation to bottom of working pad
10	Stone Embankment	Cy	841	$50	$42,067	Clean 1 to 4 inch backfill below water
11	Cement Treated Soil	Cy	1313	$7	$9,188	Deadman CTS & upper 2-foot section only
12	Portland Cement	Ton	109	$150	$16,356	5% of CTS
13	Nonwoven Filter Geotextile	Sy	404	$1	$404	
14	Shoring	Sy	40	$400	$16,154	
15	Structure Excavation	Cy	40	$15	$606	Additional excavation for deadman below Gen. Exc.
16	Selected General Backfill	Cy	902	$8	$7,215	Backfill behind deadmen and below CTS between sheet pile wall and deadman CTS, using on-site soils.
17	Furnish and Drive Steel Sheet Piling	$Ft.^2$	8527	$70	$596,858	Steel cost & $28,000 shipping plus 15% mark-up & installation @ $2700/pile
18	Furnish and Install Steel Tieback Rods	Ft	2130	$32	$68,169	Includes couplers, sleeves, grout, plates, etc.
19	Reinforcement	Lbs.	4981	$1	$5,479	
20	Coated Reinforcement	Lbs.	3029	$1	$3,786	
21	General Structural Concrete, Class 3300	Cy	138	$500	$68,990	
22	Steel Channel Walers	Lbs.	10547	$7	$68,556	Includes waler, water bolts, brackets, skaffolding, welding, plates, installation, etc..
23	Steel Ladders	Lbs.	471	$10	$4,712	All stainless steel.
24	Wharf Fenders	Ft.	347	$20	$6,933	
25	Aggregate Base	Cy	337	$45	$15,144	12" layer below CTS and sand fill.
26	Level 3, 1/2 Inch Dense MHMAC Mixture	Ton	84	$150	$12,620	
27	Remove and Reinstall Illumination	LS	1	$4,038	$4,038	
28	Furnish and Install Dockside Hoist	LS	1	$10,096	$10,096	
				Subtotal of Biddable Items:	$1,138,025	
				Contingencies @ 10%:	$113,800	
				Construction Engineering @ 15%:	$170,700	
				Construction Total:	**$1,422,525**	

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Port of Brookings : OLD BC Fisheries Dock-Sheet Pile Wall Repair

Engineer's Estimate (Preliminary)
2/20/2019

No.	Item	Unit	Quantity	Unit Price	Total Price	Remarks
1	Final Project Design	LS	1	$18,000	$18,000	
2	Permitting	LS	1	$15,000	$15,000	Shared with Ice House, Pac-Choice, Fuel Docks
3	Contractor Procurement	LS	1	$3,000	$3,000	Shared with Ice House, Pac-Choice, Fuel Docks
4	Mobilization	LS	1	$36,000	$36,000	0
5	Erosion Control	LS	1	$5,000	$5,000	
6	Pollution Control Plan	LS	1	$500	$500	
7	Removal of Structures and Obstructions	LS	1	$79,615	$79,615	Anything man-made not removable as General Excavation, plus sloughed out fill and other soil outside limits of Gen. Exc.
8	Relocate Existing Outbuildings	LS	1	$13,846	$13,846	
9	General Excavation	Cy	2631	$5	$13,154	Excavation to bottom of working pad
10	Stone Embankment	Cy	865	$50	$43,269	Clean 1 to 4 inch backfill below water
11	Cement Treated Soil	Cy	1350	$7	$9,450	Deadman CTS & upper 2-foot section only
12	Portland Cement	Ton	112	$150	$16,823	5% of CTS
13	Nonwoven Filter Geotextile	Sy	415	$1	$415	
14	Shoring	Sy	42	$400	$16,615	
15	Structure Excavation	Cy	42	$15	$623	Additional excavation for deadman below Gen. Exc.
16	Selected General Backfill	Cy	928	$8	$7,422	Backfill behind deadmen and below CTS between sheet pile wall and deadman CTS, using on-site soils.
17	Furnish and Drive Steel Sheet Piling	$Ft.^2$	8770	$61	$538,049	Steel cost & $30,000 shipping plus 15% mark-up & installation @ $2700/pile
18	Furnish and Install Steel Tieback Rods	Ft	2191	$32	$70,117	Includes couplers, sleeves, grout, plates, etc.
19	Reinforcement	Lbs.	5123	$1	$5,635	
20	Coated Reinforcement	Lbs.	3115	$1	$3,894	
21	General Structural Concrete, Class 3300	Cy	142	$500	$70,962	
22	Steel Channel Waters	Lbs.	10848	$7	$70,515	Includes waler, waler bolts, brackets, skalfolding, welding, plates, installation, etc..
23	Steel Ladders	Lbs.	485	$10	$4,846	All stainless steel.
24	Wharf Fenders	Ft.	357	$20	$7,131	
25	Aggregate Base	Cy	346	$45	$15,577	12" layer below CTS and sand fill.
26	Level 3, 1/2 Inch Dense MHMAC Mixture	Ton	87	$150	$12,981	
27	Remove and Reinstall Illumination	LS	1	$4,154	$4,154	
28	Furnish and Install Dockside Hoist	LS	1	$15,000	$15,000	
				Subtotal of Biddable Items:	$1,097,594	
				Contingencies @ 10%:	$109,800	
				Construction Engineering @ 15%:	$164,600	
				Construction Total:	**$1,371,994**	

