



MEMORANDUM

To: James Lee, P.E. – Whatcom County Public Works
From: John Olson, P.E. and John Rupp, P.E. – PND Engineers, Inc.
Date: November 18, 2014
Subject: Gooseberry Ferry Terminal - Preliminary Terminal Relocation Cost Estimate

James,

The Gooseberry Terminal of the Lummi Island Ferry System is undergoing preliminary concept planning for relocation due to future planned development of the current terminal location. The initial concept planning will consist of a preliminary cost estimate to replace the existing structure in a new location. The new location is anticipated to have a modified trestle arrangement to accommodate the future planned layout at the terminal site. Only elements from the trestle abutment to the offshore dolphins in the slip are included in the preliminary concept planning. Upland ferry loading operations are beyond the scope for this planning concept.

The existing terminal structure consists of six main elements: an abutment, trestle, transfer span, overhead support structure, wingwalls and dolphins. Concrete foundations form the abutment necessary to connect the trestle to the upland portion of the site. The existing trestle consists of a timber plank deck supported on timber stringers and caps, founded on timber piles. Timber curbs and handrails line the sides of the trestle. The transfer span is constructed of steel girders with asphalt concrete overlay, founded at the shore/hinged end on concrete cap and driven piles. The offshore end raises and lowers to accommodate all tide ranges. An overhead steel braced frame structure supports the offshore end of the transfer span. The frame structure houses the electrical and cable control systems required to raise and lower the transfer span. Cast-in-place concrete caps on driven steel pipe piles support the overhead frame structure. Steel piles and caps make up the wingwalls and dolphin systems. Fender piles are placed in front of backing piles in a 4-stage berthing system. The dolphins and wingwalls have been recently constructed and are in excellent condition. These materials could be reused in the new configuration, depending on construction phasing, for potential cost savings. However, this cost estimate is based on the use of all new materials, allowing for continuous ferry operations during new construction.

A cost estimate has been generated based on known available information for the terminal replacement planning concept. The replacement is anticipated to be the same in nature. Materials and construction of some elements will likely remain the same (transfer span, head frame, wingwalls and dolphins) however, appropriate alterations have been included for the trestle based on cost, constructability, industry standards, life span and conformance to ADA guidelines. The cost estimate assumes the trestle will have a precast concrete panel deck over steel girders resting on steel caps supported by steel piles. All materials are anticipated to be new. The wingwalls and dolphins were recently installed in their current location. These materials could be salvaged and reused in the new terminal location for cost savings to the project. However, this estimate assumes all new materials are used to allow continuous ferry operations during new

construction. Based on information provided from the county, the new terminal location is in deeper water and it is therefore assumed that no dredging will be required. A twenty percent increase in pile length has been included commensurate with the deeper terminal location. While standard lighting and electrical is included, upgrades to the terminal facility, such as lighting or ferry loading mechanisms are not included in this cost estimate.

Construction, design, surveying, geotechnical, permitting and construction administration estimates are all included in the estimate. Several unknowns are present pertaining to permitting. As the ferry terminal relocation is only part of a larger redevelopment effort, assumptions have been generated based upon best available information and are listed below:

- Federal permitting will be handled by the Tribe and its consultants.
- The Biological Evaluation/Assessment prepared by the Tribe and its consultants for the Federal permitting will be provided by the Tribe for use on state and local permitting.
- Biological surveys such as eelgrass and forage fish will be handled by the Tribe and its consultants and will be available for use on state and local permitting.
- Development of monitoring plans such as marine mammal and murrelet will be handled by the Tribe and its consultants and will be available for use on state and local permitting.
- No dredging will be required.
- Potential mitigation costs are unknown and are assumed to be covered in the contingency.
- Assuming partial funding through WSDOT Ferry Discretionary fund triggers Federal nexus with FHWA. Additional NEPA documentation services may be required beyond the Corps permit. These services are not included.
- Permitting costs do not include permit application fees.

No work related to demolition, reconstruction or modification of the haul pier to the west or the commercial dock to the east are included in the estimate.

Based upon all of the above noted items and assumptions, attached is a rough order of magnitude (ROM) cost estimate for the Gooseberry Ferry Terminal Relocation planning effort.

