



U.S. Department
of Transportation

**Federal Highway
Administration**

Memorandum

Subject: **ACTION:** Buy America Waiver
Request for Hampton Bridge-Tunnel
Project – Tunnel Storm Utility Drainage
Pumps.

Date: February 16, 2024

From: Thomas L. Nelson, Jr. P.E.
Division Administrator
Richmond, Virginia

**THOMAS L
NELSON JR**

Digitally signed by
THOMAS L NELSON JR
Date: 2024.02.16
13:18:59 -05'00'

To: Mr. Brian Hogge
Construction Team Leader
Office of Program Administration
Washington, DC 20590

Dear Mr. Hogge,

Please find the attached documentation to support a waiver to the Federal Highway Administration's (FHWA) Buy America Provisions in the Title 23 CFR 635.410 in effect in April 2019. The Hampton Roads Connector Partners (HRCP) is requesting a waiver from FHWA of the Buy America Act requirements as they apply to the Tunnel Storm Utility Drainage Pumps for the I-64 Hampton Roads Bridge-Tunnel Expansion Project. The Virginia Department of Transportation (VDOT) reviewed and submitted this waiver to the Virginia Division on January 24, 2024, and has satisfactorily addressed our January 31, 2024, questions.

We concur with this request and ask that it be advanced through the FHWA's waiver process. Please feel free to contact me at thomas.nelson@dot.gov or 804-775-3333 if you have any questions.

3 Enclosures:

VDOT's Request for Waiver of FHWA Buy America Requirement: Tunnel Pumps
HRCP's Request for Waiver of FHWA Buy America Act Requirements for Tunnel
Storm Utility Drainage Pumps
VDOT's Response to FHWA Questions: Buy America Pump Waiver Request

cc:

Edwin Okonkwo, Office of Program Administration - Buy America Program Engineer
John Mazur, Virginia Division - Major Projects Engineer



COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT
240 CORPORATE BOULEVARD
NORFOLK, VIRGINIA 23502

Stephen C. Brich, P.E.
Commissioner

January 22, 2024

VDOT-FHWA-0079

Mr. Thomas L. Nelson, Jr., P.E.
Administrator, FHWA Virginia Division
400 North 8th Street, Suite 750
Richmond, VA 23219-4825

RE: 1-64 Hampton Roads Bridge-Tunnel Expansion, Project No. 0064-M06-032

Subject: Request for Waiver of FHWA Buy America Requirements: Tunnel Pumps

Dear Mr. Nelson:

The Virginia Department of Transportation ("VDOT") is forwarding a request from our design-builder, Hampton Roads Connector Partners ("HRCP"), for waiver of Buy America requirements for the proposed tunnel storm utility drainage pumps for the Hampton Roads Bridge-Tunnel Expansion project.

VDOT has reviewed the package and concurs with HRCP's request for waiver of Buy America requirements for these pumps.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Ryan Banas".

Ryan Banas
Project Director
HRBT Expansion Project

Att: Letter HRCP-VDOT-LTR-0765 (January 10, 2024)

cc: John E. Mazur, FHWA
Kerry A. Bates, VDOT



Virginia Department of Transportation
Attn: Ryan Banas, Project Director
240 Corporate Boulevard, Suite 400
Norfolk, Virginia, 23502

Re: **Request for Waiver of FHWA Buy America Ad Requirements for Tunnel Storm Utility Drainage Pumps**
Ref: None
Project: 1-64 Hampton Roads Bridge-Tunnel Expansion Project
VDOT Contract ID No.: 0064-M06-032
FHWA Contract ID No.: NHPP-5A03(992)

Dear Mr. Banas:

In accordance with Federal Highway Administration ("FHWA") Title 23 CFR 635.410(c), as set forth in Attachment 10 to Exhibit 26 of the Comprehensive Agreement, Hampton Roads Connector Partners ("HRCP") hereby asks for the Department's assistance and support in requesting a waiver from FHWA of the Buy America Act requirements as they apply to the Tunnel Storm Utility Drainage Pumps needed for the 1-64 Hampton Roads Bridge-Tunnel Expansion Project (the "Project"). The waiver is necessary due to the domestic non-availability of the pumps.

Waiver Item Description:

A Buy America Waiver is requested for the procurement of ten (10) North and South Tunnel Approach submersible pumps (each pump rated at 5,400 gallons per minute at 60 feet) and seven (7) low point submersible pumps (each pump rated at 1,500 gallons per minute at 170 feet). There are four (4) operating, four (4) standby, and two (2) spare North and South Tunnel Approach submersible pumps and four (4) operating, two (2) standby and one (1) spare low point submersible pumps.