Phase I Access & Material Handling Surfaces **Engineer's Estimate: 2/23/19**

Item	Qty	Unit	Unit Cost	TOTALS
Design & Project Engineering	1	LS	$18,500	$18,500
Permitting	1	LS	$2,000	$2,000
Mobilization	1	LS	$90,000	$90,000
Project Layout/Mtls. Testing	1	LS	$10,500	$10,500
Site Preparation/Demolition	1	LS	$60,000	$60,000
Excavation & Grading (R&R)	12000	cy	$16	$192,000
Geotextile Fabric	215000	sf	$0	$53,750
SW Management (sediment fencing & erosion control)	500	LF	$5	$2,500
Aggregate Sub-Base	5200	CY	$35	$182,000
12" Cleanouts	4	EA	$1,000	$4,000
Catch Basins	10	EA	$1,500	$15,000
Utility Boxes &/or Relocations	2	LS	$4,000	$8,000
3" Asphalt Overlay (215,000 sf) (150 lbs/cf) w 25% overage.	5040	TON	$110	$554,400
12" pipe	768	LF	$50	$38,400
Trench Drain	280	LF	$100	$28,000
CIP Curb	5600	LF	$15	$84,000
Curb & Gutter	606	LF	$25	$15,150
Concrete Sidewalk	7000	SF	$7	$49,000
Electric Conduit & Wiring	720	LF	$25	$18,000
Lighting w Foundation	4	EA	$4,000	$16,000
Landscaping & Plantings	1	LS	$10,000	$10,000
Striping	800	LF	$1	$800
Waterline Installation/Replacement	10	LS	$5,000	$50,000
TOTAL				**$1,502,000**

PHASE IIIa and IIIb - COMBINED TRANSIENT AND WORK DOCK

2/23/19 Engineer's Estimate

No.	Task Name	Unit	Quantity	Cost/Unit	Total Costs
1	Engineering Design	LS	1	$4,500	**$4,500**
2	Permitting	LS	1	$14,000	**$14,000**
3	Contractor Procurement	LS	1	$3,500	**$3,500**
4	Project Engineering/MGMT.	LS	1	$4,400	**$4,400**
5	Fencing and erosion control, Pollution Control Plan	LS	1	$4,000	**$4,000**
6	Removal of corroded, fallen or creosote-treated piles (12"-18" diameter, Est. 30' - 45' long)	ea	45	$1,000	**$45,000**
7	Placement of 60 foot long, 12" and 18" dia., 1/2" - 5/8" t steel piles, via vibratory hammer	ea	45	$4,800	**$216,000**
8	Corrosion-resistant pile coating	LF	11	$2,700	**$29,700**
9	Hoops, caps, washer plate, fasteners, including shipping,	ea	45	$2,000	**$90,000**
10	Dock Waler Repair	ea	32	$1,250	**$40,000**
10	Equipment renting, mobilizing, putting in place, demobilizing	LS	1	$140,000	**$140,000**
	TOTALS				**$591,100**

Note: The unit prices include all labor, materials, overhead, profit, insurance, etc., to cover the finished work. This project is funded, at least in part, by federal & Oregon-state grants, and so bids

TRAVEL LIFT DOCK REPLACEMENT **Engineer's Estimate: 2/23/19**

Item	Qty	Unit	Unit Cost	TOTALS
Design & Project Engineering	1	LS	$90,000	$90,000
Permitting	1	LS	$19,000	$19,000
SW Management (sediment fencing & erosion control)				
Mobilization	1	LS	$48,000	$48,000
Project Layout/Mtls. Testing	1	LS	$10,500	$10,500
Site Preparation/Demolition	1	LS	$75,000	$75,000
Pile & Structure Removal	110	ea	$1,000	$110,000
Steel Pile Supply & Driving	60	ea	$5,800	$348,000
Steel Beam & Bracing	60	ea	$2,900	$174,000
Platform & Tracks Construction	190	LF	$600	$114,000
Load Testing	1	LS	$6,500	$6,500
Demobilization	1	LS	$48,000	$48,000
Final Inspection	1	LS	$7,500	$7,500
TOTAL				**$1,050,500**

