



State of Vermont

Highway Division

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Agency of Transportation

September 4, 2015

Ms. Dale Arango
Lake Champlain Transportation Co.
King Street Dock
Burlington, VT 05401

RE: Shelburne LCFD(1) Request for Public Interest Finding

Dear Ms. Arango:

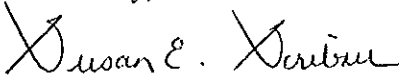
We are in receipt of material forwarded on Lake Champlain Transportation Company's behalf by Bourne Consulting Engineering in which a request for a positive Public Interest Finding for use of proprietary products on the subject project was made. Considering the information that was provided, our findings are as follows:

Vessel Hauling Chain System and Roller System: The project scope is to renovate an existing dry dock marine maintenance facility. The current dry dock system owned by the Lake Champlain Transportation Co. (LCT) is considered to be a marine railway and was originally built by Crandall Dry Dock Engineering in 1929. This is the only dry dock system on Lake Champlain that is capable of hauling out LCT vehicle ferry vessels for United States Coast Guard hull inspections for required vessel certification and for all below waterline maintenance. There is a need for synchronization of the vessel hauling system to the original design and construction components. Crandall Dry Dock Engineering historically and currently provides certification that states that the railway is safe to operate and establishes the safe operation limits and capacity of the railway; this certification will continue to be needed to allow the railway's continued use. The requested proprietary products would be supplied by Crandall Dry Dock Engineering; use of other possible products was investigated but was found to be cost prohibitive. Considering these facts, supported by additional documentation, I have determined that use of these proprietary products has been shown to be cost effective, in part due to being needed for synchronization with existing products.

As discussed, the manufacturer must provide certifications that the requested products are in full compliance with required Buy America Provisions in order for the costs to be eligible for federal reimbursement.

Please let me know if you have any questions or need additional information.

Sincerely,

Handwritten signature of Susan E. Scribner in cursive script.

Susan E. Scribner
Director, Municipal Assistance Bureau
Highway Division

cc: Tina Bohl, Project Manager
Mr. Mathew Hake, Division Administrator, FHWA
Mladin Gagulic, Materials & Certification, Construction & Materials Bureau

**Vermont Agency of Transportation
Public Interest Finding Related to Materials Procurement for a Project**

The federal regulation detailed in 23CFR Part 635.411 provides specific conditions under which a proprietary item, or reduced competition may be authorized. This form contains attachments that document the necessary facts, conditions and citation to authorize a Public Interest Finding.

This project, Shelburne LCFD(1), located at Lake Champlain Transportation Co. facilities in the Town of Shelburne is intended to provide for safe and efficient transportation. In the course of the project development, the designers have specified Crandall Dry Dock Engineering to fulfill a requirement for the vessel hauling chain system and roller system to complete the project and meet the project's intention. Documentation supporting this "Finding" is attached.

Despite responsible efforts to identify the most competitive material to perform this function, the Agency through its Project and Program Managers has found that (check appropriate box):

- there is only one item available that can fulfill the necessary function required for the project (Category A); or
- the proprietary product is necessary for synchronization with other adjacent resources or existing facilities (Category B); or
- the proprietary product has been incorporated for research or experimental evaluation in relatively short sections of road (Category C); or
- the proprietary product is shown to be cost effective (Category D).

Or

- the material being specified was approved on a prior VDPIF. That VDPIF is valid for this project as it is for municipal, regional or statewide systems that require integration or synchronization. It was approved on (fill in date) and has a sunset date of (fill in date).

These findings have been made in accordance with Agency practices, including documentation of the underlying facts compelling the Public Interest Finding.

Recommended by: Andrew Bell, Project Manager Date: 9/4/2015
(signature)

Approved by: Susan E. Quinn, Program Manager Date: 9/4/2015
(signature)

FHWA's approval required: Yes No

FHWA _____ Date: _____
(signature, if FHWA approval is required)

cc: FHWA Division Administrator
Director Program Development
Construction and Materials Bureau, Highway Division
~~Contract Administration Section~~

Lake Champlain Transportation Company

Marine Railway Reconstruction

Crandall Dry Dock Engineering Certification Request

Project Number: **Shelburne LCDF (1)**

Purpose: A request is being made to allow the use of Crandall Dry Dock Engineers, Inc. to be the sole source for critical elements of the Marine Railway Construction at the Lake Champlain Transportation Companies shipyard in Shelburne, VT.

Summary

The Lake Champlain Transportation Company (LCT) has received funding through the Federal Ferry Boat Program to renovate an existing dry dock marine maintenance facility at 4650 Harbor Road in Shelburne, Vermont. The funding is being administered by the Vermont Agency of Transportation (VTrans).

The dry dock owned by LCT is a marine railway built by Crandall Dry Dock Engineering in 1929. It has a 1000 short ton lifting capacity and is currently used to haul out LCT vehicle ferry vessels for United States Coast Guard hull inspection for required vessel certification and for all below waterline maintenance. This is the only dry dock on Lake Champlain large enough to haul these boats. Given the dry dock's age of 84 years, there is a need for overhaul in 3 major areas – the track, the cradle runner including rollers, and the chain. For a more detailed description refer to "Lake Champlain Transportation Co. Preliminary Dry Dock Overhaul Plan, Shelburne LCDF(1), September 10, 2014" which is attached.

