



Agenda Item No. (3)

To: Building and Operating Committee/Committee of the Whole
Meeting of June 26, 2025

From: John Gray, Director of Engineering and Maintenance, Ferry Division
Michael Hoffman, Deputy General Manager, Ferry Division
Denis J. Mulligan, General Manager

Subject: **AUTHORIZE AN AMENDMENT TO CONTRACT NO. 2022-F-012,
ENGINEERING AND DETAILED DESIGN SERVICES FOR THE
CONSTRUCTION OF A NEW BUILD FERRY, WITH AURORA MARINE
DESIGN**

Recommendation

The Building and Operating Committee recommends that the Board of Directors authorize an amendment to Contract No. 2022-F-012, *Engineering and Detailed Design Services for the Construction of a New Build Ferry*, with Aurora Marine Design of San Diego, CA, to increase the total not-to-exceed amount to \$3,850,000.00.

This matter will be presented to the Board of Directors at its June 27, 2025, meeting for appropriate action.

Summary

In August 2022, the Golden Gate Bridge, Highway and Transportation District's (District) Board of Directors (Board) approved award of Contract No. 2022-F-012 (Contract) to Aurora Marine Design (Aurora) for engineering and detailed design services associated with the construction of a new ferry vessel. Aurora was tasked with developing the full scope of work, including providing all technical specifications, drawings, documents, and calculations, necessary for a shipyard to build the vessel. In particular, the scope of work included driveline analysis, development of a general arrangement, preliminary engineering for structural and regulatory compliance, and detailed construction specifications.

Historically, the District did not use design, bid, build contracts in its ferry shipyard contracts, resulting in vessels where the general arrangement (engine and gearbox type and location) was specified in the contract but installations were left to the shipyards, resulting in sister ships having different systems, valves, pipe runs, and parts (even light fixtures).

While the District anticipated that the design would ultimately support additional vessels, the initial Contract did not anticipate production-level engineering services required for a multi-vessel fleet. As the design matured and grant funding for a second vessel was secured, the District determined that additional effort would be needed to provide the shipyard with the technical information necessary to perform the work and to accommodate production efficiencies, regulatory compliance, and compatibility with multiple shipyard production approaches.

The more detailed production-level engineering will result in ferry vessels that are functionally consistent and highly uniform, even when constructed at different shipyards. This approach will significantly streamline future maintenance activities and simplify spare parts management across the fleet.

This proposed amendment adds production-level engineering services to the scope of work that are necessary to prepare the design for multiple vessel construction. These additional services include updates to the 3D model, final contract drawing development, regulatory approvals, and technical detailing in alignment with selected shipyard practices. This work is essential to ensure cost effective delivery, schedule adherence, and minimization of construction and commissioning risks.

In addition, while propulsion engineering and regulatory compliance were part of the Contract's original scope, the level of effort ultimately required to support compliance with the California Air Resources Board's (CARB) Commercial Harbor Craft (CHC) amended regulation that went into effect on January 1, 2023, significantly exceeded initial expectations.

At the time the Contract was awarded, no EPA-certified or CARB-verified propulsion system existed for high-speed ferry service. District staff and Aurora worked closely with CARB and industry stakeholders to support the development and certification of a compliant solution. This included significant coordination to evaluate, select, and integrate the MAN D2862LE48B (MAN) engine and emissions package, the first OEM-integrated Tier IV and Diesel Particulate Filter system certified by the EPA.

Importantly, as the project progressed, the complexity of the selected six-engine propulsion package, the novel hybrid-electric power generation system, and the need for variable boarding configurations compatible with multiple terminals introduced unique design challenges. Aurora's role as the original designer, having developed the vessel's integrated 3D model, regulatory submittals, and technical architecture, makes them uniquely suited to complete the work. Their continued involvement ensures consistency in design execution and supports the integrity, safety, and constructability of the vessels.

Finally, this proposed amendment also includes funds necessary to compensate Aurora for the design licensing fee associated with the second vessel. A more detailed description of the components of this proposed amendment follows.

Propulsion Engineering and Regulatory Compliance Support

As part of the design development process, the District worked closely with Aurora and actively engaged with CARB through its Commercial Harbor Craft Technical Working Group. This collaboration focused on evaluating propulsion technologies capable of meeting CARB's newly adopted emission standards, which required EPA Tier IV engines with verified after-treatment systems.