Port of Brookings Harbor - Hallmark Dock Sheet Pile Wall Repair

Engineer's Estimate (Preliminary)
2/22/2019

Item No.	Item	Unit	Quantity	Unit Price	Total Price	Remarks
1	Final Project Design	LS	1	$18,000	$18,000	
2	Permitting	LS	1	$8,500	$8,500	Shared with the Other Subprojects
3	Contractor Procurement	LS	1	$3,000	$3,000	Shared with the Other Subprojects
4	Mobilization	LS	1	$180,000	$180,000	
5	Erosion Control	LS	1	$5,000	$5,000	
6	Pollution Control Plan	LS	1	$500	$500	
7	Removal of Structures and Obstructions	LS	1	$88,462	$88,462	Anything man-made not removable as General Excavation, plus sloughed out fill and other soil outside limits of Gen. Exc.
8	Relocate Existing Outbuildings	LS	1	$15,385	$15,385	
9	General Excavation	Cy	2923	$5	$14,615	Excavation to bottom of working pad
10	Stone Embankment	Cy	962	$50	$48,077	Clean 1 to 4 inch backfill below water
11	Cement Treated Soil	Cy	1500	$7	$10,500	Deadman CTS & upper 2-foot section only
12	Portland Cement	Ton	125	$150	$18,692	5% of CTS
13	Nonwoven Filter Geotextile	Sy	462	$1	$462	
14	Shoring	Sy	46	$400	$18,462	
15	Structure Excavation	Cy	46	$15	$692	Additional excavation for deadman below Gen. Exc.
16	Selected General Backfill	Cy	1031	$8	$8,246	Backfill behind deadmen and below CTS between sheet pile wall and deadman CTS, using on-site soils.
17	Furnish and Drive Steel Sheet Piling	Sy	9745	$61	$597,832	Steel cost & $40,000 shipping plus 15% mark-up & installation @ $2700/pile
18	Furnish and Install Steel Tieback Rods	Ft	2435	$32	$77,908	Includes couplers, sleeves, grout, plates, etc.
19	Reinforcement	Lbs.	5692	$1	$6,262	
20	Coated Reinforcement	Lbs.	3462	$1	$4,327	
21	General Structural Concrete, Class 3300	Cy	158	$500	$78,846	
22	Steel Channel Walers	Lbs.	12054	$7	$78,350	Includes waler, waler bolts, brackets, skaffolding, welding, plates, installation, etc..
23	Steel Ladders	Lbs.	538	$10	$5,385	All stainless steel.
24	Wharf Fenders	Ft.	396	$20	$7,923	
25	Aggregate Base	Cy	385	$45	$17,308	12" layer below CTS and sand fill.
26	Level 3, 1/2 Inch Dense MHMAC Mixture	Ton	96	$150	$14,423	
27	Remove and Reinstall Illumination	LS	1	$4,615	$4,615	
28	Furnish and Install Dockside Hoist	LS	1	$11,538	$11,538	
				Subtotal of Biddable Items:	$1,343,309	
				Contingencies @ 10%:	$134,300	
				Construction Engineering @ 15%:	$201,500	
				Construction Total:	**$1,679,109**	

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Phase IIIb Hallmark Gear
Storage/Access Surfaces

Engineer's Estimate: 2/21/19

Item	Qty	Unit	Unit Cost	TOTALS
Design & Project Engineering	1	LS	$6,500	$6,500
Permitting (Shared)	1	LS	$2,000	$2,000
Mobilization (Shared)	1	LS	$47,250	$47,250
Project Layout/Mtls. Testing	1	LS	$7,000	$7,000
Site Preparation/Demolition (109 k sf)	1	LS	$41,972	$41,972
Excavation & Grading (R&R)	8394	cy	$16	$134,312
Geotextile Fabric	243440	sf	$0	$60,860
SW Management (sediment fencing & erosion control)	700	LF	$5	$3,498
Aggregate Sub-Base	7275	CY	$35	$254,633
12" Cleanouts	3	EA	$1,000	$2,798
Catch Basins	14	EA	$1,500	$20,986
Utility Boxes &/or Relocations	3	LS	$4,000	$11,193
3" Asphalt Overlay (90,000 sf) (150 lbs/cf) w 25% overage.	5901	TON	$110	$649,146
12" pipe	1074	LF	$50	$53,725
Trench Drain	392	LF	$100	$39,174
CIP Curb	7835	LF	$15	$117,523
Curb & Gutter	848	LF	$25	$21,196
Concrete Sidewalk	9794	SF	$7	$68,555
Electric Conduit & Wiring	1007	LF	$25	$25,183
Lighting w Foundation	6	EA	$4,000	$22,385
Landscaping & Plantings	1	LS	$27,982	$27,982
Striping	1119	LF	$1	$1,119
Waterline Installation/Replacement	1	LS	$13,991	$13,991
TOTAL				**$1,632,982**

