



# St. Johns River

## Water Management District

Ann B. Shortelle, Ph.D., Executive Director

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On the internet at [www.sjrwmd.com](http://www.sjrwmd.com).

DATE: September 24, 2020

TO: Prospective Respondents

FROM: Amy Lucey, Contracts Administrator

SUBJECT: Addendum #5 to Invitation for Bids # 36060, Lake Apopka Duda Property Water Storage Improvements

As a result of inquiries, the following clarifications/changes are provided for your information. Please make all appropriate changes to your bid documents. Note: changes are reflected with original language shown with strike-through and new language is underlined.

- Q1: Sheet 2, Hydroseeding and Sodding, Note 3; Is there an anticipated quantity or area required for the Coconut Fiber Blanket ECC-2 by East Coast Erosion?
- A1: The assumed quantity is the same as that for sod in cost schedule item 7.
- Q2: Sheet C21, Detail C21/4, detail shows Rip Rap adjacent to Concrete Footing, See Structural Plans; Please provide location for the Rip Rap adjacent to a Concrete Footer.
- A2: This is a typical detail that is not applicable to this project.
- Q3: Sheet S6, Detail S6/1, detail calls out a HP8x8x8'-0" at the top cross beam, supporting the walkway. Should the beam be a HP8x36?
- A3: Yes, HP8x36 is correct. The detail has a typo.
- Q4: Your consideration in including Rodney Hunt as an approved manufacturer of Slide Gates per the attached would be appreciated.
- A4: Rodney Hunt may be an approved manufacturer. However, a slide gate with a spigot back is required to attach directly to the corrugated aluminum pipe. The spec provided discusses mounting to a concrete wall with no mention of attaching directly to a pipe. Final approval is subject to review of shop drawing submittal.
- Q5: Cost Schedule Form, line item 8, Removal and Backfill of Existing Culverts, 6 LS: There are 4 EA Existing pipe culverts to be removed, as shown on Sheet C4 of the plans. Is there a significance the 6 LS? Are there 6 EA pipe culverts to remove?
- A5: There are 4 known culverts that need to be removed and backfilled. Based on past projects at Lake Apopka, there is a fair chance that additional culverts will be discovered during construction. Therefore, we included 2 extra culverts in the bid form.
- Q6: Is it known which parts or how much of Marsh Rabbit Road, North-South Road, and/or Duda West Road, have Existing Limerock Base material?
- A6: Marsh Rabbit Road west of the central
- Q7: Cost Schedule Form, line item 10, Geotextile, 1,500 SY: what is the location of the Geotextile in Bid Item 10?

- A7: Underneath the riprap shown on the plans.
- Q8: If the material deliveries/load tickets exceed bid form pay item 4 or 5 qty's to meet grade, will the additional material be paid for?
- A8: Yes, if additional material is necessary.
- Q9: What conversion factor/formula will be used to convert material deliveries/load tickets in TN to CY per the pay item?
- A9: For clean fill and limerock, divide TN by 1.2 and 1.3, respectively, to convert to CY.
- Q10: Can Cost Schedule Form, Line item 4 and 5 be changed to be paid by the Ton(TN)?
- A10: No.

Additions:

1. Please add note 6 to Structural Steel Notes on Sheet S1as follows:
6. PROTECTIVE COATING FOR STRUCTURAL STEEL SHALL BE AS MANUFACTURED BY SHERWIN-WILLIAMS, OR EQUAL, AS FOLLOWS:

FIRST COAT (PRIMER):	DURA-PLATE 235, 4-8 MILS DFT
SECOND COAT:	DURA-PLATE 235, 4-8 MILS DFT
THIRD (FINAL) COAT:	DURA-PLATE 235, 4-8 MILS DFT

SURFACE PREPARATION SHALL BE SSPC-10 NEAR WHITE BLAST. COLOR SHALL BE LIGHT GRAY. CONTRACTOR SHALL SUBMIT COLOR SAMPLES FOR DISTRICT APPROVAL. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE PAINT MANUFACTURER SPECIFICATIONS.

2. Rodney Hunt Aluminum Slide Gate Specification

**NOTE:** The Bid Opening **remains** 2:00 p.m., **Tuesday, October 6, 2020**

Please acknowledge receipt of this Addendum on the **BID FORM** provided in the bid package. If you have any questions, please e-mail me at [alucey@sjrwmd.com](mailto:alucey@sjrwmd.com).