**Ferry Terminal Relocation
Planning Concept**

**Whatcom County
Gooseberry Ferry Terminal
ROM PROJECT COST ESTIMATES**

11/18/2014
PND Proj. #144014.01

Item	Description	Unit	Quantity	Unit Price	Amount
1	SITE MOBILIZATION AND DEMOBILIZATION				
	Mob & Demob (approx. 10% of items 2 - 9 only)	LS	All Req'd	\$ 530,200	\$ 530,200
		SITE MOBILIZATION AND DEMOBILIZATION SUBTOTAL =			\$ 530,200
2	DEMOLITION				
	Demolish Wingwalls	DAY	3	\$ 20,000	\$ 60,000
	Demolish Dolphins	DAY	4	\$ 20,000	\$ 80,000
	Demolish Existing Trestle, Transfer Span & Overhead Support Structure	DAY	10	\$ 20,000	\$ 200,000
	Disposal	TON	150	\$ 600	\$ 90,000
		DEMOLITION SUBTOTAL =			\$ 430,000
3	TRESTLE				
	Girders - W24x84 (Furnish)	TON	41	\$ 2,000	\$ 82,000
	Cap - Double HP12x84 (Furnish)	TON	6	\$ 2,000	\$ 12,000
	Piles - 24" diameter x 0.5" wall x 120' long (Furnish)	L.F.	2400	\$ 125	\$ 300,000
	Abutment - Concrete (Furnish)	C.Y.	12	\$ 200	\$ 3,000
	Decking Panels - 8" Precast (Furnish)	S.F.	5760	\$ 70	\$ 404,000
	Decking Shear Key (Furnish & Install)	C.Y.	25	\$ 900	\$ 23,000
	Decking Grout Pocket (Furnish & Install)	C.Y.	18	\$ 900	\$ 17,000
	Sidewalk - 4' Wide (Furnish & Install)	C.Y.	30	\$ 775	\$ 24,000
	Guardrail (Furnish & Install)	L.F.	720	\$ 150	\$ 108,000
	Abutment (Install)	EA.	1	\$ 5,000	\$ 5,000
	Piles (Install)	EA.	20	\$ 7,000	\$ 140,000
	Cap Splice (Install)	EA.	3	\$ 2,000	\$ 6,000
	Cap Setting (Install)	DAY	1	\$ 20,000	\$ 20,000
	Cap Weld - Vert (Install)	EA.	6	\$ 2,000	\$ 12,000
	Cap Weld - Batter (Install)	EA.	7	\$ 4,000	\$ 28,000
	Decking (Install)	DAY	3	\$ 10,000	\$ 30,000
	Girder (Install)	DAY	4	\$ 20,000	\$ 80,000
	Coatings (Furnish & Install)	L.S.	1	\$ 50,000	\$ 50,000
	Stormwater Collection System (Furnish & Install)	L.S.	1	\$ 200,000	\$ 200,000
		TRESTLE SUBTOTAL =			\$ 1,544,000
4	TRANSFER SPAN				
	Girders - W30x116 (Furnish)	TON	32	\$ 2,000	\$ 64,000
	End Beams - W24x84 (Furnish)	TON	2	\$ 2,000	\$ 4,000
	Intermediate Floor Beams - W14x22 (Furnish)	TON	2	\$ 2,000	\$ 4,000
	Orthotropic Floor Beams - HSS8x4x1/4 (Furnish)	TON	5	\$ 2,000	\$ 10,000
	Decking - 1/2" Plate (Furnish)	TON	17	\$ 2,000	\$ 34,000
	Guardrail (Furnish & Install)	L.F.	180	\$ 100	\$ 18,000
	Steel Framing (Fabrication)	TON	55	\$ 5,000	\$ 275,000
	Coatings (Furnish & Install)	L.S.	1	\$ 50,000	\$ 50,000
	Erection	L.S.	1	\$ 50,000	\$ 50,000
		TRANSFER SPAN SUBTOTAL =			\$ 509,000
5	OVERHEAD SUPPORT STRUCTURE				
	Columns - HSS12x12x1/2 (Furnish)	TON	11	\$ 2,000	\$ 22,000
	Diagonal Braces - L5x5x1/2 (Furnish)	TON	4	\$ 2,000	\$ 8,000
	Tower Top Beams - W16x36 (Furnish)	TON	2	\$ 2,000	\$ 4,000
	Equipment Support Beams - W16x36 (Furnish)	TON	3	\$ 2,000	\$ 6,000
	Hanger Support Beams - W18x46 (Furnish)	TON	2	\$ 2,000	\$ 4,000
	Guardrail (Furnish & Install)	TON	0.5	\$ 2,000	\$ 1,000
	Fabrication	TON	21	\$ 3,000	\$ 63,000
	Superstructure (Install)	DAY	4	\$ 20,000	\$ 80,000
	Control System - Controls & Hoists (Furnish & Install)	EA.	1	\$ 100,000	\$ 100,000
	Counter Weight Blocks (Furnish & Install)	TON	46	\$ 1,900	\$ 88,000
	Concrete Cap - 16x16 (Furnish & Install)	C.Y.	57	\$ 1,500	\$ 86,000
	Piles - 24" diameter x 0.5" wall x 120' long (Furnish)	L.F.	1,920	\$ 125	\$ 240,000
	Piles (Install)	EA.	16	\$ 7,000	\$ 112,000
		OVERHEAD SUPPORT STRUCTURE SUBTOTAL =			\$ 814,000