Phase III c Boatyard
Storage/Access Surfaces

Engineer's Estimate: 2/21/19

Item	Qty	Unit	Unit Cost	TOTALS
Design & Project Engineering	1	LS	$6,500	$6,500
Permitting (Shared)	1	LS	$2,000	$2,000
Mobilization (Shared)	1	LS	$47,250	$47,250
Project Layout/Mtls. Testing	1	LS	$7,000	$7,000
Site Preparation/Demolition	1	LS	$18,853	$18,853
Excavation & Grading (R&R)	3771	cy	$16	$60,330
Geotextile Fabric	109349	sf	$0	$27,337
SW Management (sediment fencing & erosion control)	314	LF	$5	$1,571
Aggregate Sub-Base	3268	CY	$35	$114,376
12" Cleanouts	1	EA	$1,000	$1,257
Catch Basins	6	EA	$1,500	$9,427
Utility Boxes &/or Relocations	1	LS	$4,000	$5,028
3" Asphalt Overlay (90,000 sf) (150 lbs/cf) w 25% overage.	2651	TON	$110	$291,584
12" pipe	483	LF	$50	$24,132
Trench Drain	176	LF	$100	$17,596
CIP Curb	3519	LF	$15	$52,789
Curb & Gutter	381	LF	$25	$9,521
Concrete Sidewalk	4399	SF	$7	$30,794
Electric Conduit & Wiring	452	LF	$25	$11,312
Lighting w Foundation	3	EA	$4,000	$10,055
Landscaping & Plantings	1	LS	$12,569	$12,569
Striping	503	LF	$1	$503
Waterline Installation/Replacement	1	LS	$6,284	$6,284
TOTAL				**$768,067**

EXHIBIT A

OLD BC DOCK - Support Structure

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EXHIBIT A

EXHIBIT A

PAC-CHOICE DOCK- Support Structure

1

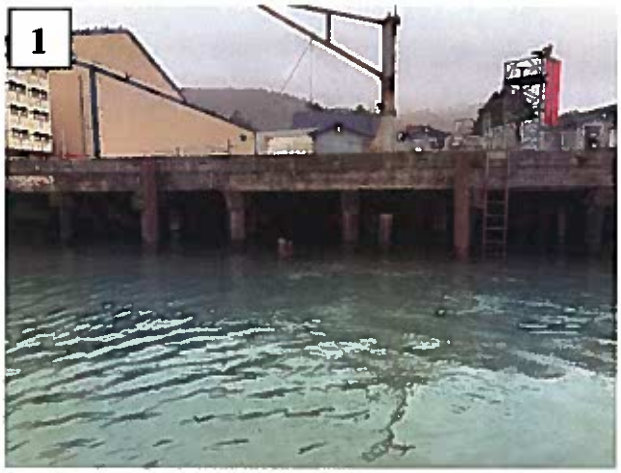

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EXHIBIT A

HALLMARK DOCK- Support Structure

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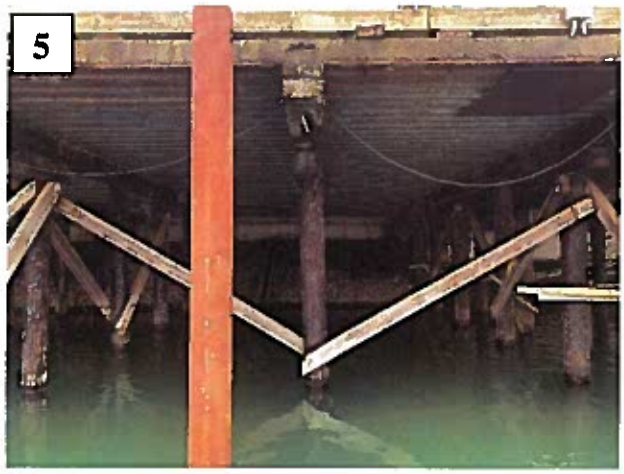

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EXHIBIT A

ICE HOUSE DOCK- Support Structure

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EXHIBIT A

TRAVEL LIFT DOCK- Support Structure

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EXHIBIT A

FUEL RECEIVING DOCK- Support Structure

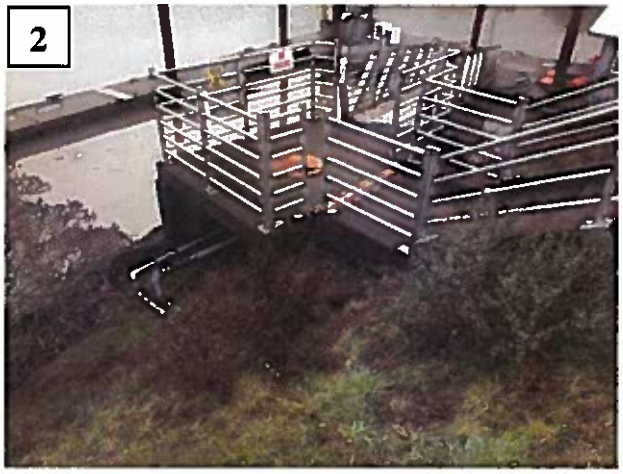

EXHIBIT A

TRANSIENT DOCK- Support Structure

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WORK DOCK- Support Structure

