



PhilaPort
THE PORT OF PHILADELPHIA

**RE: FY17/18 Infrastructure for Rebuilding
America (INFRA) PAMT H-6 & H-7 CRANE
ELECTRIFICATION - Buy America Act 23 US
Code 313 Waiver Request**

MARAD USDOT Grant # 693JF71910026

September 8, 2021

Philadelphia Regional Port Authority (PhilaPort)
3460 N. Delaware Avenue, Philadelphia, PA 19134

Waiver Request

Philadelphia Regional Port Authority (PhilaPort) is requesting a Buy America Act waiver for the supply of a ship-to-shore (STS) crane Medium Voltage (MV) Cable Reel System required for the Hyundai crane electrification project at Packer Avenue Marine Terminal (PAMT). To support this waiver request the narrative below provides project background, information, efforts to meet Buy America compliance, waiver item description, and precedence for waivers on similar projects.

Project Background

In September of 2019, PhilaPort executed FY2017-2018 INFRA grant No. 693JF71920026 with the Department of Transportation's Maritime Administration (MARAD). The primary goal of the two-phase project and grant was to increase container capacity and throughput at PAMT. An additional benefit was to improve air emissions and operational reliability of the two existing Hyundai STS cranes by converting the drive supply power from onboard diesel generator to utility supplied electricity.

The two existing Hyundai STS cranes (referred to as H-6 and H-7) were installed at PAMT in 2004. They are used to load and discharge containers from the vessels. Both H-6 and H-7 operate exclusively with onboard Tier 1 generators powered by Cummins KTA50-GP diesel engines (2011 rated horsepower). The STS cranes can lift 66 metric tons each. Depending upon the workload, fuel usage varies from 20 gallons per hour to a maximum of 100 gallons per hour. The proposed project would convert the power supply of H-6 and H-7 from onboard diesel generator to utility supplied electricity.

The project has substantial environmental benefits given the complete elimination of pollutants because of the transition to electric drives. PAMT has a planned annual container throughput of 900,000 TEUs which is forecasted to require 4,103 hours of operation for both H-6 and H-7. At this level of operations, converting the cranes to utility supplied electricity would reduce air pollutants, as follows:

Emissions	Grams/Gallon of Diesel
CO ₂	1,216.67
SO ₂	0.22
CO	3.17
NOX	16.55
VOC	0.82
PM ₁₀	0.45
Total	1,237.88

Source: 2017 INFRA BCA (Pennoni/Econsult)

In addition to a substantial environmental impact, diesel engine powered cranes are less efficient and less reliable than electrically powered cranes often resulting in operational delays. Diesel engine powered cranes require significantly more routine, preventative, and emergency maintenance than electrically powered cranes. Electrifying H-6 and H-7 cranes would avoid many of these delays, saving labor and overall shipping costs. Annually, these improvements in

efficiency and reliability are valued at \$474,871 per year. The crane improvements at PAMT will generate direct operational savings through the reduction of diesel usage in favor of electric power. The relative affordability of electrical power, and the increased efficiency of the electrified cranes, will cause an overall reduction in utility spending. These savings are valued at \$150,294 annually.

Notwithstanding, the reduction of carbon dioxide emissions, reductions in other various known pollutants will be more significant. Crane consumption of gallons of diesel fuel will result in fewer emissions and therefore costs associated with pollutants. These costs are valued at \$229,074 per year.

Project Objective

The objective of the ‘PAMT H-6 & H-7 Crane Electrification Project’ is a conversion of the two (2) existing Hyundai ship-to-shore (STS) cranes at the PAMT from primary on-board diesel generator power supply to utility supplied electricity via a trailing medium voltage (MV) cable reel system.

The existing generator power supply shall be removed from the cranes. A new MV cable reel system will be mounted on the left portal beam of the cranes and allow for 1,200 linear feet of crane travel in either direction of the crane power interface pit. The required electrical and control equipment will be installed in the vacated engine house. Control system modifications will be made to incorporate the new electrical equipment.

Major benefits of from this project (Crane electrification)

- Reduction of emissions and carbon footprint
- Improving terminal maintenance and reliability
- Reduction of STS crane downtime (service and repairs)

Project Timeline and Cost

Design for the project began in April of 2020. During design it became apparent that the MV Cable Reel system would not be Buy America Act 23 U.S. Code 313 (‘Buy America’) compliant. To confirm this assumption and after discussing with MARAD, PhilaPort requested the design engineer, Boos Navarre, perform Market Study among potential suppliers. The design engineer contacted three (3) known suppliers in the industry and one (1) potential supplier in a related industry. All four (4) respondents confirmed that they could not and would not supply a fully Buy America Compliant MV Cable Reel system.