Waiver Item Cost:

The cost of the items for which HRCP is seeking a waiver is estimated to be \$3.52 million.

Country of Origin:

Sweden (for FLYGT pumps)



Reason for Waiver Request:

After an exhaustive search of pumps available in the market, the only pumps that satisfy the Technical Requirements of the Project's Comprehensive Agreement (see end notes) are manufactured by FLYGT/XYLEM or ABS/Sulzer. Neither of these manufacturers is able to produce a Buy America-compliant pump, including because the pumps are cast and machined overseas. However, it may be possible for the pumps to be assembled and tested in the United States.

From the available technically-compliant options, HRCP determined that the FLYGT model N3312 (for the North and South Tunnel Approach pumps) and FLYGT model NZ3301 (for the low point submersible pumps) best suit the needs of the Project (see Attachment No. 01).

HRCP believes a waiver is necessary because the pumps are manufactured products, predominantly comprised of iron and steel, for which the manufacturing process does not occur entirely within the United States. HRCP therefore requests that the Department seek a waiver from FHWA to permit use of the FLYGT pumps on the Project.

Description of HRCP's Efforts to Locate a Domestic Equivalent:

HRCP contacted a total of seventeen (17) different pump manufacturers to try to find Buy America-compliant submersible pumps for the Project.

Of the seventeen (17) manufacturers HRCP contacted, two (2) did not respond at all. None of the fifteen (15) manufacturers who responded can produce a Buy America-compliant pump, and only two (2) manufacturers confirmed they can produce a pump that complies with the Project design requirements.

The responses HRCP received (or did not receive) from each manufacturer it contacted are summarized in the following table.



Pump Manufacturer	Pump Compliant with Technical Requirements	Pump Compliant with Buy America
Flygt/Xylem	Yes	No
Grundfos	No	No
ABS/Sulzer	Yes	No
Cornell	No	N/A
Flowserve	No	No
Ebara	No	No
Goulds	No	No
Gorman Rupp	N/A	No
KSB	N/A	No
Fairbanks	N/A	No
Myers	No	N/A
Hydromatic	No	N/A
Wilo	N/A	No
Zoeller	- *	- *
Vaughan	- *	- *
PPP	No**	N/A
Homa	N/A	No

* No response from manufacturer, despite multiple contacts by HRCP.

** HRCP held meetings with PPP, which offered to explore development of a pump prototype that might meet some of the Technical Requirements and to investigate whether it could manufacture this pump in accordance with Buy America requirements. However, because this pump would be a prototype, and PPP has no experience supplying submersible pumps, any resulting pump would not be compliant with TR 26.3.3.3.A. "Reliability and Availability" which requires "a proven track record of reliable service in a similar application" (see end notes).

N/A: Manufacturer responded that the pumps it supplies either do not meet the Buy America requirements or do not meet the Technical Requirements. HRCP therefore did not investigate the compliance with the other requisite.

ABS/Sulzer also confirmed that none of its submersible pumps comply with Buy America, since they are manufactured in Ireland. Moreover, although the ABS/Sulzer pumps comply with the Technical Requirements, using them would require modifications to the Project design (which is not the case with the FLYGT pumps).

FLYGT stated that the standard assembly for its pumps occurs in Sweden with no United States-sourced components. FLYGT also confirmed, that the best it could provide is a pump with approximately 65% to 75% United States domestic content (corresponding to the motor drive unit components). In this scenario, FLYGT would relocate the manufacturing, other processes that substantially transform the pump components (such as coating application), and performance testing of the completed pump to a XYLEM Inc.-owned manufacturing facility located in Pewaukee, Wisconsin. But even despite this considerable effort, the pump still would unavoidably contain 25 to 35% foreign-source steel and iron



for castings and metal components. FLYGT also stated there is no possible price premium that would enable it to provide a technically-compliant pump that also entirely complies with Buy America.

HRCP's extensive procurement efforts have shown that there is no available Buy America-compliant pump and the FLYGT pumps are the only option that is fully compliant with the Project technical requirements and Project design.

Analysis of Re-Design Using a Domestic Equivalent:

HRCP considered re-design options which might have enabled domestically produced pumps to be used on the Project. Initially, HRCP understood a vertically-mounted pump might be available in compliance with Buy America, even though using such a pump would have required revising the Released For Construction (RFC) Project specifications, which require a horizontally-mounted pump (see end notes), as well as significant other re-design efforts.