## SPECIFICATION: ALUMINUM SLIDE & WEIR GATES

### PART 1 GENERAL

#### SCOPE OF WORK

The CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to install, ready for operation and field test stainless steel gates and appurtenances as shown on the Contract Drawings and as specified herein.

The gates and appurtenances shall be supplied in accordance with the latest edition of AWWA C562 Standard for Fabricated Aluminum Slide Gates as modified herein.

#### REFERENCES

AWWA C562	Fabricated Aluminum Slide Gates
ASTM A240	Stainless and Heat Resisting Plate
ASTM A276	Stainless and Heat Resisting Steel Bars and Shapes.
ASTM B584	Copper Alloy Sand Castings
ASTM B209	Aluminum Plate
ASTM B221	Aluminum Bars and Shapes
ASTM B308	Aluminum Structural Profiles
ASTM D2000	Rubber Products in Automotive Applications
ASTM D4020	Ultra-High Molecular Weight Polyethylene
ASTM F593	Stainless Steel Bolts, Hex Cap Screws and Studs
ASTM F594	Stainless Steel Nuts
AWS D1.2	Structural Welding Code - Aluminum
AWS D1.6	Structural Welding Code – Stainless Steel

#### SUBMITTALS

Provide the following information to confirm compliance with the specification in addition to the submittal requirements specified in Section\_\_.

Complete description of all materials including the material thickness of all



structural components of the frame and slide.

General assembly drawings showing all details of construction, details required for installation, dimensions, and anchor bolt locations. General assembly drawings must be provided in 3D format.

Maximum bending stress and deflection of the slide under the maximum design head.

Calculations for maximum operating load, hoist selection, and stem design.

## QUALITY ASSURANCE/QUALIFICATIONS

All of the equipment specified under this Section shall be furnished by a single manufacturer with a minimum of 20 years experience designing and manufacturing water control gates. The manufacturer shall have manufactured water control gates for a minimum of 100 projects.

The manufacturer's shop welds, welding procedures, and welders shall be qualified and certified in accordance with the requirement of the latest edition of ASME, Section IX or AWS D1.2 Structural Welding Aluminum.

The specification is based on the aluminum slide gate as manufactured by Rodney Hunt, Inc of Orange, MA.

## **PART 2      EQUIPMENT**

### GENERAL

Each slide gate will be manufactured as detailed here and will be supplied fully tested as per requirements. To the maximum extent possible, the gate assembly comprising of frame, guides and slide will be supplied as a factory assembled unit and shipped to site ready to install on the wall thimble or wall.

The aluminum slide gates will be manufactured in accordance with AWWA C-562.

The gate manufacturer will be  
Rodney Hunt, Inc.  
or prior approved equal.

The slide gates will be designed for water tightness for both seating and un-seating differential head per the actual site requirement as detailed in



the Aluminum Slide Gate Table.

The slide gates will be shop tested to verify the leakage performance at operating head in the un-seating direction. Where sealing configuration permits, hydrostatic testing will be conducted at 1.5 times operating head, to demonstrate structural integrity. Testing for opening load at the unseating operating head to verify actuating mechanism sizing will also be conducted.

The slide gates will be of rising stem type unless site geometry prohibits it. Operation will be by means of a manual hoist, electric actuator or hydraulic cylinder as detailed in the Stainless Steel Slide Gate Table.

The slide gate will be supplied complete with all accessories such as: gate assembly, gasket, studs and nuts for mounting, stem, thrust nut, stem couplings, stem guides, pedestal, operating mechanism as required, gate opening indicating arrangement and as required anchor bolts and fasteners for stem guides and pedestal.

The allowable leakage rate for the aluminum gates in this specification shall be 1/2 the allowable leakage listed in the latest revision of AWWA C562, 0.05 gpm/ft of wetted seal perimeter in seating head and unseating head conditions.

The gates shall utilize self-adjusting seals. Due to the difficulty of accessing gates when they are in service - gates that utilize adjustable wedges, wedging devices or pressure pads are not acceptable.

All structural components of the frame and slide shall be fabricated of aluminum having a minimum thickness of 1/4-inch and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.

All welds shall be performed by welders with AWS certification for the material grades used in fabrication.