After receiving the Market Study and advising MARAD, PhilaPort proceeded to bid the Project. This allowed for the bidding contractors to try and engage resource to identify a fully Buy America compliant MV Cable Reel system as part of a larger project.

On June 28, 2021, PhilaPort received bids on this project from two contractors, *See Appendix B – Contractor Bid Proposal*. The two bids were deemed non-compliant since neither conformed with the Buy America requirements as it relates to the cable reel component. Both contractors who

submitted a bid proposed the same non complaint supplier for the MV Cable Reel system. Our understanding was that other MV Cable Reel suppliers withheld submitting bids because they knew they couldn't provide a fully Buy America compliant MV Cable Reel system.

Waiver Item

The Market Study and competitive bid process both confirmed that the MV Cable Reel system would not be Buy America compliant, thus requiring a waiver.

An MV Cable reel is a system which delivers utility supplied electric power to STS cranes. Utilizing common voltage levels of 5,000 to 15,000 volts, electrical cables can deliver enough power to meet the entire STS cranes' electrical needs. The electrical trailing cable on the cable reel tie into the port's electric utility infrastructure. The cable reel system allows the STS cranes to be mobile along the dock by reeling cable in and out (from a motorized and synchronized cable drum) as the crane moves along the ships berths. The cable on the cable drum also delivers fiber communications to and from the STS cranes and the terminal (maintenance and operations).

A MV Cable reel system is comprised of the following main components:

- Drive Gearbox and Motors (Item 1)
 - Steel/Iron component
- MV Trailing power cable (Item 2)
 - Non-Steel/Iron components
- Electrical and Communications Collector System (Item 3)
 - Steel/Iron component
- MV cable drum (Item 4)
 - Steel/Iron component
- MV Cable guides and diverter mounted to STS structure/legs (not shown)
 - Steel/Iron component
- Gantry level bi-directional multi-roller, curved cable guide (not shown)
 - Steel/Iron component

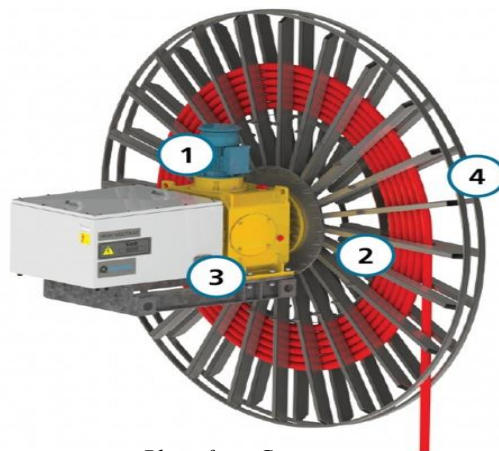


Photo from Cavotec.com

It is important to note at PAMT the other five (5) ‘new’ STS cranes, which operate alongside the H-6 & H-7 STS, all have a MV Cable Reel system installed by a foreign crane manufacturer.

(These cranes were not part of the grant scope). These systems have been reliable for the terminal operator and have significantly reduced emissions. Additionally, the PAMT dock, where H-6 & H-7 operate, was recently retrofitted to allow for the electrification of H-6 & H-7 via MV Cable Reel system. See below photo of the existing terminal.



Pictured: PAMT ‘new’ STS manufactured by foreign supplier and equipped with MV Cable Reel System.

Waiver Item Suppliers and Country of Origin

Possible Suppliers of MV Cable Reel Systems:

- Stemmans/TransTech (Germany)
- Cavotec (Germany)
- Conductix-Wampfler (Germany)

Cost of Waiver Item and Maximizing Domestic Content

Supply of the MV Cable Reel system (material only) is expected to be \$410k of the engineer estimated project total cost, \$5.5 million. Of the \$410k, approximately \$300k is non-steel/iron electrical cable with the remaining \$110K or 27% of the cable reels system being foreign steel and iron. Therefore the non-compliant steel in the cable reel system is 2% of the engineers estimate of the project.

A summary of the MV Cable Reel System engineer estimated component costs and sourcing information are as follows:

Component	Approx. Value	Iron/Steel
Trailing Cable	\$ 300,000	No
Cable guides/Diverters	\$ 40,000	Yes
Gantry level bi-directional multi roller	\$ 20,000	Yes
Gear box/motors	\$ 50,000	Yes
Cable Drum		Yes
Electrical/Communications Collector		Yes
Component Value	\$ 410,000	
Iron/Steel Value	\$ 110,000	
Component non-compliant, %	27%	
Total Project cost	\$ 5,500,000	
Total Project cost non-compliant, %	2%	

PhilaPort expects that all other components on the Project to comply with Buy America 23 USC 313 requirements.