In exploring this possibility of redesign, the Engineer of Record ultimately determined that the only way to accommodate such a change to vertically-mounted pumps would be to perform a major Project redesign to create additional height clearance within the pump stations. Such a change would have directly impacted tunnel roadway final grade elevation and the structural design of the bored tunnels. Raising the roadway level would have either:

- resulted in a reduced traffic envelop clearance, which would be against the Technical Requirements (see end notes). Even if it was possible to waive the traffic envelope clearance requirement, this would negatively impact the Project's traffic concept by possibly reducing the permissible vehicle height in the tunnel, including because of interferences with finishing equipment located above the roadway (such as jet fans, dynamic message signs, etc.); or
- required an increased tunnel diameter, in order to maintain the traffic envelop clearance as currently designed, which also was not a viable alternative.

Subsequent to its efforts to consider redesign, HRCP learned that a Buy-America compliant vertically-mounted pump was not available, so this option was not pursued further.

Through its extensive discussions with pump manufacturers, HRCP learned that the contract requirement for a pump that is both submersible and explosion proof (see end notes) is the primary impediment to Buy America compliance. As such, redesigning the pump to a different capacity would not alleviate this constraint.

Conclusion:

Despite HRCP's exhaustive efforts, HRCP has determined it is not possible to adhere to both the contract requirements and Buy America requirements with respect to the Tunnel Storm Utility Drainage Pumps. Prior to asking for this waiver, HRCP engaged in comprehensive research-both in procurement and in exploring possible redesign options-to ensure that all avenues were explored to incorporate Buy America-compliant pumps that satisfy the Project requirements.



In the best interests of the Project, in view of the criticality of the Hampton Roads-Bridge Tunnel to the Hampton Roads region, and to ensure public access to transportation improvements in a timely manner, HRCPP hereby requests that the Department apply for a waiver of the Buy America Act requirements (FHWA Title 23 CFR 635.410), as they apply to the Tunnel Storm Utility Drainage Pumps, so that the proposed FLYGT pumps can be used on the Project.

Should you have any questions, please feel free to contact the undersigned.

Regards,

A handwritten signature in blue ink, appearing to read "Juan Miguel Pérez".

Juan Miguel Pérez
Project Executive

Hampton Roads Connector Partners

Comprehensive Agreement - Exhibit 2 - Technical Requirements 23.3.1.1.A.2:

2. Required static clearance envelope

a. Vehicular vertical clearance of 16 feet 6 inches minimum measured perpendicular from the roadway surface.

Comprehensive Agreement - Exhibit 2 - Technical Requirements 26.3.3.3.

A. All mechanical equipment shall be designed to perform reliability in the intended application. All systems and equipment proposed for use shall have a proven track record of reliable service in a similar application.

Comprehensive Agreement- Exhibit 2 - Technical Requirements 26.3.6.1.A.10:

Pump stations shall be classified per NFPA 70. Pump station equipment shall be suitable for the applicable space hazardous classification; equipment located in wet wells, drywells, and grit chambers shall be explosion proof

Comprehensive Agreement- Exhibit 2 - Technical Requirements 26.3.6.1.B.1:

The pumps shall be submersible, non-clogging, non-overloading, solids handling, centrifugal type.

Comprehensive Agreement- Exhibit 2 - Technical Requirements 26.3.6.1.B.7:

Pumps shall be mounted on housekeeping pads and be accessible and maintainable.



Comprehensive Agreement- Exhibit 2 - Technical Requirements 26.3.6.1.8.8:

All pumps shall be from a single manufacturer.

Comprehensive Agreement- Exhibit 2 - Technical Requirements 26.3.6.1.8.11:

Pumps shall be installed such that any single pump can be removed from the pump station without disconnecting or disrupting the operation of any other pump;

Released for Construction Project Specification -Section 33 45 00. 2.1.A.2-Storm Utility Drainage Pumps:

Pumps shall be dry pit submersible type, capable of operating in a continuous non-submerged condition in horizontal mounting position in a dry pit installation, permanently connected to inlet and outlet pipes.



Memorandum

Title: Response to FHWA Questions:
Buy America Pump Waiver Request

Date: February 13, 2024

To: John Mazur, FHWA

From: Virginia Department of Transportation

In response to FHWA's January 31, 2024 questions, below is additional information related to the Hampton Roads Bridge-Tunnel (HRBT) Buy America pump waiver request.