Project Description

The Lake Champlain Transportation Company (LCT) is performing major reconstruction of its unique ship lift system used for dry docking vehicle ferries that cross Lake Champlain. The dry dock system (marine railway) is of a unique design having been designed and constructed in 1929 by Crandall Dry Dock Engineers who formally developed this type of ship lift system and have been performing these services since starting in 1854. Crandall Dry Dock (CDD) marine railways have been install all around the world and continue to provide ship lifts for certification and maintenance for vessels up to 5,000 long ton.

This dry dock is critical to meeting the transportation needs provided by LCT. The marine railway has been in continuous use since 1929 providing dry docking of Lake Champlain ferries. The dry docking of the vehicle ferries is required by the USCG in order to maintain the operational certifications of the vessels and therefore the continuation of the transportation link between Vermont and New York at three locations.

Certification for Purchase of Marine Railway Components by Crandall Dry Dock Engineers

Extent and Period of Applicability

Specific Components requested to be included relate to the ship and cradle hauling mechanism including hauling machine, gears, chains, sheaves, cradle roller system and associated hardware used by CDD including joining shackles, links, connectors and pins. These components generally have very long lives. The specific components are limited to the following:

- Vessel hauling chain system: Anticipate that life of replacement chain will last 75+ years. The existing chain, sheaves, shackles, etc. being replaced under this project have not been replaced since construction in 1929.
- Roller System: This system allows the cradle to ride up and down the track with minimal frictional resistance. This also has a long operation life, estimated at 40+ years, and therefore its replacement occurs very infrequently.

The above, therefore, represents the limit of the request applicability and provides the anticipated period of applicability for each of the specific components

The Marine Railway does consist of many other components including:

- 600 feet of timber and concrete track foundation that runs above and underwater;
- Cradle foundation including built up trusses and runners;
- Cradle deck with bilge and keel blocking
- Cradle uprights and cat walk
- Hauling house and foundation

The above components are not part of the unique Crandall Dry Dock components and no special consideration is being sought for these elements. Modifications, upgrade and replacement of these components will take place as part of the normal public bidding process.

Basis of Decision

The decision to request the certification is the need to meet the synchronization of the vessel hauling system to the original design and construction components. Crandall Dry Dock Engineers installed their specific design to maintain proper operation and certification of the system for the continued safe usage for vessel haul out.

Crandall Dry Dock Engineers have had continuous oversight and input on the operation and maintenance of the Marine Railway since its construction. They have historically and currently provide a certification that states that the railway is safe to operate and establishes the safe operation limits and capacity of the railway. Crandall will need to continue to provide this certification to allow the railway's continued use.

Description of Public Benefit

The shipyard and specifically the marine railway is the only place on Lake Champlain where vessels the size of the LCTC cross-lake vehicle ferries can be dry docked. Dry docking of these ferries is required by USCG regulations as well as the vessels do require periodic maintenance requiring them to be pulled out of the water.

As such, the marine railway is directly related to maintaining the existing cross-lake vehicle ferry system at three locations. A summary of these crossings and impacts are as follows:

<u>Location</u>	<u>Vehicles/Year</u>	<u>Alternative Route Distance</u>
Grand Island to Plattsburgh	902,712	40 additional miles
Burlington to Port Kent	17,173	86 additional miles
Charlotte to Essex	143,215	51 additional miles

As can be seen from the above numbers, the ferry routes offer significant public benefit while the alternative routes would require significant additional time for travel. Also the use of the ferry reduces the level of traffic on these alternate routes especially during peak summer/fall tourist seasons. While not quantified, the loss of the ferry service would also result in an economic impact to the specific areas that now rely on the ferry service.

Evaluation of Other Possible Products

The use of other possible systems (products) results in consideration of other dry dock systems and would require the reconstruction of the facility to incorporate these type lift systems. This would include substantial infrastructure cost that is not required in maintaining the existing marine railway system. All systems require periodic independent inspection for certification of capacity and operation. While some of the systems below have ownership by foreign companies, the construction would be in the US.

Type of alternative systems includes:

Graven Dock System - Creation of a basin within the shoreline with walls and an end gate that can be closed allowing the basin to be pumped out.

- Normally associated with large to very large vessels up to 75,000 tons or more.
- Has very high construction cost to create perimeter walls, end gate and pumping system
- Has high operating cost to pump out the basin and to maintain the pumping as most do leak while vessel being worked on.
- High maintenance cost for end gate and pumping system
- Estimated cost would be \$8 to 10 million to construct a equivalent size dry dock but would have significant regulatory approval reviews.

Floating Dry System - consists normally of a large steel U-shape structure that is lowered into water and pumped out to raise the dock and vessel.