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2

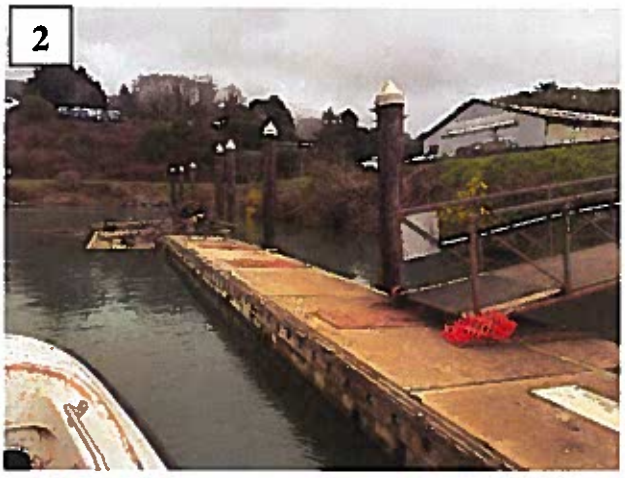
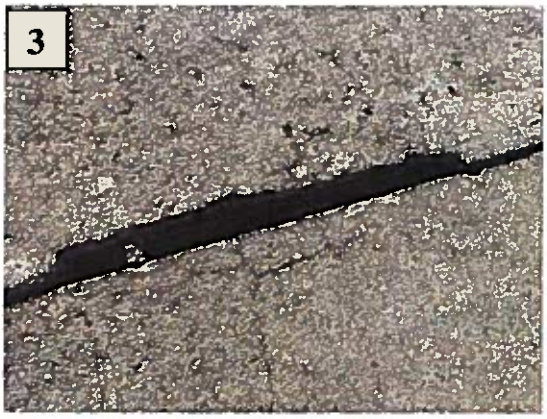


EXHIBIT A

BC Fisheries - Support Structure

EXHIBIT B

OLD BC DOCK – Surfaces



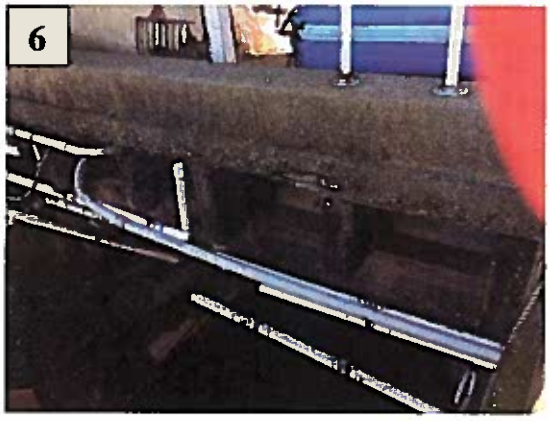
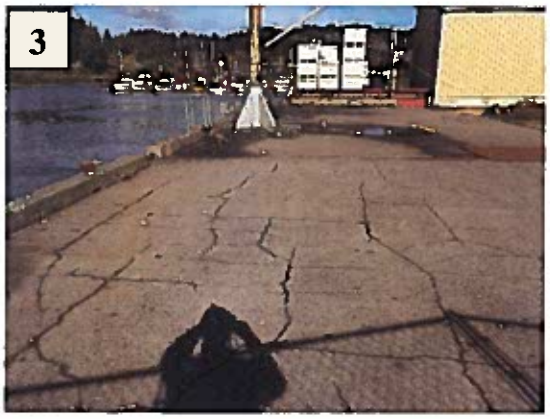


EXHIBIT B

PAC-CHOICE DOCK- Surfaces



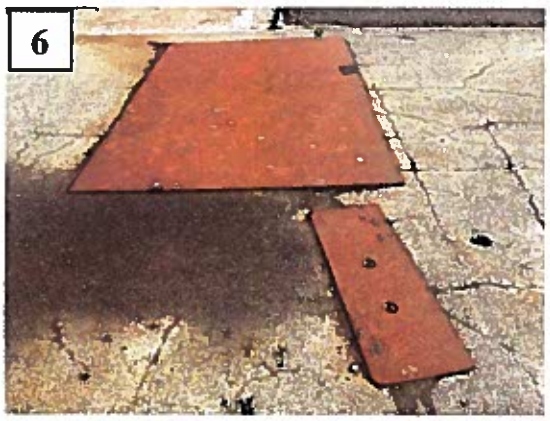
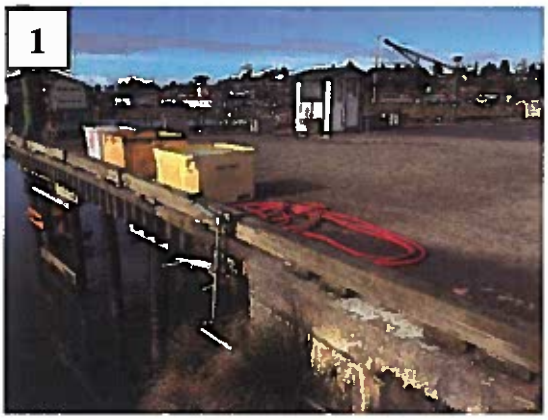


