



THE STATE
of **ALASKA**
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Department of Transportation and Public Facilities

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Subject: Buy America Waiver Request

The Alaska Department of Transportation and Public Facilities – Southcoast Region is submitting a Buy America waiver request in accordance with 23 CFR 635.410 to permit the use of steel or iron products not manufactured in the United States. This letter addresses three components of the Gustavus Ferry Terminal Improvements Project where products containing foreign steel or steel of unknown origin are required.

All other steel or iron products that are procured through the construction contract and manufactured specifically for this project will comply with Buy America policies. However, in the few instances described here the Buy America requirements are inconsistent with the public interest or suitable, domestic products are not readily available.

Project Identification: Alaska Marine Highway System (AMHS)
Gustavus Ferry Terminal Improvements
AKSAS No. 68128, Federal Project No. 0003182

Project Description:

The marine terminal serving Gustavus, Alaska is located on the north shore of Icy Strait, near the entrance to Glacier Bay National Park. It is a multiple use facility that provides public transportation via AMHS ferry service plus freight and fuel transfer operations through private carriers. The terminal consists of an approach trestle, a movable transfer bridge, mooring and fendering structures, and a freight dock. The proposed terminal improvements project will realign a portion of the approach leading to the transfer bridge and modify the bridge substructure by replacing the existing pontoon float with a hoist-operated lift system. The project is scheduled for obligation in July, 2017.

Project Cost:

This is a federal-aid highway project with total estimated cost of \$6,500,000.00.

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Waiver Items:

The primary components of the bridge lift system are two high-capacity wire rope hoists, hanger rod supports and an industrial computer controller that manages the bridge positioning process. Not all of the products incorporated in the proposed lift system are available from manufacturers in the United States; therefore, the Department is seeking a waiver to furnish or procure the following items through the construction contract even though they contain non-domestic steel or do not otherwise comply with the provisions of FHWA Buy America.

1) Wire Rope Hoists – PEARLSON SHIPLIFT hoists and supplemental equipment

The Department salvaged two 75 ton hoists during repairs to one of its terminals and proposes furnishing them for the terminal improvements project. The equipment complied with Buy America provisions when procured some 30 years ago but neither the Department nor the manufacturer can document material origin after the fact. The Department seeks a waiver to furnish this equipment without material certification.

The State-furnished hoists are only a part of the lift system and supplemental equipment such as blocks and wire ropes are required to complete the installation. These ancillary items will be sourced from the hoist manufacturer and the equipment is either fabricated abroad or contains foreign products for which there is no suitable domestic alternative. A waiver is sought to permit purchase of these non-domestic products.

a) Justification for Waiver Request:

The Department operates and maintains four terminals that use PEARLSON SHIPLIFT brand hoists to control positioning of the transfer bridge. PEARLSON SHIPLIFT hoists are commonly used in ship dry docks but have been adapted for use in bridge lift systems in Alaska and at other facilities around the world. During an electrical system upgrade at an AMHS terminal the hoists were accidentally damaged and the lift system was made inoperable. Both hoists were replaced in their entirety instead of repaired on site to avoid a lengthy terminal closure. As a result, the Department owns two hoists that have been completely refurbished by the manufacturer, Pearlson Shiplift Corporation (PSC), and they are in storage at AMHS facilities in Ketchikan, Alaska. These hoists will be furnished to the Contractor for use in the Gustavus ferry terminal improvements project.

The hoists were originally manufactured in 1987 for the Whittier Ferry Terminal Project No. RS0830(1) and all products incorporated in the work were required to be produced in the United States. A *Project Materials Report* certifying specification compliance was filed; however, it is not now possible to trace the origin of all steel components used in the original construction or installed as replacement parts over the intervening years. Those material test reports are no longer available and the manufacturer cannot positively certify compliance. While it is most likely the steel content is domestic because the hoists were Buy America compliant in the initial construction project and the major components are the same as those used in the original fabrication, the Department cannot document the steel's origin.

The equipment furnished by the Department does not comprise a complete hoist system; it includes the frame, motor, reduction gear, drum, upper sheaves and sensing devices. Two lower sheave assemblies and wire ropes are required to make the system operational and these supplemental components will be procured through the construction contract.