Finish: Mill finish on aluminum. Welds shall be cleaned by buffing or brushing. Aluminum in contact with concrete or cementitious grout shall be coated with epoxy paint to provide isolation. All iron and steel components shall be properly prepared and shop coated with a primer.

FRAME



The frame assembly, including the guide members, invert member and yoke members, shall be constructed of shapes with a minimum thickness of 1/4-inch for all wetted members.

Frame design shall allow for embedded mounting, mounting directly to a wall with stainless steel anchor bolts and grout or mounting to a wall thimble with stainless steel mounting studs and a mastic gasket material. Mounting style shall be as shown on the Contract Drawings.

All wall mounted or wall thimble mounted gates shall have a flange frame. Flat frame gates are not acceptable.

Gussets shall be provided as necessary to support the guide members in an unseating head condition.

The frame shall extend to accommodate the entire height of the slide when the slide is in the fully opened position on upward opening slide gates or downward opening weir gates.

On self-contained gates, a yoke shall be provided across the top of the frame. The yoke shall be formed by a structural members affixed to the top of the side frame members to provide a one-piece rigid assembly. The yoke shall be designed to allow removal of the slide.

A rigid aluminum invert member shall be provided across the bottom of the opening. The invert member shall be of the flush bottom type on upward opening gates.

A rigid aluminum top seal member shall be provided across the top of the opening on gates designed to cover submerged openings.

A rigid aluminum member shall be provided across the invert of the opening on downward opening weir gates.

## SLIDE

The slide and reinforcing stiffeners shall be constructed of aluminum plate and shapes. All structural components shall have a minimum thickness of 1/4-inch.

The slide shall not deflect more than 1/360 of the span or 1/16 inch, whichever is smaller, under the maximum design head.

Reinforcing stiffeners shall be stitch welded to the slide and mounted horizontally. Vertical stiffeners shall be welded on the outside of the horizontal stiffeners for additional reinforcement.



The stem connector shall be constructed of two angles or plates. The stem connector shall be continuously welded to the slide. A minimum of two bolts shall connect the stem to the stem connector.

## SEALS

All gates shall be provided with a self-adjusting seal system to restrict leakage in accordance with the requirements listed in this specification.

All gates shall be equipped with UHMW polyethylene seat/seals to restrict leakage and to prevent metal to metal contact between the frame and slide. The seat/seals shall extend to accommodate the full height of the slide in all positions.

All upward opening gates shall be provided with a resilient seal to seal the bottom portion of the gate. The seal shall be attached to the invert member or the bottom of the slide and it shall be held in place with stainless steel attachment hardware.

All downward opening weir gates shall be provided with UHMW polyethylene seat/seals across the invert member.

The seal system shall be durable and shall be designed to accommodate high velocities and frequent cycling without loosening or suffering damage.

All seals must be bolted or otherwise mechanically fastened to the frame or slide. The seals shall be mounted so as not to obstruct the water way opening.

Gates that utilize rubber "J" seals or "P" seals are not acceptable.

The seal system shall have been factory tested to confirm negligible wear (less than 0.01") and proper sealing. The factory testing shall consist of an accelerated wear test comprised of a minimum of 25,000 open-close cycles using a well-agitated sand/water mixture to simulate fluidized grit.

## OPERATING STEM

The slide gates will be supplied with rising type operating stems unless non-rising stems are required by installation geometry.

The stem will be supplied with ACME full or stub threading. The stem will be designed to allow for elevation deviations of up to 2".

The stem shall be constructed of solid stainless-steel bar for the entire length, the



metal having a tensile strength of not less than 90,000 psi for stems that are 3 inches or less in diameter. Stems that are in excess of 3 inches in diameter shall have a tensile strength of 85,000 psi.

The threaded portion of the stem shall have a minimum outside diameter of 1-1/2 inches. Stem extension pipes are not acceptable.

The design of stem will be per the provision in AWWA C-562.

The L/r ratio will not exceed 200.

For buckling, Euler's formula will be used with an end condition of 2.0. For threaded sections, the radius of gyration will be based on the minor diameter. At the stem design load as follows, the yield strength of the material will not be exceeded.

As a minimum for manual hoists, the stem design load is the load produced with a 100 pound effort on the crank or handwheel.

For electric actuators, the stem design load is the greater of the load produced with a 100 pound handwheel effort and 1.50 times the load produced at a locked rotor condition.

