MARYLAND ENVIRONMENTAL SERVICE

Larry Hogan, Governor

James M. Harkins, Director

**July 1, 2015**

**MARYLAND CORRECTIONAL INSTITUTION (MCI)**
**WASTEWATER TREATMENT PLANT ENR UPGRADE**

**HAGERSTOWN, MARYLAND**

**PROJECT ID No. 15-02-17R**

**ADDENDUM NO. 1**

**BID DUE DATE: July 31, 2015**
**BID DUE TIME: 1:30 PM**

**TO ALL PROSPECTIVE BIDDERS:**

Please note the following changes presented herein in connection with the above-referenced project and be governed accordingly. The prospective Bidders shall acknowledge on the Bid Form the receipt of Addendum No. 1. This addendum is hereby made a part of the Contract Documents of which the contract will be based and is issued to modify, explain, and/or correct the original Contract Documents. All Bidders shall include any cost impact in their bids.

## ITEM 1: REVISIONS TO SPECIFICATIONS AND DRAWINGS

A. **Add** the following to Specification 11300-1.01.B:

*The manufacturer shall be fully responsible for the full functionality of the filtration system as specified and intended by the design.*

B. **Add** the following to Specification 11300-1.05.C:

*All submitted calculations shall be certified by a P.E. registered in the State of Maryland.*

C. **Remove** the following in Specification Section 11300-2.01.A:

*"2. Or Equal"*

**Replace** with the following:

*2. Leopold, Xylem Inc.*
*3. or Equal*

259 Najoles Road • Millersville, Maryland • 21108
phone 410-729-8200 • fax 410-729-8220 • www.menv.com

D. **Remove** the *Specification Section 15115 – Slide Gates* in its entirety and **Replace** with the revised *Specification Section 15115* as attached in this addendum.

E. **Remove** the following in Note 17 on Drawing E-5 for the wash water pumping station panel:

*"Provided by System Integrator"*

**Replace** with the following:

*Provided by Equipment Supplier*

**Enclosures**

**WILLIAM C. KESSEL**
**PROCUREMENT ADMINISTRATOR I**

**END ADDENDUM No. 1**

# SECTION 15115
# SLIDE GATES

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Slide Gates

### 1.02 RELATED SECTIONS

A. Section 01650 - Start-Up, Demonstration and Instruction of Systems

B. Section 05500 – Metal Fabrications

C. Section 09900 - Painting

### 1.03 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Society for Testing and Materials (ASTM):

   a. A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
   b. A193, Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
   c. A240, Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.
   d. A276, Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes.

2. American Water Works Association:

   a. C561, Open-Channel, Fabricated-Metal, Slide Gates and Open-Channel, Fabricated Weir Gates

### 1.04 DEFINITIONS

A. Slenderness Ratio: The ratio of the maximum unsupported stem length to the stem cross-section radius of gyration. Slenderness ratio shall not exceed 200.

B. Self-Contained: The arrangement of the gate operator, supported by the gate frame, such that operating thrust loads are not applied external to the assembly.

## 1.05 SUBMITTALS

A. Shop Drawings Consistent with Section 01300 and including:

1. Make, model, and weight of each equipment assembly.
2. Manufacturer's catalog information, descriptive literature, specifications, and identification of materials of construction.
3. Detailed structural and mechanical drawings showing the equipment fabrications and interface with other items. Include dimensions, size, and locations of connections to other work, and weights of associated equipment associated therewith.
4. Gate operator and stem calculations for each gate and service condition.
5. Gate opening and closing thrust forces that will be transmitted to the support structure with operator at extreme positions and load.

B. Manufacturer's Certificate of Proper Installation consistent with Section 01300.

C. Operation and maintenance manual consistent with Section 01300.

## PART 2 - PRODUCTS

## 2.01 MANUFACTURERS

A. Units Manufactured by:

1. Stainless Steel:

a. Aquanox Water Control Gates

b. HydroGate Corp.

c. Rodney Hunt Co.

d. Or Equal.

B. Coordination:

1. Provide single source coordination responsibility through the gate manufacturer for the gates and operators.

## 2.02 MATERIALS

A. Stainless Steel Slide Gates:

1. Frame and Slides: ASTM A-276 Type 304L or 316L
2. Rails and Yokes: ASTM A-276 Type 304L or 316L
3. Stems: ASTM A-276 Type 304 or 316 or ASTM F593/F594
4. Fasteners and Anchor Bolts: ASTM A-276 Type 304 or 316

5. Flushbottom Seals: Rubber – ASTM D-2000 BC610-615 or other suitable material for extended use in water or wastewater
6. Guides: UHMW Polymer ASTM D4020. The use of neoprene J-Bulb, P-seals or crown seals is not permitted.