Each lower sheave assembly is a three sheave cartridge fitted in a steel housing engineered and manufactured in the United States exclusively for PSC. It incorporates two styles of roller bearings, one set in the three sheaves and one set in the clevis pin of the block housing. The bearings are made by The Timken Company and SKF USA, Inc. and as is common among

today's manufacturers, the roller bearings are sourced from a worldwide network of plants. Neither bearing manufacturer can assure the bearings it supplies will be produced domestically.

The wire rope used with the PEARLSON SHIPLIFT hoist system is a proprietary running rope engineered to meet the specialized requirements of PSC and Lloyds Register certifications. It is 1-3/8 inch diameter, 6x36WS class, IWRC(K), lang lay type, class B galvanized wire, with a plastic encapsulated core. The minimum breaking strength is 120 tons. The rope is built by a single manufacturer in their facilities abroad and PSC permits no alternative for use with its equipment.

b) Cost of the Waiver Items:

Estimated replacement value of two salvaged PEARLSON SHIPLIFT hoists is \$400,000.

Estimated value of two lower sheave assemblies is \$95,000 and the bearings comprise \$15,000 of that total.

Estimated value of two sets of wire ropes with end terminations is \$14,500.

c) Country of Origin:

The State-furnished PEARLSON SHIPLIFT hoists were manufactured in the United States.

Lower sheave assemblies are fabricated in the United States using roller bearings from manufacturing facilities in India and Germany.

Wire ropes are built in the United Kingdom.

d) Availability of Domestically Manufactured Product:

The lower sheave assemblies are fabricated for PSC in manufacturing facilities in Bremen, Ohio. All steel plate, pins and forged sheaves are produced, fabricated, assembled and coated in the United States. The two sets of roller bearings are manufactured in facilities outside of the United States. The hoist manufacturer states there are no domestic bearings that are readily interchangeable with those specified in the sheave assembly design.

When PEARLSON SHIPLIFT hoists were developed in 1957 ship lift wire ropes were produced by two domestic manufacturers. Those facilities have since closed and over the years PSC has collaborated with BRIDON rope manufacturing to develop a patented ship lift rope. This rope is built exclusively by BRIDON in their United Kingdom plant. All new and existing PEARLSON SHIPLIFT installations use BRIDON wire ropes, including those operated by the U.S. Navy and U.S. Coast Guard. A suitable domestic equivalent is unavailable.

e) Redesign Using Alternate or Domestic Product:

The Department installed the first wire rope hoists in an AMHS terminal in 1984 and they have become the standard equipment for all terminals with hoist-operated lifts. The Department further improved bridge safety and operational reliability by developing its own industrial computer control system built specifically for PEARLSON SHIPLIFT hoists. A redesign of the bridge lift system using an alternate hoist because the steel origin of the salvaged equipment cannot be certified is needless and unwarranted. Installing State-furnished equipment is a significant cost savings to the project and it ensures equipment compatibility with other state-owned ferry terminal facilities.

A redesign of the lower sheave assembly using domestic roller bearings is impractical. The blocks are a pre-engineered component that has been standardized by PSC for use with the wire rope hoists. The bearings are an integral part of the assembly and bearings supplied by

other than the original equipment manufacturer requires redesigning a very specialized, proprietary product.

There is no option to redesign the PEARLSON SHIPLIFT hoist system to use a domestic wire rope. The patented BRIDON rope is the only product approved by the hoist manufacturer for use with their equipment.

f) Waiver Request:

The Department concludes it is in the public interest to furnish the salvaged hoists and waive the requirement for material certification. Furnishing the salvaged equipment ensures standardization among the terminals, streamlines engineering and design of the bridge lift system, simplifies future maintenance and obviates the purchase of new equipment.

Roller bearings and wire ropes that are integral to and specifically designed for the hoists are not produced in the United States. The Department requests permission to procure these non-domestic parts through the construction contract to complete installation of the lift system.