For hydraulic actuation, the stem design load will be 1.25 times the thrust produced at system relief pressure.

Stems of more than one section shall be joined by stainless steel or bronze couplings. The coupling shall be threaded and bolted to the stems.

Stems shall be provided with adjustable stop collars to prevent over closing of the slide.

## STEM GUIDES

Stem guides will be provided as required to meet the stem design criteria.

Wall mounted stem guides will be adjustable in two directions, providing at least 0.50" of adjustment in both directions. Wall brackets will be stainless steel.

Wall mounted stem guides will have machine bored, split bushings to facilitate erection. Bushings will be bronze or UHMWPE. Stem guides mounting at the base of the pedestal do not require adjustment.





## MANUAL OPERATOR MECHANISMS

Unless otherwise shown on the Drawings, gates shall be operated by a manual handwheel or a manual crank-operated gearbox. The operator shall be mounted on the yoke of self-contained gates or on the pedestal of non-self-contained gates.

The gate manufacturer shall select the proper gear ratio to ensure that the gate can be operated with no more than a 40 lb. effort when the gate is in the closed position and experiencing the maximum operating head.

An arrow with the word "OPEN" shall be permanently attached or cast onto the operator to indicate the direction or rotation to open the gate.

Handwheel operators shall be fully enclosed and shall have a cast aluminum or ductile iron housing.

Handwheel operators shall be provided with a threaded cast bronze lift nut to engage the operating stem.

Handwheel operators shall be equipped with roller bearings above and below the operating nut.

Positive mechanical seals shall be provided above and below the operating nut to exclude moisture and dirt and prevent leakage of lubricant out of the hoist.

The handwheel shall be removable and shall have a minimum diameter of 15 inches.

Crank-operated gearboxes shall be fully enclosed and shall have cast aluminum or ductile iron housing.

Gearboxes shall have either single or double gear reduction depending upon the lifting capacity required.

Gearboxes shall be provided with a threaded cast bronze lift nut to engage the operating stem.

Bearings shall be provided above and below the flange on the operating nut to support both opening and closing thrusts.

Gears shall be steel with machined cut teeth designed for smooth operation. The pinion shaft shall be stainless steel and shall be supported on ball or tapered roller bearings.



Positive mechanical seals shall be provided on the operating nut and the pinion shafts to exclude moisture and dirt and prevent leakage of lubricant out of the hoist.

The crank shall be cast aluminum or cast iron with a revolving nylon grip.  
The crank shall be removable.

All gates having widths in excess of 72 inches and widths greater than twice their height shall be provided with two gearboxes connected by an interconnecting shaft for simultaneous operation.

Interconnecting shafting shall be constructed of aluminum or stainless steel.

Flexible couplings shall be provided at each end of the interconnecting shaft.

One crank shall be provided to mount on the pinion shaft of one of the gearboxes.

An extended operator system utilizing chain and sprockets shall be furnished by the manufacturer when the centerline of the crank or handwheel, on a non-gear operator, is located over 48 in above the operating floor. Chain wheels are not acceptable.

A removable stainless steel or aluminum cover shall be provided to enclose chain and sprockets.

The extended operator system shall lower the centerline of the pinion shaft to 36 in above the operating floor.

A handwheel may be utilized in conjunction with a gearbox in lieu of the extended operator system if the centerline of the pinion shaft is 60 in or less above the operating floor.

Pedestals shall be constructed of stainless steel. Aluminum pedestals are not acceptable.

The pedestal height shall be such that the handwheel or pinion shaft on the crank-operated gearbox is located approximately 36 in above the operating floor.

Wall brackets shall be used to support floor stands where shown on the Drawings and shall be constructed of stainless steel.

Wall brackets shall be reinforced to withstand in compression at least two times the rated output of the operator with a 40 lb. effort on the crank or handwheel.

The design and detail of the brackets and anchor bolts shall be provided by the gate manufacturer and shall be approved by the ENGINEER. The gate manufacturer shall supply the bracket, anchor bolts and accessories as part of



the gate assembly.

Operators shall be equipped with polycarbonate plastic stem covers.

The top of the stem cover shall be closed and vented. Gate opening indication will be provided on the stem cover for all non-rising stem gates. A full height scale will be mounted on the side of the stem cover and an indicator nut mounted on the rising stem to show gate position. The scale graduation will be 1”.