EXHIBIT B

HALLMARK DOCK- Surfaces



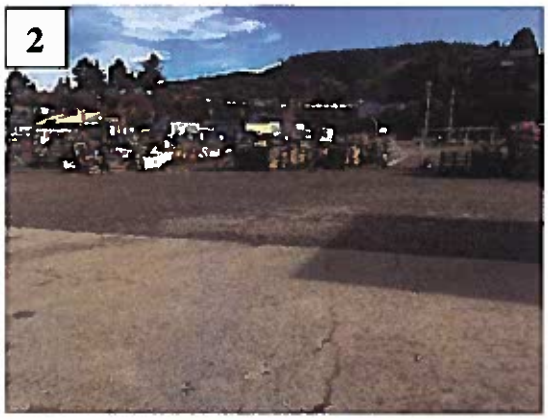


EXHIBIT B

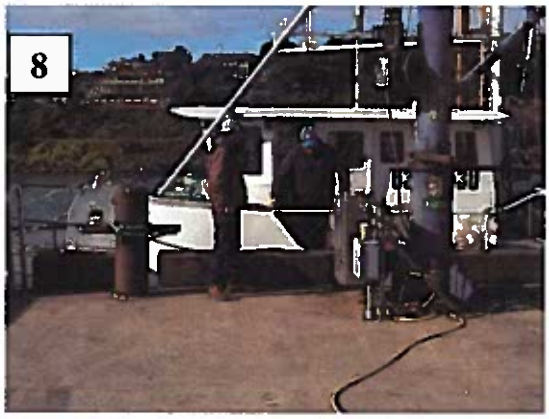
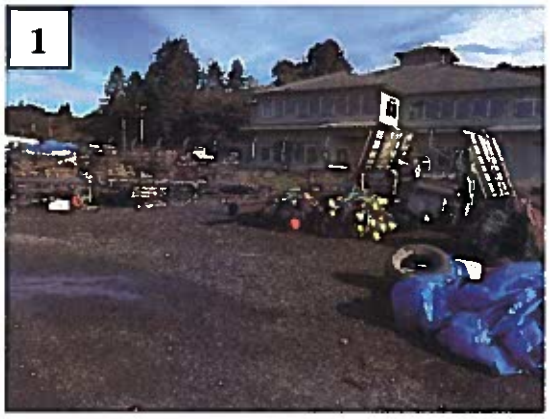