At the time, no propulsion solution existed that met these requirements and was compatible with high-speed passenger ferry operations. The District contributed performance data requirements and operational insights to help shape a realistic compliance path for its vessels and for the broader industry.

This effort ultimately supported the certification of the MAN Diesel engine and emissions package, the first OEM-integrated solution compliant with the amended regulation. The MAN engine was not only suitable but proved to be the best match for the District's service profile, offering the required power density, matching size and weight constraints, and providing redundancy to support service reliability.

The engineering work needed to evaluate, validate, and incorporate this propulsion system into the vessel design was extensive. This proposed amendment accounts for the unplanned level of effort dedicated to these essential technical services and reflects the District's proactive approach to meeting ambitious regulatory goals by demanding early-stage innovation from engine manufacturers and working with our industry partners to achieve the necessary regulatory certifications.

Production-Level Engineering

The Liwa-class design represents a significant evolution in the District's fleet, integrating advanced propulsion technology, terminal compatibility features, and regulatory compliance considerations into a single vessel platform. The process of translating the vessel design into a fully buildable, production-ready package has proven more complex than originally anticipated, particularly in the context of the District's intent to use this vessel class as the foundation for future fleet replacement.

Production-level engineering is the phase in which the conceptual and regulatory design work is refined to a level that supports efficient fabrication, quality assurance, and consistent performance across multiple builds. This requires tailoring the design to align with shipyard infrastructure, fabrication tooling, and assembly workflows, all of which vary by facility. As the District prepares to competitively procure the first two vessels in this class, the need for a mature, modular, and constructible design is critical to ensuring the shipyard has the technical information necessary to perform the work, and to achieve schedule certainty and repeatability in production.

The proposed contract amendment allows Aurora to continue its role through this critical transition by finalizing the 3D model, updating the structural and systems drawings, integrating modular construction strategies, and compiling a complete, coordinated construction package. These

services are essential for maintaining alignment between design intent and production realities, especially given the vessel's innovative electrical power generation and multi-terminal boarding requirements. In addition to supporting builder compatibility, this phase also consolidates regulatory approvals, including structural assessments, stability documentation, and CARB compliance, into a unified package that will guide construction, inspection, and commissioning.

Aurora's direct knowledge of the propulsion system architecture, regulatory commitments, and structural design decisions uniquely positions them to deliver a shipyard-ready product that meets the District's technical, operational, and compliance goals. Aurora submitted a high-level proposal to the District for the additional production-level engineering work and District staff determined the proposed rates and estimated costs to be fair and reasonable.

Design Licensing Fees for Additional Vessels

Under the terms of the Contract, Aurora charges the District a design license fee for each additional vessel that uses the Liwa-class design. This proposed amendment includes the design licensing fee of \$350,000 associated with the second vessel, which is proceeding under the fully funded *M.V. Del Norte* Replacement Project. Licensing fees for future vessels will be addressed as additional projects are initiated and funding becomes available.

A Disadvantaged Business Enterprise (DBE) Project Goal of 1.55% is established for this Contract and will apply to the additional scope associated with this proposed amendment.

Fiscal Impact

The total cost of Aurora's design services for the two vessels, including this amendment, represents about 6% of the cost of building the two ferry boats.

This contract amendment will be funded through two capital projects, as shown in Table One. Project #1940, *Purchase New Vessel*, is included in the FY 24/25 Ferry Division Capital Budget in the amount of \$30,000,000 and is funded as follows: \$13,500,000 (45%) State of California Low Carbon Transit Operations Program (LCTOP) and State of Good Repair (SGR), \$11,100,000 (37%) Federal Highway Administration (FHWA) funds transferred to the Federal Transit Administration (FTA), and \$5,400,000 (18%) District toll revenues. Project #2445, *Del Norte Replacement*, is included in FY 24/25 Ferry Division Capital Budget in the amount of \$29,492,000, funded with \$23,593,600 (80%) FTA funds and \$5,898,400 (20%) District toll revenues. Sufficient funds are available in the project budgets to support this contract amendment.

Table One – Contract 2022-F-012

	Project 1940	Project 2445	Total
Base Contract Value	\$1,943,173.50	-	\$1,943,173.50
This Amendment	\$1,523,159.08	\$378,301.89	\$1,901,460.97
Total	\$3,466,332.58	\$378,301.89	\$3,844,634.47