## 2.03 PERFORMANCE REQUIREMENTS

A. Leakage:

1. Seating Head Condition:

   a. Not to exceed 0.1 gallon per minute per foot of gate periphery

2. Unseating Head Condition:

   a. Not to exceed 0.2 gallon per minute per foot of gate periphery

## 2.04 FABRICATION

A. Slide Gates:

1. Gates shall be either self-contained, with yoke and bench stand operators, or non-self contained, with separate stem guides and floor stand operators, in accordance with the requirements of these specifications.
2. Specific gate design and configuration shall be as shown on the Drawings.
3. For all wall mounted gates, the gate frames shall be of Flange Back design. Flat Back frames are not permitted.

B. Guide Frames:

1. General:

   a. Furnish welded gate frame and guides composed of guide rails, cross bars, and headrails with clear opening same size as waterway.
   b. Provide ¼-inch minimum thickness frame members.

2. Vertical Guides:

   a. Design for maximum rigidity, and extend in one continuous piece from the gate invert to form posts for support of gate operators of self-contained gates.
   b. Provide guides of sufficient length to support two-thirds (2/3) the height of the slide, when the gate is fully open.
   c. When guides extended above the operating floor, they shall be sufficiently strong so that no further reinforcements are required.
   d. Incorporate a replaceable UHMW polyethylene bearing strip in a retainer slot on the downstream side (unseating head side) of the gate.
   e. Weight

1) Stainless Steel – not less than 9 lbs. per linear foot.

3. Frame Invert

a. Weight:

1) Stainless Steel – not less than 9 lbs. per linear foot.

4. Operator Support Yoke (Self-Contained Gates Only):

a. Extend head angle or yoke 30 IN above operating floor and provide guides of sufficient strength that no further reinforcing will be required.
b. Design yoke to support lift mechanism, constructed from at least two angles, or two other suitable shapes, and bolted or welded to the top of the guides to provide a rigid assembly.
c. Design yoke arrangement such that the slide and stem can be removed without disconnecting yoke.
d. Design yoke to support lift forces when subjected to a load of 80 LB pull on the operator.
e. Maximum deflection of yoke under design head conditions shall not exceed 1/720 x Length.

5. Slide:

a. Reinforce as required so that the slide will not deflect more than 1/720 of the gate span, when the upstream liquid depth (seating head side) is as shown on the schedule and the downstream liquid depth is less than 1/2-inch.
b. Reinforce with one-piece angles or channels welded to the slide plate. Bolted reinforcements will not be permitted.
c. Where required on the Drawings, furnish V-notch or rectangular weir cutouts in the slide plate. Cutout dimensions and location to match details shown on the Drawings.

6. Seals:

a. General:

1) Unless otherwise indicated in the Gate Schedule, provide seals as follows:

(a) Upward opening slides gates

(1) Provide flush seal at gate invert.
(2) Provide seat/seal consisting of UHMPE guides and nitrile neoprene compression cord. J type seals are unacceptable.

(3) Top seal shall consist of UHMPE wiper seal including both top and bottom nitrile neoprene compression cords. J type seals unacceptable.

(b) Downward opening slide gates

(1) Provide invert and side seals consisting of UHMPE guides and nitrile neoprene compression cord. J type seals are unacceptable.

(2) For aperture opening gates, provide seat/seal consisting of UHMPE guides and nitrile neoprene compression cord. J type seals are unacceptable.

b. Flush seals:

1) Provide flush closure with a rubber insert to function as a seating surface for the gate slide.

7. Stems:

a. Threads: Acme type with RMS surface roughness of 63 micro-inches or less on the flanks for manually operated gates and 32 micro-inches or less on the flanks for electrically operated gates. Extend threaded portion of stem 2 inches above operator when gate is in CLOSED position. All stems threads shall be ROLLED ACME type. Machine cut stem threads are not acceptable.

b. Ratio of the unsupported stem length to the radius of gyration, both in inches, shall not exceed 200.

c. Diameter: Capable of withstanding without damage, the thrust equal to at least 2-½ times the rated output of the operator, with a 40-pound effort applied to the handwheel or crank.

d. Design electric motor-driven floor stands to withstand at least 1.25 times the output thrust of the motor in the stalled condition.

e. Support operating stems with cast iron, bushed stem guides, mounted on cast iron brackets; adjustable in two directions and spaced so that the L/r ratio does not exceed 200.

f. Provide an adjustable stop collar for the CLOSED position.

g. Connect the stems to the slide plate with a yoke, bolted to the stem and welded to the slide.

h. Slide gates having a width greater than twice the height or width greater than 84 inches shall have dual stems. For downward opening weir type gates, locate stems near outside edges of gate.

i. Utilize rising stem design for all gates unless otherwise noted on the gate schedule.

