



GUEMES ISLAND FERRY REPLACEMENT Preliminary Vessel Cost Estimate

PREPARED FOR:  Skagit County Public Works Mount Vernon, Washington		BY: Jacob M. Gerlach, PE PROJECT ENGINEER	
 1201 WESTERN AVENUE, SUITE 200 SEATTLE, WASHINGTON 98101-2953 T 206.624.7850 GLOSTEN.COM		CHECKED: William L. Moon III, PE PROJECT MANAGER	
		APPROVED: Matthew S. Miller, PE PRINCIPAL-IN-CHARGE	
DOC: 17097.02-043-03	REV: -	FILE: 17097.02	DATE: 12 February 2021

References

1. *Guemes Island Ferry Replacement, Preliminary Design Report*, Glosten Inc., Report No. 17097.02-053-02.
2. *Guemes Island Ferry Replacement, General Arrangement*, Glosten Inc., Drawing No. 17097.02-070-02.
3. *28-Car Options Cost Estimate*, Glosten Inc., Project Memorandum 17097.01, 30 March 2018.
4. U.S. Bureau of Labor Statistics, <https://data.bls.gov/PDQWeb/pc>, September 24, 2020.
5. *Guemes Ferry Electric Shoreside Facilities and Terminal Improvements, Preliminary Cost Estimate*, Glosten Inc., Report No. 17097.02-043-04.
6. *Guemes Island Ferry Replacement, Preliminary Shoreside Cost Estimate*, Glosten Inc., Report No. 17097.02-043-04.

Summary

A capital cost estimate has been developed commensurate with the preliminary vessel design shown in References 1 and 2. The total construction cost is estimated to be between \$12.5 and \$15.5 million, with a nominal price of \$13.6 million. The low to high range considers a variable labor rate (representing shipyards across the United States) and a range of vessel electrical system costs.

Using appropriate line items for a direct comparison, the previous estimate (Reference 3) was \$12.3M. An explanation for the increase in the current nominal cost estimate to \$13.6M is provided in the Interpretation section below. Shore equipment and terminal costs are estimated in Reference 5.

Assumptions

The following metrics were used to develop the cost estimate:

- \$65 to \$85/hr shipyard labor rate – representing a national range.
- 70 hrs/LT production rate for steel.
- 300 hrs/LT production rate for aluminum.
- 20% plate wastage.
- 10% shape wastage.
- 15% material markup – to cover associated material shipping, storage, handling.
- 10% estimating allowance.
- 2% builders risk insurance and bonding.

- 4% non-Skagit County construction management.
- 0% tax for the vessel.

Cost Breakdown

Total construction cost is shown in Table 1. This includes a breakdown of the shipyard construction cost estimate showing the material, direct shipyard labor, and shipyard overhead and other miscellaneous costs.

Table 1 Shipyard construction cost estimate, with variable labor rate, cost x \$1000

Vessel Construction Total		15,518	13,557	12,530			
Outside Construction Management (4%)		597	521	482			
		Labor (hrs)	Material	High	Nominal	Low	Percent
Shipyard Contract Total				14,922	13,036	12,048	
Labor rate per hour				85	75	65	
Bonding and Risk Insurance		2%		293	256	236	
Material Markup (% of Materials)		15%		860	860	860	
Estimating Allowance (% of Subtotal)		10%		1,252	1,084	996	
Shipyard Contract Subtotal		68,064	5,732	12,517	10,837	9,956	
Shipyard Engineering & Services		18,367	683	2,245	2,061	1,877	19%
Structure		23,712	676	2,692	2,455	2,218	22%
Propulsion		600	781	832	826	820	8%
Electric Plant		3,868	2,451	3,780	2,741	2,502	26%
Command and Surveillance		2,220	300	489	467	444	4%
Auxiliary Systems		6,182	408	933	871	810	8%
Outfit & Furnishings		13,116	433	1,548	1,416	1,285	13%

Interpretation

While the above costs do not include an explicit contingency, the High cost estimate of \$15.5M could be considered an upper budgetary cost. It includes a high shipyard labor rate of \$85/hour plus high vessel electrical costs.

The previous cost estimates published in 2018 (Reference 3) showed variations of ferry size (32 and 28 car). They also included alternative charging solutions (termed Limited) that purposefully undersize the charging system to save cost but result in a ferry that would be delayed often due to weather and higher tidal currents. The ferry presented herein is fully capable of operating 95% of the time on electric power alone. With the supplemental auxiliary generator, it will be able to maintain schedule on greater than 99% of all runs.

The shipyard contract cost has increased by \$1.3M. 40% of the increased cost is attributable to increasing the labor rate from \$70 to \$75/hr¹ and slightly increasing the estimated material markup. Much of the remaining increase is due to better estimates of the vessel's electrical system cost informed by the RFI process.

¹ The U.S. Bureau of Labor Statistics reports that the *Non-Military, Self-Propelled Ships, New Construction* producer price index (Reference 4) shows a 6% increase since the 2018 cost memo (Reference 3) was prepared.