2) Hanger Rod Clamp – SITEMA SAFETY CATCHER

The lift beam and hoists in conventional AMHS lift systems are *fracture critical members*, that is, damage to any one of these elements may result in a bridge failure. Current bridge design policy encourages the use of *load path redundancy*, systems with three or more structural elements between points of support. Designs employing redundant members are preferred because they provide an alternate load path that can prevent bridge collapse should a single element fail.

To provide load path redundancy and mitigate the effect of a hoist failure, the proposed design places a hanger rod in parallel with each hoist, spanning between the lift tower and the bridge. The hanger rod is locked by a restraint device that clamps the rod in any position along its stroke, thus providing an alternate bridge support while transferring traffic or if a hoist failure is detected while positioning the bridge. The restraint device that best meets the design criteria is foreign-made and the Department requests a waiver to procure this specific product.

a) Justification for the Waiver Request:

A rod clamp device that provides the greatest bridge safety will satisfy these design criteria:

- Static design capacity – the clamp must develop sufficient capacity to support the combined bridge dead load and vehicle live load plus impact.
- Unidirectional loading – the clamp must lock when the rod is loaded in tension only. A control system malfunction could cause the hoist to lift the bridge with the clamp engaged. If the clamp locks in both directions the hanger rod opposes upward bridge movement, potentially causing damage to the hoist or rod.
- Unlock by raising the bridge – once engaged the clamp must not unlock until the tension in the rod is relieved. This ensures the clamp cannot be released until the lift system is operational and can safely support the bridge.
- Dynamic design capacity – the clamp must be designed to slow and catch a falling mass. Damage to the hoist is most likely to occur when positioning the bridge. Tension in the wire rope is continually monitored by the control system and a sudden reduction in tension is used to signal a failure of the hoist. If a fault is detected the clamp engages and acts as an emergency brake to arrest the falling bridge.

The Department has selected the Sitema SAFETY CATCHER as the rod clamp best suited for use in the lift system. The hanger rod is surrounded by a housing in which several tapered clamping jaws, each faced with a brake lining, are arranged around the rod. When hydraulic pressure is applied, the clamping jaws are held in a raised position so the rod can move freely. The clamp engages as soon as the pressure is released. Springs cause the jaws to contact the hanger rod firmly, thus securing the load.

The Sitema SAFETY CATCHER engages the rod under tension only. Compression in the rod or upward movement of the bridge is not restrained by the clamp.

The Sitema SAFETY CATCHER is unlocked by pushing the rod upward, permitting the jaws to expand and relieve the radial clamping force. Reapplying the hydraulic pressure raises the jaws and the rod passes easily through the clamp.

Stopping a falling mass generates an inertial force that may be several times the static level. If the force exceeds the capacity of the Sitema SAFETY CATCHER it is designed to permit slip of the rod and dissipate kinetic energy in a well-defined manner until the bridge comes to a stop. It is specifically designed to function as an occasional emergency brake without damage to the rod or clamp.

b) Cost of the Waiver Item:

Estimated value of two Sitema SAFETY CATCHERS and spring mount bases is \$80,000.

c) Country of Origin:

Sitema SAFETY CATCHERS are manufactured in Germany by Sitema GmbH & Company KG and distributed in the United States by Advanced Machine & Engineering Company, Rockford, Illinois.

d) Availability of Domestically Manufactured Product:

In its search for a suitable rod clamping device the Department evaluated three products with capacities that exceed the required static design load.

- BEAR-LOC, manufactured and distributed by Wellman Dynamics Machining and Assembly, Inc., York, Pennsylvania.
- RATIO-CLAMP, manufactured by Hanchen GmbH & Co. KG, Ostfildern, Germany and distributed by IC-Fluid Power, Inc., Northwood, Ohio.
- SAFETY CATCHER, manufactured by Sitema GmbH & Co. KG, Karlsruhe, Germany and distributed by Advanced Machine & Engineering Co., Rockford, Illinois

All three rod clamps develop the necessary capacity for static bridge loads but only the Sitema SAFETY CATCHER meets all of the design criteria. The BEAR-LOC is manufactured in the United States but the BEAR-LOC and RATIO-CLAMP devices lock the rod in both directions, they are unlocked by reapplying hydraulic pressure without relieving the load and neither device is designed for emergency braking. Only the Sitema SAFETY CATCHER satisfies all four design criteria; there is no domestic alternative.