EXHIBIT C

Dock Access, Parking & Material Handling



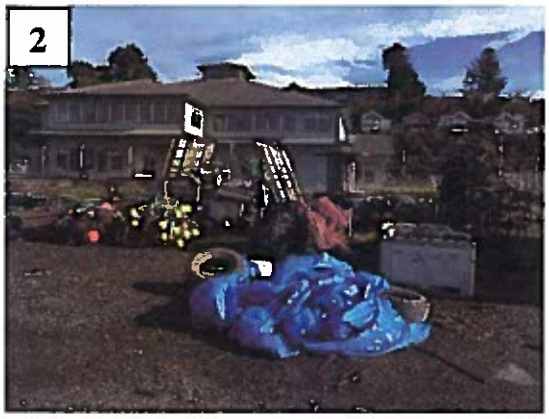
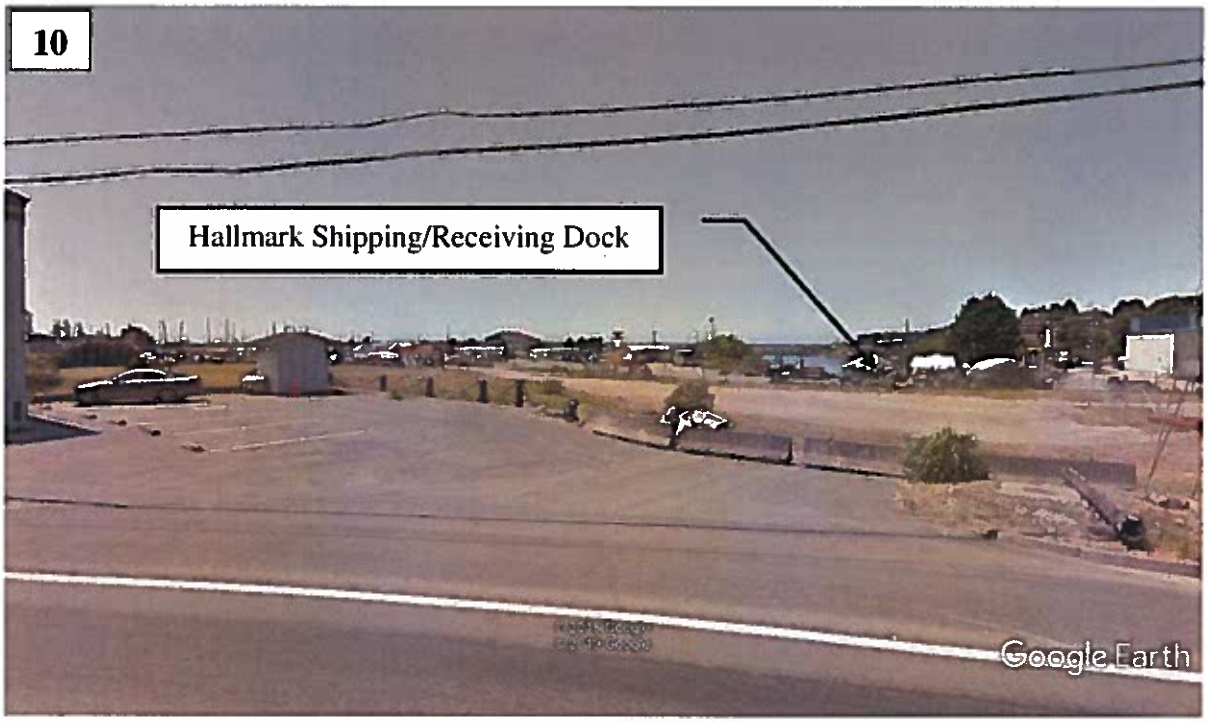
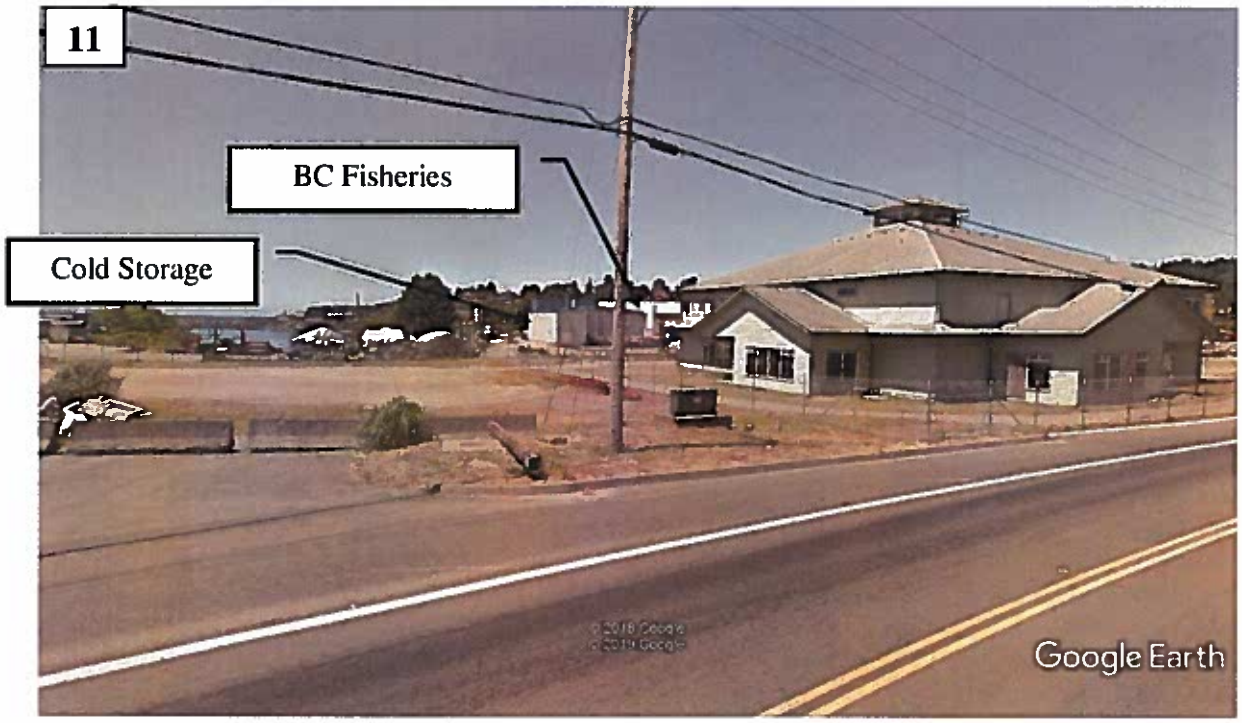


