



**COMMISSION  
AGENDA MEMORANDUM**

**Item No.** 6f

**ACTION ITEM**

**Date of Meeting** December 10, 2019

**DATE:** November 11, 2019

**TO:** Stephen P. Metruck, Executive Director

**FROM:** Kenneth R. Lyles, Director, Maritime Operations and Security  
Mark Longridge, Capital Project Manager, Seaport Project Management

**SUBJECT:** Authorization for design and permitting of fender system improvements at Terminal 91 Berths K, L & M (CIP #C801097)

**Amount of this request:** \$800,000

**Total estimated project cost:** \$6,600,000

**ACTION REQUESTED**

Request Commission authorization for the Executive Director to complete design and permitting of approximately 1,120 feet of replacement fender system at Terminal 91 in the amount of \$800,000 of a total preliminary estimated project cost of \$6,600,000.

**EXECUTIVE SUMMARY**

This project will remove and replace the current timber fender system of berths K, L & M in the Northwest corner of Terminal 91. Replacing the fender system with a stronger, more environmentally friendly steel system will allow the berth to continue to service a variety of vessel types and sizes, extending utilization of the pier for another 30 plus years and fostering tenant retention and its related employment.

The berths at the northwest corner of Terminal 91 are used primarily for fishing vessels, but also service research vessels, tugs and barges. The current fender system was installed over 20 years ago and has been repaired several times since then. It is now reaching the end of its service life. Approximately 30% of the timber piles are severely deteriorated or broken and the loading capacity of the system is becoming significantly compromised.

**JUSTIFICATION**

Replacement of this essential protective system will allow continued operation of fishing vessel, barge and other moorage activity in this berth area. The project objective is to fully replace the deteriorating fender system at the northwest corner of Terminal 91, keeping these berths in service and avoiding damage to the pier structure.

Throughout the last several years, the Port has been replacing aging treated timber systems at many of our facilities as they reach the end of their life and replacing them with steel systems

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that are longer lasting, more environmentally friendly and stronger than the timber systems they replace.

The current fender pile system at these berths consists of ammoniacal copper zinc arsenate (ACZA) treated piles, chocks and walers in a conventional arrangement typical of timber fender systems. While environmentally superior to traditional creosote piles used in the past, these piles have a relatively short service life under harsh conditions. Several of the piles currently are broken, rotted or have significant section loss around the waterline.

The designated use of these berths by industrial customers contributes to accelerated wear of the current timber system due to chafing and abrasion of the pile faces. Providing a stronger wear face of high density polyethylene (HDPE or similar) will also be a design priority to ensure a long life for the new system.

All in-water work for the installation of the new piles must be completed within the permitted fish window between August 1<sup>st</sup> and February 15<sup>th</sup> of each year, while above water work may be completed after this time (upper bullrail work etc.). This construction window falls during some of the busiest time for these berths, when fishing vessels are in port for refitting and maintenance, and it is expected that operational constraints may further tighten the time the job site is available for construction. The project team will work closely with operations staff to minimize any impacts to both the construction and operations schedules.

### ***Diversity in Contracting***

The project team will coordinate with the Diversity in Contracting Department to determine appropriate WMBE aspirational goals for this project.

## **DETAILS**

### ***Scope of Work***

Overall project scope would include the replacement of approximately 1,120 linear feet of old and deteriorated fender pile system, along with the remaining bullrail and brow at the northwest corner of Pier 91 with a new steel fender system to facilitate vessel and barge moorage for existing tariff and Preferential Use Agreement tenants.

Design and permitting scope under this authorization will include preparation of plans, specifications and estimates for completing this work, and coordination of all applicable permits required for in-water work to repair these sites.

### ***Schedule***

Permitting and operational concerns will have a significant impact on this project schedule. While it is possible that this work might be performed under the Port's existing programmatic permit for maintenance and pile replacement this largely depends on the design spacing (and resultant number) of the piles. This cannot be determined until design has begun in earnest. Also, the

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expected intermittent maintenance closures of the Hiram Chittenden locks in late 2020 is expected to place additional demand on these berths for the upcoming season and may preclude the closure of the berths for construction during this time.

Due to these factors for planning purposes at this stage of design the more conservative schedule assumptions have been used, however staff will look for all opportunities to complete this work earlier if possible.