## 2.05 LIFTING MECHANISMS

A. General

1. Provide lifting mechanisms in accordance with AWWA C561-14.

B. Manual Lifting Mechanisms:

1. General:

a. Lift mechanisms shall have either a handwheel without gear reduction or be crank-operated with either a single- or double-gear reduction as required.
b. Lift mechanism shall operate the gate with a maximum pull of 40 lbs on the handwheel or crank after the slide is unseated, based on the operating head specified. The maximum crank radius shall be 15 inches, and the maximum handwheel diameter shall be 30 inches.
c. Handwheel or crank shall be located approximately 36 inches above grating or walkway.
d. A threaded bronze lift nut shall be provided to engage the threaded portion of the gate stem. Lift nut shall be flanged with ball or roller bearings provided above and below the flange on the lift nut to take the thrust developed during opening and closing the gate with a force of 100 ft-lb on the crank or handwheel.
e. Bearings, gears, and lift nut shall be enclosed in a housing that shall be mounted on the yoke of self-contained gates or separately supported on a pedestal for non-self contained gates.
f. Fittings shall be provided to permit lubrication of all gears and bearings.
g. The direction of wheel or crank rotation to open the gate shall be indicated on the lift mechanism.
h. Furnish mechanical seals at housing penetrations.

2. Geared Lifts:

a. Gears shall be machined accurately with cut teeth to provide smooth, proper operation for the lifting mechanism.
b. Suitable shafts shall be installed with sleeve, ball, or roller bearings of appropriate size.
c. Removable cranks shall be provided with a corrosion-resistant rotating handle.
d. Suitable for operation by use of a portable-motor apparatus.

3. Pedestals:

a. Pedestals shall be machined and drilled to receive the gear and/or bearing housing, and drilled for bolting to the operating floor.

C. Dual Lifting Mechanisms:

1. All gates having widths greater than twice their height or greater than 84 inches shall be provided with two lifting mechanisms connected by a tandem shaft for simultaneous operation.
2. Interconnecting Shafts:

    a. Stainless steel with flexible couplings at ends.
    b. Diameter sufficient to prevent sagging.
    c. Include flanged coupling to allow precision weir leveling.

## 2.06 APPURTENANCES

A. Lifting Lugs: Furnish suitably attached for equipment assemblies and components weighing over 100 pounds.

B. Anchor Bolts: AISI Type 316 Stainless Steel sized by equipment manufacturer (minimum 1/2 inch in diameter), or as shown, on the Drawings.

C. Staff Gauges: For downward acting weir gates. Graduated in 1/4 inches and marked every inch and foot.

1. Manufacturer and Product: Leopold and Stevens Instruments Inc.; Porcelain Enameled Style C.

D. Stem Covers:

1. Each rising stem unit shall be provided with a stem cover unless otherwise specified
2. The cover shall be made ***of Schedule 40 (ANSI/ASME B36.10) pipe*** of clear butyrate plastic that will not discolor or become opaque for at least five years after installation.
3. The cover shall be of sufficient diameter and length to permit full travel of the threaded stem without obstruction.
4. The top of the stem cover shall be closed. The bottom end of the stem cover shall be vented, drained, and mounted in a housing or adapter plate for easy field mounting installation.

E. Indicator:

1. Provide each clear stem cover with OPEN/CLOSED indicators with 1-inch graduations on clear Mylar pressure sensitive, adhesive tape, suitable for outdoor application.
2. Provide each actuator for rising-stem gates with a galvanized pipe cover and all actuators for nonrising-stem gates with a position indicator to show the position of the gate at all times. The indicator shall be attached to the mechanism.

F. Identification Tagging Requirements:

1. For each gate operator, 1-1/2-inch minimum diameter heavy brass tag, bearing the gate tag number shown in the schedule.
2. Attach the tags to the operator by soldered split key rings to that ring and tag cannot be removed. Use block type numbers and letters with 1/4-inch minimum high numbers and letters stamped on and filled with black enamel.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

A. In accordance with the manufacturer's written instructions.

B. Disassemble factory assembled gate components before installation.

C. Field mount operators after installing gates.

D. Brace thimbles internally during concrete placement.

E. Accurately place anchor bolts using templates furnished by the manufacturer.

### 3.02 FIELD QUALITY CONTROL

A. Functional Tests:

1. Each gate shall be checked for operation through a complete cycle of open-shut-open or shut-open-shut.
2. Conduct on each slide gate.
3. Perform under actual or approved simulated operating conditions.
4. Adjust, realign, or modify units and retest if necessary.

B. Performance Test:

1. Each gate shall be checked for leakage
2. Conduct on each slide gate.
3. Perform under actual or approved simulated operating conditions.
4. Test for a continuous 3-hour period without malfunction.
5. Adjust, realign, or modify units and retest if necessary.

### 3.03 MANUFACTURER'S SERVICES

A. Manufacturer's Representative: Present at site or classroom designated by Owner for minimum of 1 person-day, travel time excluded.

B.

**END OF SECTION**