**Ferry Terminal Relocation
Planning Concept**

**Whatcom County
Gooseberry Ferry Terminal
ROM PROJECT COST ESTIMATES**

11/18/2014
PND Proj. #144014.01

Item	Description	Unit	Quantity	Unit Price	Amount
6 APRON					
	Plate - 1/2" (Furnish)	TON	3	\$ 2,000	\$ 6,000
	Plate (Install)	TON	3	\$ 2,000	\$ 6,000
	Misc. Steel (Furnish)	TON	2	\$ 2,000	\$ 4,000
	Fabrication	TON	8	\$ 5,000	\$ 40,000
	Rubber Flappers (Furnish & Install)	L.S.	1	\$ 120,000	\$ 120,000
	Hydraulics - Lifting and Hinging (Furnish & Install)	EA.	1	\$ 50,000	\$ 50,000
APRON SUBTOTAL =					\$ 226,000
7 WINGWALLS					
	Piles - Backing - 36" diameter x 0.75" wall x 140' long (Furnish)	L.F.	840	290	\$ 244,000
	Piles - Backing (Install)	EA.	6	\$ 8,000	\$ 48,000
	Piles - Fender - 12.75" diameter x 0.5" wall x 100' long (Furnish)	L.F.	1,600	\$ 70	\$ 112,000
	Piles - Fender (Install)	EA.	16	\$ 5,000	\$ 80,000
	HDPE Fender Sleeves (Furnish & Install)	EA.	16	\$ 1,500	\$ 24,000
	Caps (Furnish & Install)	EA.	2	\$ 75,000	\$ 150,000
WINGWALLS SUBTOTAL =					\$ 658,000
8 DOLPHINS					
	Piles - Backing - 30" diameter x 0.75" wall x 140' long (Furnish)	L.F.	1120	240	\$ 269,000
	Piles - Backing (Install)	EA.	8	\$ 8,000	\$ 64,000
	Piles - Fender - 12.75" diameter x 0.5" wall x 100' long (Furnish)	L.F.	2,800	\$ 70	\$ 196,000
	Piles - Fender (Install)	EA.	28	\$ 5,000	\$ 140,000
	HDPE Fender Sleeves (Furnish & Install)	EA.	28	\$ 1,500	\$ 42,000
	Caps (Furnish & Install)	EA.	4	\$ 40,000	\$ 160,000
DOLPHINS SUBTOTAL =					\$ 871,000
9 MISCELLANEOUS					
	Utilities, Lighting, Etc.	L.S.	All Req'd	\$ 250,000	\$ 250,000
MISCELLANEOUS SUBTOTAL =					\$ 250,000
SUBTOTAL CONSTRUCTION COST =					\$ 5,833,000
10 CONSTRUCTION CONTINGENCY					
	Construction Contingencies (approx. 30% of items 2 - 9 only)	L.S.	All Req'd	\$ 1,591,000	\$ 1,591,000
CONSTRUCTION CONTINGENCY SUBTOTAL =					\$ 1,591,000
11 PLANNING, PERMITTING, DESIGN AND IMPLEMENTATION					
	Engineering Design (approx. 5% Construction Cost)	L.S.	All Req'd		\$ 292,000
	Surveying (Topographic/Bathymetric & Land Survey)	L.S.	All Req'd		\$ 59,000
	Geotechnical Investigation (deep water boring, test pile program, sampling, etc.)	L.S.	All Req'd		\$ 205,000
	Permitting (Time and Materials based estimate)	L.S.	All Req'd		\$ 102,000
	Construction Admin and On-site Observation (approx. 5% Const. Cost)	L.S.	All Req'd		\$ 292,000
PLANNING, PERMITTING, DESIGN AND IMPLEMENTATION SUBTOTAL =					\$ 950,000
12 DESIGN CONTINGENCY					
	Permitting Contingency (approx. 30% of Permitting)	L.S.	All Req'd		\$ 31,000
DESIGN CONTINGENCY SUBTOTAL =					\$ 31,000
13 SALES TAX					
	Washington State Sales Tax (7.9% of Const. Cost + Const. Contingency)	L.S.	All Req'd		\$ 586,000
SALES TAX SUBTOTAL =					\$ 586,000
ROM PROJECT COST - WHATCOM COUNTY - GOOSEBERRY FERRY TERMINAL =					\$ 9,000,000