- Normally associated with small to large vessels with capacities from 500 to up to 60,000 tons
- System has very high construction cost to build steel U-shaped system with controls and pumping system. Also requires significant depth of water which typically requires dredging. Would need to consider low lake elevation conditions.
- Has high operating cost to pump out compartments to raise and lower dock system. Also to maintain the pumps for leaks while vessel being worked on.
- High maintenance cost system including steel corrosion protection as well as control and pumping system. Also would require annual freeze protection of dock and interior mechanical elements.
- Estimated cost would be \$10 to 12 million to construct a equivalent size dock but would have significant regulatory approval reviews associated with dredging and mooring.

Syncro-lift System - consists of a large platform that is raised and lowered by cable hoists.

- Normally associated with small to medium size vessels. System works well for yards with upland transfer systems to allow multiple vessel maintenance.
- System has very high construction cost due to major structural platform use to raise and lower vessel and the numerous perimeter hoists along each side. Has complex control system to equalize loads. Also requires significant additional depth of water to account for platform structural depth which typically requires dredging.
- Has high operating cost for electrical power to lift the platform and vessel.

Bourne Consulting Engineering

- Results in the same issue of future synchronization issues in the need to purchase the original manufacturers products for maintenance and upgrades of the dry dock system.
- High maintenance cost system cable wear and replacement.
- Construction cost of a new Syncro-lift system is unknown at this time but estimated to be similar to that of the Travel-lift system below at \$10 million or more including site infrastructure improvements.

Travel Lift System - consists of a motorized steel frame with cables and slings to lift vessels.

- Normally associated with marinas and small vessels but do have capacities up to 1,200 ton.
- This system is likely to be the closest to matching the marine railway in terms of simplicity and ease of maintenance and operation.
- Results in the same issue of future synchronization issues in the need to purchase the original manufacturers products for maintenance and upgrades of the dry dock system.
- Estimated budget cost for a 1,000 ton system would be \$10 million including site preparation costs.

New Crandall Marine Railway - system utilizes the natural shoreline slope to construct a rail system on which a vessel cradle can run in and out on.

- Normally associated with small to medium vessels up to 5,000 tons
- System has been utilized since 1860 and requires less energy to raise and lower the vessel.
- Due to mechanical nature of hauling system chain, chain gear, sheaves, etc are required to be constructed within tight tolerances to prevent failure within hauling system.
- In contrast to the above, the construction of a completely new 1,000 ton Crandall marine railway would be estimated at \$4.0 to \$6.0 million.

The cost comparison of these alternatives can be seen below:

Lake Champlain Transit Company
Marine Railway Reconstruction
Shelburne, VT

June 1, 2015

Alternative Dry Dock Systems

Item	Existing Reconstruction	Graven Dock	Floating Dry Dock	Syncro-Lift	Travel lift	New Marine Railway
Mobilization	50,000	150,000	100,000	100,000	75,000	75,000
Demolition and site preparation	20,000	150,000	100,000	100,000	100,000	100,000
Dredging/Excavation	-	1,200,000	1,000,000	900,000	750,000	100,000
Foundation	110,000	4,000,000	4,000,000	800,000	500,000	1,000,000
Major structural elements	545,000	5,000,000	2,500,000	7,500,000	8,000,000	1,750,000
Hardware	380,000					475,000
Mechanical Control systems	-	2,000,000	2,000,000	1,000,000	Included	250,000
Engineering / Regulatory Approvals	200,000	1,500,000	1,500,000	1,000,000	400,000	500,000
	<u>1,305,000</u>	<u>14,000,000</u>	<u>11,200,000</u>	<u>11,400,000</u>	<u>9,825,000</u>	<u>4,250,000</u>
Contingency - 20%	261,000	2,800,000	2,240,000	2,280,000	1,965,000	850,000
Estimated Cost of Construction	\$ 1,566,000	\$ 16,800,000	\$ 13,440,000	\$ 13,680,000	\$ 11,790,000	\$ 5,100,000

Estimate of Additional Cost

Specific to this issue is the specific certification that Crandall Dry Dock does for all their materials in meeting the operation constraints for use on the railway. Past experience has found that non- original equipment manufacturer (OEM) supplied parts result in premature failure and sometimes damage to the dry dock system.

The additional cost for requiring the replacement materials be provided by the OEM, which is Crandall, is more directly based on the need to meet the performance specifications required by Crandall.

While a quote in the industry may result in pricing that may be as low as 30 percent from the final price it is generally associated with materials that cannot meet Crandall's specifications. Where suppliers have worked with Crandall, their premium is more like 10 to 15 percent higher due to the high specification and inspection standards Crandall imposes.

It should be recognized that the Crandall marine railway is a unique system and has unique operational requirements.

The cost of Crandall Dry Dock supplied items are as follows:

1. Roller Frame Assemblies

CNC Drilled, Sandblasted and Painted. The roller frames fully assembled, including hardware; connectors, toggle pins, bushings, rails, rollers and zincs

\$ 249,680

2. Hauling Chain and Hardware

Hauling Chains, Backing Chains, Hauling Shackle, Swivels and Special Crandall Joining Shackles for complete assembly, including Chain Claw and complete Underwater Sheave Assemblies. In addition, provided chain slides as required for the new track only. (underwater sheave cases and chain slides will be installed on the prefabricated track.

\$ 120.940