

Ohio Environmental Protection Agency  
Attn: Dennis DeNiro  
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Columbus, Ohio 43215

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Subject:  
Lawrence Street WPCF Improvements Design  
American Iron and Steel Waiver Request

Dear Mr. DeNiro:

Date:  
May 26, 2020

We are writing on behalf of the City of Lancaster, OH to request an availability-based waiver of the American Iron and Steel (AIS) requirements for specific elliptical diaphragm air flow control valves that are being specified for the Lawrence Street WPCF Improvements Design project. These valves, ranging in size from four to eight inches in diameter, are intended to control air flow to each of the facility's six process aeration control zones based on real-time oxygen demands. One normally-closed valve will also be placed on a line to the post aeration diffusers, allowing the process blowers to provide efficient redundancy to the plant's post aeration system. There will be seven of these valves installed in total.

Contact:  
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Our ref:  
30001504

The elliptical diaphragm air flow control valves are unique in that they have a near-linear position-to-flow relationship over the full range of valve operating positions. This allows precise air flow control from 0-100% of the valve's stroke, facilitating close calibration between process oxygen needs and air supply. Additionally, the valves' patented design introduces less than 0.15 psi of headloss to the air distribution system, notably less than the approximately 0.5 psi of traditional butterfly valves. This helps reduce the energy consumption of the process blowers and create a more efficient aeration system.

A thorough internet search combined with information from regular valve vendors in the industry was conducted to find domestic manufacturers of diaphragm air flow control valves. Several aeration design experts within Arcadis were also consulted. Despite these efforts, only one additional manufacturer of diaphragm control valves was identified, and they do not manufacture domestically. Furthermore, their products were found to require

several times the amount of steel for fabrication and are therefore cost-prohibitive. Based on our research, we have concluded that no domestic manufacturers offer comparable valves adhering to the project specifications.

The information required by the "Information Checklist for Waiver Request" from the "American Iron and Steel Requirement Guidance" document found on the EPA website is listed below.

## GENERAL WAIVER REQUEST INFORMATION

Description of the foreign and domestic construction materials: Elliptical Diaphragm Air Flow Control Valves

Unit of measure: Each

Quantity: 7

Price: [REDACTED] (total for seven valves)

Time of delivery or availability: Spring 2021

Location of the construction project: Lancaster, Ohio

Name and address of the proposed supplier: Binder Group, Buchbrunnenweg 18, 89081 Ulm, Germany

A detailed justification for the use of foreign construction materials: The minimal headloss and full-stroke precision control that these valves provide cannot be equaled by any domestic manufacturers. These characteristics are integral to the design of the high-efficiency aeration system and are therefore required to meet the project specifications.

## AVAILABILITY WAIVER REQUEST INFORMATION

Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials: Not applicable; no domestic suppliers provide an equivalent product.

Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers: A thorough search for equivalent diaphragm control valves was conducted. Common valve suppliers in the wastewater industry, such as DeZURIK and Victaulic, do not offer diaphragm control valves for air service. One additional manufacturer of diaphragm control valves was identified, Egger Pumps. However, their Iris air flow control valves are manufactured in Switzerland (not AIS-compliant) and are cost-prohibitive when compared to Binder's offerings.

Project schedule:

- Detailed Engineering Design: Ongoing.
- Bid Advertisement: August 2020.
- Start of Construction: November 2020.

Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials:

- Section 43 11 14, Turbo Blowers:

A. Air Flow Control Valves:

- a. Provide air flow control valves in accordance with Section 40 05 53, Process Valves, Valve Type ED-1, and as shown on the Drawings.
- b. Design Criteria:

Valve	Header Size (in)	Valve Size (in)	Number of Valves	Min. Air Flow (scfm)	Max. Air Flow (scfm)
Complete Mix Tanks	12	8	1	940	2,385
Intermediate Tanks	12	10	1	924	2,852
Final Tanks	8	5	4	261	793
Post Aeration Redundancy	8	4	1	65	700

- Section 40 05 53, Process Valves:

A. Elliptic Diaphragm:

- a. Type 1 – Elliptic Diaphragm Control Valves for Air Service:

- i. General:

1. The valve shall have an elliptical control orifice with falling flow axis for precise control of airflow to individual control zones with continuous adjustment from 0% to 100% open over a large airflow range.
2. When wide open, the valve shall have an integrated pressure wave breaker to reduce noise emissions.
3. The valve shall have a largely linear control curve and close gas-tight.
4. The pressure loss of the valve (differential pressure across the valve during control operation) may not exceed 10 mbar (0.15 psi) at maximum specified flow and wide-open valve. In wide open position, the valve shall open the entire pipe diameter for minimum pressure loss.

- ii. Construction:

1. Body: Zinc plated steel.
2. Hardware: Type 316 SS.
3. Diaphragm: Type 316 SS.
4. Guides and Seals: Teflon/Carbon/HBNR.

- iii. Pressure Rating: 150 psi.

- iv. Internal Air Temperature Rating: 300 degrees F, minimum.

- v. End Connections: Flanged.

- vi. Operator:

1. As specified in the Valve Schedule.

- vii. Manufacturer and Model:

1. Binder Group, VACOMASS Elliptic Diaphragm Control Valve.

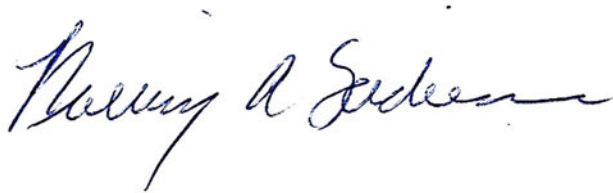
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Statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought: Arcadis has received confirmation from the supplier that domestic construction materials are unavailable for the elliptical diaphragm control valves. Please see the attached document "Binder AIS Statement" for further information.

Has the State received other waiver requests for the materials described in this waiver request, for comparable projects: Yes, AECOM previously submitted an AIS waiver request for the Tiffin WPCC LTCP Improvements project specific to these valves (Binder Elliptic Diaphragm Control Valves). That waiver request was approved.

Thank you for reviewing this waiver request. If you have any questions or concerns, please contact me by phone at 614-985-9224 or by email at Kimberly.Seidelmann@arcadis.com.

Sincerely,



Kimberly Seidelmann, PE  
Senior Project Engineer  
Arcadis U.S., Inc.

## ATTACHMENTS

- Binder AIS Statement



**April 28, 2020**

**To: Ohio Environmental Protection Agency**

**Subject: Lancaster Lawrence Street project  
American Iron and Steel Waiver Request (Availability Basis)**

Dear Sirs,

This statement is to explain the reason of the request for a waiver of American Iron and Steel Waiver (AIS) requirements for the aeration valves in the above referenced project.

The Binder VACOMASS® diaphragm control valves are unique air flow control valves considering their lower headloss and improved valve characteristic curves compared to other types of valves. The lower headloss results in less energy use since the process aeration blowers can run at lower pressures with these valves. The Binder VACOMASS® diaphragm control valves also have unique linear control curves from 0-100% open compared to other valve types, which allows for a precise flow control across the entire range of the valve positions.

The Binder diaphragm control valves are exclusively designed and manufactured in Germany. Indeed, Binder Group can't produce VACOMASS® diaphragm control valves domestically in the USA because it does not have the manufacturing facilities nor the required expertise for such sophisticated valves in the USA. Hence, we are seeking a waiver from the AIS requirement due to the non-availability of such valves in the USA from domestic suppliers.

Sincerely yours,

**Tarek El-Shafie**

Director of Business Development – North America

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