Reasons for the Waiver

Reasons for the waiver request are as follows:

- There are no US suppliers of these highly specialized MV Cable Reel systems.
- The existing dock is built to power the STS cranes by way of MV Trailing cable. The cost to change the power supply of the dock and five (5) each STS cranes would be infeasible. MV trailing cable is the safest and most efficient way to power STS cranes from the dock. Our design engineer, Boos Navarre, would not recommend changing the design. Additionally, other electrification design alternatives (bus bar system) would require foreign supplied systems.
- The cost of the cable reels system based upon engineering budget is 2%.

Impact of Wavier Not Being Granted in Timely Manner

The MV Cable Reel system is a crucial component of this project. Without this system, the project could not move forward and H-6 & H-7 would have to remain under diesel power. All the benefits outlined in the above section would not be realized

If a waiver is not granted, the electrification project would no longer be viable. Similarly, if there is a significant delay in approving the waiver, the project will be delayed. The project cannot move forward without a waiver. Any delay in the waiver approval results in additional time the STS cranes will need to operate under diesel power. Currently the lead time for these major components of the project are components is between 20 to 30 weeks (upon receipt of contractor PO).

Similar Projects where Waivers were Granted

There is precedence for the necessity of Buy America waivers on projects in this industry including several waivers similar in nature to this request. Three recent projects in which waiver requests were granted are:

- Port Newark Container Terminal (PNCT) 2016-28973 / 81 FR 87125
 - Port of Newark Container Terminal, New Jersey
 - FHWA found that a Buy America waiver was appropriate for procurement of two non-domestic Ship-to-Shore Container Gantry Cranes to accommodate Ultra Large Container Vessels at the Port of Newark Container Terminal in the State of New Jersey.
 - <https://www.federalregister.gov/documents/2016/12/02/2016-28973/buy-america-waiver-notification>
 - *This was a full waiver of an STS crane that included the cable reel system that is the subject of this waiver request.*

- Georgia Ports Authority (GPA) 2017-25074 / 82 FR 55153
 - Georgia Ports Authority for the Garden City Terminal in Garden City, Georgia
 - Procurement of eight (8) rail mounted gantry (RMG) cranes.
 - FHWA's found that a Buy America waiver was appropriate for 33 iron and steel components of Georgia Ports Authority-procured Rail Mounted Gantry (RMG) cranes that will increase intermodal capacity at the Garden City Terminal in Garden City, Georgia. These iron and steel components are not manufactured (from melting to coating) in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
 - <https://www.federalregister.gov/documents/2017/11/20/2017-25074/buy-america-waiver-notification>
 - *In the GPA approved request the Cable reel motor and gear box were specifically identified in the waiver.*

- International Marine Terminal (IMT) 2020-13563 / 85 FR 38013

- Port of Portland, Maine
- Procurement of one (1) mobile harbor (MH) crane.
- FHWA found that a Buy America waiver was appropriate for procurement of a mobile harbor crane constructed with foreign iron and steel components for the International Marine Terminal (IMT) at the Port of Portland in the State of Maine.
- <https://www.federalregister.gov/documents/2020/06/24/2020-13563/buy-america-waiver-notification>.
- **Waiver request for mobile harbor crane that included component like the Cable Reel system requested in this waiver.**

All three projects involved ship to shore or similar mobile harbor and rail mounted gantry cranes. In each instance, the applicant was not able to source US suppliers for some are all components' cranes.

COVID-19 Impact

The cable reel system is a highly specialized and critical component of the electrical system of the crane. We are aware that at times components that traditionally have been made with foreign materials can be manufactured in the United States. Given impact of COVID-19, and the resulting strain on labor markets and supply chain delays as result of the lockdown, we believe that supplier chain alternatives are becoming a lot more complicated and unlikely. For this reason, we are requesting a full waiver of the cable reel system.

Waiver request and additional information.

In summary PhilaPort is requesting a Buy America Act wavier for the supply of a ship-to-shore (STS) crane Medium Voltage (MV) Cable Reel System required for the Hyundai crane electrification project at Packer Avenue Marine Terminal (PAMT). The rationale for the request includes:

- The critical need for the component
- significance of the project and related benefits
- the demonstrated inability to provide a domestic source cable reel system
- precedent on prior Buy America waivers for Cable Reel system and Similar crane components.

Any additional questions or clarifications related to this request can be directed to:

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