EXHIBIT C

EXHIBIT C

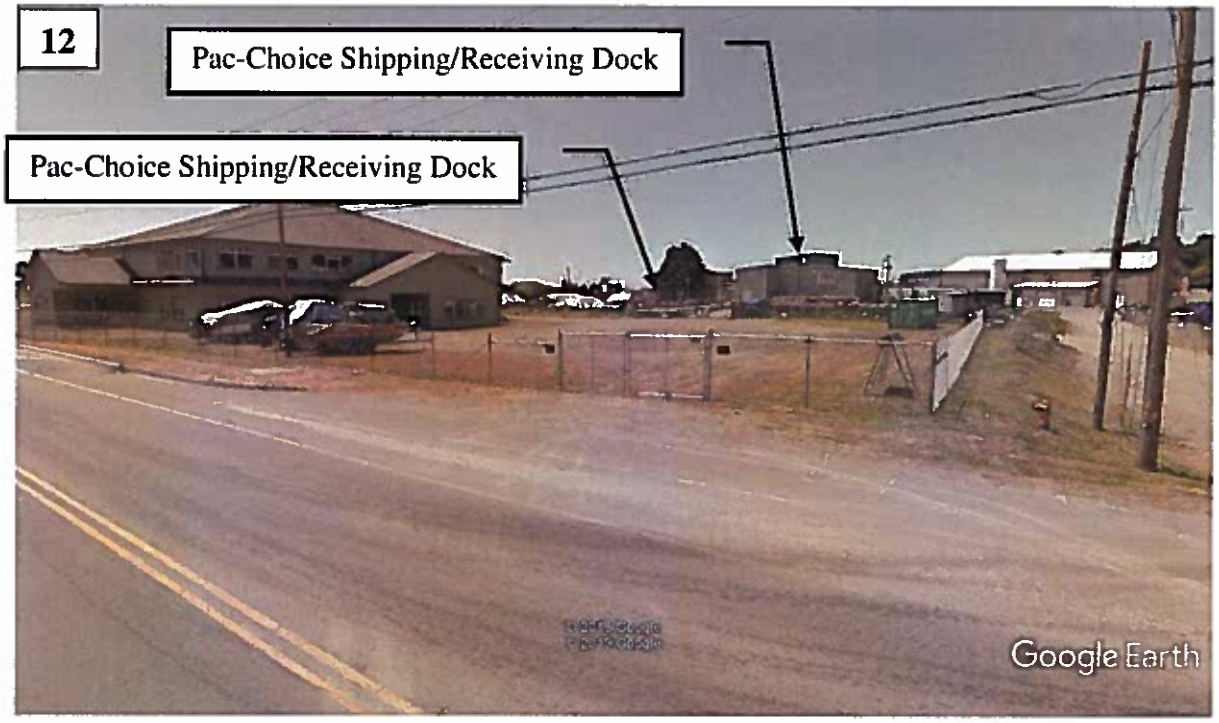


Looking Westward from Lower Harbor Road

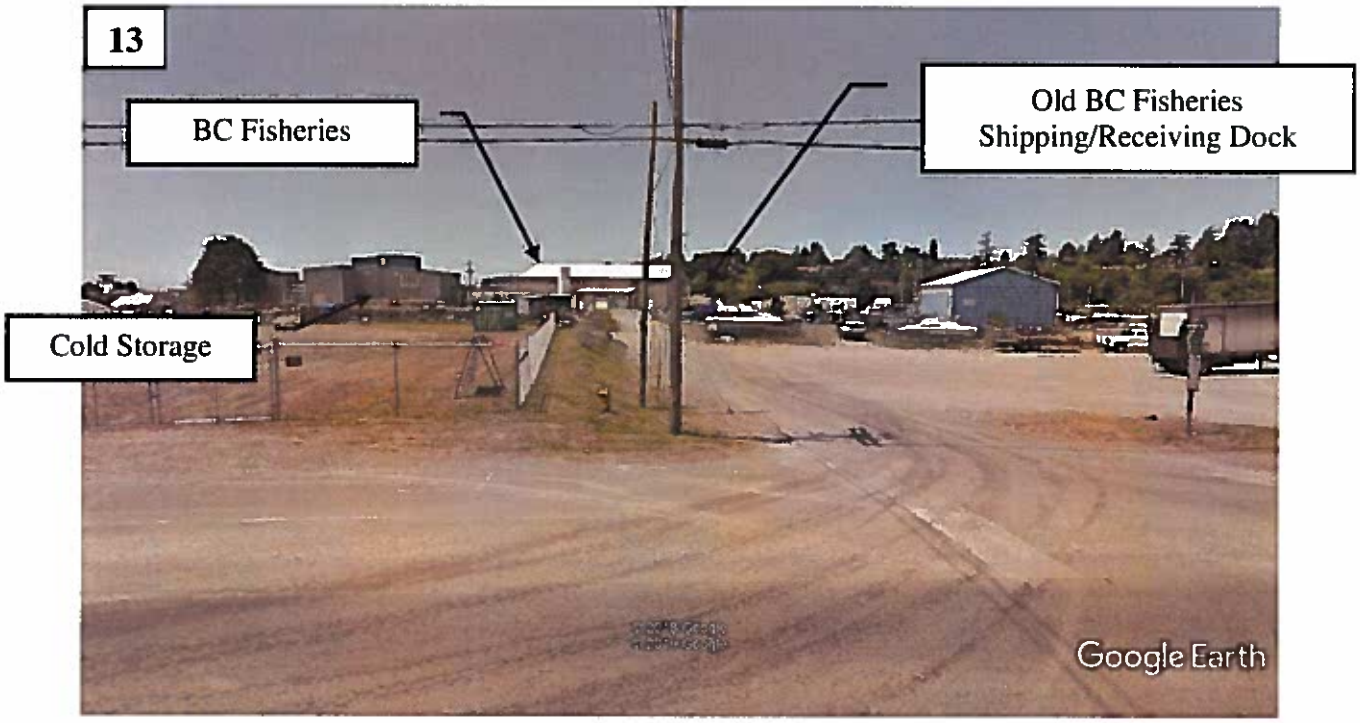


Looking Northwestward from Lower Harbor Road

EXHIBIT C



Looking Southwestward from Lower Harbor Road



Looking Westward from Lower Harbor Road

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