The bottom end of the stem cover shall be mounted in a housing or adapter for easy field mounting.

When shown on the Contract Drawings, provide 2-inch square nut, mounted in a floor box, with a non-rising stem.

The square nut shall be constructed of stainless steel.

The floor box shall be constructed of stainless steel or cast iron and shall be set in the concrete floor above the gate as shown.

Provide one aluminum or stainless-steel T-handle wrench for operation.

## ELECTRIC MOTOR ACTUATORS

See Section\_.

## WALL THIMBLES

Wall thimbles shall be provided when shown on the Contract Drawings.

The wall thimble depth shall be equal to the thickness of the concrete wall in which the thimble is to be mounted.

Wall thimbles shall be fabricated stainless steel construction of adequate section to withstand all operational and reasonable installation stresses.

Wall thimbles shall be constructed of 1/4-inch minimum thickness stainless steel and the front face shall have a minimum thickness of 1/4–inch.

The fabrication process shall ensure that the wall thimble is square and plumb and the front face is sufficiently flat to provide a proper mounting surface for the gate frame.

The face of the wall thimble shall only be machined if recommended by the gate manufacturer. If the wall thimble is to be machined, the front face



shall have a minimum thickness of 1/4-inch after machining.

A water stop shall be welded around the periphery of the thimble. Wall thimbles shall be designed to allow thorough and uniform concrete placement during installation.

Studs and nuts shall be stainless steel. Water stop may be stitch welded.

A suitable gasket or mastic shall be provided to seal between the gate frame and the wall thimble. Electrical isolation between the thimble and gate frame shall be provided.

## ANCHOR BOLTS

Anchor bolts shall be provided by the gate manufacturer for mounting the gates and appurtenances.

Quantity and location shall be determined by the gate manufacturer.

If epoxy type anchor bolts are provided, the gate manufacturer shall provide the studs and nuts.

Anchor bolts shall have a minimum diameter of 1/2-inch.

## PART 3 MATERIAL OF CONSTRUCTION

Frame Assembly	Aluminum ASTM B209, B221, B308 T6061-T6
Slide and Stiffeners	Aluminum ASTM B209, B221, B308 T6061-T6
Stem	Stainless Steel, ASTM A276 Type 304 or Stainless Steel, ASTM A276 Type 316
Wall Thimble	Stainless Steel, ASTM A276 Type 304L or Stainless Steel, ASTM A276 Type 316
Fasteners	ASTM F593 and F594 GR1 for type 304 ASTM F593 and F594 GR2 for type 316
Anchor Bolts	Stainless Steel, ASTM A276 Type 304 or Stainless Steel, ASTM A276 Type 316
Invert Seal (Upward Opening Gates Only)	Neoprene or EPDM ASTM D-2000



Seat/Seals and Facing	Ultra-High Molecular Weight Polyethylene ASTM D4020
Lift Nuts	Bronze ASTM B584 - C865
Pedestals and Wall Brackets	Stainless Steel, ASTM A276 Type 304L or Stainless Steel, ASTM A276 Type 316L
Operator Housing	Cast Aluminum or Ductile Iron

## **PART 4 EXECUTION**

### **INSTALLATION**

Installation of the gates and appurtenances shall be done in a workmanlike manner. It shall be the responsibility of the CONTRACTOR to handle, store and install the equipment specified in this Section in strict accordance with the manufacturer's recommendations.

The CONTRACTOR shall review the installation drawings and installation instruction prior to installing the gates.

The gate assemblies shall be installed in a true vertical plane, square and plumb.

The CONTRACTOR shall fill the void in between the gate frame and the wall with non-shrink grout as shown on the installation drawing and in accordance with the manufacturer's recommendations.

The CONTRACTOR shall add a mastic gasket between the gate frame and wall thimble (when applicable) in accordance with the manufacturer's recommendations.

### **FIELD TESTING**

After installation, all gates shall be field tested in the presence of the ENGINEER and OWNER to ensure that all items of equipment are in full compliance with this Section. Each gate shall be cycled to confirm that they operate without binding, scraping, or distorting.

The effort to open and close manual operators shall be measured and shall not exceed the maximum operating effort specified above. Electric motor actuators shall function



smoothly and without interruption.

Each gate shall be water tested by the CONTRACTOR, at the discretion of the ENGINEER and OWNER, to confirm that leakage does not exceed the specified allowable leakage.