1. Was the source of the pumps discussed during the space proofing process in 2020? If this was not discussed at that time, please explain why.

Yes. HRCP's designer confirmed the source of the pumps was discussed during bid preparation in 2018 and also during the space-proofing process in 2020:

- The manufacturer FLYGT was contacted as early as April 2018 and confirmed that compliance with Buy America was possible. FLYGT also provided similar feedback in May 2020.
- Only upon subsequent detailed coordination was it determined that FLYGT could not meet the specific Buy America CFR 23 requirements for the tunnel drainage pumps.

2. Were other options other than using vertical pumps considered? If so, they should be included in the documentation in this section.

No. Both the project's scope and the tunnel's geometric constraints limited the pump options available for consideration. The project scope mandated compliance with the following Technical Requirements (TRs):

- "The pumps shall be submersible, non-clogging, non-overloading, grinder/chopping, centrifugal type." (TR 26.3.6.1.B.1)
- "Installation and configuration shall be drywell type." (TR 26.3.6.1.B.3)
- "Pumps shall be installed such that any single pump can be removed from the pump station without disconnecting or disrupting the operation of any other pump. [...]" (TR 26.3.6.1.B.11)

3. The new Midtown Tunnel in Portsmouth, VA utilized space from the escape corridor to accommodate the pumps. Is this an option? If not, please explain why since it was a viable option on that project.

No, placing pumps in the egress corridor is not an option for a bored tunnel. The new Midtown Tunnel, which was constructed as an immersed-tube tunnel, has a significantly different geometric space configuration than the current HRBT project, which is constructed as a bored tunnel.

The Midtown Tunnel consists of rectangular-shaped concrete tunnel elements, also termed caissons. Not only did this configuration provide no room for pumps under the roadway slab, but the immersion process required designing the Midtown Tunnel with a wider horizontal section to aid in caisson buoyancy and flotation. This wider section enabled space for pumps along the egress corridor.

In contrast, the current HRBT Expansion tunnel is a circular bored section. For a bored tunnel, the width of the egress corridor is limited to the width necessary for safe egress of pedestrians. Geometrically, the only possible location for the drainage pump room is below the roadway level at the lowest point.

In addition, the HRBT tunnel is significantly deeper and longer than the Midtown Tunnel, making it less feasible to use non-submersible pumps at any location within the tunnel cross section.

4. Would non-submersible pumps be an option? If not, please explain why not.

No, non-submersible pumps would not achieve the project's function.

- a. Not only are submersible pumps generally recommended for subaqueous tunnel applications, but they are also specifically required for the HRBT project by the contract's Technical Requirements (Exhibit 2 of the Comprehensive Agreement). Hardening the tunnel against flooding is a prudent measure to protect such significant critical infrastructure for the region.
- b. During design development, VDOT underscored the requirement for submersible pumps after a 2009 flooding event in the existing westbound HRBT tunnel, where drainage pump rooms are also located below the roadway level. In this tunnel, a water-supply pipe ruptured in the lower plenum, and the unfortunate combination of a power outage due to weather conditions and the fact that drainage pumps were non-submersible, resulted in flooding of the roadway and a lengthy tunnel closure. VDOT therefore upgraded these pumps to the submersible type to prevent such incidents in the future.
- c. As another example, the Hugh L. Carey Tunnel (also known as Battery Park Tunnel) in New York City flooded during Hurricane Sandy in 2012. The tunnel's non-submersible pumps failed during the hurricane surge, causing catastrophic flooding of the tunnel with substantial damage to related systems.

5. Would a different quantity of smaller pumps be an option and fit with in the tunnel diameter or space available? If not, please explain.

No, a different quantity of smaller pumps is not an option.

- a. The availability issue remains. There is no submersible and explosion-proof pump available on the market, at any size, which satisfies the Buy America requirements. Explosion-proof pumps are a code requirement, and submersible pumps are necessary in this application per above.
- b. The vertical lift required to move water from the bottom of the tunnel requires a high pressure head, which can be achieved only by a large pump regardless of how many pumps share the workload.



6. **Please explain any other design options that may have been discussed any why they are not viable.**

The option of constructing a bridge at this location was eliminated early in the planning process due to stakeholder constraints. Given the scope requirement to build this crossing as a tunnel, and the necessity of installing pumps in a subaqueous tunnel to safeguard facility operation and motorist safety, current technology offers no other design options than those in the project's technical requirements.