*Activity*

Commission design authorization	Q4 2019
Design start	Q4 2019
Commission construction authorization	Q1 2021
Construction start	Q3 2021
In-use date	Q1 2022

**Cost Breakdown**

	This Request	Total Project
Design & Permitting	\$800,000	\$850,000
Construction	\$0	\$5,750,000
<b>Total</b>	<b>\$800,000</b>	<b>\$6,600,000</b>

**ALTERNATIVES AND IMPLICATIONS CONSIDERED**

**Alternative 1** – Defer replacement of fender system and continue patching and maintaining current timber system.

Cost Implications: Expected costs would be approximately \$200-400K per year to spot replace the currently failed piles and keep the dock in service. This would not include any potential damage to the berth structure which would be considerably more expensive to repair.

Pros:

- (1) Lower initial capital cost.

Cons:

- (2) Significant risk to the structure if kept in use.
- (3) Spot replacement of piles is significantly less efficient and therefore more costly per pile than system replacement.
- (4) System will continue to deteriorate, replacement piles installed under this scenario would have an estimated life of 10-15 years.
- (5) Construction costs continue to escalate so replacement would likely cost more in the future, and still may require shutdowns of the berth in the meantime.

This is not the recommended alternative.

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**Alternative 2** – Full replacement of the current deteriorated system with a similar ACZA (Ammoniacal Copper Zinc Arsenate) treated timber system similar to the current installation.

Cost Implications: \$4,300,000 (initial planning level estimate)

Pros:

- (1) Lower initial capital cost than a steel replacement system.
- (2) Would provide better protection of the pier than the existing failing system.

Cons:

- (1) ACZA piles would have an expected life of 10-15 years based on current performance and provide a lower level of impact protection compared to a steel system.
- (2) Higher costs over the life of the system and more operational disruptions due to more frequent construction cycles.

This is not the recommended alternative.

**Alternative 3** – Full replacement of the current deteriorated system with a steel system similar to those previously installed around the Port.

Cost Implications: \$6,600,000 (initial planning level estimate)

Pros:

- (1) Robust, durable proven system currently in use at several sites around the Port.
- (2) Longer life expectancy than other alternatives (approximately 2-3 times as durable)
- (3) Superior design. Efficient welded construction with all wear surfaces protected. High recycled content in both the steel and plastics used.

Cons:

- (1) Higher initial capital cost than timber alternative

***This is the recommended alternative.***

**FINANCIAL IMPLICATIONS**

<b><i>Cost Estimate/Authorization Summary</i></b>	Capital	Expense	Total
<b>COST ESTIMATE</b>			
Original estimate	\$6,600,000	\$0	\$6,600,000
<b>AUTHORIZATION</b>			
Previous authorizations	\$50,000	0	\$50,000
Current request for authorization	\$800,000	0	\$800,000
Total authorizations, including this request	\$850,000	0	\$850,000
Remaining amount to be authorized	\$5,750,000	\$0	\$5,750,000

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***Annual Budget Status and Source of Funds***

This project has been included in the 2020 Capital Plan under CIP C801097 for a total project cost of \$6,600,000.

This project will be funded by the General Fund.

***Financial Analysis and Summary***

Project cost for analysis	\$6,600,000
Business Unit (BU)	Fishing and Commercial Maritime Operations and Security
Effect on business performance (NOI after depreciation)	This project will preserve existing moorage and is not expected to generate additional revenue. Annual depreciation expense is estimated to increase by approximately \$220,000 based on an expected useful life of 30 years.
IRR/NPV (if relevant)	N/A
CPE Impact	N/A

***Future Revenues and Expenses (Total cost of ownership)***

While a treated timber system would have a lower initial capital cost, it also has a significantly shorter service life (10-15 years, vs. 30-50 years for a steel system). Conservatively, this results in the timber option having a significantly higher life cycle cost as it would need to be replaced twice as often.

Similarly, the cost savings of keeping the current system operational would likely present no long-term savings even with discounting the risk of a potential catastrophic failure; the system will still be in need of replacement in a few years and require capital outlay at that time. Balancing the deferral of these costs against the likely need for more costly repairs due to vessel damage is not recommended.

**ATTACHMENTS TO THIS REQUEST**

- (1) Presentation slides

**PREVIOUS COMMISSION ACTIONS OR BRIEFINGS**

None