e) Redesign Using Alternate or Domestic Product:

In the initial phase of project development the Department considered alternate designs using chain or wire rope hoists to provide redundant bridge support. These systems required multiple-part block and tackle to develop the required capacity using common hoist materials. Power spooling is required to take up the chain or wire as the bridge is raised. Hoists designed for dynamic braking require mechanical or electrical controlled braking to stop a falling mass. These designs also required mechanical equipment, hoist materials and brakes containing foreign steel. The alternate designs proved to be more complex, less reliable, costly to

maintain, and difficult to inspect while still not eliminating the need for products with foreign steel content.

f) Waiver Request:

The Department has identified the Sitema SAFETY CATCHER as the restraint device best suited for its lift system design. The Department requests a Buy America waiver to specify this foreign-made, proprietary product because an alternate, suitable product is not manufactured domestically.

3) Control System Devices – MANUFACTURED PRODUCTS

Positioning of the bridge is performed with an industrial programmable controller that operates the hoist motors, activates motor and emergency brakes and monitors limit sensing devices. The control system consists of many different electrical and electronic manufactured products. Most of these are off-the-shelf items that are not designed or made to order but taken from existing supplies and assembled on site. These devices are commonly made up of steel subcomponents from multiple sources, both foreign and domestic, and manufacturers do not ordinarily trace and document the country of origin of the steel in their products. The Department is requesting a waiver to specify the necessary manufactured products that make up the bridge control system.

a) Justification for the Waiver Request:

Control of the lift system requires numerous manufactured products, such as a programmable logic controller (PLC), human machine interface touchscreen (HMI), power supplies, I/O cards, terminal blocks, sensing devices, circuit breakers, relays, and switches. These are standardized products that are ready-made, supplied from stock on hand, and installed in their original form without modification. They are commonly assembled using steel subcomponents that originate from different global suppliers with some or all manufacturing processes occurring in a foreign country. It is not feasible for the manufacturer to track and document the origin of all the steel components that goes into every product. To ensure compliance with Buy America provisions the Department assumes all steel content in these devices is non-domestic and requests a waiver to specify these products.

b) Cost of the Waiver Item:

The estimated value of these manufactured products is \$22,000.

c) Country of Origin:

The country of origin for all steel content of each device is unknown.

d) Availability of Domestically Manufactured Product:

Control system components are used primarily to manage manufacturing and production processes in a wide variety of industries. Only a small percentage of the products are incorporated in federally funded highway construction projects. Manufacturers do not ordinarily trace and document the origin of the steel content; therefore, the availability of certified domestic devices is unknown.

e) Redesign Using Alternate or Domestic Product:

For the Department to construct a control system using only domestic products would require manufacturers to implement new sourcing, inventory and tracking procedures to positively certify product compliance. For some manufactured products it may be only burdensome to document the steel component's origin but for others it may be virtually impossible to trace the processes from the melting of the steel through final assembly. Requiring manufacturers to document the origin of every amount of steel to be incorporated in this one project is an onerous and costly task. A task that is unwarranted when the steel composition of the electrical and

electronic products is a small fraction of the total quantity of domestic steel that comprises the bulk of the construction project.

f) Waiver Request:

The Department cannot reliably document and trace the origin of all steel components for electrical and electronic products. It is unable to comply with the provisions of Buy America and is therefore requesting a waiver to specify manufactured products that may contain subcomponents of foreign steel in the lift control system.

The equipment described in this letter is required to complete modifications to the AMHS ferry terminal in Gustavus, Alaska, but these components do not comply with FHWA Buy America policy. The Department asserts the public interest is best served by reusing salvaged equipment, by specifying a foreign-made safety product, and incorporating manufactured products that may contain foreign steel. This determination is reasonable under the circumstances, cost effective for the project and advantageous to the State. Therefore, the Department seeks a waiver to permit use of this equipment and to ensure our full compliance with Buy America requirements.

Please contact me if you require additional information or seek clarification to help in evaluating this waiver request.

Sincerely,

L. Pat Carroll, P.E.
Regional Preconstruction Engineer

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